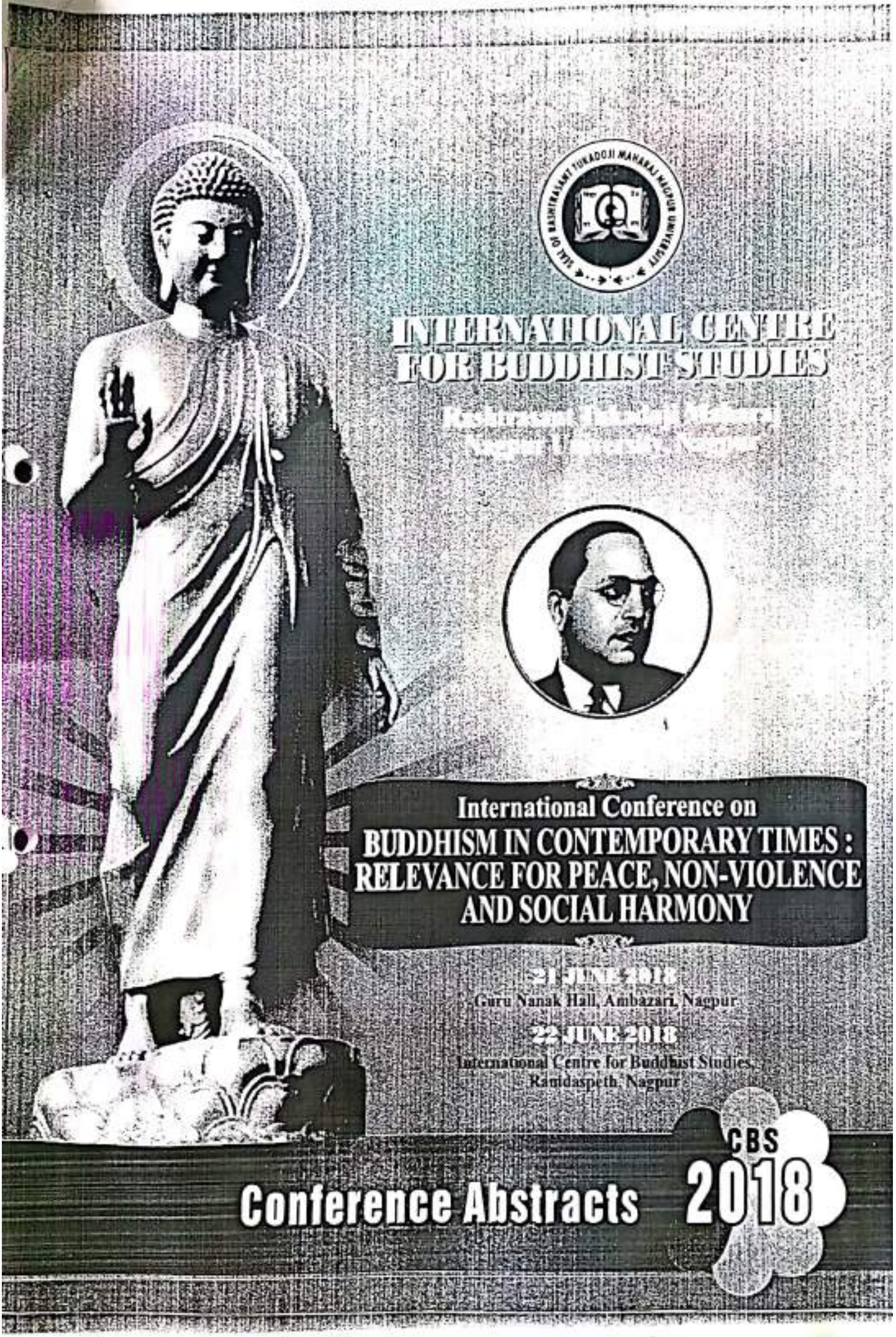

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Conference Abstracts

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Relevance of Buddhism in English literature and politics

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Buddhism has a permanent appeal. It is rather the only resort of man in the midst of possibilities of a clash between powerful groups of countries for their blind ambition of surpassing one another. Buddha's teaching is the best remedy for the disease of ambition that the mankind is suffering from. Not to exaggerate, Buddhism is the one and only philosophy that speaks of life in straightforward terms and offers humanity a very practical way to be free of sorrow caused by desire and hence it pulls in the litterateurs across the world. The authors, poets, essayists, playwrights and so on in English literature use Buddhism to justify their own views on life. In the same way, the political field is full of such people who have turned over-aspiring to gain power and ready to cross any limit for the fulfilment of the same. At such a critical juncture, the world is desperately in need of Buddha and his thoughts. That is why Buddhism is still relevant in politics as well.

Key Words: Buddhism, English literature, politics, T. S. Eliot, W. B. Yeats

बुद्ध धम्म तत्व का आंबेडकरवादी साहीत्य में आविश्कार

वर्षा चहादे (सहा. शिक्षिका)

भारतीय बौद्ध इतिहास को सहसाब्दियों से संचित उर्जा जिन में प्रस्फुरित हुई वह परमपुज्य डॉ. बाबासाहेब आंबेडकर का नाम अमर रहेगा । डॉ. आंबेडकरजी ने लाखो करोडों लोगों को इकट्ठा करके उन्हे बुद्ध के शरण में ले गए । इन्ही के प्रयास से भारतवर्ष के बौद्धो का पुणर्जागरण हुआ, इन्ही के प्रेरणा के आधार पर राष्ट्रीय एवं आंतरराष्ट्रीय स्तर पर विशाल देश को गौरवान्वित किया। डॉ. आंबेकरजीने सहसाब्दियों से अपने को भूली हुई राष्ट्र के बहुसंख्यांक एवं उपेक्षित जनता के अर्तः मन को झकझोर दिया।

इसके फलस्वरूप बुद्ध के संस्कारों को स्विकारा तथा बुद्ध तत्वज्ञान को अपने साहित्य में आविस्कृत किया। बौद्ध धम्म तत्व के तुसार, स्वातंत्र्य, समता, बंधुता, न्याय एवं शिक्षा इन पंचसुत्रों का मेल करके इस देश में जातीयता का एवं विशमता का विनाष करके नवरूप से आदर्ष समाज की रचना करना इसको बाबासाहब ने अनन्य साधारण महत्व दिया था। इसी के मार्ग पर जाते हुये इनके विकास में आंबेडकरवादी साहित्यकारों ने अपना अमुल्य योगदान दिया है। ब्राम्हणवाद ने जातीं, भाशा षास्त्रप्रमाण्य, शिक्षा क्षेत्र, तीर्थपूजा, चिकित्सा, राज्य, अधिकार, अपराध दण्ड से संबधित सभी मान्यताओं और आवष्यकताओं को रहस्याधारित संस्कारो पर खडा किया था किंतु आंबेडकरवादी विचारवंतो के तार्किक परीक्षण में वे टिक नही सके । वैज्ञानिक दृश्टि के बिना मनुश्य का आध्यात्मिक मूल्य नही बढ़ सकता, उसके बिना व्यक्ती के समक्ष समाज का वह विराट स्वरूप नही निखारता जिसके प्रति व्यक्ती अपने को समर्पित कर जीवन में कृतर्ज्ञता कर सके । जीवन को सफल बनाने के लिए बुद्ध तथा आंबेडकरवादी विचारधारा को अपनाके आंबेडकरी जनोंने बडे बडे साहित्य जिसमें काव्य, कथाएँ, उपन्यास, नाटय लिखे एवं मुर्तिकला, वास्तुकला आदि विविध कलाओं का विकास किया। तथा बुद्ध तत्वज्ञान से समाज जीवन के प्रति गतिषील दृश्टी लेकर उसे परिश्कृत किया। बुद्ध धम्म तत्व के मार्ग पर जाते हुये आंबेडकरवादी साहित्य में अनात्मवाद, अनिष्वरवाद, अनित्यवाद, बुद्धप्रामाण्यवाद यह जीवन के अति प्रिय मानकर प्रज्ञा, षिल, करूणा एवं मैत्री इन तत्वों के साथ नैतिक शिक्षा को विषेश स्थान दिया।

आंबेडकरवादी साहित्यने सामाजिक एवं धार्मिक अन्याय का केवल विरोध ही नही किया, बल्की 'नकार', 'विद्रोहता' के साथ प्रत्युत जीवन और दर्शन के प्रत्येक क्षेत्र में एक नया विकल्प प्रस्तुत किया, जिसने अपने को ब्राम्हणवादी परंपराओं से अधिक स्वस्थ, श्रेश्ठ और मानवग्राही सिद्ध किया । पुरानी दुनिया में दर्शन, न्याय, साधना कला और संस्कृती के क्षेत्र में बौद्धो का कोई सानी नही था। आज भी दुनिया में एषिया का जो आकर्शण है वह बौद्ध धर्म दर्शन और संस्कृति ही है।

अतः आंबेडकरवादी साहित्य दुःखो का कारण दिखाके वो दूर करणे का मार्ग दिखानेवाले समाज में अन्याय, अत्याचार, विशमता, पोशण इनके विरोध में लढने का सामर्थ्य देगे एवं मानवी कल्याण के लिये प्रेरणा तथा बुद्ध का संदेष देनेवाला है।

Relevance of Buddhism in English literature and politics

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Abstract:

Buddhism has a permanent appeal. It is rather the only resort of man in the midst of possibilities of a clash between powerful groups of countries for their blind ambition of surpassing one another. Buddha's teaching is the best remedy for the disease of ambition that the mankind is suffering from. Not to exaggerate, Buddhism is the one and only philosophy that speaks of life in straightforward terms and offers humanity a very practical way to be free of sorrow caused by desire and hence it pulls in the litterateurs across the world. The authors, poets, essayists, playwrights and so on in English literature use Buddhism to justify their own views on life. In the same way, the political field is full of such people who have turned over-aspiring to gain power and ready to cross any limit for the fulfilment of the same. At such a critical juncture, the world is desperately in need of Buddha and his thoughts. That is why Buddhism is still relevant in politics as well.

Key Words: Buddhism, English literature, politics, T. S. Eliot, W. B. Yeats

Introduction:

Despite several centuries, Buddhism has still quality and ability to inspire the mankind. Buddhism, in short, can be defined as the philosophy of Buddha. It is this philosophy which helps the world sustain itself amid several threats to the existence of humanity in terms of the nuclear weapons and other destructive inventions of man. Buddhism teaches peace, harmony, sacrifice of the greed for material things, love for both human and nonhuman living beings, morality, patience to tolerate others' follies and ability to forgive. This stately sublimity of thinking attracted the attention of renowned intellectuals, kings,

religious personalities, spiritualists, philosophers, litterateurs, politicians and so on from all the corners of the world. This research paper aims at taking the stock of Buddha's influence on literature and politics and thereby highlighting the relevance of his thoughts even in the present era in the above mentioned fields.

Buddhism and English literature:

Literature, be it English, be it Anglo-Indian, be it in Indian regional languages or be it from any part of the world, finds itself under the influence of Buddha's ideology at certain decisive places. So is the case with the English literature, where Buddhism seems to occupy a very crucial and prominent position. For instance, T. S. Eliot in his noted poem, *The Waste Land*, has recourse to the great thoughts of Buddha while stressing the importance of peace of mind in life. Some other distinguished writers like W. B. Yeats Lan Cao, Maxine Hong Kingston, Charles Johnson, Jack Kerouac, Tom Robbins, Gary Snyder and Alice Walker and so on can also be mentioned. Buddhism comes across English literature, especially, the modern one at a host of occasions. In various ways, the Buddha's teachings and thoughts appear in the works of a number of writers of twentieth and twenty first centuries in English literature. Today the English literature has acquired a global face which provides opportunity to the literary writers across the globe to bring the ideologies, philosophies and teachings of great personalities of various countries in the limelight by giving them expression in the creative literary artefacts. The humanity witnessed the upsurge of some revolutionary eminent ideologies which created a big sensation in the human life and also uprooted the mighty empires of several nations and endowed the human race with the pearls of nobly philanthropic thoughts. These mainly include Marxism, Communism, Colonialism, and Orientalism. IN the midst of these ideologies, schools and philosophies, Buddhism, though much old, continued to influence and shape the minds of hundreds of writers throughout the literary arena. Even today the Buddhism has not lost its appeal as it seems to be asserting itself through the various works of art. On the contrary, it has emerged as something more significant and urgent than anything else in the present era in view of the cut-throat competition among the nations to outclass one another. Buddhist views have been highlighted from time to time by various authors, poets in their respective literary writings.

T. S. Eliot seems to have got deeply influenced by the philosophy of Buddha as he gives it full and frank expression in his illustrious work entitled *"The Waste Land"*. Stephen Spender has also said that "Buddhism remained a lifelong influence in his work"[1] (Spender

20). In this poem, in the canto titled as "The Fire Sermon" he, like Buddha, expresses serious concern over the degeneration of values and the hollowness of life. The title is derived from Buddha's noted third discourse of the same name, Adittapariya Sutta. As Partidge says "Eliot had knowledge of H. C. Warren's *Buddhism in Translation,* the third title of the *The Waste Land* is derived" [2] **(Partridge 166).** In the concluding part of this canto, Eliot presents the Buddha's words used repeatedly during the discourse which intend to imply that the modern man is burning with the passion for lust and the feelings of hatred and disillusionment. Mere vacuity is spread all over the life of a modern man and it lacks in depth and substance. Here T. S. Eliot appears closely akin to the mood and mind of the Buddha. As a matter of fact, Eliot highly appreciated Buddha's teachings and he curiously went through his thoughts. While composing *The Waste Land* T. S. Eliot was under a big impression of Buddhist's thoughts and ways. It is said that he was about to covert to Buddhism. There is no doubt that *The Waste Land* takes a subtle motivation from the Buddha's ideology.

Another eminent personality in literature is W. B. Yeats. He can be considered as one of the most influential writers who got impressed by Buddhism. Yeats had lost his faith in Christianity. He read mysticism, occultism, orientalism along with Ancient Indian philosophy and Buddhism. It was his intense interest in the mysticism that directed him to go through Buddhist philosophy. Yeats' in his poem *Lapis Luzuli* speaks of a joy which is tragic. The concept of this tragic joy has a close association with Buddhism. Yeats got a piece of Lapis Luzuli "carved by some Chinese sculptor into the semblance of a mountain with temple, trees, paths, and an ascetic and pupil about to climb the mountain[3] **(Ellmann and O'Clair 153)** In respect of the concept of "Nirvana", however Yeats seems to have some difference with Buddha in that he considers it as an opportunity to be a part of the cycle of birth and rebirth contrary to that of Buddha's view that Nirvana means the salvation from the cycle of birth and rebirth.

Russell was also profoundly swayed by the unique understanding of the human life by Buddha. In most of his works he seems to be resorting to Buddhists thoughts to exemplify his own views of life. He had strong faith in Buddhism which frequently directed his mind. A list of the writers who resorted to Buddhism in order to establish their own opinions on life is quite long and suggestive of the influence and importance of Buddhism in English Literature.

Buddhism and Politics:

As far as political domain is concerned and the concerns it has raised about the deteriorating human values in the said area, the benign perspective of Buddha towards life

sounds relevant even today to deal with this crisis. Buddha came from the ruler's class. He was a born politician in the sense he was a son of a king. However, he did not uphold the view that anything is acceptable in politics to gain the power. That is why, when it came to dealing with the issue of the distribution Rohini River's water, he remained obdurate with his decision not to go for war with the dissenters. He left the life of joy and luxury but not the faith in the effectiveness of peace in politics. The leaders have unfortunately lost faith in the virtues like mercy, honesty, goodness, character and generosity and behaving rampantly in order to prove their superiority and preponderance over one another. The scene is a matter of deep apprehension since it poses a serious threat to the peaceful and incorrupt atmosphere in the area of politics. Political system is the most crucial factor in the development and orderly set- up of any nation but the way it has got away from its value based perspective, the Buddhists principles are urgently required to prevail over this challenge and subdue its intensity. Hence, Buddhism is the most appropriate way forward to solve the political problems and regain the lost faith of mankind in the human values to attain true peace in the nation and across the world. Unless and until the politicians believe in the great principal of "Bahujana sukhaya bahujana hitaya cha"[4] **(Sankrutyayan, 150)** It is translated as "for the happiness of the many, for the welfare of the many" ***(Bennett, 27).*** They can't bring a positive change in the society to corroborate and promote the values like equality, fraternity along with the upliftment and progress of the grassroots. It's a matter of shame that the people who are active in the field of politics tend to shirk the valuable thoughts of the great Buddha and fail to purify the corrupt politics of the day. This is indeed a big challenge before the humanity and hence it is the need of time to practice Buddhist's principles, as they are still not devoid of significance.

Today, the politicians seem to be using the name of Gautam Buddha for their personal benefit in politics but they are not the true followers of Buddha and his principles. Lord Buddha himself never misused his linkage with the royal families which had political power in their hands. He never displayed his association with the ruling class for spreading his thoughts among the people. However, today, the leaders across the world try to present him as an originator of particular ism to endorse their own ideologies which they have evolved for the achievement of their selfish ends. When it comes to fighting a battle of rights, these politicians show inclination towards violence rather than the Buddhist principle of the settlement of problem through peace. Most of them think that Buddhism is not applicable in the field of politics but their view is totally incorrect as the great man Mahatma Gandhi

practised Buddha's principles to fight with the broad British Empire and made it leave India. Though most of the people deny the relevance of the thoughts of Buddha in politics, it can never be forgotten that it is his philosophy at the root which keeps the selfish and aggressive politicians of the powerful countries away from violence at large. Japan is the best example of a true follower of Buddhist ways in the political province as well. Even so, it has made spectacular progress in all areas and it is by dint of Buddha's philosophy, succeeded in refraining itself from any sort of war activities despite its crucial role in the second world war which subjected it to the bitter experience of nuclear attack. Dalai Lama, a spiritual Guru, is employing the same Buddhist thoughts and ways to fight against the Chinese encroachment on the land of their country, Tibet. So, it can easily be stated that the Buddhism is quite relevant in the political arena as well in the on-going period.

Conclusion:

In terms of the influence Buddha had on the literary writers it becomes crystal clear that even today he is applicable in the field of literature and several poets, authors, dramatists are adapting Buddhism to their use and creating beautiful works of art. Literatures mirrors life and Buddha revealed the truth of life which no one can deny in spite of thousands of years and hence his influence on literature is permanent. Similarly the political thinkers are seen emphasizing the importance and need of Buddhism in the field of politics to solve the critical problems which may lead the world to the third world war and make the face thoroughly destructive situation putting an end the world. In this context, the Buddhism is the only solution to retain the existence of humanity intact and unaffected. So, the Buddhist's philosophy is relevant in the current period as well and will remain so as long as the world continues to exist.

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Indian Banking Sector: Its Challenges and Opportunity

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Abstract:

This paper consist study of changing in banking scenario, challenges and opportunities faced by Indian banking and try to understand importance of Indian banking in today's modern era. India is a second largest populated country and the seventh number economy in the world. The economic reforms initiated by the Government of India as regards two decades ago have change the landscape of several sectors of the Indian economy. The Indian Banking sectors have been play vital role in Indian economy. Today service sector contributing half and above in the Indian GDP and Banking sector is most popular service sector in India. Banking sector in India has achieved a new height with the changing times. Adopt the new technology bring revolution in working method of the banks. Banks play an important role in the development of developing countries. Economic development involves investment in various sectors of the economy. The banking sector in India has an enormous canvas of history, which covers the traditional banking practices from the time of British India to reform period. Consequently, Banking in India has been beginning to end a long journey.

Banking sector acts as a backbone of contemporary business. A healthy organized banking system is essential for the economic development of a country. In India all commercial banks without Regional Rural Banks and Local Area Banks have become Basel II compliant as on March31, 2009.Banks being basic components of financial system are the most effective way to generate the credit flow of money in markets. At the same time banking industry similar to many other financial services face a rapidly changing market, new technologies, economic fears, nasty competition and especially more customers demands.

Introduction:

Indian economic growth rate is over the past decade has been one of the more vital development in the global economy. This growth has its roots in the introduction of economic liberalisations in the early 1990s, which has allowed India to utilize its economic potential and increase the standard of living of population. After the independence Indian economy depend on agriculture based, but day by day dependability of Indian economy shift to service sector. Banking sector plays important role in the service sector and has a very vital role in the Development process. The overall development of the country through service sector is more or less depend on the growth of banking sector, today Indian banking is very much growing. Though there is lot many of challenges and opportunities in Indian banking and that's why today Indian banking sectors is become very hot topic, In Indian every sectors of people talking about Indian banking scenario.

Key word: Banking, Economy, Development, Schedule and Non-schedule Bank.

Objective:

The objective of this paper is as following

1. To explain the changing banking scenario.
2. To study the challenges and opportunities of banking sector.
3. To understanding the importance of Indian Banking Sector.

Methodology:

This paper is outcome of a secondary data on Indian Banking Sector. To complete this, annual report, various books, Journals and research paper on this particular area have been considered and searching on websites.

Evolution of the Indian Banking Sector:

The first bank in India, called Bank of Hindustan was established in the year 1770. But this bank had solvency 1832. From the year 1800 to 1858 more than 40 Bank was established, but after Second World War stay only 12 banks. The East India Company Established Joint Venture Company these include Presidency Bank, The Bank of Calcutta (1806) its rename Bank of Bengal in 1809, Bank of Bombay (1840) and Bank of Madras (1843).Originally banking sector growth had after 1860. The oldest Indian Joint Stock Company is Allahabad bank was established 1865. Punjab National Bank established was 1894 with headquarters at Lahore. Between 1906 and 1913, Bank of India, Central Bank of India, bank of Baroda, Canara Bank, Indian Bank and Bank of Mysore were set up in 1921, all presidency banks were amalgamated to 22 forms the Imperial Bank of India which was run by European Shareholders. After that the Reserve bank of India was established in 1 April 1935 under the Reserve bank Act 1934.

Foreign banks too started to come out, particularly, in the 1860s. Grind lays Bank opened its branch in Calcutta in 1864, now HSBC Bank established itself in Bengal in 1869. The fervour of Swadeshi movement lead to the establishment of many private banks in Dakshin Kanada and Udupi district, which were unified earlier and known by the name South Canada district. Four nationalised banks started in this district and also a leading private sector bank. Hence undivided Dakshina Kannada district is known as 'Cradle of Indian Banking. At the time of first phase the growth of banking sector was very slow.

Between 1913 and 1948 there were 93 schedule bank and their branches are 3106. Newly bank had United Commercial Bank, Hindustan Commercial Bank, Hindustan Mercantile Bank etc.

After Independence, Indian Government has taken more important to banking sector. This is one reason for Banking Reforms. In 1956 Bank of Imperial was nationalised and its new name was State bank of India, to the State Bank of India Act, 1955. The Government of India to control banking institution in the county taken various action, Banking Regulation Act-1949, Nationalisation State Bank of India-1955, Nationalisation SBI subsidiary Bank-1959, 50 crore Deposits major 14 Bank Nationalise in 19 July 1969 and 200 crore deposits Bank Nationalise in 1980.

In the early 1990s, the government adopt on a policy of liberalisation, licensing a small number of private banks. This come to be known as New Generation Technology banks, and include Global Trust Bank which later amalgamated with Oriental Bank of

Commerce, Unit Trust of India after renamed AXIS Bank, ICICI Bank and HDFC Bank. These changes, along with the quick growth in the Indian Economy, revitalised the banking sector in India, which has seen rapid growth with strong contribution from all the three sector banks, namely government banks, private bank and foreign banks. The next stage for the Indian Banking has been set up, with proposed relaxation of norms for foreign direct investment.

Importance:

Importance of Indian Banking Sector particular is following points.

1. Banks provide security for customers saving money.
2. Motivate to customers for increase its saving.
3. Banks control to the supply of money in the market, and provide money to governments.
4. Banks provide various facilities for customer and bank tries to trouble-free transactions for customer.
5. Banking sector is more important part of the today's people behaviour.

Structure of the Indian Banking Sector:

Indian Banking sector is broadly classified in Schedule and Non Schedule Banks. The schedule banks are those include under the 2nd schedule of the Reserve Bank of India Act, 1934. The schedule banks are further classified into: Nationalised bank; State Bank of India and its associated; Regional Rural Banks; Foreign Bank; and other Indian Private Sector Bank. Non-schedule Bank means which bank are not include in 2nd schedule of Reserve Bank of India. Schedule and Non-schedule Bank largely, this segment comprises of the Schedule banks, with the unscheduled ones forming a very small component, Banking needs of the financially excluded population is catered to by other unorganised entities different from banks, such as moneylenders, pawnbrokers and indigenous bankers,

Non-schedule banks also function in the Indian Banking sector, in the form of Local Area Banks (LAB). As at end of March 2009 there were only 4 LAB, Operating in India. LABs are Banks that are set up under the scheme announced by the government of India. In 1996, for the establishment of new private banks of a Local nature; with control over a maximum of three contiguous district, LAB aid in the mobilization of fund of rural and semi-urban district 6 LAB, were originally licensed, but the license of one of them was invalid due to other was amalgamated with Bank of Baroda, in 2004, due to its weak financially positions. The term commercial banks refers to both schedule and non-schedule commercial banks regulated under the Banking Regulation Act,

Governments new Bank Merger Policy:

The government is planning to have more globalized banks which will reduce the 21 Public Sector banks to just 12. In current circumstance Government of India accepted new merger policy, under this, nationalised banks, on 1st April 2017, the five associates banks of SBI and Mahila Bank become the part of State Bank of India. In this action SBI customer

number reach 37 crore with their branches nearest 24000 and ATM numbers 59000 across the India.

Reserve Bank of India

(Central Bank and Supreme Monetary Authority)

Schedule Bank		Non Schedule Bank
Commercial Bank	Development Bank	Co-operative Bank
Public Sector Bank(27)	Industrial Bank	NABARD
Private Sector Bank (30)	EXIM Bank	Stateco-operative Bank
State Bank of India	Agricultural Bank	District co-operative Bank
Foreign Bank (40)	Housing Bank	Urban co-operative Bank
Regional Rural Bank (196)		Rural co-operative Bank

Challenges of Indian banking Sector:

1. **Not making adequate money:**

Banking profitability is depend on more money, banks still are not making enough return on investment, other resources or the return on equity, that shareholders require.

2. **Consumer hope:**

These days it's all about the customer experience, and many banks are feeling pressure because they are not delivering the level of service that consumers are demanding, especially in regards to technology.

3. **Government Pressure:**

Authoritarian requirements continue to increase, and banks need to pay out a large part of their Annual budget on being compliant, and on build systems and process to maintain with the increasing requirements.

4. **Information Technology:**

The challenges of changing system and express growth of Information technology had impacted on the banking sector. Internet related and machinery related challenges faces to banking sector.

5. **Insurance Target:**

Present time give to insurance policy target from Authority to banks. Consequently faces problems related to insurance target.

6. **Non Performing Assets:**

Every bank has maintained NPAs is important in order to protect the power of bank balance sheets and to keep the appetite to take on good risks. Increasing the NPA is the large exertion for Indian banking system.

7. **Changes in laws:**

The circumstance laws of banking sector changes from authority instance, consequently various troubles faces to banks employees and customers. This is a one of the reason of increasing the confusion to related person.

8. **Lack of awareness:**

The low transaction indicates lack of awareness among the account holders concerning manners, smart card, debit card, credit cart, internet banking, and mobile banking.

Opportunities of Indian Banking Sector:

Some of the opportunities for Indian Banking sector are follows.

1) **Revaluation of Information Technology:**
   Information technology has been providing solutions to banks to take care of their accounting and back office requests. Resources with IT facilities the introduction of new channels in form of Electronic Fund Transfer, Electronic Clearance Service, ATM Facility, Debit Card, Credit Card, Mobile Banking, E-Banking, from the beginning to reform time has been various changes.
2) **Industrial Development:**
   Contribution in the GDP of Industrial Department play vital role in the country, Capital is the mainly essential element of the development of Industrial sector, banking sector has been provide finance to industrial sector.
3) **Knowledge Society:**
   Information Technology take new opportunities to bank and customers, today's customer is knowledgeable person, therefore changes of technology instantly accepted by banks customers.
4) **Intense Competition:**
   The intense competition in India's Investment Banking sector is together a reason and an outcome of the rapid growth of the country commercial market. A cquisition in abundance are being more than matched with the furious competition among top banks that are falling over themselves to book Indian business, driving down fees to among the lowest in the emerging market universe.
5) **Financial Inclusion:**
   Financial inclusion is where individuals and businesses have access of use and affordable financial product and services that meet their needs that are delivered in a responsible and sustainable way. Financial inclusion defines as the availability and equity of opportunities to access financial services.
6) **Rural Market:**
   The present generation is global era, connect with technology they have anywhere, so new opportunities brought to banking sector from the Rural Area. Rural banks

mainly focus upon Agricultural sector. In India there were 14475 Rural Banks in the country, of which Ninety present are located in Rural Tribal Area.

Modern Scenario in Indian Banking:

1. E-Banking: E- banking means the banking which is done through electronic media like mobile, various applications, etc. this banking has the various advantage like, Accurate statement of all means available in your bank account, Statement of current account, credits, overdrafts and your deposit, Execution of national and international transfers in various currencies, Execution of all types of utility bill payments (electricity, water supply, telephone bill), Carrying out customs payments, Electronic confirmation for all transactions executed by E-banking, Management of your credit cards.

2. Internet Banking: Internet banking is the facility provided by the bank to its customer, it is very convenient and comfort from home or office. It avoid queue and delay for the customer, this facility is work only on the fingertips of the customer. There are so many advantages of internet banking like, bill payment at anytime and anywhere, transactions are secure and safe, banking on fingertips and easy access through mobile.

3. Core Banking: Under core banking software's are used to supports the most common banking transactions. Due to core banking inter banking and intra banking transactions are getting possible in a very fast manner. Elements of core banking include: Making and servicing loans, Opening new accounts, Processing cash deposits and withdrawals, Processing payments and cheques, Calculating interest, Customer relationship management (CRM) activities, Managing customer accounts, Establishing interest rates, Maintaining records for all the bank's transactions, Establishing criteria for minimum balances, interest rates, number of withdrawals allowed and so on,

4. Plastic Money: Plastic money is a term that is used predominantly in reference to the hard plastic cards we use every day in place of actual bank notes. They can come in many different forms such as cash cards, credit cards, debit cards, pre-paid cash cards and store cards. Etc. with the help of plastic cards transactions are become very easier, we can deposit and withdraw the money by using this plastic cards with the help of automatic teller machine. **Debit Card:** A debit card is a payment card that deducts money directly from a consumer's checking account to pay for a purchase. This card is only use when there is deposit in our bank account. Debit cards eliminate the need to carry cash or physical checks to make purchases. Debit cards is also called as check cards, Credit card: **credit card** is a payment card issued to users (cardholders) to enable the cardholder to pay a merchant for goods and service based on the cardholder's promise to the card issuer to pay them for the amounts so paid plus the other agreed charges. Means it is one type of loan limit given by bank through this card, we can make payment though there is no deposit in our bank by taking the credit from the bank.

5. Other Banking Facilities: Excluded to above mentioned various other facilities are provided by the bank in today's modern era, like, ECS, EFT, International currency exchange, letter of credit, Bank Guarantee, etc. due to which banking is become very faster and smarter. Electronic clearance service (ECS) means transfer of fund from one bank to another electronically, for that bank charges the interest or charges. Electronic fund transfer (EFT) means moves money from one account to another, the account at same financial

institutions or different, cash is transfer through computerised network system. International currency exchange means when there is international transaction then for making the payment outside India, we have to convert India rupee into foreign currency and the same service is provided by the bank. A letter of credit is a document from a bank that guarantees payment. There are several types of letters of credit, and they provide security when buying and selling from two different countries.

Conclusion:

Banking sector plays a very significance role in the economy of India. Development of the industrial sector needs to create capital and provide finance. Money lending is one of type or the other has evolved along with the history of mankind. In the ancient times, there are Reference to the money lenders, in the form of Sahukar, Mahajan, Jamindar, who lend money by the mortgaging the property along with the land of the borrowers. From the beginnings of the Twentieth century, with the start modern industry in the India, the need for government keeping up banking sector was felt. But after that British government start to give attention towards the need for an organised banking sector in the India, and the Reserve Bank of India was set up the formal banking sector in the India. There was nationalized in 1969, and 1980, banks have been playing a major role in the socio-economic life of the India.

In Indian agricultural sectors significant role in the overall socio-economic fabrics in India, finance in the agricultural sector is an important as development of technology. Its need complete through small and median term loan from agricultural and commercial banks. National Bank for Agricultural and Rural Development is an Apex Bank for Agricultural sector, and Industrial sector Apex Bank is Industrial Development Bank of India, to provided last resources of the Agricultural and Industrial sector.

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MODERN TEACHING OF ICT & CLIMATE CHANGE

NAMRATA SHARMA
BHUMESH KUMAR GUPTA

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Environmental Issues of Global Scenario

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Abstract

The concept of environment is being discussed in this paper in relation to its general system frame. The environment means the total of all material, it could be living or a non living thing that around us. The environment is made up of biotic and a biotic components. The environment consists of four main domains Lithosphere, Hydrosphere, Atmosphere and Biosphere. These four main domains uniquely interact with each other. The survival of earth a depends upon these four domains. Ecology is the study of earth as house hold .There is a relation between living organisms and environment and that study comes under ecology. But with rapid increase in population and economic development there will be some side effects on environment, this side effect we refer to as environmental pollution. We live in an environment which affects our health and wealth. So here we discuss about what is environment? How environment pollution occurs and to save earth from pollution.

Keywords:-Environment, Ecosystem, Hydrosphere, Atmosphere, Biosphere.

Introduction: - Environment is derived from the french word "Environ" which means encircle, in simple words everything which is around us is called as environment or surrounding condition that directly has an impact on all human beings and animals. Our nature consist of biotic and abiotic factors. Biotic factor include human beings, plants, animal and microbes. Abiotic factors contain such as sunlight, temperature, water, wind, sand, soil, mountain etc. Environment has four main types; Atmosphere (Gases, Vapour), Hydrosphere (Water), Lithosphere (rock and minerals), and Biosphere. Biosphere is combination of atmosphere, hydrosphere, and lithosphere. Biosphere is part of earth where life can exist. We live in environment which is affected by an

addition of unwanted things like Air Pollution, Water pollution, Soil pollution, Noise pollution and E-waste.

Types and components of environment. :-

A) **Natural Environment**: - Natural environment is, which an organism live naturally on earth. Also we can say wildness, wildness means that the organism lives and interacts with natural the atmosphere such as earth, rocks and air etc.

Need of **Natural Environment**:-Environment is an essential factor for all biotic and abiotic components on earth to survive. The advantages of good environment, let us take the example of human being, we are social animal as well as powerful than other animals on Earth. If environment is clean then living things are well, buts if environment is not favourable for development it will affect the living things. We need Air to breathe, food to live, water to drink etc. all these things come from good environment. If there is no favourable environment on earth then it will be unable for the humans to survive on earth.

B)**Manmade Environment**:-Manmade Environment includes transportation, housing, agricultural and livestock farms, aquatic farms, various factories, dams, energy such as thermal plant , hydro thermal and nuclear energy plants etc.

Components of Environment

A)**Abiotic Components:-** Abiotic components are the components which surrounds us but these are non living. Abiotic components are dead substance and physical part in the environment, which change ecosystems. The abiotic components of an ecosystem listed are Air, Water, soil, Temperature and Sunlight.

B)**Biotic Components:-** Biotic components are the components which surrounds us but includes living components. It consists of Producers, Consumers, and Decomposers.

C)**Biophysical components:-**Biophysical component are living and non living components both, when combined they form biophysical components. It consists of all the factors that have an effect on the survival, development and evolution of organisms. Example of these components a) Marine environment b) Atmospheric environment

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D) Energy components:-Energy Component consist of solar energy, ch chemical energy, thermo electrical energy, nuclear energy etc.

Some Common abiotic components :-i) Atmosphere ii) Water iii) Air o Wind iv) Temperature and Sunlight v) Chemical elements

i) Atmosphere -The Atmosphere is a thin layer of gases that surrounds the earth. It seals the planet and protect us from electromagnetic radiation given off by the sun. The atmosphere is a mixture of various gases .it traps heat, making the temperature on earth comfortable for living things.

ii) Water - Water is fundamental for survival. Every organisms want water for intake. Total amount of water on earth surface is 70% and falls as rain or snow over land. Every organism need different amount of water to survive like plants in ocean and marine animals grow in condition with large amount of water.

iii) Air or Wind - Air or Wind is consists of various gases, some of these gases are necessary for living like oxygen and carbon dioxide. The wind plays an important role to carry seeds, aids pollination, spreading life .The temperature and humidity of any area depends on the speed and direction of Wind.

iv) Temperature and Sunlight - Generally Temperature of air and water affects the ecosystem. If temperature increases it directly has an effect on the growth of living things, because it changes the metabolic activities of an organism. All living things have a capacity to maintain temperature. e.g We can't survive in minus 50 degree temperature.

v) Chemical elements - Any organisms which grows in a particular area depends on Chemical content in that environment. Like chemical contain, acidity level, which has a huge impact on the plants of that region. Chemical elements constitute all material, collectively with other abiotic factors.

Some Common biotic components:-i) Producers (autotrophs) ii) Consumers (heterotrophs) iii) Decomposers (detritivores)

i) Producers: - The function of a producer is to transfer the energy [like photosynthesis] into food by absorbing light, water, and carbon dioxide and converts into energy. For example: plants

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ii) Consumers: - A consumer depends upon the producers for food. For example: Animals

iii) Decomposers: - The function of a Decomposer is to break down chemicals from producer and consumer in simple form which is reusable. For example; micro-organisms (fungi and bacteria).

Common biophysical Environments

A) Marine environment B) Terrestrial environment

A) Marine Environment: - Saline water present on the earth covers approximately 72% of planet's surface. Maximum amount of water on earth is in the ocean. Ocean is home of 230000 known species of animals and aquatic plants.

B) Terrestrial environment: -The environment belonging to the land as opposed to the sea or air. It consists of all the plants and animals which grow up and develop on the surface of earth. For example: human, animals, plants, crops etc.

Factors responsible for change in Environment

1. **Deforestation:-** To make permanent use of land, formers bring it under cultivation, which fuels the purpose which causes erosion of the soil. Hunting of the wild animal for safety reason and gentle animals for food. The industrial and scientific revolution in the recent past has tremendous affect on environment. This aspect is mainly responsible for polluting the water bodies with the chemicals from industrial waste.

2. **Effect of insecticides on environment: -** Insecticides can accumulate in the fatty tissues of an organism through plants and vegetables, which has disasters effects. The target insert developed resistance against insecticides after a long period of time. The effectiveness of insecticides decreases in manufacturing industries insecticides. The workers are affected by slow poisoning affect of the insecticides.

3. **Effect of fungicides on environment: -** The effect of fungicides in the soil increases the number of harmful bacteria and decreases the population of useful fungi. Some fungicides are poisonous to soil arthropods; the regular use of

fungicides becomes pest resistance to them. Mercurial fungicides are responsible for human poisoning and death. This happens when injection of floor and wheat seeds are treated with Mercurial with lead which leads the mercury poisoning.

4. Effect of herbicides on environment: - Herbicides in soil increase the fungi account resulting in fungal disease, Herbicides acts as a disease to live stock weed exposed to herbicide. Herbicides are extremely harmful to the human health.

5 Global Warming: - The rise in the Earth's surface temperature is a consequence of green house effect which is Global warming. Global warming causes an increase in the intensity of heat in the atmosphere. Increasing global warming lead to the more water evaporation from earth in to the atmosphere, which in turn becomes a green house gas. both at Earth's surface and in the oceans it is affected by global warming. The average surface temperature for Earth as a whole has risen some 1.3°Fahrenheit since 1850.

6. Sea Levels Are Rising: - Due to Global Warming, temperatures of glaciers increases which result melting of ice and the sea level rises. There is a rise in temperature of the sea water affect biodiversity.

7. Ocean is acidifying: -As the carbon dioxide dissolves in ocean water, it results in carbonic acid, which decreases the P^H of Oceans, known as Oceans acidification. Large amount of the CO_2 emitted by humans :affects marine organisms such as sea urchins and lobsters.

THE TOP 10 ENVIRONMENTAL ISSUES

1. Public Health

According to the WHO, due to unhealthy environment one person dies out of every four. Public health is the science and art of preventing disease, prolonging life and promoting .Health of the people depends upon what they eat, drink and breathe. Air pollution and water pollution are raising issue which directly has anaffect on public health. Without water humans can't survive long. At the same time polluted water causes airborne water diseases. For the good of public health there is need of clean water and digging wells with water filter.

2. Land Management & Urban Sprawl

The unrestrained development of urban areas, is a current problem but one that scares the environment. Now a day's migration is very easy. New infrastructure builds and it developed in less time, and untrained land is becoming scarce. Construction of many buildings have a concrete effect on natural things like water cycle, soaking of water in ground, rain water harvesting .This result in flood and landscape.

3. Waste Disposal

Any unwanted or discarded material from residential, agricultural, commercial, industrial activities that cause environmental problems is a waste. Waste disposal is one of the big problems; usually we throw plastic, paper, cloth, vegetables, rubber lather glass, food waste, coronary waste, dead animals at the local landfills. If someone is complaining about the smell then we drive up. We need to dispose of domestic, commercial, industrial, agricultural waste in proper manner. Generally we dispose waste in a river or sea, this affects the marine environment and causes health hazards in human being. When waste is disposed of via incineration process it emits harmful toxins in the air, which people breathe in. People can limit this crisis by reducing the amount of waste. By choosing to use products that can be recycled or placed in a compost pile, every household can reduce their waste.

1. Overpopulation

Improving technology and medicine death rate is declining . Scientist have come up with more advanced medicines to treat ill people, these treatment will increase the life of these ill people, which means less people will die each year. Although this is good things it will cause the issue of overpopulation which will affect many people. As population increases, overcrowding, depletion of natural resource and environmental deterioration will take places. Overcrowding leads to spreads of diseases, poor hygiene, physical violence, more people need more food, less living land, less forest. All these factor affect human life.

2. Loss of Biodiversity

Biodiversity loss has a significant and wide ranging implication for the future of humanity. Biodiversity is the variety of life on earth in a certain habitat or ecosystem. There are many factors which are responsible for the loss of biodiversity .Deforestation where trees are cut down, habitats are lost, species are displaced. Climate change is another factor by which many species

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disappear. Due to loss of biodiversity food chain water resources and other resources are under risk and ecosystem gets disturbed. So there is need to awareness about biodiversity loss and its bad effect on human life.

6. Water Scarcity

Water scarcity is a critical issue now. The demand for water from all sectors like agriculture, cities, environment, etc... is higher than the available resource. We find out that water supply severally reduce as water scarcity is fast becoming one of the most serious resource issues we have faced. The amount of water in our planet is fixed but very little for use. 97 % of all the water on the earth is salt water which is not suitable for drinking. The left 3% of water is fresh but out of which the 2% also jammed by glaciers and ice caps means only one percentage is for drinking. We all are dependent on just a small percentage of water so it's our responsibility that we must not pollute it.

7. Pollution

Pollution occurs in many ways. The presence of any solid, liquid or gaseous substance including noise and radioactive radiation in to the atmosphere in such a concentration may be directly or indirectly be injurious to human or others living organisms. Primary pollutant is directly emitted in to air from sources at the earth surface like greenhouse gases. Carbon dioxide is an important greenhouse gas. Burning of carbon based fuels since the industrial revolution has led to global warming. Acidification of ocean because of carbon dioxide. Concentration of 7% of carbon dioxide cause suffocation, headache. Depletion of ozone layer cause many skin problems due to direct irradiation of ultraviolet rays. Regular use of pesticide results in soil pollution, water pollution. In order to make our earth pollution free we try to avoid directly or indirectly pollution.

8. Deforestation

The permanent destruction of forest has taken places since early times for human to meet human demand. Cause of deforestation are encroachment of forest land for agriculture purpose, to meet the food demand of the rapidly growing population, more and more forests are cleared off for agriculture purpose. Construction of dams, canals and highways, establishment of industries, demand for fire wood, expansion of cities, mining, shifting cultivation and forest fire. Effects of deforestation are that it damages the environment, soil erosion, expansion of deserts, decrease in rain fall, Loss of

fertile land climate becomes warmer, pattern of rain fall changes, lowering of water level, economic losses. To control de forestation mining activities should be prohibitate, cutting trees should be followed by massive plantation .

Conclusion

- We are biologically inclined to give for our progeny and should attempt to make sure that this provision goes on even after we pass away.
- Maintain ecosystem, means the dealings between plants and animals can be articulated as food chains and food webs. The systems can support carnivores and herbivores.
- Pollution damages organisms, including ourselves. To control all these things we must try to make something that reduces emission of the pollutants and convert by-product of industry which will improve quality of life.

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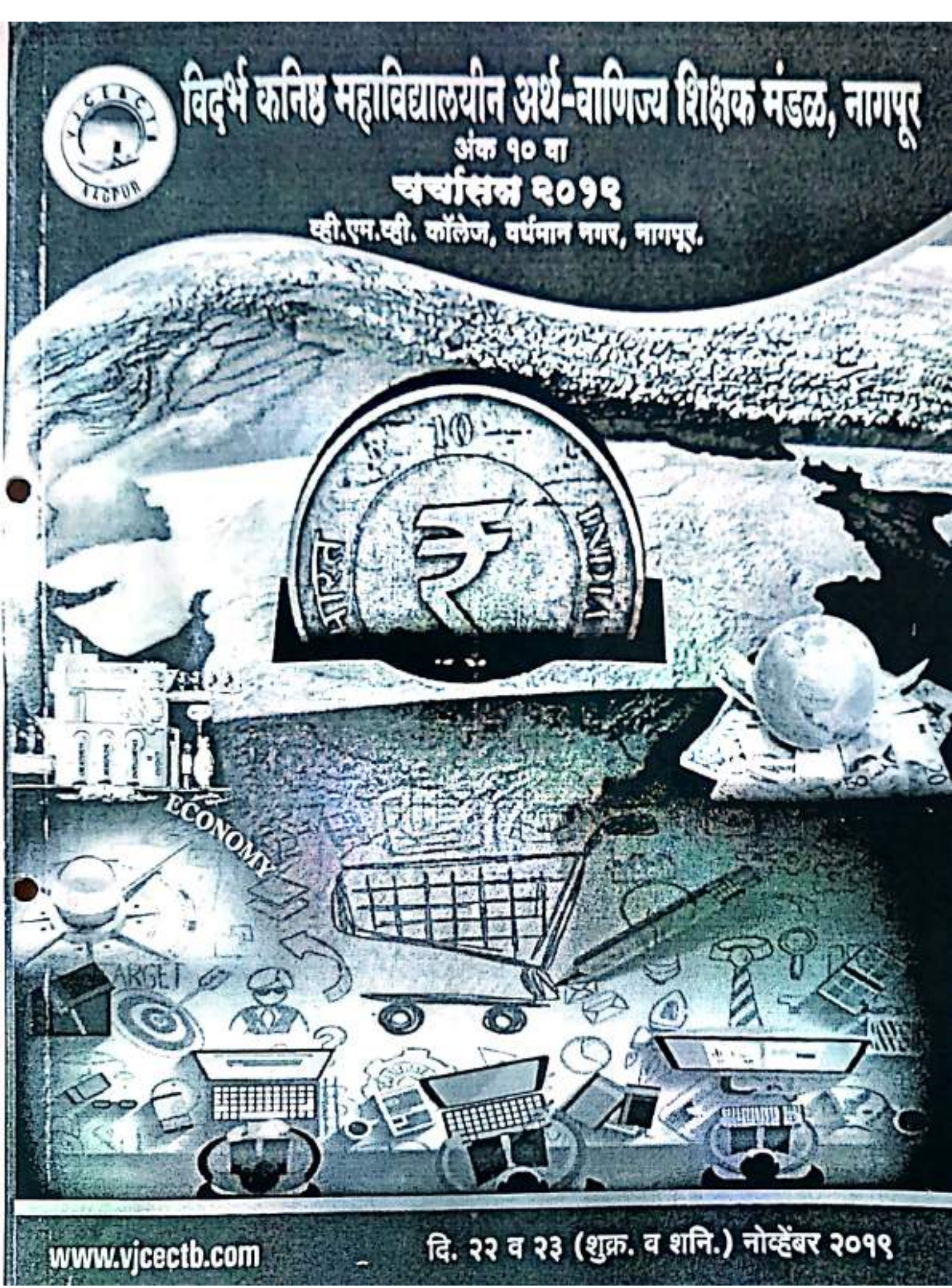

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Impact of Electronic commerce on Consumer Buying Behaviour

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Abstract: The main aim of the paper is to accomplish measurable describing the actuality of internet shopping in the case of the India in order to explain the progress of internet shopping and its impact on consumer behaviour. The paper construct on the related literature. Furthermore, the future progress of internet shopping will be measured the deep evaluation of consumer behaviour connecting its informations. This paper help the research questions that with current trends and various problems in internet shopping, and principle elements for consumer behaviour. As well, the finding of the study shows that internet consumer trust and detectable risk have strong impacts on their buying decisions. Privacy concerns, security concerns, consumer's trust are the main factors for using internet for shopping, the conviction on websites impact to the buying decision of any consumer. Further, the experiential result notified how the Electronic Commerce companies to build marketing strategies though the research data and analyzing result.

Key words: Electronic commerce, Impact, Consumer Buying Behaviour.

1. Introduction :

The internet is being developed speedily since last two decades, and with related digital economy and emerging economy that is driven by information technology also being developed worldwide. Behind a long time growth of Internet, which quickly augmented Internet users and highly speed internet connection, and some updated technology also have been developed and used for web developing, those guide to firms can promote and enhance images of product and services through web site. Therefore, according to Arjun Mittal, details of 132 product information and better service attracts more and more people changed their consumer behaviour from the traditional method to more rely on the internet shopping. Say to other word, more companies have realized that the consumer behaviour transformation is required trend, and thus change their marketing strategy. As the current researches have indicated that, the Internet shopping particularly in business to consumer has grow and online shopping become more popular too many people. Main reasons of rapid growth of Internet shopping are which mainly due to the benefits that Internet provides. Firstly, the internet offers different types of convenience to consumers. Noticeably, consumers do not require go out looking for product details as the Internet can assist them to search from online sites, and it also helps evaluate connecting each sites to get the lowest price for purchase. Furthermore, the Internet can increase consumer use product more efficiently and effectively than other channels to satisfy their requirements. Within the various search engines, consumers save time to access to the consumption related information, and which information with combination of descriptions, sound, and very deeply manuscript description to assist consumer learning and selecting the most suitable product (Moon, 2004). Though, Internet shopping has prospective risks for the customers, such as payment safety, and after service.

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Due to the internet technology progress, internet payment newly becomes prevalent way for purchasing goods from the Internet. Online payment raise consumptive effectiveness, at the equal time, as its virtual assets reduced online security.

Objective of Study: The study has following objectives

1) To understand the concept of Electronic Commerce
2) To study the impact of E-commerce on Consumer Behaviour
3) To study online and offline marketing

Research Methodology :

In this research paper used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

2. Difference between online/offline Stores :

There are two ways of selling and purchasing, one is offline and second is online. The online shopping has been rapidly developed, particularly in consumer products industry, there still have a large difference among traditional and online consumer shopping. Referred to sales in the Indian consumer product industry, the online sales engaged at a very low down percentage rate. So as to could be caused by a lot of reasons, however the most importance is the benefits are present in both traditional shops and online market; together of them have definite characteristics. For instance, the traditional seller can supply convenience in parking and shopping, it allows customers come to observe and check the quality of goods before they buy, and the after service is more directly to customers. Even, the traditional store has restricted number of goods, and the selling price is higher than online store. with valuation, we can find out the disadvantage of traditional store are more likely as the benefits of online store, in compare, the limitation of online store is also seems as the benefits of traditional store. It is clear from the summary of Internet and online shopping expansion that e-commerce is being used in many corporations due to the dramatic development of technology and cut-throat benefits of online selling. Also, the progress of the usage by individuals also becomes main contributors to the development of online shopping. Comparatively only some studies have investigated in the online shopping and impact on consumer behaviour. The before studies are more focus on the marker's point of view, such as how to set up a more efficient marketing channel online rather than the E-commerce: It's impact on consumer Behaviour one hundred and thirty three traditional offline channel. Thus, this study will combines with prior studies from literature reviews, and focus on the impact of the online shopping on consumer behaviours to find out a complete analytical development which show the essential part of business and marketing to filling the consumer's needs, and a deeply understanding of online consumer behaviour as a reference for any e-commerce company to construct marketing strategies.

3. Impact of Internet on Consumer Behaviour :

The topic research about consumer's buying behaviour with the use of electronic commerce or use of internet. The various numbers of sites available of online market and each site have been playing significant role to the buying behaviour of consumers. The internal and external factors affect to the consumer buying behaviour regularly. Internal factors are usually from the consumer's mind, and external factors are come from the environmental circumstances. There are many factors might impact on consumer's behaviours. According to Sheth (1983), the internal influences are diversity of mental processes, which makes attitudes, perception, motivation, learning, self image, and semiotics (Malcolm). The external influences could divide as: Demographics, technology, socio-economics, and public policy; culture; sub-culture; reference groups; and marketing. Warner also suggested that the consumers have two types of motives though shopping, which are first is functional and second is non-functional. Firstly deliberated functional motives are mostly about the time, shopping place and consumer's needs, which could be like one-stop shopping to save time, the ecological of shopping place such as free parking place, lesser price of products and available

...ually range of products. Secondly mon... are more related among culture or social ... the brand name of the store. The traditional ... is purely concerning the customer to purchase ... This behaviour will be influenced by the seller's ... and promotion which attracts customers goes ... purchased products, after that a part of fresh products will be taken home and be used.

3.1 Facilities or Services

According to Wolhandler, 1999; Internet provides a large convenience for buyer as the main cause for the shopping online has been agreed by most of researcher and customers. Due to the feature of internet, it allows customer to shopping online anytime and anywhere, which means customer can browse and shopping online 24/7 hours from house or workplace, which attracts some time-starved shoppers come to internet for save time to searching products in physical store. Moreover, online offers some product ways to save money and time. For instance, buyers do not require go out to the physical store and therefore there is no transportation price. Compare among the traditional shopping, there is no waiting queue for buyers on the internet, and some buyers reported that they undergo pressure from the sales people sometimes, however internet offers them further pleasant while shopping online (Wolhandler, 1999; GVU's WWW 9th User Surveys, 1998).

3.2 Information and Technology :

The present time is information and technology, so almost every person had been connect the current technology and media. The convenience based on internet is mostly according to the technology advancement, and which plays a key role through the expansion of internet shopping. According to Clark,1989; In the last ten years, organizations have realized that the updated technology might impact on internet shopping deeply, and thus there are many significant technologies like virtual reality and three D techniques have adopted to increase large competitive advantages. According to White, 1997; Information technology has used in the form of the internet improved better characteristic of product information, which help buyers decision making. Through the bigseries of surveys about the internet use, the progress of internet and its users have been fast increased in the last decade.

3.3 Internet Shopping :

The current trends are shopping through the internet. According to Sarwangaa and Todd, 1997, internet shopping and traditional shopping are partaking a lot of similarities, at the same time, it still exists some differences between them, such as the internet shopping could supply convenience and interactive services, and the traditional shopping could gives customers more comfortable shopping environment and good quality of products by Lee and Chung, 2000. Equally aspect of shopping malls are demanding to getting better their services by learn commutatively from each other, such as traditional shopping malls supply more parking spaces, further counters, and closer to residential area in order to improve services in convenience. Online shopping malls accept virtual truth by Lee 2001. In the subsequent sections, the study would provide the nature of online shopping at first, then the E-commerce web site will be indicated to understand the fundamental nature of internet shopping, later than, online safety, privacy and reliance will be discussed.

4. Consumer Trust in Internet Shopping :

The presently internet shopping had been significant increased. Many customers are unconvinced or doubtful regarding the functional mechanisms of e-commerce; it's in clear processes and effects, and the feature of many products that are available online. Their purchase products and services are the generally based on their level of trust in this product or services, and sellers whichever in the physical store or online shops. Online purchasing trust is the basic and important part for creating a relationship with customers. The trustworthiness of E-commerce web site is very relying on the how much privacy security can be provided. For instance, a very technological competence can be a factor to influence the trustworthiness (Singh and Sirdeshmukh, 2000). While mentioned over that the web seller can supply third-party authentication to e-commerce web site, and as this privacy and safety strategies are used, customers will believe their e-commerce dealings by internet are safe and sound and thus the site is more consistent to

them. Alongside this point, if the Ecommerce web site can provide the information about their customer services, location of the office, contact telephone number, and a help button on the web site, customers could also increase their trustiness as they can feel that the online retailers is truly exist (Lohse and Spiller, 1998). There for augmented the online shopping from the last decades.

Conclusion :

The research study is mainly focus on the factors from the Internet and examines those factors that affect the consumer's online shopping behaviours. It starts with the current status of the Internet evolution, and mentioned the environment of marketing as 136 Arjun Mittal representations and its difference with physical stores which in order to show the emergent history of online shopping since the Electronic Commerce turn into popular. The study focused on the Internet shopping (consist of the nature of Internet shopping, E-commerce website, and trust and reliability, online security, online privacy,) and online consumer behaviours (consist of motivation, environment, shopping and decision making procedure). Those factors were looked at, and examined to disclose the impact at online consumer behaviours. Finally conclude that, the factors from the Internet that influenced or prevented online consumer behaviours need to be carefully concerned by the online retailers, who can use the proper marketing communications to carry the customer's buying decision making process and get better their performance.

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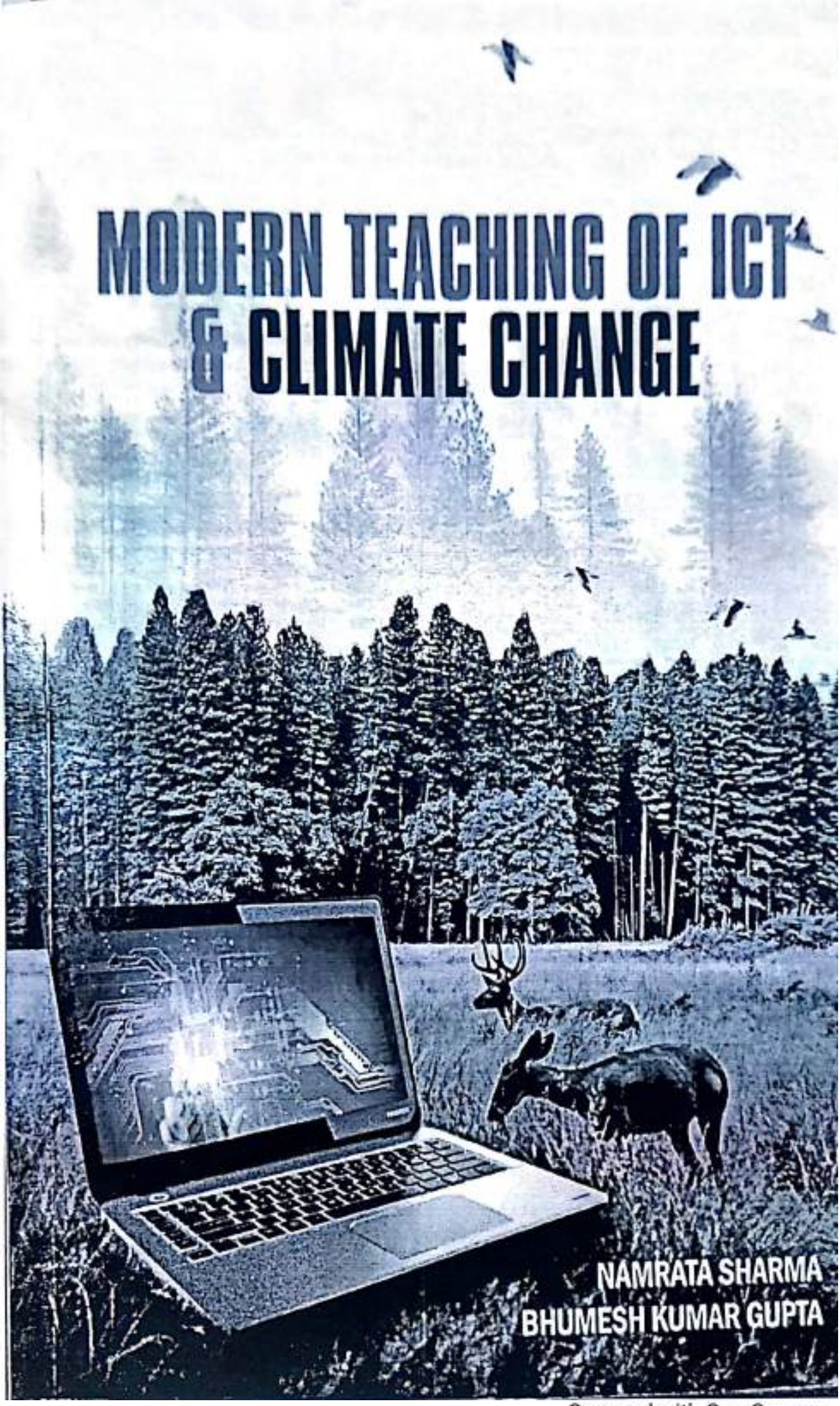

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CONTENTS

ENVIRONMENT CONSERVATION AND SUSTAINABLE DEVELOPMENT IN INDIA

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Abstract:

Environment conservation and sustainable development share close relationship with each other. India has been a nature conscious country for several ages but the adverse impact of globalisation in terms of rapid technological development has caused a big harm to the environment. There is need of accomplishing a balance in the development and environment conservation to ensure the realisation of sustainable development.

Introduction:

Environmental Conservation and Sustainable Development are two closely associated factors. It is because of the big damage done to the environment by the present model of development. In the name of speedy growth, we are deceiving the environmental conservation. As a matter of fact there is urgent need to protect our environment. Our priority should be to prevent the disease and not to just treat it. It is not appropriate to think of sustainable development at the cost environment conservation and that is why it is important to consider the environmental, social, economic model of sustainable development based on the model of GDP. But before that it is necessary to take some facts related to environment conservation and development into consideration.

Key word: Environment Conservation, Sustainable Development, Biodiversity

India: From Nature Conscious to the Developing Country:

From Eighteenth Century a movement started to protect trees in India. In Rajasthan hundreds of men and women belonging to Bishnoi community sacrificed their lives for saving trees. In the nineteenth Century 'forest

satyagrah' and 'Chipako Movement' were also started in India to ensure the safety of trees which inspired number of people across the world and sensitized the world about the importance of the environment conservation. Our culture and civilisation have been committed since ages to maintain the balance in the nature which is essential for the welfare of the entire mankind. Zero tolerance towards degradation of environment is mentioned in some of the ancient religious books of India. The present various rules and regulations constituted by the government, are in line with the rules mentioned in our religious books.

It cannot be denied that the age of globalisation has not only polluted our environment but affected our life style and culture also. The nature that we worshiped as god for several thousand centuries is today being destroyed by the destructive technology. There are, today, many challenges before the mankind with regards to the conservation of the nature and protection of the environment to ensure the safe and sound existence of humanity in the midst of increasing pollution. We are going through such a phase in which man has almost become a slave to the system which is fully depended on technology. To think of going back to the old age to become free from the clutches of modern technological development and to enjoy the life in the company of nature for true happiness and peace, is almost impossible and irrelevant. In the present scenario the whole world has become affected by the evils like Global Warming, Water and Air Pollution. On the one hand we take pride in producing the electricity by obstructing the flow of water in Dams but on the other hand we forget that the fish and other species are put into danger along with the water pollution. We have started to destroy the trees of forest which were once the main support of tribal people for living. Water of rivers was once used for irrigating the lands for cultivating diversified crops but in the present era, that it is now supplied to factories and various industries to produce several products and equipment resulting in shortage of water for agricultural purposes and the life threatening rise in the degree of several pollutants. To increase the production rate of agricultural crops, the fatal fertilizers and other diverse insecticides are largely and carelessly used by the farmers which have created a number of health-related issues. People are falling victim to the cancer like diseases. Several children are born handicapped due to the evil impact of the chemical-mixed water and the fertilizers. In this way a country which was once so pure and so close to the nature has turned highly problematic due to the environmental crisis

caused by the reckless and irrational way of living under the influence of unprecedented technological and industrial development/ advancement.

The present model of development is based on production which raises the question whether it has any space for the life-standard and human needs? Health is, no doubt, a need of man but would you like to remain poor and illiterate. If you acquire enough money, would you like to live with the polluted water and air? Principles and religion are important but can we leave our family helpless with the unfulfilled desire ofeating enough to survive? The answer to all these questions can be found in the balanced development that holds the capacity to maintain both the development and the environment conservation resulting in a sustainable development.

Advantages and the Disadvantages of the Present Development:

Whenever we discuss about the development, we generally think of the economic growth which is sometimes wrongly linked with the standard of life. GDP (Gross Domestic Product) by which the rate of development in our country is standardised, does not incorporate the social and environmental values in it. This is in no way an environment conserving development but the transfer of our valuable resources from the poor to the rich. For example, in Ballarshah in Maharashtra, several plants have encroached upon the productive land and polluted resources of water. These plants have increased the supply of coal and helped the development of many other plants which are depended on coals. But on the other hand, it has created several other social and environmental problems like urbanization, the rise of slums and landless farmers and, the problem of air, land and water pollution and so on.

Source: debadityo.com, https://www.debadityo.com/2015/02/environment-conservation-and.html

The other example to elucidate the same is that of Indira Sagar Dam (Gosekhurd Project) in Bhandara District of Maharashtra where the facility of huge level of irrigation is being made available to the people of two districts of Chandrapur and Bhandara but thousands of people and their families got badly affected by this project and they had to shift to other places under the rehabilitation scheme by the government. This project is constructed on Vainganga River, the lifeline of lakhs of people of Chandrapur, Gadchiroli, Bhandara Districts and the border of Telangana State. But due to the obstruction of the flow of this river at Gosekhurd Project, these people have been left to live miserable life due to one in the lack of adequate water provided by the Wainganga River. The other major adverse effects of this project, are seen on various creatures living in the water of the river like fish, tortoise, etc. resulting in the loss of certain species. The extinction of these species may cause imbalance in the nature leading to the condition in which the problem of the conservation of biodiversity can emerge as big challenge in the environment.

Temporal Development and Permanent Deterioration:

Sound and safe environment is the need of entire humanity. However for the sake of short term development, man is creating long-term problems for the environment which may be very dangerous for human and non-human beings. In the name of tourism people are encroaching upon the forest and cutting lots of trees to established tourism industries by constructing, hotels,

resorts, parks, etc. This temporal development covers a big long term damage to the nature which may lead to the environmental crises in future with a threat for the existence of several species living in the forests.

Construction of concrete roads have also created a serious problem related to environment since it prevents the absorption of rain water by the soil resulting in shortage of water which is the main challenge before the man in today's world. Along with this, high rise in the temperature is another problem caused by the over construction of concrete roads.

The natural resources should be used in such a way that they cause no long term evil effects and ensure long lasting balance in the environment and sustainable development so that the coming generations will also be able to enjoy the fruits of it.

Various Aspects of Sustainable Development:

To understand sustainable development through the perspective of environment conservation, it is important to shed some light on ecology.

1. Every living being has the capacity to produce maximum offspring.
2. The capacity to produce is a continuous process involving a conflict with the surrounding and energy.
3. The ecology can recover its loss through biodiversity.

Economic Growth and Environment:

Economic development plays a vital role in the development of any country. Through globalisation, the economic development has been possible. One country becomes close with other countries and makes its progress through open market. In developing country like India where adequate resources, capital and other requisites facilities are not available, the developed countries like America, France, Germany enter into it and start their business ventures in terms of big factories, plants etc. in the name of globalisation. As a result number of people get employment;and economic growth is attained but at the same time it cannot be ignored that the some negative effects are also made in terms of rising pollution caused by the factories, plants, and means of transportation and so on.

This sort of economic development is beneficial for the country, but due to its adverse effects, sustainable development is obstructed. The economic development which is accomplished at the cost of environmental balance cannot be considered as safe and beneficial for the human beings in the long run.

Goals of Sustainable Development:

United Nations General Assembly officially accepted "Universal, integrated and transformative" in September 2015. 2030 plan for Sustainable Development of 17 Goals is to be executed and accomplished by all nations from the year 2016 to 2030.

Source: techgape.com, https://www.techgape.com/2015/03/sustainable-development-india.html

The Sustainable Development Goals are:

1) No Poverty 2) Zero Hunger 3) Good Health 4) Quality Education 5) Gender Equity 6) Clean Water and Sanitation 7) Affordable and Clean Energy 8) Decent Work and Economic Growth 9) Industry, Innovation and Infrastructure 10) Reducing Inequality 11) Sustainable Cities and Production 12) Responsible Consumption and Production 13) Climate Action 14) Life Below Water 15) Life on Land 16) Peace, Justice and Strong Institutions 17) Partnerships for the Goals.(Melorose, Perroy, & Careas, 2015)

Conclusion:

In this way environment conservation is the need of time for sustainable development so that the future of the succeeding generations will not get affected by the critical environment issues.

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9. Most of the area are not connected due to transport facility.
10. Deficiency about safety ,medical facility.

Conclusion

In Maharashtra most of the people are dependent upon agri and related basicness but they cant generate more additional income from this area because there are lost of problem occur such as irregular of climate condition ,irregular rainfall, lack of knowledge about farming land, and drop prices of seeds , so it is important find out new way to generate additional income source and agro tourism is one of the best way for farmer to create more money. Such type of tourism is beneficial in rural area to generate employee and beneficial for urban areas people to understand nature ,farmers hard work, rural culture, food ,life of village , which is away from busy life.

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12

Global Perspective Of Tourism : Umred-Karhandla Wild Life Sanctuary

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Introduction

Tourism is an essential activity of the modern human society.The tourism industry is playing an important role in economic development of the various places. It opens ways to the employment both for skilled and unskilled labor in the local areas. The present research paper exposes the global sustainability and wide scope of tourism in the Eastern Vidarbha region of Maharastra.

Index Terms: Tourism, Development, Sanctuary, Tiger

Study Region

Umred-Karhandla Wild Life Sanctuary is one of the most fabulous tourist places of Eastern Vidarbha region of Maharastra. Its fame is worldwide as the Asia's biggest and royal tiger 'Jay' and its son 'Jaychand' once resided in it. It is situated about 58 k.m. from the district place Bhandara. It is situated over Pauni tahashil of Bhandara district and Umred, Kuhi and Bhivapur taluka of Nagpur district. It is connected with Tadobha Andhari Tiger reserve of Chandrapur district through the forest along Wainganga River. Its geographical location is 25° 50' 08 N

to 79° 30' 40" E which is spread in the 189 km² area. It is bounded by the Wainganga River and GoseKhurd Dam on the northeast State Highway No. 9 and Bhivapur town on the south, Umred on the west and a narrow 10 km. long range of 600-800 meter hills to the northwest. It is located 40 k.m. of Tadoba Andhari tiger reserve of Chandrapur district and 50 k.m. southwest of Nagzira wildlife sanctuary of Bhandara District.

Objectives

The main objectives of the present research paper are as following.

1. To keep focus on the global aspects of tourism in the Umred-Karhandla Wild Life Sanctuary.
2. To create awareness for the environment, natural resources, forestry, wildlife etc. in the sanctuary.
3. To expose the scope of tourism in the local tourist places.
4. To point out the shortcoming and their outcomes in the sanctuary.
5. To distinguish the possibilities of the employments in the sanctuary.

Analysis

The sanctuary provides road connectivity between key tiger reserve like Tadoba, Pench, Bor and Nagzira. About 100 km. of motor able road have been developed, out of which tourists are allowed on 44 km. The road can handle about 40 vehicles-20 in the morning and 20 in the evening. The main entrance of the sanctuary is at Karhandla village and other is at Pauni town.

Wildlife- According to a report, there are 11 tiger, six Leopards in the sanctuary besides Wild Dogs, Sloth Bears, Bisons, Nilgais, Deer and Sambars. Being near to Nagpur, the outskirt of the protected area (PA) is considered as buffer zone. The Karhandla Lake is feather in the cap of the sanctuary. During the last several years, water management works were undertaken in the sanctuary and at list 22 saucer-shaped water holes have been developed. Nine water holes have been fitted with solar pumps. Beside there are seven protection huts and barriers at 16 points.

Tigers- The wildlife Institute of India (WII) estimated the presence of three tigers in and around the sanctuary but the number has increased to six.

Birds- There are more than 90 species of birds belonging to 12 families of 12 different orders recorded in the sanctuary. This includes over 10 species of migratory birds and over seven species of endangered birds.

Reptiles- It is home to over 19 species of reptiles belonging to nine families of which four species are endangered, namely Indian Cobra, Russell's viper, Indian Rock Python, Indian Rat Snake, Chequered Keel back and Monitor Lizard.

Problems

1. The Umred-Karhandla Wild Life Sanctuary is connected with the poor facilities of roads and transports.
2. Though it has rich natural resources, it is less known to the entire Maharashtra.
3. Due to mismanagement of the concern department, the Asia's biggest and royal tiger 'Jay' was missing and its son 'Jaychand' was died with electric current by the farmers.
4. More facilities should be made available for the purpose of tourism.

Remedies

1. The Umred-Karhandla Wild Life Sanctuary should be connected with wide roads and transportation.
2. The sanctuary area should be made alien and man less.
3. More care and attention should be paid on the tigers and wildlife conservation of the sanctuary.
4. More advertisement is needed to draw attention of the tourist of India.

Conclusion

The Umred-Karhandla Wild Life Sanctuary is a significant place of tourism in

Eastern Vidarbha region of Maharashtra. The tigers are seemed to disappear in the world wide scenario, besides they have been increasing significantly in the sanctuary. Unlikely the efforts of the concern departments are fewer to conserve the largest tigers like 'Jay' and 'Jaychand'. The issues had been debated in the Indian Parliament by the Local MP's. It is necessary for the native people, concern departments and the government to preserve, aware and highlight the treasure of wild life and natural boon of the region. It would be beneficial for the promotion and progress of tourism in the sanctuary.

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13

Literary Writings and Tourism: A Critical Study

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Abstract:

Tourism has emerged as one of the major mediums of entertainment for those who get fed up with the routine responsibilities and seek relaxation for refreshing themselves through visit to beautiful places and income for those who are involved in the businesses related to tourism. Tourism affects and gets affected by the various factors such as nature, location of the beautiful places, government policies, the residents, economy, social conditions, Literature etc. Among these factors, literature also holds a place of prominence in terms of the influence it exercises on the tourism and vice-versa. There are certain famous tourist places that have attracted the attention of several literary writers and inspired them to compose melodious poems and quality prose works in the form of noted novels, essays, articles etc. On the other hand, it is the highly creative writings of some distinguished writers that have transformed hitherto unnoticed places into some of the most popular tourist places. All things considered, it can be said that both, the tourism and the literature have the capacity to positively influence each other. The present paper intends to highlight the points that reveal the relationship between tourism and literary writings.

Key-Words:- Tourism, writers, tourist places, literary writings, Literary Tourism etc.

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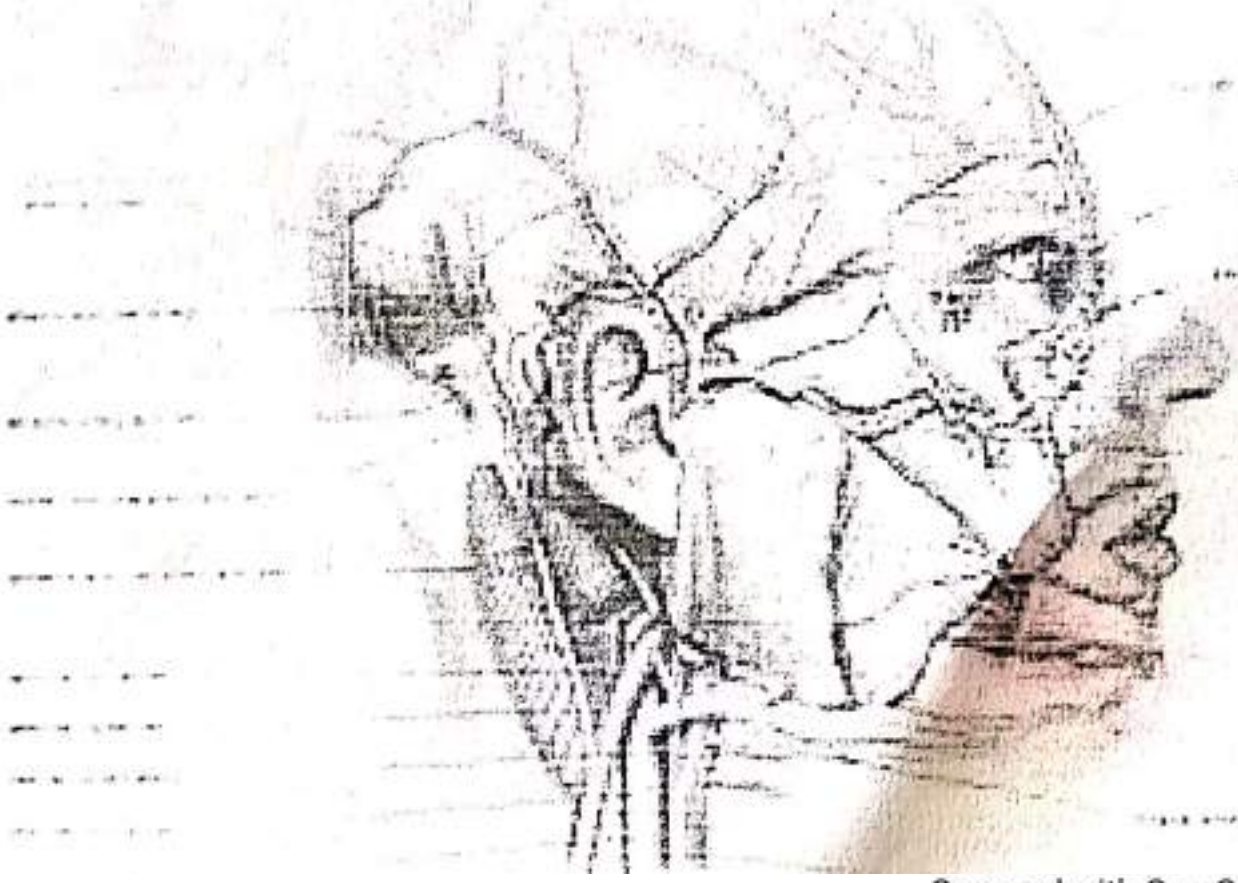

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प्रो. डॉ. विनोद मारोतराव बाली का शारीरिक शिक्षा के क्षेत्र में योगदान सराहनीय है। आपने अपनी एम. ए., एम.काम, एम.पी.एड., पीएच.डी. की पदवी आर.टी.एम., नागपुर विश्वविद्यालय, नागपुर से सम्पन्न की। इसके पश्चात् आपने एम.फिल. अमरावती विश्वविद्यालय, अमरावती से सम्पन्न की। लेखन कार्य में भी उनकी अपार रुचि है। इसी रुचि के कारण उन्होंने लेखन का मार्ग चुना। वे अनेकों राष्ट्रीय व अंतर्राष्ट्रीय सेमिनारों, कॉन्फ्रेंसों, शोध पेपरों आदि के लिए अपने महत्त्वपूर्ण लेख लिखते रहते हैं।

वर्तमान समय में आप यशवंतराव चौहान महाविद्यालय, लाखण्डूर, जिला भण्डारा (महाराष्ट्र) में विभागाध्यक्ष/निदेशक (शारीरिक शिक्षा) के पद पर कार्यरत हैं।

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डॉ. सूर्यकांत कापशीकर

- इ.स. २००७ साली राष्ट्रसंत तुकडोजी महाराज नागपूर विद्यापीठ, नागपूर येथून 'महाराष्ट्रातील आंबेडकरी चळवळीतील स्त्रिया (१९२० ते १९५६) एक ऐतिहासिक मूल्यमापन' या विषयात आचार्य पदवी प्राप्त.
- अनेक आंतरराष्ट्रीय, राष्ट्रीय व राज्यस्तरीय चर्चासत्रे, परिसंवादामध्ये शोध निबंध प्रकाशित.
- अनेक आंतरराष्ट्रीय, राष्ट्रीय व राज्यस्तरीय चर्चासत्रे कार्यशाळा व कार्यशाळांमध्ये सक्रिय सहभाग.
- इ.स. २०१६ साली राष्ट्रसंत तुकडोजी महाराज नागपूर विद्यापीठ, नागपूर येथून 'महाराष्ट्रातील आंबेडकरी चळवळीतील स्त्रिया (१९२० ते १९५६) एक ऐतिहासिक मूल्यमापन' या विषयात आचार्य पदवी प्राप्त.
- इंडियन कौन्सिल ऑफ सोशल सायन्स रिसर्च (आय. सी. एस. एस. आर.) अंतर्गत 'आंबेडकरी आंदोलन में नागपुर शहर का योगदान (१९२० से १९५६)' या विषयावर Minor Research Project पूर्ण.
- आकाशवाणी आणि दूरदर्शन वरील कार्यक्रमामध्ये सहभाग.

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ऐतिहासिक परिप्रेक्ष में

भारतीय महिला

Indian Women in Historical Perspective

डॉ. सूर्यकांत कापशीकर

ऐतिहासिक परिपेक्ष में भारतीय महिला

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नायर ने दिलेली प्रेरणा त्यांच्या करुण हृदयाची द्योतक होती. गरीबाहून गरीबाला उत्कृष्ट स्वास्थ सेवा सेवाग्राम हॉस्पीटलमध्ये प्राप्त व्हावी या विनोबाजींच्या आकांक्षेला शिरोधार्य मानून अत्याधुनिक सेवा उपलब्ध करुन देण्याची त्यांची महत्वकांक्षा उपरोक्त करुणेचीच एक झलक होती.

बंगलोरमध्ये आयोजित कम्युनिटी हेल्थ च्या आंतरराष्ट्रीय गोष्टीत मुख्य भाषणात त्यांना संज्ञा देवून गौरवान्वित करण्यात आले.

सारांश

आधुनिक दृष्टि व सुसंपन्नता असुनही अंतिम क्षणापर्यंत गांधीवादी आश्रमसंस्कृतीत जगलेल्या श्रीमती सुशीला नायर यांच्या निधनाने महात्मा गांधी यांच्या शेवटचा सहकारी काळाआड गेला. अनेक पद त्यांनी आयुष्यात भुषविली, स्वातंत्र्य समरात त्यांनी बंडाचा झेंडाही उभारला. स्वातंत्र्योत्तर काळात राजसत्ताही त्यांनी भुषविली परंतु इतिहासात त्यांची नोंद होईल ती महात्मा गांधीजींच्या खाजगी डॉक्टर म्हणूनच ! त्यामागचे कारण म्हणजे उच्च पदव्यांनी भुषित त्यांचे वैद्यकिय शिक्षण नसुन गांधीप्रती असणारी आत्मीयता होय. शिक्षणाची अंतिम पायरी गाठल्यानंतर अमेरिकेत नवीनतम ज्ञानाच्या शोधात गेल्यानंतर मौलिक समृद्धीला न भुलता परतून स्वातंत्र्यलढ्यात उडी घेणे. हो त्या काळातील एक अलौकिक घटना ठरली. या लढ्यात आपले कार्य कुठे पूरक ठरु शकते हे हेरुन सुशीला नायर यांनी आश्रमातच रुग्णावर उपचार करण्याचे काम सुरु केले. त्यावेळी त्यांच्या या कार्याला लेडी नाईटिंगल म्हणून संबोधल्या गेले आणि तीच पुढे त्यांची कायरिषा ठरली. त्यामागचे कारण होते. महात्मा गांधी (बा) कस्तूरबा !

संदर्भ सुचि

१) *गिरिराज किशोर, अनु. डॉ. अरुण मांडे, बा. कलकत्ता प्रकाशन, नारायणपेठ पुणे २०१५*

२) *महेश शर्मा, कस्तुरबा गांधी, प्रभात प्रकाशन, नवी दिल्ली २०१२*

३) *डॉ. एस.पी. कलंत्री, डॉ. प्रभा त्रिवेदी ,बापू की बेटी , हमारी बहनजी कस्तुरबा हेल्थ सोसायटी,वर्धा २०१२*

४) *तारा धर्माधिकारी, स्वातंत्र्य लढ्यातील स्त्री, रंगनाथ मुद्रन, मुंबई १९९२*

मंजुळामातेचे तुकडोजी महाराजांवरील संस्कार

डॉ.भारत व्ही. नखाते
इतिहास विभाग प्रमुख
यशंवतराव चव्हाण महाविद्यालय, लाखांदूर, जिल्हा भंडारा

प्रस्तावना

विदर्भातील संत समर्थ श्री. आडकोजी महाराज यांचा कृपाप्रसाद म्हणजेच राष्ट्रसंत तुकडोजी महाराज होत. या विदर्भामध्ये रुक्मिणी, जीवामाता, अहिल्यादेवी होळकर हया विदर्भकन्यानी आपल्या व्यक्तिमत्वाची छाप भारतामध्ये पाळलेली दिसून येते. विदर्भ म्हणजेच नररत्नांची खाणं, राष्ट्रसंताची कर्मभूमी व जन्माभूमी होय. महापवित्र आहे वऱ्हाड। तिथे नांदतो ज्ञानाचा दांड। साधुसंत झाले उदंड। आणि होणारही पुढे।। विदर्भाच्या अमरावती जिल्हयातील संताच्या चरणस्पर्शने पावन झालेले गाव म्हणजेच वरखेड क्षेत्र, परमहंस श्री समर्थ आडकोजी महाराजांची कर्मभूमी होय. त्यांचे सद्भक्त म्हणजे तुकाराम व बकारामबुवा ब्रम्हभट माहूरचे दत्तात्रय हे त्यांचे आराध्य दैवत अशा सदभक्तांची कन्या म्हणजे मंजुळा होय (माता बजाबाई व पिता तुकाराम बुवा) तिचे बंधू गोविंदराव हे आडकोजी महाराजांचे सेवक होते. मंजुळेचा विवाह अमरावती जिल्हयातील यावली गावच्या श्री गणेशपंत ठाकूर (इंगळे) यांचा पुत्र पांडूरंग उर्फ बंडोजी यांचेशी लावून दिला. हे घराणे पंढरपूरच्या विठोबाचे वारकरी चरितार्थ भिक्षेचा तरीही प्रामाणिकपणमुळे त्यांची नेमणूक अनेक प्रसंगी कोणत्याही उत्तम कामात होत असे. पूर्वजांनी केली वारी पंढरीची। पावलेमृत्युशी त्याच स्थळी तुकड्यादास)अशा दोन सदभक्त घराण्यामध्ये सोयरसंबंध हाऊन बंडोजी गणेशपंत ठाकूर व मंजुळा तुकारामबुवा ब्रम्हभट यांचा विवाह होऊन मंजुळा गृहस्थाश्रमी जीवनाची पायरी चढली. बंडोजी स्वभावाने तापट, व्यवसाय भिक्षेचा सोडून कपडे शिवण्याचा स्वीकारला, परंतु गांजा, तंबाखु पिण्याची सवय जळली तरीही प्रामाणिक व सरळ स्वभावाचे गरीबीची परिस्थिती पण स्वाभिमानीवृत्ती, मंजुळा साधी भोळी स्वभावाची, मोलमजुरी करणे, शेतावर कामाला जाणे, संताची भजने गाणे, गरीबीची उणीव न दाखविता आनंदाने जीवन जगणे, पती आज्ञा शिरसावद्य मानून त्यांच्या शब्दाबाहेर जात नसे. अशी परस्पर विरोधी स्वभावाची जोडी होती. परिस्थितीच्या रेटयामुळे पत्नीला माहेरी आणून सोडले, कालंतराने पश्चाताप होऊन पत्नीला परत आणण्याकरिता वरखेडला आले. मंजुळा पतीसोबत सासरी निघाली, मार्गात समर्थ आडकोजी महाराजांचे दर्शनासाठी थांबली महाराजांचा आशीर्वाद घेऊन जायला निघाली, तेव्हा आडकोजी महाराज आंबा खात होते, तोच आंबा त्यांनी मंजुळेला दिला, मंजुळा घेत नव्हती, आडकोजी घेना। घेना।। म्हणत होते. बंधु गोविंदानी आज्ञा देताच मंजुळेने आंबारुची प्रसाद स्वीकारला, तेव्हा आडकोजी महाराज म्हणाले

महा मलेच देजो। महा मलेच देजो बरं मंजुळा सासरी गेली. संतकृपा झाली इमारत फळा आली। (संत तुकाराम)

माणिकचा जन्म

विदर्भभूमीमध्ये वैशाख शुध्द नवमी दि.३०/०४/१९०९ रोज गुरुवार पहाटे ब्रम्हमुहूर्तावर जगाला प्रकाश देणारा माणिक जन्माला आला. माणिकच्या जन्मवेळी (रात्री) खूप वादळ, विजांचा कडकडाट, वादळ व पाऊस येऊन बंडोजींची चंद्रमौळी झोपडी उद्ध्वस्त झाली. अठरा विश्व दारिद्रय, रात्रीचा अंधार, तुफान, पावसात एक नाग फणा उभारुन बाळाच्या अंगावर उभा होता. मंजुळेला भान नव्हते, तर बंडोजी हतबल। मंजुळेला बाळंतपणी चिचेचे सार पिऊन दिवस काढावे लागले. अशा दारिद्री दाम्पत्याच्या पोटी माणिक (तु.म.) जन्माला आले. विद्या गुरुहूनि थोरा आदर्श मातेचे उपकार। जन्मापासूनि तिचे संस्कार। बालकावरी।।गरीबीची परिस्थिती खाण्यांचे वांदे, मग बारसा कसा करणार? तेव्हा बाराव्या दिवशी आकोटचे सिध्दपुरुष हरिबुवा आणि माधानचे बालांघ गुलाबराव महाराज न बोलवितांच नामकरणाला आले. बाळाला पाळण्यात हलवून नामकरण केले मंजुळा! माणिक जन्माला आलायं आपल्याच वऱ्हांडातमंजुळेचा प्रेमळ स्वभाव, प्रेमभक्ती वात्सल्य, समाजसेवा, आदि गुण राष्ट्रसंत तुकडोजी महाराजांमध्ये रुजविण्यात

मंजुळेची पुण्याई तिचे कर्तृत्व, संतांचा आशीर्वाद महत्वपूर्ण ठरतो. माणिकचा जन्मवार्तेचा दिव्य संदेश आडकोजींना कळला, त्या दिवशी आडकोजी महाराजांनी जवळच्या मंडळीकडून पैसे वाटायला लावले भोजनाचे ताट भिकाऱ्यांना, गाई-गुरे, मांजरी-कुत्रे यांना दिले. अशाप्रकारे त्यांनी माणिकचा जन्मदिन साजरा केला. परंतु माणिकला प्रत्यक्ष बघण्यापूर्वी त्यांनी तुकाराम बुवाला झोपू दिले नाही. दररोज त्यांचे घरी जाऊन महा आंबा दे। महा आंबा दे। असे म्हणतच बैचेन राहत होते."

सवा महिन्यांनी बाळ माणिकला आडकोजी चरणावर वरखेडला आणून ठेवले, तेव्हा त्यांच्या आनंदाला पारावार राहिला नाही. महा। महा म्हणून नाचू लागले. मंजुळामातेने संत ज्ञानेश्वर, संत तुकाराम महाराज, केजाजी महाराज आदि संतांची भजने गाऊन माणिकवर बालसंस्कार केले मदालसा, जिजाऊ प्रमाणे त्यांनी माणिकला जोपासले आपली गरीबी न दाखविता आनंदाने दिवस कंठणे, सकस आहार तर सोडा पण पोटभरही मिळत नव्हते. अशास्थितीत अशक्तपणामुळे एकदा विहिरीत पडली, नशीब बरे म्हणून रात्रभर जीवंतच राहिली. दुसऱ्या दिवशी तिला सर्वांनी बाहेरं काढली व बाळाला माता पुन्हा मिळाली.

माणिक कृश व हाडकुडा होता म्हणून शेजारणीच्या सल्ल्याप्रमाणे भोळ्या मंजुळेने त्याच्या अंगभर बिब्बे लावले, थोड्यावेळी सुजन येवून तो लठ्ठ दिसू लागला म्हणून ती आंनदाने नाचू लागली

इतकी भोळी मंजुळा. बंडोजींने कान उघाडणी करुन झटपट उपाय करुन त्याला बरे केले.

माणिकचे बालपण

माणिक बारीक हाडकुडा असला तरी भारी खोडकर होता. सवंगड्यासोबत रानावनात भटकणे, नदीत पोहणे, दगडाचे टाळ करुन भजने गाणे, दगड धोंडयांची पुजा करणे कुठेही भटकणे खेळणे, बाळगणे असायचे. वडिल दुकानात असेपर्यंत तो दुकानात ते गांज्या पिण्यास गेले की, माणिक पसार मंजुळामायेला भुलथापा देणे व संवगडयासोबत खेळणे हा त्याचा नित्यक्रम होता. माणिक ५वर्षाचा असतांना मंजुळा व बंडोजी यावली सोडून चांदूर बाजारला वास्तव्याला गेले. मंजुळा मोलमजूरी तर बंडोजी शिंपीकाम करु लागले. माणिकला शाळेत घातले, तेव्हा भजने गाऊन मास्तरला मोहून टाकले. इतर मुलांनाही त्याच कामाला लावले म्हणून शाळेतून नाव काढून टाकले. पुनश्च काही कारणास्तव सर्वच यावलीला परत आले. चांदूरबाजारला भारतीबुवाच्या संगतीने तो भजने गायला शिकला. यावलीत शाळेत पुन्हा घातले. तो शाळेत नियमित जात नव्हता, रानावनात भटकणे, कधी दुकानात, कधी घरी तर कधी नदीवर बंडोजींना कळले की, भजन कीर्तन, एकांतात तो रमतो म्हणून वडीलांचा आरोप की, मंजुळेच्या भोळेपणामुळे अतीलाळाने हा वाया गेला म्हणून दोघांनाही मार बसायचा.

दुकानात चंच्या शिवणे, बटवे (बटवा)शिवणे व गरजूंना फुकट वाटणे हे माणिकचे कार्य, मंजुळा घरी दळण दळत असतांना खोटेच सांगून, संपूर्ण पीठ भिकाऱ्यांना नेऊन दिले. दोघेही उपाशीच, पाटलाने दिलेले पोताभर गहू बैरागयांना दिले. देवघरातील चांदीची हनुमानाची मूर्ती मित्रांना आखाड्यात लावण्यासाठी दिली. मंजुळामाय व माणिकला छान प्रसाद बंडोजीनी दिला, मायेच्या लाळाने पोर वाया गेले म्हणून धरुन हाकलले. तेव्हा माणिक मामाचे गावी वरखेडला २२ मैल पायी चालत गेला. तेथे समर्थ आडकोजीजवळ तीन दिवस मुक्काम, आडकोजींची कृपा प्राप्त झाली. मग माणिकने आई-वडीलांना मदत करण्याचा निश्चय करुन यावली गाठली. मायेला आनंद झाला आजोबांची चौपदरी झोळी काढली एका-एका पैसाठी तास-तासभर भजने, कविता, गाणे सुरु केले सुटीच्या दिवशी मायेसोबत शेतीच्या कामावर जाणे, वडीलांना काच गुंडया करु लागणे, रानात फिरणे, नदीत पोहणे, कधी-कधी शाळेतही जाणे अशा प्रकारे माणिकचा जीवनक्रम सुरु असतांना दुकानातील नवीन कापडच गरजूस दिले. कुत्र्यांना भाकरी, भिकाऱ्यांना पीठ वाटणे हयामुळे त्रासून बंडोजीनी मंजुळा व माणिकला वरखेडला माहेरी आणून सोडले.

वरखेडला माणिक

मंजुळाच्या भावाचे घर म्हणजे दारिद्रयाचे माहेरच. भाऊ गोविंदरावांचे बहिणीवर अतिशय प्रेम पण, पत्नी समोर काहीच चालत नव्हते. फुकट दासी, बटकी मिळाली म्हणून शिव्या देणे, सर्व

काम करवून घेणे, मंजुळा घरकाम करुन मोलमजूरी करुन सर्वांचा चरितार्थ चालवू लागली. माणिकला पुन्हा शाळेत घातले, तेथेही अनियमित पण परीक्षेत अव्वल मायेला मदत करणे, गावातील कोणतेही काम, कुणी सांगितले ते करणे, भाकरीच्या तुकडयासाठी घरोघरी भजने गाणे एका-एका तुकडयासाठी, एक पैशासाठी तासभर भजन गात होता. झोपण्यापूरता मामाघरी, जेवण समर्थ आडकोजीसोबत भाकरीचे तुकडे, सोबतीला कुत्रे, मांजरी, असायचे मंजुळामायेने माणिकला देवपाटातील देव धुवायला सांगितले असता त्याने सर्व चांदीच्या देवांना पोहऱ्यात घातले व विहिरीत खाली वर खाली करुन धुतले आणि फुशारकीने म्हणाला, माय। आज ना देव विहिरीत खूप पोहलेत। मंजुळा म्हणाली, अरे देवांच्या असा खेळखेडोबा करायचा नाही देव कोपतील, माणिक म्हणाला, देवांना माणसाने घडविले, देव तर निर्जिव हाय पोहले कसे? म्हणजे हे खरे देव नाहीत तर कोपणार कसे माय निरुत्तर माणिक वरखेडमध्ये भजनं गाऊन भाकरीचे तुकडे मागीत असे. मिळालेले तुकडे आडकोजी बाबासोबत खात असे. एकदा आडकोजींनी माणिकला तुकडया म्हणून हाक मारली, माणिकने जी बाबाजी म्हटले तेव्हा पासूनच माणिकचा तुकडया झाला. तसेच भजन गातांना तुका म्हणे (संत तुकारामांची भजने) असे गायचा तेव्हा आडकोजी महाराज माणिकची भजने आवडीने ऐकत होते. तुका म्हणे,तुका म्हणे असं का म्हणतोस? तूच का म्हणत नाहीस। असे आडकोजी म्हणाले आणि तेव्हापासून माणिकच कवित्वं सुरु झाले शेवटी तुकडया म्हण तुकडयादास म्हणे झाले.

मंजुळामायेचे जीवन सासरी व माहेरी कष्टातच गेले. समाधानवृत्ती, वाणीचा गोडवा, स्त्रीयांना धैर्य देणे, भजने, ओव्या गाणे, आपल्या मुलाच्या कीर्तीचा अहंकार त्यांना स्पर्शही करीत नव्हता. गरजेच्या नसलेल्या वस्तू इतरांना दान करणे, मंजुळामायेने स्वत:चे तांब्याचे गंगाळ व पाळण्याचे गंज दुसऱ्या गरजू महिलेला दिले. तसेच सालबर्डीच्या यज्ञाप्रसंगी दान मागितले तेव्हा मी काय देवू बाबा? शेवटी म्हणाली, एवढं माणिक दिलं, ते तुमचे सर्व कार्य पूर्ण करील असे माय मंजुळेचे विशाल दातृत्व होते. स्वत:चा मुलगाच तिने समाजासाठी दान दिला होता. तसेच संत श्री दामोधरदास महाराज नागपूर (खापा) यांना मंजुळामाता मानसपुत्र मानीत होत्या. सालबर्डी महारुद्र यज्ञातून परततांना मायेची प्रत्येक गावात खणा नारळांनी ओटी भरली गेली पण त्या वस्तू तीने तेथेच वाटून दिल्या.

सालबर्डीच्या यज्ञानंतर मंजुळामायेची प्रकृती खालवली समर्थ आडकोजीच्या कृपेने त्यांनी स्वत: मृत्यूतीथी सांगितली. उत्तरायन पौष वद्य द्वादशी मृत्यूपूर्वी शेवटचा मातृप्रेमाचा कृपाकर स्पर्श तुकडोजीच्या अंगावरुन फिरविला,पंढरीची वारी सोडू नकोस, समर्थाची सेवा कर आणि सर्व समाज हे आपलेच समज, म्हणजेच समाजसेवा कर!

वरखेडची पिंगळा नदी मंजुळेच्या नावाने प्रसिध्द आहे. पौष वद्य व्दादशीला मजुळामायेची

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नाडी सुटली पण महाराज म्हणाल आज ती जाणार नाही, रात्रभर भजन चालू द्या. भजने मंडळी बोलावून अखंड जागर ले चल मुझे पिआर हे भजन तुकडोजींनी म्हटले रामराव दशमुखे यांच्या माडीवर मंजुळेच्या मुखात तुळशीपत्र व आडकोजीचे तीर्थ घातले समर्थ आडकोजीच्या समाधीजवळ आरती ओवळणे सुरु झाले दशमुखेंच्या हातातून आरती ओवाळतांना गळून पडली. शेवटी 'श्री समर्थ आडकोजी महाराजा म्हणून टाहो फोडला आणि मंजुळा सद्गुरुपायी लिन झाली, तुकडोजींनी मायेचे मस्तक मांडीवरुन खाली ठेवले सर्वत्र शोककळा पसरली.(२२/०१/१९३६)

सारांश

यावरुन असा निष्कर्ष निघतो की, जगातील महान विभूतींच्या जडण-घडणीत मातेचे श्रेष्ठत्व हे शेकडो गुरुपेक्षाही थोर असते. राष्ट्रसंत श्री तुकडोजी महाराज यांच्या जिवनातील आदर्श तत्व बघितले तर त्यांच्या मातेची साधी राहणी, परोपकारी वृत्ती, संस्कार, भजन म्हणने, भावभक्ती, दानीवृत्ती, कुटुंबवत्सलता, कोणावरही न कोपता आपले कार्य पूर्ण करणे, गरीबी, दारिद्रियता असूनही साधी-समाधानी वृत्ती, नेहमी कार्यरत असणे, सेवाभाव, पतीनिष्ठा, गुरुनिष्ठा, प्रेमभक्ती, समाजप्रती व इतरांप्रती असलेली आपुलकीची भावना, ही देणं मायमंजुळेकडून तुकडोजी महाराजांना प्राप्त झाली, त्याचे व्यक्तिमत्व घडविण्यात मंजुळामातेचे योगदान महत्वपूर्व ठरते. जगातील प्रत्येक महापुरुषांच्या व्यक्तिमत्वामध्ये मातेचे संस्कार हे निर्विवाद चिरंतन असतात. राष्ट्रसंत तुकडोजी महाराजही याला अपवाद नव्हते. हे यावरुन सिध्द होते.

संदर्भ

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TOWARDS DEVELOPMENT OF TOURISM IN MAHARASHTRA STATE

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Distt. Bhandara – 441803 (MH)

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02

ntroduction of various types of tourism in India

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Abstract- Tourism industry is has emerged as one of the fastest growing industries in the world and economically important for rapid growth for India. There are various types of tourism branches in Incredible India, The Ministry of Tourism has identified 10 niche products for development, promotion, to attract tourists with specific interest and India as a 365 Days tourist destination. It is the largest service industry in India, The sector generated employments and add revenue to nation's GDP. India's medical tourism has emerged as a major tourism destination over the years. Tamil Nadu, Maharashtra and Uttar Pradesh are the most popular states for foreign tourists arrived in India, top five most visited cities of India by foreign tourists are Delhi, Mumbai, Chennai, Agra and Jaipur.

Introduction- India is Incredible and has a vast geographical and cultural diversity, From the snow capped hill stations of Kashmir to sea beaches of Kanyakumari. Tourism in India is the major revenue generating industry, Here is the list of top 10 states of India in number of foreign tourist visits in 2015. Maharashtra is second most visited state in India by foreign tourists and boasts of a large number of popular monuments, Bollywood and colonial architecture. Aurangabad is the tourism capital of Maharashtra and tourism hub for historical monuments and heritage sites,

Tourism in India is growing rapidly, About 88.90 lakh foreign tourists visit India every year. e-Tourist Visa, visa on arrival policy and India's medical tourism sector are popular reason along with Incredible India campaign to promote tourism. The most popular states of India for tourist and tourism are Tamil Nadu, Maharashtra, Rajasthan, Kerala and Uttar Pradesh.

Medical Tourism Medical Tourism is traveling to another country for medical care, most often is for surgeries or travel for dental tourism. India is one of the most important health tourism and medical tourism travel destination worldwide. There are several hospitals provide medical tourism services in India such as Apollo Hospitals, Fortis Healthcare and Murugan Hospitals Chennai 10. There are three types of medical tourism:outbound, inbound, and domestic or intrabound.

Outbound: This type of medical tourism occurs when patients travel from the home country to a foreign country to receive medical treatment.

Inbound: This type involves patients traveling from a foreign country to the home country in search of medical care.

Intrabound or Domestic: Refers to patients traveling to another part of their own country.

The Medical Tourism Market Report: 2015 found that India was "one of the lowest cost and highest quality of all medical tourism destinations, it offers wide variety of procedures at about one-tenth the cost of similar procedures in the United States.

Wildlife Tourism Wildlife Tourism is one of the popular type of **travel and tourism of**

Incredible India, Its the best way to interact with and animal and plant life in natural habitats. Wildlife tourism is an important part of the tourism in India and closely related to eco e tourism and sustainable tourism. There are 166 national parks in India and 543 wildlife sanctuaries, home to rare and unique wild animals such as Bengal Tiger, Gujarat lion, Black panther, Leopard, Indian rhinoceros,Wild water buffalo, saltwater crocodile and King Cobra. Maharashtra state is home to many rare species of flora and fauna in 17 wildlife **sanctuaries and national parks.** Wildlife safari in important sanctuaries of Maharashtra inlcude Tadoba National Park, Sanjay Gandhi National P[illegible], Pench National Park, Bharmragarh Sanctuary, Chaprala Wildlife Sanctuary, Bor Wildlife Sanctuary, Nagzira Wildlife Sanctuary, Radhanagari Wildlife Sanctuary, Karnala Bird Sanctuary and Bhigwan Bird Sanctuary.

Eco Tourism Ecotourism in India involves exploring **natural places** and travel to natural areas and environment. Thenmala is the first ecotourism destination in India and best way to tour for witnessing the flora and fauna of India. Eco Tourism place of India are Kerala Backwaters, National Parks, Sunderbans Mangroves, Majuli island, Ladakh Himalayas, Valley of Flowers and unexplored paradise in the northeast India. India is always in the list of best holiday destination and awarded by millions of r[illegible] travelers. The land of festival has all season holiday destination which are worth visiting such as Goa, Kerala, Rajasthan, Delhi and Havelock Island. Exotic beaches, flower valleys, big mountains and wildlife makes India as one of the favourite tourist destination in the world.

Spiritual Tourism Spiritual Tourism concept in India is a type of cultural tourism that involves visiting spiritual and religious places across the country. India is home to a rich culture, legacy and temples, offers best spiritual tourism in the world. Most famous places and temples for spiritual tourism in India includes Varanasi, Rishikesh, Dwarka and most famous Hindu temples of Tamil Nadu such as Meenakshi Amman Temple, Brihadisvara Temple Thanjavur and Shore Temple at Mahabalipuram.

Heritage Tourism Heritage and **Historical Tourism** is a branch of Incredible India Tourism towards heritage, historic and culture. Heritage tourism in India involves visiting historical sites such as Taj Mahal, Hampi Monuments, Khajuraho Group of Monuments, Hill forts of Rajasthan and Ajanta Ellora Caves. Other types of tourism in India also include Film Tourism, Golf Tourism, Cruise Tourism, Ayurveda Tourism, Wellness Tourism, Adventure travel and tourism. Conventions and Conferences is another segment of tourism industry in India. India is the land of Historical monuments, which are the in the list of must see attractions in the country. These Indian historical tourist places offers heritage and cultural tourism in India and also at top of the list in international tourism.

Advantages of Tourism in India

- It brings in money. This is probably the main advantage of tourism and the reason why it has been promoted so much in recent years in developing countries especially. Whether in developing or developed countries, the income generated can make up a significant proportion of the national income.
- It provides jobs for the locals. Hotels, bars, transport, shops, and restaurants all need staffing. Tourism can provide much-needed employment for people.
- It raises the profile of the place generally. Tourism gives the locality a chance to show itself off and raise its profile in the world.
- It can provide a incentive for investment in infrastructure such as roads and rail networks, as well as funding local medical and education facilities.
- It can provide economic incentives for a place to preserve, regenerate, and provide upkeep in their urban and wildlife areas.
- Visitors promote international links,

can provide more business and cultural connections in the medium to long term.

Disadvantages of Tourism in India

• Tourism can often cause environmental damage with things like pollution and forest fires. Even if tourists behave responsibly, the sheer number of the them can cause problems. Structures such as ancient buildings, monuments, and temples often struggle to cope with the vast amounts of tourist traffic and they suffer wear and tear or damage.

• The commercialization of culture can undermine the soul of a tourist destination. Local traditions that have a rich cultural heritage are reduced to wearing costumes and putting on acts for the tourists in return for money.

• Tourists can often lack respect for local traditions and culture, not following local dress standards, getting drunk in public, or behaving rudely or inappropriately towards locals.

• Although often jobs are created by tourism, most are relatively low level, such as bar work, hotel service, restaurant serving, and so forth. They also have little prospect for promotion.

• Tourism jobs are quite commonly seasonal and insecure with no extra benefits, such as pensions, sick pay, or health care. Some areas can be inundated with visitors during busy times, and then virtually deserted for many months.

• Money can end up being directed to tourist areas when it could be used more effectively elsewhere in a country. The locals who don't live in specific tourist areas miss out and suffer relative decline.

• Often times, most of the tourism industry (travel companies and hotels, for one) in a developing country is actually owned by big foreign companies. They make the major profits, leaving local businesses with relatively little benefit.

• There is often an imbalance, where it becomes so successful that other forms of income generation are neglected and an economic dependence on tourism forms. This is fine in good times, but it can leave the country vulnerable to economic ruin. This can lead to political upheaval, terrorist attacks, or natural disasters, and tourism consequently dips or dries up altogether.

Conclusion Costs of medical procedures in developed countries such as U.S., U.K., etc. are very high as compared to India & other Medical Tourism spots. Medical Tourism is a growing sector in India Tourism is a amajor driver of economc growth globaly. India's tourism industry is experiencing a strong period of growth, driven by the burgeoning Indian middle class, growth in high spending foreign tourist and coordinated government compaigns to promote 'Incredible India'. For a developing country like India which is on the path of modern economic growth through structural transformation of the economy, tourism is the right vehicle. With its forward and backward linkages with a host of sectors like transport, hospitality, education health, banking etc. India is all set to reap full potential of this vibrant sector. It generate employment opportunities also.

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04

Environmental Effects of Tourism in Maharashtra

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Abstract

Tourism is an important sector to any country for development of economy. Tourism involves many activities that cause adverse effect on environment and it's become polluted. The good quality of environment is essential to tourism. Maharashtra is the third state of India, both in area and population, located on the western coast of India with a 720 km long coastline

Key Words: Tourism, Economy, Environmental Impacts, Natural resources, Sustainable

Introduction

Now a day's every person is stressed out and want some change from routine life and work. People traveling and visit new places to appreciate their beauty, in course of time, has given birth to new modern industry called tourism.[1] Tourism is one of the biggest and fastest growing sectors in the world economy and has significant positive and negative effect to the environmental, cultural, social and economic factor. It has major tool for economic development but, if not properly planned it can have adverse effects on environments including biodiversity and natural resources such as freshwater, forests and marine life.[2]

Objectives

The specific objectives were the followings

I. To see the positive and negative impact of tourism in Maharashtra on environment.
II. Tourism can contribute awareness to increase about conservation of the environment.

Research Methodology

The study has been conducted mainly on the basis of literature survey and secondary information. Various seminar papers and summary of discussion in those seminars, taskforce reports of research organization, journals and some periodicals on environmental impacts of tourism have been surveyed for the purpose of the study. Some environmental analyst and expertise person has also been interviewed for the purpose of accumulating facts and information.

Direct Environmental Impacts

Direct environmental impact of tourism included water quality, air quality, noise pollution, solid waste and littering, ecosystem alternation, impact of wild life and many more

1. Water quality

Water, and especially good quality of water is very important factor in tourism. The tourism industries generally overused of water for hotels, swimming pool, boating, cleaning and personal use by tourist. Certain activities of tourist in tourist place such as discharge of waste materials and sewage into water bodies.

2. Air quality

Transport by air, road, and rail is continuously increasing in response to the rising number of tourists and their greater mobility. During transport of tourists have use aircraft, railway and automobile emission of carbon monoxides and other harmful gases to the environment.

3. Noise pollution

Noise pollution from airplanes, railway, automobile as well as recreational vehicles such as snowmobiles and jet skis, is a problem of modern life. In addition to causing headache, annoyance, stress, and even hearing loss for humans, it causes distress to wildlife and birds, especially in sensitive areas.(www.unepie.org/tourism)

4. Solid waste and Littering

In areas with high concentrations of tourist activities and appealing natural attractions, waste disposal is a serious problem and improper disposal can be a major despoiler of the natural environment, rivers, scenic areas, and roadsides. For example, tourist uses plastics for food packing, water bottle after that though in environments. These plastic are nonbiodigradable which create soil and water pollution.[7]

5. Ecosystem alternation

Ecosystems and natural habitat can be damaged by tourist activities such as tourist infrastructure and recreational boating. Recreational boats can damage aquatic vegetation by cutting it with their propellers or otherwise damaging it when running ground. Wetlands have been destroyed in order to build tourist-related infrastructure, such as airports, roads, and marinas[8]. For example, in Jamaica over 700 acres of wetlands have been destroyed since the 1960s for tourism development[9]. One or two tourists may not cause visible harm, but hundreds over time can do substantial damage.

6. Impacts on Wildlife

Wildlife can be adversely affected by tourist activities such as noise of automobile, discharge of waste food materials and construction road in forest . Impacts from tourist infrastructure can be direct, such as when development in forest resorts restricts the migratory range of certain wildlife. The two primary ways in which tourist activities disturb wildlife are by altering their feeding patterns and eating habits.[10,11]

Physical impacts

Attractive landscape sites, such as sandy lakes, riversides, beaches and mountaintops and slopes, are often transitional zones, characterized by species-rich ecosystems. Typical physical impacts include the degradation of such ecosystems.

Improved Environmental Management and Planning

Taking tourist place cleaner or pollution free and used for traveling that automobile is noise less. waste treatment and disposal are often major, long-term environmental problems in the tourism industry, pollution prevention and waste minimization techniques are especially important for the tourism industry.[13,14]

Environmental awareness raising and conservation of environment

To decrease negative impact of environments on tourism has to spread awareness of environmental problems when it brings people into closer contact with nature and the environment. Arrange environmental awareness programmed for tourist and local public from tourist place. moving them toward using those that are produced and provided in an environmentally sustainable way could have an enormous positive impact on the planet's environment (UNEP, 1992).

Conclusion

Tourism development is on-going, gradual and continuous process, Maharashtra has a long way to go if it has to be portrayed to the whole world. For development of tourism in Maharashtra Everybody should be conscious about the environments. Tourism have negative impact to the environments such as, there are many activities of the tourists that can have adverse environmental effects.

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06

Importants Of Libraries In The Development Of Cultural Tourism In India

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Abstract :-

Cultural tourism is the main part of income source tourism of Indian Economy. In higher Level of education, globalization processes that make the world a smaller place, technology the effect of media and telecommunications and new types of cultural tourism in India.

Keywords :- culture, cultural tourism, heritage Libraries.

Introduction :-

Culture is a very important part of economic development due to its links with life style, geographic areas and close link between education and society. Indian government supports a lot of project for requirement of cultural activity in India . They are digitalizing their working process. In this work Libraries have become one of the key factors behind the social development based on knowledge and run by digital technology. They have possibility to provides directs online access through personal computers, means for online studying information important for e-commerce improvement.

Libraries can contribute to the development of local economies supporting local trade and tourism industry.

This paper aims to briefly show the importants of libraries in the development of tourism based on cultural and artistic resources of a region.

THE LIBRARY RESOURCES IN THE DEVELOPMENT OF A CULTURAL TOURISM :-

In terms of cultural tourism, cultural should be seen as parts of tourism development. It means that culture based on its links with lifestyle geographic area and close between education and society. It is a necessary pre requisite for tourism is development.

Culture and tourism are in terms of their basic characteristics two complex and layered fields of the modern civilization and they have a positive effect on the overall social development .Making culture less important in term of tourism is nigther logical nor justified, because culture is overall intellect of society and tourism is a sum of all material and spiritural resource and life style of a nation.

Aspects of cultural tourism –

- Cultural tourism is the placement of culture on the market with cultural and artistic product.
- Cultural tourism is the intergration between two sectors culture and tourism should merge with a view to forming a mutal product.
- Cultural tourism is managing of the reputation of a place a region or conntry based on cultural good and landscapes.

Tourism is the term of growth rate, the third Fastest-growing filed on the economic market with culture being the fourth. When these two get together, the result is cultural tourism.

Cultural tourism is based on performing arts, visual arts and festivals and navigates tourism is focused on visiting landscapes historic sites and movements and building.

The role of libraries in the development of cultural tourism has rapidly increased in the last several years, because tourists are more and more gather a lot of information on destination before they deciding to visit it.

Various way of libraries to attract tourists :-

- An organization of tourist visit providing them to get to know with cultural and historical heritage of a region.

- Libraries organize exhibition for tourist.
- Make short video to inform visitors and inform them knowledge about our country.
- The library program is for the adults and child. They can get information form it.

In term of the development of cultural tourism. There are not only use technical equipment and capabilities of the library, but also the library staff is also played very important role in cultural tourism. communication technologies and their development into information communication technologies (ICT) in India, also help to development of cultural tourism. Library collections where print dominant and non print material also help it.

INTERNET Resources are at the service of all but libraries can use then as to for the better service to tourist . Bibliographical and reference service too can be extended more promotly and precisely. There are quite few professional websites useful as companions to tourist people .

CONCLUSION :-

Libraries may be a significant factor in the cultural tourism development of a region. There is an increasing number of tourists who look up the information on a destination prior to the trip/journey, chiefly via the Internet. Libraries have a lot of material that can be presented through web sites. Although has considerably provided the number of services that libraries can offer to the public, business community and tourist, the role of the workers is still invaluable. The educated and skilled staff is the key to providing quality service. In order to introduce all the library services to tourists and the local community it is important to develop an excellent marketing strategy. It involves a well-designed and accessible web-presentation, since it can be accessed to from all over the world: the sending of e-mails to potential users; visiting travel agencies, educational institutions and companies; active part of the staff in the media; the printing and distribution of promotional leaflets, brochures as well as other methods.

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economic development and employment generation particularly remote and tribal and economicaly weake section and self help groups, has been well recognised the world wide. Hence tourism can be turned as a perpective tools of economic development in Maharashtra.

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10

A Perspective on Significance and Impact of Medical Tourism in Maharashtra

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ABSTRACT

Maharashtra, one of the largest states in India with high economic growth is also one of the most favored destinations for tourism in India for domestic and international visitors. Maharashtra, although, having two UNESCO sites besides various Forts, Temples, Hills, Rivers, Forests & Wildlife, Sea and Beaches with a rich tradition of Culture and Arts, is finding favor as the destination for Medical Tourism as well. Being the economic capital of the Country, Maharashtra is providing Modern Infrastructure and Technology with Humane Care for domestic and international visitors alike. In this article, the significance and impact of medical tourism in Maharashtra is discussed.

INTRODUCTION

In modern terms, the definition of Tourism may include the movement of people to the places outside of their usual residence for socio-cultural (recreational/leisure/exchange of ideas and work-conferences), economic (business) and even for medical treatment now aptly called Medical Tourism. The tourism industry is one of the fastest growing industries in the world and hence its importance and contribution in economic development of India is highly acknowledged.

The Ministry of Tourism, India, among

various types of tourism branches has identified top 10 branches to promote for development of fields and attraction tourists of Domestic as well as International origin. These includes, Adventure Tourism, Eco-Tourism, Medical Tourism, Wellness Tourism, Sports (Golf, Polo, Ice sports) Tourism, Film Tourism, Meetings Incentives Conferences Exhibitions (MICE), Sustainable Tourism, etc., besides Heritage and other sectors. The Medical Tourism, among others tourism branches, is one of the key sector identified and indicated to be playing major role in economic development of India. The role of Medical Tourism in India and its impact on development of tourism sector, State Economy as well as on Medical Field in Maharashtra is discussed as follows.

Medical Tourism in India

Tourism is an important factor contributing to the growth of economy of a state or country as much as that tourism plays major share in the GDP of some of the states or countries. As per the report of World Travel and Tourism Council (WTTC), in India, travel and tourism sector generated USD 210 billion (Rs. 15.24 Lakh Crore) amounting to about 9.7% of India's GDP in 2017 becoming world's 7th largest state generating from tourism. It was also estimated to have supported or generated 41.6 million jobs based on tourism and allied services.

Medical Tourism in India is one of the most promising sectors in the Tourism Industry with a potential to have a major contributing field in technological advancement, healthcare infrastructure and economic development in the country. According to a report, India's Medical Tourism sector is projected to grow to USD 7-8 billion by 2020. Apart from foreign tourists (10 million in 2017, about 15.6% higher than 2016), the domestic tourists had a major share in tourism. The most visited tourists destinations in India were Tamilnadu, Maharashtra and UP (about 52% of tourists).

Significance and Impact of Medical Tourism in Maharashtra

Maharashtra is one of the most visited states in India by foreign tourists (~ 4.3 Million) as well as for domestic tourists (from other states and union territories). Mumbai, the Capital City of Maharashtra is a Metropolitan city connected by air, sea and road transport, with most modern amenities and also having the crown of being the Economic Capital of India. Apart from Mumbai, Aurangabad is the cultural tourism capital in Maharashtra. Maharashtra having two UNESCO World Sites besides several exotic locations, Rivers, National Forests, National Parks, and religious places provides a warm welcome to Medical Tourists from domestic and foreign visitors.

Government of Maharashtra has taken several initiatives to reach out to various stakeholders (care seekers and service providers) in Maharashtra for domestic as well as foreign visitors for seeking medical treatment or care. The dedicated website of the 'Public Health Department of Maharashtra provides links to various aspects of medical tourism as well as lists the benefits of availing the medical tourism services in Maharashtra, such as; The affordability, high quality of medical treatment and care services, latest technology made available due to being the financial capital of the country, highly trained specialists and healthcare personnel, a wide range of treatments and procedures available along with traditional and alternate therapy/medicine available, National and International Level Institutions/Hospitals (Both Government and Private), Research Centers for Biomedical and Allied Fields, Good connectivity with air, road and other modes of transport available for international and domestic travelers, treatment costs, etc. Further, the website also mentions the range of medical treatments including an average treatment cost (in Indian Rupees and US Dollars) for specific procedures. The range of Medical treatment covers about 60 major ailments in cardiology/cardiothoracic surgery,

organ transplants, joint replacement, oncology/ cancer treatment, weight management/surgery, cosmetic surgery, dental, eye, Infertility treatments, bone and spine, gynecology, urology, general surgery, ENT, Nephrology, and various Health checkups. Thus, the visitor can comfortably have the treatment costs compared to derive most benefit from medical tourism.

As per the government initiatives, the state aimed to develop several state-of-the-art health care facilities in major cities in Maharashtra and make available well-trained medical professionals and low treatment costs compared to other destinations to attract patients. The medical tourists from Asia, GCC, Africa and the SAARC regions were increasingly found to prefer India including Maharashtra as medical treatment destination due to some of the following reasons: High quality treatment available within reasonable cost of treatment for particular ailment, highly skilled/trained medical personal with latest know-how of emerging trends in medical field and therapy procedures, availability of a treatment, travel cost and lodging/boarding cost, friendly neighborhood, International travel/visa/customs convenience, etc. The development of state-of-the-art health care facilities across state also benefits the local (domestic) patients due to availability of high quality affordable treatment in the vicinity. Further, it also promotes creation of jobs in the medical tourism as well as the allied sectors impacting the growth of state.

SUMMARY

Medical Tourism, has high significance and impact on the economic development of a state including Maharashtra. Further, the medical tourism not only promotes development of infrastructure and availability of high quality treatment at competitive cost, but also promotes development of allied sectors such as travel, lodging/boarding, food business, care and other facilities as well as generates employment in these sectors leading to overall growth of economy. The high quality medical care centers not only benefits foreign tourists but also to a domestic patients. Thus, development of more such facilities across the states would definitely push forward the economy of Maharashtra contributing to the economic development of India.

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11

To Study on Growth and future scope of Agro- Tourism for Development of Farmers in Maharashtra

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Abstract

Agro Tourism is to experience the real rural life, aware with agriculture area, taste the local genuine food, tradition of local area and get familiar with the various farming tasks. Agriculture is the backbone of Indian Economy and also Maharashtra. Around 80% of the population is directly or indirectly dependent on Agriculture and almost around 25 present of India's GDP comes from Agriculture. 85 million farmers are dwelling in 6.1 lack villages producing food grains for feeding the country. More than a profession or a business, agriculture is India's culture. Hence agro-tourism additional income generating activities to support agriculture. Such tourism would certainly increase contribution of agriculture in the national GDP.Agro-Tourism is one such activity.

Key words: Agro tourism, agriculture productivity, agriculture, eco- tourism

Introduction

Agro-tourism plays very crucial role in economic development of farmers in rural area. Agro-tourism is based on traditional agricultural activities. It is an opportunity for farmers to use the available resources in a diversified and innovative way. Agro Tourism is to experience the real rural life, taste the local genuine food and get familiar with the various farming tasks Agro-tourism is the form of tourism which capitalizes on rural culture as a tourist attraction. It has created a new way to generate additional income and job generating activity. The combination between tourism and agriculture that can be found in agro-tourism.it becomes a key role to generate new job opportunities in rural areas. And it support farmer for their economic growth. Travel and tourism are human-resource intensive, employing directly and indirectly 8 per cent of the global workforce. It is estimated that one job in the core tourism industry creates about one and a half additional or indirect jobs in the tourism-related economy[1].

The concept of Agro tourism is very simple, whereby the urban tourists go the farmers home; stay like a farmer, engage in farming activities, experience the bullock cart, tractor ride, fly kites, eat authentic food, wear traditional clothes, understand the local culture, enjoy the folk songs and dance, buy fresh farm produce and in turn the farmer maintains home and farm hygiene, greets new tourists, sells his farm produce at a better price, earns a livelihood all year round.[2]

Study region

In Maharashtra lots of people are dependent on agriculture and there related business. But most of the farmer can't generate more money through this work. and major part of Maharashtra is poor in terms of agriculture productivity. Because due to natural calamity, drop prices of crops frequently in every year and poor water resource Hence, there is need to do some innovative activities in the agriculture, which will help to farmers and rural peoples.

In Maharashtra urbanisation is increases day by day. today the urban people's is restricted in the closed door flats, television, video games, offices , club party, spicy fast food, let night sleeping, computer, internet, and so on. They can see nature only on television or screen of the computers. More over some people living in the cities do not have relatives in villages and they never visited or stayed in village. These people want to enjoy rural life but there is problem of such type of facilities.

Hence, it is opportunity to the farmers for the development of the agro-tourism centres and it serves him and create additional income source.

Objectives

1. To study the benefits and applicability of agro tourism in Maharashtra.
2. To generate employment opportunities to the farmer and their family member.
3. To aware cultural transformation between rural and urban people.
4. To generate new source of income to the farmer
5. To improve standard of living of farmer and rural people through agro-tourism.

Analysis and future scope

Maharashtra is the third largest state of India, both in area and population. It is located on the west coast of India with a 720 km long coastline along the green Konkan region. Nestled in the Western Ghats and the Sahyandri mountain range are several hill stations and water reservoirs with semi-evergreen and deciduous forests. There are many tourist centres in Maharashtra which are the supporting natural environment for the agro tourism centres in Maharashtra Although, Maharashtrahas a total 22368 thousand hectre area uder agriculture and 36122 thosaunds of livestock (cow, beffelows,goa tsetc.)[6]. In India, total contribution of travel and tourism to GDP was INR 5,651.0 bn (6.4% ofGDP) in 2011, and is forecasted to rise by 7.8% p.a. to INR12,891.2 bn in 2022. It has been also mentioned in WTTC Report, 2009 that India will be.a tourism hot-spot from year 2009 to 2018 having the highest 10-year growth potential.in Maharashtra Agriculture and allied activities contribute nearly 12% per cent to the State's income, although 55% of the population is dependent on agriculture[5].in Maharashtra More than4.32 (45 per cent of total) core population is living theurban areas of the Maharashtra, which can become customers of the agro-tourist centres, located in the rural. villages are also benefited due to the development of agro tourism. Some cases of agro tourism in Maharashtra Dist. Raigad; Pune and Satara, sangli ,baramati, ratnagiri have proved that agro tourism not only development of farmers but also to the village as a whole from social and economic angle.[7] following table shows tourism in maharashtra.

Year	No of tourists
2007	15000
2008	23500
2009	32100
2010	47500
2011	38800
2012	46400
2013	49950
2014	51000
2015	53600
2016	54300

Table shows tourists arrival at agro tourism centres in Maharashtra. Charts shows agro tourism industry is increases year by year so it is future scope for farmer to generate additional income source.

Problems

Maharashtra has a potential for the development of agro tourism because of good climate condition and water resources. But there are some problems about this area is as follows.

1. Farmer have deficiency of perfect knowledge about the agro-tourism.
2. Lack of communication skill and commercial approach of the small farmers.
3. Deficiency of basic infrastructure for the agro tourism.
4. Deficiency of quality and complexity of service provided to the tourist in agro tourism.
5. Ensuring hygiene and basic requirement considering urban visitors.
6. Lack of farmers have low quality land, small area of land and little irrigation.
7. Lack of government support towards agro tourism.
8. Majority of farmers are not trained about agro tourism and hospitality.

9. Most of the area are not connected due to transport facility.
10. Deficiency about safety ,medical facility.

Conclusion

In Maharashtra most of the people are dependent upon agri and related basicness but they cant generate more additional income from this area because there are lost of problem occur such as irregular of climate condition .irregular rainfall, lack of knowledge about farming land, and drop prices of seeds , so it is important find out new way to generate additional income source and agro tourism is one of the best way for farmer to create more money. Such type of tourism is beneficial in rural area to generate employee and beneficial for urban areas people to understand nature ,farmers hard work, rural culture, food ,life of village , which is away from busy life.

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12

Global Perspective Of Tourism : Umred-Karhandla Wild Life Sanctuary

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Introduction

Tourism is an essential activity of the modern human society.The tourism industry is playing an important role in economic development of the various places. It opens ways to the employment both for skilled and unskilled labor in the local areas. The present research paper exposes the global sustainability and wide scope of tourism in the Eastern Vidarbha region of Maharastra.

Index Terms: Tourism, Development, Sanctuary, Tiger

Study Region

Umred-Karhandla Wild Life Sanctuary is one of the most fabulous tourist places of Eastern Vidarbha region of Maharastra. Its fame is worldwide as the Asia's biggest and royal tiger 'Jay' and its son 'Jaychand' once resided in it. It is situated about 58 k.m. from the district place Bhandara. It is situated over Pauni tahashil of Bhandara district and Umred, Kuhi and Bhivapur taluka of Nagpur district. It is connected with Tadobha Andhari Tiger reserve of Chandrapur district through the forest along Wainganga River. Its geographical location is 25° 50^ 08 N

9. Most of the area are not connected due to transport facility.
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In Maharashtra most of the people are dependent upon agri and related basicness but they cant generate more additional income from this area because there are lost of problem occur such as irregular of climate condition .irregular rainfall, lack of knowledge about farming land, and drop prices of seeds , so it is important find out new way to generate additional income source and agro tourism is one of the best way for farmer to create more money. Such type of tourism is beneficial in rural area to generate employee and beneficial for urban areas people to understand nature ,farmers hard work, rural culture, food ,life of village , which is away from busy life.

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to 79° 30^A 40^AA E which is spread in the 189 km² area. It is bounded by the Wainganga River and GoseKhurd Dam on the northeast State Highway No. 9 and Bhivapur town on the south, Umred on the west and a narrow 10 km. long range of 600-800 meter hills to the northwest. It is located 40 k.m. of Tadoba Andhari tiger reserve of Chandrapur district and 50 k.m. southwest of Nagzira wildlife sanctuary of Bhandara District.

Objectives

The main objectives of the present research paper are as following.

1. To keep focus on the global aspects of tourism in the Umred-Karhandla Wild Life Sanctuary.
2. To create awareness for the environment, natural resources, forestry, wildlife etc. in the sanctuary.
3. To expose the scope of tourism in the local tourist places.
4. To point out the shortcoming and their outcomes in the sanctuary.
5. To distinguish the possibilities of the employments in the sanctuary.

Analysis

The sanctuary provides road connectivity between key tiger reserve like Tadoba, Pench, Bor and Nagzira. About 100 km. of motor able road have been developed, out of which tourists are allowed on 44 km. The road can handle about 40 vehicles-20 in the morning and 20 in the evening. The main entrance of the sanctuary is at Karhandla village and other is at Pauni town.

Wildlife- According to a report, there are 11 tiger, six Leopards in the sanctuary besides Wild Dogs, Sloth Bears, Bisons, Nilgais, Deer and Sambars. Being near to Nagpur, the outskirt of the protected area (PA) is considered as buffer zone. The Karhandla Lake is feather in the cap of the sanctuary. During the last several years, water management works were undertaken in the sanctuary and at list 22 saucer-shaped water holes have been developed. Nine water holes have been fitted with solar pumps. Beside there are seven protection huts and barriers at 16 points.

Tigers- The wildlife Institute of India (WII) estimated the presence of three tigers in and around the sanctuary but the number has increased to six.

Birds- There are more than 90 species of birds belonging to 12 families of 12 different orders recorded in the sanctuary. This includes over 10 species of migratory birds and over seven species of endangered birds.

Reptiles- It is home to over 19 species of reptiles belonging to nine families of which four species are endangered, namely Indian Cobra, Russell's viper, Indian Rock Python, Indian Rat Snake, Chequered Keel back and Monitor Lizard.

Problems

1. The Umred-Karhandla Wild Life Sanctuary is connected with the poor facilities of roads and transports.
2. Though it has rich natural resources, it is less known to the entire Maharashtra.
3. Due to mismanagement of the concern department, the Asia's biggest and royal tiger 'Jay' was missing and its son 'Jaychand' was died with electric current by the farmers.
4. More facilities should be made available for the purpose of tourism.

Remedies

1. The Umred-Karhandla Wild Life Sanctuary should be connected with wide roads and transportation.
2. The sanctuary area should be made alien and man less.
3. More care and attention should be paid on the tigers and wildlife conservation of the sanctuary.
4. More advertisement is needed to draw attention of the tourist of India.

Conclusion

The Umred-Karhandla Wild Life Sanctuary is a significant place of tourism in

Eastern Vidarbha region of Maharashtra. The tigers are seemed to disappear in the world wide scenario, besides they have been increasing significantly in the sanctuary. Unlikely the efforts of the concern departments are fewer to conserve the largest tigers like 'Jay' and 'Jaychand'. The issues had been debated in the Indian Parliament by the Local MP's. It is necessary for the native people, concern departments and the government to preserve, aware and highlight the treasure of wild life and natural boon of the region. It would be beneficial for the promotion and progress of tourism in the sanctuary.

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13

Literary Writings and Tourism: A Critical Study

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Abstract:

Tourism has emerged as one of the major mediums of entertainment for those who get fed up with the routine responsibilities and seek relaxation for refreshing themselves through visit to beautiful places and income for those who are involved in the businesses related to tourism. Tourism affects and gets affected by the various factors such as nature, location of the beautiful places, government policies, the residents, economy, social conditions, Literature etc. Among these factors, literature also holds a place of prominence in terms of the influence it exercises on the tourism and vice-versa. There are certain famous tourist places that have attracted the attention of several literary writers and inspired them to compose melodious poems and quality prose works in the form of noted novels, essays, articles etc. On the other hand, it is the highly creative writings of some distinguished writers that have transformed hitherto unnoticed places into some of the most popular tourist places. All things considered, it can be said that both, the tourism and the literature have the capacity to positively influence each other. The present paper intends to highlight the points that reveal the relationship between tourism and literary writings.

Key-Words:- Tourism, writers, tourist places, literary writings, Literary Tourism etc.

Eastern Vidarbha region of Maharashtra. The tigers are seemed to disappear in the world wide scenario, besides they have been increasing significantly in the sanctuary. Unlikely the efforts of the concern departments are fewer to conserve the largest tigers like 'Jay' and 'Jaychand'. The issues had been debated in the Indian Parliament by the Local MP's. It is necessary for the native people, concern departments and the government to preserve, aware and highlight the treasure of wild life and natural boon of the region. It would be beneficial for the promotion and progress of tourism in the sanctuary.

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Key-Words:- Tourism, writers, tourist places, literary writings, Literary Tourism etc.

Introduction:

Today is the world of globalization where the emerging trends keep influencing the nations across the world. Such a trend of touring the places with natural beauty and innovative touches, has obsessed the minds of people. Indians are no exception to this tendency in the current scenario. The people are so crazy about the new tourist places that they keep eagerly waiting for every single opportunity whereby they can have access to such places for enjoying the free moments of their life. Having been to one tourist place, they start thinking of another more attractive and better one for tourism. Following which, they come across various sources providing information about the beautiful tourist places. These sources include tourist leaflets, advertisements, special TV shows, mouth publicity, literary writings etc. The literary writings such as novels, essays etc. are among the most influential sources that have made a deep impact on tourism and vice-versa. In the context of Maharashtra, it is seen that several places which were not known or little known to the people across the state have now turned much famous due to the promotion made by the famous novels and other literary writings with the incorporation of charming account of the attractive features of these places into them by the eminent literary writes. At the same time, the fact cannot be ignored that some tourist places with their fascinating natural beauty captured the mind and soul of certain authors and brought out a creative and qualitative talent out of them in terms of celebrated works of art such as Maruti Chitampallis Ratawa, Ranvata, Nilawanti, Pranikosh etc. and many others. The present research paper is devoted to the critical study of such influences that tourism and literature share and in turn, promote each other.

Meaning of Tourism in relation to Literature:

Tourism is a travel for pleasure or business; also the theory and practice of touring, the business of attracting, accommodating, and entertaining tourists, and the business of operating tours (Wikipedia).[1] This definition primarily focuses on the factors: tourism for pleasure, that is, entertainment; theory and practice of touring and tourism as a business. Concept of tourism cannot be materialized without proper means of promotion which mainly include the literature as one of the crucial factors. As already mentioned, certain places got the status of famous tourist places on account of the publicity they received by the courtesy of literary writings.

Meaning of Literature in relation to Tourism:

It is quite relevant and important to shed light on the meaning of literature while discovering its relationship with the tourism. There are number of definitions of literature from different writers. Literature is the expression of thought, feelings, ideas based on the perception of the world around. Literature is nothing but the expression of human life in relation to the nature. As Shakespeare has said in his world famous tragedy Hamalet, that it holds "mirror up to nature"[2] (Shakespeare). Here nature means the human nature and as the man is a social animal, he is bound to get influenced by the social factors like tourism. Desire to give visit to new places for recreation, is quite innate with human-being. As a result, tourism has become one of the fastest growing industries across the world. "Literature can make an event, place, character or thing permanent and immortal" (Rees 4-5).[3] In the light of above view expressed by Rees in his definition of literature, it can be said that the literature confers permanence on the things it deals with. The same is applicable to tourism also as the literary writings not only enhances the importance and recognition of a tourist place, but it makes it immortal by describing it in words. For example, Mohenjo Daro and Harappa, age-old civilizations became truly known to the world due to the various articles, essays tourist leaflets written on them after excavation. Only because

of the information made available to the world through literature, these places have become hugely popular among the tourists across the globe.

Literary Tourism:

There has been an introduction of one more interesting term to describe the tourism based on literature, that is, literary tourism. "It is a type of cultural tourism that deals with places and events from fictional texts as well as the lives of their authors. This could include following the route taken by a fictional character, visiting particular place associated with a novel or a novelist, such as their home., or visiting a poet's grave. Some scholars regard literary tourism as a contemporary type of secular pilgrimage. There are also long-distance walking routes associated with writers, such as the Thomas Hardy Way."[4] (Wikipedia) This sort of tourism consists in assets, buildings, houses, hotels, cafes, fictional places, roads, farms, moors, villages, museums, cities, countries and so on associated with the distinguished authors. Shakespeare, for example, is a writer about whom the readers across the world have deep attraction and great curiosity to know each and everything related to his life and literary works. Which is why, the literary tourists not only from England but form all parts of the world give visit to his birth-place Stratford-on-Avon every day and thus it has become a popular tourist place. Similarly, in the area of the south and southwest of England, Thomas Hardy set most of his novels and named it as Wessex which later became a place of attraction for the readers.

In the context of Maharashtra, Ramtek was already a tourist place because of the historical fort temple of God Rama along with the natural beauty in terms of a beautiful Khindasi lake surrounded by the hillocks and beautiful trees. But the residence of great Sanskrit poet, Kalidasa in last period of his life, has imparted it a literary importance. A big memorial is built here to celebrate the greatness of this world-famous poet and it is visited by so many literary tourists daily. At Saoner, a tehsil place in Nagpur district, where the renowned Marathi Dramatist who wrote an immortal work "Ekach Pyala" breathed his last has also turned a place of curiosity for the literary tourists.

Conclusion:

Tourism and Literary writings influence each other. On the one hand, it is seen that the beauty and the glory of the tourist places have so profoundly impressed some of the best writers and poets of the world that they based their entire literary creation on those places. As R. K. Narayan was motivated by the beauty of the area surrounding Chennai which he named as Malgudi. On the other hand, some of the writers have given the identity of tourist places to certain areas by presenting vivid and live depiction of the loveliness and grandeur of these places. As Maruti Chitampalli, one of the most famous writers in Marathi, through his creative writing on the magnificence and splendour of Nagazira forest region in Maharashtra, has generated great curiosity in the tourists across the Maharashtra state. Besides, the literary tourism has also given a big boost to the tourism in Maharashtra. The novel 'Mrutyunjay' written by Sivaji Sawant on the life of Sambhaji Maharaj's life has attracted a host of tourists to the places associated with Sambhaji as mentioned in the said novel. Thus the tourism and literary writings share a subtle bond with each other in terms of the mutual influence.

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Role of Literature in Promotion of Tourists Places

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Introduction:

"In the middle ages people were tourists because of their religion, whereas now they are tourists because tourism is their religion.

- Robert Runcie

This apt adage is not an exaggeration because tourism is identified as one of the fastest growing and prolific industries in the world. Literature plays a very supportive role, among other factors, in promoting all sorts of tourism. Tourism has many categories like Eco-tourism, Adventure-tourism, Medical tourism, Agro-tourism, Cultural tourism, Sports tourism and a lot more.

Now a day people have strong perception to get out of the din and bustle of every day's tired and boring life and desire to get synchronized with the beauty of Mother Nature. The impact of new technologies is so vast that even the lower middle income group of people save the money throughout the year and plan the tour to some tourist places. Literature, on the other hand, motivates all sorts of readers of different income groups. It also has the freat capacity to affect the human apprehension of tourism. Many writers have made many places immortalized through their literary works, description of nature's beauty, regarding tourist's spots or destination. They portrayed all beautiful aspects of particular places in such a way that the readers get inspired to visit and be associated with those places. For the ages, the literature has definitely prompted the tourism. Literary tourism is a type of cultural tourism that deals with places and events from fictional texts as well as the lives of their authors. This could include following the route taken by a fictional character, visiting particular place associated with a novel or novelist, such as their home or visiting a port's grave.1 In this modern age we have, at our fingertip, the technology supported softwares and devices to we search like Kindle, iPod, iPhone, Tablets, Android Phone, Laptops and Desktop Computers and other sources of social medias. Now, it's easy to get accessed with the minute and graphic details, information and description about tourist places under the sky.

Tourism and Literature Defined:

There are many definitions of literature coined from time to time. According to Oxford Dictionary the literature is 'Written works, especially those considered of superior or lasting artistic merit'. R. J. Rees, critic and historian of 20th century points out that literature is 'writing which expresses and communicates feelings and attitudes towards life'. Literature on tourism is that recommends and portrays and thus makes the spots and places immortal. Sometimes, the writers directly or indirectly, motivate the readers to take the journey in general. The 'Father of English Essays' Francis Bacon aptly writes ".... Travel, in the younger sort, is a part of education, in the elder, a part of experience".

Like literature, tourism also has many definitions. Roughly, it means the travel to a particular place form many purposes. Tourism is defined as the 'activities of persons identified as visitors. A visitor is someone who is making a visit to a main destination outside his/her usual environment for less than year for any main purpose (including) holidays, leisure and recreation, business, health, education or other purposes ..... This scope is much wider than the traditional perception of tourists, which included only those travelling for leisure.'

Role of Literature in Promotion of Tourists Places:

The relation between literature and

tourism cannot be ignored. We have ample examples that travellers credit their visit to a place to the literary works. No doubt, the technology plays the vital role in the development of tourism industry. The first-hand information about the tourist places may be provided through the literature. In the distant past, many writers, in their fictional literary works, have portrayed the fictional places so beautifully that the readers intended to explore and visit such places e.g. Thomas Hardy's 'Wessex', R. K. Narayan's 'Malgudi' etc. whereas F. Scott Fitzgerald's 'This side of Paradise' has been regarded as the first interactive Tourism Novel. The tourists strongly desire to visit all the religious places mentioned in the Ramayana, Mahabharata, Bhagavat Gita, Quran, Bible or Guru Granth Sahib etc.

A nation or state may be proud of having the beautiful tourist places. Such places may be represented through literature and other media also the usefulness and the charm for the place may be enhanced through literary work. Although the literature is not the part of tourism but the systematic representation of tourist places through literature may enhance the number of tourists for any particular tourist places.

Conclusion:

The paper has presented here some of the general opinion concerned with the study of tourism with reference to literature. The literature has certainly promoted the tourism industry to flourish to the extent irrespective of real or fictional works and the places of literary importance or nothing less than the importance of other tourist places.

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Tourism and Coral Reefs

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Introduction:-

Coral reefs are significant for Human Life. Coral reefs are some of the most biologically rich and economically valuable ecosystems on Earth. They provide food, jobs, income, and protection to billions of people worldwide. Coral reefs are dying around the world. In particular, coral mining, pollution (organic and non-organic), overfishing, blast fishing and the digging of canals and access into islands and bays are serious threats to these ecosystems.. The list of factors is long, including the ocean's role as a carbon dioxide sink, atmospheric changes, ultraviolet light, ocean acidification, viruses, impacts of dust storms carrying agents to far-flung reefs, pollutants, algal blooms and others. Reefs are threatened well beyond coastal areas. Coral reefs also face high dangers from diseases, destructive fishing practices and warming oceans. In order to find answers for these problems, researchers study the various factors that impact reefs on tourism in the present presentation.

Aims & objectives

- To protect tropic structure & Biodiversity & improve Coral Reefs Ecosystem
- To Modify human activity to avoid damage to healthy coral reefs & to help damaged reefs covers

Database and Methodology:-

As the present research work has to be done single handedly researcher hope the readers will take into consideration its

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Tourist Place Navegaon Bandh National Park Of Gondia District Maharashtra State, India

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Abstract

Navegaon National Park is a beautiful place, located in the Bhandara (Gondia) district of the state of Maharashtra. It was declared as a National Park in the year of 1975. Total area of the park is 133.88 Km2. The name "Navegaon" comes from the word Nave + gaon (Nave means new in Marathi and Gaon means village). This area also known as Navegaon Bandh locally (bandh means dam in English) because of the presence of the water body. The Dr. Salim Ali Bird Sanctuary, Navegaon is home to almost 60% of the bird species found in entire Maharashtra. Every winter, flocks of beautiful migratory birds visit the lake—a rare treat for the eyes. Jungle safari, staying in a tree top house and riding a sail boat in the lake is the most unique experiences of the Navegaon National Park. Gondia is one of the most popular forest resorts in the Vidarbha region and was established the beginning of 18th century. Sprawled over an area of almost 134 Km², the wildlife park comprises of a deer park, an aviary, 3 landscaped gardens and Dr. Salim Ali Bird Sanctuary.

Geography :-

Navegaon National Park is located in the Bhandara (Gondia) district of the state of Maharashtra. The area around the lake is known as the Dr. Salim Ali Bird Sanctuary.

Flowing through the Navegaon Wildlife Park is the beautiful Navegaon Lake that flows with crystal clear water. The area around the lake is known as the Dr. Salim Ali Bird Sanctuary.

There is also a high watch towers inside the wildlife park, from where you can get awesome views of the entire region. Total area of the park is 133.88 Km².

The vegetation here is mainly of the Southern mixed dry deciduous type, comprising of Teak, Hirda, Jamun, Kawat, Mahua, Ain, Bhel & Bor trees.

Navegaon National Park :- Navegaon National Park is a beautiful place, located in the Bhandara (Gondia) district of the state of Maharashtra. It was declared as a National Park in the year of 1975. Total area of the park is 133.88 Km².

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There is also a high watch towers inside the wildlife park, from where you can get awesome views of the entire region[1].The vegetation here is mainly of the Southern mixed dry deciduous type, comprising of Teak, Haldu, Jamun, Kawat, Mahua, Ain, Bhel & Bhor trees.[2] The fauna consist of leopard, tiger, panther, sloth bear, fishing cat, four horned antelope, sambar, nilgai, python, peafowl and migratory birds.

Dominant flora :- Teak, Hirda, Jamun, Bor, Mahua, Ain, Kawat, Bhel and some plants used for EthnoMedicinal Plants.

Materials and Methods :-

Field survey – Extensive survey of the National Park were carried out in different phases. Later on, collection of ethnomedicinal information were obtained from Vaidus, Mukhiya and Pradhan of villagers are selected for the collection of data. The data were compiled thorugh a combination of interview with local people of the tribal regions.

Discussions and Conclusions :-

In the ethnomedicinal survey, the various plants were found to treat different types of diseased conditions such as inflammation, fever, hepatic disorder, hypertension, wounds, leprosy, tuberculosis, etc. Data were gathered and comprehended by conducting personal interview with the tribal people using those medicinal plants as a remedy for treatment of diseases and observing tribal patients who were on those herbal medications[4]. The survey possessed healing properties against various types of diseases in both districts. The ethnomedicinal uses of the collected plants are given in Table 1. Research and extension work are the major pathways to integrate folk knowledge about ethnobotanical and ethnomedicinal plants for modern primary health care and human welfare. The major objective should be to match safe, effective remedies to common illnesses, using local medicinal plants and cost effective household needs. The problem asthma, snake-bite, respiratory diseases, leucorrhoea, dandruff, eye-diseases, diabetes, and in the treatment of cancer. As the villagers of this area are mostly illiterate, they know how to make use of their plants but have little or no knowledge on how to conserve them. Thus, there is an urgent need for training in conservation and on the cultivation of plants of economic importance. The undesirable effect of the modern medicine has already diverted the attention of the people towards herbal medicines. To increase the acceptability and awareness among the people, there is an urgent need to develop trust and faith towards the safer indigenous system by establishing its validity in treatment for various diseases[5].

Dominant faunaMammals – Tiger, Panther, Bison, Sambar, Chital, Wild boar, Sloth Bear, Wild Dogs, Jungle cat, Small India Civet, Palm Civet, Wolf, Jackal etc.

Reptiles – Bark Gecko, Rock Gecko, Indian Cobra, Common Indian Monitor, Skink Snake, Common Cat Snake, Indian Python, Dhamen etc.

Birds – Scarlet Minivets, Paradise Fly Catchers, Kingfishers, Jungle Babbler, Common Babbler, White-checked Barbet, Green Bee-eater, Erasion Black bird, Red-vented Bulbul, Crested Bunting, White-eyed Buzzard, Honey Buzzard, White-billed Drongo, Ashy-crowned Sparrow Lark, Pale-billed Flowerpecker, White-browed Fantail, Black-shouldered Kite, Black Kite, White-throated Kingfisher, Common Kingfisher, Black-throated Munia, Rose-ringed Parakeet, Rock Pigeon, Indian Peafowl etc.

Other Attractions

Itiadoh Dam
Pratapgad
Tibetan Camp
Deer Park
Gardens
Museum and Library

Best time to visit

The best time of the year to visit the Navegaon National Park is between the months

of April to May (Wildlife) and October to June (Birds).

How to Reach

By Air – Nearest airport is Nagpur airport, about 150 Km from the Navegaon National Park. Nagpur airport is well connected by road to Navegaon National Park.

By Rail – Nearest railway station is Deulgaon (Chandrapur-Gondia Railway line) railway station, about 02 Km from the Navegaon National Park. Deulgaon railway station is well connected by road to Navegaon National Park.

By Road – Navegaon National Park is well connected to Major Cities and Places by road network. There are a number of government and privately operated vehicles that go to Navegaon National Park at frequent intervals.

Accommodations

Accommodation is available in a rest house and a youth hostel in Gondia or you can book an MTDC run suite or cottage near the national park. For the more adventurous tourists, a tree house is available near the park.

Log hut Rest House
Holiday homes Rest House
Sanjay Kuti Rest Houses
Youth Hostel
Tents

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पर्यटनाच्या विकासात खेळाची भुमिका

प्रा.डॉ. विनोद मारोतराव बळी
यशवंतराव चव्हाण कला वाणिज्य व विज्ञान
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सारांश :–

निसर्गाच्या सहवासात आनंदाचे क्षण घालविण्याची आणि नवनविन कला, संस्कृतीविषयी जाणून घेण्याची माणसांची मलभुत प्रवृत्ती पर्यटनाचा मुळ आधार आहे. धार्मिक आणि ऐतिहासिक पर्यटनाला तेवढेच महत्त्व आहे. आज वेगवान दळवळणच्या साधनाने जग जवळ आले असतांना देशाबरोबर बाहेरचे जग जाणून घेण्याचा माणसाच्या ओढीने हे क्षेत्र सातत्याने विस्तारते आहे. त्याचबरोबर खेळाच्या माध्यमातून पर्यटनाचा विकास करणे हे सुध्दा शक्य आहे, कारण महाराष्ट्रातले पारंपारिक खेळ अनेक आहेत. ते मनोरंनात्मक तर आहेतच, त्यातून आपल्या संस्कृतीचे दर्शनही घडते. आज डिजीटल खेळाच्या जमान्यात अशा पारंपारिक खेळाचे एक वेगळेपण आहे. खेळाकडे पर्यटनकांना आकर्षित करुन आपण आपले खेळही टिकवू आणि आपल्या संस्कृतीची जोपासना करण्यात मदत करु शकू.

प्रस्तावना:–

आपली जीवनसरणी बदलली आहे, आणि आपण खेळ खेळायचे थांबलो. सध्याच्या भ्रमणध्वनी आणि संगणकाच्या युगात, लोकांनी एकत्र येऊन खेळायला अनन्यसाधारण महत्त्व आहे. तंत्रज्ञानाच्या प्रगतीची दुसरी आजू ही की लोकांमधील तुटत चाललेला संवाद.....साधिक खेळामुळे लोक रोजच्या कामामधुन वेळ काढून एकत्र येतात, खेळतातत्र आणि त्यांचे करमणूक व मनोरंजन होते, सवांद वाढतो व मन प्रसन्न राहतो. आपल्याकडे खेळाला दुय्यम स्थान दिले जाते, आणि खेळाकडे गांभीर्याने बघत नाही. पारंपारिक खेळ काही छोटया गावापुरतेच सिमित राहीले आहेत. खेळामुळे शरीरास भरपूर व्यायाम मिळतो, सांघीक खेळामुळे सहकार्याची वृत्ती, संघभावना व नेतृत्व गुण यांना वाव मिळतो आणि खेळातील चढाओढीमुळे खेळांचा दर्जाही वाढतो.

अभ्यासाची उद्दिष्टये :–

पर्यटन व्यवसायात येणाऱ्या विविध समस्यांचा अभ्यास करणे व त्यावर उपाययोजना शोधणे.

परिकल्पना :–

पर्यटन स्थळांचा योग्य विकास न झाल्यामुळे पर्यटन व्यवसायाचा फारसा विकास झालेला दिसून येत नाही.

प्रश्नांच रुप :–

आटया–पाटया, लगोरी, मंगळागौरीचे खेळ, कबड्डी, खो–खो, विटी–दांडू, भातुकली – एक एक आठवायला बसलं की असे कितीतरी खेळ आपल्याला आठवतात. काही खेळ साधे, मनोरंजन करणारे, तर काही स्पर्धात्मक, चढा–ओढीचे, जिंकण्याची जिद्द निर्माण करणारे या प्रत्येक खेळासोबत माणसाच्या संस्कृतीचा धागा जोडलेला आहे. हे खेळ ज्याठिकाणी खेळले जातात त्याठिकाणी समाजाचा, परिसराचा इतिहास त्या–त्या खेळात पाहू शकतो.

हे खेळ त्या–त्या गावच्या संस्कृतीचे आणि तिथल्या रुढी –परंपराचे प्रतीक आहे. गोटया तर मुले घरोघरी खेळत होती. मंगळागौरीचे खेळ बाई लोक श्रावण महिण्यात खेळत असत. पूर्वीच्या काळी बायकांना घरातून बाहेर पडण्याची परवानगी राहत नव्हती तेव्हा हे खेळ खेळण बायकांनी एकत्र येण्याचं निमित्त होत. अख्खी रात्र खेळ खेळण्यात जागवली जायची.

भातुकलीचा खेळ तर प्रत्येक लहान मुलांना येणाऱ्या प्रौढ वयात येण्याची जबाबदारी जणु तयारीच करुन देत होते. असे अनेक खेळ छोटया छोटया गावात प्रचलीत असलीत पण आपल्याला त्याबद्दल काहीच माहीती नाही.

आज हे सर्व खेळ आपण विसरलो आहोत. अशा प्रकारचे आपल्या भुमितले काही खेळ होते हे आज सांगितले तर अनेकांना आश्चर्य वाटते. हे खेळ

कुठले, कधी खेळले, कुठे खेळतात या प्रश्नांची उत्तरे आपल्याकडे आज नाहीत. क्रिडा संस्कृतीने वर्णन कुठेही लिहलेले नाही. हा इतिहास कोणाला अवगत आहे काय. हे ही सांगता येणार नाही.

आज जगभर पारंपारिक आणि स्थानिक खेळ पर्यटनाचे एक आकर्षण असताना त्या दृष्टीने आपण विचार केला नाही. आपल्या खेळामुळे देशभरातील पर्यटक आकर्षित होऊ शकतात, ही संधी आपण घेऊ शकलो पाहीजे.

हे कां पण ?

आपल्याला आपल्या संस्कृतीचा अभिमान आहे, हे पक्क. पण हा अभिमान नक्की कशामुळे आहे याचा आपल्याला विसर पडतो. आपल्या संस्कृतीचे वेगळे पण कोणते, ती कशामुळे एवढी समृध्द झाली हे आपण जाणुन घ्यायला हवे, त्यासाठी आपली क्रिडा संस्कृती सुध्दा समृध्द आहे. शहरात क्रिकेट, फुटबाल या सारखे खेळ फक्त माहित आहे. पारंपारिक खेळ फक्त नाही छोट्या गावांपुरतेच सिमित आहेत. हया खेळाचे महत्त्व लक्षात न घेतल्यामुळे त्यांची माहिती नाही व त्यांना प्रचार त्या-त्या गावाबाहेर झालेला नाही.

काय करायला पाहीजे ?

१. सर्व पारंपारिक खेळाची यादी तयार करणे, खेळांची माहीती, खेळाचा उगम, इतिहास, सांस्कृतिक महत्त्व, कसा खेळायचा इत्यादी माहीती असली पाहीजे.

२. ज्या ठिकाणी हे खेळ खेळले जातात ती ठिकाणे पारंपारिक खेळ पर्यटन म्हणुन जाहीर करायला हवी.

कार्यक्रम :-

जे खेळ अजुनही खेळले जातात त्या-त्या ठिकाणाला त्या खेळाचे पारंपारिक खेळ पर्यटन क्षेत्र म्हणुन जाहीर करायला हवे. ज्या गावामध्ये आता फारसे खेळणारे उरले नाहीत, तिथे गावकऱ्यांनी ठरवल्यास त्या खेळाचे पुनरुज्जीवनही करता येईल.

या पारंपारिक खेळ-क्रिडा क्षेत्राला काही विशिष्ट मानदंड असावेत.

१. किमान एक पारंपारिक खेळ / क्रिडा प्रकार स्थानिक गावातील असावा.
२. स्थानिकांना हा खेळ येणं आवश्यक आहे.
३. क्रीडा प्रकार शिकविता येईल असे प्रशिक्षक असावेत.

अशा प्रकारच्या पर्यटकाला सर्वी मिळावी म्हणुन एका खेळासाठीचे विशेष केंद्र असु शकेल. जे गाव या खेळाचे पारंपारिक स्थान असेल तिथे या खेळाची माहीती आणि प्रशिक्षण दिले जाईल. या खेळाची प्रात्यक्षिके पर्यटनाच्या हंगामात दाखविली जातील. या खेळाविषयी उत्कृष्ट माहीतीपट, चित्रपट, ग्रंथ, पुस्तके इत्यादीचे एक ग्रंथालय तिथे विकसीत करता येईल. पर्यटकांना आकर्षित करायला विशेष सहाय्य उपलब्ध करता येऊ शकेल. पर्यटकासाठी खेळाची प्रात्यक्षिके आयोजित करता येऊ शकतील, तसेच उत्सुक पर्यटकांना तो खेळ शिकण्याची सोय असेल. आपापल्या पारंपारिक खेळाचा प्रचार करेल. इतर ठिकाणची मुले-मुली पारंपारिक खेळ शिकायला या केंद्रावर येऊ शकतील.

काही खेळ जे आता फारसे प्रचलीत नाहीत त्यांना अशा पध्दतीने पुनरुज्जीवन करता येऊ शकेल. हे खेळ आपआपल्या गावी खेळले जातात तसे इतर ठिकाणीही, इतर जिल्ह्यात, इतर राज्यामध्ये आणि परदेशात सुध्दा या खेळा बद्दल कुतुहल जागृत करायला हवे, त्याची माहीती मिळायला हवी.

निष्कर्ष व उपाययोजना:-

पर्यटन स्थळांकडे स्थानीक व लोक प्रतिनिधींचे दुर्लक्ष असून बऱ्याच पर्यटन स्थळी सोयी सुविधांचा अभाव दिसुन येतो. पर्यटन स्थळी जाण्याकरीता वाहतुकीच्या अपुऱ्या सोई आहेत तसेच पर्यटकांच्या वास्तव्य स्थळी निवासाच्या सोई नाहीत. पर्यटन क्षेत्रात बाजारपेठांचा अभाव असून, मनोरंजन व खेळाच्या सुविधांचा अभाव आढळून येतो त्यामुळे बहुतांश पर्यटन स्थळे दुर्लक्षित आहेत.

पर्यटन विकास :-

पर्यटनाबाबत विकासाच्या कल्पना मांडताना त्या भागातील खास खाद्यसंस्कृती, पारंपारिक कला, साहित्य, लोकजीवन, निसर्ग यांचा फारसा विचार केला जात नाही. पर्यटकासाठी चांगल्या सुविधांबरोबरच त्यांना नव्या जागांचे दर्शन होणे आणि रोजच्या जिवनापेक्षा नवा अनुभव मिळणे महत्त्वाचे असते.

उपाययोजना :—

पर्यटन व्यवसायात खेळाची भुमिका या दृष्टिने पर्यटन स्थळाचा व तिर्थस्थळाचा विकास होणे गरजेचे आहे, याकरिता शासनाने सर्व सोई सुविधा उपलब्ध करुन देणे गरजेचे आहे, आणि पर्याप्त पैसा खर्च करुन पर्यटन स्थळांचा विकास करण्यास सहाय्य करावे.

पर्यटन स्थळाचा व तिर्थक्षेत्र स्थळांचा विकास घडून आल्यास स्थानिक लोकांना रोजगार उपलब्ध होऊन रोजगाराच्या संधी प्राप्त होतील. पर्यटन स्थळांचा विकास झाल्यास लोकांचे जिवनमान बदलेल व लोकाचा राहाणीमानाचा दर्जा उंचावेल.

संदर्भग्रंथ :—

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पौनी तालुक्यातील पर्यटन स्थळाचा भौगोलिक अभ्यास

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सारांश :—

महाराष्ट्रातील भंडारा जिल्हयातील पौनी हे विदर्भाची काशी म्हणून ओळखले जाणारे प्राचीन ऐतिहासिक नगर आहे. हा प्रदेश विविधतेने नटलेला आहे. पौनी तालुक्यात पर्यटन विकासासाठी अनेक महत्वाची ठिकाणे आहेत. पौनी—कऱ्हाडला व्याघ्र प्रकल्प, गोसेखुर्द राष्ट्रीय बहुउद्देशीय प्रकल्प, पौनी ऐतिहासिक वाकाटक कालीन शहर, शहरातील प्राचीन व दुर्मिळ ऐतिहासिक स्तुप भारतातील प्रमुख १२ स्तुपांपैकी एक स्तुप आहे.

पौनी तालुक्याला निसर्गाने भरपूर मुक्त हस्ताने लयलुट केली आहे, त्याचा मनमोहक आस्वाद निवादपणा औद्योगिक हस्तक्षेपापासून दूर असलेला पौनी तालुका पर्यटकांना खुणावतो आहे.

प्रस्तावना :—

पर्यटन हा आधुनिक शब्द तेराव्या शतकात प्रचलित झाला. यामध्ये होणारी भ्रमने निरनिराळया साधनाने होत असते. पर्यटन हे समाजातील चालीरीती, रूढी, परंपरा, आचारविचार व संस्कृती याच्या प्रचाराचे एक महत्वाने साधन आहे. याद्वारे निरनिराळया समुदायात सांस्कृतिक व वैचारिक देवाणघेवाण होते. पर्यटन हा महत्वाचा उद्योग आहे की, ज्यामुळे अविकसित प्रदेशात जलद आर्थिक विकास होण्यास मदत होते.

महाराष्ट्रातील अतिपूर्वेकडील भंडारा जिल्हयातील पौनी तालुका पर्यटनाच्या दृष्टीने समृध्द आहे. पौनी तालुक्याला भौगोलिक, ऐतिहासिक व सांस्कृतिक वारसा लाभलेला असल्यामुळे अनेक पर्यटन

प्रदेशातील हिरवीगार वनराई मुळे येणाऱ्या पर्यटकांना नेहमीच मोहिनी टाकेल.

२. दुर्मिळ होत चाललेले जंगली प्राणी, पशु, पक्षी, घनदाट जंगलामुळे संरक्षित आहेत हे या प्रदेशातील मुख्य संसाधन आहे. या संसाधनाचा विकास झाल्यास समाजाची आर्थिक व सामाजिक स्थिती उंचावेल.

३. पौनी नगरातील प्राचीन धार्मिक घटकांच्या संपत्तीला धोका न होता इको–टयुरीझम या संकल्पनेद्वारा विकास करण्यात यावा.

४. गोसेखुर्द राष्ट्रीय बहुउद्देशीय प्रकल्प पुर्ण झाल्यास व त्यावर आधारित इतर पायाभूत सुविधा विकसित झाल्यास आणि प्रसिध्दी माध्यमाद्वारे त्याची प्रसिध्दी सर्वदुर झाल्यास नक्कीच पर्यटकांची संख्या वाढुन पर्यटन व्यवसाय विकसित होईल.

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कारंजा लाड तहसीलमधील पर्यटन यात्रास्थळांची स्थिरता आणि विकास

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सारांश (Abstract) :–

मानवी जीवनात बदलाकरिता तसेच धार्मिक दृष्टीने देखील आज यात्रा पर्यटनाला महत्त्व आहे. भूगोल शास्त्रात, पर्यटन भूगोलात पर्यटनाबाबत अनेकांनी पर्यटनाचे महत्त्व पटवून दिले आहे. कोणत्याही यात्रा ठिकाणचा विकास हा हळूहळू होत असतो. जशीजशी त्याला प्रसिदधी मिळत असते त्यानुसार यात्रास्थळाची स्थिरता व विकास होत असतो. लोक पर्यटनाच्या दृष्टीने विरंगुळा म्हणून एकत्र येतात त्या ठिकाणाला पर्यटनाची अवस्था प्राप्त होते.

बीजसज्ञा (Key Word) :–

पर्यटन, यात्रास्थळ, स्थिरता, विकास

माहिती स्त्रोत व अभ्यास पदधती :–

प्रस्तुत शोधनिबंधात विषयाशी संबंधित अनेक पुस्तके, संदर्भग्रंथ, मासिक, वर्तमानपत्रे, सामाजिक व आर्थिक समालोचन, शोध प्रबंध, गुगलनेट वेबसाईट यांच्या माध्यमातून सांख्यिकीय आकडेवारी जमा करून तिचे पृथःकरण करून, प्राथमिक स्तरावरल माहिती जमा करून तिचे विश्लेषण करून शोध निबंध प्रस्तुत करण्याचा प्रयत्न केला आहे.

अभ्यासाची उद्दिष्टे –

१. कारंजा (लाड) तहसीलमधील पर्यटन यात्रास्थळांचा उदय आणि विकास कशाप्रकारे झालेला आहे हे अभ्यासणे.

२. कारंजा (लाड) तहसीलमधील यात्रास्थळांचे स्थिरता अभ्यासणे.

अभ्यास क्षेत्र –

महाराष्ट्र राज्याच्या मध्यपूर्वीकडे वाशिम जिल्हा वसलेला असून हा जिल्हा १९°५१' उत्तर अक्षांस ते २१°१६' उत्तर अक्षांस आणि ७६°०७' ते ७७°१४' उत्तर रेखावृत्ताच्या दरम्यान विस्तारलेा आहे. अशा या वाशिम जिल्ह्याच्या पूर्वेस कारंजा (लाड) तहसील असून त्याचे भौगोलिक क्षेत्रफळ ८.५५ चौरस कि.मी. आहे. तसेच गावची संख्या १६९ आहे.

प्रस्तावना –

मानवी विकासाच्या उत्क्रांती प्रक्रियेत मानवाला प्राचीन काळापासून भटकंतीची सवय आहे. म्हणून प्रवासाला 'प्राचीन शोधाची जननी' म्हटले जाते. एखाद्या प्रदेशाची ज्ञात अज्ञात माहिती प्राचीन काळापासून मानव आजही शोधत आहे. मानवाच्या या शोधक बुद्धीमुळे प्रवासी संकल्पना उदयास आली. पुढे प्रवासातून पर्यटनाचा उगम झाला. म्हणून प्रवास पर्यटनाची मूळ शाखा आहे. साधरणपणे दुसऱ्या महायुद्धानंतर जगात अनेक बदल झाले. त्यांचा परिणाम म्हणजे पर्यटनाचा विकास होय. त्याआधी जगातील खलाशी शास्त्रज्ञ आणि व्यापारी यांचे वेगवेगळ्या ठिकाणी प्रवास झाले.

सुरूवातीच्या काळात प्रवास हा मनात कोणताही उद्देश किंवा जाणीव न ठेवता साधेपणाने होत असे. आज प्रवास करताना ज्या पद्धती अनुसराव्या लागतात त्यापूर्वीच्या काळात नव्हत्या. तसेच आज मनुष्य ज्याप्रमाणे आनंद लुटण्यासाठी किंवा हौसेसाठी प्रवास करतो जसे प्राचीन काळात होत नव्हते त्या काळात प्रवास करणारे वाहतीश प्रवासी यात्रेकरून किंवा नवीन प्रदेशाचा शोध घेणारे होते. पूर्वीच्या काळी यात्रा पर्यटनाचा हेतु सुख समाधान नव्हता तर धंदा अथवा व्यवसाय हा प्रमुख उद्देश वर खरेदीदार स्वस्त भावात वस्तू खरेदी करून नफ्याने विकणे व त्यापासून संपत्ती मिळविण्याची मोठी इच्छा त्यामागे होती. हळूहळू व्यापार व धंदा यातून सांस्कृतिक संबंध व सामजंस्य एकमेकांमध्ये वाढीस लागले.

सुख समाधान किंवा आनंद मिळण्यासाठी यात्रास्थळे विकसित झालेली दिसून येतात. यात्रा स्थळे पर्यटन भूगोलाची नवीन शाखा आहे. या शब्दाची उत्पत्ती भाषेतील या सन किंवा मेजवानी असा अर्थ असणाऱ्या शब्दापासून झाली आहे. याचा आर्थिक एक अर्थ मिरवणूक किंवा उत्सव असा होतो. यात्रास्थळे ही रमणीय पर्यटनस्थळी संबंधित किंवा धार्मिक स्वरूपाशी संबंधित असून या बाबतची वाढ ही सुगमता सांस्कृतिक पर्यावरणाशी निगडीत आहे.

पर्यटनाचा मुख्य घटक असलेल्या यात्रास्थळांचा विकास झाला तर देशाच्या संस्कृतीची जोपासणा होईल व त्या बरोबर देशाचे अर्थव्यवस्था, मजबूत होईल व त्याचप्रमाणे ऐतिहासिक वारसा लाभलेले कारंजा (लाड) तहसीलमधील यात्रास्थळी स्थिरता आणि विकास' याचे अध्ययन करण्याकरिता प्रस्तुत विषयाची निवड केली आहे.

यात्रा स्थळांच्या विकास अवस्था –

कारंजा (लाड) तहसीलमधील यात्रास्थळांच्या विकास अवस्थेत विभिन्नता दिसून येते. १९११ पूर्वी महत्त्वपूर्ण दोन यात्रास्थळे असल्याचे दिसून येते. क्षेत्रीय अहवालानुसार १९५१ मध्ये कारंजा (लाड) तहसीलमध्ये घड यात्रास्थळे असल्याचे आढळून आले आहे व त्यात वर्षानुवर्षे भर पडत गेलेली दिसते. वाढत्या सुखसुविधांमुळे क्षेत्रीय अहवालानुसार २००१ मध्ये यात्रास्थळांची संख्या १५ झालेली आढळून आली व नंतरच्या १० वर्षात दोन महत्त्वपूर्ण यात्रा वाढल्या. त्यात पोहा गावची दुर्गादेवीची नवरात्रीतील सुरू झालेली यात्रा प्रमुख आहे. म्हणून क्षेत्रीय अहवालानुसार २०११ मध्ये यात्रास्थळांची संख्या १७ आढळून आली आहे.

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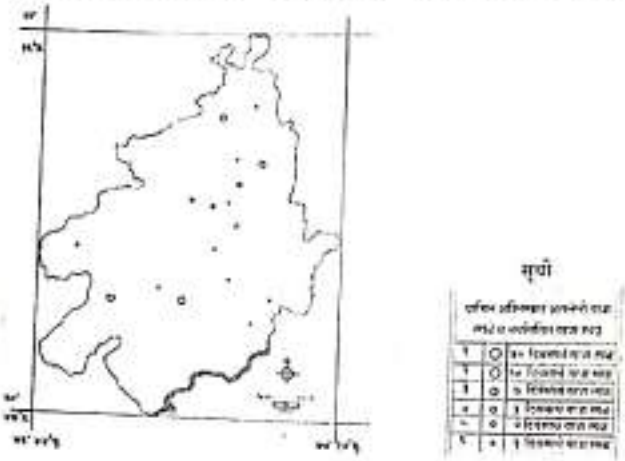
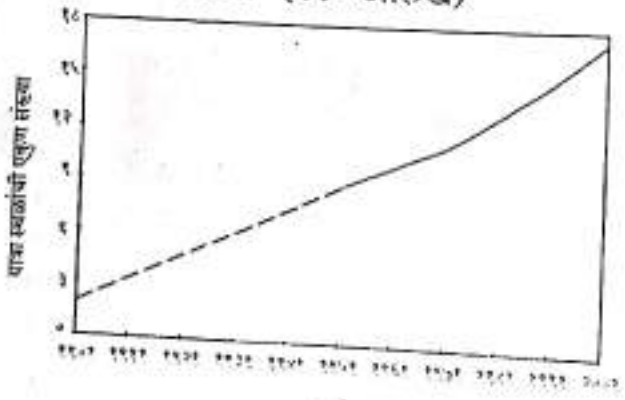
कारंजा (लाड) तहसिलीमधील यात्रास्थळांच्या अस्तित्त्वाचे आणि विकासाचे भौगोलिक प्रारूप



कारंजा (लाड) तहसील यात्रास्थळांची एकूण संख्या (वक्र आलेख)



वर्ष

कारंजा (लाड) तहसील यात्रास्थळांचे आर्युमान

तहसील	१–१०	२०–३०	२०–५०	७०–१००	यात्रास्थळांची एकूण संख्या
कारंजा (लाड)	२	२	८	४	१७

वरील सारणीवरून खालील निष्कर्ष काढता येतात. १९०१ पूर्वी हिवरालाहे (शंभू शेख), भामदेवी, कारंजातील राममंदिर येथील यात्रास्थळांचे अस्तित्त्वाचे पुरातन पुरावे आहेत. एकूण यात्रास्थळांपैकी ७० ते १०० वर्षाच्या आर्युमानामध्ये ४ यात्रास्थळे प्रमुख असून यात कारंजातील प्रमुख गुरूमंदिराचा समावेश आहे. तसेच २० ते ५० वर्षाच्या आर्युमानात सर्वात अधिक यात्रास्थळे समाविष्ट आहे व १०–३० या आर्युमानात २ यात्रास्थळांचा समावेश आहे.

विशेष कारणांसह यात्रास्थळे

अ.क्र.	स्थलांक	यात्रा स्थळांचे नाव	विशेष कारण
१	१	कारंजा	मंदिर / कामाक्षी देवी
२	२	भामदेवी	मंदिर
३	३	हिवरालाहे	शं. शेख महाराज
४	४	सोमठाणा	महादेव
५	५	पेहा	दुर्गा मंदिर
६	६	भिलखेडा	हनुमान मंदिर
७	७	आखातवाडा	चंदनशेख महाराज
८	८	डोंगरगाव	शंकर मंदिर / दुर्गादेवी
९	९	भुलेडा	लष्करी महाराज
१०	१०	मेहगाव	अभिषेक महाराज
११	११	शेमराई	मोतीशेख महाराज
१२	१२	इंजा	कैलास महाराज
१३	१३	राहटी	महादेव
१४	१४	उंबरडा बाजार	गजानन महाराज
१५	१५	काजळेश्वर	बिठोबा
१६	१६	नरेगाव	शंभूशेख महाराज
१७	१७	मोकड	कानेकनाथ महाराज

वरील सारणीवरून असे दिसून येते की, सर्व यात्रास्थळे हिंदूधर्मीय लोकांची आहेत. जी परंपरेनुसार वर्षानुवर्षे चालत आलेली आहे व आजही टिकून आहेत. नामशेष झालेली नाहीत.

यात्रा स्थळावरील विशेष कारणांचा प्रभाव

अ. क.	एकूण प्रभावाखाली येणाऱ्या यात्रास्थळांची संख्या	विशेष कारणाच्या प्रभावाचे वितरण
१	१०	संत
२	०५	देवी / देवता
३	०२	शिवलींग

वरील सारणीवरून असे दिसून येते की, कारंजा (लाड) तहसीलमधील १७ यात्रास्थळांपैकी १० यात्रास्थळांवर संत / महात्म्यांचा प्रभाव दिसून येतो व २ यात्रास्थळांवर पुरातन शिवलींग महात्म्यांचा प्रभुत्व दिसून येते. या सर्व घटकांमुळेच यात्रास्थळांची निर्मिती होते तसेच ती टिकून राहण्यास हेच घटक कारणीभूत ठरतात.

निष्कर्ष –

वरील सर्व अध्ययनावरून असा निष्कर्ष निघतो की काही अभ्यासक परिकल्पनेविषयी सांगतात की वाहतुकीच्या सवलतीमध्ये वाढ झाली असेल तर यात्रेकरूंना अधिक सुविधा प्राप्त होऊन यात्रेच्या ठिकाणाबद्दलचे महत्त्व वाढीस लागते. हाच घटक यात्रास्थळातील बदलाचे प्रमुख कारण ठरते व

यात्रास्थळांच्या उत्क्रांतीला महत्त्वपूर्ण अवस्था प्राप्त करून देते.

संदर्भ सूची –

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2. Gedam D. A., (1974) A Geographical Analysis of Fair at Salbardi, The Indian Geographical Journal, Vol-XI.
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पर्यटन उद्योग आणि आर्थिक विकासातील त्याची भूमिका

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जि.गडचिरोली

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सारांश :

प्रवास आणि पर्यटन प्राचीन काळापासून मानवाशी संबंधीत आहे. प्रवास मानवी जीवनाचा अविभाज्य घटक आहे. नवीन नवीन संशोधने शोधून काढणे, नवीन स्थळांना भेट देणे आणि वेगवेगळी संस्कृती आत्मसात करणे हा पर्यटनामागचा हेतू असतो. पर्यटन देशाच्या आर्थिक विकासाचा मूलभूत पाया आहे. सामाजिक, सांस्कृतिक, ऐतिहासिक, धार्मिक व भौगोलिक घटकांवर पर्यटन अवलंबून आहे. पर्यटनामुळे सेवा उद्योगाला चालना मिळाली. यात सुशिक्षीत—अशिक्षित, कुशल—अकुशल, ग्रामीण—शहरी भागातील लोकांना रोजगार उपलब्ध प्राप्त होतो. पर्यटनाचा देशी विदेशी अर्थव्यवस्थेवर , रोजगारावर,गुंतवणूक, शेती, परकीय चलन, पायाभूत सूविधा,क्षेत्रिय विकास, हस्तद्योग, कुटीर आणि लघुउद्योग इ. विविध घटकांवर आर्थिक परिणाम प्रत्यक्ष किंवा अप्रयक्ष स्वरूपात घडून येतो

प्रस्तावना :

'पर्यटन आणि प्रवास' हा मानवाचा फार प्राचीन काळापासूनचा छंद आहे. पर्यटनामध्ये पर्यटक हा मूलभूत घटक असला तरी पर्यटकांचे प्रवास करण्याचे हेतू वेगवेगळे असतात. मध्ययुगीन काळात नवनवीन प्रवासी नवीन मार्गाचा शोध घेणे आणि व्यापार वाढविणे आणि

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जि.गडचिरोली

****

सारांश :

प्रवास आणि पर्यटन प्राचीन काळापासून मानवाशी संबंधीत आहे. प्रवास मानवी जीवनाचा अविभाज्य घटक आहे. नवीन नवीन संशोधने शोधून काढणे, नवीन स्थळांना भेट देणे आणि वेगवेगळी संस्कृती आत्मसात करणे हा पर्यटनामागचा हेतू असतो. पर्यटन देशाच्या आर्थिक विकासाचा मूलभूत पाया आहे. सामाजिक, सांस्कृतिक, ऐतिहासिक, धार्मिक व भौगोलिक घटकांवर पर्यटन अवलंबून आहे. पर्यटनामुळे सेवा उद्योगाला चालना मिळाली. यात सुशिक्षीत–अशिक्षित, कुशल–अकुशल, ग्रामीण–शहरी भागातील लोकांना रोजगार उपलब्ध प्राप्त होतो. पर्यटनाचा देशी विदेशी अर्थव्यवस्थेवर , रोजगारावर,गुंतवणूक, शेती, परकीय चलन, पायाभूत सुविधा,क्षेत्रिय विकास, हस्तद्योग, कुटीर आणि लघुउद्योग इ. विविध घटकांवर आर्थिक परिणाम प्रत्यक्ष किंवा अप्रयक्ष स्वरूपात घडून येतो

प्रस्तावना :

'पर्यटन आणि प्रवास' हा मानवाचा फार प्राचीन काळापासूनचा छंद आहे. पर्यटनामध्ये पर्यटक हा मूलभूत घटक असला तरी पर्यटकांचे प्रवास करण्याचे हेतू वेगवेगळे असतात. मध्ययुगीन काळात नवनवीन प्रवासी नवीन मार्गाचा शोध घेणे आणि व्यापार वाढविणे आणि

नवीन रोजगार निर्माण करणे हा प्रमुख उद्देश होता. [illegible] पर्यटन हे [illegible] म्हणून ओळखले जाते. [illegible] पर्यटनामुळे मोठ्या प्रमाणात रोजगार उपलब्ध होतो. पर्यटनाची [illegible] इंटरनेटच्या माध्यमाने ओळखले जाते. पर्यटनासाठी विविध माहिती इंटरनेटवर [illegible] ऑनलाईन रोजगार उपलब्ध झालेला आहे. [illegible] आणि युवक यांना मोठ्या प्रमाणात रोजगार उपलब्ध झालेला आहे. यात वाहतूक, बँका, विविध प्रकारचे हॉटेल, हॉस्पिटल, सेवा, [illegible] इत्यादी [illegible]. पर्यटनामुळे भारताचे आर्थिक [illegible]. या शोधनिबंधात पर्यटनामुळे भारताच्या [illegible] अर्थव्यवस्थेविषयी चर्चा करण्यात आली आहे.

बीजशब्द– पर्यटनाचे स्वरूप, पर्यटन एक उद्योग, आर्थिक महत्त्व

संशोधन पद्धती

सदर शोधनिबंध हा पर्यटन व [illegible] आधारित असून यात वर्णनात्मक आणि विश्लेषणात्मक पद्धतीचा वापर करून यासंबंधी माहितीचे संकलन हे मासिके, ग्रंथ, सरकारी नियतकालिके, इंटरनेट इ. दुय्यम स्रोतांमधून प्राप्त करण्यात आले आहे.

गृहितकृत्ये

पर्यटनामुळे देशात रोजगार उपलब्ध होतो. पर्यटनामुळे देशाच्या आर्थिक उत्पन्नात वाढ होते.

पर्यटनाचे स्वरूप

पर्यटनाचे विविध स्वरूप दिसून येतात. यात निसर्गाशी स्वरूप, धार्मिक स्वरूप, [illegible], ऐतिहासिक, सांस्कृतिक व धार्मिक, मनोरंजनात्मक स्वरूप इ. चा समावेश होतो. निसर्गाशी स्वरूपात [illegible] पर्यटनाच्या माध्यमातून [illegible] होते. [illegible] हवामान, उष्ण हवामान, थंड आणि [illegible] सौंदर्य अनुभवणे [illegible] यांचा समावेश होतो. [illegible] स्वरूपात [illegible], समुद्र, [illegible] इ. चा समावेश होतो. ऐतिहासिक, सांस्कृतिक व धार्मिक, मनोरंजनात्मक स्वरूपात विविध [illegible], किल्ले, स्मारके, वास्तू, वाडे, [illegible] इ. चा समावेश होतो.

पर्यटन एक उद्योग

पर्यटन उद्योगातून रोजगाराची निर्मिती होते. [illegible] विविध उद्योगधंद्यांचा विकास होतो. उद्योगधंद्यांच्या विकासामुळे प्रादेशिक विकासाला चालना मिळते. [illegible] सुविधांचा विकास [illegible] करणे [illegible]. [illegible] आणि [illegible] या तीन घटकांवर [illegible]. पर्यटन उद्योगाचे प्राथमिक घटक [illegible] वाहतूक, निवास, हॉटेल/मोटेल्स, [illegible], मार्गदर्शक सेवा, [illegible] इ. [illegible] इत्यादी. [illegible] प्रमुख घटक [illegible] इ. होत.

पर्यटन उद्योगाचे आर्थिक महत्त्व

पर्यटन हा [illegible] उत्पादन न करता पैसा मिळवून देणारा उद्योग आहे. पर्यटन हा मुख्यतः सेवा उद्योग आहे. पर्यटनामुळे देशाला पुढील फायदे होतात.

१. रोजगार निर्मिती

पर्यटन उद्योगामुळे २०१६ मध्ये भारतात ४०,३४३,००० नोकऱ्या निर्माण झाल्या होत्या. हे [illegible] ९.३% होते. २०१७ मध्ये [illegible] ५.८% ने वाढ [illegible] मध्ये प्रमाण १२.३% झाले. [illegible] भारतात पर्यटनामधून ८.७८% रोजगार निर्मिती झाला आहे. २०२८ मध्ये हेच प्रमाण एकूण रोजगाराच्या १०.३५% आहे.

२. परकीय चलनाची प्राप्ती

पर्यटन उद्योगामुळे २०१७ मध्ये भारतात २७ बिलियन अमेरिकन डॉलर [illegible] परकीय चलन [illegible] प्राप्त झाले आहे. यात १५.२% ने वाढ झाली आहे.

३. बाजारपेठेचा विकास

पर्यटन क्षेत्राच्या ठिकाणी बाजारपेठ निर्माण झाल्या आहेत. यात स्थानिक हस्तकला व कुटीरउद्योगात निर्माण होणाऱ्या वस्तू जसे [illegible], [illegible], [illegible] शोभेच्या वस्तू, [illegible], [illegible] इ. या समावेश

होतो. यात पर्यटन बाजारपेठेत पर्यटक स्वताहून वस्तूची खरदी पटकन करतात आणि त्यामुळे मालाला भरपूर किंमत मिळत. बाजारपेठांचा आर्थिक विकास होण्यास मदत होते.

४. राष्ट्राच्या आर्थिक विकासाला मदत होते

पर्यटन उद्योगामुळे देशाचा आर्थिक विकास जलद गतीने होतो. त्याकरिता भांडवलाची योग्य प्रकारे गुंतवणूक करावी लागते. भौगोलिक, ऐतिहासिक व सांस्कृतिक स्थिती तसेच पर्यटकांची आवड–निवड पाहून वाहतूक, हॉटेल्स, उद्याने, बाजार इ.वर पैसा खर्च करावा लागतो. यामुळे रोजगार प्राप्त होतो आणि उत्पन्नात वाढ होऊन देशाला आर्थिक मदत मिळते. २०१७ मध्ये देशाच्या एकूण जीडीपीत पर्यटनाचे प्रमाण ६. ८८% होते

५. प्रादेशिक विकास

पर्यटनामुळे महाराष्ट्र, गुजरात, हरियाणा, पंजाब, इ. विविध राज्यात औद्योगिकरण, व्यापार,शेती इ. व्यवसायांचा चांगला विकास झालेला आहे. पर्यटनामुळे प्रादेशिक असमतोल दूर करणे शक्य झाले आहे. हिमाचल प्रदेश या राज्यांच्या अर्थव्यवस्थत पर्यटनाचे योगदान ४०% आहे.

६. इतर विकास

पर्यटनामुळे दळणवळण, पायाभूत सोयी सुविधा, लघु व हस्तोद्योग इ. चालना मिळते. व्यवसाय व्यापक होतो आणि व्यक्तीचे दरडोई उत्पन्न वाढते यात रस्ते, रेल्वे मार्ग. हवाई अड्डे, बंदरे याचबरोबर पाणीपूरवठा, विद्युत, गार्डन, प्रसाधन गृहे, करमणूक केंद्रे इ. पायाभूत सेवांचा समावेश होतो. तसेच लहान व्यवसायांचा विस्तार होण्यास मदत होते. आज नवीन साधनांना विशेष महत्व प्राप्त झाले आहे. त्यात इंटरनेट, व्हिडीओ कॉन्फेरेन्सिंग, ई–चॅटींग, बॅकिंग, बुकींग, ई सेवा इ. ऑनलाईन साधनांचा वापर वाढला आहे.

निष्कर्ष :

१. पर्यटनामुळे भौगोलिक, ऐतिहासिक, सांस्कृतिक व धार्मिक, मनोरंजनात्मक इ. घटकांना वाव मिळतो.
२. पर्यटनामुळे रोजगार निर्मिती होते, परकिय चलन प्राप्त होते, जीडीपीत वाढ झाली आहे.
३. राष्ट्राच्या आर्थिक विकास आणि प्रादेशिक विकास होतो.
४. इंटरनेटचा वापर वाढला असून ऑनलाईन पद्धतीने व्यवहार केले जातात.
५. पर्यटनामुळे २०१८ पर्यत भारतात परकिय चलन, रोजगार, जीडीपीमधील योगदान यात वाढ होण्याऐवजी घट होताना दिसत आहे.

उपाययोजना

भारत प्रदुषण मुक्त करावे, पर्यटनात राजकीय शीरकाव नसावा. प्रादेशिक स्तरावर पर्यटन उद्योगाला चालना देण्याकरिता सरकारी पातळीवर प्रयत्न व योजना राबविण्यात याव्या. त्यामुळे रोजगारांच्या संधी निर्माण होतील. पर्यटकांना पुरेशा सोयी सुविधा आणि सेवा पुरविण्यात याव्या. टयुरिस्ट गाईड यांना विशिष्ट प्रशिक्षण देण्यात यावे. परिपूर्ण ज्ञान त्यांना देण्यात यावे जेणेकरून योग्य माहिती पर्यटकांना पुरविली जाईल.

संदर्भ

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वजनदार तोफ आहे. या तोफेची लांबी ११ फुट, घेर ५ फुट आणि ५ कडे असलेली पुरातन तोफ आहे. या तोफेलाच लोक 'तोफमाय' च्या नावाने ओळखतात. इंग्रजांनी या तोफेला नेण्याचा प्रयत्न केला. परंतु त्यांना यश आले नाही. बावडी विहीर सानगडीत दोन प्राचीन बावडी विहिरी असुन त्या किल्याचे समकालीन आहेत. या विहिरीत उतारण्यासाठी ५० ते ६० पायऱ्या व आतील भागात मोठमोठया खोल्या आहेत. या खोल्यात भोसलेकालीन लोक युध्दाचे वेळी सुरक्षिततेच्या दृष्टीने मुक्काम करीत होते. आणि गुप्त खलबने करण्याकरीता उपयोग करीत असावेत. खोल्याचे पुढे आत गेल्यानंतर खोल गर्तेत वर्षभर थंड पाणी असते. ते कधीही आटत नाही हे पाणी दैनंदिन जिवनात उपयोगी आणले जाते.

उपाययोजना :—

महाराष्ट्र शासन व भारतीय पुरातत्व विभागामार्फत भारत सरकारतर्फे या किल्ल्याची डागडुजी व दुरूस्ती करून या ठिकाणी पर्यटनाचे उत्तम व्यवस्था निर्माण केल्यास येथील बेरोजगारांना चांगल्याप्रकारे कामकाज मिळुन आर्थिक सुबत्ता मिळवुन देण्यास सहानगड किल्ला महत्वाचा ठरेल.

निष्कर्ष :—

भारत सरकार तर्फे किल्ल्याचा विकास करून रोजगाराच्या संधी उपलब्ध कराव्या.

संदर्भ सुची:—

१. प्रा. नागतोडे डॉ. पारधी — पर्यटन भुगोल
२. विट्ठल धारपुरे — पर्यटन भुगोल
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तुमसर तालुक्यातील पर्यटन विकास एक भौगोलिक अभ्यास

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विदर्भ महा. लाखनी

डॉ. किशोर ठाकरे
वाय.सी. कॉलेज लाखांदूर

कु. आशा बानकर
संशोधक रा.तु.म.नागपूर विद्यापीठ

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सारांश :—

तुमसर तालुका हा भौगोलिक दृष्ट्य तीन जिल्ह्यांना लागुन असलेला जिल्हा आहे. पुर्वेला गोंदिया, पश्चिमेला नागपूर व उत्तरेला मध्यप्रदेश राज्यातील बालाघाट जिल्हा या तिनही जिल्ह्यातील पर्यटकांना आकर्षीत करण्याची क्षमता तुमसर तालुक्यात आहे. कारण तुमसर तालुक्यात चांदपूर हा धार्मिक गरुडमुखी मारोती मंदीरासाठी ख्यातनाम आहे. मंदीर हे कमी उंच टेकडीवर असून टेकडीच्या पायथ्याशी नौका विहारची सुविधा आहे. चांदपूर जलाशयावर बांध असल्याने पर्यटक आवर्जुन लहान मुलांना दाखविण्यासाठी घेऊन जातात.

पर्यटकांच्या दृष्टीकोनातून तहसील मध्ये रस्त्याची सुगमता वैद्यकीय सोयी सुविधा व खानावळी व विश्रामगृह असले तरी शासनाने पर्यटकांच्या मानसिकतेचा विचार करुन चांदपूर हे पर्यटन केंद्र म्हणून येथे शासकीय वस्तीगृह बालोद्यान, प्राणीसंग्रालय, मत्स प्रदर्शनी, रस्त्याचे चौपदरीकरण, व कास्याच्या भांडयाचे विक्री केंद्र, ए.टी.एम. सुविधेची सुगमता निर्माण केल्यास तुमसर तालुक्यात मोठ्या प्रमाणात पर्यटनाचा विकास होईल.

प्रस्तावना :—

महाराष्ट्राच्या पूर्वेला भंडारा जिल्हा वसलेला आहे. इ.स. ११०० मध्ये उत्खननातून मिळालेल्या शिलालेखातील उल्लेख असलेल्या भनारा या शब्दाचा अपभ्रंश होऊन भंडारा हा शब्द मिळालेला आहे.

पूर्वी या प्रदेशात गवळ्यांचे राज्य होते. १८६७ मध्ये बालाघाट (म. प्र.) जिल्ह्याची निर्मिती होऊन तुमसर नगर पालिकेची निर्मिती झाली. तुमसर तालुका मुख्यालयाची स्थापना इ.स. १९८१ मध्ये झाली. तुमसर तालुका मॅग्नीज खनिज उत्पादनासाठी प्रसिध्द असून डोंगरी बु. चिखला व नाकाडोंगरी येथे मॅग्नीज मिळत असुन देव्हाडा येथे मॅग्नीज शुध्दीकरण कारखाना आहे. वैनगंगा नदीच्या किनाऱ्यावर ऊस उत्पादन होत असल्याने आष्टी व कवलेवाडा येथे गुळाचा देशी कारखाना आहे. तर आता देव्हाडा येथे नविन साखर कारखाना सुरु झाला.

अभ्यास प्रदेश :—

प्रस्तुत लघु शोध निबंधासाठी महाराष्ट्रातील पूर्व सिमेवरील भंडारा जिल्ह्यातील तुमसर तालुक्यातील पर्यटन स्थळाच्या अभ्यास केला गेला आहे.

तुमसर तालुक्याचा अक्षांशिय विस्तार २१ अंश १७ मि. उत्तर ते २१ अशं ३७मी. व रेखांशिय विस्तार ७९ अंश २७मी. पूर्व ते ७९ अंश ५७ मी. या दरम्यायन आहे. तालुक्याच्या उत्तरेस मध्यप्रदेश, पूर्वेस गोंदिया जिल्हा, दक्षिणेस मोहाडी तालूका व पश्चिमेस नागपूर जिल्हा आहे.

अभ्यासाची उद्दीष्टे :—

तुमसर तालुक्यातील भौगोलिक वैशिट्यांचा पर्यटनाच्या दृष्टीने विचार करुन पर्यटनासोबतच पर्यटन पूरक इतर व्यवसाय वाहतूक, वैद्यकीय निवासी व्यवस्था, खानावळी, बाजारपेठा, बालोद्याने यां सुगमतेचा अभ्यास प्रामुख्याने हाती घेतला आहे.

परिकल्पना :—

तुमसर तालुका पर्यटनाच्या दृष्टीकोणातून शासनाचे धोरण उदासीन आहे.

महिती व आकडेवारीचे स्त्रोत :—

प्रस्तुत अभ्यास प्राथमिक व द्वितीयक स्त्रोतावर आधारलेला आहे. अभ्यासासाठी शासकीय प्रकाशनामध्ये उपलब्ध माहितीचा वापर केला गेला आहे. उदा. जनगणना पुस्तीका व ऋतूविक अहवाल जि. भंडारा व पर्यटन पर्यटकाच्या सोयी सुविधा जाणून घेण्याकरीता त्याचे मनोगत प्रस्तावलीच्या सहाय्याने एकत्रीत केले आहे.

बिज संज्ञा :— अभ्यास प्रदेश, हवामान, पर्यटन केंद्र, शासकीय धोरण, पर्यटन केंद्राची सुगमता व भौगोलिक वैशिष्ट्ये, उपाय योजना.

हवामान :—

तुमसर तालुक्यातील हवामान उष्ण स्वरुपाचे असून अभ्यास क्षेत्रापासून समुद्र किनारपट्टीची लांबी जवळ—जवळ ९०० कि.मी. अंतरावर आहे. त्यामुळे येथील हवेत आद्रंता दिसून येत नाही. त्यामुळे पावसाळ्य शिवाय पर्जन्याचे कोणतेही लक्षणं येथे दिसून येत नाही.

अ. पर्जन्यमान :—

या तालुक्यातील वार्षिक पर्जन्य ११२४.७ मि.मी. असून सरासरी विचलन २०३.४ असल्याने सिंचनाशिवाय शेती करणे नुकसानकारक आहे.

ब. उष्णतामान :—

तुमसर तालुक्यातील तापमान विषय स्वरुपाचे असून कमाल तापमान मे महिन्यात ४७.५० सी.जी. तर किमान तापमान ५.००० सी.जी. असल्याचे दिसून येते.

मृदा :—

तुमसर तालुक्यात ग्रॅनाइट निसेस सॅन्डस्टोन या सारख्या जुन्या खडकापासून येथील माती तयार झाली आहे.

तालुक्यात सर्वदूर साधारणत: लालसंगाची बरडी मृदा आढळून येते तर बावनथडी व वैनगंगा नदीच्या काठावर कनारी मृदा असल्याचे आढळते. तर अंबागड, चांदपूर व बावनथडी या टेकड्यांच्या पायथ्याशी खरडी मृदा असल्याचे आढळून येते.

सिंचन :—

या तालुक्यातील वैनगंगा व बावनथडी ह्या दोन प्रमुख नदया आहेत. तालुक्याच्या उत्तर सिमेवरुन पश्चिम—पूर्व दिशेला बावनथडी नदी वाहत येऊन तालुक्याच्या इशान्येला वैनगंगा नदीसोबत बपेरा येथे

संगम होते. वैनगंगा ही मोठी नदी असल्याने संगम स्थळानंतर या नादीला वैनगंगा या नावाने ओळखले जाते. या नदीच्या उपनदयांची प्रवाह प्रणाली साधारणत: वृक्षाकार स्वरुपाची असलेली आढळून येते.

तुमसर तालुक्यातील पर्यटन स्थळांचा अभ्यास:—

अंबागड किल्ला :—

या परिसरात आंब्याची झाडे अधिक प्रमाणात असल्यामुळे या भागाचे नाव अंबागड पडले. गोंड राजा बखा बुलदशाहा याच्या कालावधी मध्ये राजाखान पठान नावाच्या सुभेदारायने हा किल्ला बनविला. इंग्रजाच्या काळात याचा उपयोग कारागृहासाठी करण्यात येऊ लागला. या किल्याच्या प्रवेश द्वार हा त्या काळातील नकाशा कलेची आठवण करुन देतात किल्याच्या आत जाताच दक्षिण मुखी गणेशजी व हनुमानाचे मंदिर आहे. अंबागडच्या उच्च शिखरावर चढल्यावर किल्याच्या चारही बाजूचे अप्रतिम नैसर्गिक सौंदर्य पहावयास मिळते. जवळच वनविभागाने आयुर्वेदिक वनस्पतीची लागवड केलेली नर्सरी आहे. विज्ञान विषयाची मुले येथे भेट देऊन वनस्पतीचा अभ्यास करतात.

गायमुख देवस्थान :—

तुमसर पासून १८ कि.मी. अंतरावर मिटेवानी मार्गावर गायमुख देवस्थान असून हनुमान मकरध्वज अंबामाई व गोरखनाथ अशी यांची ३ मंदीरे आहेत. या मंदिरात गायमुख हे जलकुंड आहे. येथे भुमिगत पाण्याचा झरा असून याचे पाणी गायमुखातून सतत टाकीत पडत राहते. त्यामुळेच या स्थळाचे नाव गायमुख पडल. येथील पंचमुखी शिवशंकर या ठिकाणी शिवरात्रीला भव्ययात्रा भरते. गायमुख पहाडीवर चढल्यास चौऱ्यागड नावाचे ठिकाण आहे. येथे देवी देवतांच्या मुर्त्या आहेत. गायमुखच्या जवळ पांगडी निसर्गरम्य परीसराने नटलेला तलाव आहे. व बाजूला हिवर नावची गुफा आहे. या गुफेतून भाविक सरपटत आत जाऊन शिव पार्वतीचे दर्शन घेतात.

सिंधपूरी :—

तुमसर वरुन १२ कि.मी. अंतरावर सिंहोरा गाव असून जवळच सिधपूरी मध्ये तळ्याच्या काठावर हनुमानाचे उंच शिखर असलेले मंदिर कला व कौशल्यानी तयार केले आहे.

चांदपूर :—

सिहोरा पासून १२ कि.मी. अंतरावर तलावाच्या बाजुला असलेल्या टेकडीवर निंबाच्या झाडाखाली गरुडमुखी हनुमानजीची मुर्ती आहे. व या मुर्तीचा आकार दररोज वाढत जातो अशी आख्यायिका आहे. चांदपूर टेकडीवर सपाट माथ्यावर एक झरा आहे. येथील कुंडाचे पाणी कधीच संपत नसल्याने मंदीरातील तसेच इतर भक्तगण या पाण्याचा वापर पुजा, आंघोळ व महाप्रसादासाठी करतात.

गोबरवाही :—

सातपुडा पर्वतरांगेतील नागझिरा पहाडीवर हे प्राचीन तिर्थस्थान आहे.येथे नेहमी पाण्याने भरलेला जलकुड असतो. व नागपंचमीला येथे मोठी यात्रा भरते. या परिसरात नागाचे वास्तव्य अधिक प्रमाणात असल्याकारणाने या स्थळाला नागझीरा हे नाव पडले आहे.

माडगी :—

वैनगंगा नदीच्या तिरावरच तिरोडा मार्गावर हे देवस्थान असून येथे रक्षा विसर्जीत करुन नदीच्या पाण्यात आंघोळ करुन अंत्यविधी पार पाडली जाते. कोसा हा टसर नावाच्या किडयंना ऐन व अर्जुन नावाच्या झाडाची लागवड करुन त्या झाडाचा पाला खाऊन हे किटक जिवत राहतात.

तुमसर तालुक्याच्या पर्यटनाच्या दृष्टीकोणातून आर्थिक व सामाजिक अभ्यास :—

तुंब नावाच्या मासोळीच्या नावावरुन तुमसर हे नाव पडले आहे. तुमसर तालुक्याचे भौगोलिक क्षेत्र २००९च्या जनगणनेनुसार ५५५२१ हेक्टर असून त्यातील १८ टक्के क्षेत्र जंगलानी व्यापलेला आहे. व ४४.४० टक्के जमिन पीक लागवडी खालील आहे. तुमसर तालुक्यातील लोकसंख्या वाढीचा सरासरी दर ७ ते ८ टक्के आहे. क्षेत्रफळाचा विचार करता लोकसंख्येची घनता — ३७७ चौ.कि.मी. आहे. तर लिंग गुणोत्तर ९९२ दर हजारी असा आहे. तालुक्यातील अनुसूचित जातीचे व जमातीचे प्रमाण एकूण लोकसंख्येत सरासरी १२ टक्के अनुक्रमे आहे. तुमसर तालुक्यातील २०११ च्या जनगणेनुसार ९७.११ टक्के गावात शिक्षणाची सोय उपलब्ध होती व आज जवळपास

सर्वगावात शिक्षणाच्या सोयी सुविधा उपलब्ध आहे. जवळपास तालुक्यातील १५०० पेक्षाअधिक लोकसंख्या असलेल्या व गावात वैद्यकीय सोयी सुविधा जवळपास १०० टक्के उपलब्ध आहेत व तालुक्यात ५०० पेक्षा अधिक लोकसंख्या असलेल्या गावात बसस्थानक असून जवळपास तालुक्यातील सर्व गावे डांबर रोडांनी जोडलेले आहेत.

निष्कर्ष :—

भंडारा जिल्ह्यातील भौगोलीक, नैसर्गिक, सामाजिक व आर्थिक दृष्टीकोनातून सुजलाम सुफलाम असा तुमसर तालुका हा पर्यटनासाठी अतिशय उत्कृष्ट प्रदेश असून या तालुक्यातील एकुण भौगोलिक क्षेत्राच्या १८ टक्के क्षेत्र हा जंगलाचा असून ह्या जंगली भागात मधमोह, डिंक लाख अशी अनेक रान मेळ्यतून आदिवासी लोकांना उत्पन्न होते. तर सातपुडा व गायमुख पर्वत श्रेणीतून वाहणाऱ्या असंख्य नदय बावनथडी व वैनगंगा या नदयंना येऊन भेटतात. त्यामुळे येथे बारमाही पाणी दिसून येते. तसेच सोड्न, चांदपूर हे २ मोठे तलाव असून नाकाडोंगरी, डोंगरी/बुज, पौणार खैरी, सोरना, चिखला मिटेवाणी, आसलपाणी असे लहान ७ तलावासोबतच अनेक मालगुजारी तलाव तुमसर तालुक्यातील सिंचन व मासेमारी व्यवसायासाठी लाभदायक आहेत.

तुमसर तालुक्यातील पर्यटनाच्या दृष्टीकोनातून तुमसर तालुक्यातील एतिहासिक राजकीय वास्तू म्हणजे अंबागड किल्हा हा पुरातन तत्व विभागाच्या देखरेखीत असून याचा पर्यटनाच्या दृष्टीकोनातून जिर्णोद्धार करण्यात आला आहे. तसेच येथील आयुर्वेदिक औषधी वनस्पतीच्या नर्सरीला दरवर्षी विज्ञानाचे विद्यार्थी भेट देतात. तसेच जवळच १५ कि.मी. अंतरावर चांदपूर हा गरुड मुखी जागृत मारोती मंदीर म्हणून प्रसिध्द आहे. येथे नवस व पूजा अर्चना झाल्यावर चांदपूर जलाशयात पर्यटक नौकाविहाराचा सुध्दा आनंद घेतात. तर माडगी हे ठिकाण वैनगंगंच्या काठावर असून मृतकाचा रक्षा विसर्जीत झाल्यावर अंतविधीची पूजा ही नदी काठावरील नरसिंहाच्या मंदिरात केली जाते. तर भूगोलाचे अभ्यासक नदीच्या अवस्थेचा व खडक रचनेचा अभ्यास करण्यासाठी ह्या ठिकाणी शैक्षणिक सहलीचे आयोजन करतात. तुमसर तालुक्यातील सिंधपूरी येथील तलावाच्या काठावरील हनुमानाचे मंदीर येथील कोरीव नक्षीकामाकरीता प्रसिध्द आहे. तसेच निसर्ग नियमना विरुध्द कधीही न आटणारे, गोबरवाही येथील जलकुंड पर्यटनाचे विशेष आकर्षण आहे.

उपाययोजना :—

नैसर्गिक पर्यटन केंद्रे तुमसर सौंदयनि सुजलाम, सुफलाम असलातरी हा प्रदेश पर्यटनासाठी उपयुक्त व सोयी सुविधांनी पूर्ण नाही. कारण शासकीय योजना ह्या दूरदृष्टीकोनातून अजूनही योग्य नाही. ह्या पर्यटन ठिकाणी जाण्यासाठी रस्ते असले तरी त्याचे चारपदरीकरण व योग्य डागडुजी होणे गरजेचे आहे. पर्यटन केंद्राच्या ठिकाणी शासकीय विश्रामगृहा असणे आवश्यक आहे. सोबतच बालोद्यान व पर्यटनाच्या दृष्टीकोनातून घोडागाडी, टांगा, पॅराग्लायडींग, रोप व बगिचे, फाऊन्टेनशी पारंपारीक लोकनृत्य गृहे अशी व्यवस्था केल्यास बऱ्याच लोकांना रोजगार मिळून क्षेत्रिय विकास होऊ शकातो.

संदर्भ सुची :—

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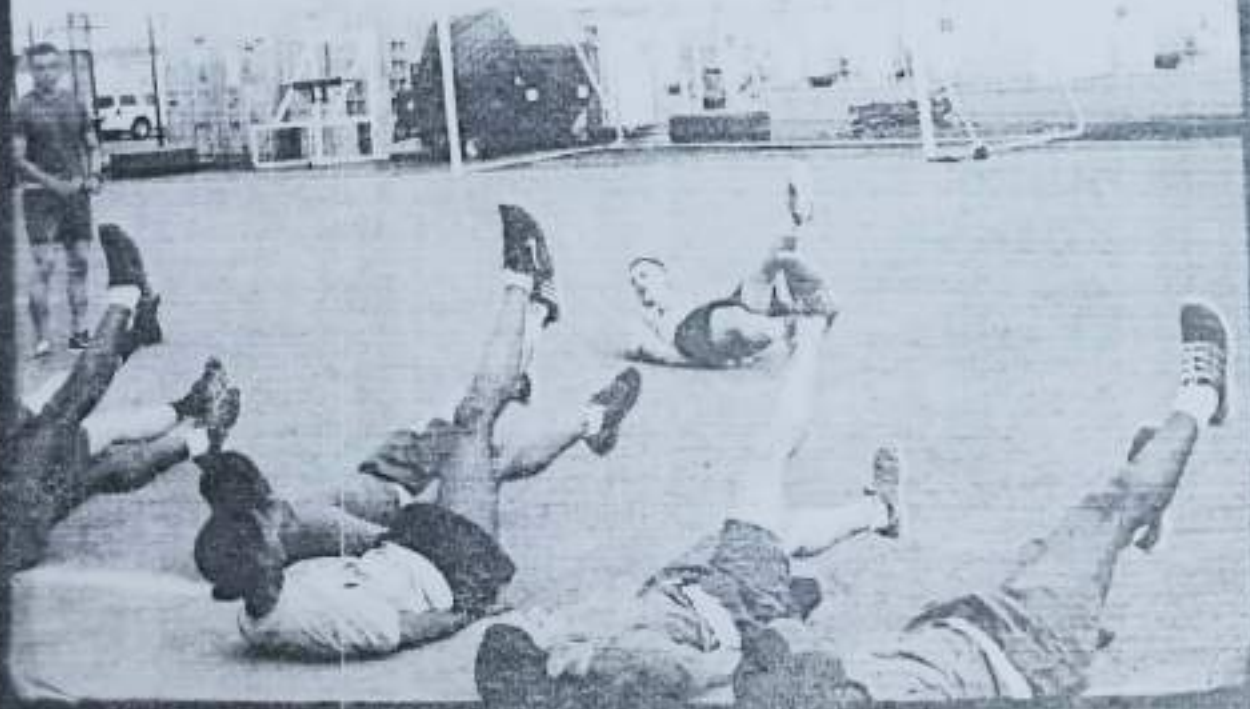

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प्रो. डॉ. विनोद मारोतराव बाली का शारीरिक शिक्षा के क्षेत्र में योगदान सराहनीय है। आपने अपनी एम. ए., एम.काम, एम.पी.एड., पीएच.डी. की पदवी आर.टी.एम., नागपुर विश्वविद्यालय, नागपुर से सम्पन्न की। इसके पश्चात् आपने एम.फिल. अमरावती विश्वविद्यालय, अमरावती से सम्पन्न की। लेखन कार्य में भी उनकी अपार रुचि है। इसी रुचि के कारण उन्होंने लेखन का मार्ग चुना। वे अनेकों राष्ट्रीय व अंतर्राष्ट्रीय सेमिनारों, कॉन्फ्रेंसों, शोध पेपरो आदि के लिए अपने महत्त्वपूर्ण लेख लिखते रहते हैं।

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भूगोल शास्त्र शिक्षण

(Geography Education)

डॉ. जगन्नाथ विठोबा दडवे

डॉ॰ जगन्नाथ विठोबा दडवे एक बहुमुखी गुण वाली, योग्य, वरिष्ठ प्रशासक तथा शिक्षक तथा प्राचार्य है। वर्तमान में ये यशवंतराव चव्हाण कला, वाणिज्य और विज्ञान महाविद्यालय, लाखनी, जिला- भंडारा, महाराष्ट्र में सहायक प्राध्यापक के पद पर कार्यरत है। इन्होंने एम.ए. (भूगोल शास्त्र), एम.फिल. एवं पी.एच.डी. की शिक्षा प्राप्त की है। डॉ॰ दडवे ने 16 शोध पत्रों को राष्ट्रीय एवं अंतर्राष्ट्रीय स्तर की पत्रिकाओं में प्रकाशित किया है।

डॉ॰ दडवे के कुशल मार्गदर्शन में 7 विद्यार्थियों ने पी.एच.डी. की उपाधि ... की है।

... को 24 साल वर्षों का अध्यापन अनुभव प्राप्त है। वे आठ वर्षों से प्राचार्य के पद पर कार्यरत ... वर्षों तक परीक्षा नियंत्रक (Controller of Examination) के पद पर गोंडवाना ... गढ़चिरोली, महाराष्ट्र में कार्यरत रहे हैं।

... ने G.U.G. में B.C.U.D. के निदेशक के पद पर भी कार्य किया है। इसके N.S.S. जिला ... जिला- भंडारा, महाराष्ट्र के पद पर भी कार्य किया है। वे विभिन्न राष्ट्रीय सम्मेलनों में तकनीकी ... के पद पर भी कार्यरत रहे हैं।

... कॉलेज में विभिन्न राष्ट्रीय एवं राज्यकीय स्तर के सम्मेलनों का सफलतापूर्ण आयोजन भी ... इन्होंने विभिन्न स्थानों पर भौगोलिक अध्ययन यात्रा का आयोजन भी किया है।

... 'SAKHI SAHYADRI' कार्यक्रम में विशेषज्ञ के रूप में लाइव फोन पर भी भाग ले...

***

... शब्दों से मिलकर बना है– भू + गोल। हिन्दी में 'भू' का अर्थ पृथ्वी और 'गोल' का अर्थ ... अंग्रेजी में इसे Geography कहते हैं जो दो यूनानी शब्दों Geo (पृथ्वी) और ... (वर्णन करना) से मिलकर बना है। भूगोल का शाब्दिक अर्थ "वह विषय जो पृथ्वी का सम्पूर्ण ... भूगोल है"। भूगोल वह शास्त्र है जिसके द्वारा पृथ्वी के ऊपरी स्वरूप और उसके प्राकृतिक ... (जैसे पहाड़, महादेश, देश, नगर, नदी, समुद्र, झील, डमरूमध्य, उपत्यका, अधित्यका, वन ...) का ज्ञान होता है। पृथ्वी की सतह पर जो स्थान विशेष हैं उनकी समताओं तथा विषमताओं का ... का स्पष्टीकरण भूगोल का निजी क्षेत्र है।

... "भूगोल शास्त्र शिक्षण" में भूगोल शास्त्र से सम्बन्धित सभी आवश्यक तथ्यों एवं ... का सरल एवं सुगम हिन्दी भाषा में वर्णन किया गया है। आशा की जाती है कि प्रस्तुत ... भूगोल शास्त्र शिक्षण के विद्यार्थियों, परीक्षार्थियों, अध्यापकों आदि के लिए बहुत उपयोगी सिद्ध ...

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Dr. Jagannath Vithoba Dadve

Dr. Jagannath Vithoba Dadve is a versatile, talented, senior administrator, educator and Principal. Presently he is working as Principal in Yashwantrao Chavhan Arts, Commerce and Science College, Lakhandur, District- Bhandara, Maharashtra.

Dr. Dadve has completed his M.A. (Geography) and M.Phil., and was awarded Doctor of Philosophy in Geography.

Dr. Dadve has published 20 research articles in national and international journals.

Under his able leadership 7 Students has completed Ph.D. while 7 another students were awarded Master of Philosophy degree.

Dr. Dadve has long teaching experience of 24 years. He is working as Principal since last Eight (8) years. He has also worked as Controller of Examination in Gondwana University, Gadchiroli, Maharashtra.

Dr. Dadve has also worked as Director of B.C.U.D. in G.U.G. He has worked as N.S.S. District Chairman in Bhandara District, Maharashtra. He has also worked as Chairman in Technical Session in various National Conferences.

Dr. Dadve has successfully organised various national and state level conferences, workshops and seminars in the college. He has also arranged Geographical Study Tour in various places. He has also participated as an Expert for Live Phone In Programme 'SAKHI SAHYADRI'.

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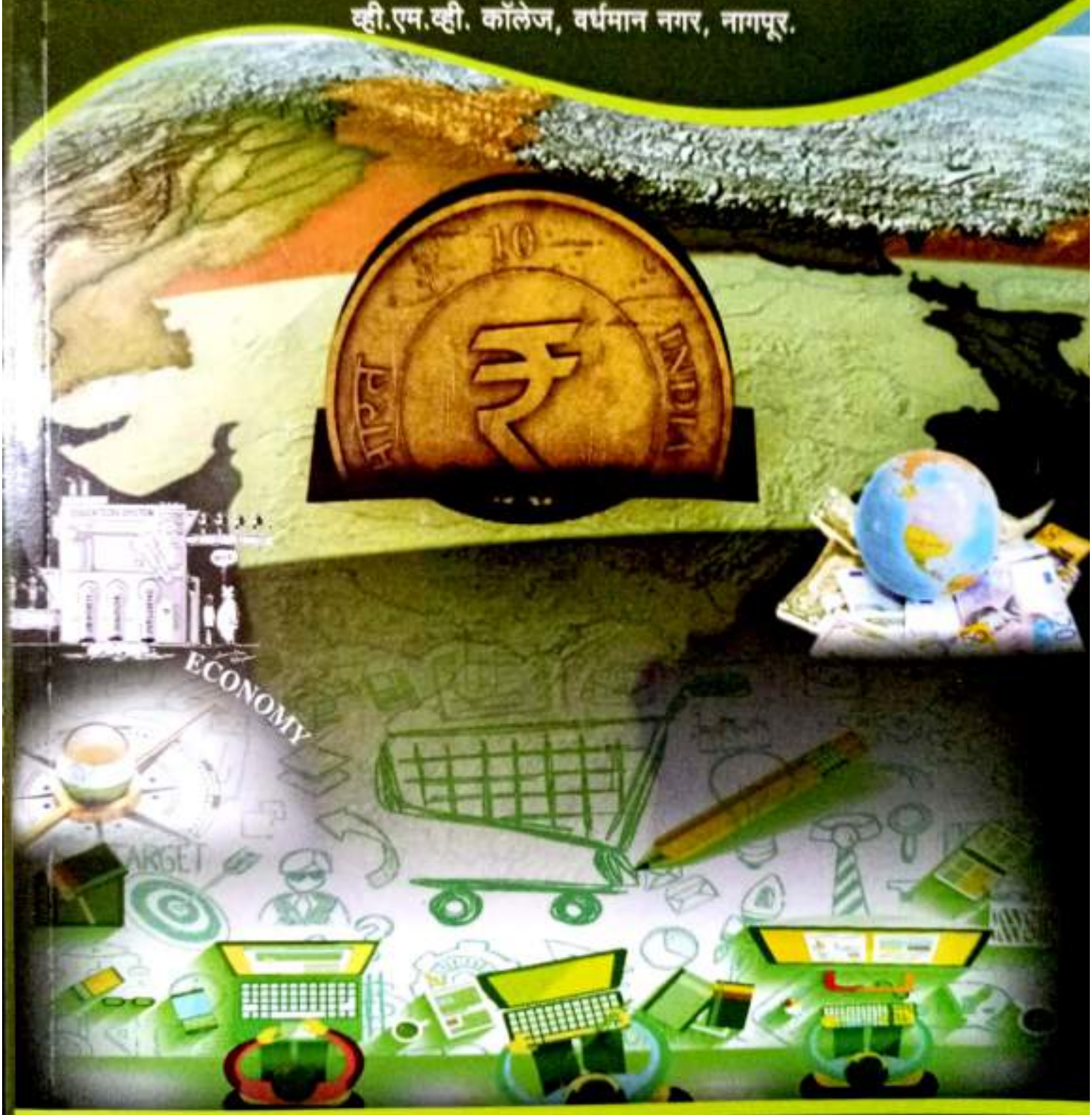

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Impact of Electronic commerce on Consumer Buying Behaviour

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Abstract: The main aim of the paper is to accomplish measurable describing the actuality of internet shopping in the case of the India in order to explain the progress of internet shopping and its impact on consumer behaviour. The paper construct on the related literature. Furthermore, the future progress of internet shopping will be measured and deep evaluation of consumer behaviour connecting dissimilarnations. This paper help the research questions that with current trends and various problems in internet shopping, and principle elements for consumer behaviour. As well, the finding of the study shows that internet consumer trust and detectable risk have strong impacts on their buying decisions. Privacy concerns, security concerns, consumer's trust are the main factors for using internet for shopping, the conviction on websites impact to the buying decision of any consumer. Further, the experiential result notified how the Electronic Commerce companies to build marketing strategies though the research data and analyzing result.

Key words: Electronic commerce, Impact, Consumer Buying Behaviour.

1. Introduction :

The internet is being developed speedily since last two decades, and with related digital economy and emerging economy that is driven by information technology also being developed worldwide. Behind a long time growth of internet, which quickly augmented internet users and highly speed internet connection, and some updated technology also have been developed and used for web developing, those guide to firms can promote and enhance images of product and services through web site. Therefore, according to Arjun Mittal, details of 132 product information and better service attracts more and more people changed their consumer behaviour from the traditional method to more rely on the internet shopping. Say to other word, more companies have realized that the consumer behaviour transformation is required trend, and thus change their marketing strategy. As the current researches have indicated that, the internet shopping particularly in business to consumer has grow and online shopping become more popular too many people. Main reasons of rapid growth of internet shopping are which mainly due to the benefits that internet provides. Firstly, the internet offers different types of convenience to consumers. Noticeably, consumers do not require go out looking for product details as the internet can assist them to search from online sites, and it also helps evaluate connecting each sites to get the lowest price for purchase. Furthermore, the internet can increase consumer use product more efficiently and effectively than other channels to satisfy their requirements. Within the various search engines, consumers save time to access to the consumption related information, and which information with combination of descriptions, sound, and very deeply manuscript description to assist consumer learning and selecting the most suitable product (Moon, 2004). Though, internet shopping has prospective risks for the customers, such as payment safety, and after service.

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Due to the internet technology progress, internet payment newly becomes prevalent way for purchasing goods from the internet. Online payment raise consumptive effectiveness, at the equal time, as its virtual assets reduced online security.

Objective of Study: The study has following objectives

1) To understand the concept of Electronic Commerce

2) To study the Impact of E-commerce on Consumer Behaviour

3) To study online and offline marketing

Research Methodology :

In this research paper used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

2. Difference between online/offline Stores :

There are two ways of selling and purchasing, one is offline and second is online. The online shopping has been rapidly developed, particularly in consumer products industry, there still have a large difference among traditional and online consumer shopping. Referred to sales in the Indian consumer product industry, the online sales engaged at a very low down percentage rate. So as to could be caused by a lot of reasons, however the most importance is the benefits are present in both traditional shops and online market; together of them have definite characteristics. For instance, the traditional seller can supply convenience in parking and shopping, it allows customers come to observe and check the quality of goods before they buy, and the after service is more directly to customers. Even, the traditional store has restricted number of goods, and the selling price is higher than online store. with valuation, we can find out the disadvantage of traditional store are more likely as the benefits of online store, in compare, the limitation of online store is also seems as the benefits of traditional store. It is clear from the summary of internet and online shopping expansion that e-commerce is being used in many corporations due to the dramatic development of technology and cut-throat benefits of online selling. Also, the progress of the usage by individuals also becomes main contributors to the development of online shopping. Comparatively only some studies have investigated in the online shopping and impact on consumer behaviour. The before studies are more focus on the marker's point of view, such as how to set up a more efficient marketing channel online rather than the E-commerce: It's Impact on consumer Behaviour one hundred and thirty three traditional offline channel. Thus, this study will combines with prior studies from literature reviews, and focus on the impact of the online shopping on consumer behaviours to find out a complete analytical development which show the essential part of business and marketing to filling the consumer's needs, and a deeply understanding of online consumer behaviour as a reference for any e-commerce company to construct marketing strategies.

3. Impact of Internet on Consumer Behaviour :

The topic research about consumer's buying behaviour with the use of electronic commerce or use of internet. The various numbers of sites available of online market and each site have been playing significant role to the buying behaviour of consumers. The internal and external factors affect to the consumer buying behaviour regularly. Internal factors are usually from the consumer's mind, and external factors are come from the environmental circumstances. There are many factors might impact on consumer's behaviours. According to Sheth (1983), the internal influences are diversity of mental processes, which makes attitudes, perception, motivation, learning, self image, and semiotics (Malcolm). The external influences could divide as: Demographics, technology, socio-economics, and public policy; culture; sub-culture; reference groups; and marketing. Warner also suggested that the consumers have two types of motives though shopping, which are first is functional and second is non-functional. Firstly deliberated functional motives are mostly about the time, shopping place and consumer's needs, which could be like one-stop shopping to save time, the ecological of shopping place such as free parking place, lesser price of products and available

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to select from usually range of products. Secondly non-functional motives are more related among culture or social values, such as the brand name of the store. The traditional shopping is purely concerning the customer to purchase their needs. This behaviour will be influenced by the seller's publicity and promotion which attracts customers goes there and purchased products, after that a part of fresh products will be taken home and be used.

3.1 Facilities or Services

According to Wolhander, 1999; Internet provides a large convenience for buyer as the main cause for the shopping online has been agreed by most of researcher and customers. Due to the feature of Internet, it allows customer to shopping online anytime and anywhere, which means customer can browse and shopping online 24/7 hours from house or workplace, which attracts some time-starved shoppers come to internet for save time to searching products in physical store. Moreover, online offers some product ways to save money and time. For instance, buyers do not require go out to the physical store and therefore there is no transportation price. Compare among the traditional shopping, there is no waiting queue for buyers on the internet, and some buyers reported that they undergo pressure from the sales people sometimes, however Internet offers them further pleasant while shopping online (Wolhandler, 1999; GVU's WWW 9th User Surveys, 1998).

3.2 Information and Technology :

The present time is information and technology, so almost every person had been connect the current technology and media. The convenience based on Internet is mostly according to the technology advancement, and which plays a key role through the expansion of Internet shopping. According to Clark,1989; In the last ten years, organizations have realized that the updated technology might impact on Internet shopping deeply, and thus there are many significant technologies like virtual reality and three D techniques have adopted to increase large competitive advantages. According to White, 1997; Information technology has used in the form of the Internet improved better characteristic of product information, which help buyers decision making. Through the bigseries of surveys about the Internet use, the progress of Internet and its users have been fast increased in the last decade.

3.3 Internet Shopping :

The current trends are shopping through the Internet. According to Jarvanpaa and Todd, 1997, Internet shopping and traditional shopping are partaking a lot of similarities, at the same time, it still exists some differences between them, such as the Internet shopping could supply convenience and interactive services, and the traditional shopping could gives customers more comfortable shopping environment and good quality of products by Lee and Chung, 2000. Equally aspect of shopping malls are demanding to getting better their services by learn commutatively from each other, such as traditional shopping malls supply more parking spaces, further counters, and closer to residential area in order to improve services in convenience; Online shopping malls accept virtual truth by Lee 2001. In the subsequent sections, the study would provide the nature of online shopping at first, then the E-commerce web site will be indicated to understand the fundamental nature of internet shopping, later than, online safety, privacy and reliance will be discussed.

4. Consumer Trust in Internet Shopping :

The presently internet shopping had been significant increased. Many customers are unconvinced or doubtful regarding the functional mechanisms of e-commerce; it's in clear processes and effects, and the feature of many products that are available online. Their purchase products and services are the generally based on their level of trust in this product or services, and sellers whichever in the physical store or online shops. Online purchasing trust is the basic and important part for creating a relationship with customers. The trustworthiness of E-commerce web site is very relying on the how much privacy security can be provided. For instance, a very technological competence can be a factor to influence the trustworthiness (Singh and Sirdeshmukh, 2000). While mentioned over that the web seller can supply third-party authentication to e-commerce web site, and as this privacy and safety strategies are used, customers will believe their e-commerce dealings by Internet are safe and sound and thus the site is more consistent to

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them. Alongside this point, if the Ecommerce web site can provide the information about their customer services, location of the office, contact telephone number, and a help button on the web site, customers could also increase their trustiness as they can feel that the online retailers is truly exist (Lohse and Spiller, 1998). There for augmented the online shopping from the last decades.

Conclusion :

The research study is mainly focus on the factors from the Internet and examines those factors that affect the consumer's online shopping behaviours. It starts with the current status of the Internet evolution, and mentioned the environment of marketing as 136 Arjun Mittal representations and its difference with physical stores which in order to show the emergent history of online shopping since the Electronic Commerce turn into popular. The study focused on the Internet shopping (consist of the nature of internet shopping, E-commerce website, and trust and reliability, online security, online privacy,) and online consumer behaviours (consist of motivation, environment, shopping and decision making procedure). Those factors were looked at, and examined to disclose the impact at online consumer behaviours. Finally conclude that, the factors from the Internet that influenced or prevented online consumer behaviours need to be carefully concerned by the online retailers, who can use the proper marketing communications to carry the customer's buying decision making process and get better their performance.

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महात्मा गांधी

जीवन, कार्य एवं विचार

संपादक
डॉ. सूर्यकांत कापशीकर

राष्ट्रपिता महात्मा गांधीजी की १५० वी जन्मवर्ष गाठ के उपलक्ष में
उनके कार्य के अवलोकनार्थ संपादित ग्रंथ

महात्मा गांधी
जीवन, कार्य एवं विचार

संपादक
डॉ सूर्यकांत कापशीकर
इतिहास विभागप्रमुख
यशोदा गर्ल्स आर्ट्स अँड कॉमर्स कॉलेज
स्नेह नगर, नागपूर ४४००१५

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स्नेह नगर, नागपूर ४४००१५

प्रकाशक:
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प्रथम आवृत्ती:
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राष्ट्रपिता महात्मा गांधी आणि राष्ट्रसंत श्री तुकडोजी महाराज यांचा ऋणानुबंध

प्रा. डॉ. भारत विठोबा नखाते इतिहास विभाग प्रमुख यशवंतराव चव्हाण कला वाणिज्य व विज्ञान महाविद्यालय लाखांदूर, जि. भंडारा

भारत देशातील एकमेव राष्ट्रपिता आणि राष्ट्रसंत यांचे ध्येय उद्देश, आचारविचारांचे विवेचन प्रस्तूत लेखात करण्याचा प्रयत्न केलेला आहे. "असा हाडामासाचा माणूस या पृथ्वीतलावर खरोखर होऊन गेला, यावर पुढील पिढ्यांचा विश्वास वसणार नाही". असे अल्बर्ट आईनस्टाईन यांनी म्हटले आहे.भारताच्या सामाजिक, राजकीय, आर्थिक क्षेत्रातील जडणघडणीत गांधीजींचे स्थान महत्वपूर्ण आहे. राष्ट्रसंत श्री तुकडोजी महाराजांनी "ग्रामगीता" ग्रंथ ग्रंथ लिहिला त्यामध्ये 'भूवैकुंठ' या ३९ व्या अध्यायात ते लिहितात,

"ग्रामराज्यचि रामराज्य। स्वावलंबन हेचि स्वराज्य।
बोलिले महात्मा विश्वपूज्य। विकास त्याचा सुंदर हा।।"

बॅरिस्टर होऊन देशविदेशातील लोकदु:ख निवारणासाठी आमरण झटलेले, दलितांचे कैवारी, स्वातंत्र्याचे जनक, सत्याग्रहाचे प्रणेते विश्वधर्मी युगपुरुष! १८९६ मध्येच चंपारण्यात ग्रामकुटुंबाचा पाया घातला, ग्रामराज्य हे रामराज्य झाले तरच स्वराज्याचे सुराज्य होईल, हे जाणून आदर्श ग्रामनिर्मितीचा पुरस्कार त्यांनी प्रथम केला. गरीब श्रीमंत,दारिद्रय, रोगराई, पथ, पक्ष, जातीभेदरहीत समाजरचना,जेथे परकेपणाची भावना नाही अशी ग्रामरचना असलेले ग्रामराज्य राष्ट्रसंतांना अभिप्रेत होते.अन्न, वस्त्र, निवारा, आरोग्य, शिक्षण यासहीत सर्व जीवनावश्यक वस्तूंची निर्मिती गावातच झाली पाहिजे यासाठी ग्रामराज्य गावगणराज्य, हमारा गाव हमारा राज ही संकल्पना तुकडोजी महाराजांनी मांडली. स्वयंपूर्ण, स्वावलंबी, आदर्श गाव निर्मीती हे दोन्ही महात्म्यांचे स्वप्न, महात्मा गांधीजी म्हणतात, खेडयांकडे परत चल, तर महाराज आपल्या अभंगात म्हणतात, "चल चल अपुल्या गावाला राहु नको शहराला अन्न नाही वर मरतील उपाशी" यावरुन या दोन महापुरुषांच्या

आचार–विचारात साम्य दिसून येते, राष्ट्रपिता महात्मा गांधी व राष्ट्रसंत श्री तुकडोजी महाराजांच्या विचारांची आज आपल्या देशाला, समाजाला गरज आहे. त्यांचे विचार विस्मृतीत जाऊन लुप्त न होता. चंगळवादी २१ च्या शतकात आाजही महत्वपूर्ण असल्याचे दिसून येते म्हणून त्यांचे जतन करणे गरजेचे आहे.

महात्मा गांधी व तुकडोजी महाराज प्रथम भेट

इ.स. १९३५ सालबर्डी महारुद्र यज्ञामुळे तुकडोजी महाराजांचे नाव संपूर्ण मध्यप्रात व देशभर प्रसिध्द झाले. या महारुद्र यज्ञामध्ये एका २५ वर्षाच्या युवकाने संपूर्ण भारतातील संत, महंत, साधुपंडीत, तपस्वी यांना एकत्रित आणून दहा लाख लोकांच्या उपस्थितीमध्ये यज्ञ संपन्न केला म्हणूनच त्यांच्या संघटन कौशल्याची चर्चा सर्वत्र पसरली.

"लाखो खिलाये आदमी जंगल मे मंगल हो गया।
लाकर हजारो ब्राम्हणों से यज्ञयागादिक किया।।
उस सालबर्डी यज्ञ मे कई दिन भिखारी खा गये।
बाकी बचा, विद्यालयादिक दान देकर खुश किये।।"

या कार्यामुळेच म.गांधीजींना त्यांचे नाव पोहचले. नागपूर येथे आयोजित हिंदी हिंदुस्तानी परिषदचे अध्यक्ष डॉ. राजेंद्र प्रसाद होते. या परिषदेनिमित्त म. गांधीजी तीन दिवस नागपूरला राहणार होते. धंतोली दे. भ.गणपतराव टिकेकर यांचा बंगल्यावर कॉग्रेसच्या नेत्यांचे निवासस्थान होते. तिथं गांधीजींना भेटून श्री हरकरे यांनी गांधीजींची अनुमती मिळविली आणि निमंत्रीत केले. महाराज व रामचरणलाला वगैरे मंडळी तिथे गेले म.गांधीसमोर एकतारी व चिपळयांवर महाराजांनी भजन म्हटल, "ऊँचा मकान तेरा, कैसी मजल चढूँ मै?" हे भजन ऐकून गांधीजी भावमग्न झाले इतके की, भजन संपताच त्यांच्या मुखातून उद्‌गार बाहेर पडले. 'फिरसे कहो महाराज' आणि महाराजांनी पुन्हा तेच भजन धुंदपणे गायलं म. गांधींचे त्यादिवशी मौन व्रत होते. परंतु आश्चर्य वाटले आणि म. गांधीजींचे मौन व्रत तुटले. गांधीजींचे मौन आजपर्यंत कोणीही तोडले नव्हते ही अशक्यप्राय घटना महाराजांच्या अभंगामुळे घडली 'किस्मतसे राम मिला जिनको' हेही भजन गांधीजींना मुग्ध करणारेच ठरले.

दुसरे दिवशीच्या भेटीत म. गांधीजी हसून म्हणाले, 'आपके भजनमे इतना बह गया था कि अपने मौन का भी मुझे ख्याल नही रहा। बडी गजबकी धून थी। तुकडयाजी महाराज मैने सुना है कि आप गॉव गॉव घूमते

है। तो क्या यज्ञ सप्ताह ही करते रहते है? महाराज म्हणाले नही महात्मजी वह तो जनताकी रुची है। वही निमित्त लेकर मै वहा भजनोव्दारा लोगोमें सद्भावना और ईन्सानियत को जगाता हू गांधीजी म्हणाले, 'बहुत अच्छा कार्य है। आपकी वाणीमें प्रेमका जादू है। आप अगर खादी और अस्पृश्यता निर्मूलन का प्रचार कर सके तो बडा काम होगा। महाराज म्हणाले, 'मेरी दिशा वही है, लेकीन मेरा अपना एक ढंग है। किसीपर स्पष्ट रुपसे वजन न डालते हुए भी मै धीरेसे वही परिणाम निकालनेकी कोशिश करता हू। आचारसेही प्रचार होगा।' गांधीजी प्रसन्नपणे म्हणाले,'जरुर जरुर मुझे बडी खुशी हुई आपसे मिलकर।

एक दिन सुना गांधीजी ने मेरा भजन अतिप्रम से।
वे कह गये फिरसे कहो रहते हुए भी मौन से।
हसते कहा फिर दुसरे दिन मेरा मौन छुट गया।
मै मस्त होने पर भजन मे ख्यालसेही हट गया।।

दिनांक ३मे १९३६ रोजी वर्धा येथील गांधी चौकातील लक्ष्मीनारायण मंदिरात महाराजांचे जाहीर खंजेरी भजन कार्यक्रम संपन्न झाला. त्याचे आयोजक सेठ जमनालाल बजाज होते। दुसरे दिवशी म.गांधी, आचार्य विनोबा भावे, तुकडोजी महाराज, आचार्य कालेलकर, श्री. बाबासाहेब विरुळकर आदि मंडळी व्यासपीठावर स्थानापन्न होती. खादीयात्रा नि सुतकताई हा कार्यक्रम होता. भाषणांच्या कार्यक्रमानंतर दहा हजार श्रोत्यांसमोर महाराजांच्या भजनाचा कार्यक्रम संपन्न झाला. महाराजांविषयी संपूर्ण खात्री स्वत: पडताळुन पाहिल्यानंतर म. गांधीजी महाराजांना म्हणाले, 'आपसे मेरा परिचय और अधिक बढे। इसलिए आप एक माह का समय निकालकर यदि मेरी कुटियामे रह सके तो मुझे बडी खुशी होगी। महाराज स्मित करीत म्हणाले, 'बापूजी अभी तो मै पंढरपूर होकर आऊंगा और बादमे आपके साथ जरुर एक महिना बिताऊंगा आप इत्मीनान रखे।'

महाराज सेवाग्राममध्ये

म. गांधी साबरमती आश्रमातून वर्ध्याला आल्यावर प्रथम सत्याग्रहश्रमात नि पुढे मगनवाडीत राहायचे नंतर वर्धापासून पाच मैलवरील शेगावला त्यांनी मुक्काम हलविला. शेठ जमनालालजींनी त्यांना सेवाग्राम आश्रमार्थ भूमी दिली होती. (शेगावचे सेवाग्राम हे गांधींनी दिलेलं नाव मात्र शासनाने १९३८ मान्य केले.) दिनांक १४ जुलै १९३६ रोजी दुपारी ४.०० वाजे दरम्यान महाराज

जेव्हा सेवाग्राम आश्रमात दाखल झाले, तेव्हा गांधीजीची सूतकताई चालू होती. महाराजांसोबत वीर हरकरे आणि सचिन नारायणराव बोडके होते.

"एक घास की कुटी मे आसन था जमाया।
ले हाथ अपने चरखा, कंबल था बिछाया।।

त्यांनी सुहास्य वदनाने महाराजांच स्वागत केलं क्षेमकुशल, प्रश्नोत्तरांनंतर महाराजांच्या प्रार्थनादी कार्यक्रमांच्या व्यवस्थेसाठी नारायण बोडके यांनाही ठेवून घेण्यास गांधीजींनी अनुमती दिली. म. गांधी हसून म्हणाले, 'लेकीन महाराज, हम पूरे एक माहतक तो आपको बिलकुल छोडेंगे नही। हमारा आश्रम जेलही समझिये।' महाराज प्रसन्नपणे म्हणाले, 'गांधीजी। जेल अगर ऐसे आश्रम बन सके तो फिर क्या देखना है।'.गांधीजीनी आपल्या आदिकुटीतच महाराजांच्या निवासाची व्यवस्था केली महाराज म्हणतात,

"थी छोटीसी कुटैया मिट्टी और बास की।
गांधी का था मंदर सुंदर। बड पिपल की छॉव में भूपर।
मै भी वहा रहा था।।"

सेवाग्राम अश्रामात गांधीजींसोबत कस्तुरबामाता, राजकुमारी अमृतकुँवर, श्रीमती लीलावती गांधीजींचे नातू कनूजी गांधी, नात कु.मनू गांधी, खानअब्दूल गफारखान व त्यांच्या एक मुलगा व मुलगी श्रीमती मीराबेन, गांधीजींचे सेक्रेटरी श्री. प्यारेलालजी, आश्रमव्यवस्थापक श्री. बळवंतसिंहजी, श्री मुन्नालालजी एम.ए., डॉ. आर्यनायकमूजी आदि. आश्रमात झाडलोट व कामे करणारी मंडळी हरिजन होती. गोविंदनामक हरिजन मुलगा स्वयंपाकी होता. स्वयंपाकगृहावर देखरेख ही कस्तुरबाची योजना होती.

भोजन

जेवनात दररोज, उकडलेली भाजी, घरी दळलेल्या गव्हाची पोळी, एक पाव गायीचे दूध, एक पाव दही, एक चमच गायीचे तूप.

दिनचर्या

'गांधी उठे प्रात:समय, प्रात:स्मरण करते हि थे।
खुद का खुदी कर काम सब, दो चार मैल फिरते भी थे।।'

म. गार्धीना आवडणारी तुकडोजी महाराजांची भजने

"किस्तत से राम मिला जिसको"
"ऊँचा मकान तेरा,

'ऐसा भेख चढा दो मुझको'
''वह राम मुझमें, राम में मै हूँ''।
'हर जगह की रोशनी में दिल भुलैय्या तुम्ही तो हो।'

ही भजनं गांधीजींना खूप आवडायची डॉ. राजेंद्र प्रसाद, पं.नेहरु आदि नेते गांधीजींना भेटायला आले की, गांधीजी महाराजांना हिच भजने ऐकावयाला लावायचे

तु. महाराज म्हणतात,

'यही भजन उनको भाँते थे, बार–बार कहवाते।'
सरहद् गांधी साथ बैठकर, हम सब मिलकर गाते।।
कस्तुरबा राजेंद्रबाबु की उन्ही दिनो सेवा थी।
कभी–कभी पंडीत जवाहर सेवाग्राम में आते।
हाथ पकडकर गांधी मेरा भजन उन्हे सुनवाते।।'
'देहाती का रहना वैसा गांधीजी का जीना ।
बडा काटकसरी था उनका हिसाब लेना–देना।।
एक बार तौलिया गुम गया, रंज वही करते थे।
कितने दिन पुरता था गिनकर, नया नही फिर लेते।।'

महाराजांच्या दृष्टीत गांधीजी

सेवागामातील मुक्कामात महाराजांना गांधीजींनी फार निरखून घेतले. तसेच महाराजांनी गांधीजींना पारखले की, दोन्ही महापुरुष एकाच ध्येयाने प्रेरित झालेले आहेत. स्वदेशीचा पुरस्कार करणारे गांधीजी यंत्राचे विरोधक आहेत, त्यांची अहिंसा अतिरेकी नि एककल्ली आहे. ते मुस्लीम धार्जिणे आहेत इ. आक्षेप महाराजांनी पूर्वी ऐकलेले होते. त्याबाबत त्यांनी गांधीजींशी चर्चा केली आणि त्यांच्या विचार मर्यादा ओळखून घेतल्या.

'गांधी थे दूरदर्शी मर्मज्ञबुध्दि थी।
जनता की कद्र उनमे थी, कार्यशुध्दि थी।
गांधी तेरी सही अहिंसा लडना ही सिखलाती थी।
अपने घर में यंत्र बने जब मै हू उनका साथी?
विदेश का यह जाल हटाओ, कौन रखेगा हाथी।
खादी अपनायी भली गरीबो कि रोटी मानकर।
सब धर्मो से प्रेम, परंतु हिंदु धर्म नही छोडा।
अपने पुत्र के धर्मांतर को पागलपण कह मोंडा।

तुकडोजी महाराज म्हणतात, 'शेगावला महात्मा गांधीजवळ होतो. एकदा फिरावयास निघालो असता गांधीजी म्हणाले, 'लोक स्वराज्याचा अर्थ चंगळ, खाणंपिणं व चैन करणे एवढाच समजत असतील ना? पण माझी तेवढीच कल्पना नाही. स्वराज्यात पूर्ण सुख सर्वत्र नांदावयास पाहिजे, मनुष्य ईश्वराचा आविष्कार आहे, तेव्हा त्यांन ईश्वराशी मिळून जाण्यातच पूर्ण उन्नती झाली असे होईल. पण त्याकरिता आधी या व्यावहारिक अडचणींची पाळमुळं खणून काढावीच लागणार! राष्ट्र स्वतंत्र व निष्कंटक झाल्याशिवाय दुसरा विचार करायला कोणाला पण कयं बरं फावेल?' महाराज म्हणतात, 'महात्मा गांधीजींचा मानस स्वराज्याच्या पूर्वीपासूनच ग्रामनिर्माणाकडे वळलेला आम्ही पाहत होता. खेडी कशी सुधरतील तेथील गायी म्हशी, शाळा, घर, मंदिर व्यवस्थित कशी होतील, याबद्दल त्यांची नेहमी चर्चा चाले. शहरापेक्षा खेडूत माणसाशी ते अधिक जिव्हाळयाने बोलत, गांधीजी त्यांच्या घरची परिस्थिती विचारुन त्याला मार्गदर्शन करीत. खेडूतांच्या सुखदु:खाशी समरस होतांना मी त्यांना पुष्कळदा पाहिले आहे. केवळ स्वराज्याची भाषणं देणारा हा महापुरुष नव्हता'

महाराज लिहितात, 'गांधीजींचे राजकारण किंवा त्यांच्या नावावर चालणारे पक्षकारण यांना मी महत्व देत नाही. राजनीतीत गांधीनी जी धार्मिकता ओतली आणि खऱ्या धर्माच्या तत्वावर जगाला आणून सुखीशांत करण्याचा जो प्रयत्न केला, त्याकडे लक्ष ठेवून मी त्यांना एक महान धार्मिक पुरुष समजतो.' महात्माजींना मी एकदा म्हणालो 'बापूजी! भारताला स्वराज्य मिळालं की आपले काम संपेल का?' त्यावर ते म्हणाले होते, 'भारताचे स्वराज्य हे माझे ध्येय नाही, ते साधन आहे. भारतातील दु:खी लोकांना सुखी, प्रगत करण्यासाठीच स्वराज्याचा उपयोग केला जाईल आणि ते काम पूर्ण झाल्यावर देखील माझं काम संपले असे नाही. जग जोवर दु:खी आहे तोवर माझं काम संपणार नाही. विश्वदर्शन, विश्वस्वराज्य, विश्वशांती हे माझे ध्येय आहे. विश्वाला पूर्ण सुखी करण्याकडे भारताच्या स्वराज्याचा उपयोग होईल तेव्हाच माझं समाधान होईल।' महात्मा गांधीची भूमिका राजकारण नि धर्मकारण यात सामंजस्य निर्माण करणारा, प्रजेला उन्नत आणि शासनाला शुध्द करील असा प्रेमाचा, सेवेचा मार्ग अवलंबून दोघांनाही धडा देणारा असा हा महात्मा खरा धर्मात्मा होता.' 'रामभजन में रंगा था बापू' असे

महाराज म्हणतात 'रात में जपता माला गांधीजी' हे दृश्यही महाराजांनी पाहिले होते ते लिहितात.

"मैंने एक दिन उठते देखा कुछ पूछा, नही बोला।
हाथ में माला चली हुई थी, सहज समाधीवाला॥
दिन निकले फिर कहते देखा, मै था अपनी धून में।
राम नाम की लगी थी तारी, मौन रहा हरीगुण मे॥

सेवाग्रामच्या मुक्कामाचा शेवटच्या दिवशी महाराजांना निरोप देताना गांधीजी म्हणाले, "अब मुझे कई दिन तक यह कमरा सूना सूना लगेगा। महाराज जी की याद आती रहेगी। नारायण महाराज जी की सभी हिंदी मराठी किताबे यहाँ भेजने न भूलना।" शेवटी गांधीजींनी महाराजांना कवटाळले, सरहद गांधीनी तर मिठीच मारली. सर्वांचे अंत:करणे भारावली महाराज गांधीजींना म्हणाले, "बापू। मै आपके संकल्पित कार्य मे जी जानसे सहायता दूँगा।" गांधीजींना मोठे समाधान वाटले. शेवटी दि.१३ ऑगस्ट १९३६ रोजी सेवाग्राम आश्रमातून शेठ जमनालाल बजाज यांच्या टांग्यात बसून वर्धा येथे आले.

तुकडोजी महाराज म्हणतात, अध्यात्माच्या आधारे स्वराज्याच्या आंदोलनातील अनेक बिकट समस्या सोडवू पाहणे हा गांधीजींचा मार्ग कंटकाकिर्ण होता. 'राष्ट्रपिता हे एका उच्च वातावणात राहिले. विव्दान, वैचारिक, श्रीमंत लोकात वावरले. पण त्यांचे आणि महाराजांचे तत्व एकच होते, मानवोध्दार! त्यांचा धर्म होता मानवता! राष्ट्रसंतांचा काळ मध्यम वर्गात गेला, ते गरीब परिस्थितीत वाढले. सोबतीला श्रमिक, कामकरी, अशिक्षित, अडाणी मिळाले पण तत्व तेच राहिले. समाजाला तेच शिकविले म्हणून राष्ट्रपिता व राष्ट्रसंत हे दोघेही युगपुरुष ठरतात. राष्ट्रसंतांचा हा जो सत्संग सेवाग्रामच्या कुटीत एक महिनाभर लाभला त्या दिवसांचा प्रभाव राष्ट्रपिताच्या हृदयावर शेवटपर्यंत राहिला. अर्थातच महाराजांच्या हृदयावर देखील गांधीजींचा प्रभाव राहावा हेही स्वाभाविक होते।

"मै गांधीजीका नही शिष्य रहा, ना गांधी मेरे कभी भक्त रहे।
पर प्रेम था हम दोनो में बडा, वह मिट नही सका कोई लाख कहें।"
"प्रेम मुझ पर बापु का था, इसमे मुझको शक नही।
मै भी उनके साथ था पर मुझ पे किसी का हक नही॥
जो भी हो प्रभु भक्ति इच्छुक वे मेरे सब मित्र है।

उनकी सेवावृत्ति का मेरे हृदयपर चित्र है।।
मै साथी था उनका, सेवा का चिंतन का।
तुकडया कहे प्रेम ही था अपार।।"

समारोप

महात्मा गांधीजींच्या अनेक योजना नि त्यांचे विचार मुळात एकाच भूमिकेचे असले तरी, गांधीजींची आत्यंतिक अहिंसा महाराजांना कधीच मानवली नाही. म्हणूनच महाराजांनी स्वत:च्या विचारानुसार व्यायामवर्ग चालवून वीर तरुण तयार केले होते. असे असले तरी त्यांनी गांधीजींना विरोध (उघड) कधीच केला नाही."वऱ्हाडला गांधीजींची जास्तीतजास्त माहीती दिली ती तुकडोजी महाराजांनीच "वऱ्हाडच्या प्रत्येक दिवाणखान्यात त्यावेळी तुकडोजी सोबत गांधीजींचाही फोटो लावलेला असे. राजकारण कशाशी खातात हे मुळीच माहित नसलेल्या खेडूतांना आणि हे जाणून घेण्याची ईच्छा नसलेल्या मंडळींना भारतमाता, राष्ट्रीयता, ब्रिटीश अत्याचार आदिंची ओळख महाराजांनीच करुन दिली. देवभक्तीसोबत देशभक्तीची चेतना महाराजांनी चेतविली. सारा धर्मच देशभक्तीकडे वळविला. महाराजांनी भजनांचे तुफानी दौरे काढून खेडूतांमध्ये चैतन्य ओतीत होते.

'प्यारा हिंदूस्थान है। गोपालों की शान है।
वीरोंका मैदान, जिसमें भक्तोंके भगवान है।।

हे भजन नव्हे तर प्रभातफेरी गीत होते. प्रत्येक गावी सकाळी सामुदायिक ध्यानानंतर आरती मंडळीनर्फे प्रभातफेरी काढून तरुणांना, खेडूतांना, स्त्रीयांना संघटीत केले. 'अब काहेको धूम मचाते हो' पत्थर सार बम बनेंगे.', १९४२ च्या चले जाव चळवळीमध्ये चिमूर, आष्टी, बेनोडा, वरुड, यावली, ब्रम्हपूरी आदि ठिकाणी क्रांती घडवून आणली.

महात्मा गांधीचा खून झाल्यानंतर तुकडोजी महाराज आपल्या श्रध्दांजलीपर भाषणात म्हणतात, (नागपूर पटवर्धन ग्राऊंड) 'पूज्य महात्मा गांधीजी की यह अंत की खबर उनका कार्य और उनकी जीवनी अमर करनेवाली है। मृत्यु तो सबको ही आती है। मगर इस अवतारी पुरुषने दोनो पंथो से विजयप्राप्त की है। एक तो वे शहीदों के मुकूटमणी बने और दुसरे वे महात्माओं के भूषण! उनके वचनों को भारतवर्ष ने पूरा करना यही आजके कर्तव्यवान का कर्तव्य हो जाता है। हम अ. भा. सेवा मंडल की ओर से पूज्य महात्मा गांधी को अपनी सेवा की श्रध्दांजली अर्पण करते है।

श्रध्दांजलीपर नवरचित गीत

"दयामयी अवतार शांती का भारतसे खो गया।
अंधेरा जिधर–उधर छा गया।।
मानवता का दीप एकदम झडप मारकर बुझ गया।
अरे क्या था और क्या हो गया?
राष्ट्रपिता सत्य का पुजारी मृत्युलोक से गया।
स्वर्ग के परमधाम बस गया।।
सेवाग्राम का सेवाधिपती सेवा से बढ गया।
अमर भगवान अभी बन गया।।
था फकीर,पर था बादशाही से बडा।
था बुढा पर नौजवानों से भी बढा।।
दुनिया सब वादो पर आगे खडा।
परमपिता गांधीजी! तुने सबको चेता दिया।।
शहीदों का भी मुकूट बन गया ।।

महात्मा गांधीच्या निधनानंतर राष्ट्रसंत तुकडोजी महाराजांनी महात्मा गांधीजींच्या विचारांना प्रत्यक्ष मूर्त स्वरुपामध्ये जनता जनार्धनापर्यंत पोहचविण्या करिता महात्मा गांधी प्रथम स्मृतीदिन गुरुकुंज आश्रम मोझरी येथे संपन्न केला. तर दुसरा गांधी स्मृतीदिन नागपूर येथे संपन्न केला. ह्याचे प्रत्यक्ष उदा. म्हणजे आदर्श आमगांव, तह. पवनी, जिल्हा भंडारा येथील सेवाश्रम निर्मिती म्हणजे महात्मा गांधीचे स्वप्न प्रत्यक्षात तुकडोजी महाराजांनी साकार केलेले आदर्श गाव होय."

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६१ राष्ट्रपिता महात्मा गांधी आणि राष्ट्रसंत श्री तुकडोजी महाराज यांचा ऋणानुबंध

प्रा. डॉ. भारत विठोबा नखाते

1 राष्ट्रसंत. श्री तुकडोजी,'सार्थ ग्रामगीता', विवेचक तुकारामदादा गीताचार्य, प्रकाशक, भू–वैकुंठ आत्मानुसंधान टेकडी (अड्याळ), गीताजयंती–२०१२

2 राष्ट्रसंत, श्री तुकडोजी विरचित, 'अभंग गाथा', प्रकाशक श्री गुरुदेव प्रकाशन, गुरुकुंज आश्रम मोझरी, अमरावती–२०१०

3 सावरकर, सुदाम, 'जीवनयोगी' खंड– ३, मराठी जनसाहित्य परिषद, अमरावती, द्वितीयावृत्ती –२००६

4 सावरकर, सुदाम, 'जीवनयोगी' खंड– ४, साहित्यप्रभा प्रकाशन, अमरावती, प्रथमावृत्ती– १९८५

5 सावरकर, सुदाम, 'जीवनयोगी' खंड– ५, मराठी जनसाहित्य परिषद, अमरावती, द्वितीयावृत्ती– २००६

6 सावरकर, सुदाम, 'जीवनयोगी' खंड– ६, साहित्यप्रभा प्रकाशन, अमरावती, प्रथमावृत्ती– १९८७

7 काळे, नंदकिशोर, 'ग्रामगीतेच्या अंतरंगात', ज्ञानपथ पब्लीकेशन, अमरावती– २०१५

डॉ. सूर्यकांत कापशीकर

इतिहास विभागप्रमुख
यशोदा गर्ल्स ऑर्टस् ॲन्ड कॉमर्स कॉलेज,
स्नेहनगर, नागपूर

- महाराष्ट्रातील नामांकित शासकीय विदर्भ ज्ञान-विज्ञान संस्था अमरावती येथुन इतिहासाची पदव्युत्तर पदवी प्राप्त
- इ. स. २००५ मध्ये विद्यापीठ अनुदान आयोग, न्यु दिल्लीची राष्ट्रीय पात्रता परिक्षा उत्तीर्ण
- इ: स. २००७ पासुन यशोदा गर्ल्स आर्टस ॲन्ड कॉमर्स कॉलेज, नागपूर येथे इतिहास विभाग प्रमुख म्हणुन कार्यरत
- अनेक आंतरराष्ट्रीय, राष्ट्रीय व राज्यस्तरीय चर्चासत्रे, परीषदामध्ये शोध निबंध प्रकाशित
- अनेक आंतराष्ट्रीय, राष्ट्रीय व राज्यस्तरीय चर्चासत्रे परीषद व कार्यशाळामध्ये सक्रिय सहभाग
- इ. स. २०१६ मध्ये राष्ट्रसंत तुकडोजी महाराज नागपुर विद्यापीठ, नागपूर मधुन 'महारेत्तरांचे आंबेडकरी चळवळीतील कार्य (१९२०ते १९५६) एक ऐतिहासीक मूल्यमापन' या विषयावर इतिहासाची आचार्य पदवी प्राप्त
- इंडियन कौन्सिल ऑफ सोशल सायन्स रिसर्च, नवी दिल्ली (आय. सी. एस. एस. आर.) अंतर्गत 'नागपूर शहराचे आंबेडकरी चळवळीमध्ये योगदान (१९२०ते १९५६)' या विषयावर Minor Research Project पुर्ण
- इतिहास विषयाची पाठ्यपुस्तके आणि संदर्भग्रंथ प्रकाशित
- आकाशवाणी आणि दुरदर्शन वरील कार्यक्रमात सहभाग.

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Structural, Morphological, Dielectric and Magnetic Behaviour of Rare Earth Substituted Cobalt Ferrite Nanoparticles - A Brief Review

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ABSTRACT

Cobalt ferrite proposes an excellent platform for solid state crystallography and structural chemistry point of view. The partial substitution of rare earth (RE) ion, such as Sm, Ce, Er, Dy, La and Nd for Fe3+ leads to structural bend in spinel structure which in turn induces strain and considerably modifies electrical and dielectric properties. The chemical as well as physical nature of the dopant into Cobalt Ferrite Oxide (CFO) matrix allows tuning of structural, magnetic and electrical characteristics. In the field of engineering, doping of advanced and efficient ferrite materials with different RE/TM-ions is a well-adopted, straightforward and flexible way to tune the structural properties. Depending on the ionic size and concentration, assimilation of RE/TM-ions in spinel ferrite results in upgraded dielectric constant, rise in resistivity and reductions in dielectric and magnetic losses. Such a detailed understanding of RE incorporation might allow further opportunities to tailor the CFO-based materials' behavior for selective applications, where thermal and chemical constancy becomes important. The amalgamation of rare earths elements into CFO would be more attractive for future applications, such as advanced sensors and photo-catalysis. Thus, a better understanding of the combined structural, magnetic, dielectric and transport properties of CFMO is highly beneficial to tune the properties for desired electronic and electromagnetic applications. The objective of present review article is to derive a precise understanding of the rare earth elements, substitution effects on the crystal structure, morphology, magnetic behavior, and dielectric properties of CFO.

Keywords : Rare earth elements (RE), Cobalt ferrite oxide (CFO), EDAX, VSM, SEM, TEM

I. INTRODUCTION

The cobalt ferrite ($CoFe_2O_4$) has got special attention due to its interesting and notable properties. A unit cell of cubic closed packed structure of spinel ferrite is composed of total 96 number of interstitialcies by O^{2-} anions, out of which 64 are at tetrahedral (A) site and remaining 32 are at octahedral (B) site. From 64 A-site 8 and from 32 B-site 16 voids are occupied by

metal cations, which lead to free drift of cations between octahedral and tetrahedral sites.

Cobalt ferrite materials have engrossed a prodigious attention in the field of fundamental and applied research because of its high thermal stability, mechanical hardness, large coercive field, high magnetostriction coefficient and anisotropy constant. Due to which we can use cobalt ferrites in a wide-ranging applications from medicine (e.g. MRI contrast agents, DNA isolation, magnetically activated drug delivery) to electronics (e.g. magnetostrictive and gas sensors, optoelectronics, microwave frequency devices, storage media). Cobalt ferrite is considered as a possible alternative for magneto-optical (MO) devices which are included not only in magnetic recording but also in light modulators and deflectors. The infrared emissivity of cobalt ferrites can also be enhanced by varying the dissemination and nature of the cations by doping rare earth elements into cobalt based spinel ferrites.

The physical and chemical properties of cobalt ferrite nanoparticles can be designed for numerous applications by substituting rare-earth metal (RE) ions such as La^{3+}, Ce^{3+}, Gd^{3+}, Sm^{3+}, Y^{3+}, Er^{3+} etc for host Fe^{3+} induces large strain as well as surface area increases by reducing the particle size. Small doping of rare earth metal ions in ferrites greatly affects electric and magnetic properties of ferrite nanoparticles due to higher ionic radius and various different oxidation states with different magnetic moment values of RE metal. Substitutions of rare earth elements show large impact upon the magnetic anisotropy of the system making the spinel ferrite an excellent option instead of hexa ferrites or garnets. Thus by choosing the proper rare earth cation, we can change electrical and magnetic properties of ferrites. Magnetic properties of the ferrites such as magnetization, coercivity (H_C), remanent magnetization (M_r) prominently depend on the quantity of doped rare earth ions in which 4f electrons are magnetism carriers.

The influence of microstructural and magnetic properties of substituted ferrite is related to the occupancy of the 4f electron shell with their magnetic moments which is a core interest in substitutions of rare earth element. Thus the structural, electrical, spectral and magnetic properties of spinel ferrites can vary with the addition of RE ions into spinel ferrite lattice. RE ions possess unpaired 4f electrons, moderate elastic constants as well as the strong spin-orbit coupling and display large magnetostrictions effect. Hence the substitution of RE ions is felicitous a proficient way of ameliorating the structural and electric-magnetic properties. This review paper represents the structural, magnetic and dielectric properties of pure and RE (Ce, Sm, Gd, Eu and Yb) doped cobalt ferrite bulk materials.

II. LITERATURE REVIEW & DISCUSSIONS

Fractional substitution of Fe^{3+} by rare earth ion, such as Er, Dy, La, Nd, Ho, leads to structural distortion in spinel structure which induces strain and considerably modifies the electrical and dielectric properties. Ferrites [1], doping with different RE/TM-ions is a well-accepted, straightforward and flexible way to tune the structure and properties. An improved dielectric constant with resistivity and a decrease in dielectric loss with magnetic losses can be achieved by incorporation of RE/TM-ions in spinel ferrite depending ionic size and concentration. When we substitute the rare earth elements of large ionic radii with the smaller ionic radii of cobalt ferrites, an internal stress will generate and as a result there is a change in cell symmetry and hence the structural properties will change. Thus in addition with structural properties of the material dielectric, magnetic and magnetostrictive properties of substituted materials will also change.

The impact of rare earth ion substitution on magnetic properties of the ferrite materials have been widely studied by many investigators [2], for the different

applications such as MO-recording, MO-sensors and hyperthermia treatment. The substitutions of RE ions in Co-Fe ferrite leads to lattice strain and structural disorder which permits to modify the electrical and dielectric properties. Thus the doping of parent spinel ferrite with rare earth ions (Y^{3+}, Gd^{3+}, Ho^{3+}, Sm^{3+}, Nd^{3+}) leads to increasing in the electrical and magnetic parameters. The properties of ferrites are mostly dependent on synthesis methods which affect the distribution of cations of tetrahedral and octahedral sites, particle size and surface area. Rare earth ions are stated to lower the Curie temperature and enhance the magneto-optical response when substitute in ferrite structures while decrease the grain size, which is an important factor in low noise media.

The substitutions of rare-earth elements in CoFe2O4 are fruitful for magneto-optical recording applications because they are efficacious in reducing the Curie temperature (T_c) as equated to pure ferrite. Saturation magnetization and coercivity values changes abruptly by the substitution of rare-earths in the cobalt ferrite materials and reduces the grain size. Hydrothermal and co-precipitation methods shows decreased value of saturation magnetization and coercivity for a series of RE (Sm^{3+}, Pr^{3+}, Tb^{3+}, Ho^{3+}, Gd^{3+}, Dy^{3+}, Yb^{3+}) substituted cobalt ferrite also shows large differences in their observed and calculated magnetic moments values [3,4].

R. N. Panda et al [5] synthesize nano-crystalline $CoM_xFe_{2-x}O_4$ (where M=Gd and Pr) powders by a citrate precursor technique and found that the crystallite sizes of the materials are within the range of 6.8 nm to 87.5 nm. Formation of the single phase spinel ferrite phase at 2201^c was observed through TG and XRD analysis. Decrease in saturation magnetization at room temperature with reduction in size of the sample was observed which attributes to the presence of super paramagnetic fractions in the materials and spin canting at the surface of nanoparticles. Compared to pure cobalt ferrite materials the substitutions of rare-earth in the crystal lattice inhibit the grain growth of the materials in a systematic manner and improve coercivity.

The structural and magnetic properties of Sm and Ce co-substituted nanocrystalline cobalt ferrite, $CoFe_{2-x-y}Sm_xCe_yO_4$ (x = y = 0.00, 0.5, 0.1, 0.12 and 0.25) through sol-gel combustion method have been studied by Syed Ismail Ahmad et al [6] and observed spinel structure with a secondary phase of RE_2O_3 for higher molar concentration of rare earth ions by XRD method. As we increase Sm and Ce concentrations specific surface area and strain will increase while crystallite size decrease. SEM micrographs displays inhomogeneous grain distributions with some agglomerates and average grain size of 0.15 mm. Energy dispersive x-ray spectroscopy (EDAX) define the stoichiometry of the samples. Surface morphology studies (TEM) substantiate the occurrence of agglomerations in the sample. FTIR spectroscopy confirmed the spinel phase by pointing two frequency bands, y_1 in higher frequency range 580-559 cm^{-1} and lower frequency band y_2 at 392-372 cm^{-1}. The force constant for octahedral site was found to be less than that of tetrahedral position. M_s and H_c was found to decrease with increase in concentration of rare earth ions due to weakening of AB interaction. VSM technique at room temperature reflects the decrease in particle size and surface effect. Thus by increasing the rare earth concentrations the Yafet-Kittle (YeK) angle was also found to increase.

Tahar et al. [7] have examined the effect of Sm^{3+} and Gd^{3+} on the magnetic properties of cobalt ferrite synthesized by forced hydrolysis method and stated that particle size increased slightly with rare earth substitution. Several research groups consecutively explained the increase in saturation magnetization in substituted ferrites on the concept of Neel's two sub-lattice model. Hence a systematic study on the impact of rare earth doping in cobalt ferrite has a well-defined significance.

III. COMPARATIVE OBSERVATIONS

The different rare earth cation substitutions and their significant effects on the characteristics (structural, dielectric, magnetic, microstructural) of the cobalt ferrites have been intensively studied. In particular, the effect of partial interstitial substitution of the rare earth cation like, Ce^{3+}, Gd^{3+}, Sm^{3+}, Yb^{3+}, Eu^{3+} etc.

A. Sm substitutions

Sheena Xavier et al [8] synthesized a series of samarium-substituted cobalt ferrites ($CoFe_{2-x}Sm_xO_4$) by sol-gel technique and confirm the formation of single-phase cubic spinel structure in all the compositions by XRD analysis without any secondary phase. Increase in samarium concentration observed the expansion of unit cell due to increase in lattice parameter. Average crystallite size and low value of lattice strain induced in the sample with increase in crystallinity are also observed. TEM analysis evident the spherical morphology of the prepared sample. EDS analysis confirms the stoichiometry of the sample and absorption bands in FTIR spectra of all the samples are found in the expected range. The occupancy of Sm^{3+} ions on the octahedral sites was revealed by decrease in band frequencies with increase in samarium content. Resultant magnetic moment decreases due to substitution of nonmagnetic ion in the octahedral site leading to decrease in saturation magnetization. The variation of coercivity of nanoparticles in the multidomain system is also observed. Substitution of samarium strongly influences the magnetic properties and hence the properties of the cobalt ferrite nanoparticles substituted with samarium ions can be tailored for suitable applications. Rashad et al. [9] specified the change in the magnetic properties of samarium substituted $CoFe_2O_4$ synthesized by citrate precursor method and the results shown the decrease in saturation magnetization and coercivity with the addition of Sm^{3+} ions.

B. Yb substitutions

Y^{3+}- doped cobalt ferrite nanoparticles, $CoY_xFe_{2-x}O_4$, were synthesized by S. S. Satpute et al [10] using the sol-gel method and observed the formation of pure with single-phase cubic spinel structure by the X-ray diffraction technique. The increased lattice parameter was found with the increase of Y^{3+} content in the cobalt ferrite due to the alteration in ionic radii of Fe^{3+} and Y^{3+} ions. SEM images showed the preparation of samples with distinct crystalline nanoparticles of spherical shape with small accumulation with the decrease of grain size with the yttrium substitution. EDAX results showed good agreement with the specific composition. The reduction in saturation magnetization (M_s), remanent magnetization (M_r) and coercivity (H_c) by Y^{3+} substitution was observed by vibrating sample magnetometer. The dielectric constant decreases and the dielectric loss tangent increases with the substitution of yttrium in the cobalt ferrite composition which shows the natural behavior of the ferrite material with increasing frequency. The decrease in dielectric constant with yttrium content was also reported by Jacobo and Bercoff et al [11]. Hence addition of non-magnetic Y^{3+} ion in cobalt ferrite intensely affects the magnetic properties. Also, yttrium ion moves in the octahedral site of the lattice which again increases the inversion parameter of cobalt ferrite.

C. Gd substitutions

A series of Gd^{3+} doped Co-ferrites $CoGd_xFe_{2-x}O_4$ (x =0.0 to 0.1) has prepared by sol-gel auto combustion method by Erum Pervaiz et al [12]. Formation of pure cubic spinel phase without any impurity was observed and crystal strain increases with increase in doping concentration. Due to large ionic radii (0.94nm) of Gd^{3+} replacing Fe^{3+} (0.64nm) the lattice constant (a) and crystallite size D (311) increases. Spherical morphology with uniform size distribution was also shown by SEM. DC electrical resistivity at room

temperature decreases (~106) up to x=0.025 then increases up to x=0.1 ~ ($4.5x10^7$). All prepared samples show a semi-conducting behavior as permittivity and tangent loss (tanδ) decreases with the substitution of Gd^{3+} in parent crystal structure. Magnetization (Ms) decreases with increase in Gd^{3+} concentration from 63 emu/gm to 27.26 emu/gm due to influence on A-B exchange interactions. Coercivity (H_c) first decreases for x=0.025, after which it increases to 2308 Oe for *x*=0.1. Magnetic anisotropy of Co-ferrites reduces with increase in Gd^{3+} concentration (*x*). B. Ravi et al [13], K.K. Bharathia et al [14] and A. Rana et al [15] have proved the effect of Gd substitution on dielectric properties of cobalt ferrite. Peng et al [16] have described an increase in crystallite size of cobalt ferrite nanoparticles by the doping of gadolinium. Addition of Gd^{3+} ions in cobalt ferrite decreases the saturation magnetization and retentivity due to migration of cations. Thus the rare earth (Gd^{3+}) doped Co-ferrites found a great application in high frequency devices and power supply field due to of its high resistivity and low losses.

D. Ce substitutions

Syed I. A. et al [17] synthesized Cerium substituted cobalt ferrite nanoparticles with composition $CoFe_{2-x}Ce_xO_4$ (x = 0.00, 0.075) by Sol-gel route method and studied structural, morphological, dielectric and magnetic properties. An increase in lattice parameter with specific surface area and decrease in crystallite were observed with increasing cerium concentrations. Normal dielectric dispersion of ferrites was shown by the dielectric study that is dielectric constant, dielectric loss at room temperature found decreased with increasing frequency. Fading of A-B interaction was revealed by decreasing value of M_S and H_C due to substitution of cerium ions. Thus the samples have uniaxial anisotropy with decreased H_C and anisotropic constant. Hence M_S and H_C can be tailored for the application of nano cobalt ferrite particles in high density recording media.

E. Eu substitutions

Europium (Eu) doped spinel cobalt ferrites with composition $CoEu_xFe_{2-x}O_4$ were made-up by co-precipitation route method by Aiman Zubair et al [18] and found to constitute a face centered cubic (FCC) spinel structure belonging to Fd3m space group with some traces of ortho and hematite phases. SEM confirms the nanocrystalline grains with spherical shape of the prepared sample. Energy dispersive X-ray spectra give the composition of the sample without any impurity. Saturation magnetization (M_s) of maximum value 65 emu/g and coercivity (H_c) of 966 Oe exhibited by the hysteresis study at room temperature. With the substitution of Eu^{3+} overall coercivity was increases and magnetization was decreases. Hence magnetic behavior is highly depend on Eu substitution and anisotropy becomes constant with change in coercivity.

I. CONCLUSION

In the present paper, the different rare earth cation substitutions like Sm3+, Ce3+, Yb3+, Gd3+ and Eu3+ etc. in cobalt spinel ferrite and their significant effects on structural, dielectric and magnetic properties of the ferrites have been intensively studied by the researchers. It seems that the XRD technique confirms the formation of pure and simple cubic spinel structure. Surface morphology reveals the formation of nanocrystalline grains with spherical shape. An increase in lattice parameter with specific surface area and decrease in crystallite are observed with increasing rare earth concentrations. The substitution of rare earth cations into the cobalt ferrites toughly impacts the magnetic and dielectric properties of the rare earth doped cobalt ferrites. It is seen that the enhancement in these properties depends on the dopant concentration, the type of dopant, sintering temperature and also on the method of preparation of the sample.

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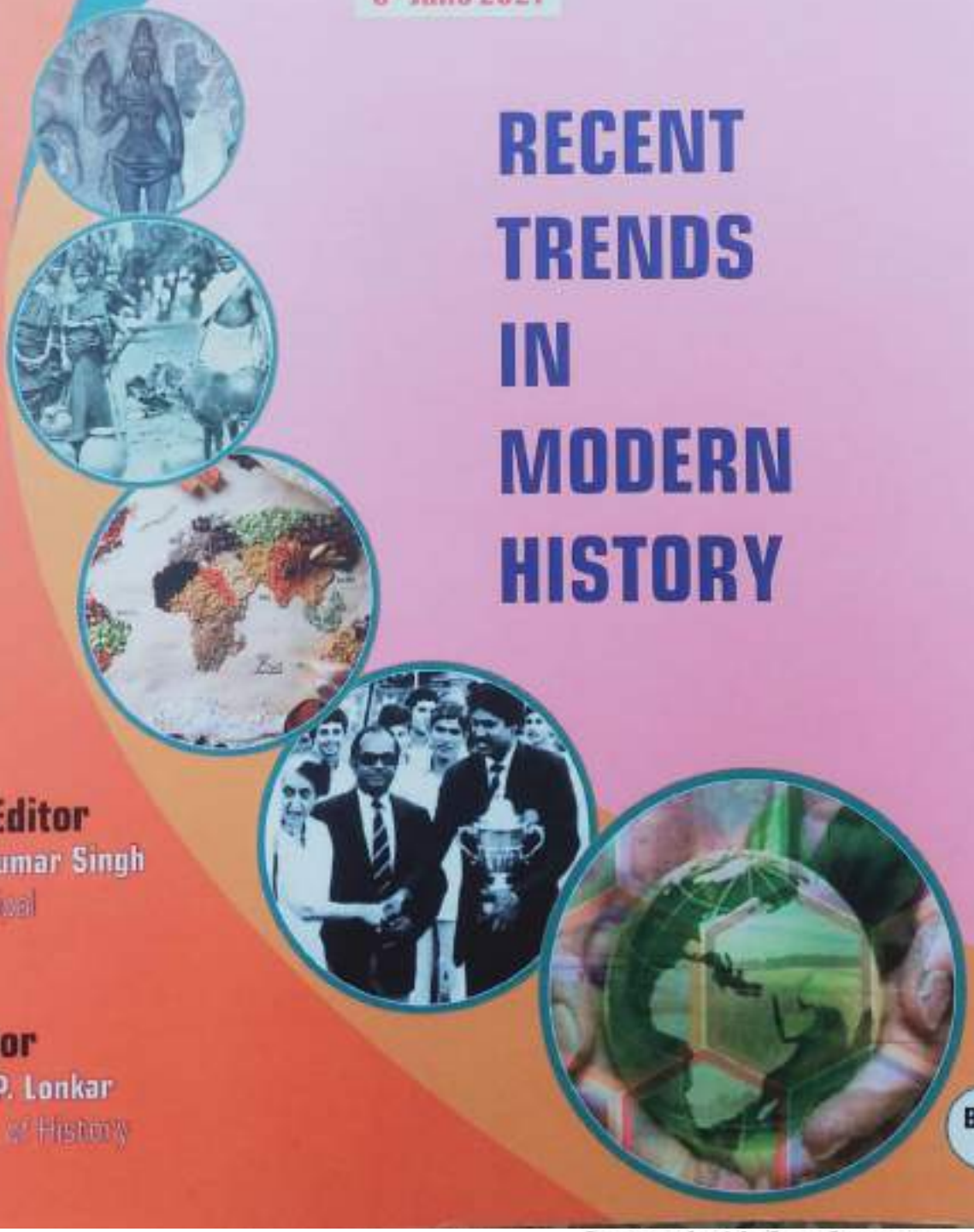

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राष्ट्रसंत श्री तुकडोजी महाराजांचे, राष्ट्रीय एकात्मतेसंबधी विचार

प्रा. डॉ. भारत वि. नखाते

यशवंतराव चव्हाण कला,वाणिज्य व विज्ञान महाविद्यालय, लाखांदुर, जिल्हा भंडारा

प्रस्तावना :–

गावा–गावासि जागवा । भेदभाव समूळ मिटवा।।
उजळा ग्रामोन्नतीचा दिवा । तुकड्या म्हणे।।
"विश्व ओळखावे आपणावरुन । आपणचि, विश्वघटक जाण।
व्यक्तीपासूनि कुटुंब निर्माण । कुटुंबापुढे समाज अपुला।।"
"गाव हा विश्वाचा नकाशा। गावावरुन देशाची परीक्षा।।
गावचि भंगता अवदशा । येईल देशा"।।

भारत हा खेड्यांचा देश आहे. गाव,खेडे हे भारत देशाचे प्रतीक आहे, गावामध्ये जनजागृती करुन,गावामध्ये सामुदायिक ध्यान,प्रार्थन घेऊन गावातील सर्व ग्रामवासी जनतेमध्ये एकतेची, सामुहीकतेची भावना जागृत करुन गावाला एकसंघ बनविणे. (एका गावातील संघटनेने लोण गावागावामध्ये प्रसारित करुन) याकरिता राष्ट्रसंत तुकडोजी महाराजांनी महात्मा गांधी स्मृती दिनाचे औचित्य साधून आदर्श ग्राम रचना, आदर्श गावाची निर्मिती केलेली आहे. त्या आदर्श गावामध्ये महात्मा गांधी, तुकडोजी महाराज व प्राचीन स्वयंपूर्ण खेड्याचे आदर्श तत्व यांचा समन्वय साधलेला आहे. (उदा. आदर्श आमगाव,तह. पवनी, जि.भंडारा)

उद्देश :–

- आदर्श गावापासून ईतर गावातील जनतेने मुलभूत तत्व उचलून आपले गाव आदर्श करावे.
- गावाची एकता अभंग राखून व परस्परांना (व्यक्तींना व गावांना)पूरक अशी सहयोग व सहकार्याची भावना जोपासणे.
- ग्रामीण एकतेमधून राष्ट्रीय एकात्मता साधणे.
- भारताचे स्वातंत्र्य अबाधीत राखणे.
- ग्रामगीता प्रत्येक भारतीय नागरिकामध्ये रुजविणे.
- माणसाला माणूस बनविणे.

अशाप्रकारे भारत देशातील सर्वच खेड्यांची रचना झाली, तरच देशाचे स्वातंत्र्य अबाधीत राहील. याकरिता महाराजांनी ग्रामगीता ग्रंथ लिहिला आहे. तसेच अभंग,भजन,प्रवचने, सप्ताह, कीर्तन, चातुर्मास, भाषण यामधून राष्ट्रीयतेचे, एकात्म भावनेचे व देशाच्या सर्वांगीण विकासाचे तत्त्वज्ञान तुकडोजी महाराजांनी विशद करुन त्या तत्त्वाचा आजीवन प्रचार व प्रसार केल्याचे दिसून येते.

परिकल्पना :– स्वयंपूर्ण, स्वावलंबी, आत्मनिर्भर राष्ट्राची उभारणी करुन राष्ट्रीय एकात्मता टिकवून ठेवणे.

महत्व :– "सर्वेत्र सुखिनः सन्तु, सर्वे सन्तु निरामयाः।
सर्वे भद्राणि पश्यन्तु, मा कश्चिद् दुःखमाप्नुयात।।

राष्ट्रसंत श्री तुकडोजी महाराजांचे आचार व विचार प्रत्यक्षात अंमलात आणून आपण वाटचाल केली तरच देशामध्ये सर्वधर्मसमभाव, राष्ट्रीय एकात्मता, स्वयंपूर्ण राष्ट्रनिर्माण करणे काळाची गरज आहे. हे मानवतेचे महानपुजारी संपूर्ण मानव जातीला एकसंघ बनवून राष्ट्रीय एकात्मतेतूनच वैश्विक एकात्मतेची शिकवण देतात.

"खेड्याकडे चला' म्हणता। परि एकहि सोय नसे पाहता।
घरे कसली? हुडेचि तत्वता। डुकरखोपडे, खुराडे।।

" हमारे धार्मिक और सांस्कृतिक अंतरंगमे, ऐतिहासिक और भौगोलिक पार्श्वभूमीमे राष्ट्रीय एकता का अधिष्ठान मौजूद है, उसका अच्छे तौर पर प्रचार होना जरुरी है। राष्ट्र मे अशान्ति पैदा करनेवाली प्रवृत्तीयोंका निर्मुलन शीघ्रता से होना जरुरी है।"

'' आज आमच्या देशाला जर सर्वप्रथम कशाची आवश्यकता असेल तर ती एकात्मतेची होय'' या एकात्मतेसाठीच ते आजीवन झटत आले होते. ते लिहितात, ''ज्याप्रमाणे दोन मदमत्त हत्ती अरण्यात आपआपसात भांडतात व त्यामुळे जंगलातील निरपराध झाडाझाडांचा उगीचच नाश होतो, त्याप्रमाणे देशातील आजच्या धुमश्चक्रीत निरपराध बहुजन समाजाचेच जास्त नुकसान होत आहे. देशातील सर्व तटस्थ विचारवंतांनी एकत्र येऊन ही परिस्थिती सामुहिक विचार विनिमयाव्दारे निवळण्याचा प्रयत्न केल्यासच ही हानी थांबू शकेल व म्हणूनच मी आतापर्यंत देशातील साधुसंतांना, नेत्यापुढाऱ्यांना, विचारक व समाजसेवकांना कळशोष करुन या गोष्टीचा विचार करण्याचे आवाहन करीत आलो आहे. त्यासाठी निरनिराळी संतसंमेलने,भारत साधुसमाजाचे आयोजन, गांधीस्मृती दिनानिमित्य नेत्या–पुढाऱ्यांना एकत्र आणण्याचे प्रयत्न व ग्रामजयंतीच्या रुपाने सर्वपक्षीय व्यक्तींना एका व्यासपीठावरुन विचाराचार व्यक्त करण्याची संधी उपलब्ध करुन देण्याची योजना आदि गोष्टी केलेल्या आहेत.''

'' सब नेताओंका कर दे मिलन। तब दूर हो मेरे दिल कि जलन''

वंदनीय राष्ट्रसंत तकडोजी महाराजांच्या अंतर्मनाची नित्यानी तळमळ। याच तळमळीतून भारताचे राष्ट्रपती, उपराष्ट्रपती, पंतप्रधान आदिना महाराजांनी वारंवार सूचना केल्या होत्या. पं.जवाहरलाल नेहरु, डॉ.सर्वपल्ली राधाकृष्णन आदिना राष्ट्रसंतान्या या विचारांची निकड जाणवली आणि त्यातूनच दिल्लीमध्ये 'राष्ट्रीय एकते' विषयीचे संमेलन आकाराम आले. अशारितीने भारतातील थोर–थोर विचारवंताचे जे राष्ट्रीय एकता' संमेलन सप्टेंबर(१९६१) दिल्लीला संपन्न झाले होते, त्या संमेलनात वं.महाराजाच्या प्रभावशाली विचारांनी प्रभावित होवून सर्वांना 'राष्ट्रीय एकात्मता समिती' निर्माण करुन अध्यक्षपदाची जबाबदारी राष्ट्रसंतांकडेच सोपविली होती आणि वं. महाराज त्या दृष्टीने निरंतर लेखन,भाषण करुन गावा–गावांना जागवित होते.सर्व पंथ, पक्ष, धर्म, प्रांताच्या जनतेत राष्ट्रीय एकात्मता फुलविण्यात होते.

''राष्ट्रीय एकात्मता का मुख्य आधार है। 'आत्मवत सर्वभूतानि' कि 'प्रत्यक्ष अनुभूति। जबतक हम दूसरोंको हमारे आत्मस्वरुपके रुप में नही समझते. तबतक विभिन्नता या पृथकत्त्व विघटन आदि मानसिक रोगोंके मिटाने के लिए हमे आत्मवान बनना परम आवश्यक है। जब ऐसा होगा तो हमारी संकीर्ण मनोवृत्ती व्यापकतामे बदल जाएगी। और तब हम इस समुची सृष्टिमें एकात्मता का दिव्य अनुभव करने लगेंगे।'' राष्ट्रसंतांनी आपल्या भजनाव्दारे देशातील हजारो समस्यांवर मोठ्या कुशलतेने प्रकाश टाकलेला आहे. ते एक महान चिंतनशील, उच्चकोटीचे तत्त्वज्ञ आणि जनता जनार्धनाने उत्तम पारखी होते. आपल्या संपूर्ण हयातीत असंख्य भजनांचे कार्यक्रमाव्दारे जनकल्याणाच्या मार्गाचे पथदर्शक होते. जीवनातील लहान–लहान बारकाव्याव्दारे आपल्या अद्भूत वाणीने स्पर्श करुन कोणतीही भिती न बाळगता त्यामध्ये सुधारणा करण्यासाठी, अनुशासनत्रीय भावना जनमाणसात रुजविली. उदा. जोडे–चपला कशी ठेवावीत..... वास्तविक त्यांची संघटनशक्ती, नियोजन, संयोजन अप्रतिम व जनकल्याणकारी होती. या एकात्मतेच्या दिव्यानुभूतीमुळे जगाची दु:खं,त्याना आपली वाटत होती, आणि ती दूर करण्यासाठी ते रात्रदिवस झटत होते. माणूस हा येथून तेथून अगदी एकच आहे. ही माझी विचारधारा आहे.... माणसाचे मोठेपण, विवक्षित जात नव्हे.... अ.भारतीय श्री गुरुदेव सेवामंडळाच्या मध्यवर्ती बैठकीतून ईश्वराच्या प्रत्येक माणसाची जात 'भारतीय'च असा ठराव आम्ही संमत करुन टाकला आहे' भारतात हा एकच साधुमहात्मा असा झाला की, खेड्यात राहणाऱ्या गरीब–दलीत माणसा पासून तो दिल्लीत राहणाऱ्या राष्ट्रपती तथा श्रेष्ठ पुढारी महात्म्यांशी व सेवाधिकाऱ्यांशी त्यांचे जिव्हाळ्याचे संबंध आले होते. खेडूत गरीब माणूस व राष्ट्रपतीचे ठायी त्यांचे प्रेम पाहून माणूस थक्क होतो. एवढे ते असामान्य व्यक्तिमत्व होते''

राष्ट्रीय एकता जागविणारी भजन

➢ ''करिता भेद अशा का मगळ?
बोलला भारत दादुनि गळा ।।
सर्वांचि माझी भावंडे ही।
परस्परांच्या कामी सगळी।।
नीच–उच मग का समजोनी।
दुखविता मन सारे सळसळ?।।
परि भाषा ही भिन्न बोलली।
तरि का हृदय जावी खळली?
उद्योगास्तव जाती समजल्या।

मानवतेसाठी नच उठल्या।।
तुकड्यादास म्हणे, राष्ट्रीयता।
एकता मार्ग न हो पांगळा।।''

- ''तन–मन–धनसे सदा सुखी हो, भारत देश हमारा।
सभी धर्म अरु पंथ पक्ष को, दिलसे रहे पियारा।।
विजयी हो विजयी हो, विजयी हो, भारत देश हमारा।।
निर्भय हो यह देश की माता, मंगल कीर्ती करानें।.....
स्पृश्यास्पृश्य हटे यह सारा, देश कलंक मिटानें।.....
सारा भारत रहे सिपाही, शत्रुको दहशानें।.....
तुकड्यादास कहे स्फूर्ती हो, सबको भक्ति करानें।।
विजयी हो, विजयी हो, विजयी हो, भारत देश हमारा।।
- ''ऐ विश्वके बालक प्रभो। मुझमे समझ दे विश्व की।
यह अखिल मानव धर्म के, आदर्श ऊँचे वेष की।
दुःख है एसका हमे, 'हम अवनती क्यो पा रहे?।
शील यह हममे भरा, ''सेवा करे हम देश की''।।
- 'सब मिलके प्रार्थना है, गुरुदेव से हमारी।
सबका भला हो जग मे, यही कामना हमारी'।।
- ''सबके लिये खुला है, मंदिर यह हमारा।
मतभेद को भुला है, मंदिर यह हमारा।।
आवो कोई भी पंथी, आवो कोई भी धर्मी।
देशी विदेशीयोंको, मंदिर यह हमारा''।।
- ''या भारतात बंधुभाव नित्य वसू दे, दे वरचि असा दे।
हे सर्व पंथ संप्रदाय एक दिसू दे, दे वरचि असा दे।।
नांदोत सुखे गरिब–अमिर एक मतांनी।
मग हिंदू असो ख्रिश्चन वा हो इस्लामी।
स्वातंत्र्य सुखा या सकलमाजी वसू दे, दे वरचि दे''।।
- ''क्यो। दिन पर दिन गिरता है, तू मानव धर्म गमाता है।
अपने को तो खोता है फिर धूल मे देश मिलता है।
.... मत कर ऐसा काम नामपर हराम का धब्बा बैठे।
तुकड्दास कहे तुझपर ही, देश भी इज्जत पाता है''।।
- ''माझा देशचि माझो घर। देश दुःखी जणू माझेचि शरीर ।
त्यासाठी मी निरंतर । कष्टी होईन सांभाळाया ।।८।।

सामुदायिकता आणि त्याव्दारे, साधण्यात येणारी राष्ट्रीय एकात्मता। म्हणजेच सामुदायिक जीवन, प्रार्थना ही राष्ट्रीय एकात्मता, धार्मिक एकात्मता व मानवतावादी एकात्मता साधण्याकरिता राष्ट्रसंत तुकडोजी महाराजांनी आरंभीलेल उत्तमोत्तम मार्ग होय.

म्हणोनि ऐका लक्ष लावून । स्वर्ग करावा जगी निर्माण।
करा कुटुंब समर्पण। सामुदायिक तत्वासि।। १३१।।

राष्ट्रसंत तुकडोजी महाराजांचे गोत्रज :– सोतबडियारा बिहारचो वटना, जयप्रकाश नारायण राष्ट्रसंत तुकडोजी महाराज यांचे शुभहस्ते शालेच्या कोनशिला प्रसंगी, बिहारी पंडित महाराजांना गोत्रज विचारतात तेव्हा महाराज म्हणतात. '' भैय्या मुझे कोई गोत्रज वगैरा नही है । मै गोत्रज वगैरा नही जानता। मै ऐसाही हूँ।..... शेवटी पंडितांचे जिद्दीवर महाराजांनी आपले गोत्रज सांगितले..... '' मेरो जात है भारतीय, धर्म है मानवता और गोत्रज है गांधी।''त्यावर जयप्रकाशजी प्रसन्नपणे हसून म्हणतात, 'महाराजजी, गोत्रज तो पूर्वजो के ऋषीओंके नाम का बताया जाता है, किंतु यह उच्च कोटी का आपका अभिनव गोत्रज सुनकर तो मुझे बडी खुशी हुयी। आज जो गांधी के नामपर अपना जीवन व्यतीत कर रहे है वह भी गांधी मेरा गोत्रज है यह बता नही सकते। देखिये पंडितजी। कितना ऊँचा गोत्रज बताया है महाराजजीने। समुचे भारतवासियोंका गोत्रज है यह और सौ बंधनोंके एक ही तो है हमारे महाराजजी।'

समारोप :–

''मानवता है पंथ मेरा। ईन्सानियत है धर्म मेरा।।

राष्ट्रसंत श्री तुकडोजी महाराज मानवतावादी,अस्पृश्यता निवारक, व जातीयवाद न माननारे आणि राष्ट्रीय एकात्मता समाजात रुजविण्यासाठी आयुष्यभर झटले.

राष्ट्रसंत तुकडोजी महाराजांच्या पुण्यतिथी महोत्सवामध्ये 'मौन श्रध्दांजली' कार्यक्रम सर्व मतस्मृती दिन म्हणून पाळण्यात येतो.यामध्ये सर्वधर्म प्रार्थना होते. जैन, बौध्द, वैदिक(हिंदु),ईस्लाम, ख्रिश्चन, शिख आदि धर्माचे प्रमुख गुरुदेव सेवकांच्या उपस्थितीमध्ये सामुदायाने प्रार्थना करतात.यामध्ये सर्वधर्मसमभावाने मानवतेचा संदेश पोहचविणारे असे हे महान पर्व आहे. यामधून राष्ट्रसंत तुकडोजी महाराजांनी धर्मसहिष्णुता, धर्मएकता, राष्ट्रधर्म जागवून राष्ट्रीय एकात्मतेचा संदेश संपूर्ण मानवजातीला दिला जातो. अशा प्रकारची पुण्यतिथी जगामध्ये फक्त राष्ट्रसंत तुकडोजी महाराजांची साजरी केली जाते हेच एकात्मतेचे, एकतेचे पर्व आहे हीच त्यांना अपेक्षित असलेली राष्ट्रीय एकात्मता होय.

ज्यांचे–त्यांचे जीवन स्वच्छंदपणे जगण्याचा अधिकार हा ज्यांचा त्याला असून हीच खरी मानवता, हाच खरा मानवतावाद, हाच खरा सर्वधर्मसमभाव व हीच खरी राष्ट्रीय एकात्मता आहे हा विश्वबंधुत्वाचा विचार राष्ट्रसंत तुकडोजी महाराजांना मान्य होता म्हणूनच ते राष्ट्रसंत झाले.

राष्ट्रसंत तुकडोजी महाराजांच्या आयुष्यात योग–अध्यात्मविद्या, ईश्वरनिष्ठा, मानवता, सर्वधर्मसमभाव, राष्ट्रभक्ती, राष्ट्रप्रेम या महान तत्वाचा पुरस्कार करीत होते त्याप्रमाणे आयुष्य जगले. समाज घटकांनी या मुल्यांची जपणूक, संवर्धन करुन स्वत: आत्मोन्नती करुन राष्ट्रोन्नतीकरिता, राष्ट्रीय एकात्मतेकरिता कार्यरत व्हावे हीच अपेक्षा!

संदर्भ सूची :–

तुकारामदादा,गीताचार्य,(विवेचक),''सार्थ–ग्रामगीता'',संपादक, सावरकर, सुदाम, प्रकाशक, श्री आत्मानुसंधान, पृथ्वीकुंठ टेकडी, अड्याळ.

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वेलुरकर,रा.,मो.,''चार महर्षी'' श्री माणिक,प्रकाशन, श्री क्षेत्र वरखेड, जि.अमरावती.

YOGA

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ABSTRACT

The health and fitness not only for us but also for our coming generation is most important. The paper focus on the yogic practices makes a physically fitness of the human being.Fitting comprehension and rehearse one can achieve the ideal level to keep physical fitness. Equalize between activity abstain from food and unwinding will furnish the sound mental and physical capacities.The word yoga is derived from the Sanskrit root Yuj, which means to join or to yoke.

Keywords: *Yoga*

Introduction

Yoga is the oldest system of personal development encompassing body, mind, and spirit. The word yoga is derived from the Sanskrit root Yuj, which means to join or to yoke. In philosophical terms, yoga refers to the union of the individual self with the universal self. Yoga is an ancient Indian practice, first described in Vedic scriptures around 2500 B.C., which utilizes mental and physical exercises to attain Samadhi, or the union of the individual self with the infinite.

Yoga has long rich history can be divided into five main periods: Vedic Yoga, Pre-Classical Yoga, Classical Yoga, Post-Classical Yoga and Modern Vigor is the limit of a single physical framework to perform work, it is wanted in each parts of life i.e., for strolling, utilizing, sitting, standing, dozing, perusing, Dancing or any possible major or minor, things needs vigor. This vigor could be enhanced by Yogic asana and Yoga is very beneficial for your physical fitness levels. Not only does it reduce stress levels, but it also makes your whole body fitter and ensures longevity.

Yoga is perhaps the best known way to bust stress, which is the root cause of chronic diseases such as reproductive problems, heart problems, immune system problems, arthritis, depression, and anxiety. Because yoga also helps in healing the mind, the healthy mind can lead to greater physical fitness, and a fit body leads to a healthy life. The effects of yoga on the mind and body's fitness are amazing. The muscles are exercised by stretching and relaxing. Breathing and blood circulation also improve. One develops stronger muscles, and consequently a stronger body, which makes it more resistant to illnesses, whether viral or related to stress. Relaxation of the body and its fitness are achieved by yoga through breathing techniques known as pranayam, and strong but gentle asanas (poses). The exercises target the parasympathetic nervous system, a component of the autonomic nervous system that deals with the rest-and-repose mechanism of the body.Therefore, optimal function of this component would ensure that the damage sustained from too much stress is kept under control. Stress can show up through a sudden increase in heart rate, shallow breathing, excessive sweating, and affect physical fitness as well. Though these are normal body reactions, when an excess of these are triggered by stress it can be a sign of trouble and can upset one's physical and mental fitness.

Objectives of Yoga in Sports

Health, physical fitness and emotional stability are the objectives which bring yoga and physical education on acommon platform for the benefit of human individual. Healthis a more general and comprehensive term conveying the'feeling of well-being', while physical fitness is a more specific term. Physical fitness is the capacity of an individual to perform a given task at a particular time. Health and physical fitness are not static. They are always changing they follow the law can be maintained only by carefully selected physical activities which are called 'exercise'. The

utility of the particular exercise program can be evaluated only in forms of the effects that one obtained in promoting a particular factor of physical fitness.

Styles of Yoga

1. Anusara

Anusara is often described as Iyengar (a purist form of yoga) with a sense of humor. Created by the aptly named John Friend, Anusara is meant to be heartfelt and accepting. Instead of trying to fit everyone into standard cookie-cutter positions, students are guided to express themselves through the poses to their fullest ability.

2. Ashtanga

Six established and strenuous pose sequences the primary series, second series, and third series, and so on practiced sequentially as progress is made. Ashtangismove rapidly, flowing from one pose to the next with each inhale and exhale. Each series of poses linked by the breath this way is called a vinyasa.

3. Bikram

This is probably my favourite. I'm a hot yoga kind of girl, and Bikram features yoga poses in a sauna-like room. The heat is cranked up to nearly 105 degrees and 40 percent humidity in official Bikram classes. If it's called "Bikram" (for inventor Bikram Choudhury), it will be a series of 26 basic yoga postures, each performed twice.

4. Hatha

By definition, hatha is a physical yoga practice, which is pretty much all yoga you'll find in this hemisphere. One of the six original branches of yoga, "hatha" encompasses nearly all types of modern yoga. In other words, hatha is the ice cream if styles like ashtanga and Bikram are vanilla and chocolate chip. Today, classes described as "hatha" on studio schedules are typically a basic and classical approach to yogic breathing exercises and postures.

5. Iyengar

This is a purist yoga named after founder B.K.S. Iyengar. Props like blocks, straps, harnesses, and incline boards are used to get you more perfectly into positions and have earned the style its nickname, "furniture yoga." Appropriate for all ages and abilities, Iyengar yoga is all about precise alignment and deliberate sequencing. Don't take that to mean easy.

6. Jivamukti

A physical, limit-pushing practice that reintegrates yoga's traditional spiritual elements in an educational way for Western practitioners. Expect a theme for each class, Sanskrit chanting, and references to ancient scripture. Created by Sharon Gannon and David Life in 1984 in New York City, jivamukti translates as "liberation while living."

7. Kripalu

Kripalu is a three-part practice that teaches you to get to know, accept, and learn from your body. It starts with figuring out how your body works in different poses, and then moves toward postures held for an extended time and meditation. It then taps deep into your being to find spontaneous flow in asanas, letting your body be the teacher.

8. Kundalini

The practice of kundalini yoga features constantly moving, invigorating poses. The fluidity of the practice is intended to release the kundalini (serpent) energy in your body. Weren't aware you had any? Well, just think of it as an energy supply, coiled like a sleeping snake at the base of the spine, waiting to be tapped; the practice aims to do just that awaken and pulse the stuff upward through the body.

9. Prenatal

Yoga postures carefully adapted for expectant mothers. Prenatal yoga is tailored to help women in all stages of pregnancy, even those getting back in shape post-birth. When you keep your muscles strong through your term, they will still have the strength and energy to return to normal.

10. Restorative

Less work, more relaxation. You'll spend as many as 20 minutes each in just four or five

simple poses (often they're modifications of standard asanas) using strategically placed props like blankets, bolsters, and soothing lavender eye pillows to help you sink into deep relaxation. There's also psychic cleansing: the mind goes to mush and you feel brand new. It's something like group nap time for grownups. It's better not to fall asleep, though.

11. Sivananda

An unhurried yoga practice that typically focuses on the same 12 basic asanas or variations thereof every time, bookended by sun salutations and savasana (corpse pose). The system is based on a five-point philosophy that proper breathing, relaxations, diet, exercise, and positive thinking work together to form a healthy yogic lifestyle

12. Viniyoga

A highly individualized practice in which yogis learn to adapt poses and goals to their own needs and abilities.Vini actually means differentiation, adaptation, and appropriate application. Instead of focusing on stretching to get strong and flexible, viniyoga uses the principles of proprioceptive neuromuscular facilitation (PNF). PNF simply means warming up and contracting a muscle before stretching it. This decreases your chance of injury.

13. Vinyasa / Power

An active and athletic style of yoga adapted from the traditional ashtanga system in the late 1980s to appeal to aerobic-crazed Westerners. After having studied with Pattabhi Jois, Beryl Bender Birch and Bryan Kest simultaneously pioneered this westernized ashtanga on the East and West coasts, respectively. Power yoga doesn't stick to the same sequence of poses each time like ashtanga does, so the style varies depending on the teacher. Classes called "vinyasa" or "flow" in your gym or studio can be vastly different but in general stem from this movement and from ashtanga as well.

14. Yin

A quiet, meditative yoga practice, also called Taoist yoga. Yin focuses on lengthening connective tissues and is meant to complement yang yoga your muscle-forming Anusara, ashtanga, Iyengar, or what have you. Yin poses are passive, meaning you're supposed to relax muscles and let gravity do the work. And they're long you'll practice patience here too.

Importance of Yoga

Yoga is not a religion; it is a way of living that aims towards 'a healthy mind in a healthy body'. Man is a physical, mental and spiritual being; yoga helps promote a balanced development of all the three. Other forms of physical exercises, like aerobics, assure only physical well-being. They have little to do with the development of the spiritual or astral body.

Yogic exercise recharges the body with cosmic energy and facilitates:

Attainment of perfect equilibrium and harmony

- Promotes self- healing.
- Removes negative blocks from the mind and toxins from the body
- Enhances personal power
- Increases self-awareness
- Helps in attention, focus and concentration, especially important for children
- Reduces stress and tension in the physical body by activating the parasympathetic

  Nervous system

Conclusion

Yoga is a procedure to control and advance the psyche and figure to increase great health, adjust of psyche and self-acknowledgement. Fitting comprehension and rehearse one can achieve the ideal level to keep physical fitness.The effects of yoga and exercise seem to indicate that, in both healthy and diseased populations, yoga may be as effective or better than exercise at improving a variety of health-related outcome measures.

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Probiotic Foods For Improving Digestion and Boosting Immunity.

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Abstract:

Probiotics are live bacteria and yeasts that are good for us, especially our digestive system. We usually think of these as germs that cause diseases. But our body is full of bacteria, both good and bad. Probiotics are often called "good" or "helpful" bacteria because they help keep our gut healthy. Many types of bacteria are classified as probiotics. They all have different benefits, but most come from two groups. A doctor can advise us as to which group of probiotics can serve us best. The most common fermented foods that naturally contain probiotics (good bacteria in human gut), or have probiotics added to them include yogurt, kefir, kombucha, sauerkraut, pickles, miso, tempeh, kimchi, sourdough bread and some cheeses. The FDA regulates probiotics like foods, not like medications. Unlike drug companies, makers of probiotic supplements don't have to show their products are safe or that they work. Lactobacillus is the most common probiotic. It's the one we find in yogurt and other fermented foods. Different strains can help cure diarrhoea and may help people who can't digest lactose, the sugar in milk. Bifidobacterium is found in some dairy products. It may help ease the symptoms of irritable bowel syndrome (IBS) and some other conditions. Saccharomyces boulardii is an yeast found in probiotics. It may help fight diarrhoea and other digestive problems.

Keywords: Probiotics, Lactobacillus, Bifidobacterium, Saccharomyces, kefir, kimchi, miso, sauerkraut, yogurt.

Introduction:

The most common fermented foods, that naturally contain probiotics (good bacteria in human gut), or have probiotics added to them, include yogurt, kefir, kombucha, sauerkraut, pickles, miso, tempeh, kimchi, sourdough bread and some cheeses.

Probiotics are live bacteria and yeasts that are good for us, especially our digestive system. We usually think of these as germs that cause diseases. But your body is full of bacteria, both good and bad. Probiotics are often called "good" or "helpful" bacteria because they help keep our gut health.

We can find probiotics in supplements and in some foods, like yogurt. Doctors often prescribe probiotics as they help us with digestive problems.

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How Do They Work?

Researchers are trying to figure out exactly how probiotics work. This is how they may keep us healthy:

- When we lose "good" bacteria in our body(for example after we take antibiotics) probiotics can help replace them.
- They can help balance our "good" and "bad" bacteria to keep our body working the way it should.

Types of Probiotics:

Many types of bacteria are classified as probiotics. They all have different benefits, but most come from two groups. A doctor can help you the best.

Lactobacillus: This is the most common probiotic. It's the one we find in yogurt and other fermented foods. Different strains can help with diarrhoea and may help people who can't digest lactose, the sugar in milk.

Bifidobacterium: It is found in some dairy products. It may help ease the symptoms of irritable bowel syndrome (IBS) and is helpful in some other conditions.

Saccharomyces boulardii: It is an yeast found in probiotics. It helps fight diarrhoea and other digestive problems.

What Do They Do?

Among other things, probiotics help send food through our gut by affecting nerves that control gut movement. Researchers are still trying to figure out which are best for certain health problems. Some common conditions they treat are:

- Irritable bowel syndrome
- Inflammatory bowel disease (IBD)
- Infectious diarrhoea (caused by viruses, bacteria, or parasites)
- Diarrhoea caused by antibiotics

There are also some researches that show that probiotics are useful for problems in other parts of our body. For example, probiotics have helped some people with:

- Skin conditions, like eczema
- Urinary and vaginal health
- Preventing allergies and colds
- Oral health

How to Use Them Safely?

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The FDA regulates probiotics like foods, not like medications. Unlike drug companies, makers of probiotic supplements don't have to show their products are safe or that they work.

We can consult a doctor if taking probiotics is a good idea. In general, probiotic foods and supplements are thought to be safe for most people, though some people with immune system problems or other serious health conditions shouldn't take them.

In some cases, mild side effects might include an upset stomach, diarrhoea, gas, and bloating for the first couple of days after one starts taking them. They may also trigger allergic reactions.Under the circumstances stop taking probiotics and consult the doctor.

These days, people are opting for many probiotic supplements, but one can also get them from fermented foods. Here is a list of 10 probiotic foods that can help improve digestion and boost immunity.

1. Yogurt : Yogurt, or curds (dahi), is one of the best available and natural probiotic foods that can add to our daily diet. A bowl of curd with lunch every day maintains a healthy gut flora. We can eat it alone or can top it up with antioxidants-rich fruits like strawberries, blueberries and apples.

2. Kefir : If one is lactose intolerant, he may try kefir. It is one of the best sources of probiotics, only next to yogurt. One can take this tangy drink alone or pair it with fresh fruit, or add it to a smoothie.

3. Idli : Love south Indian food? You must be happy to know that most of the south Indian dishes are a rich source of probiotic. Idli, dosa and other such food items are prepared by fermenting rice and lentils. By undergoing fermentation, the bio-availability of its minerals increases, helping the body assimilate more nutrition.

4. Indian Cheese (Paneer) : Although most types of cheese are fermented, it does not mean that all of them contain probiotics. Indian cheese, or paneer, is a rich source of probiotics. One can consume raw cottage cheese with black pepper or add it to his/her salads for its milky flavour.

5. Fermented Soybean - Akhuni : Akhuni is a fermented soybean cake, which one can have it mixed with chillies in chutneys (pickle) or added in meat dishes. It is nothing but a fermented, dark-coloured semi coarse paste of soya beans, which has a strong, sharp flavour.

6. Miso : Miso is a fermented soybean paste and a popular Japanese seasoning. Rich in several important nutrients, miso may reduce the risk of heart-related problems. Miso or even the soy sauce are quite popular in Indian homes, which add a burst of umami and flavour to anything you are cooking.

7. Green Peas : Now, you must be wondering how come green peas have made it to this list. According to a study published in the Journal of Applied Microbiology, it was found that green peas contain Leuconostoc mesenteroides, which is a potent probiotic, often associated with fermentation under low-temperature conditions. So, what are you waiting for, add green peas

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to your pasta, salads, and omelettes.

8. Kimchi : We all have tasted kimchi salad at least once while dining at a Chinese restaurant. It is an Asian fermented foods veggie dish, made with cabbage, radishes, and scallions. The unique strains found in khimchi will not only heal our gut, but may also help us stay in shape.

9. Pickles

Pickles are another classic fermented foods veggie option. However, not all pickled vegetables are fermented. Therefore, one should make sure that the pickled veggie one is eating is, in fact, fermented and not just pickled. One can make one's own fermented pickles and other veggies at home with these easy pickle recipes.

10. Buttermilk

If one does not like or prefers eating curds, one may consider buttermilk. There are two main types of buttermilk: traditional and cultured. Traditional buttermilk is nothing but a leftover liquid from making butter, which contains probiotics. However, cultured buttermilk does not have any probiotic benefits.

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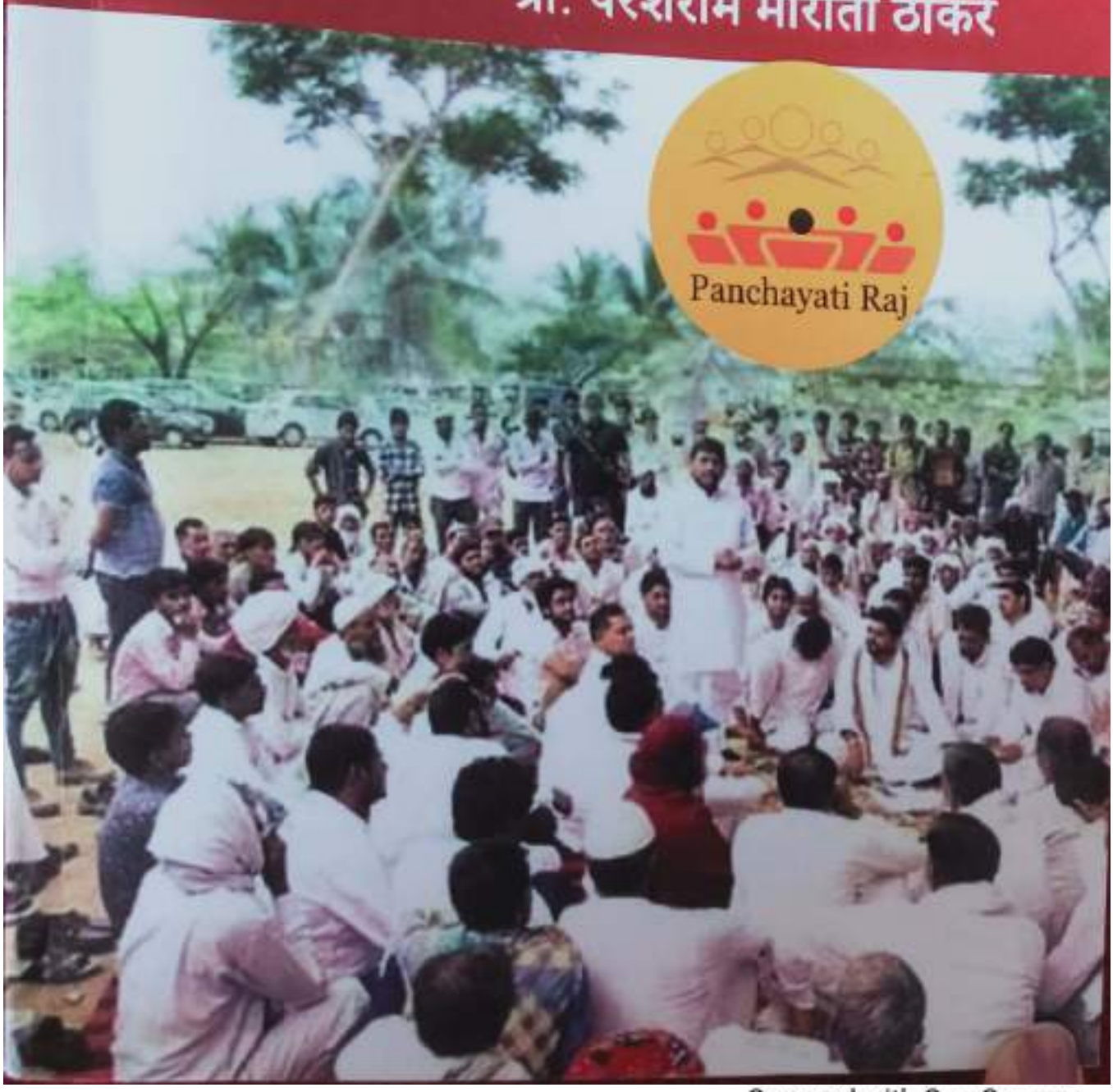

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अनुक्रमणिका

प्रा. परशराम मारोती ठाकरे

राज्यशास्त्र विभाग प्रमुख

एम.ए., एम.फिल

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CONTAMINATION OF HEAVY METAL IN FOODSTUFF AND HUMAN HEALTH RISK

Mr. Shailesh Kashinath Bhagat [27]

Abstract

Heavy metal contamination has an negative effect on the aquatic, terrestrial, and atmospheric environment. These might also be natural or anthropogenic in origin and not effortlessly degradable. Anthropogenic activities have unwontedly transferred these heavy metals in our food chain and meals web. Directly or indirectly these heavy metals have entered in our food via irrigation through wastewater effluent released by means of industries; shortage of accessible freshwater for irrigation, utilization of fertilizers and insecticide, and different anthropogenic activities have induced acute and chronic diseases. . The dose–response relationship suggests that the heavy metals have a slender stage of deadly concentrations which pose a risk to the target population. Anthropogenic sources of heavy metals commonly dominate natural sources, and foreseeing the synergy of this with the degrading environmental conditions, the health of human beings is a depend of concern. When these heavy metals get accrued in the human food, it effects in abnormalities affecting human survival and mortality. Recent information recommend that the human body gets affected with the aid of heavy metallic contamination at lower stages than earlier anticipated and evidenced. Agrochemicals are resistant and adaptive in nature, and with the increasing dose and newly synthesized compounds to protect crops, undesired aspect consequences and the prices of food production are on a hike. Practices like street food merchandising and addition of preservatives in packed meals increase the chances of heavy metal contamination in food materials. A comprehensive evaluation of the food chain right from the main producers to client level is necessary to make certain food protection and quality.

Keywords: Agrochemicals, Waste Water, Ecosystem, Anthropogenic Activities.

Introduction

The heavy metal pollution is one of the world's top environment-related problem, and has risen due with the growing industrialization and urbanization. It has become one of a very serious threats due to its deleterious outcomes on human being and environment (Yang and Sun 2009). With accelerated monetary growth globally in latest years, manufacturing and makes use of of heavy metal has accelerated many folds, leading to pollution of the environment (Raju et al. 2013; Zojaji et al. 2014). Heavy metals have a greater density, atomic weights,

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or atomic numbers. Due to its adverse outcomes exposure of heavy metals are constantly considered as a plausible risk to human beings and the environment. Toxic metals such as cadmium, mercury, lead, and arsenic are the main reasons of human fitness problems. Contamination of heavy metals can't be physically recognized or exotic due to the fact of its colorless, odorless nature and easily get absorbed. When environmental conditions changes or exceed the tolerance of the environment, heavy metals get transformed in to ionic forms, which are energetic and bioavailable which may act as chemical time bombs and causes serious risk to the ecological system (Wood 1974). Exposure of even decrease concentrations of some of these elements are very toxic to the human body and can cause acute or chronic diseases. In the past, only a few cases were mentioned about soil contamination by some of the particular heavy metals, but in the current years, presence of quite a number heavy metals have been suggested in the each component of the ecosphere (Zhou 1995). Heavy metals may get released in the atmosphere via gases, dust, smoke from various industries, electricity production, metallurgy, transportation, and constructional materials. Only mercury in the atmosphere is existing in the form of aerosols and gets deposited in the soil through precipitation and natural sedimentation. Heterogeneous contamination of a number of heavy metals can intensify the deadly contamination concentration. Pollution via heavy metals in the environment has turn out to be a huge ecological problem due to the fact it takes a longer time duration for degradation and has a longer biological half-life (Abii and Okorie 2011). Anthropogenic source of heavy metals includes a number activities like pesticide and fertilizer application in the crop field, untreated effluent discharge from industrial activities, mining activities, and sewage irrigation etc. (Zhang et al.2011). A record from Central Sweden by means of Lin (1998) referred to that environmental pollution by lead is mostly due to urban industries. The lead contamination can spread or get transported by means of water and winds from the waste heap/dumps to another surrounding area. Lead contamination of ground water also happens through percolation/leaching of industrial waste. Another plausible supply of heavy metal pollution in the agricultural land is wastewater irrigation from sewage and industrial effluents. Due to lack of fresh water resources, domestic wastewater or industrial effluents are used for irrigation in urban and peri-urban agricultural practice (Singh et al. 2010). In India, approximately 73,000 ha of agricultural land is irrigated with wastewater (Kaur et al. 2014).Wastewater irrigation when consistently practiced may additionally lead to accumulation of toxicants (including heavy metals) in the soil as well as in vegetable crops (Marshall et al. 2007). Contamination of heavy metals in vegetables usually arises from irrigation of polluted water. However, contamination may additionally occurs due to use of chemical fertilizers and pesticides, at some stage in the technique of harvesting, transportation of vegetables, and the storage. The pollution of the environment is due to human activities owing to the discharge of heavy metals from tanning industries, lubricants used for protection of machinery, etc. Contamination of heavy metals in food via consumption can emerge as a hazard to human health. According to a report by WHO and FAO (2007), greater concentrations of heavy metals in India were located in milk and drinking water and have passed the safe limit. In peri-urban areas, heavy metal contamination is occurs basically via dust and aerosols ladden with metals which enters in to the soil, and also gets deposited or absorbed by the leaves of the vegetables and plants (Abii 2012; Kachenko and Singh 2006). Vegetable crops grown in surrounding areas of industrial areas have been reported to possess high extended concentration of heavy metals (Singh and Kumar 2006). The heavy metals get accrued in the aquatic ecosystem as properly which further get transferred in the fishes and other

aquatic organisms. When the contaminated water is used for irrigation, the soil get contaminated and from the soil heavy metals get absorbed by the roots of the plants or crops and get gathered in different part of the plants. Through the plants, these poisonous metals in the end coming into the food chain. The heavy metals contaminated fruits and vegetables when consumed through ingestion, causes a number of kinds of diseases and abnormalities in human beings depending upon the degree of contamination. Some of the heavy metals are essential in lower concentration to aid crucial functions but may inhibit enzymatic activities and poses toxic outcomes on higher concentrations (Koropatnick and Leibbrandt 1995). In past few decades, human health problems are of main concern with reference to the consumption frequent food stuffs together with fruits and vegetables contaminated with heavy metals (Milacic and Kralj 2003).

Based on the toxicity, some of the heavy metals such as arsenic, lead, mercury, and cadmium ranked first, second, third, and fourth in the list, respectively. Arsenic, lead, and mercury are ranked as the top three most hazardous components in the priority list of the Agency for Toxic Substances and Disease Registry (ATSDR). Fig. 1 gives an sckechematic representation of sources of heavy metallic contamination in the environment. Cadmium, lead, arsenic, and mercury pose serious health risk when consumed through contaminated food. Cadmium and lead have massive health hazard since these elements are easily accessible to the food chain. Children are more vulnerable when exposed to these elements due to the fact it gets easily accumulated in tissues and causes retardation in teens and negative impact on the kidneys, cardiovascular system and auditory system (Rahimi 2013).

This chapter a certain overviews of heavy metal infection in foodstuff and associated human health risk. Contamination of foodstuff through heavy metal has grow to be a global problem. Appropriate prevention measures need to be seriously implemented to keep away from metal contamination in food. People devour food on the basis of their social and economic capabilities. The scenario in growing countries are extra vulnerable, as low-income people are unable to afford the good quality food and the proper quantity of nutrition. The country wide and worldwide regulatory bodies should try to minimize the urban pollution load to minimize contamination in fruits, vegetables, and cereals. The contamination of following heavy metals are most frequent in the food stuff.

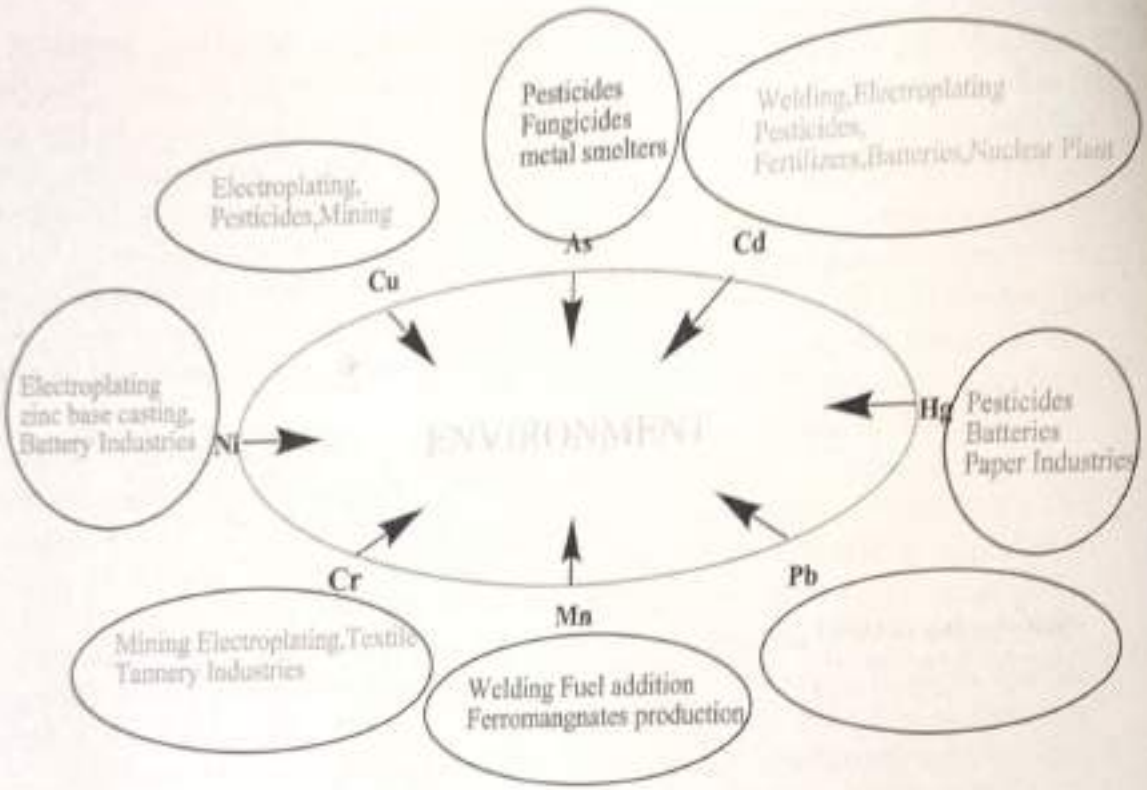

Fig 1 Source of Heavy Metals in the environment.(Modified from Paul 2017)

1. Lead

Lead is a naturally occurring element and is the most usually used element after iron. No vast biological function of lead in a human being is known. Exposure of lead can be from the air, water, dust, food, and consumer products (Lead poisoning and health 2016). Exposure of excessive concentration of lead can be toxic and can have an effect on the health of all ages of peoples. Lead can extra severely affect vulnerable population particularly infants, younger children, pregnant women, etc. Lead contamination in food stuffs is mostly induced via the application of chemical fertilizers and pesticides or through contamination of soil by using sewage and industrial effluents. Once in the meals chain, lead can easily accumulated in the human body, which may result in acute poisoning (Tajkarimi et al. 2008). The three major body systems, i.e. nervous system, hematopoietic system, and renal system, are particularly sensitive to this metal (Naseri et al. 2015; Zahir et al. 2005). Lead can affect many organs and functionalsystems of the body; similarly excessive exposure can be carcinogenic, damages the brain, and reasons miscarriage in pregnant women. Regulatory limits of lead in airand water as per EPA are 0.15 micrograms per cubic metre (for air) and 15 ppb in drinking water.

2.Cadmium

Cadmium makes up to 0.1 ppm of the earth's crust (Wedepohl 1995). It is a toxic heavy metal existing naturally in the environment. Primarly cadmium contaminal occurs from mining, smelting, and refining sulphidic ores of zinc as well as from dust generated by recycling iron and steel scrap (Ayres et al. 2003). Phosphate fertilizers include various amounts of cadmium up to 300 mg/kg, and therefore, utility of excessive quantity of chemical fertilizers in agricultural soils results Cd

contamination in agricultural lands (Grant and Sheppard 2008; Jiao et al. 2004). The excessive level of cadmium infection usually takes place in the industrial areas. A large exposure of cadmium to human beings is additionally occur by cigarette smoking. Resident living close to hazardous waste dump sites or industries which emit Cd into the ambient air has a viable risk of exposure through respiration of such contaminated air. The Cadmium contamination into the groundwater, soil, and crops which has resulted in negative health results such as hypertension, mutagenesis, carcinogenesis, and kidney lesions (Binns et al. 2003). The foremost culprit of Itai-itai disease is cadmium exposure which is characterized by severe pain in backbone and joints. The cadmium poisioning can have an effect on calcium metabolism and results brittle bone and kidney failure (Abbasi 2015). Cadmium poisioning in mass level was first mentioned in Japan which was happened due to consumption of contaminated rice grown in river water contaminated by cadmiun due to release of mining spealage. The concentration of cadmium must be under 5 ng/m3 in the atmosphere, two mg/kg in the soil, 1 µg/L in freshwater, and 50 ng/L in seawater (Rieuwerts 2015).

3.Chromium

Chromium is a toxic heavy metal that occurs in the environment in oxidation states. Chromium(III) in traces, is an essential nutrient for human biological process. Both chromium(III) and chromium(VI) are stable elements, while chromium(VI) a very toxic form and also carcinogenic i.e. cancer-causing for human beings (Thompsonet al. 2012; Costa and Klein 2006) and teratogenic i.e. malformations in a foetus(Xia et al. 2016). The release of chromium is usually takes place via industries. such as from tanning, mining, electroplating, and textile industries (Ajmal et al.1996; Moncur et al. 2005). Coal and oil combustion also leads to release of Cr in the environment (ATSDR 2000). The exposure of chromium to human can also be through oral, dermal, and/or via inhalation. The oral intake of these heavy metals is also takes place from contaminated wells (EPA 1998). Exposure of chromium may cause various sorts of diseases i.e. mouth ulcer, indigestion, acute tubular necrosis, vomiting, abdominal pain, kidney failure, and even death (Beaumont et al. 2008).The most concentration level of chromium in water provide should be 0.05gm/L according to Indian standards (Benazir et al. 2010).

4.Arsenic

Arsenic is a naturally occurring element and is present in water air and soil. Arsenic pollution and toxicity are one of a most important global problem. Contamination of arsenic is occur by means of natural geological sources which effects in groundwater contamination. Arsenic contamination also take place due to human activity like mining and industrial processes. It is existing in both forms, i.e. organic and inorganic. The major use of As is in the alloys of lead, i.e. automobile batteries and ammunition. Arsenic is also broadly used as a wood preservative. Leaching of As into the groundwater can be via rocks, soil, and pesticides. Volcanic eruptions and mining activities can also lead to the release of As in the environment. Groundwater contamination of As is a global problem. A higher level of As is generally determined in the aquifers and less in surface water. Dietary intake of even a very small quantity (less than 5 mg) should result in vomiting and diarrhea (Kingston et al. 1993). Lethal dose of As ranges from 100 to 500mg which consequences acute poisoning (Schoolmeester and White

1980). The permissible limit of As in ingesting water is 0.01 mg/L as given by the Bureau of Indian Standards.

5.Mercury

Mercury is the only metal that is existing in a liquid state at standard temperature and pressure and is a negative conductor of heat a fair conductor of electricity in contrast to other metals (Hammond 2005). It is also recognized as hydrargyrum (Random House Webster's Unabridged Dictionary 2014), a shiny metal liquid existing in trace amount in igneous and sedimentary rocks. Mercury exposure to human beings occur via ingestion, inhalation, and skin contact. Studies have advised that mercury vapors inhalation can reason immune system disorders, kidney dysfunction, infertility, negative outcomes on the foetus, heart failure, and Alzheimer's disease. Exposure to mercury can cause serious health troubles and a hazard to the early stage of development in children. Toxic effect of mercury is reported in the nervous, digestive, and immune systems and on the lungs, kidneys, skin, and eyes. People are often exposed to mercury in the form of natural mercury, that is, methyl mercury, generally from consumption of fishes and shellfish from mercury contamination in seas and oceans (report by the WHO). Also, mercury exposure with the aid of food can be through the consumption of contaminated rice and different food stuff. Mercury poisoning can reason Minamata disease, which is a neurological syndrome. As per recommendations of EPA and Food and Drug Administration (FDA) mercury concentration should be less than 2 ppb in drinking water, less than 1 ppm in seafood as per guidelines of the Occupational Safety and Health Administration (OSHA). The organic mercury have to be 0.1 milligrams of per cubic meter of workplace air, and the exposure should not be extra than 0.05 milligrams per cubic meter of metallic mercury vapors for 8-h shifts and 40-h work week (OSHA).

Source of Heavy Metals

Metallic chemical elements that have greater density and greater atomic weight or mass and are capable of inflicting an destructive impact on human and environment in low concentrations due to its poisonous and toxic effect are usually termed as heavy metals (Lenntech 2014). These are naturally occurring elements determined in the earth and rocks. Due to some of the natural but basically due to anthropogenic activities, once these metals are released, get centered in the plants, animals, and human tissues via inhalation and ingestion and once in a while through miss handling or accidents. Chemical elements such as lead (Pb), cadmium (Cd), zinc (Zn), mercury(Hg), arsenic (As), silver (Ag), chromium (Cr), copper (Cu), iron (Fe), and the platinum
(Pt) group are considered as heavy metals.

1.Natural Source of Heavy Metals

Metals have been existing in the earth from the beginning of the earth's formation,i.e. billions of years in the past (Dalzeil 1999) by means of the natural process of the biogeochemical cycle. The weathering process of underlying bedrocks is the result of naturally occurring heavy metals in the soil. Mendip region's soil (Great Britain) has been found to be closely enriched with lead, zinc, and cadmium due to mineralized veins and excessive concentration of metallic deposits in the bedrock (Fuge 1991). Bedrock weathering with slightly increased heavy metallic concentration can result in metal enrichment at some stage in soil formation process (Blaser et al. 2000). Both natural and anthropogenic sources are the major reasons of increasing heavy metal contamination in the

environment. Sources of natural cause can be from windblown soil particles,volcanic eruptions, woodland fires, biogenic sources, and sea-salt sprays (Muhammadet al. 2011). Windblown dust naturally emitted is frequently from the industrial origin Fig. 2.2).

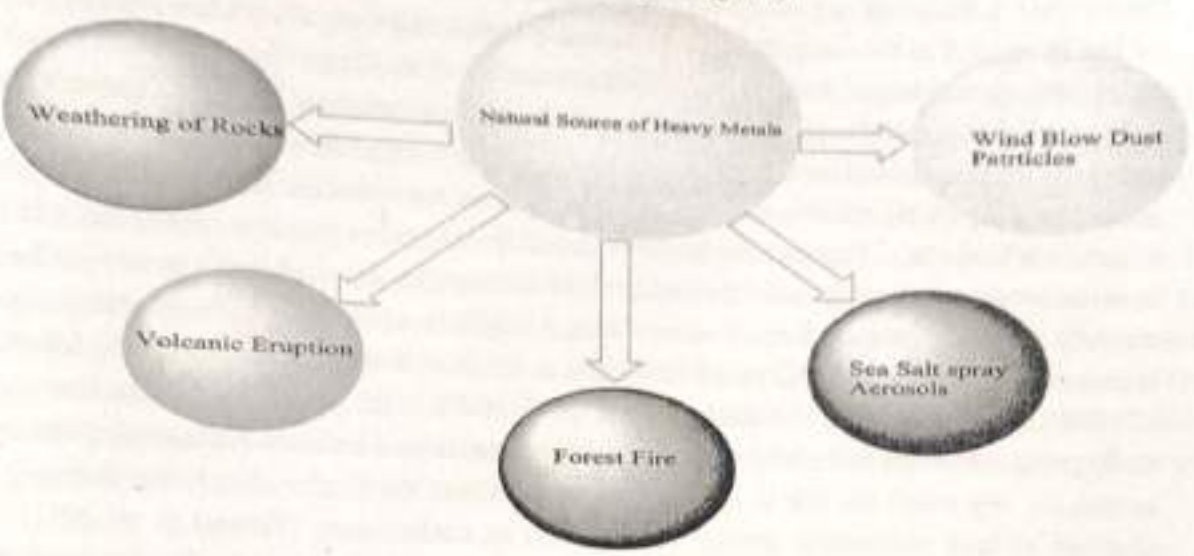

Fig 2 Natural Source of Heavy Metals in the Environment

2.Anthropogenic Sources

The anthropogenic sources of heavy metallic contamination are mining activities; application of pesticides, chemical fertilizers, and herbicides; irrigation of crop fields with contaminated water released through small industries and tanning industries; and use of municipal waste as fertilizers (Alloway and Jackson 1999; Srivastava et al. 2018; Sarkar et al. 2018). Applications of mineral fertilizer that contains trace amount of heavy metals are some of the main sources of heavy metal contamination in the food that we consume (Gray et al. 1999). Other anthropogenic activities are the disposal of waste in farmland (Merian et al. 2004; Srivastava et al. 2015, 2016), traffic emission, use of lead as an antiknock in petrol, cigarette smoking, metallurgy and smelting, aerosol cans, sewage discharge, and constructing materials (Nriagu 1990; Srivastava et al. 2017)

3.Food Contamination by heavy metals

During the process of food production, packaging, and transport from 'farm to fork', there are a number of feasible methods by which the food gets contaminated by way of various toxicants along with heavy metals. Contamination has such potential to migrate into the food and grow to be bioavailable after oral intake. The largest supply of food contamination takes place via food contact materials. Plastics, printed papers, and boards are some of the basic food contact materials. These meals contact materials are cheaper, durable, and non-porous which makes it mainly the most commercials' container for storage of food. As the process of contamination from its main source was once carried in the environment, then contamination level and the concentration of heavy metals transferred into the food chain and food net via different trophic levels. Heavy metals present in the soil, air, and water get gathered in the plants or animals, and ultimately reaching into the foodstuff. The contamination through human activities, as a result, can affect a massive geographical region affecting the

presence of Mg, Ba, Fe, Sr, K, Na, and Mg, and their values were greater than the standard limits, i.e. >10−6. High level of groundwater contamination near the industrial waste site and municipal strong waste dump site due to poor management was reported in Chandigarh, India (Ravindra and Mor 2019). This study revealed that deeper aquifer was less contaminated than the shallow aquifers. The shallow aquifers are usually used for drinking and irrigation purposes which might directly or indirectly exposed human beings to those of the heavy metals.

Noncarcinogenic Risk of Heavy Metals

A latest find out about performed in Iran and revealed that heavy metals like Zn, Fe, Al, Pb, Ni, Cd, Mn, As, and Cr were more accumulated in the medicinal plants than herbalplants and only Hg and Cu were found to be higher in herbal plants and its target hazard quotients (THQ) had been less than 1 which is regarded to be secure for consumption (Kohzadi et al. 2019). Fluoride contamination in Iranian drinking water was estimated to be low and does now not had any carcinogenic risk for both adults and children, but fluoride contamination in food and air used to be excessive and had significant effect on human fitness (Keramati et al. 2019). Heavy metal contamination on crayfish, meat, fish, and cow skin used to be estimated in Nigeria, and it was located that the hazard index of raw, smoked, and cooked meat showed the larger non carcinogenic adverse health effects (Taiwo et al. 2018). A study performed in India also reported non carcinogenic hazard due to excessive arsenic contamination in Indianrice (Sharafi et al. 2019).

Conclusion

Food contamination with heavy metals has emerge as a main problem all over the globe and has an damaging impact on human health and the environment. Heavy metals have been on the earth naturally. However, their release in the environment has been accelerated by human activities main to pollution in the environment. These pollutants are non degradable and have reached into our food chain and food web, resulting in abnormalities in the metabolism of humans leading to acute and chronic disease or even death. Local people residing nearby areas of pollution site ought to be made conscious of the deleterious outcomes of the pollutants released and how that can be a risk to their life. The cultivation and production of food crops close to place contaminated with a excessive concentration of heavy metals ought to be banned. Due to the scarcity of available freshwater, wastewater irrigation is used as an choice source for irrigation. Unfortunately, continuous use of wastewater is also a high cause of heavy metal pollution and contamination of food crops. Pollution in water bodies have also become an environmental issues because water is the only source of survival for living organisms and the survival rely upon water before prehistoric time. In view of this, rainwater harvesting and watershed management ought to be adapted to harness the freshwater resource which may want to be utilized for farming.

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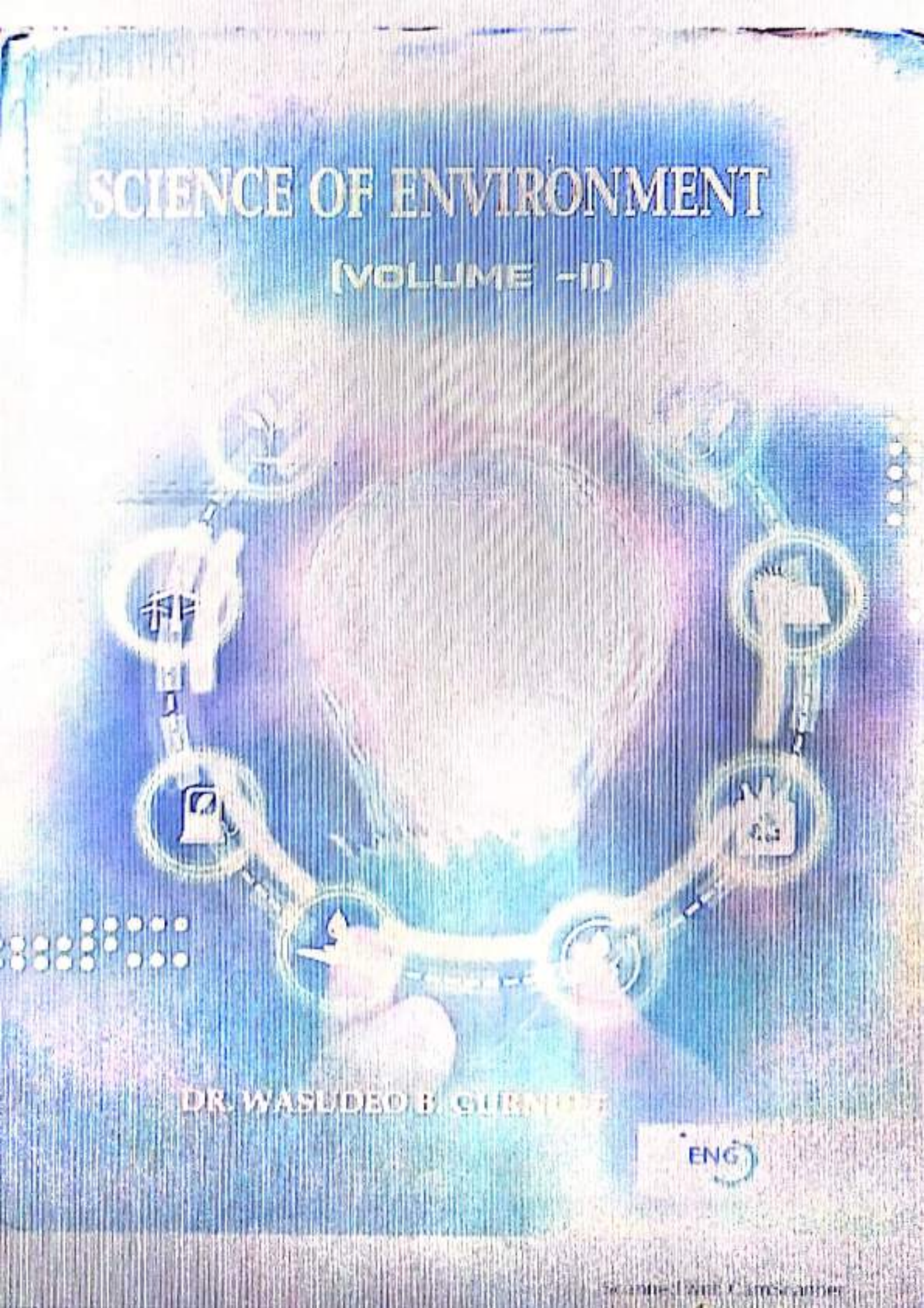

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Chapter 6

NANO-MAGNETIC ADSORBENTS FOR REMOVAL OF HEAVY METALS FROM WASTEWATER

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ABSTRACT

Heavy metals exist in maximum of the industrial wastewaters and water components are amongst the maximum severe environmental contaminants. As such, elimination of those metals from water and wastewater is a vital technique for protective public health and the environment. Thanks to its biocompatibility, flexibility, low cost, and excellent results, the adsorption approach has been widely used for this kind of purpose, making it essential to increase cheaper adsorbents in eliminating those metallic contaminants. In latest years, using magnetic adsorbents has received interest due to the fact of their magnetic property, which enables the separation and elimination of the adsorbent the usage of an outside magnetic composites, mainly the nano-sized ones, show off superiority over different adsorbents. Given their excessive adsorption yields, those were used as green and cost-powerful adsorbents for eliminating heavy metallic contaminants.

KEYWORDS: Adsorption, waste water, Magnetic Nanoparticle, Heavy metals

INTRODUCTION

Water is important and essential part of the universe and it plays a vital role within the proper functioning of the earth' ecosystems. Water stocks on earth can be divided into two categories i.e. salt water and fresh water. The total volume of water on earth is about 1386 million cubic km. Only 2.5 % of the total volume of water is fresh water and less than 1 % of all fresh water is directly available for human use (Amin et al., 2014). From a global point of view, water is unevenly distributed, with great natural variations in availability at the local level. Water pollutants are one of the most important modern-day issues which could pose a hazard to human health and the environment. The presence of poisonous chemical substances and organic agents above natural ranges maybe described as water pollutants. Pollutants contained in wastewater can be chemical contaminants which include heavy metals, natural and inorganic particles, toxins, pharmaceuticals, and hormones, or other risky substances.

(Unuabonah & Taubert, 2014). Despite the presence of vast bodies of water, drinking water is not readily available in most parts of the world. This is most dramatic in regions with rapid industrialization and population growth like large cities. Over seven hundred organic and inorganic micro pollutants are mostly toxic and carcinogenic while some have long residence times in the environment and are neither biodegradable nor bio transformable. Drought and desertification are day-to-day realities for many people and have a devastating impact on people's livelihoods. Availability of water for purposes like drinking, irrigation and industrial use are the major concerns.

Several techniques available to remove these and other micro pollutants from water and industrial wastewater: chemical precipitation, ion-exchange, electrodialysis, electrolysis and adsorption (Dąbrowski et al., 2004; Demirbas, 2008; Leta, 2017). Among these, ion- exchange is expensive technique and chemical precipitation leave behind secondary pollutants however adsorption is a less expensive technique that removes both organic and inorganic pollutants from water (Demirbas, 2008). It is therefore extremely engaging for water treatment, particularly within the developing countries that are most heavily plagued by water contamination.

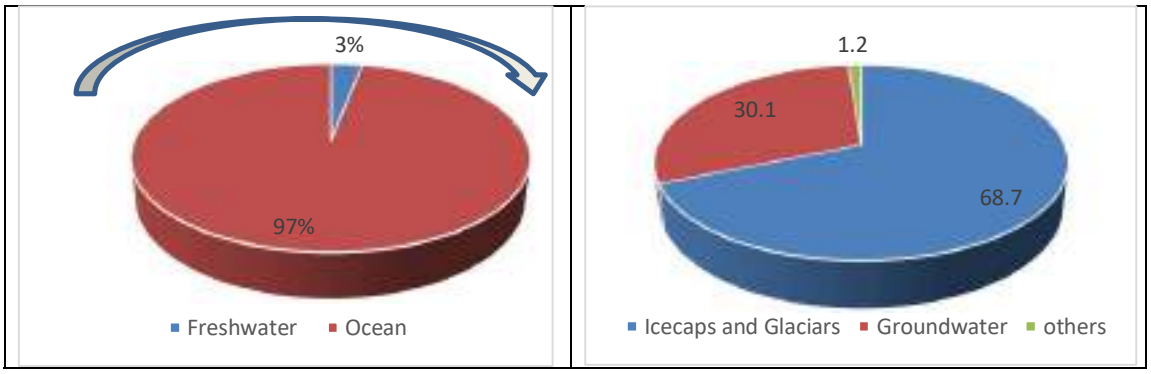

Fig. 1: (a) Water distribution on the earth and (b) freshwater distribution on the earth.

TYPES OF WATER CONTAMINATION

Water resources in most developing countries are being impure on the so much aspect their capability to sustain ancient uses as a result of high increase rates. Increasing urbanization and manufacture have exacerbated the case by creating really big purpose sources of pollution. Major centres of population and rural agro-industry have seriously broken surface water quality, even in very massive rivers and groundwater has together been contaminated. There are varied ways of water contaminations a number of them at intervals the subsequent subsections are shortly mentioned

.

AGRICULTURE

The agricultural sector is the most important consumer of worldwide fresh resources, with farming and livestock production exploitation concerning 70 % of the earth's surface water supplies, however it's conjointly a heavy water polluter. Round the world, agriculture is the leading reason for water degradation. When it rains, fertilizers, pesticides, and animal waste from farms and cattle operations wash nutrients and pathogens—such micro-organism and viruses—into our waterways. Nutrient pollution, caused by excess element and phosphorus in water or air, is the number-one threat to water quality worldwide and may cause algal blooms, a cyanogenetic soup of blue-green algae which will be harmful to people and wildlife.

SEWAGE AND WASTEWATER

Used water is also one kind of wastewater. Wastewater comes from our sinks, showers, and toilets (suppose sewage) and from commercial, industrial, and agricultural activities (suppose metals, solvents, and poisonous sludge). The time period additionally consists of storm water runoff, which happens whilst rainfall contains street salts, oil, grease, chemical substances, and particles from impermeable surfaces into our waterways More than eighty percent of the world's wastewater flows returned into the surroundings without being dealt with or reused, in step with the United Nations; in a few least-evolved countries, the discern tops ninety five percentage. These centers lessen the quantity of pollution which includes pathogens, phosphorus, and nitrogen in sewage, in addition to heavy metals and poisonous chemical substances in commercial waste, before discharging the treated waters returned into waterways.

RADIOACTIVE WASTEWATER

Radioactive waste is produced from industrial, medical and scientific processes that use radioactive material. Radioactive waste can have detrimental effects on groundwater, surface water and marine resources. Radioactive waste comes from many sources like operations conducted by nuclear power stations produce radioactive waste, mining and refining of uranium and thorium are also causes of marine radioactive waste, waste is also produced in the nuclear fuel cycle which is used in many industrial, medical and scientific processes and many more.

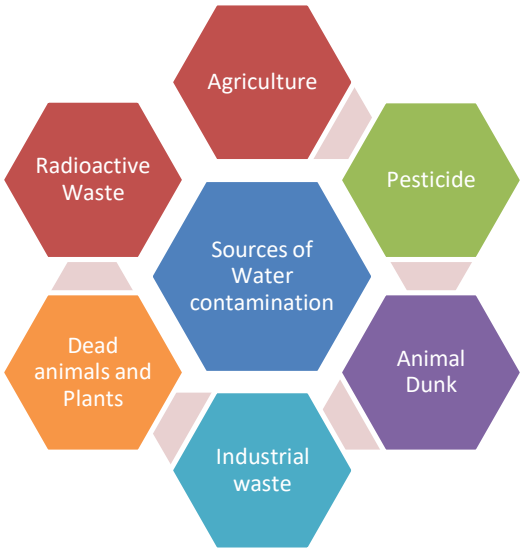

Fig. 2: Major source of water contamination

HEAVY METALS

Heavy metals are the most non-unusual maximum contaminants that can be found in industrial wastewater, these cause damage to the nearby environment and pose various health risks to humans (Ruthiraan et al., 2019). Such metals are non- decomposable with inside the surroundings and generally tend to modify the physical, chemical and organic qualities of water. The supply through which metals are launched into the ecosystem consist of volcanic eruption, soil, and rock weathering and human activities which include using polluting chemical compounds from metals, mining, manufacturing, etc. Additionally, heavy metal storage is found at significant depths in surface waters which are followed by streams / springs to lakes / rivers. However, factors contributing to the concentration and identity of heavy metals in surface water involves chemical aspects containing oxyhydroxides / aquatic vegetation scavenges heavy metals causes bioaccumulation in living organisms (Khan et al., 2015). Metals with density more than 5 g/cm3 are referred to as heavy metals, for instance, lead, mercury, arsenic, zinc and chromium are few of the heavy metals. In 1987, United States Environmental Protection Agency (USEPA) posted a listing of the contaminants discovered in wastewater that impose critical dangers into the human health, which include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, zinc, silver, thallium, and selenium(Ramos et al., 2002). In fact, the systems present in these metals can impose excessive damage and trouble on features of the cardiovascular system, liver, kidneys, blood, skin, glands, reproductive system, immune system, nervous system, urine and digestive system("Heavy Metal in Drinking Water Its Effect on Human Health and Its Treatment Techniques – a Review," 2018). These metals have been classified based on their atomic

weight, density, chemical properties, and toxicity. Based on the periodic table, one can categorize heavy metals under three general classes

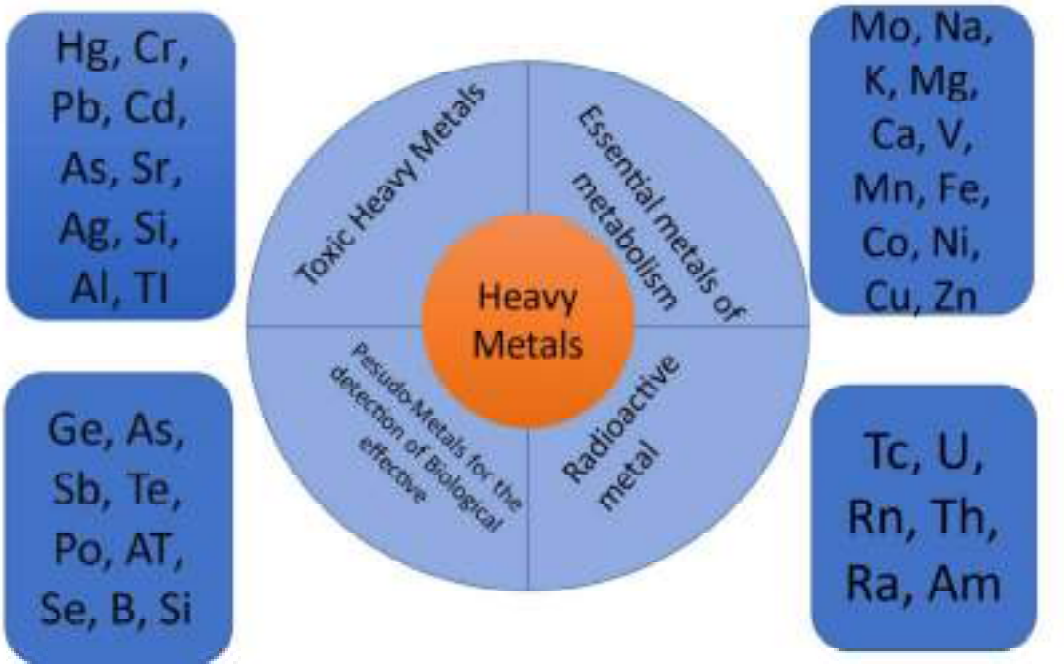

Fig. 3: Classification of heavy metals by toxicity (Tamjidi *et al.*, 2019)

ARSENIC

Environmental pollution by arsenic is due to natural phenomena such as volcanic eruptions, soil erosion and human activities (Ungureanu et al., 2015). Inorganic arsenic may be a confirmed substance and is that the most vital chemical stuff in drinking-water globally. Arsenic may also occur in an organic form. Inorganic arsenic compounds (such as those found in water) are extremely toxic whereas organic arsenic compounds (such as those found in seafood) are less harmful to health. The on the spot signs and symptoms of acute arsenic poisoning encompass vomiting, stomach ache and diarrhoea. These are observed with the aid of using numbness and tingling of the extremities, muscle cramping and death, in intense cases.

CADMIUM

Cadmium (non-degradable) ions particularly maintain big toxicities in addition to accessibly developed to organism through food that makes it tough to rip off and causes organic damage. Cadmium introduces into the surroundings via gradual erosion and rocks and soil

abrasions, along with volcanic eruptions. Furthermore, cadmium is a pollutant that immediately affects human health in numerous methods along with limiting cell growth, bone infections and lung damage. Due to these kind of health issues, WHO (World Health Organization) has said that the restriction of cadmium in blood need to now no longer be greater than 0.005mg/L(Boparai et al., 2011).

CHROMIUM

Chromium is widely distributed in the earth's crust. It can exist in oxidation states of +2 to +6. Wastewater contamination by chromium is of great concern because of its widespread 29 applications in industrial processes such as metallurgy, tanning industries, refractories and 30 foundries and its high toxicity. In fact, hexavalent chromium Cr (VI) has significant toxic 31 effects on humans and animals (Jobby et al., 2018). Moreover, Cr (VI) compounds have been classified by the 32 International Agency for Research on Cancer (IARC) as carcinogenic to humans. The 33 World Health Organization (WHO) fixed the upper limit value for Cr (VI) compounds in drinking water to 0.05 mg L-1 34 (*Cadmium in Drinking-Water Background Document for Development of WHO Guidelines for Drinking-Water Quality*, 2011).

WATER-TREATMENT TECHNOLOGIES

A multiple number of techniques are available for waste water treatments Fig. 3 shows list of important techniques used for water treatment and their classification on the basis of conventional techniques, established techniques and ongoing research techniques.

Each method has its personal benefits and barriers in time period of the nature of pollutant it could treat, cost, performance and environmental impact. Combination of various strategies for powerful and monetary elimination of contaminants is a primary studies vicinity those days. This section discusses about various treatment techniques mentioning their recent use

in the removal of heavy metal with the help of nano-magnetic material by adsorption methods.

NANO-MAGNETIC ADSORPTION

In the past decade, nanoscale solid materials became vital as a result of their special properties and therefore the nanomaterials field has gained increasing attention from scientists and engineers. A key reason for the modification within the chemical and physical properties of tiny particles as their size decreases is that the increased fraction of the "surface" atoms, that happens beneath conditions (coordination number, symmetry of the local environment, and so forth) that are totally different from those of the bulk from the energy purpose of view, a decrease in the size of a particle ends up in a rise of the surface energy fraction. Nanomaterials possess a series of distinctive physical and chemical properties. A very vital one is that the majority of the atoms that have high chemical activity and adsorption capability to several metal ions are on the surface of the nanomaterials. The surface atoms are unsaturated and are so subject to combination with different component ions by static electricity. Therefore, nanomaterials will powerfully sorb many substances as well as trace metals and polar organic compounds (*Mercury in Drinking-Water Background Document for Development of WHO Guidelines for Drinking-Water Quality*, 2005). Presently, the distinctive physical properties of nanomaterials are becoming vital attention, specially the salient magnetic properties. Alteration within the characteristics of nanoparticle such as size, composition, shape and structure will enhance the material's magnetic properties.

Magnetic nanoparticles are extremely recyclable, non-toxic, reusable associated possess magnetic characteristics that provide advantages of convenient separation upon using an external magnetic field (Ambashta & Sillanpää, 2010). The sorption on the surface of solid adsorbents demonstrates an excellent perspective for the treatment of heavy metal ion contaminated water. It's a lot of advantageous than alternative ways as a result of its simple design and low investment in terms of initial cost and space needed.

The adsorption method becomes extremely cost effective if the adsorbent used is recyclable. Because of these properties, adsorption process is gaining a great deal of attention from researchers within the treatment of industrial waste water contaminated with heavy metal ions (Wang & Chen, 2009). Ideally an adsorbent need to offer enough binding sites for suitable adsorption of heavy metal ions. Main traditional adsorbents used for heavy metal ion removal are activated carbon, metal oxides, clay etc. to name a few (Moreno-Piraján & Giraldo, n.d.; Sharma et al., 2018). These traditional adsorbents suffer from certain constraints comparable to low sorption capacities, lack of functional tunability, reusability and recyclability. To beat such limitations, new sorbents in nano dimensions are being synthesized and adopted for water decontamination.

The advantages of support magnetic nanoparticles, in addition to changed magnetic nanoparticles as an appropriate candidate for adsorption, are indexed as follows: (1) a huge variety of particles produced the usage of easy and convenient methods. (2) The capability of

adsorption is significant because of the huge surface area. (3) Toxicity is decrease and offers precise magnetic strength, and (4) metal-weighted down sorbents conveniently separate from processed wastewater via an external magnetic field. However, water pollution are ordinarily non-magnetic. Therefore, it's far most efficient that the magnetic nanoparticles blend at the side of the pollution competently, and captured cautiously with pollution because of their maximum ferromagnetism.

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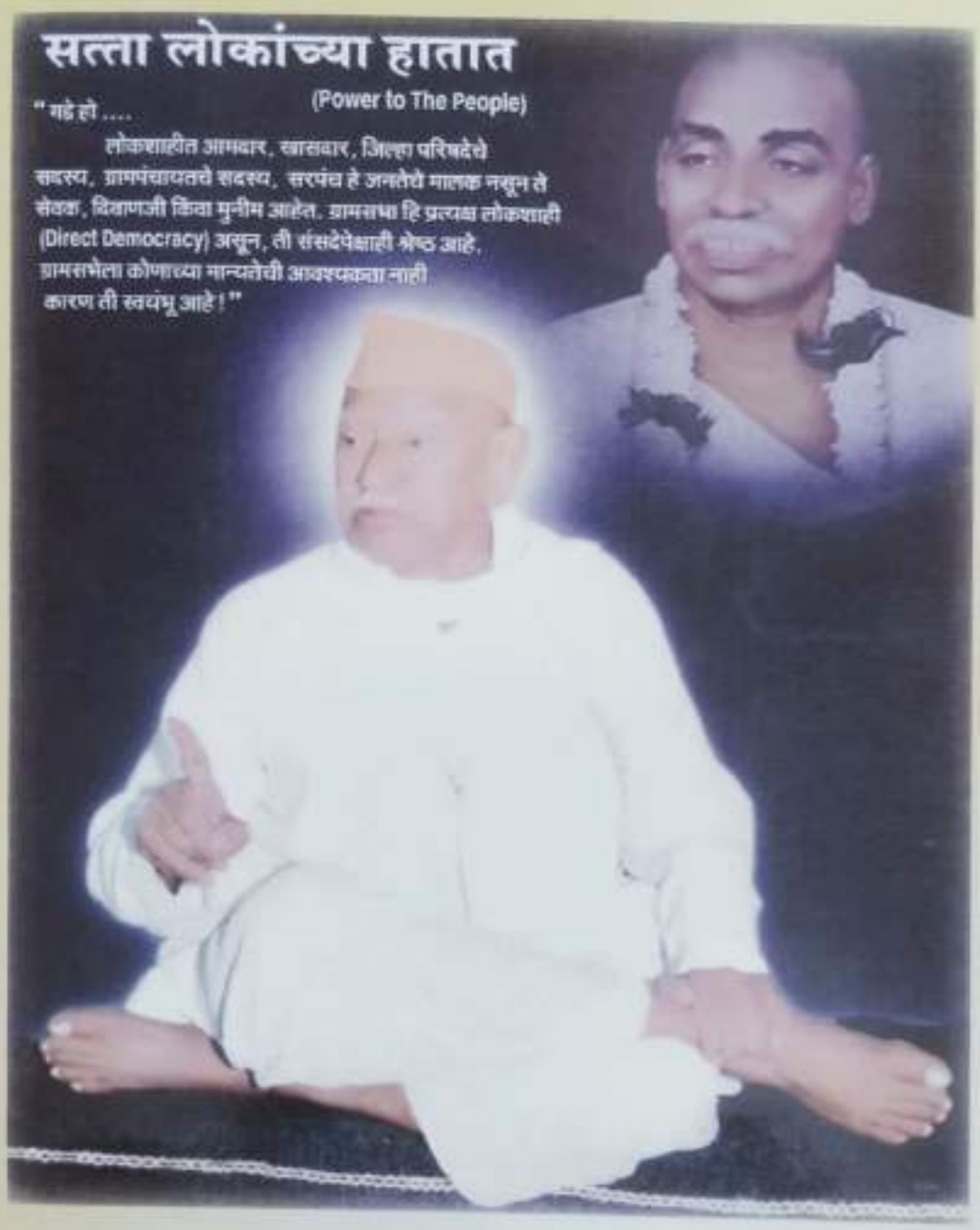

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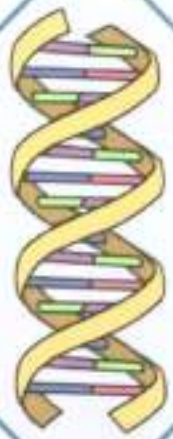

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INDEX

Investigation Of Sacred Plants In Lakhandur Area With Respect To Their Sacred And Medicinal Value

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ABSTRACT

The present investigation describes the sacred plants of Lakhandur area of Bhandara district. Many sacred places are present in Lakhandur Taluka like Durga Mata Mandir Chaprad, Vitthal Rukhmai Mandir Bhagadi and Hanuman Mandir Charbhatti. Many sacred trees are used for worship the God and Goddess in these temples. The study on diversity of sacred plants used in various religious worshipping exhibits the important role of plants in human life. It is believed that some plants are represented by gods and Goddesses, therefore, people are worshiping plants and offer their flowers, leaves, fruits, wood, seeds to gods in various religious ceremonies for getting blessings. In the present work, local information is gathered, documented and enumerated for sacred plants. Medicinal information was gathered by referring local flora and previous literature. The study has shown that 26 sacred trees are used in religious and medicinal uses in Lakhandur area. These local tree species of religious importance are used as medicines to treat many health problems. These plants are considered as sacred due to their medicinal, aesthetic and natural values. Plant worship maintains local biodiversity and plays an important role in its management and conservation. Women in Lakhandur areas worship some plants which indirectly helps protecting these plant species.

Keywords: Sacred, religious, medicinal

INTRODUCTION

A sacred plant has a spiritual reverence. Sacred plants appear throughout world history in various culturesincluding Hindu mythology. They also hold profound meaning in contemporary culture in places like Japan, Korea, and the Philippines.Plant worship is core part of many religions. It includes aspects of the eco-friendly belief that plants, forests, rivers, mountains, etc have a life forceand need to be conserved and used in a sustainable manner. Human beings have been observing the growth and death of trees, and the annual death and revival of their foliage. These trees have often seen as powerful symbols of growth, death and rebirth.Evergreentrees, are sometimes considered as symbols of the eternal, immortality or fertility.The sacred Banyan tree is the national tree of India. In Hindu belief, the Kalpavriksha is a wish granting tree.The sacred plants include the Bael, Durva, Tulsi. Flowers such as kamal, Champa, naryel, paan (betal leaf), banana leaf, etc are also valued as sacred. Tulsi in India is cultivated for religious and traditional medicine purposes.It is widely used asherbal tea, commonly used in Ayurveda.The traditional tree worship practices in India show the symbiotic relation of man with nature. Indigenous communities are being conserving its valuable biodiversity. Sacred plants have a unique vital role in human welfare. These plants are valued for economic, commercial and medicinal resources. In view of this, in present investigation the we surveyed some sacred places in Lakhandur area.

Methodology:

Information on the use of sacred plants was collected through surveys in different localities and temples in Lakhandur area. Sacred values are gathered from Pandits in temples, Vaidus andlocal people in this area. From the previous literatures the medicinal uses of the sacred plants were studied.

Results and Discussion:

A total 26 plant species were studied for their sacred and medicinal values.

Enumeration of Sacred Plants

1. ***Aegle marmelos***(L.)Correa(Local name: Bel) Family: Rutaceae

Sacred value: It is considered to be very sacred because it is associated with Lord Shiva. The Hindus worship Lord Shiva by offering bel patra during Shivratri.

Medicinal value: The leaves, bark, roots, fruits, and seeds are used in traditional medicine to treat various illnesses.The fruit of this plant is consumed as a healthy food supplement.

2. ***Azadirachta indica***A. Juss. (Local name: KaduNimb)Family: Meliaceae
Sacred value: The leaves of this plant used in many religious ceremonies. The dried twigs are used in Hawan
Medicinal value: It is used as traditional pest control. It is used in treatment for acne and dandruff. Bark cures leprosy, skin diseases, eczema, leukoderma, malarial fever, ulcers, wounds, diabetes. The leaves are bitter astringent. It has anti inflammation, antiseptic and insecticide properties. Neem oil is used for hair growth.
3. ***Bauhinia racemosa*** (Local name: Apta) Family: Fabaceae
Sacred value: In Vijaya Dasami people exchange leaves of this plant as Sona (Gold).
Medicinal value: It is used for digestive diseases such as diarrhoea and dysentery.Leaves have been used in the treatment of asthma traditionally because of their antihistaminic action. The extract of leaves possesses significant antidiabetic activity by reducing blood glucose level.
4. ***Butea monosperma***(Lam.) Taub. (Local name: Palas)Family: Fabaceae
Sacred value: Flowers are offered to Goddess Saraswati. flowers are used for making a dry colour which is used during Holi. People kept twigs in front of their houses in Pola festival.
Medicinal value: Bark is used for the treatment of pitta, kapha, anorexia, dyspepsia, diarrhoea, dysentery, haemorrhoids, bone fractures, rectal diseases, gonorrhoea, hepatopathy, ulcer, tumours and diabetes. The leaves have astringent, anti-inflammatory and aphrodisiac properties and are useful in pimples, boils, colic, worm infestations.
5. ***Calotropis procera***(Localname – Rui)Family- Asclepiadaceae
Sacred value: The flowers are used in the worship of Mahadev and Lord Hanuman. On every Saturday, leaves are made into Garland and offered to Maruti.
Medicinal value: Latex applied on boil and to the wound after scorpion sting for pain relief.Oil smeared leaves warmed and tied to ripe boil.
6. ***Cocos nucifera*** L.(Local name: nariyal)Family: Arecaceae
Sacred value: Fruits are used for all worship and rituals. It is placed on the kalasha. Coconut is a symbolic representation of the three-eyed Lord Shiva.
Medicinal value: Coconut is taken by mouth for bladder stones, diabetes, high cholesterol, and weight loss.Coconut oil is used for hair growth.
7. ***Curcuma longa*** L.(Local name- Haldi)Family- Zingiberaceae.
Sacred value: The rubbing of turmeric and oil is an essential part of the Hindu marriage festival. The rhizome used in many religious ceremonies of the Hindus.
Medicinal value: Turmeric is excellent liver tonic. Turmeric powder is considered as a good antiseptic. Rhizome powder with boiled milk is taken at bed time during cough and cold. It is also used in healing injuries. It is used for jaundice and to stimulate gall bladder activity. It reduces high plasma cholesterol. Combines with neem leaves considered effective against ringworm and scabies.
8. **Cochlospermumreligiosum** (Common name :Gongle) Family : Bixaceae
Sacred Value: The flowers are used as temple offerings specially during Mahashivratri.
Medicinal Value: The plant is used as sedative, stimulant, and is used in gonorrhoea, jaundice, cough, trachoma, syphilis etc. The gum obtained from the plant is useful in treating pharyngitis, dysentery, diarrhoea, asthma, eye problems and stomachache.
9. ***Cynadondactylon*** **L.**(Common name:Durva)Family-Poaceae
Sacred value: Leaves offers for Lord Ganesha. The plant is worshipped on Durga Ashtami.
Medicinal value: The plant decoction is effective against Cobra bite. leaves controls the blood pressure. It is used internally in the treatment of chronic diarrhoea.
10. **Ficus benghalensis**L.(Local name: vat) Family: Moraceae
Sacred value: The banyan tree is considered as the symbol of immortality. In Vatpournima women worship the tree for long life of their husbands.
Medicinal value: The arial roots are useful for treating vomiting and leucorrhoea. The bark is useful for controlling burning sensation, diarrhoea, dysentery, diabetes, ulcers, skin diseases, gonorrhoea. The latex is useful in cracks of the sole and skin diseases.
11. ***Ficus religiosa*** L. (Local name: Peepal)Family: Moraceae

Sacred values: In the Bhagavad Gita, Krishna says, "I am the Peepal tree(ashvattha) among the trees. Hence people consider it to be Lord Vishnu. It is believed that in the tree there reside – The Trimurti. The roots being Brahma, The trunk Vishnu and The leaves Shiva.
Medicinal value: The bark is astringent and aphrodisiac, and an aqueous extract of it has an antibacterial activity against Staphylococcus aureus and Escherichia coli. Leaves and tender shoots have purgative properties and are also recommended for wounds and skin diseases. The latex is good for neuralgia, inflammations and haemorrhages.
12. ***Gossypium herbaceum*L.**(Local name: cotton)Family : Malvaceae
Sacred value: Raw cotton also known as Kapus is used for religious ceremonies. It is used to create Vaat (wicks) for Pooja purposes as per one's need.
Medicinal value: People use the bark and the root to make medicine. Oil prepared with seed is used in treating headache.
13. ***Gmelina arborea*** Roxb.(Local Name: Shivan) Family: Verbenaceae
Sacred value: Farmers grow this tree in their fields and worship on Shivratri festival.
Medicinal value: Roots are used to cure abdominal pain, burning sensation and flowers used as astringent, dry fruits are used for promoting hair growth, leprosy and constipation.
14. ***Hibiscus rosa-sinensis*** L.(Local name- Jaswand)Family- Malvaceae
Sacred value: This flower is used to offering Lord Ganesha.
Medicinal value: Flower used in impotency, bronchial catarrh. Dried flower powder with Piper longum effective against bleeding pile. Flower and bark are emmenagogue. Leaves stimulate expulsion of placenta after childbirth; laxative, anodyne. Flower and roots are used in menorrhagia. Powder of dried petals mixed in a cup of milk and take twice a day for anaemic patient. Boil dried flower petals in coconut oil and apply on hairs to blacken.
15. ***Mangifera indica*** L.(Local name: Aam) Family: Anacardiaceae
Sacred value: Aam leaves are used in kalash which represent Laxmi, Power of Wealth. Tree branches are used in Yagna. In every puja at house the mango branches, leaves and Kalash are necessity and indicated as auspicious.
Medicinal value: The plant parts are used in wounds and ulcers. They are a great source of magnesium and potassium, both of which are connected to lower blood pressure and a regular pulse.
16. ***Nelumbo nucifera.***(Local Name – Lotus)Family– Nymphaeaceae.
Sacred value: Lotusis the favourite flower of Lakshmi, the Goddess of Wealth and Prosperity. The pink Lotus is said to also be a favourite of Brahma. It is the seat of Goddess Saraswati, Goddess Lakshmi, Lord Vishnu and Lord Brahma.
Medicinal Value: Filament are astringent and haemostatic, prescribed for bleeding piles and Menorrhagia. Flowers decoction is given in cholera, fever, strangury, palpitation of heart. Rhizomes Are given in piles, chronic dyspepsia and dysentery. It is applied externally to cutaneous eruptions, Scabies and ringworm. The latex sap found within the leaves, stems, and flowers has great anti-bacterial activity.
17. ***Nyctanthusarbor-tristis*L.** *(*Local name: Parijataka)Family: Oleaceae
Sacred value: Hindus believed, Lord Krishna and Radha dance under this tree.
Medicinal value: Leaves used as antibacterial. It cures asthma, chronic fever, greyness of hair and bronchitis.
18. ***Ocimum sanctum*L.**(Local Name – Tulsi)Family– Lamiaceae (Mint Family).
Sacred Value: Tulsi is the most sacred plant for Hindus.The leaves are used in holy Water during worship. Tulsi vivaah is a very popular religious practice. Yogis wear Tulsi Mala to purify their mind, body and soul.
Medicinal Value : Tea with ginger or black pepper and tulsi cures cough and cold. Decoction of tulsi Black pepper and adrak with little salt is good for malaria. A leaf is used with salt to cure Toothache. Leaves relief in stress and cold and enhances the concentration power of the person. Seed are used in genitourinary diseases.
19. ***Oryza sativa*** L.(Local name- Rice / Chawal)Family- Poaceae (The Grass Family)
Sacred value: Among Hindus the plant with inflorescence is held sacred as a symbol of wealth Goddess Lakshmi. It is also used for auspicious mark (Tilak) on forehead. During the wedding ceremony, rice is sprinkled over the newlyweds to bless them with a prosperous married life.

Medicinal value: Rice water is used as nourishing drinks. It is demulcent and refrigerant in febrile and inflammatory diseases and in dysuria, also used as a vehicle for compound preparations used for gynaecological disorders.

20. ***Phyllanthus emblica***L.(Local Name- Amla)Family: Euphorbiaceae
Sacred values: The Amla tree is worshipped by women on Amla navmi.
Medicinal Value: It is one of the most potent and nourishing fruit. Powdered fruits of *Phyllanthus emblica, Terminalia chebula*and *Terminalia bellirica*are taken in equal proportion (known as 'triphala) with warm water or milk acts a mild laxative. Amla's high concentration of Vitamin C.
21. ***Plumeria rubra*** L.(Local Name: DokChampa)Family: Apocynaceae
Sacred value: Flowers are used for worshipping Lord Shiva.
Medicinal Value: Wood is used for the treatment of Laxative and taken as vermifuge.
22. ***Prosopis spicigera***(L.) Druce.(Local name: Shami) Family: Mimosaceae
Sacred value: Leaves used for worshipping Lord Shiva.
Medicinal value: The leaves are used as astringent and paste is used to treat ulcer, fever and vomiting. The leaves of this herbal plant can be applied to the eyes which relieves from irritation.
23. ***Rosa indica*** L.(Local name- Rose /Gulab)Family- Rosaceae
Sacred value: The rose is a sign of love and peace and used in many religious events.
Medicinal value: Rose hips tea is used in the treatment of diarrhoea. Rose petals are mildly sedative, antiseptic, anti- inflammatory, and anti- parasitic. Rose plant having is very useful as blood purifier. Helps soothe skin irritation. Soothes sore throats.
24. ***Saccharum officinarum*** L(Local name – sugarcane)Family:Poaceae
Sacred value- Stem and leaves are used on the occasion of holi. Small pieces of sugar cane are used along with grains during makarsankranti. It is use in tulsivivah.
Medicinal value- Sugarcane juice maintains the highest amount of the plant's natural vitamins and minerals. The high concentration of calcium, magnesium, potassium, iron, and manganese makes sugarcane juice alkaline in nature. The presence of flavonoids helps the body stave off cancerous cells, especially prostate and breast cancer.
25. ***Saraca indica***L.(Local name- Ashoka)Family: Annonaceae
Sacred value: The Ashoka tree gets a mention in the epic Ramayana as the "Ashoka Vatika". Ashoka is also worshipped in Durga Ashtami.
Medicinal value: Bark is used as uterine tonic, used for suppressed menses, leucorrhoea, menstrual pain, menorrhagia, complaints of menopause. Also used for dyspepsia, biliousness, colic, burning sensation. Flowers is pounded and mixed with water, used in haemorrhagic dysentery, bleeding piles and retention of urine.
26. ***Ziziphus jujuba*** Lamk.(Local name- Ber)Family:Rhamnaceae
Sacred value- Fruits are used in Laxmi Pooja during Diwali. It is sacred to Shiva.
Medicinal value- The fruit is used for improving muscular strength and weight, for preventing liver diseases and stress ulcers, and as a sedative. People use ziziphus for conditions such as diabetes. It Helps Control Blood Pressure. It detoxifies Blood.

CONCLUSION:

The study on sacred plants used in various religious worshipping shows the important role of plants in human life. It is alleged that some plants or plant parts are represented by gods and goddesses. Therefore, people are worshiping plants and offer their flowers, leaves, fruits, wood, seeds etc to gods in various spiritual rituals for getting blessings. The limited people of the study area are possessing sound knowledge of these plants. Therefore, it is essential to conserve the traditional knowledge. The study has shown that in Lakhandur area 26 plant species of religious importance are used as medicines to treat many health problems. These plants have sacred and medicinal value. People worship these plants which in turn helps in conservation of these plant species.

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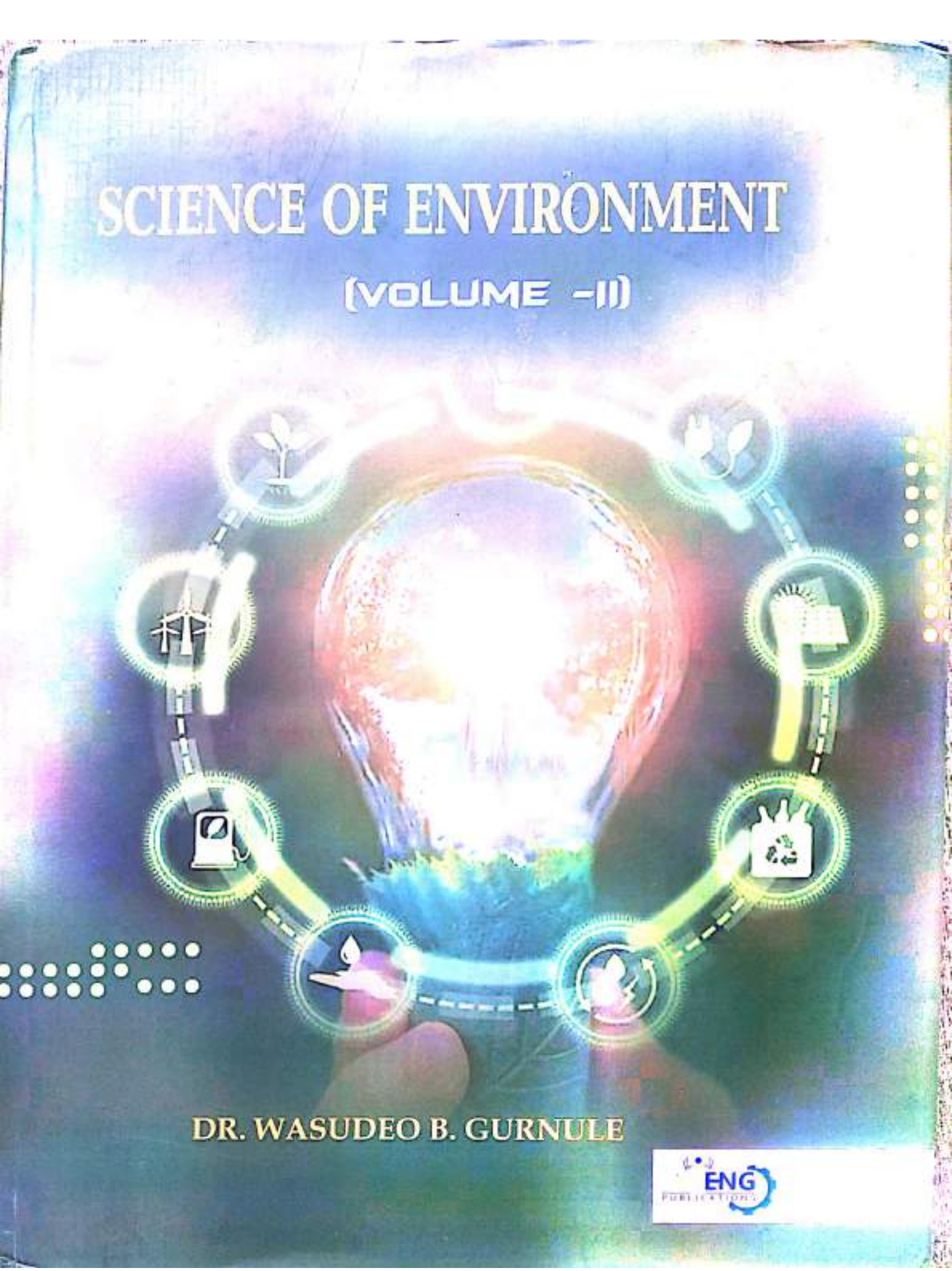

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AN OVERVIEW ON AGRICULTURAL POLLUTION ITS CAUSES, IMPACT AND CONTROL MEASURES

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ABSTRACT

Food is the basic need of all human beings. For production of food human have developed the agricultural practices long time ago. In world as the demand of food increases, there was a need of progress in farming practices. These practices have helped in increase in crop yield. But some farming practices have bad effect on ecosystem, which bring about the contamination or degradation of ecosystem. These bad farming practices result in agricultural pollution. If agricultural pollution kept untreated then it causes various bad effect on human health as well as our environment. So, there is a need to control the agricultural pollution to keep us and our environment healthy.

KEYWORDS: Agricultural Pollution, Blue baby syndrome

INTRODUCTION

Energy is needed to maintain and sustain the life. Food is the main source of energy. Plant produces their food by photosynthesis, but animals cannot produce their food by the process like photosynthesis. So, they depend on plants for food. Human being also depends on plants for acquisition the food. When human evolved, they developed several practices which were necessary and helpful for life. Agriculture was one of them. In past the agricultural practices were eco-friendly. But as the population increases the demand of food was also increases. To fulfil the demand of food there was a need to increase crop yield. To increase the yield of crop human tried to integrate several practices and techniques irrespective of its impact and hazards on environment. Some Farming practices lead to the contamination or the degradation of the ecosystem are referred to as Agricultural pollutants. Agricultural pollutants are any biotic or abiotic by-products of farming practices that lead to the agricultural pollution. Agricultural pollution shows harmful effects on humans and on ecosystem. So, there is a need to aware about the causes, effect and control measures of agricultural pollution.

CAUSES FOR AGRICULTURAL POLLUTION:

For the cause of agricultural pollution there is no only single practice responsible however it is the result of simultaneous malpractices that are residual byproducts which when released untreated, fall into the category of agricultural pollutants (Chen et al., 2017). Main important causes are as below.

- **Excessive use of Chemical Pesticides and Herbicides:**

Pathogens, pests and weeds are major risk to agriculture. Several techniques are applied regularly in the field of agriculture to overcome the pathogens, pests and weeds. Application of pesticides and herbicides is one of the simple, easy and effective technique against pest, pathogens and weeds. Human being uses excessive pesticides and herbicides to kill the pests. The excessive use of pesticides and herbicides has become a big problem to the environment, because it contains many chemicals which can impact the ecological system in an adverse manner. Pesticides are used to kill the pest but when used in wrong way or in excessive amount it also kills useful insects. When pesticides mixed with water, it seeps down into the ground water and makes it more toxic(Xudong, 2011). These chemicals are washed through the soil in the groundwater and thus contaminate it.

- **Use of excessive amounts of fertilizer:**

Farmers use chemical fertilizers to improve the crop yield. These chemical fertilizers contain phosphates and nitrates. These fertilizers when use in excessive amount, it can be left behind for long time in soil. During irrigation it mix with water and flows towards water reservoirs like lakes and rivers which leads to contamination of rivers and lakes. Excessive nitrates and phosphates cause algae contamination and thus troubles the water environment. Using large amounts of chemical fertilizer also contaminate the groundwater and thus harms the whole ecosystem, including plants, animals and human being.

- **Contaminated water**

Crops need water for growth and development. Farmers use water from canals, rivers and local reservoirs like lakes and ponds for irrigation. These reservoirs can get polluted because of drainage of industrial waste and effluents released directly into them. If farmers use this polluted water for irrigation, crop is directly exposed to the water polluted with harmful substances like mercury, lead, arsenic, and cadmium. If these crops are used by humans and animals, it can cause various diseases.

- **Heavy metals**

The use of chemical fertilizers and pesticides leads to accumulation of heavy metals like cadmium and arsenic in the soil. The accumulation of heavy metals lead to the contamination of the groundwater. When plant absorb these heavy metals, it affects their natural growth. Plants grow on heavy metal polluted soils resultant in reduction in

growth(Mohnish Pichhode & Nikhil, 2016). When humans and cattle feed upon these plants, it causes many health issues.

- **Soil erosion**

Soil erosion is regarded as a natural form of agricultural pollution. It can also be destructive to the environment. Farmers are often not aware of soil erosion and do not protect their fields from soil erosion. Through wind and rain, the upper layer of soil is carried in rivers. It also results in the natural water movement. This soil erosion occurs continuously every year which ultimately weakens the soil fertility.

- **Wrong Animal management**

Humans use excessive amount of antibiotics in order to fight the disease problem in cattle and birds. Wrong animal management cause agricultural pollution. Wrong way of animal treatment leads to serious diseases. Since humans eat this antibiotic contaminated meat, it can cause serious problems.

- **Improper Manure management**

If the manure is not treated in a proper way, it can lead to agricultural pollution. Animal urine contain urea and other excretory by-products. If this by-product does not treat properly it goes to natural water resources as well as agricultural soil. It leads to water pollution and damage to the soil. Furthermore, higher numbers of farm animals cause an increase in the production of greenhouse gases (methane and CO_2) which in turn contributes to an increase in the speed of global warming.

- **Introduced species**

New invasive species have been established through the increased globalization of agriculture. These invasive species carry pests and diseases which can harm the local ecosystem. Besides this biodiversity may be reduced because the local species are not able to deal with some of the pests.

- **Genetically modified organisms**

The use of genetically modified organisms in the form of crops result in the genetic contamination of local native plants. This causes the extinction of native species.

- **Improper Land management**

A bad land management causes an irreversible decline in fertility of soil. Farmer's burns the crop residue like rice straw in improper way which causes soil and air pollution.

Fig. 1: Causes of Agricultural Pollution

EFFECTS OF AGRICULTURAL POLLUTION

Agricultural pollution causes many harmful effects on human, animals and whole ecosystem.

Some of the effects are as below

- **Effects on human health**

Pesticides, ammonia, heavy metals, fertilizers, and oils from farms and farm machinery cause serious health problems. When they enter in drinking water, it results in direct health problems or even premature death. Nitrates from the contaminated water causes blue baby syndrome(van de Vijver et al., 2013) which leads to infant fatalities. Harmful chemicals such as heavy metals can impair vital body organs, the immune system, and can destroy the nervous system. Parasites and bacteria from animal waste may also contaminate water, contributing to diseases and death.

- **Eutrophication**

Increased levels of chemical nutrients such as nitrogen and phosphorus, from manure and fertilizers results in eutrophication (Khan & Ansari, 2005). Eutrophication is the dense growth of algae on the water surface and mainly leads to high occurrences of algal blooms. Eutrophication extensively depletes dissolved oxygen. It results in killing of fish and other aquatic life. It also results in increasing incidence of paralytic shellfish poisoning, leading to death.

- **Decrease in crop yields**

Because of toxic chemicals used in agriculture, they remain in the soil for years. Toxic chemicals have the potential of contaminating waters which results in killing of soil microorganisms as well as beneficial insects. In this way, the soil fertility, produce quality,

and ecological balance is obstructed which can in the long-term reduce the overall agricultural yields.

- **Soil pollution**

Some chemicals from pesticides can cause long lasting damage to the soil. This can lead to a decrease in fertility of the soil. Thus, many areas of lands which are currently used for agricultural purposes may not be suitable for it in the future anymore. Therefore, agricultural pollution also leads to soil pollution.

- **Air pollution**

Agricultural pollution also leads to air pollution. Many machines used for agricultural purposes secrete harmful greenhouse gases like CO_2. Beside this, farm animals emit large amounts of methane which is considered as one of the most harmful greenhouse gases. This leads to global warming.

- **Destruction of biodiversity**

The use of pesticides in agriculture can kill many useful as well as beneficial insects and other small animals. This results in reduction in biodiversity. Beneficial insects, soil microorganisms, birds and some rare small species like butterflies which have far-reaching effects on biodiversity are being destroyed by chemicals in pesticides. Use of diclofenac in painkiller used for cattle result in destruction of vulture species.

- **Water pollution**

Water pollution is another big problem caused by agricultural pollution. Through the excessive use of fertilizers and pesticides, many harmful substances reach to natural reservoirs like lakes, rivers and eventually also the groundwater. This result in water pollution which lead to adverse effects on plants, animals and also on humans.

- **Effects on animals**

There are adverse effects on animals from agricultural pollution. Because animals consume part of the crop yield or other parts of plants, they are heavily affected by pesticides. Animals can even die from the consumption of contaminated crop.

- **Effects on plants**

Agricultural pollution can become a problem for parts of the local plants since invasive species could impact the population of native species in an adverse way. This in turn can change the dynamics of the whole ecosystem.

- **Effects on aquatic life**

There is also an antagonistic effect on the aquatic system from agricultural pollution. Since the excessive use of fertilizer contaminate rivers with an excessive supply of nitrates and phosphates, algae bloom can be developed. Thus, the oxygen levels decline which cause the death of fishes and other water animals.

Fig. 2: Effect of Agricultural Pollution

CONTROL MEASURES

To control Agricultural pollution following methods can be applied

- **Decrease the use of chemical fertilizer and pesticides**

Farmers should improve the knowledge about the nutrition management so that chemical fertilizers and pesticides should not use in excessive amounts. Farmers should be educated about how to determine requirement of quantity of chemical fertilizer necessary for reasonable crop yield. Many farmers could reduce the use of chemical fertilizers and pesticides significantly and get decent crop harvests.

- **Avoid soil erosion by planting**

Soil erosion can be avoided by planting trees around the agricultural land. Planting grasses and trees along the edges of a field helps in avoiding soil erosion.

- **Improve manure management**

Animal waste is a big reason of agricultural pollution. Thus, it is important to set up and improve processes regarding the management of animal waste. There are several manure treatments processes. Proper manure management help to reduce agricultural pollution.

- **Change our consumption behavior**

Most of us consume an unnecessary amount of meat. Changing our consumption behaviour can solve the problem of agricultural pollution.

- **Prevent excessive amount of nutrients to enter the water resources**

In order to prevent the access for animals, Farmers can build fences along water bodies. It helps to prevent excessive amounts of nutrients to enter the water. Thus, agricultural pollution can be controlled.

- **Raise the awareness about agricultural pollution**

Farmers have to be educated about the negative effects of wrong practices in agriculture. They should be educated about the adverse impact on the whole ecosystem due to the excessive use of chemical fertilizer and pesticides.

- **Education**

Education is key to solve any kind of problem. We have to educate people about good agricultural practices.

CONCLUSION

Agricultural pollution is serious problem to the environmental system. It affects animals, plants and human being. It also affects our water cycle. It causes many serious diseases like blue baby syndrome due to nitrates contents in water due to agricultural pollution. The main factor responsible for agricultural pollution is the excessive use of industrial fertilizer and pesticides. Our consumption behaviour are also responsible for agricultural pollution. Agricultural pollution can be minimized by effective way of the correct agricultural practices in our society. If we all aware together, we can help to reduce agricultural pollution.

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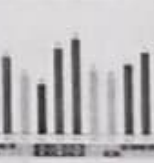

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गडचिरोली जिल्ह्यातील कामगारांचे प्रमाण: निरंतर विकास

प्रा. डॉ. गणेश एल. धोटे[1] डॉ. जे. व्ही. दडके[2] प्रा. डॉ. के. वाय. ठाकरे[3]

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सारांश : [illegible] लोकांची गुणवत्ता ही लोकसंख्येवरुन नाही तर त्यांच्या व्यावसायिक संरचनेवरुन ठरते. एकूण लोकसंख्येत कामगारांचे प्रमाण यावरुन लोकसंख्येची गुणवत्ता, आर्थिक स्थिती व राहणीमानाचा दर्जा लक्षात येतो. एकूण लोकसंख्येत काम करणाऱ्यांचे प्रमाण कमी असते म्हणजे अशी लोकसंख्या अविकसीत व मागासलेली समजली जाते. तर कामगारांचे प्रमाण अधिक असल्यास, लोकसंख्या आर्थिक दृष्टया सक्षम समजली जाते. अशा वेळी प्रदेशाचा विकास अधिक झपाटयाने होत असतो विकास होत असतांना निरंतर विकास महत्वाचा ठरतो.

महाराष्ट्राच्या पूर्व सिमेवर गडचिरोली हा जंगलव्याप्त व दुर्गम जिल्हा असून बहुतांश लोक शेती या व्यवसायात गुंतलेली आहे. जिल्हयात कृषी योग्य क्षेत्र 17.93 टक्के असून, जिल्हयात शेतीकरीता जलसिंचनाच्या फारशा सुविधा उपलब्ध नाही. जिल्हयात विपूल प्रमाणात वने जल व खनिज संपत्ती असून मोठा उद्योग नाही. त्यामूळे कामगारांचे प्रमाण तूलनेने कमी आढळून येते. याचा परिणाम विकासावर होऊन, बरीच लोकसंख्या दारिद्रय रेषेखाली जिवन जगत आहे. त्यांचे आर्थिक उत्पन्न वाढविताना निरंतर विकासाची संकल्पना कायम ठेवणे आवश्यक आहे.

बीजसंज्ञा : लोकसंख्या, लोकसख्येची व्यावसायीक संरचना, गतिशिलता, आर्थिक विकास, व निरंतर विकास.

प्रस्तावना : सर्वसाधारणपणे लोकसंख्येचा अभ्यास, लोकसंख्येचे वर्गिकरण, वितरणानुसार अंतर, त्यांचे गुणधर्म, लोकसंख्या वाढत व्यावसायीक संरचना, लिंगगुणोत्तर व लोकसंख्येची घनता यानुसार केले जाते. यावर भौगोलिक व ऐतिहासिक घटकांचा परिणाम पडत असतो. (Premi K. & P. Tyagi) आधुनिक काळात लोकसख्येच्या संरचनेत झपाटयाने बदल होत आहे. तो बदल म्हणजे लोकसंख्येतील व्यावसायीक संरचना होय. लोक वेगवेगळया व्यवसायात गुंतलेली असतात. त्यांची नोंद जणगणना पुस्तीकेत कामगार अशी आहे. विविध व्यवसायात असणाऱ्या कामगारांच्या संख्येवरुन लोकांची आर्थिक स्थिती समजू शकते. जेथे कामगारांचे प्रमाण जास्त् अशी लोकसंख्या आर्थिक दृष्टया प्रबळ समजली जाते. व अशी लोकसंख्या विकासाचे सुचक मानले जाते. गडचिरोली जिल्हयातील एकूण लोकसंख्येत कामगारांचे प्रमाण याचा अभ्यास करतांना हाच दृष्टीकोण येथे ठेवण्यात आलेला आहे. लोकसंख्येतील कामगारांच्या प्रमाणावरच आर्थिक विकास अवलंबून असतो.

परिकल्पना : गडचिरोली जिल्हयांचा बहुतांश भाग जंगलमव्याप्त असून शेती करीता अल्प क्षेत्र उपलब्ध आहे. याशिवाय मोठी लोकसंख्या ग्रामीण भागात वास्तव्याला आहे. येथे व्यावसायीक दृष्टया कामगारांचे प्रमाण कमी आहे. त्यामूळे येथिल लोकसंख्या आर्थिक दृष्टया मागासलेली आढळून येते. यांचा परिणाम जिल्हयाच्या विकासावर झालेला दिसून येतो.

अभ्यासाची उदिष्टये : गडचिरोली हा वनव्याप्त आदिवाशी बहुल जिल्हा आहे. येथिल एकूण लोकसंख्येत कामगारांचे प्रमाण, व यांचा विकासावर व लोकांच्या आर्थिक बाबीवर तसेच निर्भरतेवर परिणाम झालेला आहे. याचा अभ्यास करून निरंतर विकास हा उदिष्टे समोर ठेऊन हा अभ्यास करण्यात आलेला आहे.

संशोधनाची पध्दती : प्रस्तूत अभ्यास हा पूर्णत: व्दितीयक माहितीवर आधारीत आहे. जणगणना माहिती पुस्तीका, आर्थिक व सामाजिक समालोचन, विविध शासकिय कार्यालयामधून आवश्यक माहिती मिळवून, वर्गीकरण आणि विश्लेषण करून विश्लेषण केलेले आहे.

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११. गडचिरोली जिल्ह्यातील लोकसंख्येची आर्थिक वैशिष्ट्ये: एक क्षेत्रिय अभ्यास

प्रा. डॉ. गणेश एल. घोटे
सहाय्यक प्राध्यापक, भूगोल विभाग, यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय, लाखांदूर, जि. भंडारा.

सारांश

लोकांची गुणवत्ता ही लोकसंख्येवरून नाही तर, त्यांच्या व्यावसायिक संरचनेवरून ठरवली जाते. एकूण लोकसंख्येत कामगारांचे प्रमाण यावरून लोकसंख्येची गुणवत्ता, आर्थिक स्थिती व राहणीमाणाचा दर्जा लक्षात येते. एकूण लोकसंख्येत कामगारांचे प्रमाण कमी असल्यास अशी लोकसंख्या आर्थिक दृष्ट्या मागासलेली समजली जाते. याउलट कामगारांचे प्रमाण अधिक असल्यास अशी लोकसंख्या आर्थिक दृष्ट्या सक्षम समजली जाते. यावरून निर्भरता गुणांक काढून, निर्भरतेचे प्रमाण काढून अशी लोकसंख्या कार्यक्षम आहे की, मागासलेली आहे हे कळते.

महाराष्ट्राच्या पूर्व सिमेवर गडचिरोली हा जंगलव्याप्त व दुर्गम जिल्हा असून ९०% लोक कृषी व्यवसायात गुंतलेली आहे. जिल्ह्यात कृषी योग्य क्षेत्र १७.९१ टक्के असून जलसिंचनाच्या फारशा सुविधा उपलब्ध नाही. जिल्ह्यात विपूल प्रमाणात वने, जल व खनिज संपत्ती असून मोठा उद्योग नाही. येथे निरक्षरतेचे प्रमाण बरेच असून शेती हा मुख्य व्यवसाय आहे. त्यामुळे कामगारांचे प्रमाण बरेच कमी आढळते. याचा परिणाम लोकांच्या राहणीमानावर होऊन लोकसंख्या मागासलेली व आर्थिक दृष्ट्या कमकुवत स्वरूपाची असते.

बीजसंज्ञा : लोकसंख्या, लोकसंख्येची गतिशिलता, कामगारांची संख्या, व्यवसायात नसलेली लोकसंख्या, आर्थिक विकास, मागासलेपणा.

प्रस्तावना

सर्वसाधारणपणे लोकसंख्येचा अभ्यास, लोकसंख्येचे वर्गिकरण, वितरणानूसार अंतर, त्यांचे गुणधर्म, लोकसंख्या वाढ, लोकसंख्येची घनता यानुसार केले जाते. यावर भौगोलिक व ऐतिहासिक घटकांचा परिणाम पडत असतो. (जिस ख ''. इ. उर्ड़ु) आधुनिक काळात लोकसंख्येत झपाट्याने बदल होत आहेत. तो बदल म्हणजे लोकसंख्येतील व्यावसायिक संरचना होय. लोक वेगवेगळ्या व्यवसायात गुंतलेली असतात. त्यांची नोंद जणगणना पूस्तीकेत कामगार अशी आहे. विविध व्यवसावात असणाऱ्या कामगारांच्या संख्येवरून लोकांची आर्थिक स्थिती समजू शकते. जेथे कामगारांचे प्रमाण जास्त अशी लोकसंख्या आर्थिक दृष्ट्या प्रबळ समजली जाते. याउलट ज्या लोकसंख्येत कामगारांचे प्रमाण कमी असते, अशी लोकसंख्या आर्थिक दृष्ट्या मागासलेली समजली जाते. अशा लोकसंख्येत कामगारांचे प्रमाण कमी असल्यामुळे अवलंबिताचे प्रमाण अधिक असते. अशा लोकसंख्येला आपला विकास साधतांना बऱ्याच अडचणींचा सामना करावा लागतो. गडचिरोली जिल्ह्यातील

Education
Beyond Face to Face Mode
Opportunity & Challenges

Dr. Mangla Tomar is an Assistant Professor (HOD ENGLISH DEPARTMENT) in G. S. College of Commerce, Wardha, Maharashtra, working in this institution since 2003. She is M.A., M.Ed., M.Phil Ph.D. and has about 41 papers to her credit published in National and International Journals. She has distributed a book named "English for Beginners." She has written book chapters in 15 different edited books. She is likewise connected with Cambridge University and running two Cambridge courses: Business English Cambridge Exam (Preliminary Level) and Business English Cambridge Exam (Vantage Level). She is additionally directing understudies Banking Certificate Course in Insurance and Finance run by Bajaj Group.

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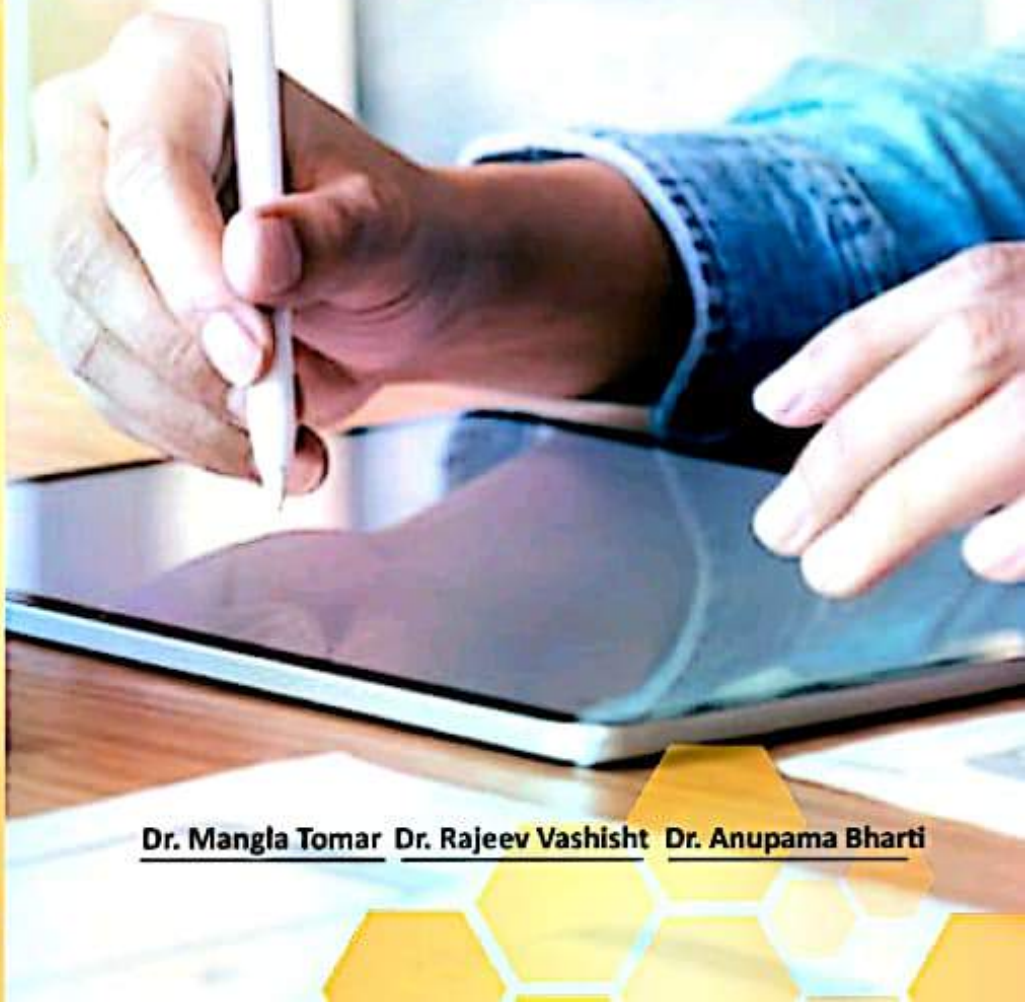

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Chapter-4

Forging New Pathways: Skilled Based Education

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Assistant Professor, Dept. of Microbiology
Yashwantrao Chawhan College, Bhandara

Abstract:

This paper focuses on the need of using innovative and new pathways for skilled based education during COVID-19. It also includes findings on how prospective students are responding to the corona virus by using innovative apps in education sector during COVID-19.

Keywords: *Innovative Skills, Apps, Digital India etc.*

Introduction:

Covid-19 is an infectious disease caused by severe acute respiratory syndrome coronavirus-2 (SARS-COV-2). The disease was first identified in December 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing 2019-20 coronavirus pandemic. It is contagious in humans and the World Health Organization has designated the ongoing pandemic of covid-19 a Public Emergency of International concern.

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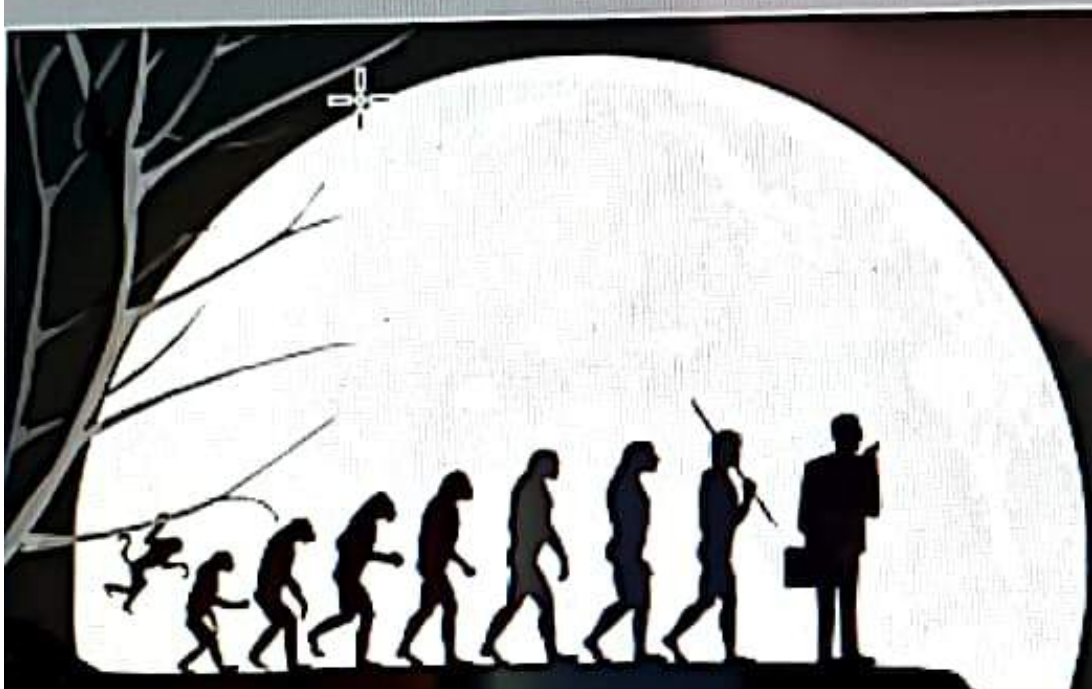

Holocene Climate Change and Environment

Edited By
Navnith Kumaran
Damodaran Padmalal

phenomenon is directly connected to the global climate system. It examines Holocene events at different time intervals based o
a new high-resolution multiproxy record (pollen, spores, NPP, diatoms, grain size characteristics, total organic carbon, carbon
nitrogen ratio, stable isotopes) and other physical tools from all regions of India. It also covers new facilities in chronological stud
and luminescence dating, which have added new dimensions toward understanding the Holocene glacial retreats, the evolution o
coastal landforms, landscape dynamics, and human evolution.

Each chapter is presented with a unified structure for ease of access and application, including an introduction, geographic detail
fieldwork, and sampling techniques, methods, results, and discussion. This detailed examination of such an important region
provides key insights in climate modeling and prediction systems globally, which makes Holocene Climate Change and Environment
a valuable practical reference for climate researchers as well as researchers working in environmental geosciences, climatology
palaeosciences, and natural hazards.

Key Features

- Provides data and research from environmentally and geologically diverse regions across the Indian subcontinent.
- Presents an integrated and interdisciplinary approach, including consideration of human impacts.
- Features detailed case studies that include methods and data, allowing for application to related research and modeling globally.

Dr. Navnith Kumaran is a former Emeritus Scientist of the Council of Scientific & Industrial Research, New Delhi, and a retired Senior Scientist of Agharkar Research Institute, Pune, India. He also worked at the University of Calabar, Nigeria, as a Senior Faculty Member in the Department of Biological Sciences and Faculty Associate in Geology (1979–1989). He has contributed immensely to palynology, vegetation dynamics, and climate change over the past 40 years. His current focus on late quaternary using modern analogs has immense potential to reconstruct long and comprehensive palaeoenvironmental and climate records and provides a stronger basis for developing strategies for sustainable management of key environmental processes and their interaction with human activities. He edited a special volume (325) of Quaternary International dealing with Holocene Palynology and Palaeoclimate.

Dr. Damodaran Padmalal is a Senior Scientist in the National Centre for Earth Science Studies, Trivandrum, under the Ministry of Earth Sciences, Government of India. His research interests are quaternary geology, palaeoclimate, and environmental geology. He has published many research papers in international and national peer-reviewed journals and edited volumes. He is the author of several books and co-edited a special issue of the Journal of Geological Society of India on "Western Ghats- Evolution and Environmental Issues" (Volume 92; 2018). He has received the INSA- DFG Exchange of Scientists Fellowship in the year 2004, Rajiv Gandhi Excellence Award (2011) instituted by India International Friendship Society (New Delhi), and Certificate of Merit (2014) of the Ministry of Earth Sciences, Government of India.

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CHAPTER

4

Late Holocene advancements of denudational and depositional fronts in the Higher Himalaya: A case study from Chandra valley, Himachal Pradesh, India

S.J. Sangode[a], **D.C. Meshram**[a], **A.M. Kandekar**[a], **Amol Abhale**[a], **S.S. Gudadhe**[b], **Suman Rawat**[c]

[a] *School of Earth Sciences, Savitribai Phule Pune University, Pune, India,* [b] *Yashwantrao Chavan Arts, Commerce and Science College, Lakhandur, India,* [c] *Wadia Institute of Himalayan Geology, Dehradun, India*

4.1 Introduction

A significant amount of area in the Higher and Trans Himalaya presently manifests deglaciated valleys connected to glacierized catchments. These valleys and their transitional environments preserve a collage of glacial, fluviatile, eolian, and colluvial deposits reflecting various processes including the recycling and incision of postglacial valley fills during most of the Late Holocene. In an emerging climate change scenario, these valley basins play an important role in evaluating their response to extreme conditions. This demands a better understanding of the sediment–geomorphic environments of the valley-catchment setups in terms of documentation of ongoing processes and their implications to future changes. Detailed studies on the records of such change, within a given geomorphic setup would allow better assessment of their vulnerability to episodic and spasmodic controls of climate and tectonics.

Sedimentation and morphological changes in the Himalaya are primarily governed by repeated glacial/interglacial cycles (Shroder and Higgins, 1989; Owen et al., 1998; Benn and Owen, 2002; Bookhagen et al., 2005). A combination of varied orographic and climatic factors resulted in contrasting glacial patterns across the Himalayan and Karakorum mountain belts (Owen et al., 2005, 2009). Mapping, documentation and correlation of the sediment records across these deglaciated valleys are therefore fundamental aspects to identify their connection with climatic and/or tectonic changes, particularly during the Late Quaternary times (e.g., Mitchell et al., 1999; Owen et al., 2009; Sangode and Gupta, 2010).

The Late Pleistocene–Holocene time interval in the Higher Himalayas has recorded major change in the valley system from glacial to glaciofluvial with typical misfit-fluvial valley morphology. This time has also witnessed major change in the rates of erosion, sediment production, sediment transport, recycling, and deposition; demanding their interrelations to be achieved in modern and predictive context. Continued warming may result into various morphological changes such as creation and merger of smaller-deglaciated valleys. The altered hydrometeorology encourages conditions like GLOF,

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ECO-CRITICISM AND ERNEST HEMINGWAY: A CRITICAL STUDY

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YashwantraoChawhan Arts, Commerce & Science,
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ABSTRACT:-

The present paper attempts to make a critical study of the theory of eco-criticism in view of the current situation across the globe in which, the problem of imbalance in the environment due to human interference has put forth a big challenge before the existence of all living beings and briefly observes the trace of this theory in the works of Ernest Hemingway. English literature contains plethora of occasions in which the issue of rising ecological imbalance is either directly or indirectly addressed. Hemingway's novels and short stories appear to have included the eco-critical perspectives. Eco-criticism explores the relationship between literature and environment.

Key Words:- Eco-Criticism, Ecology, Eco-Centric, Ernest Hemingway

Introduction:- Eco-criticism is a literary and cultural critical appreciation of the works of art from an environmentalist point of view. Literary works are appraised in terms of their environmentally damaging or cooperative effects. Beliefs and ideologies are measured for their environmental implications. Eco-critics peep into the investigation of the history of concepts such as 'nature', in an attempt to comprehend the cultural progress of mankind, which has given birth to the present worldwide ecological predicament. Straight representations of environmental degradation or political problems are of obvious interest to eco-critics. In the literary works of Ernest Hemingway, there are so many points at which he seems to be raising the concern for the hazardously growing imbalance between the world of human beings and the environment.

The term 'ecological' was first used by Karl Kroeber in 1974. In this regard, the view of Pramod K. Nayar expressed in the book entitled, *Contemporary Literary and Cultural Theory* can be taken into consideration. He rightly puts that Eco-criticism originates in a bio-social context of unrestrained capitalism, excessive exploitation of nature, worrying definitions, and shapes of development and environmental hazard. While it does not seek to alter the course of any of these very real factors, its task is to see how theoretically informed readings of cultural texts can contribute not only to consciousness growth, but also look into the politics of development and the construction of nature.[1]

Eco-criticism has a crucial role to play in the study of human bond with nature. Over the period of thirty years, eco-criticism has made the scholars to pay their attention toward itself, and has emerged as one of the most significant and interesting critical theories applied to the interpretation of works of art. It is quite apt, on our part, to know the meaning of eco-

criticism, and the various sub-fields involved in it. Eco-criticism rose to prominence in literary analysis as a means of examining the association between the literary works and the physical environment in the mid-1990s.

As eco-criticism is a newcomer in the field of literary criticism, various readers, literary scholars and critics have tried to use this approach in varied ways. They also put forth the meaning and scope of this critical approach in diverse ways. However, their major concerns, being similar, the different approaches generally draw attention to the relationship between humans and the earth. Eco-criticism is the study of the relationship between humans and nonhumans; living organisms and the environment as presented in the literary works. It means, in other words, it is the investigation and examination of the relationship between literature and the environment from the ecological perspective to make an analysis of environmental conditions, and reach the probable solutions for the betterment of prevailing environmental conditions.

The Eco-criticism Reader published in 1996 by Cheryll Glotfelty and Harold Fromm and *The Environmental Imagination* published in 1995 by Lawrence Buell are the founding works of the theory of eco-criticism. Cheryll Glotfelty is, beyond doubt, unanimously recognized as the pioneer of the eco-critics in the field of English literature. Cheryll Glotfelty is the acknowledged founding father of Eco-criticism in the United States of America. As a beginner of this approach she holds the view:

> Simply put, ecocriticism is the study of the relationship between literature and the physical environment. Just as feminist criticism examines language and literature from a gender conscious perspective, and Marxist criticism brings an awareness of modes of production and economic class to its reading of texts, ecocriticism takes an earth-centered approach to literary studies.[2]

Glotfelty raises questions like how is nature represented in literature? How has the concept of wilderness changed over time, and how is science itself open to literary analysis? Eco-criticism is evidently a kind of political way of making an analysis as compared to Feminism and Marxism. Eco-critics usually establish an explicit link of their cultural analyses with the green, moral and political agenda. In this regard, eco-criticism is intimately associated with the environmentally-oriented developments in philosophy and political theory. Glotfelty exerts a strong influence on the school of the critics of ecological writing.

In his book *The Environmental Imagination* (1995), Buell asserts that this study must be 'conducted in a spirit of commitment to environmentalist praxis'[3]. His work is thus crucial to eco-criticism. His eco-critical approach can be observed in his excellent work on Henry David Thoreau, which unfolds the layers of Thoreau's Nature writing and the construction of American culture.

The area of eco-criticism is very extensive, because it is not limited to any literary genre. In addition to Lawrence Buell, CherylGlotfelty, and William Howarth, Simon C, Estok, William Rueckert, Suellen Campbell, Michael P. Branch and Glen A. Love, are also strongly dedicated to the interpretation of works by applying eco-critical approach.

Glen A. Love, one of the leading eco-critics, in the expansion of eco-criticism, has been instructing and writing for years with the purpose of establishing interactions between the life sciences and the social sciences. What connections are there between human nature and the eco-criticism? This question finds a central position in the book entitled, *Practical Eco-criticism* written by Glen A Love in 2003. Eco-criticism is concerned with nature writing, and ecological themes in all literature.

William Rueckert, who coined the term eco-criticism in 1978 in his essay "Literature and Ecology: An Experiment in Ecocriticism,", wrote that:

> Eco-criticism entailed application of ecology and ecological concepts to the study of literature, because ecology has the greatest relevance to the present and future of the world we all live.[4]

The way Rueckert has expressed his valuable and much significant thoughts about eco-criticism, he seems to be covering almost every sort of all probable associations between literature and the physical environment. Some scholars are usually seen raising the question, how one can make his contribution to environmental re-establishment, within one's aptitude as an academic of literature in spite of creating general wakefulness to the forthcoming predicament. The different methodologies to textual analysis like environmental ethics, deep ecology, eco-feminism, spiritual ecology and social ecology have emerged as a result of critics' effort to comprehend and examine the basic reasons of environmental degradation.

Ernst Heinrich Haeckel (1834-1919), a German biologist and philosopher of evolution, used for the first time the term ecology in 1876. Ecology 'is a term derived from German 'Oecologie', meaning the branch of biology that deals with the relationships between living organisms and their environment'[5].

Hemingway's eco-centric views are deeply involved in his treatment of nature through his characters. Hemingway did not stick to any particular attitude towards nature. His attitude shifts in accordance with the requirements of the story. The mind of Hemingway, during the process of writing, works hugely under the influence of natural environment. In many of his novels and short stories, physical environment seems to be directing the creative mind of Hemingway. Two passages one from *A Farewell to Arms,* the other from *TheOld Man and the Sea*, will show the wide range of his naturalism. Shortly before Lieutenant Henry and Catherine make their escape to Switzerland, Henry meditates on their happiness with premonitions of their fate.

What does the word, "the world", indicate at this place? At the back of the word lies Henry's previous mention of the natural snare, that comes up simply as a result ofloving finely. Catherine will lose her life in the snare, and so will their baby. Nature willwitness all this. The word also denotes Henry's refusal of the disorder of battle, and his purposeful run away from it. For his denial, the world will compel him to compensate, not with his existence, but by smashing him. A big breakage has already been caused to him by the trench mortar shell, and has developed muscular at the wrecked spot. He will besmashed once more as Catherine passes away in baby's delivery, nevertheless he will be tough enough to stay alive even after the next breakage.

This type of a vision of nature would not have fulfilled Hemingway's intention in *The Old Man and the Sea*. The old man is ancient, a Saint Francis, who continues to exist by destroying his 'true brothers' the fish, but he reflects as obviously of man and Nature as Henry does of his 'world' :

> Then he was sorry for the great fish that had nothing to eat and his determination to kill him never relaxed in his sorrow for him. How many people he will feed, he thought. But are they worthy to eat him? No, of course, no. There is no one worthy of eating him from the manner of his behaviour and his great dignity. I do not understand these things, he thought. But it is good that we do not have to kill the sun or the moon or the stars. It is enough to live on the sea and kill our true brothers.[6]

As mentioned above, Hemingway seems to be serious and conscious in many ways about wild life and natural resources. As a matter of fact, he takes the position of an eco-writer showing his concern for the much needed freedom of wild animals. In almost all the novels written by Ernest Hemingway, the cries of the marginalized, deprived, the inferiors would clearly be audible from eco-critical point of view. He wanted to reinstate and recover our wisdom of equilibrium and harmony in the direction of human nature and physical surroundings.

The main themes of Hemingway's short stories and novels are consistently related to human associations and sensational issues like wild life, Nature symbols and imagery, biodiversity, surroundings, atmosphere, adverse effects of war on nature etc., and these are today regarded as Ecology or Green studies. In most of his fictional works, whether it is *A Farewell to Arms* or *The Old Man and the Sea*, the leading subject matter seems to be eco-centric. Hemingway's eco-centric views can be witnessed in every natural resource or physical surroundings, and they lead us to examine his profound eco-centric approach to literature.

Yet, Hemingway's approach to Nature is not simple to describe. Nature appears to be a very kind and generous figure, when it enables humans to go for fishing, big-game hunting, and bullfighting, and for many other things of entertainment. The pleasure it offers us is so heart-freeing, subtle and spiritual, that it cannot be described in words. Mountains, hills and valleys are affectionate, and so are rivers and brooks to fish in, but the mountain in "The snows of Kilimanjaro", is a sign of bereavement, and there is an ominous point in a river at which Nick Adams, in the course of his fishing, will not go near in "Big Two-Hearted River". Several animals are to be admired; particularly the bulls, who give man the finest sport in the world; others like the silly-looking hyena are contemptible. The marlin is one of the great wonders of creation. "But thank God, 'the old man says, "They are not as intelligent as we who kill them; although they are noble and more able.'[7]

As it has been one of the primary concerns of eco-critics to investigate the sense of place as exhibited in the literary works of the writers, and thereby trying to reach the interpretation of the text in the light of ecological principles, it may evidently be seen in Hemingway's novels and short stories that keen sense of place is a dominant factor. The understanding of the importance of place is an apparent passion with him. It was Hemingway's clear view that, if one did not have geographical background then he possessed nothing. He is acutely place-

conscious. He pays close attention to the geographical background of his novels, but he does not allow background to be an obstacle in the way of the action.

It would not be wrong to place Ernest Hemingway in the tradition of literary naturalism. His naturalism is basic, and evidences of it appear almost everywhere in his works. He likes his heroes to be strong and brave men of action not much given to reflection. It makes no difference, to which social level they belong. Harry Morgan of *To Have and Have Not*, who kills naturally to protect his livelihood, is equal to Colonel Cantwell of *Across the River and into the Trees*, the veteran of two wars, who loves Venice, its history and its art as much as he does his nineteen-year old, nobly-born mistress

Conclusion:-

Eco-critical theories have posed an objection to the absolute supremacy, power and right of any one creature within the environment. In almost all the novels written by Ernest Hemingway, the needs and rights of the minorities, the neglected sections, the poor and marginalized are noticeably highlighted from eco-critical perspective. He first deeply felt and then strongly asserted the need to reinstate and reclaim our responsibility to maintain equilibrium and harmony in the physical environment. Thus there appears a close relationship between Ernest Hemingway and Eco-criticism. His works seem to anticipate the theory of Eco-criticism.

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7. *Ibid, p. 47.*

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Human Apathy towards Animals in the Novels of Ernest Hemingway in the Light of Eco-Criticism

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Abstract
The present research paper aims at making a critical study of human ignorance towards the feelings of non-human living beings. Ernest Hemingway's novels like The Old Man and the Sea and The Sun Also Rises offer much scope to the critical study of human apathy towards animals through eco-critical perspective.
Key Words: ecocriticism, eco-centric, environment, apathetic attitude

Ernest Hemingway was a writer with the undisputed competence to create a new literary world. American literature cannot be imagined without him. So is the impact of this creative literary artist on it along with the world literature. The entire world of his writings is based on his adventurous spirit.

While examining the human apathy towards animals in the novels of Ernest Hemingway in the light of eco-criticism, it is apt to have a quick and short glance at the theory of ecocriticism. Ecocriticism is a critical interpretation of a work of art from an eco-critical perspective. Literary works are studied in the light of disastrous and constructive effects on nature they produce and thereby positive environmental change is sought. The deterioration of the environmental values and the related problems like the harm to biodiversity generate special interest among the eco-critics.

Ernst Heinrich Haeckel made the use of the term ecology in 1876 for the first time. The term 'ecological' was first used by Karl Kroeber in 1974. While William Rueckert coined the term eco-criticism in 1978 in his essay "Literature and Ecology: An Experiment in Ecocriticism,", and emphasizes that "ecology has the greatest relevance to the present and future of the world we all live".[1]

William Rueckert seems to assert the relevance of the theory of ecocriticism in order to maintain a safe and sound environment. However, the contribution of Cheryll Glotfelty in bringing the theory of eco-criticism to limelight is beyond doubt significant. *The Eco-criticism Reader: Landmarks in Literary Ecology* published in 1996 by Cheryll Glotfelty and Harold Fromm is the seed-work of the theory of eco-criticism. As an initiator of this approach she believes, 'Simply put, ecocriticism is the study of the relationship between literature and the physical environment'.[2] In *The Environmental Imagination*, Buell declares that "the study must be conducted in a spirit of commitment to environmentalist praxis".[3] Ecocriticism is the study of the relationship between humans and nonhuman beings; living organisms and the environment as presented in the literary works. In other words, the investigation and examination of the relationship between literature and the environment from the ecological perspective is to make an analysis of

environmental conditions, and reach the probable solutions for the betterment of environment.

The main themes of Hemingway's short stories and novels are consistently related to human association with nature and sensational issues like wild life, nature symbols and imagery, biodiversity, surroundings, atmosphere, adverse effects of war on nature, human cruelty towards animals, etc., and these are today regarded as ecology or green studies. In most of his fictional works, whether it is *The Old Man and the Sea*, or *The Sun Also Rises*, the leading subject matter seems to be eco-centric.

A number of implicit and explicit ecological ideas and values find expression and assertion at various spots across Hemingway's fictional works. He seems to imply the need of the increasing wakefulness and understanding in the human society for the safety and conservation of both wild life and physical environmental world. Hemingway appears alert and conscious about animals and natural resources. As a matter of fact, he seems to take the position of an eco-writer showing concern for the much needed freedom of wild animal.

Hemingway voices his protest against the maltreatment meted out to nonhuman beings by the humans. He seems to oppose the human domination and the resultant exploitation, persecution, and merciless killings of animals at the heartless hands of people. Hemingway implies his anguish against the undisputed supremacy of humans over nonhuman creatures. He, in many of his fictional works, discloses the dark reality of human world behind the curtain of ostentatious sympathy for the nonhuman living beings.

Ernest Hemingway seeks to draw the attention to the bullfighting, which involves much bloodshed and cruelty. He underscores the fact of how bullfighting has posed a danger to life of an animal, since it involves brutal killings of innocent bulls. Such violence engenders imbalance and a state of disharmony, which in turn generate certain problem disturbing the whole environment. He sheds some light on the cynic nature of people, who inhumanly enjoy such cruel and fierce games as the unsympathetic and pitiless spectators. This is undoubtedly a serious threat to the bond between human and wild. This is a critical problem of environment. Bullfight, according to Hemingway in his nonfiction work entitled *Death in the Afternoon*, is not sport but tragedy, i.e., not an equal contest between the man and the bull but one "in which there is danger for the man but certain death for the animal".[4]

Ernest Hemingway lays bare the false affection of humans for the nonhuman beings in his novel The Old Man and the Sea. The old man expresses deep feelings of love for the trapped marline. The fish is giant. His behavior, according to Santiago, is highly dignified and noble. The old man goes to the extent of declaring that no man deserves quality to claim the flesh of the fish. But despite all his sympathy and affection for the fish, the old man blatantly and unfeelingly exhibits his resolution to kill the fish. His determination to slay the huge marline in spite of love for him discloses his hidden egocentric intent to use the fish for personal benefit. It means to man his self-interest is above the life of animals. The old man, therefore, says to the fish, "I love you and respect you very much. But I will kill you dead before this day ends".[5]

Ernest Hemingway seems to raise the issue of human indifference towards the animals. Hemingway realizes that the gap is widening between human and nonhuman creatures due to the cruel and unfeeling treatment given to the latter by the former. If the picture will remain the same even in times to come, there may arise an ecological imbalance in the environment. This may turn out to be a critical problem of environment, because the presence of both the human beings and non-human beings in balance is the need of nature. But the apathetic attitude of people towards the dumb creatures in modern world has raised a question mark before the existence of the latter. The callous living style of human beings has caused a serious threat to the existence of some species of animals, while some others have already become extinct.

Hemingway's attitude towards bullfighting is that of an opponent, as he seems to show his strong disapproval of it in *The Sun Also Rises*. Jake Barnes, one of the important characters of the novel, talks to a waiter at Pamplona about the recent

unfortunate incidence during a bullfight, in which a peasant was killed by a bull. But the waiter feels no feelings for the dead peasant, rather he thinks of this tragic incidence as a matter of fun. Hemingway presents the conversation between the waiter and Jake Barnes as:

> " A big wound. All for fun. Just for fun. What do you think of that?"
>
> "I don't know'
>
> "That's it. All for fun you understand."
>
> "You are not an aficionado?"
>
> "Me? What are bulls? Animals. Brute animals." He stood up and put his hand on the small of his back. Right through the back. A cornada right through the back. For fun- you understand."
>
> He shook his head and walked away. (6)

People have lost their feelings for the innocent killings during the bullfights. Their hearts have become stony. The man has nothing to do with the killings of either the bulls or the bull-fighters. It is just a matter of fun and cynic enjoyment for him. Through this small conversation, Hemingway seems to affirm his strong opposition to such a cruel and inhuman sport, where life loses its importance and only violence and bloodshed dominate the entire scene.

Hemingway's old man, in his novel *The Old Man and the sea*, brings forth the tragic image of the fighting cocks, which continue to fight even after they have lost their eyes in the course of fierce and brutal fight. Hemingway wants to make the unfeeling world realize the agonies of dumb animals by describing such pathetic incidences in his novels and short stories.

Ernest Hemingway raises ecological values to the level of a specific universal appeal in *The Old Man and the Sea* and *The Sun Also Rises*. His account of human apathy toward the animals has today turned a subject of serious contemplation for all mankind. Hemingway seems to emerge as an eco-conscious writer in the sense that his fictional works incorporate descriptions of events and incidences which present a pathetic picture of the predicament of animals caused by none other than hardhearted humanity. Ecological concerns as manifested in Hemingway's novels and short stories are as important and significant to him as they are to the environmentalists of today. An apathetic attitude of man towards the animals is a big threat to the ecological balance. Hemingway therefore presents the account of such events in his fictional works, which focus on cruelties and other maltreatments given to animals, so that the people will realize the responsibility to provide a safe and sound environment to the fellow nonhuman beings. His ecological perception of nature is, indeed, comprehensive, perpetual, and appealing worldwide.

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OEDIPUS COMPLEX- A DOMINANT ELEMENT IN GIRISH KARNAD'S YAYATI

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Abstract:
The present paper aims at unfolding the mystery of occult relationship between a father and a son in relation to a mother. The son's attraction for the mother and his ill wish to have sexual relations with the latter and the intervention of the father which disrupts the plan of the son are the key themes of the play, Yayati written by Girish Karnad. Oedipus complex seems to dominate the entire plot of the play.
Keywords: *Oedipus complex, incestuous relationship, mythology, male child, male parent.*

Introduction:
Girish Karnad is a modern Indian playwright who pens works of art in his regional language. Besides being a famous actor as well as a director of theatre and films, he earned image as an innovative and creative dramatist after independence. Originally, he wrote the plays in regional language and they were translated later in other languages such as English, Hindi etc. There is a deep impact of existentialist views of Jean Paul Sartre and Albert Camus on Girish Karnad. He is much fond of conventions and customs. He finds apt material for plots in his own culture and history but presents them in modern way. Thus he promotes the spirit to think over modern happenings through the historical and mythical perspectives.
The Oedipus story as described in the Greek mythology holds historical and cultural significance. It is quite apt to take the tale of Oedipus into consideration before taking the stock of its dominance and influence in the play Yayati written by famous Indian playwright Girish Karnad. The tragedy of Oedipus needs to be studied in connection with the ancient age, culture and the spirit of the primitive era. The prediction of an oracle proved true as the Oedipus killed the king Laius who was none other than his own father and married the queen who was actually his mother. Oedipus tries his best to escape misfortunes but finally he has to meet with the disastrous destination, a point at which he finds that nothing is left to be thought as good and encouraging to continue the journey of life. Even so, all the miserable and unfortunate incidences that occurred in the life of Oedipus were the result of ignorance and unknowingness. Oedipus doesn't kill his father knowingly nor does he marry his own mother wittingly. But when he realizes the bad and bitter truth of life, he blinds himself while the queen, on the other hand, commits suicide. Destiny cunningly deceives him. He, however, holds himself responsible for whatever sinful happens in the life.
Oedipus complex, according to Sigmund Freud denotes the incestuous attraction of a male child toward the parent of opposite sex, that is, a mother. The male child looks at his father as a barrier on his way to fulfilling sexual desire with his mother. Calvin S. Hall comment on this strange relationship between a son and a father in relation to a mother as follows:
Prior to the emergence of the phallic period, a boy loves his mother and identifies with his father, when the sexual urge increases, the boy's love for his mother becomes more incestuous and as a result becomes jealous of his rival, the father. This tail of affair in which the boy causes the exclusive sexual possession of his mother and feels antagonistic towards his father, is called as the Oedipus complex.[1]
Having taken above view expressed by Hall into consideration, it can be said that the relationship that exists between a father and a son in Girish karnad's Yayati suffers from Oedipus complex. Plays written by Girish Karnad are replete with the scenes in which, the exchange of dialogues with the use of abusive and foul words frequently takes place. Yayati is typically a play which falls in the abovementioned category. The nexus between Yayati and Pooru seems to have been dominated by Oedipus complex. Karnad's Yayati who is a king establishes sexual relationship with his attendant for which he is punished with untimely old age. But his son Pooru took the curse upon himself and he became old in place of his father. In this way, Pooru replaced his father to satiate his carnal desire of sex with his mother. Since early

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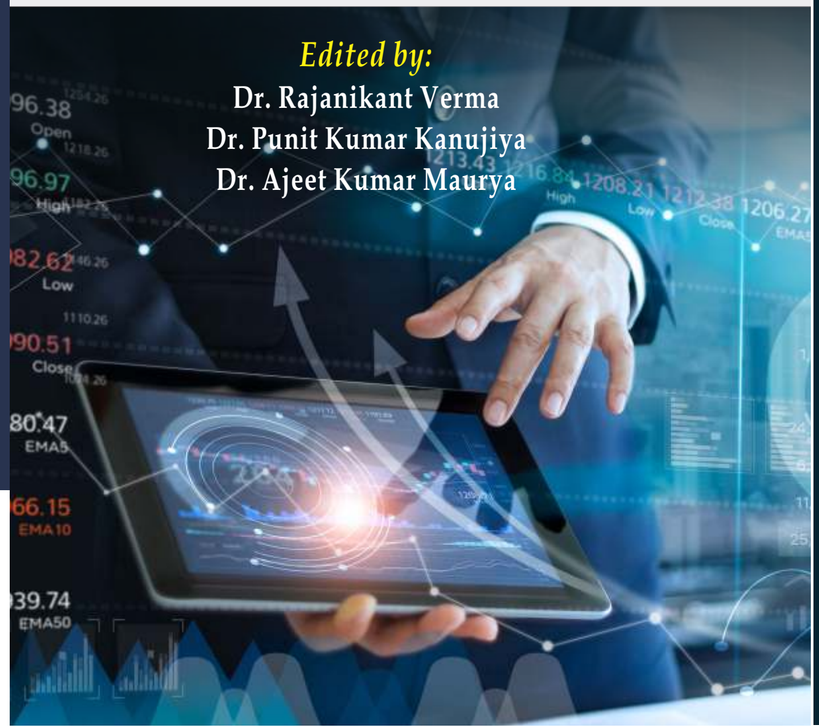

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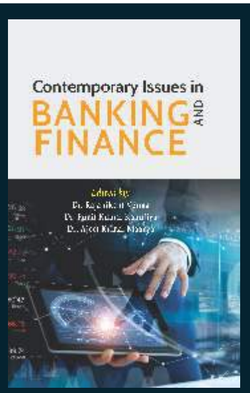

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Contents

CHAPTER 16

Recent Trends of Non-Performing Assets of Schedule Commercial Banks in India

Dr. Vinod M. Barde

ABSTRACT

After the globalization banking sector has been achieved prosperous growth. The banking sector of every nation is said to be the base of its development and its economy. In Indian economy seventy percent market operate through the public sectors banks out of banking sectors. Hence the appropriate and constant progress of the banks is very important. The banking business usually depends on lending and investment. The lending and deposits is the core function of the banks. The banks receiving the deposits and lend to the business, housing and agricultural sectors as per their demands. But the major issue being faced by the banks in lending to these sectors is the problems of increasing the Non-Performing Assets (NPAs). NPA means the unpaid amount of the interest or repayment amount to the banks by the borrowers. In present research paper tries to find out the position of NPA in scheduled commercial banks in India from the last ten years i.e. from 2008-09 to 2017-18

Keywords: *Non-performing assets, Schedule commercial banks, Advances, Net profit, Gross and Net NPA's.*

Introduction

Banks play a key function as a mediator which normally transfers funds from the depositors to the lenders like corporate and governments. Therefore banks are the measured to be the mainly significant part in the economic development of the country. The banking industry generally consists of accepting deposits from the various depositors and lending in the form of loan and advance to the needed sector or individual. Banks earned profits from the amount of repayment, thus profitability of banking industry mostly depends on the interest on the loan and advances

during the period. When loan taken from the banks to the borrowers, its responsibility is pay the amount of interest and principal of loan and advances to the banks punctually. But some borrowers who are unable to pay the principal or interest amount or both on time or never, that is the main reason of increasing NPAs for the banks. After the globalization has shown a significant growth in the in the advance by the banks and along with the increase in banks advances, the height of the NPAs are also increasing speedily. This directly impacts on the profitability and liquidity of banks. Therefore Solutions and guideline of the recovery of NPAs given by the Reserve Banks of India and suggest some measures by various committees of related issues.

Objective of Study: The study has following objectives

- To understand the concept of NPAs
- To highlight the current trends of NPAs in Indian Banks
- To explain the effects of NPAs

Research Methodology

The researchers used an explanatory research technique based on past literature from the respective journal, annual reports, newspaper, magazine, internet sites of academic literature of NPAs. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is broadly used for this research paper.

Meaning of Non-Performing Assets

Generally NPAs concepts said to the banks are outstanding or unpaid amount to the interest and principal of loan and advance for the period of more than 90 days. According to the RBI, define the concept of Non-Performing Assets is an amount of interest or principal or repayment or instalment of loan and advance remain overdue for a period of ninety or more than ninety days in respect of a term Loan or the account remain 'out of order' for a period of more than ninety days, in respect of an overdraft or cash credit or The bill remains overdue for a period of more than ninety days in the case of bills purchased and discounted.

Classification of Assets

According to the guidelines of the RBI, with effect from March 31, 2005, NPAs classified are as follows

Substandard Assets

A substandard asset means NPA left for a span below or equal to a year. A general provision of fifteen per cent on complete outstanding should

be arranged and the 'unsecured exposures' recognized as 'substandard' would make extra provision of 10 %, that is, a total of twenty five per cent on the outstanding balance.

Doubtful Assets

An asset would be categorized as uncertain if it exists in the substandard classification for a year. Hundred per cent of the degree to which the advance is not covered by the realizable value of the security and to which the bank holds a lawful resort and the attainable value is assessed on a true basis. About the secured portion, provision may be at the rates from 25% to 100 % of the secured portion subject to the span for which the asset has remained doubtful

Loss Assets

A loss asset is recognized by the bank or internal or external auditors or the RBI assessment but the amount has not been written off entirely. Loss assets should be written off. If loss assets are allowed to exist in the books for any reason, 100 percent of the outstanding should be provided for.

Meaning of Schedule Banks

Those banks included in schedule commercial banks, which registered in the vide section 42(6)(a) of schedule II of Reserve Bank of India Act. 1934. As per the RBI report of March, 2018, total schedule commercial banks in India are 149 including RRB, having 140133 reporting offices across India which includes private, public and foreign banks. The following table no-1 shows the gross advance and gross NPA along with percentage to gross advances of the schedule commercial banks in India during the 10 years that is from 2008-09 to 2017-18. The gross NPAs percentage shows rising the above mentioned years. In 2008-09 the percentage of gross NPAs is 2.3 and 4.3 is in 2014-15. That is indicated increasing rate of gross NPAs is slow during 2008-09 to 2014-15. On the other hand gross advance by the banks have also increase to the huge amount. But 2010-11 percentages of gross NPAs have been decreased. In 2015-16 gross NPAs are 7.5 percent increased from precious 4.3 percent, to increase in 2017-18 are 11.2 percent. That is clear that the percentage of gross NPAs had been highly increased in last 3 years.

Table No.1 (Rupees in Crore)

Year	Gross Advance	Gross NPA Amount	Gross NPA Percentage
2008-09	3024652	69954	2.3
2009-10	3262079	81718	2.5
2010-11	3995982	93997	2.4

2011-12	4648808	136968	2.9
2012-13	5971820	192769	3.2
2013-14	6875748	263015	3.8
2014-15	7560666	322916	4.3
2015-16	8171114	611607	7.5
2016-17	8476705	791791	9.3
2017-18	9266210	1039679	11.2

(Source: Report of Reserve Bank of India)

From the following table no-2 show the net advance and net NPAs with percentage to net advance during the period of 10 years that is from 2008-09 to 2017-18. The following data shows increasing trend of net NPA except in 2010-11 during the selected time period in 2008-09 the net NPAs was 1.1 percent while comes up to rise 6.0 percent in 2017-18. In 2008-09 rising trend is slow, up to 2014-15, but 2015-16, 2016-17 and 2017-18 rising trend of net NPAs is high.

Table No. 2 (Rupees in Crore)

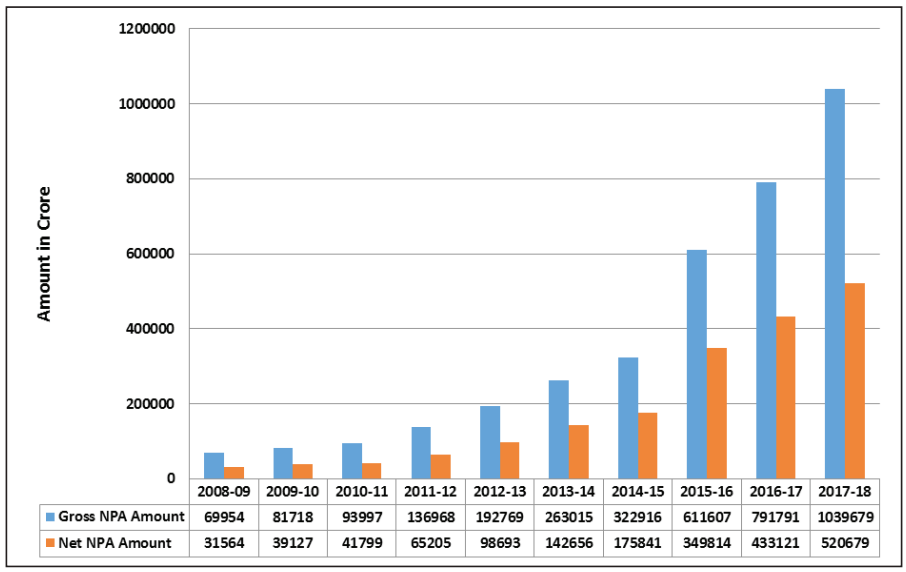
Year	Net Advance	Net NPA Amount	Net NPA Percentage
2008-09	2999924	31564	1.1
2009-10	3496720	39127	1.1
2010-11	4297487	41799	1.0
2011-12	5073559	65205	1.3
2012-13	5879773	98693	1.7
2013-14	6735213	142656	2.1
2014-15	7388160	175841	2.4
2015-16	7896467	349814	4.4
2016-17	8116109	433121	5.3
2017-18	8745978	520679	6.0

(Source: Report of Reserve Bank of India)

Analysis

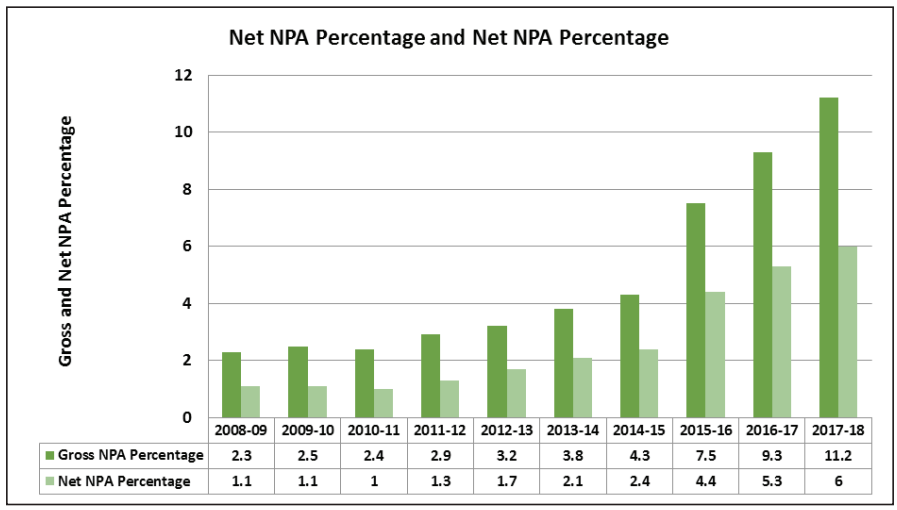
The following graph represents the gross and net NPA amount of scheduled commercial banks in India. The x-axis represents the time period of the study. I.e. 10 years, from 2008-2009 to 2017-2018. While the y-axis represents the NPA amount. The following graph shows that during the 10 year period the NPA level has increase very much along with the advances continuously. It is clear that the following graph, the gross and Net NPA

amount has always increase to 2017-18 from 2008-09 continuingly. This is a major issue for the schedule commercial banks in India.



	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Gross NPA Amount	69954	81718	93997	136968	192769	263015	322916	611607	791791	1039679
Net NPA Amount	31564	39127	41799	65205	98693	142656	175841	349814	433121	520679

Figure-1 Gross and Net NPA (Amount in Crore)



	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Gross NPA Percentage	2.3	2.5	2.4	2.9	3.2	3.8	4.3	7.5	9.3	11.2
Net NPA Percentage	1.1	1.1	1	1.3	1.7	2.1	2.4	4.4	5.3	6

Figure-2 Gross and Net NPA (Percentage)

Analysis

The above graph indicates the Gross NPA and Net NPA percentages to advances. In the x-axis shows the time period that is of 10 years from 2008-2009 to 2017-2018. And in the y-axis shows the percentage of the NPA to advances. The graph shows the upward trend during the study time period. The level of NPA percentage to advances has shown a considerable increase. In 2008-09 gross NPA percentage was 1.1% which has continuously increase to 6% in 2017-18

Conclusion

We can conclude at the end of this research paper, that the increasing NPAs are major issue of scheduled commercial banks in India. For reducing the NPA and its regulation, there is need to create new policy for stopping the increasing NPA by the government and Reserve Bank of India. Increasing NPA can damage the banking structure. If this condition continues to exist further, the banking system will totally collapse and its impact will affect the economy. Therefore banks must have rigorous rules to control the increasing NPAs. As well as banks must avoid unsecured advances, insufficient mortgage advances.

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INDEX

Electronic Commerce: Issues and Challenges in India

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ABSTRACT

E-commerce is a product of information and communication technology uprising in economic fields or the most noticeable way of contribution of ICT to economic growth. In the changing economy, e-commerce, e-business and e-banking have increasingly become a required part of business community in world. E-commerce means electronic commerce which include trading and facilitation of trading in product such as mobile banking, electronic fund transfer, internet marketing, online transaction processing, reselling of product, electronic data exchange, inventory management system and automated data collection systems. It implies overseeing the merchandise and service throughout the electronic media and web. Who offer items or services directly to the client from the gateway with the facilitated of a digital shopping cart or digital shopping basket scheme and permits payment through internet banking or credit or debit cards, e-commerce or e-business includes carrying on a business with the assistant of the web and by utilising the various information technology.

Keywords: Electronic commerce, Issues, Challenges, Indian Society, Model

Introduction

E-commerce is a product of information and communication technology uprising in economic fields or the most noticeable way of contribution of ICT to economic growth. In the changing economy, e-commerce, e-business and e-banking have increasingly become a required part of business community in world. E-commerce means electronic commerce which include trading and facilitation of trading in product such as mobile banking, electronic fund transfer, internet marketing, online transaction processing, reselling of product, electronic data exchange, inventory management system and automated data collection systems. It implies overseeing the merchandise and service throughout the electronic media and web. Who offer items or services directly to the client from the gateway with the facilitated of a digital shopping cart or digital shopping basket scheme and permits payment through internet banking or credit or debit cards, e-commerce or e-business includes carrying on a business with the assistant of the web and by utilising the various information technology.

Objective of Study: The study has following objectives

1) To understand the concept of Electronic Commerce
2) To study the Issues of E-commerce
3) To highlight the challenges of E-commerce in India

Research Methodology

The researchers used an explanatory research technique based on past literature from respective journal, annual reports, newspaper, magazine, internet sites of academic literature of Electronic Commerce. Considering the objectives of the study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study. The accessible secondary data is extensively used for research paper.

Models of E-commerce

There are four main models of E-commerce, which are available in the existing literatures which are as follows:

- **Business to Business Model (B2B):**

In this type of E-commerce, together participants are businesses. The B2B model is predicted to become the biggest value sector of the industry within a few years. B2B model involves electronic transactions for ordering, purchasing, selling and reselling between houses.

- **Business to Consumer Model (B2C):**

This is famous type of E-commerce. In this type of E-commerce, involves transaction between business organisation and consumer. These model any Business organisation that sells its product and service to consumer with the help of internet. In this model business organisation display the price catalogue on the internet, consumer have been searching various sites, ordering the product after comparing the product with other company assist of debit/credit cards or cash on delivery.

- **Consumer to Consumer Model (C2C):**

In this model involves transaction between consumers. In the C2C model a consumer sells directly to another consumer. Online sale web sites that make available a consumer to advertise and sell their product online to another consumer. However, it is necessary that both the seller and the buyer must register with the transaction site. While the sell wants to pay a fixed fee to the online sale house to sell their products, the buyer can offer without paying any fee. The site brings the purchaser and seller together to conduct deals.

- **Consumer to Business Model (C2B)**

In this model transaction created between consumer and a business organisation. It is similar to the B2C model, the dissimilarity is that in this case the consumer is the seller and the business organisation is the buyer. In the C2B transaction, has been determination of the price of particular product by the consumer.

- **Issues of E-commerce:**

E-commerce is especially significant for increasing for expending to local customer reach. Also export their product easily with the help of e-commerce websites. But for sure, seller can't just setup their online store and wait for customer to do shopping without providing any good service. One of the mainly significant problems of e-commerce is customer satisfaction.Customer satisfaction is required to make the potential customer faithful customers being aware of the problems they face with that case them not to revisit their sites would be good for them. Here are some of the issues that the customers face with and the things you should do.

- **Wrong product delivery:**

The basically huge complaint of the customers is the wrong product delivery. If they haven't got too many orders, it would be good to check each order one by one. If they have sent more than 20 order a day, it would be good to use computerization systems or to employ additional staff.

- **Shipping damage product:**

When each order should be check before shipping they can gain the customer trust by informing then about the possible problems which may occurred during the shipping. Also giving information about their rights if any problem occurred will be a good idea. Customer had an agreement with the shipping company to be much more alert with their products, with every damage which may occur during the shipping process, we can give penalty to the shipping company. By this way they will be more careful and we will be able to send undamaged product.

- **The importance of delivery time:**

The delivery time is generally standard for e-commerce stores. Seller should inform to the customers about minimum and maximum delivery times of the products they want to buy. If this standard time is exceeded for the reason that of shipping company, informing the customer about the issue and presenting a gift or a coupon to them would be nice calling them by way of phone and telling that the problem is occurred because of the shipping company will make them trust.

- **Technical problem on e-commerce site:**

Every e-commerce sites should be online twenty four hours. Some of the customers do online shopping at night. So sellers should be able to serve all day. This depends on the number of staff they have. Also a night shifter would be pleasant for giving online support. Running twenty four hours online is also based on their infrastructure.

- **Extra expenses for your customers:**

It is very crucial to point to all of the costs that the customer would pay before the ordering process. Most of the time, the supplementary expenses are the shipping expenses. Try to provide a free shipping service for their customer. But if they can't just inform the customers about the shipping the expenses (or any other) providing more payment gateways to the customers is also another option.

- **Reduce return problems:**

Products return is always irritating for e-commerce website managers, for the reason that it cost a lot of time and money. If the customer has so much return problem, possibly they want visits their store again for sure it is very normal to have return problem. But the key part is holding it as minimum. If protect the customer rights and help them in this return period without any problem. They can increase their sale thanks to their approach.

- **Insufficient product descriptions:**

The product description is most significant for search engine and the customers. Every sellers have been try to give every information of the product such as the size, weight, features and technical details also the warranty and support information is very important other than that using high declaration and high qualities photos will assist the customer to provide the right decision.

- **Challenges of E-commerce:**

E-commerce is present situation in the selling and buying of goods and services. The sellers and the buyers had been faced major challenges which carrying out business transactions through internet is as follows

- **Lack of Internet Infrastructure:**

Electronic device and internet is the backbone of e-commerce. Unfortunately internet access in India is so far cheerlessly low down against other developed country, e-commerce remains far absent from the common man. It is difficult for e-commerce to reach last people in the country.

- **Digital illiteracy:**

Digital illiteracy is one of the major challenge in the India, because need of digital literacy have been must to user for e-commerce. On the other hand, the continuous migration of skilled computer engineers to other countries has demanded India of software engineers. This has posed a real risk to India information technology industry. Noticeably, answer to this problem lies in curbing the computer brain drain and uses the same in the country.

- **Issues of Payment and Tax:**

Now a day new problems creates continuously of payment and tax. The e payment is made through debit card, credit card, plastic money and e-banking which could, however, not become popular so far in India mainly due to two reasons. First is dissemination of credit card in in very low and second is the Indian customer are quite doubtful of paying by credit card with the increasing threat of fraud played by hackers.

- **Lack of privacy and security:**

This is a big challenge of the e-commerce. E-commerce market is the near lack of cyber laws to control transaction on the net. The India's Information technology bill passed by the Indian parliament on 17 May, 2000 intends to get legislatively the rising areas in e-commerce. The bill also intends to assist e-commerce by removing lawful uncertainties formed by the new technology.

- **Virus problem:**

With the reason of computer virus is also a formidable problem in the execution of e-transactions is confirmed by the computer originated as Manila. The offenders causing virus must be awarded prevention punishment, otherwise related assaults in future cause lasting blows to the quite young e-commerce in India as well.

Conclusion

From the above research article we can conclude that e-commerce plays an essential role in Indian society. It plays an important role in upgrading and developing the Indian economic system. It provides support to small and medium enterprises to do well their business. On the other hand e-commerce faces some challenges also which we need to work on like of cyber laws, lack computer education, lack of proper infrastructure etc.

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STUDY THE GAS SENSING MATERIAL AND THEIR MECHANISM: A REVIEW

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ABSTRACT: This review paper studded gas sensing material which has widely investigated and utilised for detection of toxic and flammable gasses. such as CO, Co2,H2S,C6H6,02,NH3,H2,LPG etc there are several material used for gas sensing purpose. the detection of such gasses, numerous materials are used such as semiconducting metal oxide in SMO we are discussing about transition metal oxide and non-transition metal oxide and their factor for detection of various gasses. Carbon based material such as Graphene and carbon nanotube and some conducting polymers such as polyaniline(PANI) and discussing their advantages and disadvantage and studied how they perform with different parameters in terms of sensitivity selectivity, response time and stability and studied their sensing mechanism and performance for detection about different gas.

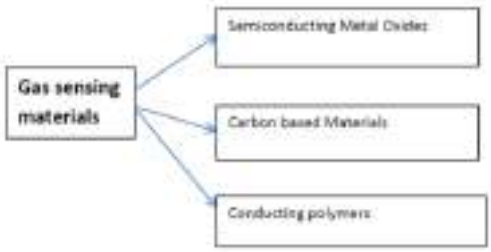
Key words: - Gas sensing, semiconducting metal oxide, carbon based material, conducting polymer , sensitivity.

INTRODUCTION :

Now days the demand of gas sensors is growing because of wide range use of several gases for industrial, domestic purposes and accidents due to leakage of gas are increasing. Many nanostructured metal oxides having favourable electrical, chemical properties and thermal stability are used as gas and humidity sensors for applications in many fields such as environmental monitoring , Medical diagnosis, health , energy, air quality monitoring, control of food quality or safety of industrial processes and homemade security system [1] Gas sensing technology has become more significant because of its well-known and common applications in the following areas:(1) industrial production (e.g., methane detection in mines) (2) automotive industry (e.g., detection of polluting gases from vehicles) (3) medical applications (e.g., electronic noses simulating the human olfactory system) (4) indoor air quality supervision (e.g., detection of carbon monoxide) (5) environmental studies (e.g., greenhouse gas monitoring) [2]

Throughout the last few years, with the quick industrial development and urbanization, the harsh air pollutant gasses are frequently attributed to automobile exhaust and factory emission has become a great threat to human existence and development. Meanwhile, a leakage of flammable and explosive gases such as Acetylene, ammonia, hydrogen, propane, propylene and methane that may result in loss of life and property damage. So, real-time and effective detection of those harmful gases via using gas sensors is in pressing need at present and future [3]

There are so many materials used as sensing gasses such as many semiconducting metal oxide s material, carbon based materials and some conducting polymers this have shown great potential for the detection of inflammable, flammable and toxic gases



Semiconducting Metal Oxide:

The extremely common sensing materials are metal oxide semiconductors, which give sensors with several advantages such as low cost and high sensitivity. Metal oxides, such as TiO2, CuO, ZnO,Cr2O3, Mn2O3, Co3O4, NiO, CuO, MgO, SrO, In2O3, WO3, V2O3, Fe2O3, GeO2, Nb2O5, MoO3, Ta2O5, La2O3, CeO2, Nd2O3 V2O5, and SnO2, can be utilized to detect flammable, oxidizing, or reducing gases with sensors which are mainly based on the resistance change responses to the target gases [2]. Metal oxides selected for gas sensors can be determined from their electronic structure. The scale of electronic structures of oxides is so wide that metal oxides were divided into two the following categories:

(1) Transition-metal oxides (Fe2O3, NiO, Cr2O3, etc.)

(2) Non-transition-metal oxides, which include (a) pre-transition-metal oxides (Al2O3, etc.) and (b) post-transition-metal oxides (ZnO, SnO2, etc.).Pre-transition-metal oxides (MgO, etc.[4] transition-metal oxides obtained various oxidation states on the surface; hence metal oxide semiconductors are promising sensing materials compared to the non- transition ones. Transition-metal oxides with d0 and d10 electronic configurations could be used in gas sensing applications . The d0 configuration could be found in transition metal oxides (e.g., TiO2, V2O5, WO3), and d10 appears in post-transition-metal oxides (e.g., SnO2 and ZnO)[2] Only transition metal oxides with electronic configurations d0 and d10 are actually used as gas sensors. The d0 configuration exists in binary transition metal oxides, such as TiO2, V2O5, WO3. The d10 configuration is found in later transition metal oxides, such as ZnO and SnO2.[4]

These metal oxide semiconductors generally have a wider band gap and a lower surface/interface state density, so they can work at higher temperatures, and the change in surface work function effectively controls the space charge layer.[5] Semiconductor metal oxide (SMO) gas sensors are the most well-researched group of gas sensors and recently SMOs with a size of 1 nm to 100 nm have been increasingly used for the detection of gases due to their size-dependent properties. . Gas sensors using inorganic metal oxides, such as, zinc oxide, tungsten oxide, titanium oxide, tin oxide, iron oxide, silicon oxide,etc , show superior detecting qualities because of changing oxygen stoichi- ometry and electrically active surface charge[6] Nanomaterials are unique because of their mechanical, optical, electrical, catalytic, and magnetic properties; In addition, these materials also have a high surface area per unit mass; In addition, new physical and chemical properties arise when the particles are in the nanometer range. The surface and the ratio between surface and volume increases dramatically with decreasing material size. In addition, the movement of holes and electron in semiconductor nanomaterials is influenced by the size and geometry of the materials[7] Research on sensors based on semiconductors made of metal oxides should find new solutions to overcome their shortcomings. Research on metal oxide nanostructures shows that nanostructures (such as semiconductor nanowires) can improve the sensitivity and response time of gas sensors.[2]

Carbon based materials :

In the last few year researcher are very much interested in study of carbon based nanomaterial's, because of their unique

electrical , optical , mechanical properties which makes them very interesting materials for development of gas sensor. Such carbon based materials such as carbon black, Graphene, carbon nanotube , Florence Some carbon based nanomaterial's such as Graphene and carbon nanotube have high quality crystal lattices and show high carrier mobility and low noise.

Geaphene:

Graphene is composed of a two-dimensional matrix of carbon atoms covalently linked by sp2 bonds to form a honeycomb sheet.it discovered in 2003,an allotrope of carbon and single layer of graphite. Structure of graphene is honeycomb like structure and 2D carbon nanomaterial having atomic thickness is 0.345nm. Graphene was considered part of the crystalline structure of graphite until 2004, when Novoselov and others first demonstrated some of the amazing electrical properties of graphene layers that they possessed[8] Graphene has very high surface area and electron mobility making it an attractive material for photocatalysis and gas sensing applications [9] graphene has high quality crystal structure that shows high-mobility, ballistic conduction. Its electronic bandgap, carrier type and densities.[7]. Being a strictly two-dimensional material, all graphene atoms are exposed to the environment, which results in the highest surface area per unit volume. It is a highly conductive material exhibiting metallic conductivity and, hence, low Johnson noise even in the limit of no charge carriers, where a few extra electrons can result in notable relative changes in carrier concentration. Graphene has few crystal defects, and thus exhibits low level of 1/f noise caused by their thermal switching. A few of its properties make this material very interesting for developing gas sensors[7]

Carbonnanotube;

Carbon nanotubes (CNTs) are associates of the fullerene structural family and the ends of a nanotube may be covered. Their name is resulting from their long, hollow structure with the walls formed by graphene sheets. These sheets are rolled at specific and discrete angles, and the combination of the rolling angle and radius determines whether the individual nanotube shell is metallic or semiconducting[8]. Carbon nanotubes cylindrical carbon nanomaterial that can be classified into two types.1 single-walled CNTs (SWCNTs) and 2. Multi-walled CNTs (MWCNTs) according to the number of layers in the tube of wall. CNTs was observed in 1991 in the carbon soot of graphite electrodes during an arc discharge[7]. CNT has unique electrical properties mechanical stiffness, strength, and high thermal conductivity[10] Due to the well known and excellent properties of Nano scale materials, intensive research has been performed in various areas.

CONDUCTING POLYMER:

It is well recognized that the electrical conductivity of these conducting polymers is affected through exposure to various organic and inorganic gases. Conducting polymers that can be used as gas sensing materials include polypyrrole (PPy), polyaniline (PAni), polythiophene (PTh) and their derivatives[2] This Conducting polymers have a great importance among the researchers due to high mobility of the charge carriers and as excellent hosts for the tricking of metals and semiconducting nanoparticles.[11] Polyaniline (PANI) has been investigated as a potential material for gas sensing applications, due to its environmental stability, controllable electrical conductivity and interesting redox chemistry (or electroactivity), especially operating temperature to around at room temperature [12] Amongst the various conducting polymers, polyaniline (PANI) is a most studied polymer because of its relative ease in preparation, good environmental stability and tuneable conductivity

Tai and his team investigated NH3 gas-sensing behaviours of PANI/TiO2 Nano composite synthesized by an in-situ chemical oxidation polymerization approach, of which the sensitivity (S) and the recovery time (trec) were enhanced by the deposition of TiO2 NPs on the surface of PANI films [06].

Table gives an overall summary of materials

Mechanisms:

The surface of the semiconductor metal oxide adsorbs the gas molecules in case a sensor is exposed to a reducing gas. Adsorption of a gas molecule on the surface decreases the potential barrier by inserting electrons to the conduction band, allowing the electron to flow easily and thus reducing the electrical resistance. In this manner, the SMO gas sensors act as variable resistors whose value is a function of gas con-centration [6]. The response to reducing gases may be from reactions involving the utilization of the surface oxygen ion and replacement of the charge carrier density on the conduction band of the n type semiconductors, which is shown by reaction. The reverse development happens throughout exposure to oxidizing gases. Within the case of n-type semiconductors, the resistance of the gas sensors decreases after they are in touch with reducing gases or vapours Gas sensors for oxidizing and reducing gases are metal oxide sensors (MOS). The sensing materials is composed of one or more transition metal oxides. The detection of gasses this characteristic is based on the reaction between the material and the oxidizing or reducing gas in the atmosphere, which causes a change in electrical conductivity. Due to changes of electrical conductivity which is measured by a pair of electrodes embedded in material. The heating element is used to adjust the temperature of the sensor. The sensor should be heated to a temperature between 200 and 400 degrees Celsius to improve sensitivity and response time. Oxidizing and reducing agents are key terms used in describing the reactants in redox reactions that transfer electrons between reactants to form products.[13]

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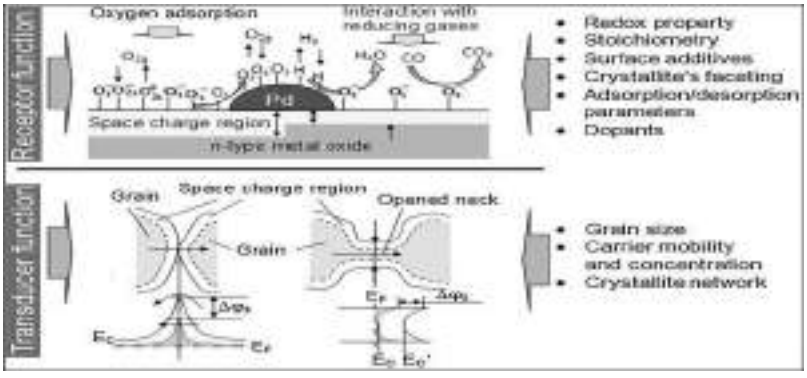
Table 1 gives an overall summary in advantages, disadvantages and application fields for the mentioned gas sensing methods. Materials

Materials	Advantages	Disadvantages	Target gasses
Metal oxide Semiconductor	(a) Low cost; (b) Short response time; (c) Wide range of target gases; (d) Long lifetime.	Relatively low sensitivity and selectivity; (b) Sensitive to environmental factors; (c) High energy consumption. (a)	Industrial applications and civil use.
Carbon based materials	(c) Large surface- area-to-volume ratio; (d) Quick response time; (e) Low weight. (a)	a) Difficulties in fabrication and repeatability; (b) High cost.	Detection of partial discharge (PD)
Polymer	(a) High sensitivity; (b) Short response time; (c) Low cost of fabrication; (d) Simple and portable structure; (e) Low energy consumption	(a) Long-time instability; (b) Storage place of synthetic (c) Poor selectivity;	(a) Indoor air monitoring; (b) Irreversibility; products as paints, wax or fuels; (c) Workplaces like chemical industries.

Fig. Receptor and transducer functions as well as their physicochemical and material properties of metal oxide semiconductor gas sensor [06]



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Chapter – 8

MUSHROOMS CULTIVATION AND THEIR METHODS

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Abstract

Mushroom cultivation is art and skill science. Cultivation is one of the common practices for the skilled person It's also called waste from best. Within low investment more benefits. It also developed from low time. The cultivation of edible mushrooms carries great relevance in today's world in context. Artificial mushroom cultivation can be done within four-week proper growth mushrooms is one of the fungi which grows on dead and decaying matter with concern point mushroom can be cultivated on agricultural waste mushroom may be edible and nonedible. Their number of species are useful in different streams like food and medicine. Mushroom is one the nutritious food which high protein, vitamin, carbohydrate and nutritionally important. Most food industry base on mushrooms. Mushrooms have been farmed for their nutritional benefits and flavour since ancient times, particularly in far eastern regions. Mushroom cultivation starts with a different stage like spawn production, sterilization, incubation irrigation, and harvesting. We have discussed the cultivation of Pleurotus species on agricultural

waste like soybean, glycine, and rice straw in different quantity has been discussing We also have discussed the ecological importance

Keywords: Mushroom cultivation, Ecological importance spawn. Sterilization oyster mushroom

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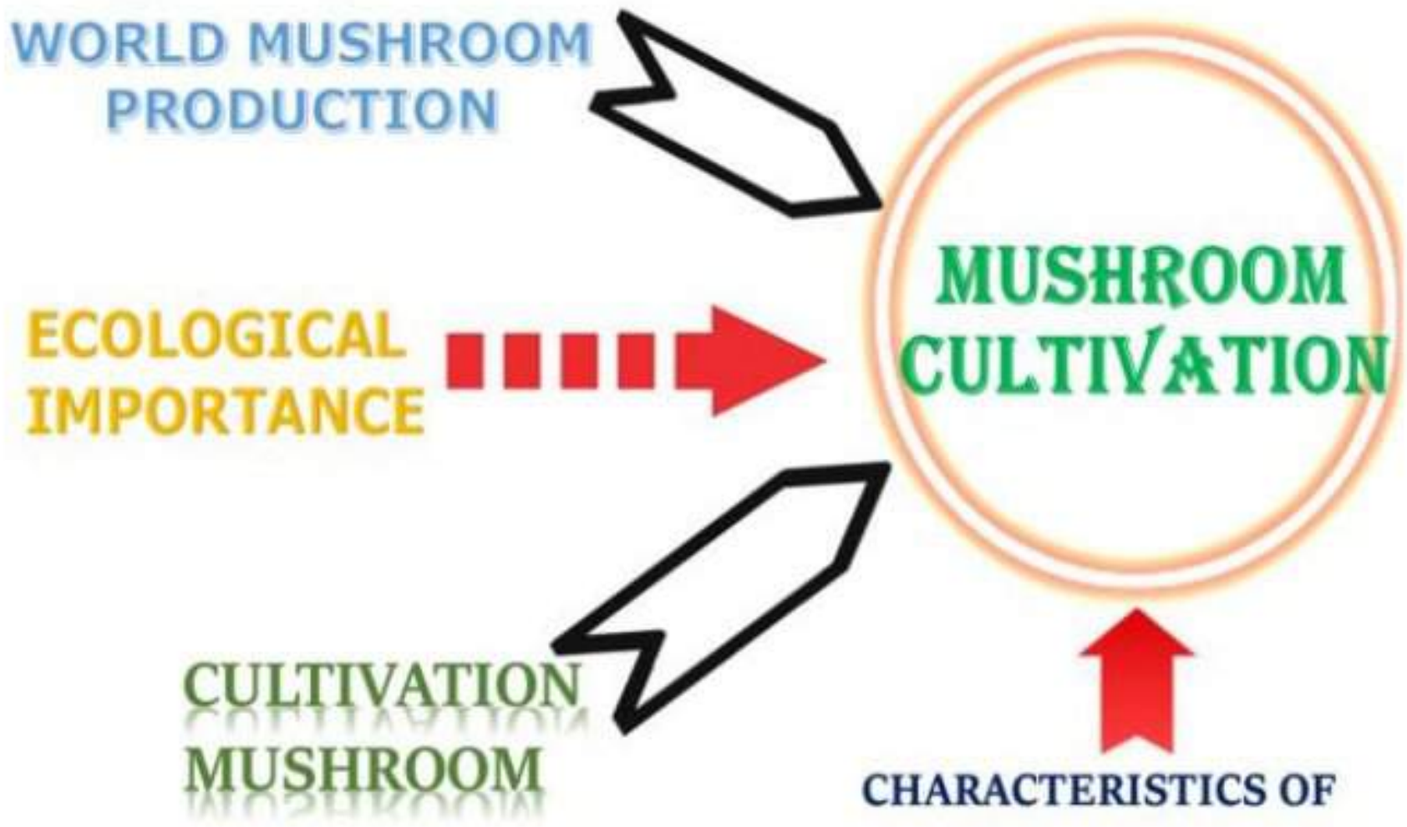
Graphical Abstract:



Introduction

"A mushroom is a macro fungus with a characteristic fruiting body, which can be either epigeous or hypogeous and large enough to be seen with the naked eye and plucked by hand," according to a wider definition (Chang, S. T. 2008). Mushrooms are members of the Fungi kingdom, which is separate from plants, animals, and microorganisms. Fungi cannot use energy from the sun directly through chlorophyll, which is the most crucial property of plants. As a result, fungi must eat other species and acquire nutrition from the organic matter in which they reside. Mycelium, the fungus's live body, is made up of a microscopic web of threads (or filaments) called hyphae. Sexually compatible hyphae will merge and begin to generate spores under certain conditions. Mushrooms are spore-producing structures that are greater than 1 mm in diameter (Oei, P., & Nieuwenhuijzen, B. V. 2005). Mushrooms have been cultivated for their nutritional

benefits and flavor in far eastern regions since ancient times. Mushrooms provide less protein than other foods. animals, but not nearly as much as in most plants. They have a low-fat content, high fiber content, and all essential amino acids except iron, which contains all of the essential minerals (Chakravarty, B. (2011)."The earth can't produce anymore; man must do more with what the earth produces," is something that we should all be concerned about. The primary aspects of ZERI should be the sustainable exploitation of lignocellulosic wastes found in Brazil for improved quality of life, reduced waste emissions, and value-added goods (Chang, S. T. (2007). Only a few species of mushrooms and related fleshy basidiomycetes are economically cultivated, even though there are over 300 genera of these fungi. This could be because many of them are mycorhizal, meaning they won't sporulate without the host.

Mushrooms have a reputation for being tough to work with, and it is commonly accepted that the Agaricus bisporus mushroom, in particular, is difficult to influence through breeding. The natural breeding system was not well understood during early attempts at the genetic improvement in the farmed fungus A. bisporusMany saprophytic species, on the other hand, have proven to be cultivable The button mushroom, Agaricus bisporus, was widely cultivated in Europe before being exported to North America by the settlers; the Shiitake mushroom (Lentinus edodes), which has been grown in China and other oriental countries for centuries; and the oyster mushroom (Pleurotus ostreatus), which was collected as wild specimens from Florida forests and is now actively cultivated in several countries around the world. The oriental Snoke or velvet stem mushroom (Flammulina velutipes), which is primarily produced in Japan, as well as the paddy straw mushroom (Volvariella volvacaea) and the ear fungus (Auricularia auricula), which has a high medicinal potential, are also farmed. The Reishi mushroom (Ganoderma lucidum) is another cultivated mushroom that is utilized as alternative medicine and as a flavoring ingredient in Japan Anti-tumor or immuno-stimulating polysaccharides have

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been found in 651 mushroom species from 185 taxa, inhibiting tumorigenesis. (Chakravarty, B. (2011).

Mushrooms are named are given based on their appearance at various eras and in various nations, the word mushroom has been employed in a variety of ways. All bigger fungi, or fungi with stalks and caps, or all large fleshy fungi are included in the broad definition of mushroom Linnaeus originally placed mushrooms in the Division Thallophyta, which included the so-called lesser plants. This was partly because the structure minutes were quite simple and anatomically uncomplicated (lack of true roots, true stems, true leaves, true flowers, and true seeds). They were more closely linked to plants than to animals since they had a cell wall. Modern research has demonstrated that mushroom biota, like other fungi, has specific characteristics that are important enough to place them in a different fungal kingdom, the Kingdom Myceteae. The funeral stands out from the plant and animal kingdoms because it has a unique cell wall. Only larger fungi that are edible and/or medicinally valuable are used in this way. The term mushroom is most commonly used to refer to only the edible Agaricus species.

"A mushroom is a macrolungus with a characteristic Uniting body that can be either epigeous (above ground) or hypogeous (underground) and large enough to be seen with the naked eye and plucked by hand," according to this book's definition (Miles, P. G., & Chang, S. T. (2004). Lentinula edodes, an umbrella-shaped mushroom with a pileus (cap) and a stipe (stem), is the most frequent type. Other species, such as Volvariella volvacea and Agaricus campestris, have a volva (cup) or an annulus (ring), or both, as does Amanita muscaria. Furthermore, some mushrooms have the shape of flexible cups, while others have the shape of golf balls. Some resemble little clubs, others like coral, while others are yellow or orange jellylike globs, and still, others resemble the human ear. In reality, there are a plethora of different types (Chang, S. T. 2008). Oyster mushrooms (Pleurotus spp.) are saprophytes that are also known as white-rot fungi, abalone, or tree oyster mushroom (Mahari et

al., 2020). Problems linked with cultivation, distribution, and storage, as well as senescence-induced browning and disease resistance, are all areas of research for mushroom breeding. Another goal of mushroom breeding is to incorporate numerous better crop growing properties, such as a shorter development cycle and spore avoidance. Traditionally, mushrooms release billions of spores into the air, causing health issues like lung allergies and fever episodes. Spores also cause climatic installations to be blocked, resulting in greater energy expenditures (Chakravarty, B. (2011).

Characteristics of Mushrooms

The most common mushroom is an umbrella-shaped mushroom with a pileus (cap) and stipe (stem), such as Lentinula edades, while some species have an annulus (ring), such as Agaricus bisporus, or a volva (cup), such as Volvariella volvacea alternatively you can have both. Amanita phalloides, for example, some mushrooms are also in the shape of flexible cups. Others, like golf balls, can be found. Some resemble little clubs; others like coral; yet others are yellow or orange jellylike globs, and still, others resemble the human vehicle. There are numerous forms to choose from. The structure we refer to as a mushroom is the fungus' fruiting body (Miles, P. G., & Chang, S. T. (2004).

Ecological Importance of Mushrooms and Fungi

Mushrooms and fungi are nongreen creatures that do not have chlorophyll. They can't make food from simple inorganic components like water, carbon dioxide, or nitrous, as green plants can. They get their nourishment from the dead or living plants and animal tissues. Saprophytic fungi are those that receive nutrients from dead organic matter, such as agricultural crop wastes, dead tree wood, animal feces, and so on. Parasitic fungi are those that get their sustenance from living plants and animals while inflicting harm to their hosts. Farmers are generally concerned about such songs because they can cause significant crop damage and even catastrophic food shortages. However, some fungi live in close physiological association with their host plants and

animals (e.g., those living inside termite nests or mushrooms living in association with the roots of some grasses or trees such as pines) and in a special type of partnership, in which each partner benefits in some way (Miles, P. G., & Chang, S. T. (2004).

World Mushroom Production

Mushroom farming requires ideal conditions for best development and yield. The cultivation of numerous types of mushrooms necessitates a variety of environmental conditions. Several species of mushrooms are farmed in the mushroom industry. Oyster mushrooms, for example, are grown for commercial purposes (Pleurotus spp.), which are easily grown in the lowlands and sold in markets, while in this area, shiitake (Lentinus encodes) and button mushrooms (Agaricus spp.) are grown. the highlands and the chilly climate (Mahari et al., 2020). There are three types of mushrooms in the mushroom industry: edible mushrooms, medical mushroom products, and wild mushrooms. Chang, S. T. (2006). The International Society of Mushroom Science (ISMS) for edible mushrooms, the World Society for Mushroom Biology and Mushroom Products (WSMBMP) for mushroom biology and medicinal mushroom products, and the International Workshops on Edible Mycorrhizal Mushrooms for some wild mushrooms have all developed international bodies/forums that have helped to bring these segments of the mushroom industry to the forefront of international attention. The three worldwide bodies/forums have done a lot to promote each of their particular professions, including bringing scientists together for good talks, stimulating research, and disseminating useful information, to name a few things. Many of the known mushroom species have a promising future. Mushroom production has been continuously expanding around the world, owing mostly to contributions from developing countries such as China, India, Poland, Hungary, and Vietnam. Experimentally based evidence is also growing to back up centuries of observations about mushrooms' nutritional and therapeutic benefits. (Chang, S. T. 2008).

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Cultivation Mushroom

Mushroom farming is both an art and a science. The art is perfected by curiosity and practical experience, while the science is developed via research. Mushroom development dynamics include several technological features that are similar to those seen in our everyday agricultural crop plants**.** (Chang, S. T. 2008).

Pleurotus Sajor-cajun cultivation Pleurotus Sajor-cajun (grey oyster mushroom)

It is similar to the Pleurotus (oyster) mushroom group's high-temperature species, necessitating high temperatures for fructification. In tropical and subtropical areas, this mushroom has a bright future. Its cultivation is simple, requiring only a few simple methods. Kaul, T. N. and Dhar, B. L. (2007). Chang, S. T. 2008).

Biological Nature

Biodiversity The optimal temperature for mycelium growth is 10–35°C. Mycelium grows best at a temperature of 23–28°C. The fruiting body's ideal developmental temperature is 18–24°C. The substrate used to make the mushroom bag/bed should have a pH of 6.8–8.0. The C/N ratio in the substrate varies between 30:1 and 60:1. The development of the fruiting bodies necessitates a high amount of air movement and enough lighting.

Spawn Substrate

A. 1.5 percent gypsum or lime in wheat grain.
B. Cottonseed hull is 88 percent, wheat bran is 10%, sugar is 1%, and gypsum is 1%.
C. Sawdust is 78 percent, wheat bran is 20%, sugar is 1%, and gypsum is 1%.
D. Sawdust is 58 percent, spent coffee grounds/spent tea leaves is 20%, water hyacinth/cereal straw is 20%, sugar is 1%, and gypsum is 1%.

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Cultivation Substrate

A. Cottonseed husk 95%, gypsum 2%, lime 1%, and calcium superphosphate 2%
B. Rice straw accounts for 80%, cotton waste for 18%, gypsum for 1%, and lime for 1%.
C. Water hyacinth is 80 percent, cereal straw is 17 percent, gypsum is 2%, and lime is 1%.

The following is a successful cultivation method that has been tested:

- The substrate is cotton waste or rice straw combined with water hyacinth.
- Cut the straw and water hyacinth into small segments or tear huge pieces of cotton waste into small bits.
- Mix in 2 percent (w/w) lime and enough water to achieve a moisture content of 60–65 percent. Place the materials in a pile, cover them with plastic sheets, and set them aside for the night.
- Pasteurize the substrate by placing it in tiny baskets or on shelves, or by cooking it for 15 minutes in boiling water.
- After chilling to around 25°C, thoroughly combine around 2% (w/w) spawn with the substrate and pack into 60-cm-long tubes with rigid plastic [polyvinyl chloride (PVC)]
- Incubate these columns at approximately 2428°C in the dark, if possible.
- Remove the plastic wrapping and turn on white light after three to four weeks, when the mushroom's mycelium has ramified the entire column of the substrate.
- Watering It's sometimes necessary to maintain the surface from drying out.
- Approximately three to four hours White primordia begin to emerge across the entire surface after a few days.

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- After that, two more Pleurotus mushrooms are ready to pick after three days.
- During the harvest, if multiple flushes are required, regular watering is critical.

Figure: Mushroom Cultivation Practice

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१४. महाराजा सयाजीराव गायकवाड यांच्या औद्योगिक सुधारणा

प्रा. भोजराज व्ही. बोदेले
यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय लाखांदूर, जि. भंडारा
डॉ. शरयू बी. तायवाडे
तायवाडे महाविद्यालय महादुला कोराडी, जि. नागपूर.

सारांश

१९०८ मध्ये सयाजीरावांनी बडोदा संस्थानातील कृषी, सहकार, आणि औद्योगिक विकासाला आधारभूत अशी बडोदा बँक उभारली. या बँकेच्या माध्यमातून अनेक लोकोपयोगी योजना राबवल्या. कमी व्याजदरात कर्जपुरवठा होऊ लागल्याने नवउद्योजकांना उद्योग स्थापन करण्यासाठी प्रोत्साहन मिळाले. या बँकेच्या उद्घाटनप्रसंगी त्यानी बँक स्थापनेचा उद्देश पुढील शब्दात व्यक्त केला आहे. ते म्हणतात, ''ज्या आर्थिक चळवळीचे औद्योगिक राष्ट्राच्या मालिकेत अखेर आपल्याला स्थान मिळवायचे आहे त्या चळवळीचे द्योतक म्हणूनही या बँकेचे मी स्वागत करतो.''

बीजशब्द :— औद्योगिक विकास, बँका, कृषीवर आधारीत उद्योग, सहकार, ॲक्ट, औद्योगिक शोरण.

शिक्षणाची ताकत ओळखलेल्या सयाजीरावांनी हेही ओळखले होते की, भारत हा शेतीप्रधान देश असल्याने शेतीपूरक उद्योगधंद्याची सांगड नीट न घातल्यास आपण जगाच्या स्पर्धेत मार्ग पडू, हे शंभर वर्षांपूर्वी ओळखलेल्या महाराजांनी आपल्या राज्यात यासंदर्भात टप्प्याटप्प्याने नियोजन केले. राज्यकारभार हाती आला त्यावेळी काही लाखांचा तोटा असलेले राज्य पंचवीस वर्षात आर्थिक नियोजन, काटकसर, कर आकारणी, महसूल वसुली आणि शेतीपूरक उद्योगाच्या संगतीने ते जगातले सातव्या क्रमांकाचे श्रीमंत व्यक्ती बनले, हे त्यांच्या सुप्रशासनाने मुख्य सूत्रच आहे. या राज्याचे उत्पन्न व खर्चाची वाट याची तपासणी करण्यासाठी स्वतंत्र खाते निर्माण करून जमाखर्चाचे उत्तम नियोजन करत उद्योगधंद्याची नीट घडी घातली. शेती, सहकार आणि उद्योग या तिन्हींचा समन्वय साधून सयाजीराव हिंदुस्थानात कृषी—औद्योगिक प्रयोगाचे उदाहरण घालून दिले.

शेतीपूरक एरंडेल तेलप्रक्रिया, सुतगिरण्या, सहकारी पतपेढ्या, सहकारी बँका, सहकारी साखर कारखाना, कापसावर प्रक्रिया करून पूरक निर्मिती विणकाम, दुध डेअरी, विट कारखाने, कागद उद्योग, विद्युतनिर्मिती, मीठ कारखाना, सयाजी स्टील वर्क्स, महाराणी वूलन मिल, फिशरी उद्योग, डिंक उद्योग, पेन्सिल कारखाना, मातीची भांडी निर्मिती कारखाना ही चौफेर उद्योगांची महाराजांची दृष्टी बडोदा राज्याचे श्रीमंतीचे रहस्य होते. एवढेच नाही तर उद्योगपती जमशेटजी टाटा हे महाराजाचे मित्र आणि बडोदा राज्यातील नवसारीचे उद्योगपती होते. टाटा स्टील आणि टाटा केमिकलच्या उभारणीत महाराजांची प्रेरणा, प्रत्यक्ष मदत होती.

बडोदा तुरुंगातील गुन्हेगारांच्या कौशल्याच्या मदतीने कपडे, गालीचे, बास्केट, बॉक्स करून घेऊन त्यांना मुक्तीनंतर उद्योगाचे जणू प्रशिक्षणच देत होते. बडोद्यातील उद्योगधंद्याच्या भरभराटीसाठी महाराजांनी वेळोवेळी कायदे केले. यात मालक आणि कामगारांने हितही सांभाळले जाई. औद्योगिक प्रदर्शनांतून उद्योगधंद्यांना जोडून घेण्याची महाराजांची रोष्ट्रीय दृष्टीही दिसून येते.

१९०८ मध्ये सयाजीरावांनी बडोदा संस्थानातील कृषी, सहकार आणि औद्योगिक विकासाला आधारभूत अशी बडोदा बँक उभारली. या बँकेच्या माध्यमातून अनेक लोकोपयोगी योजना राबवल्या. उद्योग स्थापन करण्यासाठी कमी व्याजदरात कर्जपुरवठा होऊ लागल्याने नवउद्योजकांना उद्योग स्थापन करण्यासाठी प्रोत्साहन मिळाले. या बँकेच्या उद्घाटनप्रसंगी त्यांनी बँक स्थापनेचा उद्देश पुढील शब्दात व्यक्त केला आहे. ते म्हणतात, "ज्या आर्थिक चळवळीमुळे औद्योगिक राष्ट्राच्या मालिकेत अखेर आपल्याला स्थान मिळवायचे आहे त्या चळवळीचे द्योतक म्हणूही बँकेचे मी स्वागत करतो." या बँकेकडे सयाजीराव एका वेगळ्या भूमिकेतून पाहत होत. बँकेच्या माध्यमातून लोकांच्या आर्थिक सवयी बदलतील व आर्थिक व्यवहार पैसा खेळता राहील अशा व्यापक दृष्टिकोनातून या बडोदा बँकेचा विस्तार केला.

१९११ मध्ये बडोद्यामध्ये असलेल्या ८६ उद्योगांची संख्या १९२१ मध्ये वर गेली. या उद्योगांमध्ये ओखा मीठ कारखाना, सयाजी स्टील वर्क्स, अस्विनी उद्योग, टाटा केमिकल्स, महाराणी वूलन मिल, फिशरी उद्योग, डिंक उद्योग, पेटलाद येथील पेन्सिल निर्मितीचा कारखाना, मातीची निर्मितीचा कारखाना अशा विविध उद्योगांचा समावेश होतो. सयाजीरावांनी औद्योगिक धोरण आखताना यामध्ये केवळ पुरूषांनाच विचारात न घेता महिला व किमान पाचवा वय पूर्ण असणाऱ्या बालकांना देखील बारकावयाने विचार केला असल्याचे आढळते. १९१७ मध्ये महिलामध्ये उद्योगासंबंधी तांत्रिक ज्ञान व कौशल्याचा विकास करण्यासाठी चिमणाबाई स्त्री उद्योगालय सुरू केले.

उद्योगधंद्याच्या विकासासंदर्भात विविध कायदे करून सर्व उद्योगधंद्यांना कायदेशीर पाठबळ दिले. यामध्ये १८९७ चा कंपनी ॲक्ट, १८९८ सालचा बॉयलर ॲक्ट, व यल्स फॉर ओपनिंग फॅक्टरीज ॲंड ॲक्वीजिशन ऑफ लँड व याचवर्षी वेट ॲंड मेजर्स ॲक्ट, १९१३ साली फॅक्टरीज ॲक्ट आणि १९१५ सालचा यल्स ऑफ डेवलपमेंट ऑफ कॉमर्स ॲंड इंडस्ट्रीज इत्यादी कायद्यांचा समावेश आहे.

सयाजीरावांनी उद्योग धोरणांची अंमलबजावणी करताना ज्या काटेकोरपणाने ही धोरणे राबविली त्याचा परिणाम म्हणून बडोदा संस्थान त्यानेवळीच्या इतर प्रगत संस्थानांच्या तुलनेत औद्योगिक विकासामध्ये अग्रेसर राहिले. उद्योगधंद्यांच्या जडणघडणीमध्ये सयाजीरावांनी समाजातील प्रत्येक घटकाला सामावून घेतले. कोणताही भेदाभेद न करता उद्योग विकासाचे उद्दिष्ट साध्य केले. कोणत्याही राजाने अशाप्रकारे जनतेच्या कल्याणासाठी हे अखंड कार्यरत राहणे हे तसे दुर्लभच म्हणावे लागेल. सयाजीरावांचा उद्योगाकडे बघण्याचा दृष्टिकोन केवळ एक संस्थानापुरता मर्यादित नव्हता, तर बडोद्यातील कोणत्याही क्षेत्रातील सयाजीरावाने धोरण हे राष्ट्रीय वृत्तीने प्रेरित झालेले दिसून येते. याचबरोबर बदलत्या काळात निर्माण होणारे नवे ज्ञान आणि तंत्रज्ञानाशी पारंपारीक ज्ञानाची योग्य प्रकारे सांगड घालून कारागीर जातींना औद्योगिक विकासाच्या मुख्यप्रवाहात आणले. महाराज

सयाजीराव गायकवाड हे किती दूरदृष्टी असणारे राजे होते हे त्यांच्या ६४ वर्षाच्या राज्यकारभारात बडोद्यात केलेल्या विविध उद्योगधंद्याच्या आजच्या स्थितीवरून लक्षात येते.

बडोद्यात मुबलक प्रमाणावर उपलब्ध असलेल्या दुधावर आधारीत डेअरी फार्म सारखा उद्योग १९२५ मध्ये मकरपुरा, बडोदा येथे सुरू केला. जगभरात प्रसिद्ध असणारा अमूल हा दूध उत्पादनातील ब्रँण्ड जेथे आहे तो मेहसाणा जिल्ह्यातील आनंद हे ठिकाण बडोदे संस्थानातच येते. सयाजीरावांच्या उद्योगविकासाचे आणखी एक वेगळेपण म्हणजे उद्योगांची उभारणी करताना कच्चा मालाची सहजासहजी उपलब्धता होईल अशाच ठिकाणांची निवड करत. समाजातील परंपरागत विचारसरणीच्या लोकांना देखील पारंपारिक मानसिकतेतून बाहेर काढणारी आपली धोरणे विनासायास आत्मसात करायला लावण्याचे सयाजीरावांचे कौशल्य अनोखे वाटते. कोणत्याही उपक्रमाच्या यशस्वितेसाठी त्या कामाप्रतीचा एक ध्येयवाद संबंधित नेतृत्वाकडे असावा लागतो तरच अपेक्षित उद्देश साध्य होतो. सयाजीरावांच्या सर्व यशस्वी कामांमध्ये त्यांचा ध्येयवाद स्पष्टपणे जाणवतो. असा ध्येयवाद प्रत्येकाने आत्मसात करण्याची गरज आहे. जर तसा ध्येयवाद बाळगून काम करण्याची सवय लागली तर आपण कोणत्याही क्षेत्रामध्ये असो हमखासपणे आपणाकडून उत्तम कामगिरी घडते.

महाराज म्हणायचे, ''तुम्हालाही वाटतच असले पाहिजे की, औद्योगिक गुलामगिरीचे जे जू आपण आपल्या मानेवर बसू दिले आहे ते आजच्या आणीबाणीच्या वेळी झुगारून देऊन जर त्यापासून आपण आपली सुटका करून घेतली नाही, तर पुन्हा सुटकेचीच काय पण कसलीही आशा नको'' प्रत्येक देशाना विकास हा मुख्यत: त्या देशातील प्रमुख उद्योगधंद्याच्या प्रगतीवर अवलंबून असतो. भारत हा कृषिप्रधान देश असला तरी देशाचे राष्ट्रीय उत्पन्न, लोकांच्या जीवनमानाचा दर्जा, स्वयंलित अर्थव्यवस्था आणि कृषी क्षेत्राच्या विकासाबरोबरच उद्योगांचा विकास होणे देखील आवश्यक आहे. आंतरराष्ट्रीय पातळीवर औद्योगीकरणाची मोलाची भूमिका असल्याचे दिसून येते. मात्र प्राचीन काळामध्ये अन्न, वस्त्र, निवारा अशा मानवाच्या मूलभूत गरजा असल्यामुळे उद्योग व व्यापाराचे अस्तित्वच नव्हते. मानव निसर्गाच्या सानिध्यात राहून येथे उपलब्ध होतील ती कंदमुळेखाऊन आपला उदरनिर्वाह करीत असत. वस्त्र म्हणून झाडाच्या पानांचा किंवा मृत जनावरांच्या चमड्याचा वापर करत आणि निवाऱ्यासाठी गुहेचा वापर करत असे. कालानुरूप मानवाचा विकास होऊन प्राचीन मानव प्रगती करू लागला.

द्वितीय हिंदी औद्योगिक परिषदेमध्ये श्रीमंतांच्या हस्ते उद्घाटन करताना महाराज म्हणतात, ''मोठ्या धंद्यांना आवश्यक सहाय्य करा व प्रोत्साहन द्या; परंतु छोट्या धंद्याच्या पोटापाण्याकडेही अवश्य पहा. त्यांना जरूर ती मदत कराच. कारण त्या लहानसहान धंद्यांवरच आपले लाखो गावडी कारागीर गुजराण करीत आहेत. '' या विधानावरून सयाजीरावांचे उद्योगविषयक धोरण स्पष्ट दिसते. संस्थानातील शेवटच्या घटकाचा देखील इतक्या बारकाव्याने विचार करून त्यांना डोळ्यासमोर ठेऊन उद्योगविषयक धोरण ठरवली जात. यामुळे सर्व घटकांचा समान विकास होणे शक्य झाले. समाजात आर्थिक समानता प्रस्थापित झाल्याने सामाजिक स्वास्थ्यदेखील टिकून राहीले.

अलेंबिक केमिकल वर्क्सचा रौप्यमहोत्सवामध्ये बोलतांना महाराज म्हणतात, ''आपल्या देशातील कामगारवर्गापैकी एक प्रचंड बहुसंख्याक वर्ग शेतकीवर उपजीविका करणारा आहे. वर्षातील सुमारे चार महिने त्याचे काम त्यांना पुरते. बाकीच्या आठ महिन्यांत तो जवळजवळ निरुद्योगीच असतो. सक्तीच्या फुरसतीचा हा काळ कोणत्या किफायतशीर व्यवसायात गुंतवून टाकावयाचा हा हिंदी अर्थशास्त्रज्ञांपुढे एक सर्वांत महत्त्वाचा व बिकट असा प्रश्न आहे. शेतीला जोडून नवे उद्योगधंदे किंवा शेतीला आनुषंगिक असलेले पोटधंदे जर खेड्यापाड्यांतून सुरू करण्यात येतील तर हा बिकट प्रश्न सोडविण्यास बरीच मदत होईल.'' आधुनिक भारताच्या औद्योगिक विकासाचा विचार करता ब्रिटिशांच्या अंकित असणारा भारत आणि ५६२ संस्थानिकांच्या अधिपत्याखाली असणारा भारत अशा दोन टप्प्यांमध्ये आधुनिक भारतातील औद्योगिक विकासाचा विचार करावा लागतो. ब्रिटिश भारतातील औद्योगिक शोषणाचा प्रभाव त्रावणकोर, हैद्राबाद, बडोदा, मैसूर यांसारख्या औद्योगिकदृष्ट्या प्रगत संस्थानावर दिसून येतो. या संस्थानाचा तुलनात्मक विचार करता बडोदा संस्थान औद्योगिक विकासाबाबत आपली वेगळी ओळख निर्माण करणारे ठरले. याचे प्रमुख कारण म्हणजे महाराजा सयाजीराव गायकवाड यांचे नेतृत्व होय. सयाजीरावांनी आपल्या संस्थानाच्या सर्वांगीण विकासासाठी शैक्षणिक, धार्मिक, आर्थिक, राजकीय, शेती, सहकार, उद्योग अशा सर्व क्षेत्रात आपल्या द्रष्ट्या भूमिकेतूनन पायाभूत काम करून ठेवले. त्यामुळेच आधुनिक भारतातील प्रगती, विकास, सामाजिक सुधारणा अशा सर्वच क्षेत्रात सयाजीरावांनी उभे केलेले काम आदर्श म्हणून विचारात घ्यावे लागते.

निष्कर्ष

१. शिक्षणाची ताकद ओळखलेल्या सयाजीरावांनी हेही ओळखले होते की, भारत हा शेतीप्रधान देश असल्यामुळे या देशात शेती पुरक उद्योग उभारले पाहिजे.
२. बडोदा तुरुंगातील गुन्हेगारांच्या कौशल्याच्या मदतीने कपडे, गालीचे बास्केट, करून घेऊन त्यांना मुक्तीनंतर उद्योगाचे जणू महाराज प्रशिक्षणच देत होते.
३. हिंदुस्थानात उद्योग जर यशस्वी करावयाचे असतील तर प्रथम ज्यांना बाजारात मागणी आहे अशाच प्रकारचे धंदे सुरू केले पाहिजेत असे महाराज म्हणत असत.

संदर्भ

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स्त्रीवाद

(काल आणि आज)

संपादक

डॉ. प्रतिभा एस. जाधव

अनुक्रमणिका

स्त्रीवादाचे मुख्य प्रवाह

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प्रस्तावना:—

१८७५ नंतर विश्वस्तरावर स्त्रियांचे आत्मभान जागृत झाले आणि त्याचा परिणाम साहित्यावरही झाला. १९७५ नंतर महाराष्ट्रात स्त्रीवादी चळवळीला सुरूवात झाली. विविध स्त्रीवादी संघटनांचे मुखपत्रे म्हणून स्त्रीयांनी चालवलेली नियतकालिके निर्माण झाली. त्यांचा अत्यंत चांगला परिणाम स्त्रीलिखित साहित्यावर झालेला दिसतो.जागृत झालेले आत्मभान आणि मुक्तीसाठी सुरू झालेले प्रयत्न स्त्रीलिखित साहित्यात चित्रित झालेले दिसतात. कथा, कादंबरी, आत्मचरीत्राप्रमाणेच कवितेतही मुक्तीचे अनेक सूत्रे प्रभावीपपणे अभिव्यक्त होताना दिसतात. रजनी परूळेकर, अंलजी कुलकर्णी, प्रज्ञा पवार, कविता महाजन ते संध्या रंगारींपर्यंत कवितेच्या क्षेत्रातही मुक्त अभिव्यक्ती झालेली दिसते. या कवयित्रींचा काव्याचा आढावा घेतला जाऊ शकतो. या कवयित्रींच्या कवितेतून स्त्रीवादाची अनेक सूत्रे अधोरेखित झाली आहेत. मलिका अमरशेख, नीरजा आणि अनुराधा पाटील यांची कविता रूढ अर्थाने स्त्रीवादी नाही. वेदनेची मुक्त अभिव्यक्ती त्यांची कविता करते. स्त्रियांची वेदनेतून सुटका हे स्त्रीवादाचे मागणे आहे. अनुराधांच्या कवितेतून स्त्रियांच्या वेदनेची अत्यंत संवेदनशील पण प्रखर मांडणी झालेली दिसते.

साठोत्तरी मराठी वाङ्मयामध्ये विविध साहित्यप्रवाह उदयास आले. यामध्ये ग्रामीण, दलित, आदिवासी, भटक्या विमुक्त आणि स्त्रीवादी अशा प्रवाहांचा प्रामुख्याने उल्लेख केला जातो. यापैकी स्त्रीवादी साहित्याचा प्रवाह हा भारतीय संस्कृती आणि विचारसणीमधून जन्मलेला नसून तो पाश्चात्यांकडून आपल्याकडे आलेला प्रवाह आहे. त्यामुळे स्त्रीवाद ही मूळ भारतीय विचारसणी नसून मार्क्सवादाप्रमाणे बाहेरून आलेली पण सध्या भारतात रूजलेली विचारसरणी आहे. पाश्चात्य देशातील औद्योगीक क्रांती तसेच इतर घडामोडींमधून स्त्रियांच्या समस्यांचा विचार करणारी चळवळ उदयास आली. या

स्त्रीमुक्ती चळवळीमधूनच स्त्रीवाद, स्त्रीवादी विचारप्रणाली, स्त्रीवादी समीक्षा, स्त्रीवादी साहित्य चळवळ निर्माण झाली.

१९७५ नंतर भारतात स्त्रीवादी विचारांना सुरूवात झाली असली तरी पाश्चात्य देशात ही सुरूवात १९ व्या शतकाच्या पूर्वार्धात झालेली दिसते. राजकीय प्रक्रियेमध्ये स्थान मिळावे, मदतादानाचा अधिकार मिळावा, मत स्वातंत्र्य मिळावे, शिक्षणात नोकरी—व्यवसायात स्थान मिळावे, संपत्तीमध्ये वाटा मिळावा अशा अनेक हक्कासाठी पाश्चात्य देशात उदा. इंग्लंड, अमेरिका, फ्रांन्स इत्यादी. या देशामध्ये स्त्रीयांना दीर्घ काळ लढा द्यावा लागला. या हक्कासाठी प्रसंगी त्यांनी तुरूंगवासही भोगला. त्यामुळे त्यांच्यातील संघटित शक्ती जागृत झाली. पुरूषधान समाजव्यवस्थेमध्ये मिळणारी असमानतेची, दुय्यम स्वरूपाची वागणूक याची जाणीव झाली. सामाजिक—सांस्कृतिक प्रक्रियेतील आपल्या सहभागाविषयी सजगता निर्माण झाली. त्यांच्या मनातील आत्मविश्वास वाढला. यातुनच स्त्रीवादी विचारसरणीचा उदय झाला. स्त्रीवादी विचारसरणीच्या मुळाशी स्त्रीमुक्ती चळवळही कारणीभूत होती. पुढे तिचे रूपांतर स्त्रीवादी विचारांमध्ये झाले.

स्त्रिवादी साहित्याच्या काही व्याख्या —

१. स्त्रियांना दुर्बलतेतुन मुक्त करणारे साहित्य म्हणजे स्त्रीवादी साहित्य होय — डॉ. उषा तांबे

२. स्त्री म्हणजे शरीर नव्हे, उपभोगाची वस्तू नव्हे, तिला मन आहे आणि त्या मनाची इच्छा, आकांक्षा, स्वाभिमान, तिच्या स्वः त्वाची जाणीव करून देणारे साहित्य म्हणजे स्त्रीवादी साहित्य होय.

स्त्रीवादी कथा— स्त्रियांनी विपूल प्रमाणात कथालेखन करून आपल्या विविध अनुभवांना वाट मोकळी करून दिलेली दिसते. सन १८९६ मध्ये शांताबाई ह्यांची 'मासिक मनोरंजन'मध्ये पहिली कथा प्रकाशित झालेली आढळते. सन १९६१ मध्ये शांता किर्लोस्कर ह्यांचे 'डाक्याची साडी', १९६२ मध्ये कमल देसाई ह्यांचा 'रिंग', १९६५ मध्ये विजया राजाध्यक्ष यांची 'अधातंर', निर्मला देशपांडे यांची 'गर्ल' आशा बगे यांची 'अत्तर', उर्मिला पवार यांची 'प्रतीती' १९९० मध्ये प्रकाशित झाली.

'स्त्री स्वातंत्र्य म्हणजे स्वैराचार' अशा प्रकारची प्रतिक्रिया पुरूषवर्गातून व्यक्त झाली. स्त्रीच्या वागण्या—बोलण्या आणि पेहरावात होणाऱ्या बदलांमुळे पुरूषी अहंकार डिवचला जात होता. मॉडर्न स्त्री

कमी म्हणजे स्वैराचारी वृत्तीची स्त्री असे चित्र निर्माण करण्याचा प्रयत्न होत होता. फॅशनच्या नावाखाली स्त्रीया कमी कपडे वापरतात म्हणून त्यांची छेडछाड होते अशा प्रकारे पुरूषाच्या वाईट वर्तनाचे समर्थनही झाले. स्त्रीयांच्याही लेखनात मॉडर्न स्त्री रंगविताना लैंगिक उत्तेजना निर्माण करणारी वर्णने येऊ लागली. लोकप्रिय साहित्य लिहिण्यासाठी भडक आणि उथळ प्रसंगनिर्मितीला प्राधान्य देण्यात आल्याचे दिसते.

स्वातंत्र्योत्तर काळातील लोकप्रिय लेखिका म्हणून कुसुम अभ्यंकर, नयना आचार्य, सुमती क्षेत्रमाडे, शैलजा राजे, शकुंतला गोगटे, योगिनी जोगळेकर, ज्योत्स्ना देवधर, मृणालिनी जोशी, कुमुदिनी रांगणेकर, लिला श्रीवास्तव, निर्मला देशपांडे आदींचा उल्लेख करावा लागेल.

'स्त्रीवादी साहित्य' या प्रवाहाच्या नावाखाली 'मध्यमवर्गीय' व 'उच्चवर्गीय' स्त्रीच्या साहित्याची चर्चा होताना दिसते. स्त्रीमुक्ती आणि स्त्रीवादाची साहित्य हे मध्यमवर्गापुरते घोटाळताना दिसते. ग्रामीण स्त्री आणि दलित स्त्री यांच्या अधिकाराची दखल मराठी साहित्याने अजून नीटपणे घेतल्याचे दिसत नाही. ग्रामीण लेखिकांपेक्षा दलित लेखिका आघाडीवर असल्याच्या दिसतात.

बालविवाह, विधवा विवाह, पुनर्विवाह, परित्यक्ता, विधवा, निसंतान स्त्रीचे दु:ख, वर निवडण्याचे स्वातंत्र्य नसणे, नावडता पती मिळणे, जुलमी पती मिळणे, अशिक्षित पती मिळणे, पतीचे विवाहबाह्य संबंध असणे अशा विविध विषयांना घेऊन कथा लिहिलेल्या आढळतात. अर्थार्जन करणाऱ्या प्रौढ कुमारिकांचे अनुभवविश्व 'रंग' ह्या कमल देसाई यांच्या कथांमध्ये आढळते. नोकरी करणाऱ्या स्त्रियांचे प्रश्न सुनीती आफळे यांच्या 'तिढा' गौरी देशपांडे यांच्या 'परंतु मुर्खाचे' या कथामध्येही व्यक्त झालेले दिसतात. घरकामात मदत करणारे पती सानियाच्या कथेत व गौरी देशपांडेच्या कथेतही भेटतात. विजया राजाध्यक्षंनी मुलाच्या संगोपनाच्या प्रश्नाला घेऊन 'विसंवाद' ही कथा लिहिल्याचे दिसते. अनिता काळे यांच्या कथांमध्ये लैंगिक अनुभव, कुमारी माता, कुटुंब नियोजनाच्या साधनांचा वापर असे विषय येतात. वयात येणे, गर्भधारणा, गर्भपात, बाळंतपण अशा शरीरकेंद्री अनुभवांवरही लेखिकांनी कथा लिहिल्या आहेत. उर्मिला पवार यांच्या कथांमध्ये दलितांच्या दु:खांना वाचा फोटलेली दिसते.

स्त्रीवादी आत्मचरित्र —स्त्रियांनी आपल्या व्यथा, वेदना आठवणी कथन करण्यासाठी आत्मचरित्र हा वाङ्मयप्रकार हाताळलेल्याचे जाणवते. स्त्रियांची आत्मचरित्रे ही त्यांच्या जीवनाची साक्षीदारच आहेत. सन १९१० मध्ये रमाबाई रानडे यांनी 'आपल्या आयुष्यातील काही आठवणी' हे पहिले आत्मचरित्र लिहिलेले आढळत असले तरी १९२८ मध्ये पार्वतीबाई आठवले यांची 'माझी कहाणी' हे आत्मचरित्र खऱ्या अर्थाने स्त्रीने स्वत:विषयी व आपल्या कर्तृत्वाविषयी लिहिलेले पहिले आत्मचरित्र होय. नंतर पुष्कळ स्त्रियांनी आत्मचरित्र लिहिले आहेत. जसे आनंदाबाई कर्वे यांचे 'माझे पुराण' (१९४४), इंदिरा भागवत यांचे 'या सदाशिव' (१९४७), सत्यभामाबाई सुखात्मे यांचे 'गेले ते दिवस' (१९६५), इत्यादी.

स्त्रियांनी लिहिलेल्या आरभीच्या काळातील आत्मचरित्रामध्ये पतीचे चरित्र अधिक आणि आपले आत्मचरित्र अल्प असे यां लेखनाचे स्वरूप असल्याचे दिसून येते. आपण आपल्या पतीची सावली आहोत. 'पती हाच परमेश्वर आहे' अशा पती भक्तीतून, पती प्रेमातून, पती निष्ठेतून लेखन स्फुरल्याचे जाणवते. पतीचे कर्तृत्व, पतीच्या सहवासातील आठवणी अश भावना ह्या आत्मचरित्रातून व्यक्त झाल्याचे दिसतात. पतीची इच्छा म्हणून, लोकाचा आग्रह म्हणून, कोणी सूचवले म्हणून, हौस म्हणून, दु:ख विसरण्यासाठी म्हणून, पतीविषयीचे लोकांतील गैरसमज दूर व्हावेत म्हणून, आपल्या सहजीवनातील कृतार्थता व्यक्त करण्यासाठी म्हणून ही आत्मचरित्रे लिहिलेली आढळतात. लक्ष्मीबाई टिळक यांचे 'स्मृतीचित्रे' व गोदावरी परूळेकर यांचे 'जेव्हा माणूस जागा होतो. ही दोन आत्चरित्रे वाचकांच्या पसंतीला उतरलेली आहेत. हंसा वाडकर यांचे 'सांगत्ये ऐका' मधील अनुभव वाचताना वाचक विलक्षण अस्वस्थ होतो. आनंदाबाई विजापूरे यांचे 'अजून चालतेची वाट' यात एका बेधूंद आणि संवेदनक्षम प्रेयसीच्या मनाची तडफड व्यक्त झालेली आहे. तर १९९५ मध्ये नजूबाई गावित यांचे 'आदोर' हे आदिवासी स्त्रीचे आत्मचरित्र प्रकाशित झाले. यामध्ये आदिवासी स्त्रीच्या जीवनातील दैन्य दारिद्य व्यक्त झालेले दिसते.

स्त्रीवादी कादंबरी— सन १८७३ मध्ये साळूबाई तांबेकर यांनी लिहिलेली 'चंद्रप्रभा विरहवर्णन' ही पहिली कादंबरी आहे. तथापि, १९५० पर्यंत स्त्रीयांच्या कादंबरी लेखनाचे स्वरूप हे प्रबोधनपर असल्याचे जाणवते. या काळातल्या महत्त्वाच्या लेखिका म्हणून गीता

साने व विभावरी शिरूरकर यांचा उल्लेख करावा लागेल. स्त्री शिक्षणाचा पुरस्कार करण्यासाठी काशिबाई कानेटकर यांनी 'रंगराव' ही कादंबरी लिहिली. हुंडा पद्धतीला विरोध करण्यासाठी जानकीबाई देसाई यांनी 'गृहलक्ष्मी' १९१५ ला कादंबरी लिहिली. यशोदाबाई भट यांनी 'मुलांचे बंड' ही १९२१ या कांदबरीतून विधवांच्या समस्या मांडल्या आहेत.

स्वातंत्र्योत्तर काळातील शिक्षणामुळे, राजकीय हक्कांमुळे स्त्रीची पारंपारिक प्रतिमा बदललेली दिसते. जागतिल पातळीवर स्त्रीयांच्या हक्कांची आणि अधिकारांची सकारात्मक चर्चा होताना आढळते. शिक्षण, कायदा आणि चळवळ यांमुळे स्त्री आत्मसन्मानाने पाऊल उचलत आहे. कुटुंबातील तिचे प्राचीन स्थान बदलत आहे. विवाह ही सक्तीची बाब नसून सहजीवनाची बाब ठरत आहे. 'स्त्री हे काचेचे भांडे आहे' अशी गुळगुळीत वाक्ये बाजूला पडून 'स्त्री ही जिवंत माणूस आहे' तिलाही मन आहे. तिचे खाजगी आयुष्य आहे. तिलाही मैत्रीची आणि प्रेमाची गरज आहे. 'स्वत:च्या आयुष्याविषयी निर्णय घेण्याचा तिला अधिकार आहे' असा विचार दृढ होत आहे.

.स्त्रीवादी कविता —

स्त्रीवादी कवितेचा विचार केल्यास खऱ्या अर्थाने सन १९२० ते १९५० ह्या काळातील स्त्रियांच्या कविता ह्या गीतांच्या स्वरूपातून प्रकटलेल्या दिसतात. ह्या गीतांमधून स्त्रियांच्या धार्मिक व कौटुंबिक भावना व्यक्त झाल्या आहेत. सन १९५० पर्यंतच्या कालखंडातील प्रमुख व महत्त्वाची कवयित्री म्हणून संजीवनी मराठे ह्यांचं नाव घ्यावे लागेल. त्यांचे 'काव्यसंजीवनी' (१९३२), 'राका' (१९४३), 'संसार' (१९४३) असे संग्रह प्रकाशित संग्रह प्रकाशित झालेले दिसतात. त्यांनतर शांता शेळके ह्याचा 'वर्षा' हा कवितासंग्रह १९४७ मध्ये प्रकाशित झाला.

पिता, पुत्र, पती आणि प्रियकर ही स्त्री जीवनातील शरीरनिष्ट अशी नाती आहेत. त्यातल्या त्यात 'पती' आणि 'प्रियकर' ही नाती अत्यंत नाजूक व आत्मिक आहेत. आपल्याकडे साहित्याला कलावंताच्या जीवनाचा आरसा मानण्याचा प्रघात आहे. त्यामुळे काही कवयित्रींनी आपले पूर्वायुष्यातील 'प्रेम' व 'प्रियकर' उघडकीस येऊ नये म्हणून पुरूषमुखी कविता लिहिल्याचे जसे जाणवते तसे त्यांच्या कवितेत पतीवरच प्रियकराच्या रूपाने कलम केल्याचेही दिसते.

कुठल्याही कलाकृतीची उंची ही त्या कलावंताच्या अभिव्यक्तीमधील प्रामाणिकपणावरच अवलंबून असते. त्यामुळे अशा कविता सत्व हरवल्यासारख्या भासतात. अत्यंत वैयक्तिक अशा तरल संवेदनक्षम अनुभवातून ह्या कविता जशा व्यक्त झाल्या आहेत, तशा स्त्रीवर होणाऱ्या अन्यायाच्या तीव्र निषेधातूनही.

'रज:स्वला, संभोग, बाळंतपण
शरीराभोवती फिरलेलं
आयुष्यासकट माणसाचं चक्र
मुक्या वेदनांचं वाटोळ'
(मलिका अमर शेख—'बाळूचा प्रियकर')

'तो आरशात जसा असतो तसा दिसतो
ती आरशात जशी नसते तशी दिसते'(अश्विनी धोंगडे— 'स्त्रीसूक्त')

'स्त्री स्वातंत्र्य म्हणजे स्वैराचार' अशा प्रकारची प्रतिक्रिया पुरूषवर्गातून व्यक्त झाली. स्त्रीच्या वागण्या—बोलण्यात आणि पेहरावात होणाऱ्या बदलांमुळे पुरूषी अहंकार डिवचला जात होता. मॉडर्न स्त्री कमी म्हणजे स्वैराचारी वृत्तीची स्त्री असे चित्र निर्माण करण्याचा प्रयत्न होत होता. फॅशनच्या नावाखाली स्त्रीया कमी कपडे वापरतात म्हणून त्यांची छेडछाड होते अशा प्रकारे पुरूषाच्या वाईट वर्तनाचे समर्थनही झाले. स्त्रीयांच्याही लेखनात मॉडर्न स्त्री रंगविताना लैंगिक उत्तेजना निर्माण करणारी वर्णने येऊ लागली. लोकप्रिय साहित्य लिहिण्यासाठी भडक आणि उथळ प्रसंगनिर्मितीला प्राधान्य देण्यात आल्याचे दिसते.स्वातंत्र्योत्तर काळातील लोकप्रिय लेखिका म्हणून कुसुम अभ्यंकर, नयना आचार्य, सुमती क्षेत्रमाडे, शैलजा राजे, शकुंतला गोगटे, योगिनी जोगळेकर, ज्योत्स्ना देवधर, मृणालिनी जोशी, कुमुदिनी रांगणेकर, लिला श्रीवास्तव, निर्मला देशपांडे आदींचा उल्लेख करावा लागेल.

'स्त्रीवादी साहित्य' या प्रवाहाच्या नावाखाली 'मध्यमवर्गीय' व 'उच्चवर्गीय' स्त्रीच्या साहित्याची चर्चा होताना दिसते. स्त्रीमुक्ती आणि स्त्रीवादाची साहित्य हे मध्यमवर्गापुरते घोटाळताना दिसते. ग्रामीण स्त्री आणि दलित स्त्री यांच्या अधिकाराची दखल मराठी साहित्याने अजून नीटपणे घेतल्याचे दिसत नाही. ग्रामीण लेखिकांपेक्षा दलित लेखिका आघाडीवर असल्याच्या दिसतात.

समारोप— स्त्रीवादी विचार हा प्रथम १८७५ पासून जगात सूरू झाले. तर भारतात १९६० पासून खऱ्या अर्थाने सूरू झाले. स्त्रीवादी साहित्यात मुख्य प्रवाह कथा, आत्मचरित्र, कादंबरी आणि कविता हे आहेत. तसे पाहिले तर साहित्याचे प्रवाह खूप आहेत मात्र विशेषत्वाने वरील प्रवाह आपणास पाहावयास दिसून येतो. या साहित्यात स्त्री आत्मभान, तिचा स्वाभिमान, स्वत्व, अस्तित्व, पुरूषा बरोबरीचा सन्मान, शिक्षण, समान न्याय, स्वतंत्र विचार सरणी इत्यादींचा विचार केलेला आहे.

निष्कर्ष—

१. स्त्रीवादी कथा १८९६ पासून सूरूवात झाली.

२. स्त्रीवादी कथेत स्त्रियांनी विपूल प्रमाणात कथालेखन करून आपल्या विविध अनुभवांना वाट मोकळी करून दिलेली दिसते.

३. स्त्रीवादी आत्मचरित्रातून—स्त्रियांनी आपल्या व्यथा, वेदना आठवणी कथन करण्यासाठी आत्मचरित्र हा वाङ्मयप्रकार हाताळलेल्याचे जाणवते.

४. सन १८७३ मध्ये साळूबाई तांबेकर यांनी लिहिलेली 'चंद्रप्रभा विरहवर्णन' ही पहिली कादंबरी.

५. १९५० पर्यंत स्त्रीयांच्या कादंबरी लेखनाचे स्वरूप हे प्रबोधनपर असल्याचे जाणवते.

६. स्त्रीवादी कवितेचा विचार केल्यास खऱ्या अर्थाने सन १९२० ते १९५० सूरूवात झाली.

७. या काळातील स्त्रियांच्या कविता ह्या गीतांच्या स्वरूपातून प्रकटलेल्या दिसतात.

संदर्भ—

१. गौरी देशपांडे, एकेक पान गळावया, मौज प्रकाशन, मुंबई.

२. मेघना पेठे, हंस अकेला, राजहंस प्रकाशन, पुणे.

३. प्रिया तेंडुलकर, जन्मलेल्या प्रत्येकाला, राजहंस प्रकाशन, पुणे.

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५. डॉ. निलम गोऱ्हे, स्त्री प्रश्नांचा वेध पद्मगंधा प्रकाशन, पुणे.

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स्त्रीवाद (काल आणि आज)

■ डॉ.प्रतिभा सुरेश जाधव

■ प्रथम आवृत्ती — दि. ८ मार्च २०२२

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प्रकाशित पुस्तके :

१ अक्षरांचा दान (काव्यसंग्रह), २०१० मध्ये प्रकाशित, प्राजक्त प्रकाशन, नाशिक
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४ श्वास मोकळा घेते (काव्यसंग्रह संपादन, २०१९, आम्ही लेखिका, नाशिक शाखा)
५ संवाद श्वास माझा... (काव्यसंग्रह, २०२०, संवेदना प्रकाशन, पुणे)
६ अंतरंगातील डायरी (ललित लेखसंग्रह, २०२१, संवेदना प्रकाशन, पुणे)

- सावित्रीबाई फुले पुणे विद्यापीठातील पीएच.डी. मार्गदर्शक म्हणून कार्यरत
- महाराष्ट्र राज्य विश्वकोश निर्मिती मंडळावर समीक्षक–लेखक म्हणून कार्यरत
- यशवंतराव चव्हाण महाराष्ट्र मुक्त विद्यापीठ, नाशिक येथील कुसुमाग्रज अध्यासनाच्या सल्लागार समितीवर कुलगुरू नियुक्त सदस्य म्हणून कार्यरत
- नाशिक येथे संपन्न ९४ व्या अखिल भारतीय मराठी साहित्य संमेलनातील निमंत्रित कवयित्री
- झी मराठी, मायबोली, झी २४ तास, टीवी ९, कलर्स मराठी या विविध वाहिन्यांवर मुलाखती व इतर कार्यक्रम प्रसारित
- मी जिजाऊ या एकपात्री प्रयोगाचा शुभारंभ मॉरिशस येथील महात्मा गांधी ऑडिटोरियम येथे २५ मे २०१६ रोजी संपन्न
- सिंगापूर येथील आंतरराष्ट्रीय परिषदेत दि. २४ नोव्हें. २०१८ रोजी मी सावित्री ज्योतिबा फुले हा एकपात्री प्रयोग सादर
- सिंगापूर येथे पर्यटन मंत्रालयाद्वारे ग्लोबल सिटीझन ऑफ इंडिया २०१८ हा पुरस्कार प्रदान
- युनिव्हर्सल टॅलेंट बुक ऑफ रेकॉर्ड्स मध्ये नोंद २०१८
- मी अरुणा बोलतेय या पुस्तकास राज्य पुरस्कार प्राप्त
- चित्रलेखा या महाराष्ट्रातील आघाडी साप्ताहिकात महिला सबलीकरण व युवा जनजागृती च्या कार्यासंदर्भाने दखल घेत जून २०१८ मध्ये मुलाखत प्रसिद्ध
- विविध राष्ट्रीय आंतरराष्ट्रीय जर्नल्समधून विविध विषयांवरील पन्नासहून अधिक शोधनिबंध प्रसिद्ध
- सदस्य, अखिल भारतीय मराठी चित्रपट महामंडळ
- दैनिक सकाळमधून आनंद या सदरात (२०१९), दैनिक पुण्यनगरीमधून अर्धे आकाश निळेशी (२०२०), [illegible] (२०२१) या सदरात साप्ताहिक लेखन प्रसिद्ध
- सायंदैनिक [illegible] टाइम्स (औरंगाबाद) यात प्रतिभासंवाद हे साप्ताहिक सदरलेखन सुरू आहे
- सदस्य, महाराष्ट्र साहित्य परिषद, शाखा – नाशिक रोड
- विविध दिवाळी अंक, नियतकालिके यातून सातत्याने लेखन
- दिल्ली येथून प्रकाशित होणाऱ्या प्रतिष्ठित लक्षवेध दिवाळी अंक २०१६ च्या मुखपृष्ठावरील सेलिब्रेटी [illegible] बहुमान प्राप्त
- सावित्रीबाई फुले पुणे विद्यापीठ बहि:शाल मंडळाच्या व्याख्यात्या व ग्रंथअन्वेषिका आहेत
- महाराष्ट्रभर विविध विषयांवर ५०० हून अधिक व्याख्याने दिली आहे
- थिंक महाराष्ट्र डॉट कॉम या वेबपोर्टलवर डॉ. प्रतिभा जाधव प्राथमिक शिक्षिका ते डॉक्टरेट प्राध्यापिका हा विशेष मुलाखतवजा दीर्घलेख जून २०१६ मध्ये प्रसिद्ध
- आवाज इंडिया टीवी या राष्ट्रीय वाहिनीवरील हम बेटियाँ सावित्री की या कार्यक्रमात २८ सप्टेंबर २०१६ रोजी मुलाखत प्रसारित
- [illegible] न्यूज झी २४ तास या वाहिन्यांवर मुलाखत प्रसारित
- मिसेस नाशिक २०१४ चा बहुमान प्राप्त

विविध संस्थांच्या पदाधिकारी

१) काव्यप्रतिभा विविध बहुउद्देशीय संस्थेच्या संस्थापक अध्यक्षा
२) साहित्यसखी महिला मंच, नाशिक शाखा संस्थापक अध्यक्षा
३) अखिल भारतीय चित्रपट महामंडळ, सदस्य
४) [illegible] एक परिवर्तन या राज्यव्यापी सामाजिक संस्थेच्या नाशिक जिल्हाध्यक्षा
५) [illegible] या अभिनव अभियानातील कार्यकर्ती – शिक्षिका
६) डॉ. बाबासाहेब आंबेडकर राज्यव्यापी सामाजिक, साहित्यिक संस्थेच्या जिल्हाध्यक्षा
७) आम्ही लेखिका या संस्थेच्या नाशिक शाखा, जिल्हाध्यक्षा

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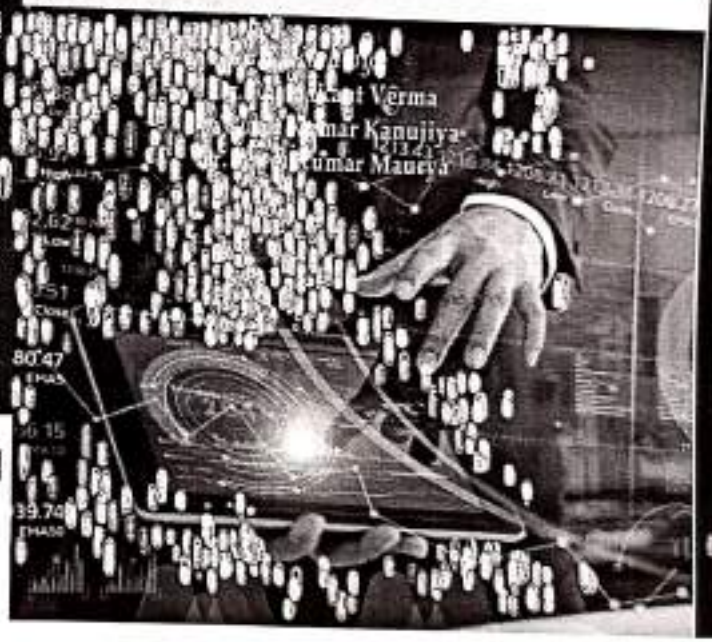

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CHAPTER 5

Role of Non-Banking Financial Institutions in Indian Economy

Dr. Rita Ramji Raut

ABSTRACT

Non-Banking Financial Institutions plays an important role in developing Indian economy. It is registered under Company Act, 1956. The banking sector is one of the important sectors in business area. NBFI grows continuously with comfortable cost so it is profitable sector to the businesses. It provides financial services and banking facilities to the society like loans and credit facilities. It gives financial support to Indian Economy. Many peoples are included in NBFC as customer on the basis of low rate credit facilities. Customers who could not maintain their account at minimum amount in a bank, so even low class customers or those customers who cannot invest in bank or cannot take loan from bank, for those customers NBFC are very beneficial. It works under Company Act so it is like a company. This study is focus on new opportunity to investment in non-banking financial institutions. It contains various tools of Indian Financial System.

Keynotes: *Financial Position, Indian Economy, Functions of NBFI, Role of Financial System.*

Introduction

NBFC is working in out of bank area. It is like a bank but it is not working as bank. This is the last option to customer for taking credit at zero bases account. It works as financial intermediaries between bank and non-banking companies. It also helps in transportation, employment; help in wealth generation etc. They have played a vital role in banking facilities but not having banking license. It is only a part of Bank not a complete bank. It is also known as "Finance Companies", "Finance Corporations",

Dr R. R. Raut
chapter in Edited Book
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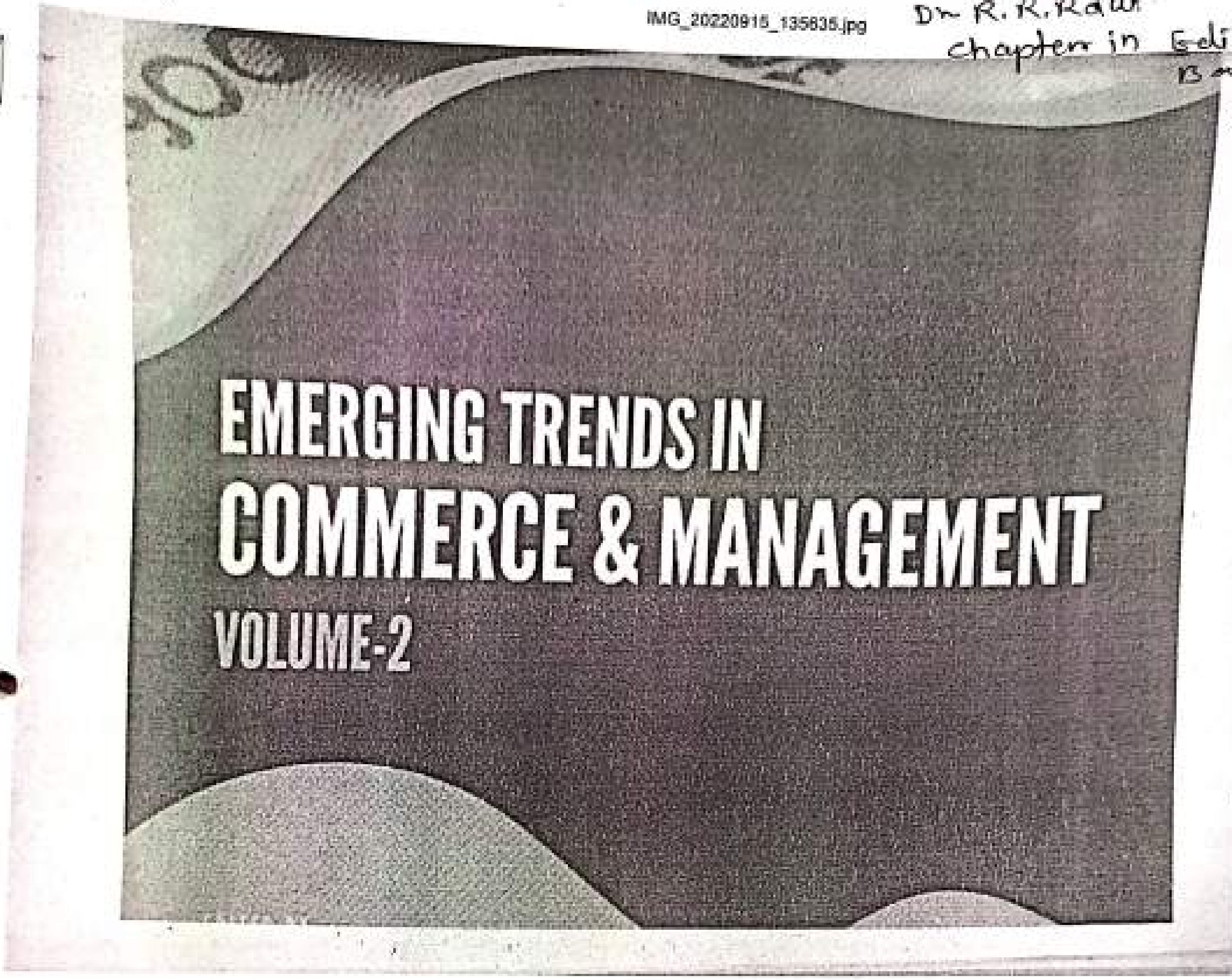

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Dr. Dimple, Surbhi Birla

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EMERGING TRENDS IN COMMERCE & MANAGEMENT: VOLUME-2

by: Y Suryanarayana Murthy, Dr. Ashwinkumar A. Santoki, Salauddeen Shaik, Dr. Pallavi, Priyadarshini. V, Sachindra G R, Dhirendra Bahadur Singh, Dr. Ravi Kumar Gupta, Dr. Dimple, Surbhi Birla

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CHAPTER 11

A STUDY OF CURRENT TRENDS OF DIGITAL COMMERCE IN INDIA

Dr. Rita Ramji Raut[16]

Abstract

Digital Commerce is the process of using technology at various online platforms. Currently it is the main foundation of successful organized industry. Now a day's new trend of commerce spread rapidly among a person that is Digital Commerce Indian government provided various platforms of digitization. Due to the corona pandemic, many businesses were locked and lost. In that period, people need job; people need a platform to fulfill their requirements and selling their talent. Through social media, we have seen that many peoples created their videos that showing their talent. Online platform reached everywhere from urban to rural, rural to urban. So, we can feel here the touch of digital commerce. Each and every family has going for learning the online fundamentals in India.

There is a trend of using cashless transactions methods for payments in bank or shops, cashless shopping, online tutorials etc. This is the Digital Commerce. The data material is collected from official reports, meeting agenda, books, articles, newspapers and websites etc. for the research paper. This study will focus on role of digital commerce in various fields and its application and need of digital commerce and give some suggestions for disapplication of digital commerce.

---

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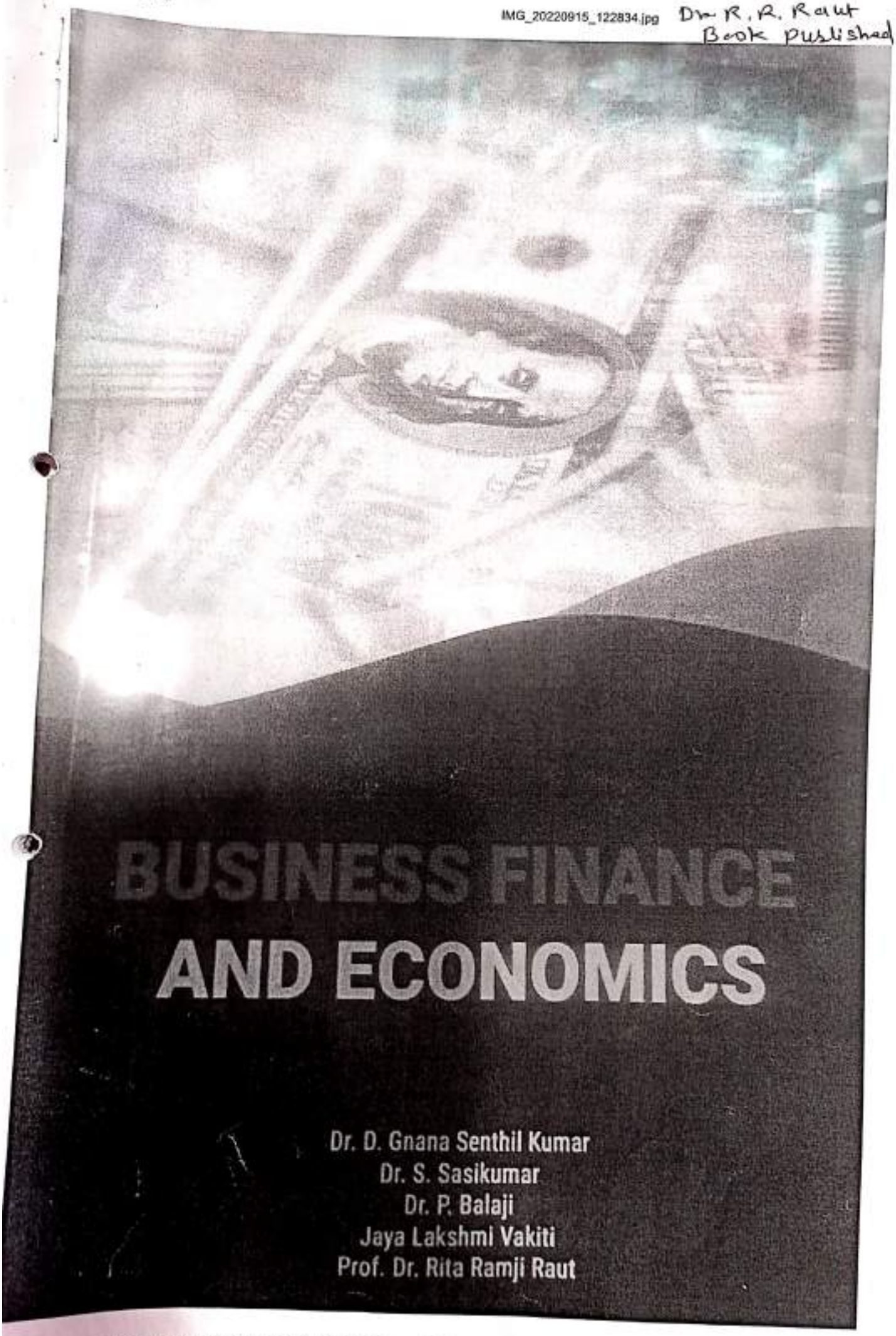

BUSINESS FINANCE AND ECONOMICS

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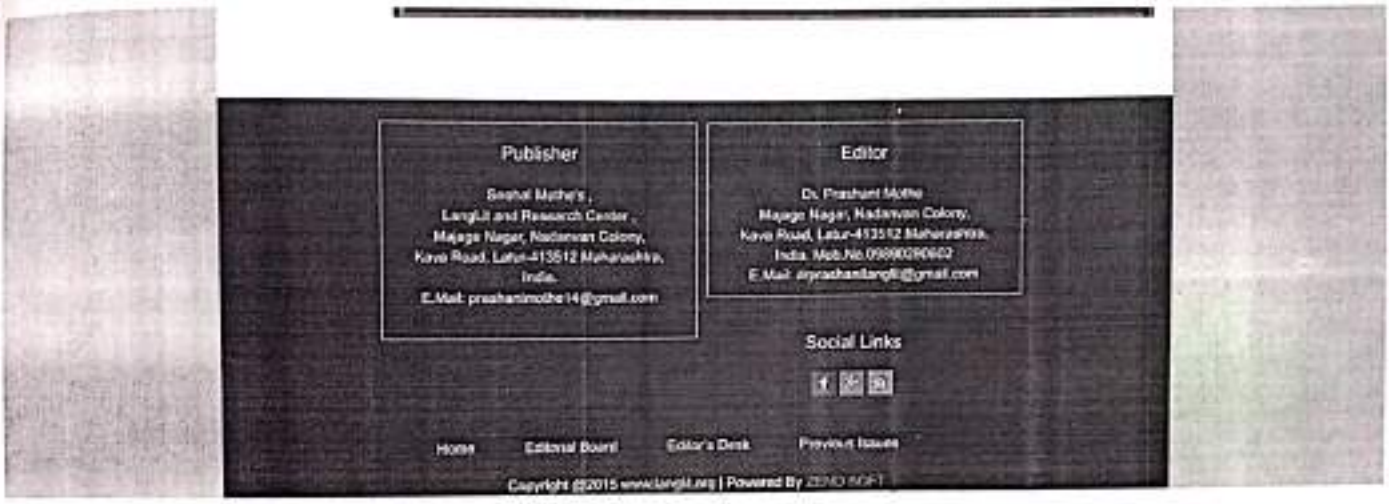
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GITHA HARIHARAN'S NARRATIVE TECHNIQUE IN 'THE THOUSAND FACES OF NIGHT' AND 'THE GHOSTS OF VASU MASTER'

DR. RAKESH VISHWANATH TALMALE
Assistant Professor in English,
Yashwantrao Chawhan Arts,
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Lakhandur, Dist- Bhandara.

ABSTRACT

The eminent Indian writer Githa Hariharan got enormous encouragement from her predecessors and wrote one novel after another of enduring quality. Githa Hariharan is post-colonial novelist alive to contemporary reality and thought. Her novels are purposeful and thought provoking. The present work, "Githa Hariharan's Narrative Techniques in 'The Thousand Faces of Night' and 'The Ghosts of Vasu Master'' is an in-depth study of her narrative technique which embarks her ideas and philosophy of life. Her narrative technique emancipates Indian scenario, atmosphere and feeling that openly shine on the global horizon of the popular genre. Literature is reflection of life. All genres of literature are embarked on revealing life one way or another. Novel is generally considered as a "long narrative in prose detailing the actions of factious people" (Williams, 1972). In a way, more than a prosaic description of persons, events or incidents, it is a lively composition of the same with the perfect blending of fact and fiction. The depiction of all such events and characters through a cohesive whole can guarantee lasting success for the writer and his work. The required organic unity among various characters, events and dialogues can be achieved through perfect narration. The art of narration pertains to two basic queries- 'what' and 'how'. 'What' part of narration discusses the various recurrent themes at length. In the present work, a study is undertaken to elaborate in details the 'how' aspect of narrative technique. As the realm of narrative technique is quite vast and endless, an attempt is made to limit the study to the use of various modes like humour, simile metaphors, irony, symbolism, personification, repetition etc. as found in the two novels of Githa Hariharan.

Keywords - *Narrative, Genre, Humour, Simile, Metaphor, Irony, Symbol.*

I) Humour

Humour is useful tool in the hands of a skillful artist to shape his plot in an interesting manner. According to Carlyle, "Humour is sympathy with the seamy side of things." It is sympathetic appreciation of the comic. Among the early exponent of the humour, Geoffrey Chaucer stands out as the best among his lot. However, among the novelists of the later years, Charles Dickens is incomparable; his humour becomes more mature when he depicts the human follies and foibles, inconsistencies and incongruities. In fact, as a humorist, he stands

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IDENTITY CRISIS IN GITHA HARIHARAN'S 'THE GHOSTS OF VASU MASTER'

Prof. Dr. Rakesh Vishwanath Talmale
Assistant Professor in English,
Yashwantrao Chawhan Arts, Commerce & Science College,
Lakhandur, Dist- Bhandara.

Abstract:
Indian English literature is overwhelmed with the social and cultural ethos of India. It represents Indian scenerio in one sense and Indian psychology in another. Many novelist tries to focus on Indian tradition, religion, society which seen in their surroundings. Some novelists of Indian English writing are revolutionary as they remarkably expose other side the fact lurks on the surface of the society. They bombastically expose the hidden but unraveled truth of the traditional ethos which makes impact on the individual's psychology.
Githa Hariharan's novels, short stories, essays, newspaper articles and columns are immensely popular in the contemporary Indian English writing. Githa Hariharan's 'The Ghosts of Vasu Master' (1994) is outstanding novel asserts in-depth psychology of the Indian teacher Vasu Master and his dumb and contented ward Mani.
Keywords: *Identity, Psychology, Self-realization, Education system, Teacher.*

Introduction:
Literature is mirror image of human life. It incorporates the threads of human psyche and their action in life. While studying literature, one can study literature as to discover unknown meaning of life. The modern psychological novel presents the deeper and more searching significance of the present scenario. It displays the structure of psychology of modern man. The thoughts and feelings of the personage of the novel show the way to search the self-consciousness. Githa Hariharan's 'The Ghosts of Vasu Master' evinces the self-assertion of a retired teacher Vasu Master whose life becomes meaningless after retirement and shows the loss of individuality.
Githa Hariharan expresses the concept that the unconscious mind can be studied through self-realization. She investigates the complex structure of unconscious psyche of her characters. She takes the reference of Sigmund Freuds' theory of 'Psychoanalysis' from the book 'Art and Literature'. According to Freud, the receipt of psychological fallout is the infamous of unconscious behavior and experience. Most of the substance of the unconsciousness is unacceptable or unpleasant, for example fillings of pain, distress, anxiety or strife. The unconscious also contains what Freud calls laws of transformation; these are the principles that lead the process of repression and sublimation. In 'The Ghosts of Vasu Master', Vasu Master sustains number of psychological conflicts. Hariharan used tales, incidents and narratives to explore Vasu Master's conscious psychology.
Being the protagonist of the novel, Vasu Master shares past events of his life with several other characters. These other characters of the novel too narrate their own stories. Every chapter is formed as an independent tale; which shows the innovative quality of the novel. It is similar like monologue with a salient listener.
Vasu Master has recently retired as a teacher from P.G. Boy's school, Elipettai. He is the teacher of English language and literature. On his retirement, he gets a note book as a gift from his students. He plans to write an essay entitled "From decades in a classroom" as a guide to young teachers. Instead of his vast teaching experience, he cannot write about his teaching as the past events follow him like Ghosts. Though, after his retirement, he wishes to start the second half of his teaching career. Vasu Master provides tuition classes to teach Mani, a slow learner along with three more students. Mani is a papaya shape head and is dumb and contented child. Vasu Master observes, "It was this Mani who came to me, twelve years old, with, it seemed the brain of a six or seven-year-old" (GVM: 12). Mani was not considered a clever child, or an especially attractive but he was quite and confused one. Vasu Master accept him as an opportunity to prove his experience as a teacher and he said,

> *Of course I will teach him, I heard myself say, brining the interview to an abrupt end. I accepted my new chare immediately because I knew Mani was not like the other three tuition boys. They seemed bore and lazy, a I often thought that they richly deserved the two doses they got of the same lessons, once in school and then again in my room (GVM: 10).*

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Qualitative and quantitative phytochemical analysis and in vitro antimicrobial activity of *Calycopteris floribunda* plant extract.

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ABSTRACT

In order to maintain health and to prevent, diagnose, or to treat physical and mental illness, traditional medicine plays key role. These traditional medicine practices can include plants and herbs. The current study focused on the preliminary quantitative and qualitative analysis with antimicrobial activity of various extract of different bits of wild *Calycopteries Floribunda* plants. plant parts include leaves, flowers, stem etc. *Calycopteris Floribunda* is a rich source of secondary metabolites as well as this study is also includes the investigation of antimicrobial potential of n-hexane, Methanolic, acetone and aqueous extract of given plant species. The various extract of *C. Floribunda*was tasted against pathogenic bacteria such as *E. coli* and *P. Vulgaris*. The maximum zone of inhibition was shown by the Methanolic and aqueous extract. As *Calycopteries Floribunda* is rich source of biochemical constituents and therefor to be considered as an important medicinal plant with antimicrobial property.

Keywords-Antimicrobial activity, Calycopteris Floribunda, Phytochemical analysis, Qualitative and Quantitative analysis, Secondary metabolites

1. INTRODUCTION

Our biological ecosystem composed of number of known and unknown variety of plant species includes poisonous, medicinal and non-poisonous. [1] The plant has been an important source of medicine used by man from prehistoric time for relieving, diagnosis, treatment and ailments. [2,3] Medicinal plants play vital role in disease prevention [4,5].

C. Floribunda is a climbing shrub and found in low laying tropical region forest of western ghat and rarely in the eastern ghat of India. This plant species having various name in distinct region. It is commonly known as Ukshi, kokkarai in Hindi, minnarakoti in Tamil, adivijama in Telugu. *C. Floribunda* is also grown in central and southern parts of india also in the vidharbha region of Maharashtra. Plant synthesize diverse range of bioactive molecule make them rich source of different type of medicine. Higher medicinal plant consists of rich source of natural product play a dominant role in drug development program in pharmaceutical studies. [6,7].

Methods of treatments and effect of medicinal plants on human health were known till 18th century, but the presence of bioactive molecules was unknown. [8,9]. The use of medicine was gradually expanded until today, in modern medicine, medicinal plants displaced from direct used and therefor they are used as raw material in many cases. [10]. The large area of world continues to use traditional medicine based on direct used of medicinal plant due to their low cost [11].

C. Indicum belonging to same family as *C. Floribunda*. Phytochemical study of *C. Indicum* reveals the occurrence of proteins, carbohydrate, tannins, steroids, etc. as well as quantitative analysis determined ash percentage in it. [12]. Similarly,*T. Arjuna* is one of the important medicinal plant of *combretaceae* family also exhibit bioactive molecule therefor it makes this plant as potential medicinal species. [13,14]. *Terminalia Catappa* is native to southern Asia which used traditionally by villagers due to its strong antimicrobial activity against *P. aeruginosa, P. testosterone*, *P. Vulgaris,* etc. The further investigation also indicates its wound healing and antidiabetic activity [15].

There are several species are found in combretacea family, most of the species exhibit numerous secondary metabolites and shows antimicrobial properties against pathogenic bacteria. [16,17] Among these species C.Floribunda is unrevealed species in combretacea family. The current research investigation is based on C. Floribunda, that reveals the presence of natural product present in it with the help of various solvent extract as well as its antimicrobial activity.

2.MATERIAL AND METHOD

2.1. COLLECTION OF PLANT

Healthy and disease free various segments of C. *Floribunda* were collected from forest region of Bramhapuri taluka dist. Chandrapur and the identification of collected species were doing through professors of department of botany N.H. college Bramhapuri. The accumulated plants bits i.e. leave, flowers and stem was thoroughly washed 2 to 3 times with deionized water and kept in shaded area for drying purpose at room temperature for 10 to 15 days.

2.1. PREPARATION OF LEAVE, FLOWER AND STEM EXTRACT

Different solvent like n-hexane, acetone, chloroform, methanol, and water used for extract preparation. Dried plant segments were separately pulverized into medium fine powder using grinder. 10 to 15 g powder of each segments of selected plant were taken in different thimbles made up of filter paper and was put into soxhlet extractor. All material was extracted using soxhlet extraction apparatus for approximately 10 to 12 hours using following solvents.[18,19,20]

i. n-hexane – 10 to 12 hrs. (leaves, flowers and stem)
ii. Acetone – 6 to 8 hours (leaves, flowers and stem).
iii. Chloroform - 10 to 12 hours. (leaves, flowers and stem).
iv. Methanol – 10 to 12 hours. (leaves, flowers and stem).
v. Water - 10 to 12 hours. (leaves, flowers and stem).

Leaf, flower and stem extract in different solvent appears different colour as shown in fig.1.

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leave extract **flower extract** **stem extract**

Fig. 1: Different solvent extract of leaf, flower and stem

3.PRELIMINARY PHYTOCHEMICAL SCREENING:

3.1. QUALITATIVE ANALYSIS

In order to perform qualitative analysis, miniature portion of extract was used for phytochemical test which shows the presence of anthocyanin, Saponins, carbohydrates, terpenoids, proteins, flavonoids, in various extract. The test of presence of these bioactive molecule was done by method given by Rahul S. Patil et.at. [2015] [21]. The result analysis of above study is given in the table no 1.

Table no 1: Observation table of phytochemical test showing presence of secondary metabolites in *C. Floribunda* plant extract

Solvent Extract	Phytochemical Constituent	Leaf	Flower	Stem
n-hexane Extract	Flavonoid	+	+	-
	Tannin	+	-	-
	Carotenoid	+	+	-
	Saponins	+	+	+
	Alkaloid	+	-	+
	Cardiac glycoside	+	-	-
	Protein	+	-	-
	Fatty acid	+	-	-
	Volatile oil	+	+	+
	terpenoids	-	+	+
	Tannin	+	+	-
	Carotenoid	+	+	+
	Saponins	-	+	+
	Alkaloid	-	+	+
	Cardiac glycoside	+	-	-

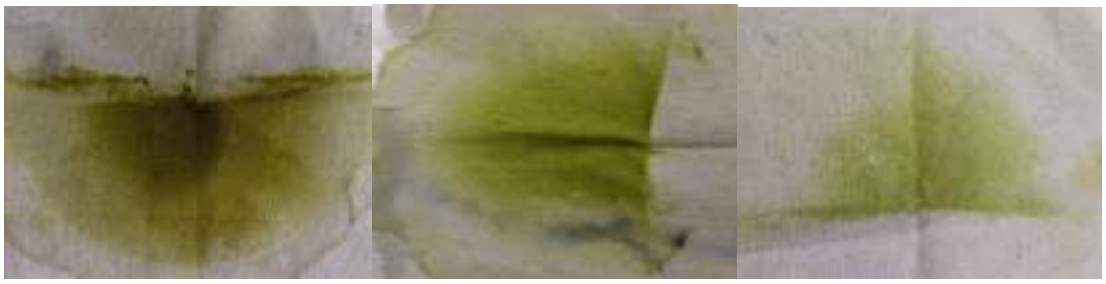
Acetone Extract	Protein	-	-	+
	Fatty acid	+	-	-
	Volatile oil	+	+	+
	terpenoids	+	+	+
Methanol Extract	Flavonoid	-	+	-
	Saponins	-	+	-
	Alkaloid	+	+	+
	Cardiac glycoside	+	+	-
	Volatile oil	+	+	+
	terpenoids	+	+	+
	Phenolic	-	+	+
Chloroform Extract	Flavonoid	+	-	-
	Carotenoid	+	-	+
	Saponins	+	-	+
	Alkaloid	+	+	+
	Volatile oil	+	+	+
	terpenoids	+	-	+
Water Extract	Flavonoid	+	+	+
	Tannin	+	+	+
	Carotenoid	+	+	-
	Saponins	+	+	+
	Alkaloid	+	+	+
	Cardiac glycoside	+	-	-
	Phenolic	+	-	+
	terpenoids	+	+	-

3.2 QUANTITATIVE ESTIMATION

3.2.1 ALKALOIDS**: -**

Alkaloids estimation was performed by taking 1gram of plant material was weighed into 250ml beaker and 40ml of 10% acetic acid in ethanol was added and covered and allowed to stand for 4 hours. This was filtered and the extract was concentrated on water bath to one quarter of the original volume. Concentrated ammonium hydroxide was added drop wise to the extract until the precipitation was complete. The whole solution was allowed to settle and the precipitate was collected and washed with dilute ammonium hydroxide and then filtered. The residue is the alkaloid, As shown in fig.2. Which

was transferred into a pre-weighed beaker and weight the alkaloid present in material. And it was found that 1 gm of leaf contained 0.013 g of alkaloids.



Leaves Flower Stem

Fig.2 : The quantitative estimation of alkaloid observes green solid precipitate.

3.2.2FLAVONOIDS: -

1 gm of leaf powder was taken in a soxhlet extractor and the compounds were extracted with methanol for 48 hrs. till it becomes colourless. The Methanolic extract was concentrated and filtered. 5-10 ml of water was added to the filtrate and lead acetate was added in the solution. The flavonoids get precipitate as lead phenolate. The precipitate was taken and suspended in ethyl alcohol. Through this alcohol filtrate, H_2S was passed for 5-10 minutes. The lead Sulphide gets precipitate out as black solid as shown in fig.3. The solution was filtered through filter paper and filtrate was concentrated in after transferring into a pre-weighed beaker. The beaker and its constituents were dried and the increase in weight was noted. After weighing the amount of flavonoid contained found to be 0.0203 g.

LeaveFlower Stem

Fig 3: The quantitative estimation of flavonoid observes black solid precipitate

4. ANTIMICROBIAL ACTIVITY OF PLANT EXTRACT

Along with phytochemical study the aim of the current study was also focused on antimicrobial activity of *C. Floribunda* plant bits' extract. Antimicrobial activity of n-hexane. acetone, methanol, chloroform and water extract of leave, flower and stem of *C. floribunda* were determining by using well diffusion method against gram negative bacteria i.e. *E. coli* and *P. Vulgaris.*

Antimicrobial test was carried out by using nutrient broth and Muller-Hinton agar media. Nutrient broth was prepared using method given by P. Poovendram et.al. [2011] [22] spread on Petri plates, after solidify

bacterial culture was spread by using spread plate techniques. The agar was carefully punched using cork-borer of 5 mm in diameter. 0.5 ml of prepared extract was dispensed into the well of agar using micropipette. The positive antibacterial activity was established by the presence of assessable zone of inhibition after the 24 hours of incubation at 36 ºC temperature.

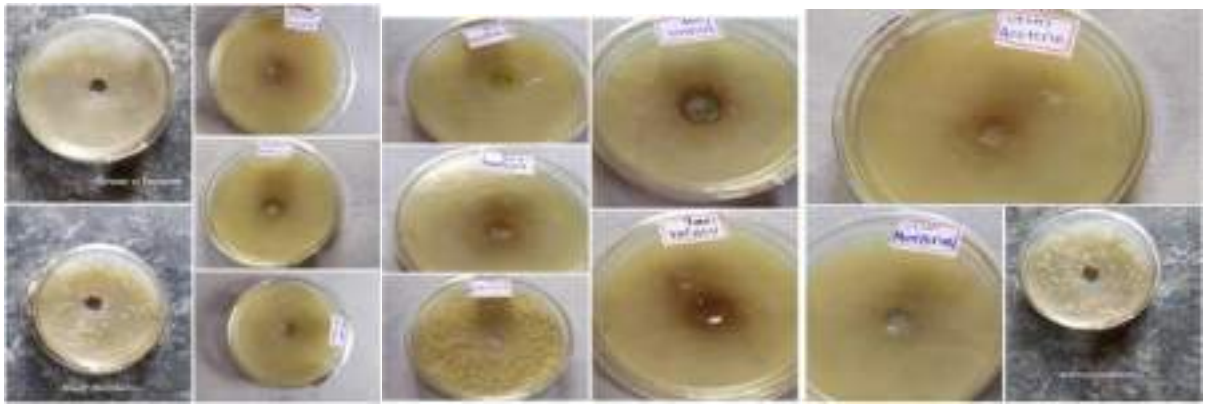


Fig. 4. Antibacterial activity against *P. Vulgaris* of n-hexane, chloroform, methanol, acetone and water extracts of *C. Floribunda* plant extract.

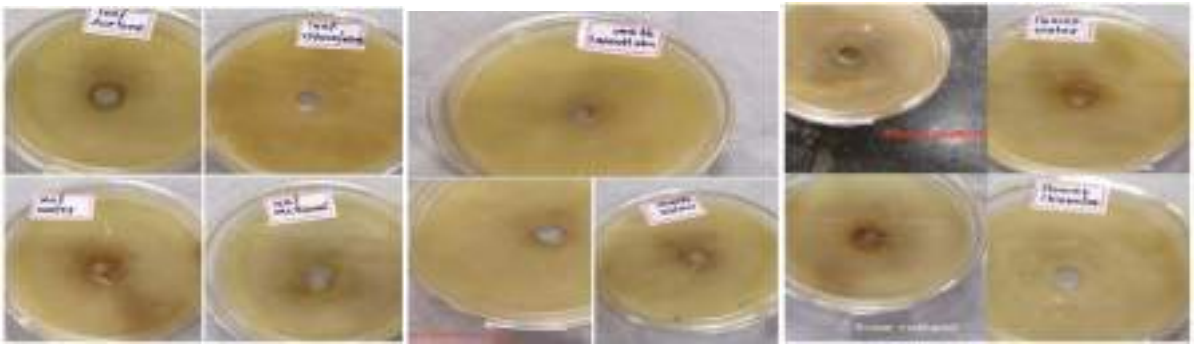


Fig. 5. Antibacterial activity against *E. coli* of n-hexane, chloroform, methanol, acetone and water extracts of *C. Floribunda* plant extract.

Solvent extract	Plant section	Zone of inhibition (indiameter)	
		E.coli	***P.Vulgaris***
n-Hexane	Leaf	-	0.5 mm
	Flower	-	-
	Stem	-	-
Methanol	Leaf	1.5cm	1.6 cm
	Flower	1.3 cm	1.2 cm
	Stem	0.2 cm	1 cm
Acetone	Leaf	0.5 mm	0.7 mm
	Flower	0.6 mm	0.9 mm
	Stem	0.8 mm	0.1 mm
Chloroform	Leaf	-	1 cm
	Flower	-	-
	Stem	-	-
Water	Leaf	0.6 mm	1.5 cm
	Flower	0.3 mm	0.7 mm
	Stem	0.2 mm	-

Table no 2: Observation table indicates zone of inhibition by various solvent plant extract against gram negative bacteria. **[(-) – Show no zone of inhibition].**

Antimicrobial activity of each extract against given gram negative microorganism was detected by calculating their zone of inhibition in mm and cm. The obtained analysis shows that n-hexane extract of leaf, flower, and stem does not show any activity against *E. Coli*, while n-hexane extract of leaf show little inhibition of 0.5mm diameter against *P. Vulgaris*. as well as chloroform extract leaf also gives the zone of inhibition against the same microorganism.

Concerning solvent of extraction,it was observed that Methanolic, acetone, and aqueous extract had the maximum significant antimicrobial activity and while of chloroform and n-hexane extract had least antimicrobial property against *E. coli* and *P.Vulgaris*.

5. CONCLUSION

Result of phytochemical test of different extract of *C. Floribunda* plant were summarized in table no. 1. In natural product screening n-hexane extract of leaf, flower, and stem yielded flavonoids, tannins, carotenoids, Saponins, alkaloids, proteins, terpenoids etc. During the analysis of Methanolic extract and aqueous extract detect flavonoids, volatile oil, cardiac glycosides, phenolic compound, tannin, terpenoids, Saponin in all sections

of *C. Floribunda*, moreover detection of acetone and chloroform extract shows least results compared to other. The presence of such active ingredients makes *C. Floribunda* as one of the essential medicinal species in *combretaceae* family. This plant was observed to be rich source of alkaloids and flavonoids as major component in quantitative analysis. 0.013 g and 0.0203 g of alkaloids and flavonoids was extracted from 1 g leaf extract using quantitative analysis.

The scientist in recent year has made attempt to reveal the effectiveness of better known plant having certain medicinal value, mainly to determine their antibacterial phenomenon against different pathogenic microbes [23]. The objectives of current study focused on phytochemical evaluation for presence of natural product and antimicrobial activity of given plant and has disclose the capability higher plant look as new anti-epidemic agent as serving drug discovered from natural product. The study prefers *E. Coli* and *P. Vulgaris* a gram negative microbes for its antimicrobial activity were used against n-hexane, acetone, Methanolic, chloroform and aqueous extract. The inhibitory action was observed in terms of inhibition zone. the antimicrobial activity was maximum of Methanolic and acetone extract as they show highest zone of inhibition while that of others extract i.e. n-hexane and chloroform show minimum activity. Amongs this aqueous extract of *Calycopteris Floribunda* shows moderate activity against given microorganism.

Now a day'speoples irrespective of the region are in search of the herbal are to avoid the obnoxious effect of the commonly available treatment modalities. *Calycopteries floribunda* is one of the unexplored plant with various phytochemical constituents and antimicrobial potential so as to derived novel antimicrobial agents for the treatment of various infection for developing new medicine.

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CONTENTS OF MARATHI PART - I

२. भंडारा जिल्ह्यातील प्रमुख कृषी पिकांचे अभिक्षेत्रिय विश्लेषण : एक भौगोलिक अभ्यास

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सारांश

जिल्हयातील हवामान मान्सून प्रकारचे असून पावसाळा दमट आढळता. या हवामान प्रकारात पावसाचे प्रमाण भरपूर असल्यामुळे सर्वत्र तांदूळ या पिकांची लागवड केली जाते. याशिवाय रब्बी हंगामात गहू, तांदूळ, उळीद, मूंग, तूळ, तेलबिया व इतर पिके यांचे उत्पादन घेतले जाते, उन्हाळी हंगामात सर्वत्र तांदूळ हे पिक घेतले जाते. एकंदरीत जिल्हयातील हवामान तांदूळ पिकांकरिता अनुकूल असल्यामूळे तुमसर, मोहाडी, भंडारा, लाखनी, साकोली, पवनी व लाखांदूर या तालूक्यात तांदूळ हे प्रमुख पिक घेतले जाते. तांदूळ पिकांचे सर्वाधिक उत्पादन व क्षेत्र मोहाडी तालूक्यात तर कमी लागवड क्षेत्र साकोली तालूक्यात दिसून येते. याशिवाय ऊस, मिरची, वटाना, सोयाबिन, कापूस, कुळीथ, बरबटी व भाजीपाला यासारखे पिके जिल्हयात घेतली जातात.

बीज संज्ञा :- कृषी उत्पादने, जलसिंचन, उदरनिर्वाह शेती, व उत्पादकता, आधुनिक तंत्रज्ञान

प्रस्तावना

कृषी हा भारतातील प्रमुख व्यवसायापैकी एक असून यातून मानवाच्या मूलभूत गरजांची पूर्तता केली जाते. म्हणून शेती व्यवसायाला मानवी जिवनाचा मुलभूत आधार मानले जाते. शेती विकासावर अनेक घटकांचा प्रभाव पडत असून यात भौगोलिक, सामाजिक व आर्थिक हे घटक प्रमुख आहे. यावरच शेतीचा विकास अवलंबून असतो. याशिवाय शेतीखालील प्रदेश व मातीची सुपिकता या गोष्टीचा त्या प्रदेशातील पिक प्रारूपावर विशेष प्रभाव पडत असतो.

भारतासारख्या देशांत ६५% लोक शेती व शेतीवरील उदयोग धंदयात अवलंबून आहेत. व राष्ट्रीय उत्पन्नापैकी २२ ते २६% इतके उत्पन्न हे शेती व्यवसायातून प्राप्त होते. म्हणून शेतीला भारतीय अर्थव्यवस्थेचा कणा संबोधले जाते. असे असले तरी पिकांच्या बाबतीत प्रदेशानुसार भिन्नता दिसून येते. म्हणजेच कृषी पिकांवर तापमान, पर्जन्य, आर्द्रता, मृदा ई. नैसर्गिक, आर्थिक यासारख्या घटकांचा प्रभाव पडतो. याचाच परिरणाम म्हणून भंडारा जिल्हयात सुध्दा विभागानूसार कृषी पिकाच्या बाबतीत अभिक्षेत्रिय विविधता आढळून येते.

उद्देश : भंडारा जिल्हयातील प्रमुख कृषी पिकांचे अभिक्षेत्रिय दृष्टीकोनातून भौगोलिक अध्ययन करणे हा या अभ्यासाचा मुख्य उद्देश आहे.

परिकल्पना : भंडारा जिल्हयात जलसिंचनाच्या बऱ्याच सोयी आहेत त्यामुळे कृषी पिकांत विविधता दिसून येते. यात खरीप व रब्बी हंगामात हवामानानुसार वेगवेगळी पिके घेतली जातात. असे असले तरी मुख्य पिक म्हणून भात हे या शेतीतील प्रमुख पिक आहे. भात पिक जिल्हयात खरीप व उन्हाळी हंगामात मोठया प्रमाणात घेतले जाते.

अभ्यास पध्दती

प्रस्तुत रिसर्च पेपर मध्ये वापरण्यात येणारी सांख्यिकीय आकडेवारी ही दुय्यम स्वरूपाची असून ती आर्थिक व सामाजिक समालोचन कार्यालय, जनगणनापुस्तीका व शासनाचे प्रकाशित मासिक व वर्तमान पत्रे यातून मिळविलेली आहे. म्हणजेच यात दुय्यम आकडेवारीचा वापर करून अचूक विश्लेषणाकरीता तिचा वापर करण्यात आलेला आहे.

अभ्यास प्रदेश

महाराष्ट्र राज्याच्या पूर्वेस भंडारा जिल्हा असून १ मे १९९९ ला भंडारा जिल्हयाचे विभाजन होऊन गोंदिया जिल्हयाची निर्मिती झाली. भंडारा जिल्हयाचा बहुतांश भाग वैनगंगा नदी खोऱ्यात असून अंशाक्षिय विस्तार २०°३९ मिनिटे उत्तर ते २१°३८ मिनिटे उत्तर अक्षांश, तर रेखावृत्तीय विस्तार ७९°२१ मिनिटे ८०°४२ मिनिटे पूर्व रेखांश इतका आहे. जिल्हयात भंडारा, मोहाडी, तुमसर, साकोली, लाखनी, पवनी व लाखांदूर अशी ७ तालूके आहेत. जिल्हयाचे एकूण क्षेत्रफळ ३७१७ चौ. किमी इतके क्षेत्र व्यापलेला असून राज्याचा १.२१% इतके आहे.

(नकाशा क्र.१)

जिल्हयातील भूपृष्ठ रचनेचा विचार केल्यास जिल्हयाचे प्राकृतिक रचनेनूसार दोन भाग पडतात.

१. उत्तरेकडील डोंगराळ प्रदेश
२. वैनगंगेचा मैदानी प्रदेश

जिल्हयाच्या उत्तरेकडील भागात सातपूडा पर्वतरांगा असून तो उंचवटयाचा व डोंगराळ भाग आहे. यात आंबागडचे डोंगर प्रमुख आहे. याशिवाय चांदपूर, गायमुख या इतरही टेकडया आहेत. यात तुमसर व मोहाडी तालूक्याच्या काही भागाचा समावेश होतो. साकोली तालूक्यात गायखुरी टेकडया, भंडारा तालूक्यात भिमसेन टेकडया, तर मोहाडी तालूक्यात कोका टेकडया व गायखुरी डोंगराच्या रांगा पसरलेल्या आहेत.

वैनगंगा मैदानी प्रदेशात वाळू मिश्रित व काळी खोल, चिकट व आर्द्रता टिकवून ठेवणारी मृदा असून पिकांस अतिशय उपयुक्त आहे. याशिवाय याच भागात खरडी व बरडी मृदा आढळते. लाखांदूर व पवनी तालूक्यात "चौरास" प्रदेश आढळतो. यातील मृदा, काळी, सुपिक, व भरपूर भूजलसाठा असलेली आहे ही शेती करीता अत्यंत उपयुक्त आहे. या भागात वर्षातून तीन पिके घेतली जातात.

जिल्हयातील सर्वात मोठी नदी वैनगंगा असून ती जिल्हयाच्या तूमसर, मोहाडी, पवनी, लाखांदूर, भंडारा या तालूक्यातून वाहते. या नदीला वाघ, पागोडी, सूर, गाढवी, चंदन, बावनथडी व चुलबंद अशा अनेक लहान मोठया नदया येवून मिळतात. भंडारा जिल्हयात वैनगंगा नदीची एकूण लांबी २००km असून पवनी तालूक्यात गोसेखुर्द गावाजवळ इंदिरासागर धरणाची निर्मिती करण्यात आलेली आहे. याचा फायदा जिल्हयात पाणीपूरवठा, जलसिंचन व विदयूत निर्मिती करीता होतो.

शेती पिक उत्पदनाकरीता मृदेला अत्यंत महत्व आहे. या घटकावरच शेतीचा विकास अवलंबून असतो. भंडारा जिल्हयात रेगुर, पिवळसर, गाळाची मृदा आढळते. पवनी तालूक्यात ८५% काळी मृदा, १५% पिवळसर मृदा, लाखांदुर तालूक्यात २०% गाळाची मृदा व ७०% काळीमृदा, १०% पिवळसर मृदा, भंडारा तालूक्यात ३०% गाळाची मृदा, तर लाखनी, साकोली, तूमसर, मोहाडी या तालूक्यात पिवळसर मृदा आढळते. या मृदेत प्रामुख्याने तांदूळाचे उत्पादन मोठया प्रमाणात घेतले जाते.

जिल्हयात मान्सून प्रकारचे हवामान आढळते. येथे उन्हाळे उष्ण (मे व जून) तर हिवाळा थंड (डिसेंबर ते जानेवारी) आढळतात. पाऊस साधारणत: जून ते सप्टेंबर या महिण्यात ८०% इतका पडतो म्हणजेच जिल्हयाचे हवामान विषम प्रकारचे असून उन्हाळे उष्ण व हिवाळे सौम्य व कोरडे आढळतात. जिल्हयात सरासरी १०५० मिली. इतका पाऊस पडतो हे पावसाचे प्रमाण भात पिकांकरीता अनुकूल आहे.

अभ्यास विषय

शेतीला जलसिंचनाची खुप गरज आहे. कारण शेती मधून योग्य ते उत्पादन घेण्याकरीता योग्य जलसिंचनाची आवश्यकता भासते. म्हणूनच जलसिंचन हा शेतीचा महत्वाचा घटक समजला जातो. यावरच शेती पिकांची उत्पादकता अवलंबून असते. जिल्हयात मान्सून कालावधित ८०% पर्जन्य पडत असल्यामुळे कोरडया ऋतूत शेतीला विविध स्त्रोताद्वारे सिंचन केले जाते. जिल्हयात जलसिंघनाचे स्त्रोत पुढील प्रमाणे आहेत.

सारणी क्र. १

भंडारा जिल्हयातील सिंचनाचे स्त्रोत

सिंचनाचे स्त्रोत		संख्या
कुपनलिका / विहीरी		३१,४५०
प्रकल्प	तलाव	११६९
	मोठे	०२
	मध्यम	०५
	लघुसिंचन	२०३
	कोळबंधारे	१७९
उपसासिंचन		०५

स्त्रोत : भंडारा सामाजिक व आर्थिक सर्व्हेक्षण, अहवाल २०२१

महाराष्ट्रात सर्वाधिक ओलित होतो. क्षमता असलेला जिल्हा म्हणून भंडारा अग्रेसर आहे. जिल्हयात विहीरी/कुपनलिका, तलाव, प्रकल्प व उपसा सिंचनाद्वारे २,४५,२१९.१७ हेक्टर आर. निव्वळ लागवडी क्षेत्रापैकी १,२१,००४.२८ हे. आर. क्षेत्राला सिंचिन केले जाते.

जिल्हयात कुपनलिका/विहीरीची संख्या ३१,९९० (२०२१ नुसार), गांव तलाव ११६९, मोठे प्रकल्प ०२, मध्यम प्रकल्प ०५, लघुसिंचन प्रकल्प २०३, कोळ बंधारे १७९, उपसा सिंचन ०५, असून याद्वारे निव्वळ लागवड क्षेत्रापैकी ६६.३९% क्षेत्राला सिंचन केले जाते. भंडारा जिल्हयात तलावांची संख्या जास्त असल्यामुळे, तलावाचा जिल्हा म्हणून भंडारा जिल्हयाला

ओळखल्या जाते. तर जिल्हयात भंडारा, पवनी, लाखनी, लाखादूर व साकोली तालुक्यात विहीरीची संख्या जास्त आहे. जिल्हयात गोसेखुर्द येथे, इंदिरा सागर प्रकल्प, इटियाडोह प्रकल्प, बघेडा, सोरणा, चांदपूर, चोरखमारा, बोदलकसा, धानागड, संग्रामपूर, चुलबंद, खैरबांधा, बेटेपार, रेंगेपार इ. मोठे व मध्यम, लघु प्रकल्प आहेत. सिंचनामुळेच जिल्हयात दुबार ते तिबार पिके घेणे शक्य झालेले आहे.

सारणी क्र. २

भंडारा जिल्हयातील जलसिंचनाची साधने व सिंचित क्षेत्र (२०२१ नुसार)

जलसिंचनाचे स्त्रोत	सिंचित क्षेत्र हे.आर	टक्केवारी
कुपनलिका/विहीरी	५४६३४.६४	४५.१५%
तलाव मोठे, मध्यम व लघु उपसा सिंचन प्रकल्प	६६३६९.६४	५४.८५%
एकूण	**१.२१००४.२८**	**१००.००%**

स्त्रोत : भंडारा जिल्हा सामाजिक व आर्थिक समालोचन पुस्तिका -२०२१

जिल्हयात विहीरी द्वारे ५४६३४.६४ हे.आर. क्षेत्रास म्हणजेच ४५.१५% क्षेत्रास, तर तलाव, प्रकल्प व सिंचन प्रकल्प याद्वारे ६६३६९.६४ हे. आर. क्षेत्र म्हणजेच ५४.८५% क्षेत्रास जलसिंचन केले जाते. अशाप्रकारे एकूण १,२१,००४.२८ हे. आर. क्षेत्रास जलसिंचन होते.

सारणी क्र. ३

भंडारा जिल्हयातील प्रमुख पिकांखालील क्षेत्र

सन-२०२१ (क्षेत्र हेक्टर मध्ये)

अ.क्र.	तालूके	विविध पिके								एकूण क्षेत्र
		खादयान्न पिके		कडधान्य दाळी						
		तांदूळ	गहू	हरभरा	तूर	उळीद	मूंग	तेलबिया	इतर पिके	
१	तुमसर	३१३२२.०	१६७०.००	८२०.००	९९३.००	१४.००	२७६.००	३८७.००	१५९२.१५	३७०४४.७५
२	मोहाडी	३४७५७.०६	३४३१.६०	१३९३.८०	१०६४.०५	२००.१०	२७५.१५	१३७.६०	३४१९.८७	४४६७९.२३
३	भंडारा	२४६५८.००	३२४७.४८	१७२४.४०	१६३.२७	निरंक	११७.६०	९०.८५	२८५१.१८	३२८५२.७८
४	साकोली	१८३६४.८०	६२०.२४	५८७.२३	५६३.४९	निरंक	निरंक	१३६.००	५७१.३४	२०८४३.१०
५	लाखनी	२०३६४.६०	६१९.५५	५३०.१५	७१७.८२	१२७.६५	१०९.१९	८३.९७	१६७५.६	२४२२८.५३
६	पवनी	२९२७८.८५	३०६५.७८	२९११.३५	११४१.३७	२२०.१५	५५९.४५	१.३०	६४५८.००	४३६३६.२५

७	लाखांदू र	२७७०२.६९	११६३.००	१४५५.७५	९३६.५८	१८६७.५०	२२९०.५०	१.२३	६५०९.२८	४१९३४.५३
एकूण क्षेत्र		१८६४४८.००	१३८२७.३५	९४२३.१८	५५४९.५८	२४२९.४५	३६२७.८९	८४५.९५	२३०७७.४२	२४५२१९.१७
टक्केवारी		७६.०३%	५.६३%	३.८४%	२.२७%	०.९९%	१.४७%	०.३४%	९.४३%	१०० ००%

स्त्रोत : भंडारा जिल्हा सामाजिक व आर्थिक समालोचन अहवाल - २०२१

भंडारा जिल्हयातील प्रमुख पिकांखालील क्षेत्र

१. **तांदूळ :** भंडारा जिल्हयाचे एकूण भौगोलिक क्षेत्र ४०८७००.०० हे. आर. एवढे आहे. लागवडी लायक क्षेत्र ३०००५८.४४ हे. आर. असून यापैकी २,४५,२१९.१७ हे. आर. क्षेत्र लागवडी खाली आहे. जिल्हयात तांदूळ या पिकांचे उत्पादन खरीप व उन्हाळी हंगामात घेतले जाते. जिल्हयातील हवामान, मृदा, जलसिचंन इ. अनुकूलतेमुळे तांदूळ पिकांचे उत्पादन सर्वाधिक क्षेत्रावर घेतले जात असून १,८६,४४८.०० हे.आर. एवढे आहे. तांदूळाचे उत्पादन सातही तालूक्यात प्रामुख्याने घेतले जात असून तांदूळ हेच प्रमुख पिक आहे. एकूण लागवड क्षेत्रापैकी ७६.०३% भागात तांदूळाचे उत्पादन होते. जिल्हयात सर्वात जास्त तांदूळाचे क्षेत्र मोहाडी तालूक्यात ३४७५७.०६ हे. आर. तर सर्वात कमी क्षेत्र साकोली तालूक्यात १८३६४.८० हे.आर. इतके आहे.

२. **गहू पिक :** जिल्हयात गहू पिकांखालील क्षेत्र १३८२७.३५ हे. आर. असून ५.६३% इतके क्षेत्रावर गव्हाचे पिक घेतले जाते. हे पिक रब्बी हंगामात घेतले जाते. या पिकांचे सर्वाधिक क्षेत्र मोहाडी तालूक्यात ३४३१.६० हे. आर. असून सर्वात कमी क्षेत्र लाखनी तालूक्यात ६१९.५५ हे. आर. एवढे आहे.

गहू पिकांचे उत्पादन जिल्हयातील सर्वच तालूक्यातून कमी अधिक प्रमाणात होतांना दिसून येते.

३. **कडधान्ये (दाळी पिके) :** जिल्हयात हरभरा, तूर, उळीद, व मूंग इ. कडधान्य पिके घेतली जातात. या पिकांची एकूण २१०३०.१० हे. आर. क्षेत्रावर लागवड केली जाते. याचे प्रमाण ८.५५% एवढे आहे. यात हरभरा ९४२३.१८ हे. आर, तूर ५५४९.५८, उळीद २४२९.४५, मूंग ३६२७.८९ हे. आर. क्षेत्रावर घेतले जाते.

४. **तेलबिया (भूईमुंग, जवळ, तीळ) :** या पिकांचे जिल्हयात ८४५.९५ हे. आर. म्हणजेच ०.३४% क्षेत्रावर लागवड केली जाते. व हे पिक सर्वच तालूक्यात कमी अधिक प्रमाणात घेतले जाते.

५. **इतर पिके :** भंडारा जिल्हयांमध्ये इतर पिकांखालील क्षेत्र २३०७७.४२ हे. आर. असून याचे प्रमाण ९.४३% एवढे आहे. लाखांदूर तालूक्यात इतर पिकांचे क्षेत्र सर्वाधिक ६५०९.२८ हे. आर. असून सर्वात कमी क्षेत्र साकोली तालूक्यात ५७१.३४ हे. आर. एवढे आहे. इतर पिकांत ऊस, मिरची, भाजीपाला, मसाल्याचे पदार्थ, आंबा, लिंबू वर्गीय पिके, केळी, फळे इ. समावेश होतो.

वरील विवेचनावरून असे लक्षात येते की, जिल्ह्यात सर्वाधिक क्षेत्र तांदूळ पिकांच्या लागवडी खाली असून त्याचे प्रमाण ७६.०३% इतके आहे. व तांदूळ पिकांची दर हेक्टरी उत्पादकताही जास्त दिसून येते. त्यानंतर इतरही पिके जिल्ह्याच्या विविध तालुक्यात घेतली जातात.

निष्कर्ष

भंडारा हा जिल्हा तलावांचा जिल्हा म्हणून ओळखला जातो. जिल्ह्यातून वैनगंगा नदी वाहते. तसेच इतर नद्या वाहतात. या नद्यावर धरणे बांधून यातून जलसिंचन केले जाते. याचा लाभ यांथील पिक पध्दतीवर दिसून येतो. शिवाय येथे पावसाचे प्रमाण अधिक असून तांदूळ हे प्रमुख पिक जिल्ह्याच्या सर्वच तालुक्यात दिसून येते. यांथील जलसिंचनामुळे जिल्ह्यात तांदूळाचे पिक खरीप व उन्हाळी हंगामात घेतले जाते. रब्बी हंगामात गहू, कडधान्ये (हरभरा, तूर, उळीद, मूग) गळीतांची पिके, उस, भाजीपाला, मसाल्याचे पिके, भरडधान्ये, फळफळावळ अशी दुय्यम पिके सुध्दा घेतली जातात. तांदूळाचे उत्पादन सर्वच तालुक्यात होत असल्याचे स्थानिक बाजारपेठाही उपलब्ध आहेत. त्यामुळे भातगिरण्याचा विकास झालेला दिसून येतो.

उपाययोजना

जिल्ह्यात तांदूळाचे पिक हे पारंपारीक पध्दतीने घेतले जाते. त्यामुळे तांदूळाच्या चांगल्या जातीचे वाण, खापरून या शेती पध्दतीत बदल करणे आवश्यक आहे. याकरीता शेतकऱ्यांना योग्य प्रशिक्षण देणे, तांदूळाच्या जातीचे नविन नविन वाण शोधून काढण्याकरीता संशोधन केंद्र मोठया प्रमाणात स्थापन करणे आवश्यक आहे. त्यामुळे अधिक चांगल्या जातीची लागवड करून, तांदूळ उत्पादनात प्राविण्य प्राप्त करणे काळाची गरज आहे. याकरीता ग्राम पातळीवर शेतकरी मेळावाचे आयोजन करणे आवश्यक आहे.

संदर्भग्रंथ

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बुध्दाचा धम्म: जीवन जगण्याची आचारसंहिता

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सारांश :

निसर्ग आणि त्याची शक्ती यांच्यामागे लपलेल्या नियमांचे अध्ययन म्हणजे विज्ञान होय. त्याला चांगल्या प्रकारे समजून घेणे, त्याचे निरीक्षण करणे आणि प्रयोगाव्दारे परिक्षण करणे विज्ञान होय. विज्ञान मानवाला भौतिक सुख देते परंतु मानवाला फक्त भौतिक सुखच नाही तर मानसिक सुखाची सुध्दा आवश्यकता आहे. जगाच्या पाठीवर मानसिक सुखाशिवाय श्रेष्ट सुख दुसरे नाही. परंतु मानसिक सुखाची पूर्तता विज्ञान करु शकत नाही. त्यामुळे धम्माची आवश्यकता आहे. धम्म म्हणजेच निर्मळ जीवन जगण्याचा मार्ग आहे, सुव्यवस्थित जीवन जगण्याचा मार्ग होय. हा मार्ग मानवाला भौतिक सुखापेक्षा मानसिक सुख जास्त देतो. एकंदरीत विनाशापासुन जगाला तारायचे असेल तर धम्माशिवाय दुसरा पर्याय नाही.

प्रस्तावना :

विज्ञानपूर्व काळात सर्वच देशातील लोकांवर धर्मांचा प्रभाव होता. तत्कालिन सामाजिक जीवनावर धर्माचे अधिराज्य होते. जीवनात जे जे सनातन आहे हे सर्व हिंदु धर्मात आहे. त्यामुळे धर्म स्थिर व्हायला पाहिजे ही विचारसरणी भारतात रुढ झाली मानवी स्वभावाचे स्वरूप स्थिर आहे. त्यामुळे त्याचे नियमन करणारा धर्म स्थिर असायला पाहिजे ही विचारसरणी भारतात प्राचीन काळापासुन चालत आलेली आहे.

पूर्वाग्रह आणि अंधश्रध्देच्या विरूध्द केला जाणारा बंड जाणारा बंड म्हणजे 'विज्ञान' अशाप्रकारची फ्रांशिश बेकनन यांनी विज्ञानाची व्याख्या प्रतिपादित केली आहे प्रा.एफ.सी.कोनट यांच्या मतानुसार मानवी बुध्दीने नैसर्गिक घटनापासुन कार्यकारणभाव लक्षात घेवून निरीक्षण आणि प्रयोगाव्दारे घटनांचे केलेले सुसबध केलेले अध्ययन म्हणजे विज्ञान बुध्द म्हणजे विज्ञान आणि विज्ञान म्हणजेच बुध्द अशाप्रकारची व्याख्या केली जाते.

धम्म आणि विज्ञान हे विषय २१ व्या शतकातील महत्वपूर्ण विषय आहेत. हा विषय मानवाच्या सुख आणि विकासाचा आहे. जगात अनेक मतप्रवाह आहेत. प्रत्येक धर्मांच्या संस्थापकाने आपल्या तत्वप्रणालीनुसार समाजाला मार्गदर्शन केले आहे. हे मार्गदर्शन करताना विज्ञानाला विरोध केला. या सर्व धर्मसंस्थापकांनी मानवाला भगवान, आत्मा, ईश्वर, परमेश्वर, स्वर्ग, नरक, पुनर्जन्म, भुतपिशाच्च, राक्षस, पुर्वकर्म या भ्रामक कल्पनामध्ये जखडून ठेवले आहे.

ई.स. पूर्व ५६३ मध्ये सिध्दार्थाचा जन्म झाला. त्यांनी आपल्या जीवनात वयाच्या ३५ वर्षापर्यंत अनेक विषयावर अध्ययन व विचार विमर्श केला. ऋषींच्या आश्रमात राहून कठोर तपश्चर्या आणि अध्ययन केले. परंतु यामध्ये त्यांना कुठलेही सत्य दृष्टीस पडले नाही. सत्याचा शोध घेण्याकरिता मनन चिंतन केले. शेवटी वैशाख पौर्णिमेला त्यांना सम्यक सम्बोधी प्राप्त झाली आणि पूर्वापार चालत आलेल्या रूढीपरंपरा विरूध्द उभे राहिले. मनुष्याला काल्पनिक गोष्टींपासून दूर करण्याचा प्रयत्न सुरू केला. त्यांनी एक नवीन विचारप्रणाली प्रस्थापित केली. ही नवीन विचार प्रणाली विज्ञानाशी सुसंगत होती. तिला 'धम्म' या नावाने संबोधित केल्या गेले. तिला 'धम्म' या नवीन नावाची ओळख दिली. धम्म काय आहे हे समजावून सांगितले आणि मानवाला जुन्या रूढी परंपरापासुन दुर सारण्याचा प्रयत्न केला. त्यामुळे 'धम्म' काय आहे हे समजने आवश्यक आहे.

भगवान बुध्दाने प्रतिपादित केलेला धम्म विज्ञान व तर्कावर आधारित आहे. मनुष्याला ज्ञानी, सदाचारी, मानवतावादी, समतावादी, कर्मवादी, बनविणारा भगवान बुध्दांचा धम्म विकासाकडे घेऊन जाणारा आहे. दु:खापासून मुक्त करणारा हाच खरा जीवनाचा मार्ग आहे. भगवान बुध्दाने सांगितलेल्या धम्मात कुठल्याही

प्रकारची अंधश्रध्दा आणि कर्मकांड याही कारण धम्माने आत्मा परमात्मा, स्वर्ग, नरक, पुनर्जन्म भगवान, ईश्वर यांना अमान्य केले आहे. डॉ. बाबासाहेब आंबेडकर यांनी धम्माचे तीन भाग सांगितले आहेत –

१. धम्म २. अधम्म ३. सद्धम्म

भगवान बुध्दांचा धम्म मानवाच्या सांगण्यावरुन, बुध्दीच्या कसोटीवर आधारित आणि विज्ञानाशी सुसंगत आहे. डॉ बाबासाहेब आंबेडकर लिखित 'बुध्द आणि त्यांचा धम्म' ग्रंथाला उपरोक्त तीन विभागात विभाजित केले आहे. कारण सामान्य व्यक्तिला बुध्द भगवान बुध्दाची तत्वप्रणाली समजावयला पाहिजे. भगवान बुध्दांच्या तत्वांच्या आचरणाने मनुष्य ज्ञानी, सदाचारी, मानवतावादी आणि प्रबुध्द बनतो अशा व्यक्तिचा सर्वत्र सन्मान होतो.

विज्ञान हे ज्ञान अतिशय पवित्र, स्वच्छ तसेच प्रामाणिक आहे आणि विज्ञान हा सर्वांसाठी सोकळे आहे. जिज्ञासु आहे. त्याप्रकारे दक्ष व सुसज्ज बुध्दा आहे. याशिवाय विज्ञानाजवळ सर्वच प्रश्नांचे उत्तर आहे, दावा नाही. होय ज्ञानाची खरी ओळख आहे. एखादा प्रयोग सिध्द झाला तर कोणाला काय वाटेल किंवा कोणाला काय वाटणार? या गोष्टीची विज्ञानाला चिंता नाही. भगवान बुध्दांनी ईश्वर, आत्मा, स्वर्ग, नरक या धार्मक काल्पनांना नाकारले विज्ञान म्हणजे बुध्द आणि बुध्द म्हणजे विज्ञान अशाप्रकारची व्याख्या केली जाते. भगवान बुध्द एक महान वैज्ञानिक,अतुलनीय महापुरुष आणि शास्त्रज्ञ होते. जगातील पहिले वैज्ञानिक, शास्त्रज्ञ आणि मनोचिकित्सक म्हणुन भगवान बुध्दाची ओळख आहे. त्यांनी मानवाला सुख समृध्दीने जीवन जगण्याचा मार्ग शोधून काढला. तर्कशास्त्र विज्ञान आणि बुध्दीवादावर आधारित मार्ग म्हणजे धम्म असे अनेक बुध्दीवंत विज्ञानवादी लोकांचे मत आहे.

विज्ञानानुसार धम्म सांगतो की, प्रत्येक वस्तु गतिशिल अवस्थेतुन परिवर्तित होत असते. उत्क्रांतीच्या नियमानुसार परिवर्तनाची क्रिया सतत सुरू राहते हा आधुनिक विज्ञानाचा नियम बौध्द धम्म तत्वज्ञानाचा अनित्यवाद आहे. ज्यावेळी विज्ञानाच्या स्तराला एक सिमित दायऱ्यामध्ये जखडले जाते. त्यावेळी धम्म त्या सर्व प्रश्नांना सोडवितो. धम्म मानवाला सदाचार शिकवितो. तसेच शांती, मनाचा समतोल राखण्यासाठी जीवनात स्थिरता आणि मानवी जीवन निर्दोष राखण्यासाठी मदत करतो.

या भूतलावर जन्म ग्रहण करणाऱ्या प्रत्येक मर्त्यें मानवाला आपल्या जीवनात काहीतरी सत्कर्म करावे लागतात. त्यामुळे त्याचे जीवन सुखी आणि समृध्द होते व इतरांना सुध्दा तो सुखी आणि समृध्द करू शकतो. परतु सद्या स्थितीत जग एका वेगळयाच मार्गाला लागलेले आहे. धर्मसस्थापकांच्या काल्पित भगवान, आत्मा, परमात्मा, ईश्वर, परमेश्वर, स्वर्ग, नरक, पुनर्जन्म भुतपिशाच्च, राक्षस, पूर्वकर्म तसेच रुढी परंपरा, कर्मकांड, वाईट चालीरिती यामध्ये मनुष्यप्राणी एवढा जखडला आहे की, त्यातुन त्यांची सुटका होणे कठीण झालेले आहे. त्यामुळे त्याचा मानसिक विकास झाला नाही व त्याचे जीवन सुखी व असुध्द होता पुन्हा तो अज्ञान अंधकारात वाहून जात आहे. यातून मानवाला स्वत:ला मुक्त करून सुखी व प्रगतीशील जीवन जगायचे असेल तर बुध्दाच्या धम्माशिवाय दुसरा पर्याय नाही. हा धम्म मार्ग त्यावरील शेवटचा उपाय आहे. धम्माचेच तत्व म्हणुन मानवाने पंचशिलाचे जरी अनुसरण केले किंवा आंगिकर केला तर त्याचे अंतरंग सुजलाम सुफलाम होईल, त्याचे जीवन सुखी व समृध्द होईल.

बौध्द धम्मात पंचशिलाला अतिशय महत्वपूर्ण स्थान आहे. शीलम्हणजे सदाचार होय. या सदाचाराच्या पाच पायऱ्या बुध्द धम्मात सांगितल्या आहेत. यालाच 'पंचशिल' असे म्हणतात.

१) पानातिपाता वेरमणी सिक्खा पदं समादियामि ।
२) अदिन्नादाना वेरमणी सिक्खा पदं समादियामि ।
३) कामेसुमेच्छाचारा वेरमणी सिक्खा पदं समादियामि ।
४) मुसावादा वेरमणी सिक्खा पदं समादियामि ।
५) सुरामेरयमज्जपमादट्ठाना वेरमणी सिक्खा पदं समादियामि ।

अर्थ –

- मी जीव हिंसेपासून अलिप्त राहण्याची शपथ घेतो.
- मी चोरी करण्यापासून अलिप्त राहण्याची शपथ घेतो.
- मी कामवासनेच्या अनाचारापासून अलिप्त राहण्याची शपथ घेतो.
- मी खोटे बोलण्यापासून अलिप्त राहण्याची शपथ घेतो.
- मी मद्य मादक पदार्थ तसेच इतर मोहात पाडणाऱ्या सर्व मादक वस्तुंच्या सेवनापासून अलिप्त राहण्याची शपथ घेतो.

या बुध्दाच्या धम्मातील पंचशिलात व्यक्तीच्या संपूर्ण विकासाची पायेभुळे रोवलेली आहेत. याच्या अनुसरणाने कोणाचेही अहित किंवा अकल्याण तर होणार नाही परंतु हित किंवा कल्याण झाल्याशिवाय राहणार नाही.

निष्कर्ष :

अशा या बुध्दाच्या धम्मातील पंचशील व इतर तत्त्वांमुळे व्यक्तीचे घर,कुटुंब, समाज यांच्यावर चांगले संस्कार तर होण्यास मदत मिळते त्याचबरोबर भयमुक्त, भितीमुक्त जीवन जगता येत असल्याने स्वत:ची प्रगती इतरांना दु:ख न देता, इतरांना त्रास न पोहविता, इतराशी सन्मानाने वागुन स्वत:चे जीवन सुंदर, सुबक व विकसित करण्यास मदत मिळते. एकंदरीत धम्मातील तत्त्वामुळे शारिरिक व मानसिकरित्या आरोग्य समृध्दी लाभून व्यक्ती आनंदी जीवन जगु शकतो व दुसऱ्यास तसे जीवन जगण्याची प्रेरणा बनु शकतो. म्हणुन भगवान बुध्दाचा धम्म हा सुव्यवस्थित जीवन जगण्याची आचारसंहिता आहे, गुरुकिल्ली आहे हे शाश्वतकाल टिकणारे सत्य आहे.

संदर्भ :

१. बुध्द आणि त्याचा धम्म, डॉ.बाबासाहेब आंबेडकर.
२. बुध्द तत्त्वज्ञान आणि प्रबोधन क्रांती, निरजन पाटील.
३. धम्म प्रबोधन प्रवचने, एम.डी.सरोदे.
४. धम्मपद प्रश्न– अनुवादक भदन्त महास्थवीर, प्रबुध्दभारत पुस्तकालय,नागपूर २०१४.

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स्वातंत्र्योत्तरकाळातील मराठी रंगभूमीचे स्वरूप

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प्रस्ताविक

मराठी साहित्यामध्ये एक रंजनप्रधान आणि समाजाभिमुख साहित्यप्रकार म्हणून या साहित्य प्रकारास अनन्यसाधारण महत्व आहे. एक मिश्र कला म्हणून या साहित्य प्रकाराकडे पाहिले जाते. शिवाय प्रयोगक्षमता हे या वाङ्मय प्रकाराचे अंगभूत वैशिष्ट्य असल्याने लोकमाणसामध्ये अधिक लोकप्रिय झाला. विविध ललित कलांचा मधुर अविष्कार नाटयकलेत होत असल्याने नाटयकला हे मानवी जीवनाचे एक अविभाज्य अंग बनलेली दिसते. मानवी जीवनातील विविध घटना, प्रसंग आणि व्यक्तिरेखा यांचा एक अद्भुत असा अविष्कार नाटयकलेतून घडतांना दिसतो. प्राचीन काळापासून चालत आलेली ही कला अजूनही रसिकांच्या मनावर मोहिनी घालतांना दिसते. आपल्या भारतीय रंगभूमीला एक समृद्ध व प्रदिर्घ अशी परंपरा लाभलेली आहे. मराठी रंगभूमीनेही त्यात मोलाची भर टाकून नाटय विश्वामध्ये महत्वाचे योगदान दिलेले आहे.

'महाराष्ट्राचे भरतमुनि' विष्णुदास भावे यांच्या 'संगीत सीता स्वयंवर' या नाटकाने मराठी रंगभूमीचा पाया घातला. ५ नोव्हेंबर १८४३ ला सांगली येथे या नाटकाचा पहिला प्रयोग चिंतामनराव पटवर्धन यांच्या दरबारात झाला. आणि यातूनच रमराठी नाटकाचा जन्म झाला. या वाङ्मय प्रकाराने मराठी मध्ये पुढे मोठीच परंपरा निर्माण केली आणि मराठी साहित्य समृद्ध केले. यापूर्वी मराठीतून नाटके लिहिली गेली, तसेच ती निरालंबा स्वरूपात समाजात नांदत होती. ''मराठी नाटक हे मराठी मनाचा स्वभावधर्म असल्यामुळे ते मराठीच्या जन्मावरोबरच उपजत आहे हे खरे'' असे जे कृ. पा. मराठे म्हणतात, ते योग्य वाटते.

बीज शब्द :– रंगभूमी, स्वातंत्र्योत्तर कालखंड, नाटककार, नाटय लेखिका, दलित, स्त्रीया इत्यादी.

व्याख्या –१)''रंगभूमीवर दृश्यात्मक रूपाने प्रयोगीत होईल अशी वाङ्मयीन रचना म्हणजे नाटक होय'' २)''नाटक हे काल्पनीक अथवा खरोखरी होऊन गेलेल्या एखाद्या व्यक्तिच्या व तिच्याशी संबंध असलेल्या इतर व्यक्तिच्या आयुर्वर्तनातील काही भागांचे दृश्यरूपाने मर्यादित कालात दाखवता येणारे व मनोरंजन करून उपदेश करणारे दृश्य काव्य आहे''

१९२० नंतर मराठी रंगभूमीची स्थिती अधिक विकट होती. प्रतिभाशाली नाटककार नव्हते, त्यामुळे कलात्मक नाटक तयार होत नव्हेत. नाटकांच्या प्रातांत असे घडत असतांनाच मुखपटाची सुरूवात झाली. आणि करमणुकीचे एक नवे साधन समाजाला उपलब्ध झाले. १९३४ नंतर मुखपट हा बोलपट बनला त्यामुळे कलात्मक नाटकच संपले होते. परंतु मराठी नाटकाला नवे रूप मिळवून देण्यासाठी१९३३ स्थापन झालेल्या नाटयमन्वंतर या संस्थेने कलावंतानी सादर केलेला पार्श्वनाथ आळतेकर यांची'आंधळ्यांची शाळा' या नाटकाने खऱ्या अर्थाने मराठी रंगभूमीच्या इतिहासात आशय व अविष्कारदृष्ट्या वास्तवाचे एक नवे भान आणले.

१९३३ नंतर मराठीरंगभूमीला चित्रपटाबरोबर स्पर्धा करावी लागली. चित्रपटासारख्या प्रभावी माध्यमामूळे संगीत नाटक मागे पडू लागले. नंतरच्या काळात सामाजिक, राजकीय आणि ऐतिहासिक स्वरूपाची नाटके लिहिली गेली. मो. गा. रांगणेकर ह्यांचे 'कुलवधू' आणि श्री. वी. वर्तक यांचे

'आंधळ्यांची शाळा' या नाटकापासून वैभवाचे दिवस येऊ लागले. भा. वि. वरेरकर, प्र. के. अत्रे, पु. ल. देशपांडे, वि. वा. शिरवाडकर, वसंत कानेकर, वसंत कानेटकर, जयवंत दळवी, विजय तेंदूलकर, विश्राम बेडेकर इत्यादी थोर नाटककारांनी मराठी रंगभूमीला भरभराटीचे दिवस आणून दिले.१९६० नंतर प्रयोगीक रंगभूमीला सुरूवात होतांना दिसते. त्यामध्ये विजय तेंदूलकर, रत्नाकर मतकरी, महेश एलकुंचवार आदी लेखकांनी स्वातंत्र्योत्तर काळातील मराठी समृद्ध आशय आणि विषय असलेली नाटके दिली आहेत. तसेच स्वातंत्र्योत्तर काळातील लक्षात राहणारी नाटके म्हणून पुढील नाटकांचा उल्लेख करावा लागेल. हिमालयाची सावली, घाशिराम कोतवाल,

महानिर्वाण, तुझे आहे तुझपाशी, ती फुलराणी, संध्या छाया, सूर्यास्त आणि उद्ध्वस्त धर्मशाळा ही ती नाटके होत.

वरेरकर, अत्रे, रांगणेकर इत्यादी महत्वाचे नाटककार जरी नाटयलेखन करीत असले तरी रंगभूमीची स्थिती दोलायमान होती. निरनिराळे कंत्राटदार, क्लब, मंडळे यामधून जुन्या–नव्या नाटकांचे प्रयोग होत होते. पण रंगभूमी सुसंघटीत नव्हती,

दलितोत्तर नाटकारांनी दलिताविषयी पुढील नाटके लिहिली आहेत. त्यामध्ये शुंग, सूर्यास्त, लोककथा ७८, कन्यादान, पुरूष, स्मारक आणि धर्मान्तर ही ती नाटके होत. ह्या नाटकामध्ये दलित जीवनातील संघर्षाचे चित्रण केलेले आढळते.दलित रंगभूमीची पाळेमुळे आंबेडकरी जलशात दिसतात. सत्येशोधक जलसे, छत्रपती मेळे, आंबेडकरी जलसे यांनी प्रबोधनाचे कार्य केलेले दिसते. स्वातंत्र्योत्तर काळात म. भि. चिटणीस यांच्या पासून दलित रंगभूमीला सुरूवात होते. म. भि. चिटणीस यांच्या 'युगयात्रा' या नाटकाने दलित रंगभूमीच्या उदयाचे रणशिंग फुकले. भि. शि. शिंदे ह्यांच्या'काळोखाच्या गर्भात' ह्या नाटकाने दलित रंगभूमीला गती मिळाली. एकामागून एक सकस नाटके लिहून सादर करण्यात आली. दत्ता भगत, प्रेमानंद गज्वी, भि. शि.शिंदे, टेक्सास गायकवाड, रामनाथ चव्हान आणि संजय पवार ही नावाजलेल्या दलित नाटककारांची नावे आहेत. दलित रंगभूमिने 'हिट ॲंड हॉट' या व्यावसायिक वर्तुळात अडकलेल्या मराठी नाटकांना समृद्ध जीवनाशय देण्याचा प्रयत्न केला. प्रेमानंद गज्वी यांची 'तनमाजोरी' आणि 'किरवंत' ही गाजलेली नाटके आहेत. दत्ता भगत यांचे 'वाटा पळवाटा' हे बहुचर्चित नाटक आहे. दलित नाटकारांनी दलितावरील अन्याय अत्याचाराचे प्रसंग आपल्या नाटकातून प्रतिकारित्या मांडलेले आहेत. दलित नाटकातले विद्रोह आणि आक्रोश हे त्या नाटकातले प्रमुख स्वर आहेत. प्रकाश त्रिभूवन यांचे 'धांवा रामराज्य येतयं', रामनाथ चव्हान यांचे 'वामनवाडा' टेक्सास गायकवाड यांचे 'देशाचे मानकरी', संजय पवार यांचे 'कोण म्हणतो टक्का दिला' , अरूणकुमार इंगळे यांचे 'काय रं' ही प्रेक्षकांच्या पसंतीला उतरलेली नाटके आहेत.

दलित नाटककारांनी नाटकातही अनेक प्रयोग केले. दलित नाटक थिएटरमध्ये बंदिस्त होऊ नये म्हणून त्यांनी चौका चौकात करता येणारी पथनाट्य लिहिली. पथनाट्याने दलितांच्या प्रश्नाना वाचा फोडण्याचे काम केले. 'मसन्याऊद' हे पथनाट्य खूप गाजले.ह्या पथनाट्यात दलितांचा प्रश्न अत्यंत प्रभावीपणे मांडलेला दिसतो. प्रेमानंद गज्वी ह्यांनी 'देवनवरी' आणि 'घोटभर पाणी' ह्या एकांकिका लिहिल्या आहेत. 'तनमाजोरी', 'जय जय रघुवीर समर्थ', 'पांढरा बुधवार', नाट्ययात्रा', 'किरवंत', आणि 'गांधी –आंबेडकर', अशी नाटके लिहिली आहेत. दलित शोषित आणि स्त्रियांच्या दु:खाना वाचा फोडण्याचे काम या सारख्या नाटकातून केलेले दिसते. वेठ–बिगारापासून ते ब्राम्हणातील किरवंतापर्यंत गज्वींची लेखणी संचार करतांना दिसते. प्रेमानंद गज्वीच्या लेखनात काव्यात्मकता, नाट्यात्मकता आणि प्रतिकात्मकता ठळकपणे दिसून येते. नाट्यतंत्रावर त्यांची प्रभावी हुकूमत असल्याचे जाणवते. सामाजिक प्रश्नांची सखाल जाण असलेला हा प्रतिभावान नाटककार आहे. गज्वींच्या 'घोटभर पाणी' या एकांकिकेमध्ये दलितावर पाण्याच्या अनुसंगाने जे अन्याय अत्याचार केले जात त्याचे प्रभावी चित्रण केलेले दिसते.

वरेरकर, अत्रे, रांगणेकर इत्यादी महत्वाचे नाटककार जरी नाट्यलेखन करीत असले तरी रंगभूमीची स्थिती दोलायमानच होती. कंत्राटदार, क्लब, मंडळे यामधून जुन्या–नाटकांचे प्रयोग होत होते. पण रंगभूमी सुसंगतीत नव्हती. तीला निश्चित दिशा नव्हती. नेमके सुत्र नव्हते. अशा स्थितीत रंगभूमीचा शतकोत्सव डॉ. अ. ना. भालेराव यांच्या प्रेरणेने साजरा झाला. आणि रंगभूमीला दिशा देण्याचे काम ह्या एका दृष्ट्या माणसानी केले.प्रयोगाच्या बरोबरीने तसेच रंगभूमीच्या भविष्याच्या दृष्टीने विस्ताराने चर्चा केली.रंगभूमीच्या परंपरेचे भान ठेवून भविष्यात काय करता येईल याचा विचार केला. आणि रंगभूमीमध्ये नवचैतन्य निर्माण झाले. तसेच श्री आत्माराम भेंडे यांच्या 'कलाकार ' या नाट्य संस्थेने वेगवेगळ्या विषयावरची नाटके जाणतेपणाने रंगभूमीवर आणली. हे दोन्ही प्रयत्न १९४० ते १९५० या दशकात फार महत्वाचे ठरले. त्यामुळे त्यांच्या कार्याचे पडसाद आणि इष्ट परिणाम स्वातंत्र्योत्तर मराठी रंगभूमीमध्ये आपल्याला जाणवतात. नाटककार वि. वा. शिरवाडकरांना नाटक लिहिन्यास डॉ. भालेरावांनी प्रवृत्त केले. तसेच नट, नाटककार, दिग्दर्शक अशा विविध विभागातील कलाकारामधला. प्रतिभेचा कोंभ फुलवण्याचे कार्य

या काळात पडले. एक नवी दृष्टी, नवी जान यानिमित्ताने आली. तिच्यातूनच रंगभूमीने अनेक लक्षवेधी प्रवाह निर्माण झाले.

स्वातंत्र्योत्तर कालखंडात मराठी साहित्याच्या स्वरूपात फरक जाणवू लागला. दुसरे महायुद्ध नुकतेच होऊन गेले होते. त्यामुळे त्याचा जनमानसावर फार मोठा परिणाम झाला होता. मानवी जीवन किड्यामुंग्या सारखे बनले होते. यंत्रयुगाने मानसाला भावनाशुन्य बनवले होते. या परिस्थितीचा परिणाम सर्वच साहित्यप्रकारावरही झाला. अशातूनच नवकाव्य, नवकांदबरी, नवकथा, नवनाटय नव्याने जन्माला आले. स्वातंत्र्योत्तर कालखंडात मराठी रंगभूमीला उत्क्रांत अवस्था येत गेली. अशा रंगभूमीच्या प्रवाहात अनेक नाटककारांनी आनखीनच जास्त जोमाने मराठी रंगभूमी विकसीत केली.त्यात प्रवाहाचा विचार करता दलित रंगभूमी, कामगार रंगभूमी, बालरंगभूमी, एकांकिका, नाटिका, भारतीय समांतर रंगभूमी ह्या होत.

यातूनच नाटयवाङ्मयाच्या क्षेत्रात स्त्री – पुरूष संबंधाना तसेच स्त्रियांच्या भावनांचा, सामाजिक स्थितीचा, प्रश्नांचा अतिशय कळवळाने आपले विचार नाटककारांनी मांडले. या बरोबरच स्वातंत्र्योत्तर काळात स्त्री नाटय लेखिका यांच्या लेखनाला अंशत: का होईना सुरूवात झाली. आणि त्यातुन स्त्री – पुरूष असा भेद करण्याचे कारण नाही. तशी आवश्यकताही नाही. स्त्री म्हणून तिचे स्वत:चे अनुभव क्षेत्र असते. त्यात काही आकलनाचे विषय असू शकतात. म्हणून १९४७ नंतर स्त्रीस्वातंत्र्य लढयाची महती निर्माण झाली. तिला स्वत:चे आत्मभान येऊ लागले. त्यासोबतच आर्थिक स्वातंत्र्याच्या दिशा स्पष्ट होऊ लागल्या. नव नवीन कार्यक्षेत्र उपलब्ध झाली. या नव्या जाणिवेतून नवे प्रश्न समस्या निर्माण झाल्या.उद्ध्वस्त होऊ पाहणारी कुटूंब व्यवस्था, कागदावरच राहीलेली समानता, स्त्री–पुरूष संबंधातील नवे आयाम, स्वातंत्र्योत्तर कालखंडातील शिक्षित, सुसंकृत स्त्रीने पाहिले, अनुभवले, भोगले ते सर्व प्रश्न स्त्री नाटयलेखिकांच्या नाटकातून पूर्णत: जरी उतरले नसले तरी आत्मभान आलेल्या स्त्री नाटय लेखिका आपल्या समस्याना वाचा फोडू लागल्या. एक ठाम जीवनदृष्टी बाळगुन नाटय लेखन करणाऱ्या लेखिकांचा उदय या काळात झाला.यात गिरजाबाई केळकर, 'हीच मुलीची आई', मालती तेंडुलकर 'मराठ्यांचा राजा', शकुंतला पराजपे 'चढाओढ', वनिता देसाई 'म्हाराची पोर', माई वरेरकर 'काकाची शशी', अनुसया वाघ, 'बालसंवाद', आनंदीबाई किर्लोस्कर' नव्या वाटा' ज्योती मापसेकर, 'मुलगी झाली हा' इत्यादी होत. नाटयवाङ्मयाच्या क्षेत्रात स्वातंत्र्योत्तर कालखंडात जी संमृद्धी आल्याचे दिसते या काळातील नाटकांचे स्वरूप सुटसूटित, सफाईदार आहे. मराठी रंगभूमी नव्या सौंदर्याने आणि सामर्थ्याने संपन्न करण्याचा प्रर्यत्न स्त्री नाटय लेखिका करू लागल्या. त्यामधून वेगवेगळ्या स्त्रीविषयक समस्यांना हात घालण्याचा प्रयत्न करू लागल्या. स्त्रियांच्या दु:खाचा शोध घेण्याबरोबरच स्वत्व:साठी आत्मसन्मासाठी स्त्री मुक्तीच्या लढ्याची उभारणी करण्याचा प्रयत्न केला आहे. या व्यतिरिक्त मराठी नाटयसृष्टीला विविध अंगानी बहर आणण्यासाठी या कालखंडात सामाजिक, कौटुबिक, राजकिय, पौराणिक, विनोदी, फार्स, कल्पनारम्य, भक्तिरसप्रधान, मनोविश्लेषणात्मक, आत्मचरित्रात्मक, ऐतिहासिक, शास्त्रीय अशा विविध विषयावर नाटय लेखन केलेले दिसतात.

सारांश:–स्वातंत्र्योत्तर कालखंडात मराठी रंगभूमीच्या स्वरूपाच्या वाटचालिचा विचार करतांना नाटकाची ऐतिहासिक पार्श्वभूमी , व्याख्या यांचा आढावा घेण्यात आला. आशय–विषय आणि प्रयोग या बाबतीत खुपच विकसित झालेली दिसते. प्रेक्षकांचे रंजन करतांना विविध परिवर्तनवादी विषय मांडण्याचेही प्रयत्न मराठी नाटककाराकडून झालेले आहेत. व्यवसाय आणि सामाजिक समस्या या दोन्ही बाबीकडे मराठी नाटककारांनी लक्ष दिल्याचे दिसते. मराठी नाटकांच्या वाटचालित दलित रंगभूमी ही वेगळ्या जिवनानुभूतिची नाटके सादर करणारी रंगभूमी आहे. दलितांच्या समस्या आणि प्रश्न यांना केंद्र माणून दलित नाटककारांनी नाटके लिहिली. नाटकबरोबरच पथनाटय ह्या प्रकारही या नाटककारांनी प्रभावीपणे वापरल्याचे दिसते. याच काळात स्त्रीयांच्या विविध प्रश्न आणि समस्यांना वाचा फोडणारे नाटकही 'मुलगी झाली हो' (ज्योती मापसेकर) या नाटकानेही वादळी चर्चेचा विषय बनले.स्वातंत्र्योत्तर काळातील मराठी नटकातून सामाजिक प्रश्न जसे मांडले आहेत. तसेच प्रेक्षकांसाठी 'हिट अँड हॉट' प्रकारने नाटकेही लिहिले आहेत.

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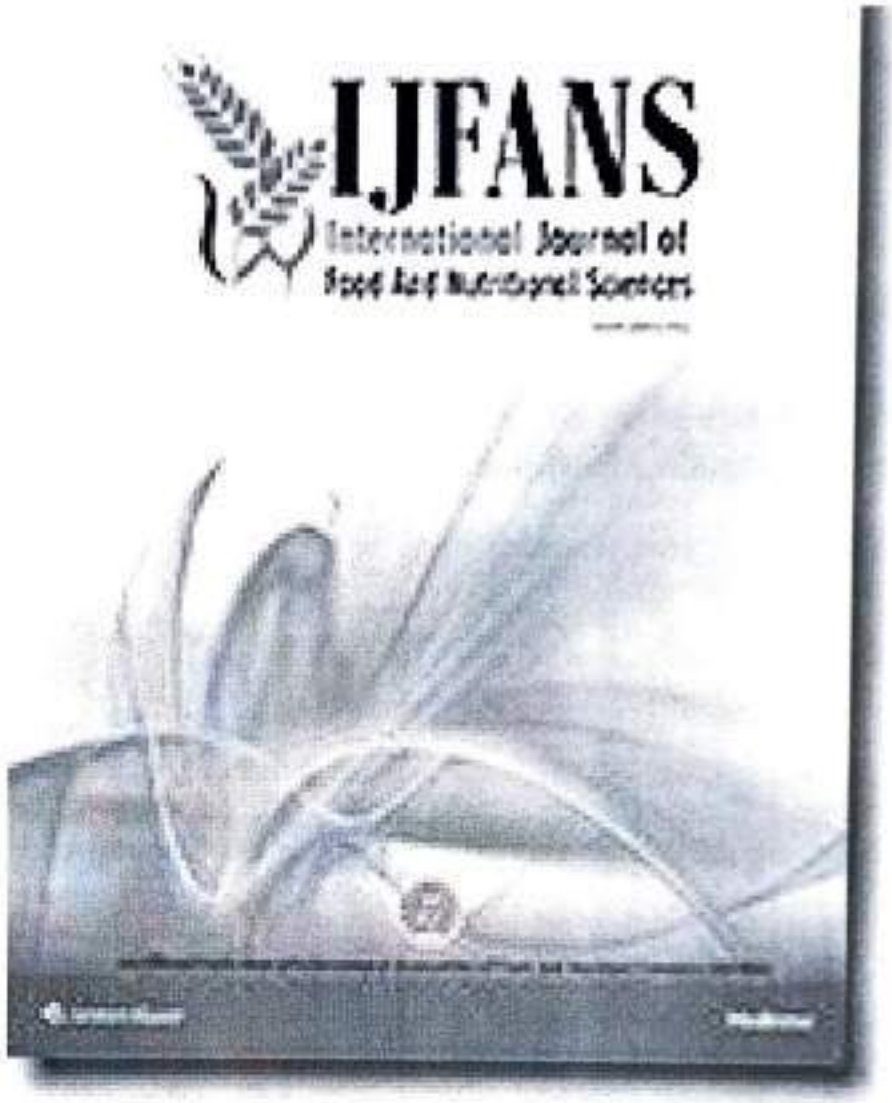

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AFFECT OF GLOBALIZATION ON CLIMATE CHANGE AND FOOD PRODUCTION : A GEOGRAPHICAL STUDY

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Abstract:

Climate change ensues due to Global Warming causing decreases in agricultural production. It possibly began with development which was followed by a fast growth of fossil petroleum ingesting. This question has drawn international attention since the 1970 and it has been extensively recognized by scientists that the Greenhouse gas formations are the reason of global warming. Global warming and climate change can effect agriculture in a variety of ways. This paper means to deliberate about the causes and impact of Global warming on agriculture area.

Key Word: Global Warming , Agricultural, Climate change, Crop produce.

Introduction:

The impact of Global Warming can affect Agriculture production and food security. The research hence looks into how adaptation can take place along with alleviation and how these steps can integrate into the overall development methods and program. It is the fact that agriculture still offers a livelihood for the most of the people particularly the underprivileged throughout the world. 15% population lives in India out of the world population. Agriculture performs a vital role in the comprehensive economic and social progress of India. The most approaching weather changes in present time is the increase in the atmospheric temperature due to increased level of Greenhouse gases Carbon -dioxide, methane nitrous -oxide and chlorofluorocarbons. There is a wonderful growth in the temperature of earth surface and sea water. During 1951 to 2005 the normal temperature of the earth was 0.74° to 1.33° Fahrenheit, do climate change.

Agricultural facilities add to around 20% of the yearly rise in anthropogenic greenhouse gas issue. Agricultural sector adds to global warming through carbon-dioxide, methane, sulpher-dioxide, nitrous-oxide and chlorofluorocarbon [cfcs]. The growing attentions of those dangerous or Green House gases, there is much nervousness about future variations in our weather and direct or indirect influence on farming.

Objective :

1⅛ To determine the variation of crop Production.

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2½ To calculate the changing in Ecosystem.

3½ To determine the Climatic effects on food Production.

Evidence of climate change

The most convincing climate change evidence scientists have of climate change is long term data connecting atmospheric CO2 levels and global temperature, sea level, the area of ice, the relic record and the distribution of types.

This data, which goes back billions of years, shows a robust correlation between CO2 levels and temperature. Recent data shows a trend of increasing temperature and growing CO2 levels start in the early 19th century. Because all parts of the global climate are connected, scientists have been able to generate models of how changes produced by heating should work their way through the whole system and appear in different areas, for example, sea level, intemperate weather, the movement of fish species in the ocean.

Testing whether or not forecast alterations have occurred is an important way to confirm important theory.This can be done in two ways.First, it is imaginable to load a model with important data and request.How well does this model forecast what we know happened. A second way to test is to use the model to forecast upcoming changes and then to see if emerging reality turns. It is possible to way the rapid departure of glaciers and observe the summer melting of the Polar Ice Cap. Sea levels are rising evidently, the temperature of the world's oceans is clearly rising and consequently many fish type are moving to follow waters that are the right temperature for them.Relating these changes to the timing of rises in CO2 levels and temperature suggests relationship. In specific occurrences, for example, CO2 levels, temperature and ocean pH, the chemical progresses are noticeable showing finished fundamental connection.

Visual Effects of Climate Change Evidence

Melting Glaciers

Rising Sea Levels

Flooding

Worsening Droughts

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Changing in ecosystems

As the world warms, whole biomes will transfer. Before increasing temperatures at the equator consume lacking such main crops as rice north into once cooler areas, many fish types have migrated long distances to stay in waters that are the proper temperature for them.

In once colder waters, this may increase fishermen's catches; in warmer waters, it may eliminate fishing; in many places, such as on the East Coast of the US, it will need fishermen to go further near feast angling lands. Farmers in temperate regions are conclusion drier environments hard for crops such as slop and wheat, and once main rising regions are now weak. Some areas may see complete ecological transformation. In California and on the East Coast, for example, climate change impacts and warming will soon fundamentally change the forests; in Europe, hundreds of plants species will disappear and hundreds more will move thousands of miles.

How climate affects :

Climate change can distressed farming in several ways. Outside a definite range of temperature, warming inclines to decrease crops because crop speed through their progress, creating a reduced amount of grain in the procedure. The greater temperature, also restrict the aptitude of plants to get and use humidity. Evaporation from the soil hastens when temperature increase and plants growth transpiration. That is dropping wetness from their leaves. Because worldwide warming is perhaps to increase rainfall, the net influence of advanced temperatures on water availability is a competition between better evapotranspiration and greater precipitation. Usually, that race is accomplished by increased evapotranspiration.

Finally the climatic change could upset agricultural in numerous manners:

- Production, in terms of number and standard of crops.
- Agricultural practices, through variations of water consumption [Irrigation] and agricultural. Contributions such as herbicides, pesticides and fertilizers.
- Environmental effects, in specific in relation of frequency and intensity of soil. Drainage, soil erosion, reduction of crop change.
- Rural space, over the loss and gain of cultivated land, land conjecture, land renunciation, and hydraulic amenities.

Adaptation, organisms can develop more or less competitive, as well as humans may develop urgency to develop more competitive, organisms, such as flood resistant or salt resistant varieties of rice.

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The big misgivings to find, particularly because there is lack of information on countless particular, local regions and contain the uncertainties on greatness of climate change, the impacts of technological changes on efficiency, global food demands, and the several capabilities of variation.

Most of the agronomists believe that, agricultural production will be regularly affected by the harshness and place of climate change, not so much measured trends in climate. If change is measured, there may be adequate time for biota adjustment. Rapid climate change, however, could harm agricultural in many countries, especially those that are already suffering form rather poor soil and climate conditions, because there is less time for optimum natural selection and change.

India and Global Warming affects:

In India different produce are developed by varied farming means in fifteen Agro-climate regions these farming crops are intensely affected by global warming that take to climate variations. It is fact that Indian agriculture is based on rainwater for irrigation. Indian agriculture regularly go through that, certain area of is scarcity disposed to and the other sectors are inclined to inundating initial part of many parts in India, have been fighting with drought and simultaneously, agrarian soil is drenched with inundations. In such a nation, the impact of Global Warming will be hazardous as weather change is supposed to influence on agrarian output and changing crop system. As a developing country India is poorly prepared to face Global Warming which exaggerated such dangerous weather change. The lassitude in government technology will turn it harder to deal with this question. The issue will be more critical and it is understandable from the point that, if the normal temperature is a by one degree Celsius it takes to augmented melting of the glaciers of Himalaya.

Climate change and Food Production:

One of the maximum attractive impacts of increasing temperatures is touched in World agriculture, though these effects are touched very differently in the largely temperate developed world and in the more tropical developing world. Different crops grow best at quite exact temperatures and when those temperatures change, their production changes meaningfully. In North America, for example, growing temperatures may decrease corn and wheat productivity in the US mid-west, but increase production and production north of the border in Canada. The productivity of rice, the main food of more than one third of the world's population, failures 10% with each 1° C growth in temperature. Previous climate persuaded problems have been balance by major advances in rice technology and always larger applications of fertilizer; prospects are that in Thailand, the world's largest exporter of rice, though, upcoming increases in temperatures may decrease production 25% by 2050. At the equal period, global population models suggest that developed world will add 3 billion people by 2050 and that developing world food producers must dual main food crop production by then just to uphold present levels of food ingesting.

Climatic inconsistency and occurrence of dangerous actions are key doubts for the Indian subcontinents. In India, the study of recurring and yearly outside air temperatures has uncovered a important warming leaning of 0.57° Cen. per hundred years. The warming is seen to be principally added by the post–monsoon and winter seasons. The monsoon temperatures do not display a important leaning in any main area of the nation. Like warming leaning has also remained understood in Pakistan, Nepal, Srilanka, and Bangladesh. The rainwater differences in India take remained typically chance over a Century, with no systematic difference obvious in

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summer monsoon season. But, parts of rising propensity in the episodic rain take continued implicit through the West Cost, North Andhra Pradesh and Northwest India and those of decreasing tendency done East Madhya Pradesh, Orissa and Northeast India during changed years.

Conclusion:

The climate change, as observed through inclinations of temperature increase and increased Co2 attention, is matter of primary concern. The various studies for measuring its impact on Farming area has increased .Crop progress models have been revised and assessed for many significant crops of this area under different climate variation conditions. But most of the result occur to be area exact and with fixed deductions. Accuracy in evaluating the extent of the climate change on higher spatial and temporal determination scale is the key requirement for exact assessments of the influence. Indian farming is probable to experience damages because of heat, unreliable weather, and declined irrigation availability. Adaptations policies can help minimize negative influences. This requires research, funding, and policy support.

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बहिणाबाई चौधरी यांच्या काव्यातील ग्रामीण जीवनाचे दर्शन

प्रा.कांतीलाल झोलबाजी लाडे

यशवंतराव चव्हाण कला वाणिज्य व विज्ञान महाविद्यालय लासलगाव ता.निफाड जि.नाशिक

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प्रास्ताविक :—

१९६० नंतर मराठी साहित्य जे अनेक प्रकार निर्माण झाले त्यात ग्रामीण साहित्य हा महत्त्वाचा प्रवाह आहे. नवा आशय, जिवनाचे नवे क्षेत्र मराठी वाचकांसाठी ग्रामीण साहित्याने खुले करून दिले.

'ग्रामीण' या शब्दातून ग्राम—गाव—खेडे यांची रचना, त्यांचे स्वरूप, वैशिष्टे समजून घेण्याला ग्रामीण साहित्य ही संकल्पना स्पष्ट होते.

व्याख्या —

ज्यात आजचे व कालचे ग्राम जीवन, त्याचे मनोव्यापार सांस्कृतिक संकेत आणि सर्वांगीण स्वरूप व्यक्त होते असे म्हणता येईल... (गो.म.कुलकर्णी) ग्रामीण साहीत्याचे केंद्र ग्रामव्यवस्था आहे.ग्रामव्यवस्थेचा केंद्रबिंदू शेतकरी आहे असे प्रमोद मुनघाटे यांनी मान्य केले आहे. ग्रामीण साहित्य म्हणजे ग्रामिणांनी ग्रामिणाचे अस्सल जीवनदर्शन घडविणारे देशी बळणाचे साहित्य होय असे श्रीराम गुंटेकर यांनी व्याख्या केली आहे.

ग्रामिण साहित्यात कथा,कादंबरी,कविता इ.प्रकारचा समावेश होतो.या दृष्टिने बहिणाबाई चौधरी यांच्या कवितेतील ग्रामीण दर्शन घडवून आणणे हा या शोध निबंधाचा विषय होय.

उद्दिष्टये —

बहिणाबाई चौधरी यांच्या काव्यामुळे ग्रामीण जीवनावर पडलेला प्रभाव अभ्यासणे हा शोधनिबंधाचा प्रमुख उद्दिष्टये आहे.तर बहिणाबाईच्या जीवन चरित्राचा परिचय घडवून देणे हा दुय्यम उद्दिष्टये आहे.

जीवन चरित्र्य —

आधुनिक मराठी कवितेच्या क्षेत्रात बरेच कवी,विदवान व्यासंगी होते पण बहिणाबाई चौधरी या अशिक्षीत होत्या.बहिणाबाई चौधरी यांचा जन्म २४ ऑगस्ट १८८० रोजी खानदेशातील असोदा या गावी झाला.असोद हे गाव जळगाव जिल्हयात आहे.त्याच्या वडीलाचे नाव उखाजी महाजन तर आईचे नाव भिमाई होते.बहिणाबाई एकूण सहा भावंडे होती.त्यात तीन बहिणी व तीन भाउ होते.

इ.स.१८८० हा काळ भारतीय पारतंत्र्याच्या काळ होता.भारतावर ब्रिटीशाचे राज्य होते या कालखंडात भारतीय सुधारकांची दुहेरी लढाई सुरू होती.एक सामाजिक सुधारणेसाठी समाजातील अनिष्ठ रूढीविरूदध लढा सुरू तर दुसरीकडे भारतीय स्वातत्र्यासाठी लढाई सुरू होती. अशा संघर्षाच्या काळात बहिणाबाईचा जन्म झाला होता.तत्कालीन रूढीप्रमाणे वयाच्या १३ व्या वर्षी जळगावच्या नथुजी चौधरी याच्या सोबत बहिणाबाईचा विवाह (लग्न) झाले.बहिणाबाईना सासर एकत्र कुटूंब पदधती होता.परंतू घरगुती वादामुळे त्याना विभक्त राहण्याचा प्रसंग आला व नव्याने संसार सावरतांनाच त्याचा पतीचा म्हणजेच नथुजी चौधरी याचा १९१० ला मृत्यू झाला.

बहिणाबाई हया तीन लेकरं व थोडीशी शेतजमीन हयावर संसार करताना त्याना फार त्रास सहन कराव लागला.तत्कालीन समाजात एक विधवा म्हणून जगताना बहिणाबाई याना अनेक समस्यांना तोंड दयावे लागले.शेतातील व दैनंदिन कामे करताना मन रमविण्यासाठी त्याना त्याच्या स्त्रियांनी गीताचा आधार घ्यावा लागला.ओव्या,गीत,अभंग म्हणून त्या कामे करीत असत.या जीवनातील हिंदोळयावर वेगवेगळे विषय हेच बहिणाबाई चौधरी याच्या कविता आहेत.असा बहिणाबाईचा मृत्यू ३ डिसेंबर १९५१ ला झाला.

ग्रामीण कवितांचा अभ्यास —

घरातील व शेतातील काम करतांना बहिणाबाईला काव्य सुचले आणि काव्य मराठी कवितेत अजरामर झाले.

बहिणाबाई चौधरी यांच्या 'अरे संसार संसार ' ही कविता ग्रामीण कवितेच्या दृष्टिने महत्त्वाची आहे.संसारीक मानसाला उपदेश करताना म्हणतात

अरे संसार संसार
जसा तवा चुल्हयावर
आधी हाताला चटके
मग मिळते भाकर

संसार हा सुख दु:ख याचे मिश्रण आहे.कोणतेही कार्य करताना त्रास सहन करावाच लागतो जशी पोटासाठी भाकर मिळविण्यासाठी काबाळ कष्ट करावाच लागतो अशा निसर्गातील अनेक उदाहरण देवून काकडी,भिलवा,सागरगोटी,इत्यादीचे गुणधर्मही आणि महत्व सांगितलेले आहे त्याचप्रमाणे मनाची अवस्था मांडताना बहिणाबाई चौधरी म्हणतात.पृथ्वीवरचा माणूस हजार पटीनेही मानव आहे.परंतू त्याचे मन किती चंचल आहे हे सांगताना.

मन पाखरू पाखरू
त्याची काय सांगू मात
आता व्हत भुईवर
गेल गेल आभायात

मानवी मन हे अतिशय चंचल आहे.उभ्या पिकात राहणाऱ्या ढोरासमाणे, पुन्हा पुन्हा उभ्या पिक खाणाऱ्या खोडकर जनावरासारखे तर शेंडयावेळापूर्वी जमिनीवर असणारे मन क्षणात आभाळाकडे स्वार होतांना दिसते.

घर कसे असावे हे सांगताना ' खोपा ' कवितेतून मांडलेले आहे

असे खोप्यामधी खोपा
सुगरणीचा बांगला
पहा पिलासाठी तीन
झोका झाडाला टांगला

सुगरण पक्षी हे आपल्या वास्तव्यासाठी एक छोटेसे घरटे बांधलेले आहे आणि पाळण्या प्रमाणे झाडाला बांधलेला आहे.त्याची लहान लहान पिल्ली त्यावर असुन झोके घेत आहे अशा सुंदर निटनेटकी घराची अवस्था शेतकरी,कष्टकरी,मजूर यांच्या झोपडयांची घराची असते अशी ग्रामीण वातावरण बहिणाबाई चौधरी यांनी आपल्या कवितेतून मांडलो आहे.

धरीत्रीच्या कुशीमध्ये बिय बियाण निजलं
पल्ले पसरली माती जशी शाल पांघरली

शेतात पेरणी झाल्यानंतर बियाण जमिनीत निजण्याची आणि मातीची शाल पांघरल्याची कल्पना बहिणाबाईंनी किती सुंदर मांडलेली आहे.

सासुरवासीन पोरीचा जिव्हाळ्याचा विषय,माहेर,माहेरच्या गोष्टी , माहेरचा माणूस असो वा वस्तू तिला भारी आनंद आणि माहेरी जायच म्हटल की डोळ्यासमोर उभ्या राहतात ती माहेर,माहेरची माणसं,वाहणारी नदी,माहेरला जाणारी वाट,

लाभे पायाला चटके
रस्ता तापी सानी लाल
माझ्या माहेरची वाट
माले वाटे मखमल

आजच्या काळात लोकांची जिवनशैली बदलत चाललेली आहे.माणूस समाजात वावरत असूनही एकाकी होत चाललेला आहे.सगळयांना सोबत घेउन पुढे न जाता एकटयाने हित स्वार्थी वृत्ती असलेल्या मानसाला बहिणाबाई चौधरी विचारतात

मानसा मानसा , कधि होशिल मानुस
लोभासाठी झाला , मानसाच रे कानुस

जीवन जगत असतांना आनंदी जिवन जगावे.मानसाने कसे असायला हवे ते मांडतात

बिना कपाशीन उले,त्याले बोंड म्हणू नही
हरी नामाईना वाले,त्याठी तोंड म्हणू नही

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अशा सहज वाक्य रचनेतुन त्यांनी ग्रामीण शेतकरी , खेडे गावातील मग, चालीरीती उत्सव इत्यादी मधुन आपल्या कवितेतून सहज साकारल्या आहेत.

शेतात काम करत असताना उन,वारा,पाउस,पशु—पक्षी अशा अनेक घटकाशी त्यांचे नाते जुळल्या गेले आणि त्यातुनच त्यांना ओव्या,कविता,गाणी सुचु लागले व त्या ओव्या,गाणे दळण दळतांना घरातील कामे करताना,शेतातील कामे करताना म्हणून लागल्या तेव्हा त्यांना मुलगा सोपान देव किंवा त्याचा मावसभाऊ त्या लिहून ठेवत असत बहिणाबाई चौधरी यांच्या मृत्यू नंतर त्या कवितेची वही त्यांनी आचार्य अत्रे यांना दाखविली त्या कविता जेव्हा आचार्य अत्रे यांनी वाचल्या तेव्हा त्यांना "बावन कशी सोनं आहे कुठे होता हा खजिना ! " सापडल्यासारखे वाटत आहे असा अमोल साहित्य/कविता महाराष्ट्रीय जनतेपासुन लपवून ठेवणे बरे नव्हे त्यामुळे १९५२ मध्ये आचार्य अत्रे यांच्या सहकार्याने ('बहिणाबाईची गाणी') या पुस्तकाची पहिली आवृत्ती प्रकाशित झाली.

समारोप —

बहिणाबाई चौधरी ह्या अशिक्षित होत्या तरी त्यांनी शेतात व घरकाम करताना ज्या ओव्या,गाणी गाईल्या त्या आजच्या ग्रामीण जीवनातील जनतेसाठी आवश्यक आहेत अभ्यासाच्या दृष्टीने समाजोपयोगी दिसुन येतात त्यांच्या या ग्रामीण काव्याचा आजही त्यांचा प्रभाव समाजावर दिसून येतो.

संदर्भ सुची —

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५. मालशे स.ग.—शोधनिबंधाची लेखण पदधती, प्रथमावृती,सुविचार प्रकाशन मंडळ — पुणे —नागपूर १९७५,पुन:मुद्रण १९८८

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A REVIEW ON SUBSTITUTIONAL EFFECT OF DIVALENT IONS ON COBALT NICKEL FERRITE

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Abstract:
Ferrites belong to the class of materials which are best known for their wide range of application. Among ferrites, structurally Spinel Ferrite is simplest of them which crystallize into the spinel structure with excellent properties like high saturation magnetization, coercivity, and better thermal and electrical properties. Among spinel ferrites, Cobalt-Nickel ferrites find their space in a variety of applications because of their unique properties when compared to other ferrite family members. Co-Ni ferrites possess high magnetocrystalline anisotropy, unique magnetic structure and high correlation between the coercivity, crystallite sizes and sample preparation pressure due to their significant magnetostriction properties cobalt-based compositions are one of the most promising candidates for applications in magnetomechanical and magnetoelectric sensors. Co-Ni ferrites are the key electronic materials used high-frequency applications in the telecommunication field and also in high-density digital recording disks, audio/video tapes, high-quality filters, rod antenna radio frequency circuits, transformer cores, read/write heads for high-speed digital tape, operating device etc. This review work offered a versatile way in which the structural, electrical and magnetic properties of Cobalt Nickel nanoferrites can be influenced by the substitution of various divalent dopant ions.
Keywords: Ferrites, Spinel Ferrite, Cobalt-Nickel ferrites, Saturation Magnetization, Coercivity, magnetocrystalline anisotropy.

1. INTRODUCTION:

The structural, magnetic and electrical properties of the spinel ferrites are typically determined by the nature, valency and amount of dopant, their site preference and the distribution of iron and metal ions in the octahedral and tetrahedral sites of the spinel lattice [1,2]. The aspects which regulate the distribution of cations in spinel ferrite are the cations ionic radii, site preference of ions, Madelung energy and crystal field effects [3,4].
CoFe2O4 is one of the most significant ferrites that find its place under the class of hard magnetic materials. It has reportedly illustrated very high value of saturation magnetization and coercive field along with its exceptional thermal stability and high anisotropy field [5–8]. However, NiFe2O4 belong to the class of soft magnetic material exhibiting low saturation magnetization and coercivity, low electrical conductivity and thus low eddy current losses

along with high electrochemical stability [9–12]. Nickel ferrite exhibits high corrosion resistivity, magnetostriction, magneto crystalline anisotropy and magneto-optic properties; which make this material beneficial in many applications like recording media with optical wave guide, magnetic static wave devices and surface acoustic wave transducers [13]. CoFe2O4 and NiFe2O4 are prominent materials for numerous applications such as microwave devices, recording media, gas sensors, drug delivery, computer memory cores, high density information storage, telecommunication, low energy inductors, medical instruments, catalysts, high frequency transformers, microwave and dye absorbers [14–18]. As a consequence, the substitution of Ni ions in CoFe2O4 ferrite results in a magnetic compound that would have the characteristic of both spinels and inspires its use in many other potential applications. Their physical properties can be modified by altering the chemical composition, grain size, morphology and lattice strain [19–22] According to the exchange-coupling theory, nanocomposites permanent material can possess the high coercivity of hard phase and the high remanence of soft phase at the same time [23]. Insertion of Co2+ in NiFe2O4 produces mixed CoNiFe2O4 ferrite, usually, with both Co2+ and Ni2+ cations in octahedral (B) sites, slightly changing the cell parameter of the cubic spinel NiFe2O4. On the other hand, doping of cobalt (Co) in NiFe2O4 makes improvements in (i) the magnetocrystalline anisotropy (and consequently the magnetization) and (ii) the coercivity (Hc) enhancing its application potential in magnetic recording [24].

Earlier studies established that embedded Ni-Co ferrites possess high magnetocrystalline anisotropy, unique magnetic structure and high correlation between the coercivity, crystallite sizes and sample preparation pressure [25]. Amongst all spinel ferrites, due to their significant magnetostriction properties cobalt-based compositions are one of the most promising candidates for applications in magnetomechanical and magnetoelectric sensors [26,27]. Moreover, Ni-Co ferrites are vital electronic materials employed in electronic devices suited for high-frequency applications in the telecommunication field [28] and also suitable for many practical applications such as high-density digital recording disks, audio/video tapes and so on. These materials are commercially used in high-quality filters, rod antenna radio frequency circuits, transformer cores, read/write heads for high-speed digital tape and operating devices [29,30].

In order to synthesis Cobalt Nickel ferrite nanoparticles, researchers used various techniques and methods like, Sol–gel [31], Micro-emulsion [32], Reverse emulsion-assisted hydrothermal process [33], Combustion synthesis [34], High energy ball milling [35] and Hydrothermal method [36]. In the present study we are going to review substitutional effect of divalent ions on structural, magnetic and electrical properties of Co-Ni Ferrite.

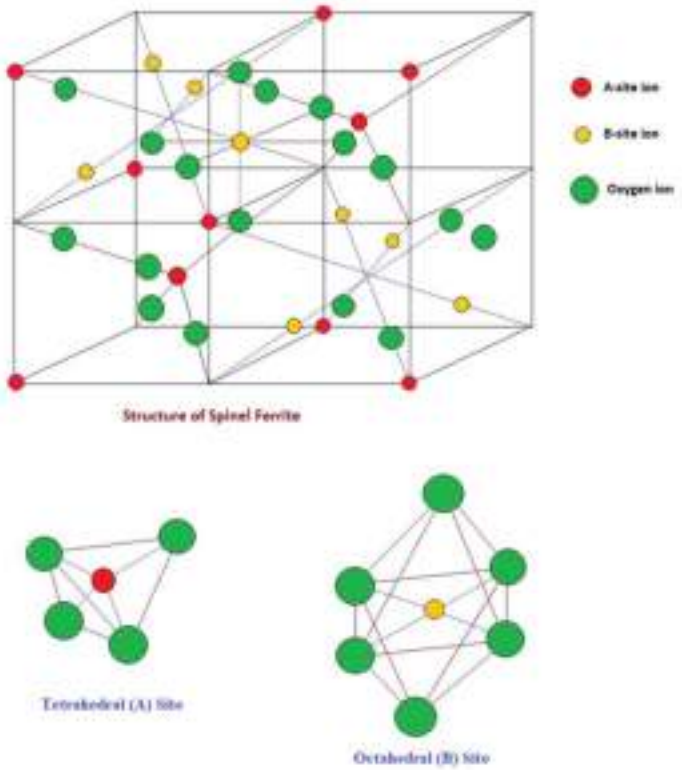


Figure 1: Structure of Spinel Ferrite

2. STRUCTURE OF SPINEL AND CO-NI FERRITE:

Ferrites are basically mixed metal oxides with iron (III) oxides as their principal component broadly crystallize in three crystalline structures; spinels (AB_2O_4), garnet ($A_3Fe_5O_{12}$) and magneto plumbite ($AFe_{12}O_{19}$) where A and B are metal ions. Structurally Spinel Ferrite is simplest of them which crystallize into the spinel structure and determined by the oxygen ion lattice. Spinel ferrites are oxides that have a cubic crystal structure, where the oxygen anions form a face-centered cubic (FCC) lattice. Spinel ferrites have a general formula AFe_2O_4, where A represent divalent ions, such as Fe^{2+}, Cu^{2+}, Mg^{2+}, Zn^{2+} etc. The crystal structure can be considered as a cubic close-packed arrangement of O^{2-} anions, with cations occupying the tetrahedral and octahedral sites. In normal spinels, divalent cations reside on one-eighth of the tetrahedral sites and one-half of the octahedral sites are occupied by Fe^{3+} ions. Whereas the Inverse spinel ferrites are better expressed as $Fe^{3+}\ (AFe^{3+})\ O^{4}$, indicating that half of the Fe^{3+} ions occupy tetrahedral sites and the remaining half, together with the A^{2+} ions, occupy the octahedral interstitials. Between these two structural models there exist spinel ferrites with a variable cation distribution and the stoichiometry of which can be represented by the general formula

$$(A^{2+}{}_{(1-\delta)},\ Fe^{3+}{}_{\delta})^{tet}\ [A^{2+}{}_{\delta},\ Fe^{3+}{}_{(2-\delta)}]^{Oct}\ O^{4},$$

where parentheses denote the tetrahedral interstitial sites; brackets signify the octahedral interstitial sites δ is the inversion degree of the spinel [37].

Normally, in AB_2O_4 structure divalent ion is bigger in size than that of trivalent ion. Former occupies octahedral site while latter occupies tetrahedral site with some exceptions. In nickel

and cobalt ferrite divalent metal ion (Co^{2+} and Ni^{2+}) occupies octahedral site and Fe^{3+} ions occupy half at tetrahedral and octahedral each forms inverse spinel structure. The cation distribution between A- and B-site depends on the ionic radii, the type of bonding and the preparation method. This cation distribution decides the structural, electrical and magnetic properties for a particular ferrite system at and well above room temperature [38].

The Nickel ferrite is a well- known cubic spinel ferrite, which lies under the class of inverse spinel ferrite. The general formula of inverse nickel ferrite is $[Fe_{\delta}^{3+}]_A\ [Ni^{2+}Fe_{2-\delta}^{3+}]_B O_4^{2-}$ where 'δ' is the degree of inversion. It is normal spinel if $\delta = 0$ and inverse spinel structure when $\delta = 1$. The Fe^{3+} cations are distributed between A-site and B-site but Ni^{2+} reside only at B-site. The ferric ions ratio $(Fe_A^{3+})/\ (Fe_B^{3+}\ )$ indicates the degree of inversion [39]. $CoFe_2O_4$ has a partially inverse structure and it is a well-known hard magnetic material, with relatively high values of saturation magnetization and coercivity. $NiFe_2O_4$ is a completely inverse spinel and it behaves as a soft magnetic material (with high saturation magnetization and low coercivity) [40]. These properties make these ferrites very promising candidates for a variety of applications in biomedical, electronic as well as recording technology [41–43].

The unit cell of spinel cubic structures contains 32 oxygen atoms with 8 tetrahedral (A) and 16 octahedral (B) occupied sites [44]. Usually, Co and Fe ions accommodate both at A and B-sites while Ni ion occupy B sites. Hashim et al. [45] have reported synthesis of Co-Ni Ferrite and observed distribution of Co^{2+} and Fe^{3+} over both tetrahedral and octahedral site while Ni^{2+} preferentially occupying octahedral site. However, Kumar et al. [46] reported most of the octahedral site are occupied by Ni, Co and Fe ions and tetrahedral site are occupied by only Fe ion in $Co_{1-x}Ni_xFe_2O_4$.

3. DIFFERENT DIVALENT DOPINGS IN CO-NI FERRITE:

3.1 Copper

Many researchers have reported effect of Cu on structural, dielectric and magnetic properties of Co-Ni Ferrite. In 2011, Ghazi et al. [47] studied Ni-Co-Cu nanofilms grown on phosphor-doped Si substrate by electrodeposition technique at different electrolyte temperatures. All the films with FCC structure show increasing grain size with raising electrolyte temperature. Saturation magnetization show significant upsurge at the electrolyte temperature of 65 °C and decrease in coercive field with increase in the electrolyte temperature. Babu et al. in 2018 [48] synthesized single phased $Ni_{0.7}\ Co_{0.3-x}\ Cu_x\ Fe_2\ O_4$ (x = 0.0, 0.05, 0.1, 0.15 and 0.2) nanocrystalline ferrites using the sol–gel method. They observed that the difference in the ionic radii of Co^{2+} and Cu^{2+} led lattice constant to increase from 8.3442 to 8.3693 Å with increasing doping concentration. The average crystallite size found to be ranged from 10.92 to 12.61 nm with average grain size of approximately 10 μm. The cation distribution studies confirmed that copper ions occupied the octahedral site. The dielectric study confirms normal dielectric behaviour of spinel ferrite where dielectric constant and dielectric loss tangent and the initial permeability are found to decrease with increasing frequency attributed to hopping mechanism. They found increase in DC resistivity with the frequency up to 6 MHz and then decreased gradually, indicating a change in the magnetic ordering from ferrimagnetism to paramagnetism. The resistivity increased as the dopant concentration increased. The observed g-value

determined by ESR reduced linearly with increasing the magnetic field and dopant concentration. Balavijayalakshmi et al. (2014) [49] prepared $Co_{0.4}$ $Ni_{0.4}$ $Cu_{0.2}$ Fe_2 O_4 nanoparticles co-precipitation method with different sintering temperatures and studied its structural and magnetic properties. FTIR studies confirm absorption bands at around 590 cm^{-1} and 435–427 cm^{-1} respectively. Their observation suggests enhanced crystallinity, increased particle size and shifting of absorption bands toward lower values with increasing sintering temperatures. It is observed that the saturation magnetization (Ms), remanent magnetization (M_r) and coercivity (H_c) values of samples are increasing the sintering temperature. A saturation magnetization of 48 emu/g and coercivity of 1151O_e are obtained for the samples sintered at 900 ^{0}C.

Abdelmajid et al. [50] reported synthesis of single-phase Cu_x $Co_{0.5-x}$ $Ni_{0.5}$ Fe_2 O_4 with x= (0.1, 0.2, 0.3, 0.4) ferrites by the co- precipitation method. Both lattice constant and crystallite sizes are found to be decreasing with respect to Cu^{2+} doping content and lie in the range 8.294 to 8.346 Å and 38 to 21 nm respectively. The morphological study confirmed the presence of uniform and cubic-shaped and agglomerated samples. It is observed that increasing copper content enhance magnetic properties due to the increase in B–B exchange interaction induced anti-parallel spin coupling. Rajasekhar Babu et al. (2017) [51] reported study of single-phase $Co_{0.5}$ $Ni_{0.5-x}$ Cu_x Fe_2 O_4 (x=0.0, 0.1, 0.2, 0.3 and 0.4) ferrite nanoparticles prepared through Sol-gel auto combustion method. The observed values of lattice constant show increasing trend with respect to Cu content, but no significant change on crystallite size. Grain size ranges from 0.391 μm to 2.752 μm. Grain size, Bulk density, X-ray density increases while the porosity decreases with the substitution of Cu concentration. Magnetic study reveals the increase in Saturation magnetization and the magnetic permeability with increase in doping concentration. In their study, it is seen that the magnetic coercivity (H_c) decreases from 885 to 191 Oe due to the reducing magnetocrystalline anisotropy with the copper incorporation. Dielectric study reflects semiconducting nature of ferrite with augmented DC resistivity and activation energy due to lowering of hopping of charge carriers between ferrous and ferric ions at octahedral B sites.

Ramakrishna et al. (2018) [52] fabricated $Co_{0.5}$ $Ni_{0.1}$ $Cu_{0.4}$ Fe_2 O_4 using the sol-gel auto combustion technique and found to have lattice constant 8.4773 Å and crystalline size of 43 nm. SEM study reveals smooth, well-arranged grains of polygonal structure having clear grain boundaries. Saturation magnetization and remanent magnetisation of the sample $Co_{0.5}$ $Ni_{0.1}$ $Cu_{0.4}$ Fe_2 O_4 is found to be 59.55 emu/gm and 7.92 emu/gm respectively. While the Coercivity is recorded to be 197.5 O_e. Devan et al. [53] synthesized $Ni_{0.93}Co_{0.02}Cu_{0.05}Fe_2O_4$ as a ferrite phase and BaTiO3 as a ferroelectric phase by normal ceramic method and studied the effect of temperature on dielectric properties of the prepared sample. The observed improved dielectric properties and hysteresis behavior suggested its potential to be useful in making the memory devices more stable and reliable for spintronic application and magnetic sensors. Shakir et al. [54] investigated Cu^{2+} and Mg^{2+} co-substituted $CoNiFe_2O_4$ and found lattice constant and crystalline size to be improved with respect to doping concentration. Crystalline size ranged in 18.71-29.93 nm. They observed increase in electrical conductivity due to the replacement of less conductive transition metals (Co and Ni) with well conducting metals such as Mg^{2+} and

Cu $^{2+}$ ions making conductivity 2.6 times better than observed before doping. was obtained after the replacement of Co and Ni with Mg and Cu respectively.

3.2 Magnesium

In 2020, Bhandare et al. [55] synthesized Mg doped $Co_{0.5}Ni_{0.5}Fe_2O_4$, (x = 0, 0.1, 0.2, 0.3, 0.4) and reported Co^{2+} inhabits both the A and B sites in the ratio 2:3 while the rest of the A and B sites by Fe^{3+} cations and confirmed it with the Mossbauer spectroscopy studies. XRD analysis confirmed average crystallite size (D) in the range 30-38 nm. SEM studies confirms irregular shaped, agglomerated particles having porous structure due to release of gases during the combustion process. A small decrease in saturation magnetization and magnetic moment of the samples is observed when Mg-substitutes for Ni due to the substitution of non-magnetic Mg^{2+} cations at the tetrahedral site. The high value of coercivity is observed due to hard magnetic property possessed by cobalt that did not vary significantly with respect to doping concentration. Rosnan et al. [56] used co-precipitation method to synthesize Co–Ni–Mg ferrite powders with composition $Co_{0.5}$ $Ni_{0.5-x}$ Mg_x Fe_2 O_4. It is observed that increase in doping concentration leads to shift 2θ toward lower angle side and causes increase in lattice parameter, particle size and higher degree of crystallinity. It is seen that X-ray density and Bulk density is decreasing while the porosity increases with increasing Mg^{2+} substitution. Morphological studies revealed particles obtained have homogenous morphology, uniform size, but partially agglomerate due to interactions between magnetic particles. Magnetic studies showed that both saturation magnetization and coercivity first increases upto x=0.1 concentration and then decreases with further increase in Mg substitution. The values of squareness ratio confirm the single magnetic domain nature of the samples. They recommended the prepared samples to be useful in high density recording media for obtaining the suitable signal-to-noise ratio. Selmi et al (2017) [57] prepared single-phase $Ni_{0.4}Co_{0.4}Mg_{0.2}Fe_2O_4$ composition by sol-gel method having lattice constant 8.310 Å, average particle size of 0.47 μm and X-ray density of 5.265 g/cm^3. Dielectric study confirms semiconducting nature of ferrite where dielectric constant increases with rising temperature since the hopping of charge carriers is thermally activated. Frequency dependent study exhibit decrease in dielectric constant, loss tangent and the real part of impedance (Z') with increase in frequency. Improvement in AC conductivity with temperature is attributed to increase in electron hopping between Fe $^{2+}$ and Fe $^{3+}$. Moreover, the study of spectra of Z'', characterized by the appearance of peaks which shift to higher frequencies with increasing temperature, point to the existence of relaxation phenomenon in prepared material.

Table 1- Various reported methods of synthesis of divalent ion doped Co-Ni Ferrite and related structural, Magnetic and Electric Properties. M_s stands for Saturation Magnetization, M_r for Remanent Magnetization, H_c for Coercivity, ε for dielectric constant, ΔE for Activation Energy, σ_{AC} for AC Conductivity, ρ for resistivity, T_c= Curie Temperature

Composition	**Synthesis Method**	**Sintering Temp. (^{O}C)**	**Crystallite Size (nm)**	**Studied Properties**		**Reference**
				Magnetic	**Electric**	
$Ni_{0.8-x}Co_{0.2}Cd_xFe_2O_4$ (x=0.1, 0.2, 0.3)	Ceramic	1100 - 12h	18.49-33.07 nm	-	ρ_{dc} =4.31-8.74x10^9 Ω-cm T_c=710-730 ^{o}C ε'=3547-11368 (1kHz) ΔE=0.57-0.8 eV	[58]
$Ni_{0.17}Co_{0.35}Cu_{0.48}Fe_2O_4$ $Ni_{0.21}Co_{0.34}Cu_{0.45}Fe_2O_4$ $Ni_{0.25}Co_{0.33}Cu_{0.42}Fe_2O_4$	Electrodeposition technique	-	47-103 nm	H_c=29-42.5 O_e M_s=0.0029-0.126 emu/cm^2, M_r= 0.0021-0.0095 emu/cm^2	-	[47]
$Co_{0.4}Ni_{0.4}Cu_{0.2}Fe_2O_4$	Co-precipitation	130, 600, 900	12-32 nm	M_s= 0.61, 38.8, 48.4 emu/g, M_r=0.022, 15.7, 20.8 emu/g H_c= 421.4, 1091, 1151.3 O_e	-	[49]

$Ni_{0.93}Co_{0.02}Cu_{0.05}Fe_2O_4$	Ceramic	1250-12h	1.21-1.28 μm	M_s=5-15 emu/g, M_r=1.5-5.5 emu/g.	ε'=6200-10400 (1kHz)	[53]
$Co_{0.5}Ni_{0.5-x}Cu_xFe_2O_4$ (x =0.1, 0.2, 0.3 and0.4)	Sol-gel auto combustion	1050-4h	53-95 nm	M_s=40-60 emu/g, H_c= 196-885 O_e	ΔE=0.56-0.60 eV	[51]
$Co_{0.5}Ni_{0.1}Cu_{0.4}Fe_2O_4$	Sol-gel auto-combustion	1000-3h	43 nm	M_s= 59.55 emu/g, M_r=7.92 emu/g H_c=197.5 O_e	-	[52]
$Co_{0.5}Mg_xNi_{0.5-x}Fe_2O_4$ (x =0, 0.1, 0.2, 0.3, 0.4)	Sol-gel auto combustion	600-2h	30.4-37.7 nm	Ms= 33-41emu/g, Mr= 27.19-31.01 emu/g Hc= 931.11-1032.7 Oe μ_B= 1.29-1.68	-	[55]
$Co_{0.5}Ni_{0.5-x}Mg_xFe_2O_4$ (x=0.1, 0.2, 0.3, 0.4 and 0.5)	Co-precipitation	900-10h	32.6-35.8 nm	Ms=26.41- 34.05 emu/g Mr=47.34-61.49 emu/g Hc=603.26-684.11 603.26	-	[56]

$Ni_{0.4}Co_{0.4}Mg_{0.2}Fe_2O_4$	Sol-gel	1050-48h	-	-	ΔE=0.268 eV	[57]
$Ni_{0.2}Mn_xCo_{0.8-x}Fe_2O_4$ (x = 0.0, 0.1, 0.2, 0.3, 0.4)	Sol-gel auto combustion	950-3h	48.50-52.13 nm	M_s= 63.39-73.81 emu/g M_r= 21.51-35.23 emu/g H_c= 441.07-1116.89 O_e	-	[59]
$Ni_{0.5}Co_{0.5-x}Zn_xFe_2O_4$ (x = 0, 0.02, 0.04 and 0.06)	Sol-gel	1200-5h	1.50-1.61 nm.	-	σ_{AC} = 6.95x10^{-9} - 8.22x10^{-6} S/cm	[60]
$Ni_{0.8}Co_{0.2-2x}Cu_xMn_x Fe_2O_4$ (with x = 0.01,0.03, 0.05, 0.07 and 0.09)	Solution Combustion	700-2h	39-51 nm	M_s= 50.97-145.3 emu/cc M_r= 21-57.83 emu/cc H_c= 22.42-365.94 O_e	ρ_{dc}= (2.10-4.16) x10^{13} Ω-cm ΔE= 0.14-0.27 eV	[61]

Zhao et al. [62] reported effects of Mg Substitution on the structural and magnetic properties of $Ni_{0.2}Mg_xCo_{0.8-x}Fe_2O_4$ (x = 0.0, 0.2, 0.4, and 0.6) nanoferrites. XRD study detected the samples with higher crystallinity with polycrystalline nature. Lattice constant, X-ray density, Bulk Density found to be decreasing with respect to doping concentration. Difference in ionic radii of Co^{2+} and Mg^2 cause lattice constant to decrease from 8.3681 Å to 8.3665 Å and crystallite size to increase from 48 to 50 nm. Magnetic studies reveal that saturation magnetization (Ms) and a residual magnetization (Mr) decreases from 70.16 to 39.77 emu/g and 36.40 to 20.20 emu/g respectively with the increasing of magnesium ion content since Mg^{2+} preferentially occupy the B-site reducing the density of Co^{2+} on the B-site. But most noteworthy change occurred in coercivity which reduced significantly from 1032.61 to 378.50 O_e. The squareness ratio (M_r/M_s) of above 0.50 designates a single magnetic domain

formation. They have suggested samples above 600 O_e potentially useful in high-density recording medium.

3.3 Zinc

Ni-Co-Zn spinel ferrite is another variant of divalent substituted Co-Ni ferrites which is exploited by the researchers for their possible applications. Azhagushanmugam et al. [63] investigated effect of cation distribution on Structural and Magnetic properties of Nickel Cobalt Zinc Ferrites synthesized by chemical Coprecipitation method. It is observed that lattice parameter increases while the particle size and X-ray density decreases with the increase in zinc concentration. This increase of lattice parameter can attributed be to the greater ionic radius of Zn^{2+} (0.83 Å) ions compared to Ni^{2+} (0.78 Å), against which it is substituted. TEM investigation indicates the nanostructured nature and spherical morphology having particle size 17 nm of the prepared samples with uniform size.

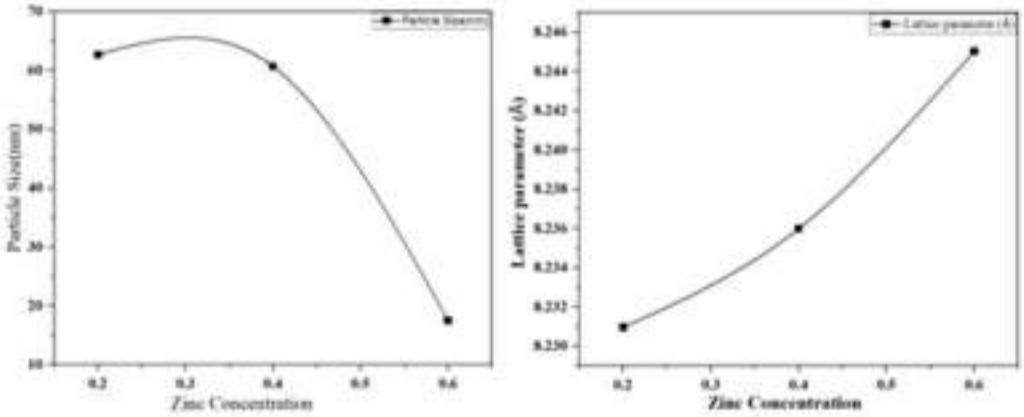
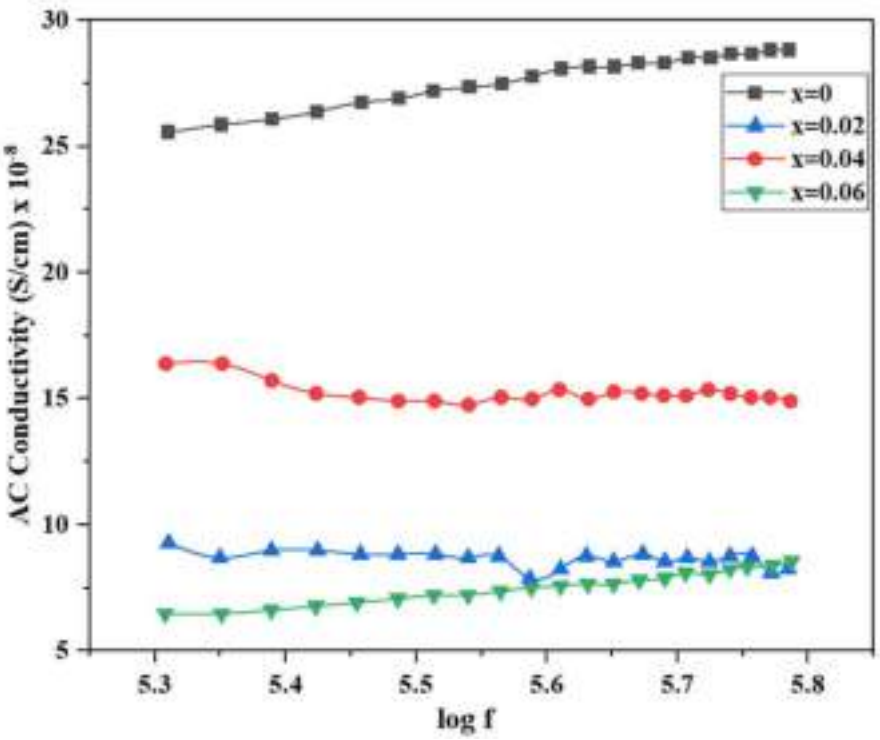


Figure 2. Variation of particle size and Lattice parameter with Zn in Ni-Co Ferrite as reported by Azhagushanmugam et al. [63]

Zhao et al. [64] prepared and investigated $Ni_{0.2}Zn_xCo_{0.8-x}Fe_2O_4$ (x = 0.0, 0.2, 0.4, 0.6 and 0.8) using sol-gel method for the better understanding of zinc doping on the structural and magnetic properties. The larger Zn^{2+} (0.74Å) ionic size led to the increase in the lattice constant of the Ni-Co Ferrite from 8.3761 Å to 8.4222 Å. Porosity and X-ray density also increased with Zn content. The average crystallite size found to be within the range 103-130 nm with nonlinear behaviour with respect to Zn^{2+} concentration. The results of morphological study confirmed forming of spherical agglomerated very fine particles. As the zinc ion content increases, Ms and Mr increase first upto $x = 0.02$ and then decrease thereafter upto concentration x=0.1. Sample with doping concentration of x=0.02 exhibited best magnetic properties. Observed values of coercivity decreases from 1003.96 O_e to 0.64 O_e due to replacement of Cobalt with high coercive value by Zn^{2+} ion. The low value of Mr/Ms ratio confirmed the superparamagnetic nature of the prepared samples. In 2018, Vijaya Babu et al. [60] investigated the structural, electrical and magnetic properties of nano-structured $Ni_{0.5}Co_{0.5-x}Zn_xFe_2O_4$ (x = 0, 0.02, 0.04 and 0.06) ferrites prepared by sol-gel method. Crystallite size was found to increase with increase in Zn attributed to the increased pore mobility due to the

creation of excess cation vacancies. However, the lattice constant decreases from 8.3485 Å to 8.3323 Å due to slight variances in the ionic radii of Co^{2+} (0.745 Å) and Zn^{2+} (0.74 Å) ions. Morphological studies confirmed spherical shaped but agglomerated grains to some extent with an average grain size 5-10 nm. Their dielectric study reported decreasing dielectric constant and dielectric loss tangent with increase in frequency approaching a constant value at higher frequencies. This typical dielectric behaviour of the ferrites is the consequence of hopping mechanism between Fe^{3+}-Fe^{2+} ions which decrease with increasing frequency since the hopping frequency of charge carriers cannot follow the changes to the externally applied electric field at higher frequencies. AC conductivity is also seen increasing with rising frequency since hopping frequency increases with applied frequency. Studies also reported substitutional effect on dielectric properties where zinc substitution concentration causes dielectric constant to decrease in the low frequency range. This is due to migration of Fe^{3+} ions from B- site to A- site which decreases the hopping between Fe^{3+}-Fe^{2+} ions in B site causing lower polarization and hence lower dielectric constant. It is also observed that the initial permeability and the g-value reducing with increasing Zn^{2+} dopant concentration.



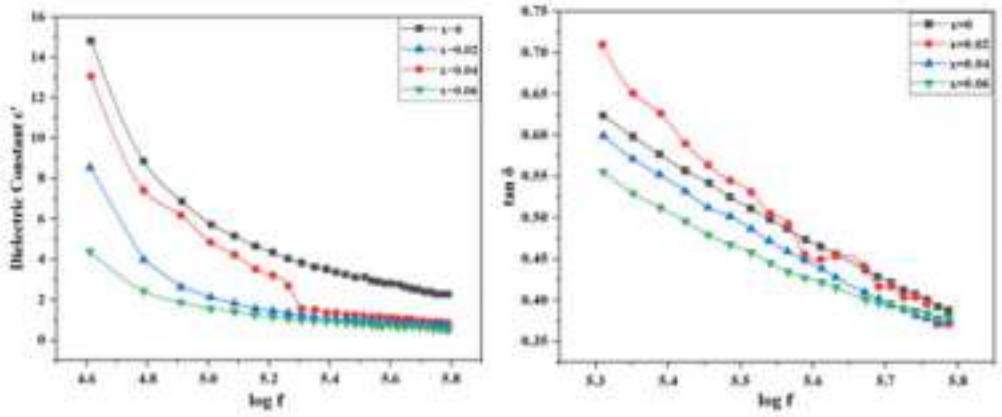


Figure 3. Variation of (a) AC conductivity, (b) Dielectric constant and (c) Dielectric loss tangent with frequency for $Ni_{0.5}Co_{0.5-x}Zn_xFe_2O_4$ (x = 0, 0.02, 0.04 and 0.06) reported by Vijayababu et al. [60]

Synthesis of $Zn_{0.35}Ni_{0.57}Co_{0.03}Fe_{2.05}O_4$ was reported by Ghodake et al. (2015) [65] using a chemical combustion route and reported increase in crystallite size with increasing temperature. The real part of initial permeability was also seen surging and loss factor decreasing with increasing sintering attributed to increase in grain size with increasing sintering temperature. Their study indicates the shifting of material from ferrimagnetic to paramagnetic state at Curie temperature. In 2012, Bhise et al. (2012) [66] reported synthesis of Ni-Co-Zn ferrite by Sol-gel Auto-Combustion Method and observed increase in lattice parameter, grain size, porosity but decreased densification with increase in temperature. Substitutional effects of Zn on structural and magnetic properties of Co-Ni Ferrite were investigated by Raju et al. (2014) [67]. Rietveld refined XRD study revealed sample with cubic structure, *Fd-3m* space group and the lattice constant which increases linearly with surging Zn concentration obeying Vegard's law. In this investigation, for low doping concentrations of Zn with $x \leq 0.3$, M_s increased from 57.12 to 76.78 emu/g and decreased thereafter to a value 64.89 emu/g when x was increased further upto $x = 0.5$. This increase of M_s upto $x = 0.3$ with the Zn concentration is in accordance with Neel's Sublattice model; however, the decrease in M_s after $x > 0.3$ is attributed to the three-sub-lattice model suggested by Yafet and Kittel. Remanent magnetization (M_r), Squareness ratio (M_r/M_s), Coercivity (H_c) and magnetic anisotropy are found to be decreasing with increasing Zn concentration and lowering Co^{2+} ions. The observed high coercivity is driven by the large anisotropy of the cobalt ions due to spin orbit coupling. Rani et al. [68] employed co-precipitation method for synthesis and investigation of physico-chemical properties of zinc substituted Co–Ni mixed ferrites. They observed appreciable increase in lattice constant with Zn substitution. The average crystallite size of the samples found in the range 11.59-21.20 nm. The SEM image of the product reveals rock like particle morphology with agglomeration in 2 μm scale. Thakur et al. (2012) [69] studied superparamagnetic behavior of $Ni_{0.4}Zn_{0.6}Co_{0.1}Fe_{1.9}O_4$ nanoferrites, synthesized by a co-precipitation method. Magnetic studies done by them found almost zero coercivity, which proposes a superparamagnetic behavior at 300 K. Tian et al. (2009) [70] fabricated $Ni_{0.11}Zn_xCo_{0.03}Fe_{2.86-x}O_4$ spinel ferrite films using wet chemical method to study structural and

magnetic properties. They found no significant effect on grain size but increase in lattice constant due to doping. Average grain size observed to be 40±2 nm and lattice constant in the range 0.8383 to 0.8425 nm attributed to the larger ionic radius of Zn^{2+} (0.074 nm) as compared to Fe^{3+} (0.067 nm). Magnetic studies revealed nonlinear change in saturation magnetization which increased upto x=0.35 due to addition of non-magnetic Zn decreasing magnetic moment of tetrahedral site M_A thereby increasing overall magnetization and then decreases with further increase of Zn due to spin canting effect. It is observed that Coercivity and magnetocrystalline anisotropy declines monotonically with the growing Zn content x from 0 to 0.51.

3.3 Manganese

It has been seen that very limited work has been reported on Manganese substituted Co-Ni Ferrite. Zhang et al. [59] reported structural, morphological and magnetic properties of Ni–Co ferrites substituted by the Manganese ions. Structural distortion and strain due to Mn substitution caused lattice expansion. It was observed that the lattice constant first decreased from 8.3798 to 8.3738 Å when Mn^{2+} content reaches x=0.1 and then increased with the increase of Mn^{2+} content. The average size of the experimental microcrystals reduces first and then grows with the Increase of Mn content. Reported particle size of the prepared samples ranged from 80 to 90 nm. VSM measurements confirmed ferromagnetic behavior and observed that the magnetic properties Ms, Mr are decreasing with the increase of manganese ion content. The decrease in magnetic moment and Squareness ratio is signifying that, the presence of non-conducting domain particles is in accordance with the doping concentration. The prepared ferrite has high coercivity, and the coercivity decreases with the further substitution of Mn content suggesting that manganese-doped nanoferrites have low magnetic properties. Lee et al. [71] investigated of dynamic magnetic properties and thermal magnetic stability of Ni-Co-Mn Ferrite and reported enhanced magnetic properties along with higher thermal stability factor compared to Ni–Co ferrites.

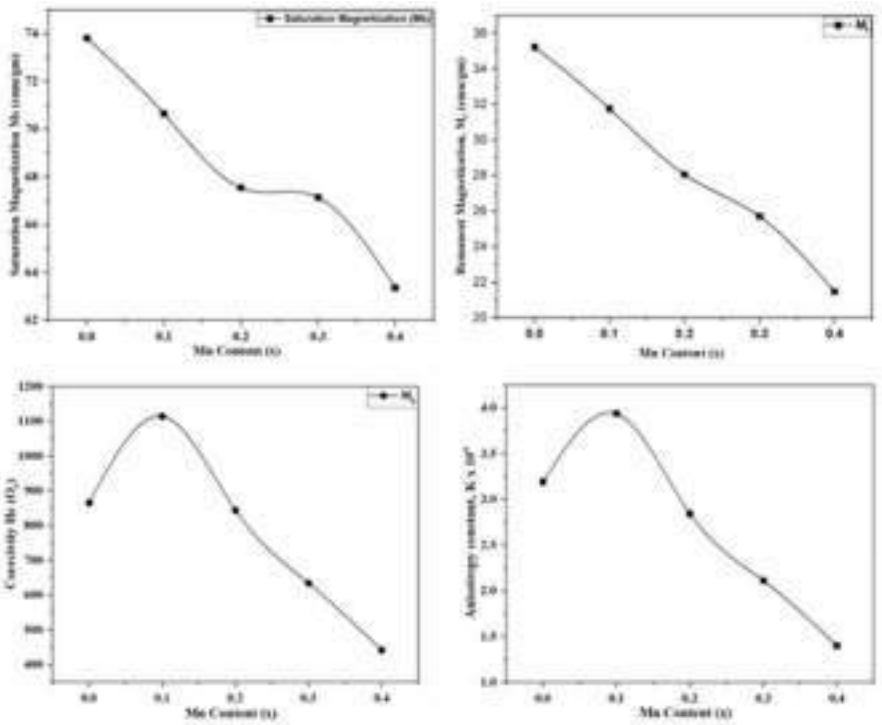


Figure 4: Variation of Saturation magnetization (Ms), Remanent Magnetization (Mr), Coercivity and Anisotropy constant with respect to Mn concentration reported by Zhang et al. [59]

3.4 Cadmium

Aldar et al. [58] prepared $Ni_{0.8-x}\ Co_{0.2}\ Cd_x\ Fe_2\ O_4$ (x=0.1, 0.2 and 0.3) by standard double sintering ceramic method and confirmed single phase samples with the Fd-3m space group. Lattice parameter and grain size are found to be increased with increase in Cd doping due to larger ionic radius of Cd ion (0.97Å). Temperature dependent dielectric study confirmed the semiconducting behaviour and increase in dielectric constant and then declining signifying phase transition from ferromagnetic to paramagnetic state. Activation energy and curie temperature showed declining nature with respect to increasing Cd content. Frequency dependent studies indicate AC conductivity increases with increasing frequency and dielectric constant show dielectric dispersion at lower frequencies. Alahmari et al.[72] investigated $Ni_{0.5}Co_{0.5-x}Cd_xFe_2O_4$ ($x \leq 0.20$) to study its structural and magnetic properties and reported the enhanced value of saturation magnetization (Ms) ascribed to the effects of surface spins, the cations distribution, the evolution of magneto-crystalline anisotropy, and the variation of magnetic moment (n_B). The greatest Ms of about 38.5 emu/g was obtained for x = 0.20 NFs. All prepared samples with squareness ratio below 0.5 show the single-magnetic domain structure. Kulkarni et al. [73] reported structural properties of cadmium doped cobalt nickel ferrite ($Co_{0.5}Ni_{0.5}CdxFe_{2-x}O_4$) (x = 0, 0.1, 0.2, 0.3, 0.4, 0.5) and found the single-phase cubic spinel structure with lattice parameter in the range 8.39 to 8.33 Å that showed shrinkage with increase in doping. The crystallite size is confirmed by Debye Scherrer method, WH and SS plots are to be varying in the range of 35–160 nm. SEM study confirmed granular and flower structured grains. The FTIR study found the absorption bands in the range of 580–600 cm^{-1} and another below 400 cm^{-1} corresponding to octahedral and tetrahedral sites.

3.5 Other (Mixed)

In 2015, Jadhav et al. [61] reported preparation of $Ni_{0.8}Co_{0.2-2x}Cu_xMn_xFe_2O_4$ ferrites (with x = 0.01, 0.03, 0.05, 0.07 and 0.09) through solution combustion route. Crystallite size follow unusual trend as a function of doping concentration and found to increase up to 0.03 doping concentration and then reduce thereafter. However, the lattice constant was found unaffected with doping concentration and remains constant at around 8.34 Å for all the samples. SEM study confirmed formation of porous structured agglomerates with submicron sized grains. Observed values of saturation magnetization showing non-linear increase with respect to Cu and Mn doping concentration due surface spin disorder of the grains. Reported results indicate sample with x=0.7 composition yields improved magnetic as well as magnetomechanical properties signifying its potential use in transducer application. Jadhav et al. (2016) [74] reported structural, electrical and magnetic properties Mn and Cu Co-substituted Ni-Co ferrite thick films for screen printing technique. Magnetic observations display no substantial change in saturation magnetization with doping concentration. Dielectric study show reduction in DC resistivity with increase in temperature which confirms the semiconducting nature of prepared samples. The reported resistivity values of the thick films are of the order of 10^{13} Ω-cm at room temperature. Resistivity values are observed to be almost 3 orders greater than its bulk counterpart.

4. CONCLUSION:

In a nutshell, this review work presented a versatile way in which Cobalt Nickel nanoferrites can be fabricated and the influence of the various divalent dopant ions on the structural, electrical and magnetic properties of the materials. Different parameters that contribute to structural, electric and magnetic properties are clearly summarised in tabular form which gave more insight to the researchers about the effect of divalent ions on Co-Ni ferrites. The particle size of spinel ferrites is found to be a function of the selected synthesis method and the associated metal nature. In present overview, we have found Divalent metal ion doped Co-Ni ferrite particles possess different sizes, from ultrasmall 2 nm to 100 nm. They can be fabricated mostly by sol-gel auto combustion and co-precipitation methods however other methods like the Electrodeposition technique and even combination of these methods with high-temperature calcination are also frequently employed. A series of diverse shapes for ferrite nanoparticles have been observed, from spherical to nanorods or nanotubes which are considerably affected by the type of doping atoms, level of impurity, specific surface area, etc.

Different divalent dopants have been added to the CoNiFe2O4 nanoparticles with the aim of modification in its saturation magnetization (Ms). Increase or decrease of Ms largely decided by the nature and concentration of doped ion as well as cation distribution and surface spin effects. Furthermore, it was clear that the magnetic properties are strongly dependent on the microstructure of the samples where the porosity and density also play crucial roles on the magnetic properties. Cobalt Nickel ferrites with divalent doping of elements have excellent electrical and magnetic properties which result in a wide range of applications such as high-density recording media for obtaining the suitable signal-to-noise ratio, transducer application,

gas sensors, drug delivery, computer memory cores, high frequency transformers, stable memory devices, spintronics, magnetic sensors etc.

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INDEX

होता त्यामधे क्रांतीसिंह नानाचा सहभाग घेतला होता. त्यांचे वकृत्व अत्यंत प्रभावी होते. ग्रामीण समाजात लोकजागृतीचे कार्य त्यांनी अतीशय प्रभावीपणे केले अनेक जनआंदोलनात भाग घेऊन कारवासही भोगला होता. भारताच्या लोकसभेवर इ.स. १९५७ व इ.स १९६७ मध्ये अशी दोन वेळा निवड झाली होती. इ.स १९७६ मध्ये नानांचे निधन झाले.

संदर्भ ग्रंथ :-

१) महाराष्ट्रातील समाजसुधारक, संत, साहित्यिक आणि थोर भारतीय विचारवंत :- व्ही.एन.स्वामी, विद्याभारती प्रकाशन लातूर.

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३) आधुनिक भारताचा इतिहास :- डॉ. प्र.न.देशपांडे विद्या बूक्स पब्लिशर्स औरंगपूरा, औरंगाबाद.

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समाज सुधारक महात्मा जोतीराव फुले

प्रा. भोजराज व्ही. बोदेले
यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय लाखांदूर, जि. भंडारा

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प्रस्तावना

आजच्या बदलत्या सामाजिक व सांस्कृतिक समाज वास्तवात महात्मा फुल्यांच्या प्रज्ञा व प्रतिभावंत विचार साहित्याचा अभ्यास व चिकित्सा आज अनेकार्थांनी अनिवार्य ठरली आहे. जोतीबांच्या विचार–आचार, उक्ती–कृती, वाणी–लेखणीत प्रचंड सामर्थ्य आहे. जोतीबा फुले यांचे कार्य भारतीय समाजामध्ये हिमालयापेक्षा उतुंग व महासागरापेक्षा अथांग आहे. वास्तविक पाहता देशप्रांत, जातपात, धर्मग्रंथ, पक्षविपक्ष, भाषासंस्कृति इत्यादी मानवनिर्मित कृत्रिम भेदाभेद बाजूला सारून निखळ वस्तूनिष्ठ व व्यक्तिनिरपेक्ष दृष्टीने महात्मा फुल्यांच्या कार्याकडे तत्कालीन संदर्भात बघावे म्हणजे जोतीबांच्या दैदीप्यमान कार्यामुळे आपले डोळे दिपून जातील. यात काही शंका नाही.

एकोणिसाव्या शतकातील सामाजिक–सांस्कृतिक प्रबोधनाची समस्त उर्जाच जोतीराव फुल्यांच्या सामाजिक व वाङ्मयीन कर्तृत्वात एकवटलेली आहे. मूलगामी समाजक्रांतीचे तत्वात, स्त्री–शुद्रातिशुद्र बहुजनांचा कैवारी, आधुनिक इहवादी निष्ठा, विवेक निष्ठ मूर्तिभंजन, सर्वधर्मी समभाव प्रखर समष्टिभाव आणि विशाल मानवतावादी दृष्टिकोण ही जोतीराव फुल्यांच्या युगंधर व्यक्तिमत्वाची प्रमुख वैशिष्टये आहेत. त्यांची प्रखर कृतिशीलता हा तर त्यांच्या व्यक्तिमत्वाचा अनन्य विशेष होतो.

भारतात शांती–सुव्यवस्था नांदावी आणि देशातील सर्व समाजाची सर्वांगीण उन्नती होऊन, देश

महान बनावा याकरिता महात्मा जोतीबाच्या सामाजिक व बाड्मयीन कर्तृत्वापासून प्रेरणा घेऊन त्यावर अमलबजावणी करणे काळाची गरज आहे.

बीजशब्द— स्त्रीया, अस्पृश्यता, शिक्षण, शेती, शेतकरी, धर्म, मानवता, समता, बंधुभाव इत्यादी.

जोतीबा फुले यांचा जन्म ११ एप्रिल १८२७ मध्ये पुण्यात झाला. सातामाळी समाजातील गोविंदराव शेटिबा फुले आणि चिमणाबाई या दांपत्याचे जोतीराव दुसरे अपत्य होते. मूळचे गोऱ्हे हे उपनाव बदलून फुलांच्या मळ्यामुळे फुले हे नाव पडले. त्यांचे लग्न वयाच्या १३ व्या वर्षी ९ वर्षांच्या सावित्रीबाई खंडोजी नेवसे पाटील यांच्या कन्येशी झाले. ते वयाच्या १४ व्या वर्षी स्कॉटिश मिशनच्या इंग्रजी शाळेत दाखल झाले. अमेरिकन विचारवंत थॉमस पेन यांच्या 'रॉइटस् ऑफ मॅन' या ग्रंथाचा जोतीबाच्या मनावर फार मोठा प्रभाव पडला. पेनच्या व्यक्तिमत्त्वातील क्रांतिप्रवणता जोतीरावांच्याही ठिकाणी आहे. कबिराच्या बीज ग्रंथातील 'विप्रमती' या प्रकरणाचा त्यांच्या विचारसरणीवर प्रभाव पडला. जोतीबांनी स्वत:चा 'कबीर साधूच्या पंथाचा' असा निर्देश केला आहे. जोतीरावांवर ख्रिश्चन मिशनरींचा अधिक परिणाम झाला. त्यामुळे त्यांनी समतेचे तत्व स्वीकारले आहे. इंग्रजी शिक्षणामुळे व इंग्रजी ग्रंथ वाचल्यामुळे जागृत झालेल्या जोतीबाच्या मनावर एक गोष्ट लक्षात आली ती म्हणजे पाश्चात्त्य देशातील लोकांनी आधुनिक काळात जी नेत्रदीपक प्रगती केली आहे तिचे मूळ त्यांच्या ज्ञानोपासनेतच आहे, शिक्षणात आहे.

जोतीबांचा संघर्ष हा ब्राम्हणाविद्ध नसून त्यांच्या ब्राम्हण्यवादी विचाराविरूद्धी होता. ते म्हणतात, 'सर्व दु:खाचे व समस्येचे मूळ कारण अज्ञान आहे. हे जोतीबांनी ओळखले आणि हजारो वर्षापासून समग्र भारतीय स्त्रियांना अज्ञानाच्या खाईत ज्यांनी लोळत ठेवल, अशा सनातनी लोकांविरूद्ध क्रांतीचे पहिले पाऊल म्हणून इ. स. १८४८ मध्ये पुण्यात मुलींची पहिली शाळा सुरू केली.

जोतीरावांची अस्पृश्यांबद्दलची आपुलकी त्यांच्या विशाल जीवनदृष्टीची द्योतक आहे. त्यांनी अंधश्रद्धा निर्मुलनाचे, जातीभेद व विषमता दूर करून सामाजिक परिवर्तनाचे स्त्री–पुरूष समतेचे महान कार्य केले. अशा अनेक लोकोपयोगी कर्तृत्वामुळे जनतेनी इ. स. १८८८ मध्ये 'महात्मा' ही पदवी बहाल केली. आधुनिक भारताचा पहिला महात्मा ठरले. जात, वर्ण, लिंग, भाषा, देश यांच्या पलीकडे जाऊन सर्व गोष्टींचा विचार केला आहे. एकूणच विश्वकुटुंबाचाच त्यांनी सदासर्वकाळ विचार केल्याचे दिसते. मानवधर्म हाच खरा धर्म आहे. ही त्यांची धारणा होती.फुले म्हणतात, आजचे युग हे विज्ञानाचे आहे. त्यामुळे वैज्ञानिक दृष्टिकोन प्रत्येकांनी अंगीकारला पाहिजे. परंतु भारतीय समाज जीवनात पारंपरिक दैववादी, अंधश्रद्धावादी दृष्टिकोन अधिक दिसून येतो. अंधश्रद्धेमुळे समाज जीवनाचा ऱ्हास होतो. समाजाचा उत्कर्ष होत नाही. म्हणून जोतीरावांनी वैज्ञानिक दृष्टिकोणाचा अंगीकार केला तसेच त्याचा प्रसार–प्रचार केला. दैव आहे की नाही या गणपतरावांच्या प्रश्नाला उत्तर देताना जोतीराव म्हणतात, ''दैव हे कल्पित धोरणानें मानलेले कर्म आहे. त्यास मुळीच कर्ता नसतो. नशीब, प्रारब्ध आणि संचित या सर्वांचा कर्ता अनुमानानें आपण सर्वांचा निर्माणकर्ता मानीला आहे. रती, सुकश्त ही पूर्वजन्मी आपण केलेल्या कर्माची फळे होत, अशी कल्पना आहे. लल्लाटरेषा व ब्रम्हलिखित हे आमच्या पूर्व जन्मींच्या पाप–पुण्यावरून जन्मास घालतेवेळी ब्रम्हाजीने आपल्या कपाळावर सर्व लिहून ठेवले असते, त्याप्रमाणे ते सर्व घडून येते. या सर्वांवरून असे सिद्ध होते की, उद्योग आणि आळस याविषयी परिणामाचे अनुमान सर्व लोकांस कळत नाही, यास्तव ते त्यास अनुमानाने दैव म्हणतात.'' दैव हे कल्पित असल्यामुळे वैज्ञानिक ज्ञानाची, सत्यज्ञानाची, वस्तुनिष्ठज्ञानाची, भौतिक ज्ञानाची कास माणसांनी धरली तरच नवा समाज अस्तित्वात येईल. हे सांगताना जोतीराव म्हणतात,

''मानवपदाची जरा लाज धरा ।। विद्वान तो ।। मुलीमुलें।।
गिर्वाणी शिकता कळेल तुम्हाला।। आठवाल ।। माझ्या
तुम्ही ।।
ऐकू दिले नाही एकहि शब्दाला ।। वेदबखरीला ।।
लपविले ।।
द्विजकूट तुम्ही आणावे मैदानी ।। आली ही पर्वणी ।।
जोती सांगे''

(''जो. फु., १९९१ : ५७९)

मानवाचे नैसर्गिक अधिकार हा महात्मा फुले यांच्या सामाजिक विचारांचा केंद्रबिंदू आहे. आपले विचार व्यक्त करण्याचे स्वतंत्र अधिकार लोकांना पटवून देण्याचे कार्य फुले यांनी केलेले आहे. समाजाच्या कोणत्याही एका बलिष्ठ घटकाने दुसऱ्या दुर्बल घटकावर जुलूम जबरदस्ती करून त्यांचे स्वातंत्र्य हिरावून घेता कामा नये असे त्यांचे विचार होते.

अस्पृश्यांवर होणाऱ्या धार्मिक व सामाजिक जुलूमांचे हृदयभेदी 'करूण' असे चित्रण त्यांनी उभे केले आहे. महारमांगासाठी शिक्षण संस्था काढणे, त्यांना हौद खुला करून देणे ह्या त्याकाळी क्रांतीकारक घटना होत्या. तत्कालीन विद्वान हे सनातनी प्रवृत्तीने होते. त्यांना वर्णव्यवस्थेची चौकट बळकट करावयाची होती. वर्णव्यवस्था ही ईश्वरनिर्मित नसून ती आर्यांची निर्मिती आहे. हे फुले यांनी स्पष्ट केले.

त्याकाळची राणी होने महार व मांग यांनी विनंती केल्याप्रमाणे त्यांच्या वस्तीला आपल्या लवाजम्यासह त्या भेट देत, त्या वस्तीच्या हलाकीचे चित्र ती पाहते ते असे. त्याबद्दल जोतीबा फुले लिहितात, ''गवताची लहान–लहान खोपटी त्यामध्ये कौलारू लहानसे एखादे घर, प्रत्येक खोपटीच्या पुढे अगर घराच्या ओसरीवर बसून काम करणारे महार–मांग व त्यांची पोरे, महारणी, मांगणी व त्यांची अज्ञानी इकडून तिकडून फिरणारी बालके, काही पंख फडफडीत करून मौजेकरिता फिरणारी व काही भक्ष्य शोधार्थ फिरणारी कोंबडी, धन्याच्या घरापुढे बसलेली व इकडे–तिकडे फिरणाऱ्या धन्याच्या स्थितीचे वाटेकरी व तद्दर्शक अशी रोड झालेली विश्वासू कुत्री, एखादी म्हैस, एखादी गाय, इकडे–तिकडे पडलेल्या कातड्यांचे तुकडे, वाळत घातलेल्या शिंदीची पाने, काही तयार केलेल्या केरसुन्या इत्यादी गोष्टी वस्तूपासून ह्या भागवत राहणारे लोक अगदी दरिद्री असूनही उद्योग करणारे असावेत, असा भास सहजच होकणार आहे''(जो. फु., १९९१ : ६९४)

स्त्री व पुरूष ही समाज रथाची दोन चाके आहेत. ती सनातन असली पाहिजेत. लहान व मोठ्या आकाराची चाके लावून रथ चालविता येत नाही. तसेच स्त्री व पुरूष यांच्यात समानता असल्याशिवाय समाजरथ चालू शकत नाही. समाजाचे भले स्त्री–पुरूष समतेतच आहे. त्यासाठी स्त्रींयाना सर्व प्रकारच्या संधी पुरूषांच्या बरोबरीने मिळाल्या पाहिजेत. असा त्यांचा आग्रह होता.पुरूषांना एका बाजूला अनेक सवलती देत असतांना स्त्रियांना मात्र अनेक बंधनांनी जखडून टाकले होत. याविषयी महात्मा फुले यांचे तत्वज्ञान मोलाचे आहे.समाजाकडून युगानुयुगे दाबल्या, दडपल्या गेलेल्या शुद्रादीशुद्रांच्यांचेश्रेणीत हिंदु स्त्रीचे स्थान होते, असे म्हणण्यात यत्किंचितही अतिशयोक्ती नाही.

जोतीराव फुले स्त्रीविषयक विचार मांडतांना लिहितात, ''काही लोभी पुरूष आपल्यास जास्ती सुख व्हावे अथवा आपल्या मनोकामना पूर्ण व्हाव्या यासाठी एका घरात दोन–दोन, तिन–तिन लग्नाच्या बायका करून नांदतात. व त्याविषयी आपण काही हेकड पुरूषांनी केलेल्या धर्मग्रंथांचा आधारही दाखवितात. त्याचप्रमाणे जर काही स्त्रियांनी आपल्या मनोकामना तृप्त करण्याकरिता दोन–दोन, तिन–तिन लग्नाचे नवरे करून एका घरात नांदू लागल्यास आपणा सर्व पुरूषास याविषयी काही विधिनिषेध वाटणार नाही का ? (जो. फु., १९९१: ४५०)

स्त्री मुक्तीचे तत्वज्ञान आणि स्त्रीमुक्तीची चळवळ उभारली, कोणताच मनुष्य गुन्हेगार म्हणून जन्माला येत नाही. भोवतालची परिस्थिती आणि यथोचित शिक्षण व संस्कार यांचा अभाव यामुळे बरेचसे लोक चुकीच्या मार्गाकडे वळतात. स्त्री, शुद्र आणि अतिशुद्र यांच्या सामाजिक गुलामगिरीविरूद्ध बंड पुकारणारा पहिला पुरूष आहे. सार्वजनिक सत्यधर्माची स्थापना त्यांनी केला. ईश्वराला जोतीरावांनी 'निर्मिक' म्हटले आहे. 'सर्वसाक्षी जगत्पती। त्याला नको मध्यस्थी' हे जोतीरावांच्या धर्मविचारातील एक प्रमुख सूत्रवचन आहे. सार्वजनिक सत्यधर्मात स्वयंनिर्णयांचे स्वतत्र आणि बंधूता यांचे महात्त्वाचे स्थान मांडलेले आहे.

'सार्वजनिक सत्यधर्म पुस्तक' हा जोतीरावांचा शेवटचा ग्रंथ त्यांच्या मृत्यूनंतर सन १८९१ प्रसिद्ध झाला. हिंदूधर्म संस्थेवर जरी जोतीरावांनी वारंवार हत्यार उपसले होते. तरी मनुष्यमात्राच्या जिवित साफल्यासाठी धर्मभावनेची आवश्यकता आहे. अशी त्यांची दृढ

धारणा होती. धर्म जीवनातील भाबडेपणा, दंभ व मिथ्याचार यांची त्यांना मनापासून चिड होती. हे खरे पण नास्तिकता, धर्मपराङ् मुखत: यांनाही त्यांचा सक्त विरोध होता. म्हणून सत्यशोधक समाजातील आपल्या अनुयायांच्या मार्गदर्शनासाठी त्यांनी आपला उजवा हात पक्षाघाताने निकामी झाला असतांना धीर न सोडता डाव्या हाताने हा ग्रंथ लिहून काढला. ''या आपल्या अमर्याद विस्तीर्ण पोकळीमध्ये निर्मिकाने अनंत सूर्यमंडळासह त्यांच्या ग्रहोपग्रहांसहित तत्संबंधी एकंदर सर्व प्राणीमात्रांस उत्पन्न केले आहे. त्यापैकी आपन सर्व मानव स्त्रीपुरूषांनी त्याचे स्मरण मनी जागृत ठेवून एकमेकांशी कोणत्या तऱ्हेचे आचरण केल्यामुळे त्यास आनंद होणार आहे; यास्तव मी त्याच्या कृपेने एकंदर सर्व मानव स्त्रीपुरूषांच्या हितासाठी हा लहानसा ग्रंथ रचिला आहे.''(जो. फु. १९९१ : ४३५)

हिंदूधर्म, बौद्धधम्म, ख्रिश्चनधर्म, इस्लामधर्म आणि सार्वजनिक सत्यधर्माचा पुरस्कार केला. पूर्वीच्या सामाजिक चौकटीत ज्या प्रकारची धार्मिक पिळवणूक, सामाजिक विषमता नि अन्याय ही अंगभूत होती. तशी ती इंग्रजी राजवटीत नव्हती. नव्या राजवटीत समान संधीला वाव होता. इंग्रजी राजवटीने भारतीय स्त्रीशूद्रादी शुद्रांना भटशाहीच्या तुरूंगातून सोडवण्याच्या कामी आधीच्या कोणत्याही राज्यकर्त्यांपेक्षा अधिक मजल मारली असल्याचे कृतज्ञतापूर्वक जोतीराव फुले नमूद करतात.

स्त्री, शुद्र व अतिशुद्र यांच्या शिक्षणाला ब्राम्हणांचा विरोध होता. ह्या कार्याला विरोध करण्यासाठी फुले दांपत्यांनी कंबर कसली आणि ह्या कार्याला समोर नेण्याचे काम त्यांनी केला. 'हे समाज विरोधी काम करित आहेत' हा समज ठेवून जोतीबांच्या वडीलांना न पटल्यामुळे त्यांनी ह्या दांपत्याला घराबाहेर काढले. फुलेना शिक्षण देतांना अनेक अडचणी सहन कराव्या लागल्या, तरी त्यांनी न जुमानता हे उदात्त कार्य अंगीकारले. फुल्यांनी आपल्या इहवादी शैक्षणिक विचार सरणीत मानची मूल्यांना व मानवी अंत:सत्वाला विशेष महत्त्व दिले. फुल्यांचा शिक्षणविषयक दृष्टिकोन भूतदयावादी आणि मानवतावादी होता. प्रामीण शिक्षणावर त्यांनी जास्त भर दिला.

जोतीरावांनी शुद्रातिशुद्रांचे आर्थिक शोषण हे विविध धार्मिक सणातून, उत्सवातून, भट कामगाराच्या अन्यायी वृत्तीतून तसेच इंग्रजी राजवट व सावकारशाहीच्या माध्यमातून होते, हे गद्याप्रमाणे पद्यातही अतिशय सेडेतोडपणे सांगितले आहे. श्रमिकांचे शोषण नष्ट झाल्याशिवाय सामाजिक समानता प्रस्थापित होणे दुरापास्त आहे. शुद्रातिशुद्र यांच्या संपूर्ण अवनतीच्या परिस्थितीवर महात्मा फुले यांनी केवळ चिंतन केले असे नाही, तर कृतीही केली.

मूळातच फुल्यांची वृत्ती ही चिंतनशील आणि शोधक होती. त्यामुळे त्यांच्यात कृतिप्रवणता निर्माण झाली होती. या उर्मीतून त्यांनी सुधारणेला वाहून घेतले होते. विचारवंत फुल्यांची वैचारिक दिशा, त्यांच्या लेखनाची विविधता, शैली व त्यांची विवेकनिष्ठा यातून ते थोर वैचारिक निंबधकार होते असे दिसते.

'तृतीयरत्न' हे नाटक जोतीरावांनी सन १८५५ मध्ये लिहिले. हे त्यांचे पहिले लेख अंधश्रद्धेविरूद्ध होते. तसेच अज्ञानाचा गैरफायदा घेऊन भोळ्या शुद्रास धूर्त आर्यभटाने ठकविण्याविरोधात पहिला कठोर प्रवाह या नाटकात घेतला आहे. इ. स. १८६९ मध्ये जोतीरावांनी 'ब्राम्हणांची कसब' नावाचा पद्य ग्रंथ लिहिला. या ग्रंथाद्वारे भटजी, अंडाणी व गरीब शुद्राला धर्माच्या नावाखाली भूलथापा देऊन कसे राजरोस लुबाडतात ते दाखवून दिले आहे. इ. स. १८७३ मध्ये जोतीरावांनी 'गुलामगिरी' नावाचा ग्रंथ लिहिला. बहुजन समाज शैक्षणिक, आर्थिक, सामाजिक, सांस्कृतिक व जीवनाच्या हरेक क्षेत्रामध्ये उच्चभ्रू लोकांचे कसे गुलाम आहेत हे जोतीरावांनी या ग्रंथातून सिद्ध केले आहे. 'गुलामगिरी' या ग्रंथाच्या अर्पणपत्रिकेमध्ये जोतीराव म्हणतात, ''युनायटेड स्टेट्समधील सदाचारी लोकांनी गुलामास दास्यत्वापासून मुक्त करण्याच्या कामांत औदार्य, निरपेक्षता व परोपकार बुद्धी दाखविली यास्तव त्यांच्या सन्मानार्थ हे पुस्तक त्यास परमप्रीतीने नजर करितो, माझे देशबांधव त्यांचा, त्या स्तुत्य कृत्याचा कित्ता, आपले शूद्रबांधवांस ब्राम्हणलोकांच्या दास्यत्वापासून मुक्त करण्याच्या कामात घेतील अशी आशा बाळगतो'' यावरून त्यांची साहित्यातिल सामाजिक दृष्टी भारतातील सामाजिक गुलामगिरी संपविण्याची होती.

इ. स. १८८३ मध्ये जोतीरावांनी 'शेतकऱ्याचा

असूड' नावाचा ग्रंथ लिहिला या ग्रंथात शेतकऱ्यांचे दु:ख, दु:खाची कारणे आणि दु:ख निवारण्यासाठी उपाय जोतीरावांनी सांगितली अरहेत. शेतकरी हा देशाचा पोशिंदा असताना देखिल अत्यंत हलाकीची परिस्थिती त्यांच्या वाट्याला आलेली आहे. हे बघून जोतीरावांना दु:ख वाटे. शेतकऱ्यांच्या दु:खाला धर्म व राज्य दोन्ही जबाबदार आहेत. असे जोतीराव म्हणतात. अडाणी शेतकऱ्यांची उच्चभ्रु व सावकार फसवणूक करतात. तेव्हा सरकारने शेतकऱ्यांच्या हिताचे रक्षण करावे. तसेच पाणी म्हणजे शेतकऱ्यांचे जीवन. तेव्हा सरकारने मोठमाठी धरणे बांधून कालव्याद्वारे शेतकऱ्यांच्या शेतीला पाणी उपलब्ध करून द्यावे. जेणेकरून शेतकरी शेतातून हमखास उत्पादन घेउ शकेल. अशी मागणीही जोतीरावांनी केली. शेतकऱ्यांची दुर्दशा त्यांच्या अज्ञानामुळे झाली म्हणून जोतीराव शेतकऱ्यांना विद्येचे महत्व सांगतांना म्हणतात, "विद्येविना मती गेली, मतीविना निती गेली, नितीविना गती गेली, गतीविना वित्त गेले, वित्ताविना शुद्र खचले, इतके अनर्थ एका अविद्येने केले."

इ.स. १८८५ मध्ये जोतीरावांनी 'इशारा' नावाचा ग्रंथ प्रसिद्ध केला. या ग्रंथात शेतकऱ्याची सद्य: स्थिती चांगली आहे. या न्यायमुर्ती रानडे यांच्या मताचे खंडन केले आहे. तसेच जातीभेद प्रगतीच्या आड येत नाही याही मताचे खंडन केले आहे. जोतीरावांनी इ. स. १८८५ मध्ये 'सत्सार' हे नियतकालीक सुरू केले. 'सत्सार'च्या पहिल्या अंकात ब्राम्होसमाज व प्रार्थनासमाज यांच्या वरवरच्या सुधारकी भूमीकेचे खंडन जोतीरावांनी केले. ब्राम्होसमाज व प्रार्थनासमाज विश्वधर्माचे प्रतिपादन करतात, बंधुभावाची शिकवण देतात, पण मग प्रत्यक्ष कृतीच्या वेळी मात्र कचखाऊपणा करतात. आजतागायत अन्यायाने व निर्दयपणे अस्पृश्य म्हणून दूर लोटलेल्या आपल्या धर्मबांधवांना तेदैनंदिन व्यवहारात बरोबरीच्या नात्याने वागवत नाही. आपल्या धार्मिक व सामाजिक कार्यात सामील करून घेत नाहीत. असा त्यांचा आक्षेप होता.

जोतीरावांची कविता राजकीय, आर्थिक, सामाजिक व सांस्कृतिक आशय मूलभूत परिवर्तनासाठी समतेच्या, बंधुतेच्या, न्यायाच्या स्थापनेकरिता सार्वजनिक सत्यासाठी कशी आवश्यक आहे. तसेच पोवाडे, पत्रबद्ध पत्रे, पद, मंगलाष्टके, आरत्या अशा विविधांगी पद्धतीने मांडली आहे.

निष्कर्ष :–

१. महात्मा फुले हे थोर समाज सुधारक आहेत.

२. शुद्रादीशुद्र व स्त्रियांसाठी शिक्षणाचे द्वार मोकळे करून देणारे ते प्रथम व्यक्ती होत.

३. शेतकऱ्यासाठी त्यांनी इंग्रज सरकारसमोर मोठेमोठे धरणे बांधण्याचे सांगितले होते.

४. 'तृतीय रत्न' या नाटकातून अंधश्रद्धेवर कडाडून प्रहार केला होता.

५. त्यांनी 'सत्सार' हे नियतकालीकातून समाजसुधारणा विषयक विचार मांडले आहेत.

संदर्भ –

१.अग्निहोत्री द. ह. : महाराष्ट्र संस्कृतीचे तात्विक अधिष्ठान, सुविचार प्रकाशन, नागपूर, १९७७.

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INDEX

02

Entrepreneurship and Rural Development

Dr. Vinod Barde
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Abstract: India is the Village Nation. More than 70 percent population residence in the village. Rural economy depends on the agricultural sectors. Agriculture produce contributes of nearby 20 percent of gross domestic product (GDP) in India. To rise our agriculture productivity & our economy we must to develop rural areas. Agriculture sectors have insufficient of employment. That's reason people are suffering the unemployment, poverty, migration.Rural entrepreneurship play the importance role in the creation of the employment and reduced level of poverty. Government also promotes and motivates to new entrepreneur to start self-employment through the Start-up scheme, MUDRA scheme, and Skill Development program etc. Rural entrepreneurship development facing many problems because unviability of capital, lack of literacy, lack of technical education. In this research study to attempt to know the importance and problems of the rural entrepreneurship.

Keywords: Rural Area, entrepreneurship, youth, village, unemployment.

Objectives of the Study:

1. To know the meaning of entrepreneurship.
2. To know the importance of the rural entrepreneurship.
3. To study the problems of rural entrepreneurship.

Research Methodology: The present study is based on the secondary data in the descriptive nature. The data were collected from articles, books, journals, websites and government publications.

Introduction: India is a nation of villages. Nearby 75 percent of India's population are living in rural areas out of which ¾ of the labour force is still earning its source of revenue from agriculture and its allied activities. Land being inadequate is incapable to engage the labour force in agriculture. Long time before rural region was create many employment through subsidiary industry of agriculture. But now that industry breakdown after new era of globalisation. Due to the absence of traditional industries in rural areas, the population here is completely dependent on agriculture. But due to the burden of additional population on agriculture, the rural economy seems to have collapsed. Earlier in the rural areas real income increased due to agriculture based industries and all family members working in agriculture. The result of the change over time is that unemployment and poverty have increased to a great extent. As a result, population migrates to rural areas in search of employment. The visible result of this is that many people have returned to the villages during the corona period, so tobe seen that there is a real need to provide new employment in the rural areas.Start-up scheme, Mudra loan, entrepreneurship training and mentoring as well as help to the budding youth are being provide through the government. Therefore, many young people are creating self-employment by creating new industries without going back to work.The Prime Minister of India has announced start-up India Scheme in theindependence programme speech, in order to promote the Entrepreneurship. The action plan of this initiative is focusing on three areas viz. simplification and handholding, funding support and incentives, industry-academia partnership and incubation. In an effort to support rural entrepreneurs of India, the Centre would think of giving low interest rate loans under the Micro Units Development through MUDRA

scheme.

Importance of Rural Entrepreneurship: Rural entrepreneurship can be considered one of the solutions to reduce poverty, to reduce migration, employment generation, and to develop rural areas. Rural entrepreneurs may rise the standard of living and purchasing power of the rural people and bottom of pyramid by proposing employment opportunity to the rural areas people.

1. To reduce poverty: Rural entrepreneurship generate new work for the rural people. Rural entrepreneurship will increase the rate of literacy and self-employment. Thus improving their standard of living.

2. To reduce Migration: Rural population travels toward urban for work, searching good job etc. rural entrepreneurship develops infrastructural in rural areas. It's reduce the gap between urban and rural areas. Rural entrepreneurship can avoid the migration of people from rural to urban areas in search of job and employment.

3. Employment generation: Rural entrepreneurship is labour intensive and generates large number of employment opportunities for the rural people. Rural entrepreneurship provides a clear solution to the growing problem of large number of unemployment.

4. Developed rural areas: Rural entrepreneurship generates source of income for the rural areas people in the local level. Hereby developed rural areas about increasing income through the rural entrepreneurship.

5.Improves standard of living: Rural entrepreneurship will also increase the literacy rate of people. Their education, source of income and self-employment will prosper the society, thus improving their standard of living.

Problems of Rural Entrepreneurship: Developing entrepreneurship particularly rural entrepreneurship is not so easy. It is constrained by various problems. Some of the problems faced by rural entrepreneurs are as follows:

1. Shortage of finance: Finance is the blood of the business. Maximum of the rural entrepreneurs are mainly struggling to increase the finance for their businesses. Lack of availability of adequate collateral security often mars the chances of rural youth in procurement adequate funds in time to set up their own venture. Due to this, the entrepreneurs are forced to take credit from village money lenders who charge excessive rates of interest.

2. Absence of technical education: Reason of the defective education system rural youth lack decision-making, skilled, technical knowledge which is adisablement in developing the life force of enterprise, therefore not many people come forward to create self-employment units.

3. Insufficient infrastructural facilities: Rural areas haven't well build infrastructural facilities viz, Transportation, water, market, electricity, street lighting, where house and communication etc. which obstruct the smooth movement of various industrial activities.

4. Lack of professional knowledge: Due to the lack of business environment in the rural areas, there is a lack of knowledge required for business creation. Due to lack of new business ideas, capital formation, as well as insufficient knowledge, the rate of new business creation is seen to be lower than in urban areas.

5. Skilled labours unviability: In rural areas, skilled labours cannot be found easily as compared to urban areas by the entrepreneurs. Skilled labourers prefer to work in big cities due to high salary than rural areas.

6. Fear to invest in the business: Rural entrepreneurs have low risk bearing ability due to lack of economic resources and external funding. So, they restrict to invest in their businesses in rural areas.

7. Competition: Rural entrepreneurs are facing cut through competition from urban entrepreneurs and reputable organizations. They cannot compete with the urban entrepreneurs due to lack of calibration and branding of the products.

8. Lack of awareness of business ideas: Lack of vocational skill among rural youth. The rural entrepreneur lacks knowledge about creating industries based on modern technology apart from traditional business.

9. Risk: Rural entrepreneurship faces many kind of risks. Similar technical risks, economic risk, social risk, and environmental risk.Due to these reason, there are obstacles in the creation of industries in rural areas.

Conclusion: Contribution of rural industry is more important in the national economy. Mainly in the rural economy. Rural entrepreneurship is generating employment opportunities in the rural areas with low capital cost and increasing the real income of the people. It's contribution to the development of agriculture and urban industries. To solve the problem of unemployment in rural areas, it is necessary to create industries in rural areas. It is necessary to develop rural areas to solve the problems of poverty, migration, unemployment etc. for that, it is necessary to create new industries in rural areas.

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प्रा.पी.एम.ठाकरे,
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प्रस्तावणा :–

"सार्वजनिक निवडणूका काटेकोरपणे आणि कार्यक्षमतेने पारपाडल्या नाहीत तर नुसत्या सार्वजनिक यंत्रणाच कुचकामी ठरत नाही तर संपूर्ण लोकशाही व्यवस्था संकटात सापडते" असे पोलॉक नामक विचारवंत म्हणतो. त्यावरून लोकशाहीसाठी निवडणूकाचे असलेले महत्व स्पष्ट होते.

भारतात निर्वाचनाच्या माध्यमातुन प्रतिनिधी निवडण्याची मागणी भारतीय राष्ट्रीय सभेने १८८५ मध्ये केली. ब्रिटिश संसदेने १८९२ च्या कायद्यात नेमणुकीचे तत्व भारतासाठी स्वीकारले. त्या नोमणूका त्या काळातील जमिनदार संघटना, चेंबर ऑफ कॉमर्स, नगरपालिका व विद्यापीठे यासारख्या संस्थांच्या शिफारशीद्वारे होत असत. १९०९ च्या इंडियन कौन्सिल अॅक्टने मतदारसंघाची निर्मिती केली. या निवडणूकीत मतदानाचे तत्व प्रथमच स्विकारण्यात आले. मतदानाचा अधिकार, संपत्ती कर, शेतसारा भरणारे शेतकरी पुरूषा यांच्यापुरताच सिमीत होता. मतदानाचा हा सिमीत अधिकार नष्ट करून सार्वत्रिक प्रौढ मतदानाचे तत्व स्विकारावे अशी मागणी स्वातंत्र्यचळवळीच्या वेगवेगळ्या पीठांवरून होत होती. पण या तत्वास मान्यता मिळत नव्हती. १९३५ च्या भारत प्रशासन कायद्याने १९४५ मध्ये निवडणूका झाल्या तथापि मतदानाचा अधिकार, संपत्ती कर भरणारा व शेतसारा भरणारा पुरूषा एवढ्यापुरताच मर्यादित होता. स्वातंत्रनंतर भारतीय संविधानाने निर्वाचनाच्या तत्वाची अधिक व्यापक पायावर उभारणी केली.

सार्वत्रिक प्रौढ मताधिकाराचे तत्व आणि स्वतंत्र आयोग यांचा समावेश भारताच्या राज्यघटनेत १९४९ मध्येच करण्यात आला.

स्वातंत्र्यानंतर १९५२ मध्ये पहिली निवडणूक झाली. या निवडणूकीसाठी सार्वत्रिक प्रौढ मताधिकाराचे तत्व प्रथमत प्रत्यक्षात आले. त्यामुळे १७ कोटी ३० लाख नागरीकांना मताधिकार प्राप्त झाला. निर्वाचनाचे तत्व प्रत्यक्ष व्यवहारात आणण्यासाठी भारतीय संसदेत अनेक कायदे पास केले. लोकप्रतिनिधीत्व कायदा १९५० लोकप्रतिनिधीत्व कायदा १९५१, परिसीमन आयोग कायदा १९५२, राष्ट्रपती व उपराष्ट्रपती निर्वाचन कायदा १९५२, मतदार नोंदणी कायदा १९६० असे महत्वपूर्ण कायदे आहेत. याशिवाय निवडणूक आयोगाने वेळोवेळी काढलेले आदेश व निर्देश निर्वाचन पध्दती अधिक निःपक्षपाती होण्यास कारणीभूत ठरले आहेत.

प्रस्तूत शोध निबंधाची उद्दिष्टे :–

१) मतदारांच्या राजकीय जाणीवांचा शोध घेणे.
२) मतदारांच्या सामाजिक, आर्थिक व शैक्षणिक पार्श्वभूमीचा शोध घेणे.
३) मतदाराच्या राजकीय सहभागाचा अभ्यास करणे.
४) उमेदवाराच्या राजकीय नेतृत्वाचे अध्ययन करणे.

शोध निबंधाची गृहितके :

१) मतदारांच्या राजकीय सहभागाचे प्रमाण वाढत आहे.
२) मतदारांच्या मतदान प्रवृत्तीवर संकुचित निष्ठांचा प्रभाव पडलेला आहे.
३) मतदारांच्या राजकीय जाणीवांचा स्तर वाढला आहे.

➢ मतदान वर्तन म्हणजे काय ?

:– एर्लेनो आणि रिज यांच्या मते, " सार्वत्रिक निवडणुकीमध्ये लोक कसे मतदान करतात आणि तसे मतदान करण्याची कारणे समजवून घेणे म्हणजे मतदान वर्तन होय".

➢ मतदार वर्तनाला प्रभावित करणारे घटक :–

१) जातीयता (Castism) :– भारतीय समाज एक परंपरागत समाज असल्याने जातीयता समाजामध्ये खालच्या स्तरापर्यंत रूढ झालेली आहे. त्यामुळे जातीचा प्रभाव मतदार वर्तनावर सर्वांत जास्त पडत असतो. जात ही समाजाला जोडणारा आणि समाजाला विभक्त करणारा घटक म्हणून कार्य करते. एका जातीच्या लोकांना ऐक्याच्या सूत्रामध्ये बांधण्याचे कार्य केवळ जात करते. तर दुसरीकडे एका जातीच्या लोकांना दुसऱ्या जातीच्या लोकापासून पृथक करण्याचे कामही जात करते. भारतात एकत्रीकरणापेक्षा समाजाला विभाजित करणारा घटक म्हणून जातीचा प्रभाव दिसून येतो.

२) धर्म (Religion): भारत एक बहुधर्मीय राज्य असून या देशामध्ये हिंदू, मुस्लीम, शिख, ख्रिश्चन, पारसी, बौद्ध, जैन आदी जवळ जवळ सर्व धर्माचे लोक एकत्र राहतात. जातीप्रमाणेच धर्मालाही समाजाला जोडणारा आणि समाजाचे विघटन करणारा घटक मानला आहे. एका धर्माच्या लोकांना एकत्र आणण्याचे कार्य धर्म करतो म्हणून धर्म हा एकत्रीकरण करणारा घटक मानल्या जातो. तर एका धर्माच्या लोकांना दुसऱ्या धर्माच्या लोकांपासून दूर करण्याचे कार्यही धर्म कधी कधी करतो म्हणून धर्म समाजाचा विघटन करणारा घटक मानला जातो. भारतात एकत्रीकरण करणाऱ्यापेक्षा विभाजन करणारा घटक म्हणूनच या घटकाची भूमिका राहिली आहे. ब्रिटिश काळात भारतीयांमध्ये फूट पाडण्यासाठी मुसलमानांना आणि शिखांना विधिमंडळामध्ये वेगळे प्रतिनिधित्व देण्यात आले होते तेव्हापासूनच हिंदू आणि मुस्लिम यांच्यातील दुरावा वाढत चाललेला आहे. धर्माच्या नावावर मते मागितली जातात, धर्माच्या नावावर प्रचार केल्या जातो. मंत्रिमंडळातही विविध धर्मांना प्रतिनिधित्व दिल्या जाते. धर्माच्या आधारावर अनेक निवडणुका लढविल्या गेल्या आहेत. उदा. १९८९ मध्ये झालेल्या लोकसभा निवडणुकीमध्ये धर्म हा महत्त्वाचा मुद्दा होता धर्माच्या प्रभावामुळेच काँग्रेसचा पराभव झाला, तत्कालिन पंतप्रधानमंत्री श्री. राजीव गांधी यांनी अयोध्या येथील राम मंदिराचा शिलान्यास केल्यानंतर मुसलमान नाराज झाला तर शिलान्यास केल्यानंतर मंदीर बांधले नाही म्हणून हिंदू नाराज झाले. अशा प्रकारे दोन धर्माचे लोक नाराज झाल्यामुळे उत्तर प्रदेशसारख्या मोठ्या राज्यात काँग्रेसचा दारुण पराभव झाला. धर्माच्या आधारावर अनेक राजकीय पक्षांची स्थापना करण्यात आली. स्वातंत्र्यपूर्व काळात मुस्लिमांनी मुस्लिम धर्माच्या हितसंरक्षणासाठी 'मुस्लीम लीगची' स्थापना केली तर त्याला शह देण्यासाठी हिंदू महासभा अस्तित्वात आली. शिखधर्माच्या हितसंबंधाच्या रक्षणासाठी 'अकाली दलाची' स्थापना करण्यात आली, पश्चिम बंगालमध्ये ख्रिश्चन डेमॉक्रेटीक पार्टी' अस्तित्वात आली, केरळमध्ये ख्रिश्चन धर्माच्या हितसंबंधाच्या संरक्षणासाठी 'केरळ काँग्रेसची' स्थापना करण्यात आली.

३) भाषा (Language) : जाती आणि धर्माप्रमाणे भाषा हा ही घटक समाजाला जोडणारा आणि समाजाचे विभाजन करणारा एक घटक आहे. समान भाषा बोलणाऱ्या लोकांना एकत्रित आणणे सोपे असते. १९५६ साली भाषिक आधारावर राज्याचे पुनर्गठन करण्यात आले तेव्हा पासून या भाषिक राज्यामध्ये भाषिक अल्पसंख्यकांची समस्या निर्माण झाली आहे. त्यामुळे भाषिक अल्पसंख्यकांना असुरक्षित वाटते आणि म्हणून ते अशाच उमेदवारांना मतदान करतात जे त्यांच्या हितसंबंधाच्या रक्षणाची हमी घेतात. भाषिक आधारावर आज अनेक पक्ष सत्तेत आलेले. हिन्दी विरोधी पक्ष म्हणून 'डीएमके' सत्तेत आला. मराठी भाषिक हितसंबंधाचा रक्षक म्हणून महाराष्ट्रात शिवसेनेला ' महत्व प्राप्त झाले. आसाममध्ये 'आसाम गण परिषद' अस्तित्वात आले, तेलगु भाषिकांचा रक्षक म्हणून आंध्रमध्ये 'तेलगु देसम पक्ष' अस्तित्वात आला. हे भाषिक व प्रादेशिक पक्ष लोकांच्या भाषिक भावना भडकावून आपले राजकीय स्वार्थ साध्य करतात.

४) उपराष्ट्रवाद (Sub Nationalism) : १९५६ नंतर राष्ट्रवादाची भावना कमी होत गेली आणि अनेक संकुचित निष्ठा डोके वर काढायला लागल्या त्यामध्ये प्रादेशिकतावाद, आदिवासीवाद, भूमिपुत्राची संकल्पना, अशा संकुचित निष्ठा अस्तित्वाचे आधार बनल्या. या संकुचित निष्ठेच्या आधारावर अनेक राजकीय पक्ष अस्तित्वात आले. प्रादेशिक भावनेच्या आधारावर तेलगु देसम पक्ष, आसाम गण परिषद, नॅशनल फ्रंट, नागा नॅशनल ऑर्गनायझेशन, मणिपूर पीपल्स पार्टी, महाराष्ट्र नवनिर्माण सेना सारखे पक्ष अस्तित्वात आले. आदिवासींच्या रक्षणासाठी झारखंड पक्ष, ऑल पार्टी हॉल लीडर्स कॉन्फरन्स यासारखे पक्ष अस्तित्वात आले. अशा पक्षाद्वारे संकुचित निष्ठेच्या आधारावर प्रचार केल्या जातो. लोकांनाही ते पक्ष जवळचे वाटतात.

५) राजकीय विचारसरणी (Political Ideology): राजकीय विचारसरणीचाही मतदार वर्तनावर प्रभाव पडत असतो. कारण काही मतदार विशिष्ट विचारसरणीशी प्रतिबध्द असतात. त्या विचारसरणीचे प्रतिनिधित्व करणाऱ्या राजकीय पक्षाला ते मत देतात. अनेक मतदार डाव्या विचारसरणीने प्रभावित असतात. विशेष करून केरळ, पश्चिम बंगाल आणि त्रिपुरा या राज्यामध्ये अनेक मतदार डाव्या विचारसरणीशी कटिबध्द आहे. त्यामुळे ते नेहमी भारतीय कम्युनिस्ट पक्ष, मार्क्सवादी कम्युनिस्ट पक्ष, फॉरवर्ड ब्लॉक, रिव्होल्युशनल सोशॅलिस्ट पार्टी या पक्षांना मत देतांना आढळतात. तसेच काही लोक राष्ट्रीय स्वयंसेवक संघाच्या विचारसरणीला कटिबध्द आहेत. असे लोक त्या त्या विचारसरणीच्या पक्षालाच नेहमी मतदान करतात. १९७७ पूर्वी राष्ट्रीय स्वयंसेवक संघाची शाखा जनसंघ मानल्या जात होती म्हणून हे लोक जनसंघाला मत देत होते. १९७७ मध्ये 'जनसंघ' जनता पक्षात विलीन झाला त्यामुळे हे लोक जनता पक्षाला मत द्यायला लागले. १९८० नंतर ते पक्ष भारतीय जनता पक्षात विलीन झाला. म्हणून हे लोक भारतीय जनता पक्षाला मतदान करतांना दिसून येतात.

६) व्यक्तिपूजक नेतृत्व (Charismatic Leadership) : मतदार वर्तनावर पक्षनेता किंवा उमेदवाराच्या दिव्यबलयी व्यक्तिमत्वाचा प्रभाव पडतो. १९४७ ते १९६४ सालापर्यंत पंडित नेहरुंच्या व्यक्तिमत्वाच्या प्रभावामुळे लोक काँग्रेस पक्षाला प्रचंड बहुमताने निवडून देत होते. १९७५ ते १९८४ पर्यंत श्रीमती इंदिरा गांधींच्या व्यक्तिमत्वाच्या प्रभावामुळे लोक इंदिरा काँग्रेसला प्रचंड बहुमताने निवडून देत होते.

महाराष्ट्रात शरद पवार, बिहारमध्ये नितीशकुमार, तामीळनाडू मध्ये जयललिता, पश्चिम बंगालमध्ये तृणमूल काँग्रेस ममता बॅनर्जी, तर २०१५ च्या दिल्ली विधानसभा निवडणुकीमध्ये अरविंद केजरीवाल यांच्या व्यक्तिपूजक नेतृत्वावर जनतेने विश्वास दाखविला. २०१४ च्या १६ व्या तसेच २०१९ च्या १७ व्या लोकसभा निवडणुकीत भारतीय जनता पक्षाला नरेंद्र मोदींच्या नेतृत्वाने लोकसभेत बहुमत प्राप्त करून दिले. अशाप्रकारे व्यक्तिपूजक नेतृत्व मतदारांना प्रभावित करीत असतात.

७) सत्ताधारी पक्षाची कामगिरी (Roll of Ruling Party) : सत्ताधारी पक्षाने केलेल्या कामगिरीचाही मतदारवर्तनावर प्रभाव पडत असतो. निवडणुकीच्या वेळी प्रत्येक पक्ष आपला निवडणूक जाहीरनामा घोषित करतो. त्यामध्ये आश्वासने दिलेली असतात. या आश्वासनाची पूर्तता सत्ताधारी पक्षाने किती केलेली आहे यावरून याचा प्रभाव मतदार वर्तनावर पडतो. १९७७ च्या निवडणुकीत लोकांनी जनता पक्षाला निवडून दिले व जनता पक्षाने जी आश्वासने दिली ती पूर्ण न केल्यामुळे १९८० च्या निवडणुकीत जनता पक्षाला पराभव पत्करावा लागला आणि काँग्रेसला लोकांनी निवडून दिले. १९८० च्या निवडणुकीत काँग्रेसने आंध्रप्रदेशमध्ये जी आश्वासने दिली होती ती पूर्ण न केल्याने तेथे तेलगु देशम पक्ष विजयी झाला. अशाप्रकारे सत्ताधारी पक्षाने जर आपले आश्वासन पूर्ण केले तर लोक त्यांच्या बाजूने मतदान करतात, त्यांनी जर आश्वासन पूर्ण केले नाही तर लोक विरोधात मतदान करतात.

८) आर्थिक आणि राजकीय प्रश्न (Economical & Political Issues) निवडणुकीच्या वेळी आर्थिक आणि राजकीय प्रश्न ज्वलंत असतात. त्यांचाही प्रभाव मतदारांवर होत असतो. १९७१ च्या निवडणुकीत इंदिरा गांधी यांनी 'गरिबी हटाव'चा नारा दिला होता. राजकीय पक्षांनी 'इंदिरा बचाव'चा नारा दिला होता. अशावेळी तत्कालीन परिस्थितीत 'गरिबी हटाव'चा नारा प्रभावी ठरला आणि लोकांनी इंदिरा गांधीना निवडून दिले. १९७७ च्या निवडणुकीच्या वेळी 'स्वातंत्र्य की गुलामी' हा प्रश्न लोकांपुढे मांडण्यात आला. लोकांनी स्वातंत्र्याची बाजू घेतली आणि जनता पक्षाला निवडून दिले. १९८० च्या वेळी आसाममध्ये परकीय नागरिकांचा प्रश्न गंभीर होता. म्हणून आसाम गण परिषद पक्ष निवडून येऊ शकता. १६ व्या लोकसभा निवडणुकीत २०१४ मध्ये नरेंद्र मोदी यांनी 'सबका साथ सबका विकास' ही घोषणा देऊन निवडणूक जिकली. अशारितीने राजकीय प्रश्न आणि आर्थिक प्रश्न मतदार वर्तनाला प्रभावित करतात.

(९) पैशाची ताकद (Money Power). ज्येष्ठ पत्रकार व राज्यसभेचे माजी सदस्य कुलदीप नायर यानी, देशाचे पहिले शिक्षणमंत्री मौलाना अबुल कलाम आझाद हे मंत्री असताना एक रुपयाचेही त्याचे बँक बॅलन्स नव्हते, पण आज आपल्या देशात सर्व करोडपती राज्यसभेत आणि लोकसभेत भेटतील अशी स्थिती आहे. अशी टीका २७ सप्टेंबर २०१२ मध्ये नागपूर येथे श्रमिक पत्रकार संघात केली होती. तर १३ जुलै २०१२ च्या The Times of India सर्वेक्षणानुसार देशातल्या एकूण २,३२२ MPs आणि MLA पैकी ४८% करोडपती जनप्रतिनिधी आहेत. त्यामधील उत्तरप्रदेशमध्ये सर्वात जास्त श्रीमंत उमेदवार असून महाराष्ट्र नंतर आंध्रप्रदेशाचा क्रमांक लागतो. आधुनिक युगात निवडणूक अतिशय खर्चिक झाली आहे. त्यामुळे ज्या पक्षाजवळ पैसा अधिक असतो तो पक्ष निवडून येण्याची शक्यता जास्त असते. भारतामध्ये शासकीय आकडेवारी नुसार ३०% लोक दारिद्र्यरेषेच्या खाली आहेत. त्यामुळे अशा लोकांच्या मतदार वर्तनावर पैशाचा प्रभाव पडतो. राजकीय पक्ष लोकाना पैसे वाटतात किंवा निवडणुकीच्या वेळी धोतर, साड्या, ब्लॅकेट वाटतात.

१०) लाटीचा प्रभाव (Influence of Addiction) यासंदर्भात पॉल ब्रॉस यांच्या मते, जेव्हा मतदारामध्ये स्पष्टपणे एकाच दिशेने किंवा एकाच राष्ट्रीय पक्षाकडे व त्यांच्या नेत्याकडे कल बनू लागतो तिला लाट असलेली निवडणूक म्हणता येईल. ही लाट येणे एखाद्या मुद्यावर किंवा मुद्याच्या संचावर आधारित असते. स्थानिक गणिती आणि युती यांच्या पलिकडे जाऊन जसा जसा खेड्यापाड्यात व टपरीवर लाटेचा प्रवास होत जातो तसेतसे विशिष्ट बांधिलकी नसलेले व निर्णय न घेतलेले बहुतेक मतदार त्या दिशेने जाऊ लागतात. (पॉल आर ब्रॉस, द १९८४ पार्लमेंटरी इलेक्शन इन उत्तरप्रदेश, एशियन सर्व्हे, जून १९८६)

११) गुंडगिरीची ताकद (Muscular Power) : १९८९ नंतरच्या निवडणुकीत गुंडगिरीचा प्रभाव मोठ्या प्रमाणात पडला आहे. विशेष करून उत्तर प्रदेश आणि बिहार सारख्या राज्यात राज्यकर्त्याजवळ पाळलेले गुंड असतात. ते शस्त्र दाखवून लोकांना भयभीत करतात. विशिष्ट उमेदवाराला मते द्या नाहीतर तुम्हाला मारण्यात येईल अशा धमक्या देतात. त्यांच्या धाकामुळे लोक मतदान करायला जात नाहीत. ही परिस्थिती कमी–अधिक प्रमाणात २०१५ पर्यंत सर्वच राज्यात निर्माण झाली आहे. ही गोष्ट नाकारता येत नाही. अशारितीने शारीरिक ताकद किंवा गुंडगिरीची ताकद मतदान वर्तनाला प्रभावित करणारा घटक बनला आहे.

१२) परंपरा (Tradition) : भारतात अनेक मतदार परंपरेच्या प्रभावाने विशिष्ट पक्षाला मतदान करतात. काही लोक पिढ्यानपिढ्या एकाच पक्षाला मतदान करतात, काँग्रेस पक्षाला पिढ्यानपिढ्या मतदार करणारे अनेक लोक आहेत. जनसंघाला मतदान करणारे अनेक परंपरागत मतदाता आहेत. अशा लोकांसमोर कोणताही आर्थिक प्रश्न नसतो. ते पिढ्यानपिढ्या विशिष्ट पक्षाला परंपरेनुसार मतदान करतात.

१३) अल्पसंख्यांकांची असुरक्षितता (Insecurity of Minority) : भारतात धार्मिक, भाषिक, जातीय अल्पसंख्यांकांचे गट आहेत. या अल्पसंख्यांकांच्या मनात नेहमी बहुसंख्याकाद्वारे अत्याचार होण्याची असुरक्षिततेची भीती असते. त्यामुळे ते संघटितपणे राहतात आणि नियमितपणे त्यांच्या नेत्यांच्या मतानुसार संघटितपणे मतदान करतात. त्यामुळे सर्व राजकीय पक्ष मोठा मतदान प्राप्त करण्यासाठी अल्पसंख्याकांना खुश ठेवण्याचा प्रयत्न करतात. उदा. मुस्लिम, बौध्द इत्यादी.

१४) निवडणूक प्रचार (Election Campaign) निवडणूक प्रचारसुद्धा मतदार व्यवहारावर मोठ्या प्रमाणात प्रभाव पडतो. आजच्या काळात जनप्रसारमाध्यमे अतिशय प्रभावी झाली आहेत. आणि ज्या पक्षाचा प्रचार प्रभावी होतो त्या पक्षाची निवडणूक जिंकण्याची संधी वाढते त्यामुळे वृत्तपत्र, रेडिओ, टेलीव्हिजन द्वारा निवडणूक सभाद्वारे सर्व पक्ष प्रचार करतात. १९८९ च्या निवडणुकीनंतरच्या प्रचारामध्ये कॅसेटचा वापर अधिक केल्या जात होता आता परंतु २०१४ च्या १६ व्या लोकसभा निवडणुकीत भाजपासारख्या राजकीय पक्षाने इलेक्ट्रॉनिक्स मिडीयाच्या माध्यमातून लोकांच्या मनामध्ये पोहोचण्यासाठी 'अच्छे दिन आने वाले है', 'सबका साथ सबका विकास', 'कुठे नेऊन ठेवला महाराष्ट्र माझा' अशा स्लोगनच्या माध्यमातून मतदाराला प्रभावित केले आहे. आणि त्याच्या प्रभावाने मतदारांनी आपले मतदान केले आहे.

१५) प्रसार माध्यमांची भूमिका (Roll of Media) : आधुनिक युगामध्ये इलेक्ट्रीक मिडीया व प्रिंट मिडीया याच्या माध्यमातुन गोंडस अशी आश्वासने व आकर्षक सुभाषिते प्रसारित करून मतदारांना आकर्षित करण्याचे काम प्रसार माध्यमे करतांना दिसून येतात. उदा. अच्छे दिन आनेवाले है, अबकी बार मोदी सरकार, कुठे नेऊन ठेवला महाराष्ट्र माझा, डिजीटल इंडिया शायनिंग इंडिया, गरिबी हटाव अशा स्वरुपाने सारे सतत इलेक्ट्रॉनिक्स मिडीयाच्या मार्फत मतदारांसमोर ठेवले जातात.

१६) सोशल मीडीयाचा प्रभाव

भारतीय राजकारणावर सोशल मीडियाचा प्रभाव २०१४ पासून स्पष्टपणे दिसू लागला. मध्य प्रदेश, राजस्थान आणि छत्तीसगडच्या निवडणुका वगळता सोशल मीडियानं प्रत्येक राज्यात किमान एक वेळ निवडणुकीच राजकारण ढवळून तिशील केल आहे. तेव्हापासून आजपर्यंत सोशल मीडियानं राजकारणातली जवळपास एक फेरी पूर्ण केली. सध्या या तीन राज्यांत सोशल मीडिया निवडणुकीच राजकारण घडवण्यात गुंतला आहे. जयपूर शहरात भाजपच्या आयटी सेलची कार्यशाळा झाली. या आघाडीवर अमित शहा आणि अमित मालवीय सातत्यान काम करत आहेत. सन २०१९ च्या लोकसभा निवडणुकीपासून सोशल मीडियाची दुसरी निवडणुकीय फेरी सुरू होईल. सामाजिक चळवळींचा अवकाश डिजिटल कृतिशीलतेनं व्यापला आहे, तसेच ऑन लाईन राजकीय संघटनही केले जात आहे. सोशल मीडियाची ही कार्य नवीन समाजिक चळवळींशी साम्य असलेली आहेत. या चळवळींचा गेल्या पाच वर्षात प्रत्येक राज्यात प्रभाव पडलेला दिसतो.

• निष्कर्ष :–

सार्वत्रिक प्रौढ मताधिकारावर आधारित मुक्त व न्याय निवडणूकाव्दारे सर्व महत्वाच्या प्रश्नाची निर्णायक उत्तरे मिळण्यासाठी मतदारांचा राजकीय सहभाग वाढणे गरजेचे आहे. सोबतच मतदारांनी सांप्रदायिकता, जात, धर्म,भाषा, राजकीय पुनरुत्थानाचा सहभाग या संकुचित प्रवृत्तीपासून मुक्ता करण्यासाठी स्थानिक स्वयंसेवकांनी निवडणूक आयोगाच्या पूर्वसमतीने मतदाराची राजकीय शिक्षण संसूचन माध्यमांचा वापर करून राजकीय जाणीव जागृती घडवून आणणे आवश्यक आहे.

संदर्भ ग्रंथसूची

१)डॉ. भोळे भास्कर लक्ष्मण:– "भारतीय शासन आणि राजकारण पिंपळापुरे बुक डिस्ट्रीब्युटर्स नागपूर – जून २०१९
२)डॉ. विघे प्रशांत, डॉ. तेलगोटे धर्मेन्द्र– 'लोकशाही निवडणूक प्रक्रिया आणि सुशासन''साईनाथ प्रकाशन नागपूर' एप्रील–२०१९
३) डॉ. विघे प्रशांत–'मॉडर्न इंडियन पॉलिटी''भारतीय संविधान व भारतीय राजकारण–ऑक्टोबर–२०२०''साईनाथ प्रकाशन नागपुर
४) दैनदिन ई – सकाळ वृत्तपत्र – २ जानेवारी २०२३

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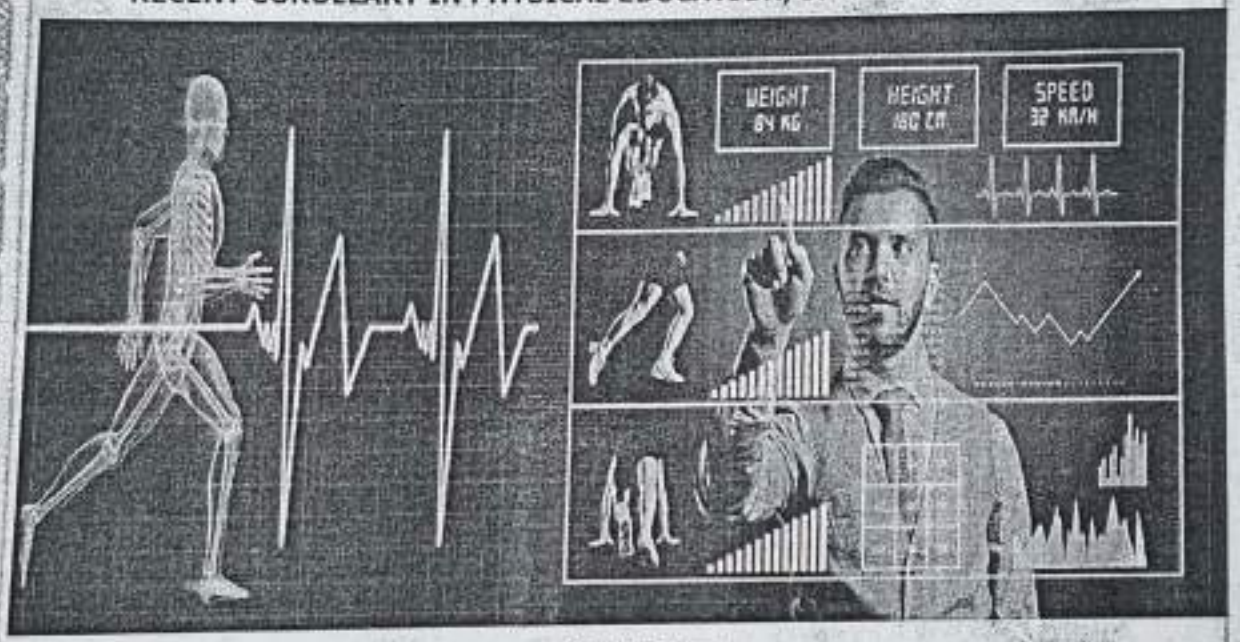

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Impact Of Physical Activities And Sports For Boosting Immunity And Wellness

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Abstract

Physical activity is essentially the development of the use of energy generated by skeletal muscles. The concept of real work is associated with many types, forces and areas of development. There are many types of real work, including exercise, sports, play, dance, and dynamic lifestyles such as walking, housekeeping, and farming. Active work or exercise can improve your well-being and reduce the risk of several infections, such as type 2 diabetes, malignant growths and cardiovascular disease. In particular, ordinary activities can improve your personal satisfaction. Being fit improves your character. This allows you to perform proactive tasks without feeling tired or anxious. Being in good shape also guarantees that you are intellectually fit and calm. So this is the perfect opportunity to play some games, engage in proactive tasks, encounter joy, harmony and appreciate a fiery and energetic lifestyle.

Introduction

Physical work can be characterized as any development of the body that requires the use of energy. This includes all movement during that time, except standing or resting. Active work can be seen, for example, in going to class, climbing the stairs, mowing the lawn and, in any case, cleaning the house. Exercise is active work, but not all real work is exercise. Exercise is an organized, organized and monotonous activity to improve or maintain true well-being. The possibility that active work is a prerequisite for well-being is not new. Ancient scientists and doctors relied on it, and Hippocrates (60-357 BC) explained it. Perhaps instinctively, said Russell Pate, extraordinary pioneers have always understood the connection between active work and well-being, but as previously noted, the science of active work and physical activity did not begin to be applied until the 20th century. European exercise physiologists - 1920 Nobel laureate August Krogh (187-199) and 1922 Nobel laureate A. V. Slope (1866-1977) - were quick on the field. Noting that the field has not produced a Nobel since then, Pate said, "We are overdue." In the United States, the Harvard Fatigue Laboratory was dynamic around the same time, until the end of World War II (1927-1919 7). According to Pate, it spawned a significant number of scientists who conducted applied science research projects across the country that still exist today. At the beginning of the 20th century, most of the science of active work and movement focused on understanding the physiological responses important to exercise. Near the middle of the century, some exceptionally famous experts on the spread of disease, such as Jeremy Morris (1910-2009) and Ralph Paffenbarger (1922-2007), were inspired by the effects of active work on well-being. Pate said: "I think you could probably argue that we are here today because of Jeremy Morris in the UK and Ralph Paffenbarger's scheme in the US." As he would like to think, the field benefited enormously from the credibility these early disease experts brought to their work. Morris is best known for his work in the mid-1950s. Different social outcomes for dynamic multilevel bus drivers compared to static drivers. Paffenbarger continued this work in verbal encounters between dynamic house builders (i.e., drivers) and static housewives, and conducted an important study of Harvard graduate classes with multiple real-world job levels (Paffenbarger et al., 1978). He also produced what many people call the Paffenbarger curve, which represents the relationship between active work and coronary outcomes. The lower end of the mobility continuum is associated with significantly increased fatal and nonfatal respiratory failure (Paffenbarger et al., 1978). The Paffenbarger curve has been used to describe the relationship between active work and many other persistent contagion effects, and well-being has been used here and there as a proxy for actual work (Blair et al., 1989). Pate said the key message of the curve is that "you don't want to be still." To be honest, active work and movement are important for everyone. Young people, teenagers and adults of all ages need regular, real work. Real work promotes great well-being and you should remain dynamic in all phases of your life, paying little attention to your body type or BMI.Understanding the advantages of actual wellness and realizing how dynamic you ought to be can assist you with keeping up wellbeing and improve your general personal satisfaction. Here are a couple of advantages of normal actual work that exhibit the significance of actual wellness.

Set aside cash

As indicated by the Centers for Disease Control and Prevention, persistent illnesses cause 7 out of 10 passings in the U.S., and treating constant infections represents 86% of U.S. medical care costs. While a few illnesses can't be forestalled, you can lessen your danger for certain sickness – like coronary illness and diabetes – through diminishing dangerous practices and carrying on with a solid way of life. Settling on sound decisions, like taking part in standard active work, can lessen your danger for some, medical problems and complexities that can bring about costly clinical consideration.

Increment your future

Various investigations have shown that standard actual work builds future and lessens the danger of untimely mortality. There's not an enchantment recipe that deciphers long stretches of actual work into long periods of life acquired.

Reduce your risk of injury

Standard exercise and active work increment muscle strength, bone thickness, adaptability, and security. Physical wellness can decrease your danger for and versatility to unintentional wounds, particularly as you get more established.

Improve your personal satisfaction

Actual inertia is related with an expanded danger for particular sorts of malignancy, various persistent infections, and psychological well-being issues. Exercise, notwithstanding, has been appeared to improve disposition and emotional wellness, and gives various medical advantages. Obviously actual wellness additionally permits you to do things that you may not in any case have the option to do.

Stay dynamic

Remaining dynamic and sound permits you to do exercises that require a specific degree of actual wellness. For instance, climbing to the highest point of a mountain is a remunerating experience that ingrains a feeling of achievement and gives tremendous landscape, however there are individuals who can't encounter this because of wellness limits. Yet, in any event, strolling around the zoo with your family or playing on the jungle gym with your youngsters can be trying for the individuals who disregard active work for expanded timeframes. Being dynamic implies that it's simpler to remain dynamic as you get more seasoned.

Improve your wellbeing

There are various wellbeing benefits to actual wellness. Normal exercise and active work advances solid muscles and bones. Remaining dynamic can likewise assist you with keeping a sound weight, lessen your danger for type 2 diabetes, coronary illness, and diminish your danger for certain malignant growths. All in all, remaining dynamic is a critical piece of keeping up great wellbeing and health.

Significance of physical fitness

That doesn't mean you can lift really heavy loads or even run a long distance run, despite the fact that people who can are undeniably fit. For the average person, wellness in a meeting health office helps count every second count and involves three essential parts of our being; physical, mental and emotional well-being. Experts are gradually realizing that the three parts of an individual generally affect our real well-being. For example, if someone is very excited or mentally stressed, it can make them sick. This pressure can lead to ulcers, cardiovascular problems, strokes, stomach problems, and the sky is the limit. In any case, when the body is in order, a person generally feels better and is ready to avoid many real diseases. But when we think of wellness or fitness, we usually mean actual wellness, and this is important for a number of reasons.

1. Being in great shape assists with monitoring circulatory strain. The heart is a muscle and in the event that it isn't practiced it won't be solid. At the point when you are fit, your heart is less inclined to build up the numerous heart illnesses found in such countless individuals today. Strolling is supposed to be a definitive method to stay fit, with 2000 stages each day incredible for practicing the heart and keeping those joints flexible.
2. Talking of joints, work out – wellness – is useful for anybody with joint inflammation or firm muscles. Delicate exercise from strolling or swimming assists with fortifying the muscles, joints and tendons so the scope of movement is kept up or even expanded.
3. Being fit is brought about by active work, yet such exercise likewise makes us better inwardly. It gives us a feeling of direction and lessens sensations of dormancy and gloom. At the point when you get

making the rounds on your walk you will see or meet others and this social communication is additionally important to keep you having a positive outlook on yourself and your life.

4. Being fit methods you won't be overweight – or if nothing else, not as much as those individuals who won't ever work out. Being overweight causes a great deal of issues, from worn joints to coronary illness and numerous issues in the middle, just as causing you to feel terrible about your self-perception. So what's the principal intention for begin getting fit? Take a walk. Every day go somewhat further. Before long you will actually want to walk two kilometers without feeling short of breath. In any case, consistently counsel your medical care proficient prior to beginning any wellness system.

The significance of Physical Fitness in a Student's life

Being physically active and in good shape is extremely important, especially among today's younger people who anxiously appreciate the luxury of laptops, personal computers and televisions and are not always dynamic and lively. Dealing with electronics is not terrible as long as it is not temporarily used as a distraction. To appreciate the magnificence of life and face it fully, you should start engaging in proactive tasks or sports. Because students are young, they have a lot of potential to develop a side interest that will keep their well-being in check throughout their lives.

Being in great shape doesn't really need a thorough timetable of exercise. The variety of advantages that join being in great shape and dynamic are :-

• Prevents Chronic illnesses – Being Physically fit assists lower with blooding sugar levels and checks pulse. It additionally keeps a mind your wellbeing and you are less inclined to endure strokes or heart sicknesses.

• Controls Weight – The momentum age is inclined to infections inferable from additional body weight and expanded cholesterol levels. Being fit permits you to dispose of fat which thus upholds a sound way of life.

• Ensures solid bone, muscle and joint turn of events – Adolescence is the ideal time when you can put resources into your body and the outcomes will keep going forever.

• Reduces stress – Stress is perhaps the most ruling wellbeing risk in the more youthful age. Being unsuitable causes you to lose your certainty and is perhaps the most conspicuous factor of causing pressure. Being fit makes you actually keen and betters your between close to home connections. In this manner, making you calm.

• Increases energy levels and certainty – Laziness is a partner of an unsuitable body. Being fit makes you dynamic, lively and vigorous constantly. Subsequently making you more skillful and brief in your work and results. This at last reflects in your certainty level which gets helped.

Conclusion

Being in great shape upgrades your character. It allows you to perform proactive tasks without being drained or anxious. Being in great shape additionally guarantees you being intellectually fit and tranquil. So it's the ideal opportunity for you to play a few games, engage in proactive tasks to encounter joy, harmony and to appreciate fiery and energetic way of life.

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The Paper was jointly written by

Prof. Dr. Tapan Dutta | Dr. Sanjay Choudhari | Dr. Amit Temburne

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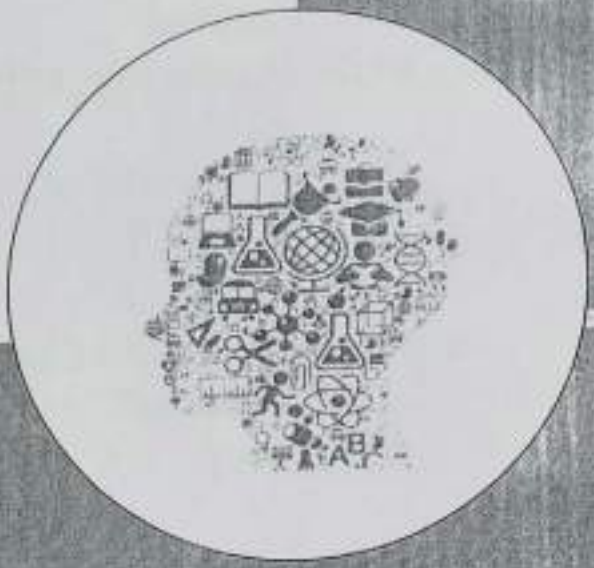

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The Role Physical Education And Sport Achieving The Sustainable Development Goals

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Abstract
Following 15 years of progress towards the remarkable sustainable Development Goals (MDGs), the world has directed its concentration toward the replacement Sustainable Development Goals (SDGs) in a time of change to the recently took on 2030 Agenda for Sustainable Development. In investigating accomplishments and forthcoming business encompassing the eight MDGs, the worldwide local area, driven by the United Nations, attempted an exhaustive conference measure with partners from all circles of society and concurred on 17 SDGs to be sought after over the course of the following 15 years. With the overall desire of bringing individuals and the planet closer together and abandoning nobody, the 2030 Agenda is an exceptional chance to rouse worldwide activity for advancement around the world, remembering for the field of Sport for Development and Peace.

Keywords: Sustainable development, goals, agenda, sport

Introduction

Game has shown to be a practical and adaptable apparatus for advancing harmony and improvement targets. Since the origin of the MDGs in 2000, sport has assumed an indispensable part in improving every one of the eight Goals, a reality that has been perceived in various goals of the General Assembly. In goal 70/1, named "Changing our reality: the 2030 Agenda for Sustainable Development", took on in 2015, game's part in propelling social advancement is additionally recognized: Game is likewise a significant empowering influence of economical turn of events. We perceive the developing commitment of game to the acknowledgment of improvement and harmony in its advancement of resilience and regard and the commitments it makes to the strengthening of ladies and of youngsters, people and networks just as to wellbeing, instruction and social incorporation goals.

Game adds to prosperity paying little heed to age, sex or identity. It is appreciated by all, and its scope is unparalleled. For example, the World Taekwondo Federation set up the Taekwondo Humanitarian Foundation to advance the military craftsmanship in outcast camps all throughout the planet. Such drives bring issues to light with regards to the situation of youthful outcasts and are completely in agreement with the SDGs, especially concerning wellbeing (Goal 3: Ensure solid lives and advance prosperity for all at all ages). Youngsters and youngsters advantage hugely from active work. Joined with a school educational plan, proactive tasks and game are fundamental for exhaustive instruction (Goal 4: Ensure comprehensive and quality training for all and advance deep rooted learning).

2030 plan and schooling

The developing worldwide worry for securing the earth and guaranteeing success for all implies that by 2015, the United Nations will define a progression of worldwide objectives. These objectives are partitioned into 17 supportable improvement objectives (SDOs), which are additionally isolated into 169 explicit objectives, which determine and indicate each SDO. This proposition on worldwide maintainability is advanced inside the structure of "2030 plan", and underlines that all areas of society, regardless of whether group or individual, should add to the acknowledgment of reasonable improvement objectives. As well as being eco driven, these objectives incorporate different issues, like round creation, squander age, destitution or wellbeing and prosperity,

metropolitan turn of events or social value. This will cover numerous spaces of mediation, in the climate, yet in addition in the financial, moral and sociological fields, with clear goals, like finding some kind of harmony between current turn of events and future advancement. Nonetheless, albeit the SDG is a recommendation that will be accomplished in 15 years (2015-2030), a few examinations accentuate that the speed of accomplishing the SDG isn't pretty much as quick true to form. In this manner, all legislative and non-administrative associations should cooperate to advance the acknowledgment of these objectives.

In these establishments, training ought to be viewed as a vital factor in merging the economical propensities for people in the future. The United Nations Decade of training for supportable turn of events (2005-2014) has accentuated the significance of coordinating reasonable improvement activities into all parts of schooling to advance the difference in mindfulness and mentality towards maintainability. In this way, at the institutional level, thorough training is one of the fundamental ways of building supportability. Lauder et al. stressed the significance of instruction in managing the world's social and ecological issues. Sachs perceived this significance and underlined that training is a vital factor in accomplishing the drawn out objectives of the thousand years improvement objectives.

Sports exercises and key instruments for accomplishing supportable improvement objectives

The examination on Sports under the objective of supportable improvement is basically completed by three foundations. To begin with, the Sixth International Conference of pastors and senior authorities accountable for sports and Sports Affairs (mineps VI) . The gathering distinguished three expansive spaces of intercession focused on (I) fostering a comprehensive vision for admittance to don, actual training and game for all; (II) boosting the commitment of game to manageable turn of events and harmony; and (III) ensuring the uprightness of game. This paper audits diverse SDOs to feature SDOs identified with AF and Sport. Notwithstanding, the job of joint endeavors in the 2030 plan isn't determined. Simultaneously as mineps VI, the Commonwealth gave a report explaining the commitment of sports to economical improvement objectives. The identity of the record lies in the detailing of a progression of markers and accomplishments, which will all the more equitably measure the commitment of various games related fields to the definition of maintainable advancement objectives. Simultaneously, along with the directions in mineps VI, it gave another report itemizing that the particular targets of each manageable advancement objective can be accomplished through sports, however didn't determine the particular qualities of EF.

At last, in 2019, the Ibero American Sports Council and the Ibero American General Secretariat mutually gave a report recognizing sport as an apparatus for accomplishing maintainable improvement. For this situation, they picked manageable improvement objectives that could be accomplished through EF, sports practice or game as an organization. They have made a thorough examination of how such a relationship will occur (single direction or two-way), and set forward a progression of methodologies and associations to advance feasible turn of events. The fundamental discoveries of this report are that not all objectives designated at explicit objectives have a similar directionality and effect as game, but instead accentuate direct significance to 8 of 17 feasible advancement objectives and 19 of 169. One more illustration of the connection among game and AF and SDO is reflected in the account remarks of day and menas. Notwithstanding, indeed, these creators can't recognize EF and the particular targets proposed by UNESCO. At long last, different organizations, for example, who affirmed these connections and showed the wellbeing, social and monetary advantages of adding to 13 of 17 reasonable improvement objectives, yet didn't indicate explicit goals for which work could be done. All things considered, these frameworks recommend that a brought together examination of the ideas of game, actual exercise and AF be accentuated, and mineps vi initial considers the idea evaluation that the expression "Game" is utilized as an overall term, including public games, sporting events, recreation, dance and association. Different types of impromptu creation, rivalry, custom and native games and games. All things being equal, the Commonwealth subtleties the wording contrasts between sport, coordinated games,

AF, actual exercise, EF, and quality EF. Notwithstanding, in spite of the acknowledgment of these distinctions, the objective determination of each practical improvement objective is seen according to the general viewpoint of sports.

Conclusion

So, it is an assortment point specifically noteworthy and need to build up a multidisciplinary way to deal with address the difficulties of things to come. This is the principle reason for this review is to set up the conceivable connection between EF, as a discipline, in other educational program targets Based on the survey, examination and correlation of different explicit destinations, the supportable improvement objectives are advanced. It especially suggests that the possible connection between the new schooling model and the objectives set out in plan 2030 be broke down, as a main impetus for methodological change, and establish the framework for future business related examination in instructive organizations.

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युगपुरूष महाराजा सयाजीराव गायकवाड

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प्रस्तावना

भारताच्या वैचारीक, सामाजिक व शैक्षणिक बांधणीत महाराजा सयाजीराव गायकवाड हया दूरदृष्टी राजाने सर्वार्थाने लक्षणीस काम केले. देशभरातील सर्व युगपुरूषांना उदा. दादाभाई नौरोजी, ना. गोखले, म. गांधी, लो. टिळक, पं. मदन मोहन मालवीय, स्वा. सावरकर, डॉ. बाबासाहेब आंबेडकर, म. फुले, छत्रपती शाहूया आणि अनेकांना या राजाने मदत केली. ते एक प्रकारचे सर्वांचे पाठीराखे होते. एवढेच नाही तर महाराजा गायकवाड यांनी स्वतंत्र भारताचे स्वप्न पाहत लोककल्याणकारी राज्याचा आदर्श निर्माण केला. आयुष्यभर प्रजाहित जपत त्यांनी आपले स्वप्न वास्तवात उतरविले, मात्र भारतातील अशा एकमेव उत्तुंग व्यक्तिमत्त्वाकडे स्वातंत्र्याच्या सूर्योदयानंतर कोणाचे फारसे लक्षच गेले नाही, हे मात्र घडून गेले. भारतातील पाऊणशे वर्षांचा कालखंड सयाजीरावांच्या कर्तृत्वाने भरलेला आहे, असे रियासतकार गोविंद सखाराम सरदेसाई यांनी लिहून ठेवले. त्याहून महत्त्वाचे भाकीत जगदीश चंद्र बोस यांनी केले. ते म्हणतात, 'भारतासाठी आता सुवर्णकाळ फार दूर नाही. सर्वांच्या एकत्र प्रयत्नातून तो सुदिन लवकरच येणार आहे. आणि या देशाच्या जनकल्याणासाठी जे प्रयत्न करतात, त्यांचे उद्याचे नायक आहेत सयाजीराव. हा सुदिन म्हणजे स्वातंत्र्याची पहाट होती, पण नियतीचे वेळापत्रक वेगळेच होते. स्वातंत्र्यसूर्योदयाच्या दर्शनाअगोदरच सयाजीराव हे जग सोडून निघून गेले आणि जे घडावे असे वाटत होते, ते घडून शकले नाही. स्वातंत्र्यानंतर पंच्याहत्तर वर्षे होत आलीत, पण भारताच्या स्वातंत्र्यलढ्यात सर्व क्रांतिवीराच्या पाठीमागे आयुष्यभर हिमतीने उभे राहून, सार्वभौम सत्तेशी संघर्ष केलेल्या महाराजा सयाजीराव गायकवाड यांच्याकडे आमच्या इतिहासकारांनी, राज्यशास्त्रप्रशासनातील मान्यवरांनी सामाजिक सुधारणांच्या पताका खांद्यावर घेऊन आपापल्या नेत्यांच्या नावाचे आयुष्यभर भांडवल करणाऱ्या कोणाही मंडळींना काळापूर्वी दूरदूष्टी असलेल्या या युगद्रष्ट्यासंबंधीचा खरा इतिहास सांगावा वाटला नाही. हे का घडले ह्याचा शोध घेण्यापेक्षा, घडून मात्र गेले आहे.

इतिहासकार वि. का. राजवाडे यांनी महाराष्ट्रातील शंभर वर्षातील कर्तृत्ववान व्यक्तींची मोजदाद करणारा एक बहुमोल लेख लिहिला आहे. त्या लेखात पहिले नाव लिहिले आहे महाराजा सयाजीराव गायकवाड यांचे. सयाजीराव महाराज जाऊन पाऊण शतक उलटले. स्वातंत्र्यपूर्व काळात ह्याच युगपुरूषाच्या कर्तृत्वाने पाऊण शतकाचा इतिहास विविध घटनांनी भरलेला होता. आणि आजचे समाजजीवन वेगवेगळ्या कारणांनी–घटनांनी ढवळून निघत असताना सगळ्यांना बरोबर घेऊन समामिलकीच्या भूमिकेतून सर्वक्षेत्रात उत्तुंग काम केलेले सयाजीराव प्रसिद्धीच्या प्रांगणातून बाजूला राहिले असले तरी, येत्या काळात सर्वांना प्रेरणा देऊ शकतील असे एकमेव व्यक्ती आहेत.

महाराजा सयाजीराव गायकवाड यांच्या कालखंडातील चार टप्पे पाडता येतील जसे १. अनुभव काळ, २. अभ्यास काळ, ३. विचार काळ व ४. प्रगतीकाळ.

१.अनुभव काळ (१८८१ ते १८८७) :—महाराजा सयाजीराव गायकवाडयांची १८७५ साली दत्तक म्हणून राजमाताजमनाबाईने बडोदा राज्याचा राजगादीवर निवड केली. १२ वर्षाच्या अशिक्षित अशा गोपाळरावाना खऱ्या अर्थाने १८८१ पर्यंत सहा वर्षे स्वत:चे शिक्षण आणि राज्यप्रशासनाचे शिक्षण गुरू म्हणून ब्रिटीश संस्थानातील आयसीएस अधिकारी एफ.ए.एच. मि. इलियट यांनी सयाजीरावांची उत्तम तयारी करून घेतली. दिवान सर टी. माधवराव केशव भाऊराव पंडित आणि व्यकटराव जोशी उर्फ भाऊ–मास्तर या मंडळीनी सयाजीरांना शिकविण्याचे काम केले. सुरूवातीला प्राथमिक माहिती पूरवत राहुन त्यांने विषयज्ञान वाढवले व काही काळानंतर त्यांचे अभ्यासाचे विषय वाढविण्यात आले. त्यांचा अभ्यासक्रमही विस्तारीत करण्यात आला. या तरूण राज्याच्या अंगचे गुण, नवे शिकण्याची चिकाटी, अन गोविस तास एखाद्या गोष्टीचा ध्यास घेवून त्याना पाठपूरावा

करण्याची जिद्द त्यांनी ओळखली. स्वत:च्या मुलावर करावे तसे शिक्षण, प्रशासन, कुटुंब प्रमुखाप्रमाणे राज्याची जबाबदारी या मुलभूत कर्तव्याचे संस्कार सयाजीरावावर या गुरूवर्यांनी केले. ''शाळेची राजवाड्यातील जागा बदलुन मोतीबागेत नेण्यात आली. सकाळी सहा वाजल्यापासून ते संध्यांकाळपर्यंत महाराजांचे इतर विद्यार्थ्यांबरोबर शिक्षण होऊ लागले मराठीच्या जोडीला इंग्रजी, गुजराती व उर्दु हे नवीन भाषाविषय समाविष्ठ झाले. ही सहा वर्षे त्यांच्या दृष्टीने परिवर्तनाची होती. अठराव्या वर्षी १८८१ ला प्रत्यक्ष राज्यकारभार त्यांच्या हाती आला. १८८१ ते १८८७ हया अनुषंगाने काळात राज्यपद्धती समजून घेणे, त्यात योग्य ते बदल करणे आणि या बदलांची अंमलबजावणी करताना विविध प्रकारच्या अनुभवांना त्यांना सामोरे जावे लागले.

२.अभ्यास काळ(१८८७ ते १८९५) :– पहिल्या राणी चिमणाबाई यांच्या अकाली मृत्यूमुळे सयाजीराव यांना निद्रानाशाचा आजार जडला. निद्रानाश उद्भवताच गो. स. सरदेसाई महाराजांचे रिडर यांच्या कडून वाचन करवून घेत. सरदेसाई कधी इंग्रजी गोष्टीचे पुस्तक, तुकारामाचे अभंग असे महाराजाना आवडणारे साहित्य रात्रभर वाचून दाखवत. महाराजाना वाचनाची गोडी याप्रसंगाने लागून ग्रंथवाचनाचे जणू वेसनच जडले. इतिहास, तत्वज्ञान, नितिशास्त्र हे महाराजांचे आवडीचे विषय होते. या विषयाचरच्या ग्रंथवाचनाचा व्यासंग त्यांनी अत्यंत चिकित्सकपणे वाढविला. एखादी संकल्पना न समजल्यास ते चर्चा करून संकल्पना समजावून घेण्याचा प्रयत्न करीत. त्यांची ज्ञानाभिलाषी वृत्तीच या घटनेवरून सुस्पष्ट निदर्शनास येते. हिंदूस्थानातील अनेक विद्वानांना, पंडितांना आणि शास्त्रज्ञांना महाराजांनी बडोद्यास बोलावून विद्वान तज्ज्ञांची व्याख्याने त्यांनी आयोजित केली होती. यामध्ये डॉ. रवींद्रनाथ टागोर, पं. मदन मोहन मालविय, सी. व्ही. रमन, जगदिश चंद्र बोस, डॉ. जयस्वाल, डॉ. राधाकृष्ण, सरोजनी नायडू, वि. दा. सावरकर, मार्क ट्वेन, रूडियार्ड किप्ली, हंस स्वरूप स्वामी, डॉ. रामचंद्र भांडारकर, डॉ. किर्तीकर, जदूनाथ सरकार, न. चि. केळकर, म. जोतीबा फुले, विट्ठल रामजी शिंदे, अन्नासाहेब कर्वे, अहिताग्नी राजवाडे, प्रा. पांगारकर, ई. एम. फॉस्टर अशा विद्वांनाचा समावेश होता. इत्यादी विद्वांन पंडितांचे व्याख्यान ऐकूण महाराज सयाजीराव गायकवाड यांच्या मनावर वैचारीकता वृद्धींगत होत असे. तेथूनच प्रग्लभतेचा पांयडा त्यांच्यावर पडत होता.

महारांजाच्या प्रकृतिच्या कारणाने भारतातील उपचारासोबत परदेश पर्यटन व उपचारासाठी १८८७ ला विलायतेचा पहिला प्रवास घडला. यातून जगातील चांगल्या गोष्टी या जिज्ञासू विद्यार्थ्यांने न्याहाळल्या. त्याचा अभ्यास केला. यांचा उपयोग बडोद्यासाठी कसा करता येईल, हयाचा विचार करून जगभरातील चांगल्या तज्ज्ञांना बडोद्यात आणणे सुरू केले.त्यामध्ये अमेरिकेतील विल्यम बार्डन यांना ग्रंथालय उभारण्यासाठी आपल्या संस्थानात आणून ग्रंथालयाचे डायरेक्टर म्हणून नेमणूक केली. बार्डन साहेबांनी बडोद्यास आल्याबरोबर पाश्चात्य ग्रंथालयातील कामाच्या धरतीवर बडोद्याच्या सेंट्रल लॉयब्ररीचे निर्मिती केली, सोबंतच संस्थानात सरकारच्या मदतीने चालणारी सार्वजनिक मोफत ग्रंथालये व वाचनालये संस्थानाच्या निरनिराळ्या भागात उघडली. ज्या खेडेगावात अशा तऱ्हेची ग्रंथालये उघडता आली नाहीत त्या ठिकाणी त्यांनी फिरत्या ग्रंथालयाची योजना केली. अशिक्षित लोकांना ज्ञानसंपादनाची गोडी लागावी म्हणून त्यांनी उत्तम चित्रपट तयार करवून लॅन्टर्न स्लाइड्सच्या द्वारे ते चित्रपट गावोगावी दाखविण्याची व्यवस्था केली.

३.विचार काळ(१८९५ ते १९०९) :– अभ्यासातून, अनुभवातून, पाहण्यातून जमविलेल्या नवकल्पना, जगभरातील नानाविध विचार, प्रशासन पद्धती, साहित्य, कला–संस्कृतीचा सयाजीरावांनी डोळसपणे स्वत: अभ्यास केला. मनापासून या गोष्टींना प्रोत्साहन देण्याची योजना आखू लागले. राज्य हे एक कुटुंब आहे. कुटुंबात उत्पन्न आणि खर्चाची तोंड मिळवणी करावी लागते. अनाठाई खर्चास आळा घालणे, शक्य तेथे काटकसरीने बचत करणे आणि आपल्या राज्य कारभारात शिल्लक वाढती राहील याची प्रत्येकांने काळजी घेणे, हे तत्व महाराजानी आपल्या राज्यात अमलात आणले. शेतसाऱ्याची नव्याने आकारणी, नियीमत वसूली, कर चुकविणाऱ्यास जरब बसविणे, प्रत्येक खात्याने आपल्या खर्चाचे अंदाजपत्रक करावे अशाप्रकारची अमलबजावणी अधिकाऱ्यांच्या मार्फत महाराज करीत असत. महाराज म्हणजे एक विद्याव्यासंगी व्यक्तीमत्व होते. महाराजांना सर्व धर्मांबद्दल आस्था होती. ''सयाजीराव गायकवाड यांच्या जातीधर्म मिमांसेकडे मागे वळून पाहतांना लक्षात येते की, महाराजांच्या जाती धर्माविषयक सुधारणा आणि तत्संबंधीची वैचारीक मिमांसा

अत्यंत क्रांतदर्शी होती. इ.स. १९११साली लंडन येथे भरलेल्या पहिल्या जागतिक वंशविषयक परिषदेत सर्ववंशांना आणि सर्व लोकांना समानसंधीचे व समतोल धोरण आखण्याची भूमिका त्यांनी मांडली होती".

महाराजांनी आपल्या शिकागोच्या अध्यक्षीय भाषणात अनेक मुद्यांना हात घालत तेथिल विद्वानांची मते जिंकली. हिंदूस्थानांची गौरवी गात हिंदूस्थातील प्राचीन रूढी–परंपरा तसेच वर्णव्यवस्था आणि आजच्या काळात त्यात माजलेली अराजगता देखिल स्पष्ट केली. तसेच आजच्या वर्तमान घडीच्या स्वार्थपूर्ण व्यक्तींच्या कार्यामुळे कशा पद्धत्तीने देशाचे नुकसान होते. हे ही समजावून सांगितले. जे लोक शिकून समाजाच्या विकासात हातभार लावतात, नवसृष्टी निर्मितीसाठी प्रयत्न करतात ते परमेश्वराचे जोडीदार आहेत. परंतु सध्या स्वार्थाने सर्वांना पछाडलेले आहे. ते म्हणतात, ''भौतिकशास्त्र, वैद्यकशास्त्र, शिल्पशास्त्र, समाजसुधारक आणि धर्मद्रष्टे हे लोक या नव्यासृष्टीचे निर्माते आहेत. सृष्टीकर्त्या परमेश्वराचे ते एका परीने जोडीदारच आहेत. पण स्वार्थ, जातीद्वेष, संकुचित देशाभिमान व लोभ या दुर्गुणाचे मूर्तिमंत पुतळे असणाऱ्या लोकांनी जगात सर्वत्र गोधंळ माजवून दिला आहे.'' खऱ्या अर्थाने प्रत्येक देश आपपल्या पद्धतीने पुढे जाण्याचा व प्रगती करण्याचा प्रयत्न आहे. परंतु राष्ट्रनिर्मितीच्या आड येणारी स्वार्थांध लोक राष्ट्रविकासात अडसर ठरतात.

४.प्रगती काळ(१९०९ ते १९३५) :– सयाजीराव यांचे अनुभव, अभ्यास, प्रत्येक गोष्टीने दूरदृष्टीपणे पाहून यशस्वी अंमलबजावणी केल्यामुळे भारतातील वेगवेगळेपण ऊठून दिसू लागले. महाराजांच्या स्वप्नांचा आविष्कार म्हणजे बडोदा राज्याची झालेली प्रगती होय. हा प्रगतीकाळ स्थैर्याचा आणि सर्वव्यापी सुधारणांचा काळ होता.

सयाजीराव गायकवाड यांच्या प्रशासनवैशिष्ट्याचे एक उदाहरण सांगता येईल. ''शिक्षण हेच प्रगती आणि परिवर्तनाचे एकमेव साधन आहे. त्याकरिता ते शिक्षण रयतेला दिले पाहिजे, हे राजाचे कर्तव्य आहे. शेती च उद्योग–व्यापार ही प्रगतीची शिडी आहे. रस्ते, शेतीसाठी व पिण्यासाठी पाणी, लोकांचे आरोग्य हा प्रजेच्या सुखाचा राजमार्ग आहे.'' हे महाराजांनी स्वत: कळवण्यासारख्या खेड्यातून आल्याने ओळखले होते. त्यामुळे समाजाचे सगळे घटक महत्त्वाचे आहेत. दुर्बल, मागासवर्गीय आणि जगंलातील आदिवासी ही आपलीच प्रजा आहे. त्यांना समाजप्रवाहात आणण्यासाठी राजाचे कर्तव्य आहे. यावर सयाजीराव म्हणत 'राज्याचा कारभार आम्ही हाती घेतला आमची प्रजा संतुष्ट राहावी, त्यांचा सुखात वाढ व्हावी, अशी माझी अंत:करणापासून इच्छा आहे. कित्येकांना माझे हे काम आणि प्रयत्न असमंजसपणाचे वाटत असतील परंतु त्या सर्वाच्या मुळाशी एकच उद्देश आहे, आणि तो म्हणजे प्रजाजनाचे हित करणे हा होय. प्रजेचे कल्याण करने हेच माझे कर्तव्य आणि हाच माझा मोक्ष आहे. लोकांनी याकरिता शिक्षण संपादन करून सुधारणांचा स्विकार करावा.' म्हणून अस्पृस्य आदिवासीसाठी मोफत शाळा सुरू केल्या. हा संबंध भारतातील पहिला प्रयोग होता.प्रगत असलेल्या राष्ट्रात शिक्षणाबद्दल अशी जागरूकता होती. त्यामुळेच विलायतेत १८७२ साली, जपानमध्ये १८८० साली, इंग्लंडमध्ये १८८१ साली, फ्रान्स मध्ये १८८४ साली आणि स्पेन–डेन्मार्क येथे १८८५ साली सक्तीच्या प्राथमिक शिक्षणाची सुरूवात झाली. ह्या सक्तीच्या शिक्षणासाठी शिक्षण घेणाऱ्या विद्यार्थ्यांकडून फीस घेतली जाई. ऐपत आणि इच्छा असणारेच शिकू शकत. ही गोष्ट सयाजीराव या तरूण राजाला अभ्यासातून कळली. भारतात याच काळात शिक्षणासंबंधी १८८२ मध्ये हटंर कमिशन आले. जोतीराव फुले यावेळी म्हणाले, ''समाजातील कनिष्ठ वर्गांना अगोदर शिकवा'' उच्च वर्गाचे प्रतिनिधी मात्र आग्रहाने म्हणाले, ''आपण उच्चवर्गीयांना प्रथम शिकवू. तो वर्ग शिकला की, ते शिक्षण खालच्या वर्गापर्यंत आपोआप झिरपत जाईल. ह्या दोन्ही विचारांचा अभ्यास तरूण सयाजीराव यांनी केला. इ. स. १८८२ साली अस्पृश्य–आदिवासी या वंचित समाजासाठी सरकारी खर्चाने शिक्षण देण्याचा हुकूम काढला. त्याच वेळेस महाराजांनी निरनिराळ्या भागात १८ शाळा या अंत्यज लोकांसाठी उघडल्या. शाळांची ही संख्या वाढत जाऊन १८९६ साली शाळांची संख्या २० झाली त्यावेळेस महाराजा सयाजीरावांचे वय अवघे २० वर्षाचेही नव्हते. हे अखिल भारतीय अस्पृश्यता निवारण परिषदेमध्ये त्यांनी अध्यक्षिय भाषणात म्हणाले ''मला या कामी अनेक अडचणींशी झगडावे लागले. कितीही पगाराचे

आमीष दाखविले तरी कित्येक वर्षे हिंदू शिक्षकच मिळेनात, मुसलमानांकडून व नंतर आर्य समाजिष्टांकडून हे काम करून घ्यावे लागले''

या अंत्यत कठिण सुधारणेत महाराजांनी अपूर्व यश संपादनाबद्दल महाराजांना परोपकारी सभा नावाच्या एका संस्थेने महाराजांना 'पतितपावन' अशी पदवी दिली. त्यावेळी केलेल्या भाषणात महाराजांनी ''या पदवीला मी पात्र आहे. बसे मला तरी वाटत नाही. उलट माझ्यावर या पदवीमुळे एक अवघड जबाबदारी लादली जात आहे. या क्षेत्रात मी एकटाच खपत आहे, असे नसून इतर जे कोणी आहेत, त्यांच्याकडेही हा मान जातो. राज्याच्या काळजीमुळे व परिस्थितीमुळे या कामी मला जितके करावयाचे होते तितके माझे हातून घडले नाही. माझे अधिकारी मला जे सांगतात त्यावर मला अवलंबून राहावे लागते. ते जे करतात त्यावरच तृप्त राहावे लागते. मानवी प्रयत्नाला मर्यादा असतात. विशेषेत:. हिंदूस्थानातील राजे लोकांना ते सर्वाधिकारी असूनही या मर्यादा अधिकच भोवतात !'' अशा स्पष्ट उद्गार वयाच्या १९ वर्षाच्या तरूण राज्याने म्हटले होते.वंचित समाजाला उन्नत करण्याचा हा जगातील महत्त्वाचा सामाजिक क्रांतीचा निर्णय होता. एवढेच नाही तर १८९२ साली सक्तीच्या मोफत प्राथमिक शिक्षणाची बडोद्यात सुरूवात केली. सक्तीच्या मोफत शिक्षणाची महाराजांची ही दूरदृष्टी तत्कालीन जगातल्या अग्रेसर शासनप्रणालींना मागे टाकणारी होती. १८९१—९२ साली ना. गोपाळ कृष्ण गोखले यांनी पार्लमेंटमध्ये भारतातील प्रजेला सक्तीच्या व मोफत प्राथमिक शिक्षण देणारा ठराव मांडला. महाराजा सयाजीराव यांचा बडोद्यातील शिक्षणाचा आग्रह डोळ्यासमोर ठेवून हा कायदा करावा, असे आग्रहाने मांडले.

सर्व क्षेत्रात सयाजीरावांनी लक्षणीय कार्य केलेले आहे हे आपणास दिसून येईल. खऱ्या अर्थाने महाराजा सयाजीराव गायकवाड हे स्वातंत्र्यपूर्व काळात भारतात लोकशाही संविधानाचा पाया घातला. बनारस हिंदू विश्वविद्यालय आणि देशभरातील शेकडो संस्थांना मदत केली.या विश्वविद्यालयाचे ते कुलपती होते. पं. मालवीय उपकुलगुरू होते. भारतात स्वातंत्र्यसंग्रामात एकटया सयाजीरावांनी जगभरातील क्रांतीकारकांना मदत करून ब्रिटिश सरकारशी आयुष्यभर संघर्ष केला. भारतात प्रशासनातील सयाजीराव यांचे पुढील प्रयोग देशभर महत्त्वाचे ठरले. त्यांनी १८८५ मध्ये पहिला सहकारी साखर कारखाना काढला, स्त्री शिक्षणाचा कायदा केला, १८९० मध्ये स्वतंत्र शेती खाते उघडले, १८९१ मध्ये गाव तेथे ग्रामपंचायत केले, गावोगावी वाचनालय उघडली, सोबतच व्यायामशाळा करून तरूण मुलांना व्यायामाद्धारे आरोग्याचे महत्त्व पटवून दिले, धार्मिकतेला प्रोत्साहन देण्यासाठी धर्मखात्याची सुरूवात केली व पुरोहितासाठी कायदे केले. १८९२ साली सक्तीचे मोफत प्राथमिक शिक्षण सुरू केले. राइट बंधूंच्या अगोदर आठ वर्षे पुणे येथील संस्कृत पंडित शिवणकर बापू तळपदे यास १८९५ याली जगातील पहिल्या विमानोड्डाण प्रयोगास आर्थिक मदत केली होती. १९०१ साली दुष्काळासाठी फॅमिन कोड केले. १९०६ साली महाराजांच्या मदतीने 'महाराजा सयाजीराव गायकवाड आयुर्वेदिक विद्यापीठाची नाशिक येथे स्थापना केली, जात, पात, धर्म याचा विचार न करता चौसष्ट वर्षात महाराजांनी कोट्यावधीची मदत गरूजूंना दिली. साहित्य, कला, संगीत, चित्रकला, शिल्पकलाचे ते पाठराखे होते. एवढेच नव्हे तर महाराजा सयाजीराव हे भारतातील एक प्रज्ञावंत, विचारवंत राजा होते. त्यामुळेच मराठी, हिंदी, संस्कृत साहित्य संमेलने, प्राच्यविद्या परिषदा, मानववंश परिषद, जागतिक सर्वधर्म परिषद, औद्योगिक परिषदा, संगीत संमेलने, अखिलभारतीय अस्पृश्यता परिषद, राष्ट्रीय कॉंग्रेस अधिवेशने या आणि अशा परिषदाचे ते अध्यक्ष, उद्घाटक आणि आयोजक होते. या त्यांच्या अनेकांगी विविध अष्ठपैलू कामगीरीतून त्यांची प्रज्ञावंत युगपुरूष, युगद्रष्टा म्हणून ख्याती सर्वश्रृत आहे.

निष्कर्ष :—

१.सयाजीराव गायकवाड हे देशाभिमान बाळगणारे द्रष्टे युगपुरूष होते.

२. सयाजीरावांनी आपल्या कार्यकाळात प्रजेसाठी जे काही चांगले करता येईल ते काम केलेले आहेत.

३.देशप्रदेश गमन करतांना जे जे चांगले, उत्तम असे जे दिसेल ते आपल्या राज्यात आणण्याचा प्रयत्न केला आहे.

४.शेतीसुधारणा, ग्रामीण—खेडूत लोकांना शिक्षणाचे द्वार उघडे करून देणारे ते पहिले राजकर्ते होत.

५.ग्रंथनिर्मितीला प्रोत्साहन देणेव ते लोकांपर्यंत कसे पोहचेल याची काश नेहमी बाळगून असत.
६.रस्ते, रेल्वे, पाणीपुरवठाव उद्योग ही देशाची विकासद्वारे आहेत असे ते समजत.

संदर्भ :—

१.भांड बाबा, ''लोकपाळ राजा सयाजीराव'' साकेत प्रकाशन, औरंगाबाद, २०१३
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३.वरखडे रमेश, 'माहाराजा यसाजीराव गायकवाड यांचा भाषण संग्रह' भाग —२, खंड —२, महाराजा सयाजीराव गायकवाड चरित्र साधने, प्रकाशन समिती, औरंगाबाद, २०१३
४.डॉ. बुवा जी.ए., 'महाराजा सयाजीराव यांच्या सुधारणा ग्रंथालय', भाग ४, खंड २५, महाराजा सयाजीराव गायकवाड चरित्र साधणे प्रकाशन समिती, औरंगाबाद, २०२०

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लाखांदुर तालुक्यातील स्त्रियांचे आजार आणि आहार यांचा अभ्यास

प्रा.डॉ.अल्का दहीकर
य.चव्हाण कॉलेज लाखांदुर जि.भंडारा
(गृह अर्थशास्त्र विभाग प्रमुख)

प्रस्तावना :–

स्त्री समाज जिवनाचा अर्धा हिस्सा समाज निर्मीतीत अत्यत महत्वाची परंतु प्राचीन काळापासुन आधुनिक काळापर्यंत उपेक्षीत राहीलेली. परंतु आधुनिक काळात स्त्री ही पुरूषांच्या बरोबरीने आर्थिक जबाबदारी पेलायला पराबाहेर पडु लागली आहे. निसर्गात जे वात्सल्य,प्रेम,ममता, स्त्री ला मिळालेली आहे. त्यांची बरोबरी पुरूष कधीही करू शकणार नाही. त्यामुळे स्त्री नौकरी व्यवसायात किंवा इतर उपक्रमामध्ये कितीही पुढे गेली असली तरीही स्वत:च्या कुटुंबाविषयाची जबाबदारी ती विसरू शकत नाही. प्रगत देश घडविण्यासाठी स्त्री ही शारीरीक तसेच मानसिक दृष्टया सुदृढ असणे अतिशय आवश्यक आहे.

पुरूषप्रधान सम्कृतीत वावरताना अजुनही स्त्रिया स्वत:च्या प्रकृतीकडे दुर्लक्ष करतात. प्रकृतीची हेळसांड करताना आणि नशिबाचे भोग म्हणुन कित्येक दुखणी अंगावर काढतात. परंतु निरामय जिवन जगायचे असेल तर त्यानी कुटुंबातील आपले स्थान ओळखुन दवुन न राहता आपल्या शारीरीक दुखण्याची योग्यवेळीच दखल घेतली पाहीजे. यासाठी स्त्रियाना आपल्या शरिराची आणि त्याला ग्रासु शकणाऱ्या दुखण्याची तोंडओळख असेल तर अज्ञानापोटी भोगावे लागणारे भोग त्या सहज टाळु शकतील. यासाठी तीने स्वत:च्या आरोग्याची काळजी घ्यायला हवी.

जागतीक आरोग्य संघटनेने आरोग्याची फार समर्पक व्याख्या केली आहे. "आरोग्य म्हणजे केवळ आजाराचा अभाव नव्हे तर संपूर्ण शारीरीक, मानसिक आणि सामाजिक स्थिती उत्तम अवस्थेत असणे आणि रोगमुक्त असणे यालाच आरोग्य म्हटले जाते.

आरोग्य हे अन्नावर योग्य निर्भर असते. म्हणुन उत्तम पोषण स्वास्थाची मुलभुत बाब ममजली जाते ज्या प्रकारचा आहार मिळेल त्यावर शरीर सौष्णव आणि आरोग्य अवलंबुन असते. यासाठी योग्य आहार आवश्यक असतो.

अशाप्रकारचा सामान्य आहार स्त्री पुरूष दोघांनाही आवश्यक असतो. परंतु अजुनही ग्रामीण भागात पुरूषाबरोबर स्त्रियाना महत्व दिले जात नाही. पुरूष हा कमावणारा कुटुबांचा कर्ता म्हणुन त्याला अन्नाचा जास्तीत जास्त वाटा दिला जातो. तसेच मुलीपेक्षा मुलांनासुध्दा जास्त आहार दिला जातो. कौमार्यावस्थमध्ये मुलीची मासिक पाळी सुरू होत असल्यामुळे उलट या वयात तिला सकस आहाराची गरज असते. परंतु आपल्याकडे अजुनही बऱ्याच कुटुबांत मुलीला अपुरा आहार देण्याची चुकीची पध्दत रूढ आहे. त्यामुळे तिच्या वाढीवर परिणाम होतो.

तिला अशक्तपणा, रक्तक्षय यासारख्या आजारांचा त्रास होऊ लागतो. त्यामुळे पुढे गर्भारपणात गर्भाच्या वाढीवर अनिष्ट परिणाम घडुन येऊ शकतात. या वयात मुलीची अंतर्बाह्य वाढ अधिक जोमाने होत असल्यामुळे तिला सकस आणि सुदृढ आहार दयायला पाहीजे.

स्त्रियांचे स्वास्थ्य :–

स्त्रियांचे स्वास्थ म्हणजे कुटुंबाचे स्वास्थ स्त्रिचे स्वास्थ बिघडल्यास कुटुबाच्या दैनंदिन नियमितेवर

परिणाम होतो. म्हणुन स्त्रिने स्वास्थ चांगले राहणे खुप आवश्यक आहे. स्त्रिला सर्वच प्रकारचे घरकाम, कौटुंबिक जबाबदाऱ्या मुलांची देखभाल करावी लागते. त्यामुळे शारिरीक दृष्ट्या सुदृढ राहणे आवश्यक आहे.

स्त्रियांचे आजार :–

स्त्रिच्या आजाराविषयी सांगायचे झाल्यास रक्तक्षय, मासिक पाळीची अनियमितता, हृदय रोग, प्रसुतीचे आजार, मधुमेह, गर्भाशयाचे आजार, स्तनाचे आजार आढळुन येतात. यापैकी मुख्यत्वे रक्तक्षय , मधुमेह, हृदयरोग हे तीन आजार स्त्रिच्या स्वास्थ्यावर घातक परिणाम करणारे असतात.

स्त्रियाचे आहार :–

सुदृढ राहण्यासाठी आहार महत्वाचे कार्य करतो. म्हणुन स्त्रिला तिच्या आवश्यकतेनुसार समतोल आहार मिळणे आवश्यक आहे.

स्त्रियांच्या पोषण विषयक गरजा :–

प्रत्येक स्त्रिची पोषण विषयक आवश्यकता तिच्या कार्यानुसार वेगवेगळी असते. हलके काम करण्याऱ्या स्त्रिला १९०० कॅलरी, साधारण मेहनतीचे काम करण्याऱ्या स्त्रिला २२०० कॅलरी तर जास्त मेहनतीचे काम करण्याऱ्या स्त्रिला ३००० कॅलरी आवश्यक असतात. तर गर्भावस्थेमध्ये सामान्य अवस्थे पेक्षा ३०० कॅलरी जास्त आवश्यक असतात.

लाखांदुर तालुका हा ग्रामिण भाग आहे. तसेच हा भाग मागासलेला आहे. त्यामुळे स्त्रियांना आहाराचे आवश्यक ज्ञान नाही. योग्य अन्न घटकांच्या अभावी स्त्रिया मध्ये अनेक आजार आढळुन आले. सुदृढ आरोग्य करीता समतोल आहाराची गरज असते आहारातील एखादा घटक सातत्याने शरिराला कमी पडल्यास रोग उद्‌भवू शकतात.

लाखांदुर तालुक्यातील मुख्य व्यवसाय शेती असल्यामुळे ७५ टक्के स्त्रिया ह्या शेतावर काम करण्यास जातात. शेतातील काम हे कष्टाचे आहे. परंतु कष्टकरी स्त्रिया ह्या घरून डब्यात अपुरे जेवन नेतांना आढळतात. तसेच त्याचा दर्जा योग्य नसतो. कष्टाचे काम केल्याने जी उर्जा उत्सर्जीत होते. त्याप्रमाणे अपुऱ्या व निकृष्ट जेवणाने पुरेशा कॅलरी त्यांना मिळत नाही. त्यामुळे कॅलरीजची कमतरता आढळते. आणि याचा परिणाम म्हणजे रक्तक्षय यासारखे इतर आजार दिसुन येतात. दररोज शेतावर जात असल्या मुळे मुलांना योग्य प्रमाणात स्तनपान करु शकत नाही. त्यामुळे त्याची रोग प्रतिकार शक्ती कमी होउन त्याच मुली प्रौढ झाल्यावर रोगांना आमंत्रण देतात. भारतामध्ये केलेल्या सर्वेक्षणात असे दिसुन आले की, निम्न आर्थिक स्तरातील कुटुंबाच्या स्त्रियामध्ये घेतलेल्या आहारामध्ये फक्त १८०० कॅलरी आणि ४० ग्रॅम प्रथीने असल्याचे दिसुन आले आणि ही प्रथीने सुध्दा निम्न दर्जाच्या आहारातुन प्राप्त केली होती.

हार्वर्ड विश्वविद्यालयाने केलेल्या सर्वेक्षणात असे दिसुन आले की, गर्भवती स्त्रियाना संपुर्ण आहार दिल्यामुळे गर्भावस्थेत मध्ये त्यांना त्रास झाले नाही. तसेच प्रसुती सुध्दा जास्त त्रास न होता सुखरूप झाली. तसेच गर्भवतीचा आहार चांगला असल्यामुळे दुध सुध्दा भरपुर येते. (शेरी)

व्याख्या:–

सामान्य आहार :– ''शरीराची शारीरीक, मानसिक कार्ये सुरळीत चालण्यासाठी जो परीपुर्ण संतुलीत आहार घेतला जातो त्याला आपण 'सामान्य आहार' असे म्हणतो.''

प्रत्येक स्त्रिला तिच्या कार्याच्या स्वरूपानुसार आहार लागतो तसेच स्त्रिला तिच्या अवस्थे प्रमाणे

(गर्भावस्था, दुग्धस्रवन अवस्था) आहारासाठी जास्त मागणी असते गर्भावस्थेत गर्भाच्या जडनघडनीला पोषक आहाराची गरज असते. तर स्तनपान करणाऱ्या मातेला बालकाचे संगोपण करावयाचे असते. या करीता पोषक आहार मिळावयला हवा शारिरीक कष्ट करणाऱ्या स्त्रिला साधारण काम करणाऱ्या स्त्रिपेक्षा अधिक कॅलरीजचा आहार लागतो.

आजार :–

शारिरीक आणि मानसिक स्वास्थासाठी संतुलीत आहार असा दैनंदिन जीवनात समावेश असने, हा अतिशय महत्वाचा भाग आहे. असंतुलीत आहारामुळे किंवा आहारातील काही घटकाच्या कमतरते मुळे स्त्रियांमध्ये खालील प्रकारचे आजार आढळून येतात.

रक्तक्षय :–

रक्तक्षय म्हणजे शरिरातील हिमोग्लोबिनचे प्रमाण सामान्यपेक्षा कमी होणे होय. लोहाच्या कमतरतेमुळे जास्त प्रमाणात स्त्रियांमध्ये रक्तक्षय होतो. आहाराच्या अनियमीतेमुळे स्त्रियांमध्ये रक्तक्षय हा आजार आढळून येतो. तसेच निकृष्ट आहार व कमी वजनामुळे ३० ग्रॅम लोहाची आवश्यकता असते. लोह हे मुख्यत: कडधान्ये, हिरव्या पालेभाज्या, गुळ, किसमीस, एणाक कवचाच्या फळांमध्ये आढळून येते. लोहाच्या कमतरतेमुळे रक्त पोलकाची संख्या कमी होऊन रक्तक्षय होता. यामध्ये व्यक्ती अशक्त होऊन निरुत्साही बनतो. आहारातुन गर्भवतीला लोहाची कमतरता झाल्यास बालकाला देखील रक्त क्षय होण्याची शक्यता असते. तसेच लोहाचे अयोग्य पोषण, पचनसस्थेचे बिकार, रक्तस्राव यामुळे शरीराला लोह पुरेशा प्रमाणात मिळत नाही त्यामुळे रक्तक्षय होण्याची शक्यता वाढते.

मधुमेह :–

मधुमेह हा आजार होण्याचे प्रमुख कारण म्हणजे स्वादुपिंडात निर्माण होणाऱ्या इन्सुलीन स्त्रावाची कमतरता. स्वादुपिंडातील आयलेट्स ऑफ लॉगर हॅन्स या पेशी इन्सुलीन तयार करतात. यात बिघाड झाल्यास इन्सुलीन स्त्रावाने बंद होते. कर्बोदकाचे पचनानंतर ग्लुकोजमध्ये रुपांतर होते. ग्लुकोजचे रक्तात शोषन झाल्यावर तिचे ज्वलन होऊन स्फुर्ती मिळते. परंतु शरीरातील इन्सुलिनच्या कमतरतेमुळे ज्वलन पुर्ण होऊ शकत नाही. त्यामुळे ग्लुकोज जसेच्या तसे राहुन वाढलेले ग्लुकोज मुत्रातुन स्त्रवते. अशा प्रकारे मधुमेह होतो. हा रोग विशेषत: अनुवाशीकता, जीवनशैली (उदा. मानसिक ताण) स्थुल पणा इत्यादी. जखमा लवकर न भरणे, वजन कमी होणे, लवकर थकवा येणे , अंधत्व येणे मुत्रातुन शर्करा जाणे. रक्तात शर्करेचे प्रमाण वाढणे वरचेवर तहान व भुक लागने जास्त झोप येणे इत्यादी प्राथमिक लक्षणावरुन मधुमेह झाला असे म्हणता येईल. संपुर्ण जगात २००२ च्या सर्वेनुसार १५० मिलीयन लोक मधुमेहाने पिडीत झाले ही संख्या २०२५ पर्यंत दुपटीने वाढण्याची शक्यता जागतीक आरोग्य संघटनेने वर्तविलेली आहे. आफ्रीकन आणि अमेरीकन तसेच पाढऱ्यात्वचेच्या महीलांना मधुमेह नियत्रण करणे कठीण जाते. म्हणुन मधुमेह नियंत्रीत करण्यासाठी आहारपध्दती व्यायाम यावर लक्ष देणे गरजेचे आहे.

हृदयरोग :–

मध्यावस्था परिस्थितीत हृदय रोग होण्याचे मुख्य कारण शारिरीक व मानसिक ताण हे दिसुन येते. स्त्रियाच्या हृदय रोगामध्ये रोहिनी काठिण्य किंवा हृदयरोहिनीचा रोग सगळ्यात जास्त प्रमाणात मृत्युसाठी कारणीभुत ठरते असतो. काही घटनामध्ये असे आढळुन आहे की हृदयरोहणीचा रोग आणि त्या पासुन मृत्यु हे पुरूषापेक्षा स्त्रियांमध्ये जास्त मोठया प्रमाणात आढळुन येतात या हृदयरोगाची कधी कधी

लक्षणे सुध्दा दिसून येत नाही व अचानक पणे रोगाचा मृत्यु होतो. ज्या स्त्रियांचा आहार समतोल आहे आणि ज्यांना कुटलेही व्यसन नाही. अशा स्त्रिया शारिरीकदृष्टया सुदृढ असतात तसेच ज्या स्त्रियांचे वजन कमी असते स्थुलपणा कमी असतो. अशा स्त्रियांना हृदयरोगाची भिती कमी असते.

Akesson यानी स्टॉकहोममधील करोलीनस्का संस्थेमधुन केलेल्या सन २०१८ मधील संशोधनात अंदाजे २५ हजार स्त्रियांच्या आहाराविषयी माहीती गोळा केली त्यानुसार सुदृढ आहार खेळ व व्यायाम हे सुध्दा हृदयरोगाचा धोका टाळण्यास फलदायी ठरतात तसेच फळांचे वेगवेगळे पदार्थ भाजीपाला कडधान्ये हे रोहीणी काढीण्याचा हृदयरोग टाळण्यास मदत करतात. असे संशोधनाअंती दिसून आले. त्याचप्रमाणे जन्मतांच हृदयाच्या रचनेत दोष असणे संसर्गामुळे होणारे रोग उदा. संधिवात रक्तदाब वाढणे हृदयातील झडपाचे विकार, कोलेस्टेरॉल असलेल्या स्निग्ध पदार्थांचा जास्त प्रमाणात उपयोग रक्तपेशाचे कार्य लवकर थांबल्यास देखील हृदयरोग होऊ शकतो.

उद्दिष्टे :–

- स्त्रियांच्या पोषणविषयक दर्जा जाणुन घेणे.
- स्त्रियांच्या आहाराबद्दल सर्वेक्षण करणे.
- त्यांच्या आहारात अन्न घटकांचे अभाव असल्यास ते तपासणे तसेच त्यांची कारणे शोधणे.
- आजच्या नव्या पिढितील स्त्रियांना आहारविषयक माहिती देणे.
- आहारातील अन्न घटकांच्या अभावी होणाऱ्या आजारांची माहिती देणे.
- रोगाच्या निमुर्लनासाठी उपाययोजना सांगणे.
- स्त्रियांच्या आजारविषयी माहिती देणे.

गृहितके :–

- आहारविषयी असलेले अज्ञान यामुळे आजार होतात.
- ग्रामीण भागात असलेल्या अंधश्रध्देमुळे काही भाज्या आहारात घेतल्या जात नाही उदा. दुधीभोपळा वगैर
- आहारात वेगवेगळे अन्नघटक न घेता एकच किंवा सारखे पदार्थ खाल्ले जातात. उदा. तांदळाचा जास्त प्रमाणात उपयोग.
- आहार शिजवितांना चुकीच्या पध्दतीचा वापर केला जातो.

लघुशोध प्रबंधाची अध्ययन पध्दती :–

लाखांदुर तालुक्यातील प्रत्येक गावांमध्ये आढळ प्रश्नावली, मुलाखत या पध्दतीने स्त्रियांच्या विविध आजारविषयी माहीती गोळा करण्यात आली.

१.३ यावरून खालील माहीती प्राप्त झाली.

संशोधन पध्दती:–

अध्ययन क्षेत्राची निवड:–

प्रस्तुत अध्ययनासाठी लाखांदुर तालुक्याची निवड करण्यात आली या तालुक्यातील स्त्रियांना

आजाराच्या समस्या आढळून आल्या त्या मोडविण्याच्या दृष्टीने ही निवड करण्यात आली.

स्त्रियांच्या आरोग्याच्या तक्रारी दर्शविणारी सारणी

नमुन्याचा आकार:—

लासलगाव तालुक्यात प्रत्येक गावात जाउन २० ते ४० वयोगटातिल स्त्रियांचा समावेश करण्यात येऊन २५ स्त्रियांचे सर्वेक्षण केले

स्त्रियांच्या आरोग्याच्या तक्रारी:—

आहारातील अन्नघटकांच्या कमतरतेमुळे ग्रामिण भागातील स्त्रियांमध्ये आरोग्याच्या अनेक तक्रारी दिसुन आल्या त्यामध्ये हातपाय दुखणे, डोकेदुखी, थकवा, जाणवणे रक्तक्षय, हार्टअटॅक, मधुमेह गर्भपात आणि इतर आजार सुध्दा आढळले.

स्त्रियांच्या आरोग्याच्या तक्रारी दर्शविणारी सारणी:—

अ.क	आरोग्याच्या तक्रारी	प्रमाण व टक्केवारी			
		२०—२५	२५—३०	३०—३५	३५—४०
१	हात पाय दुखणे	—	६(६%)	७(७०%)	२(२%)
२	डोकेदुखी	—	३(३%)	२(२%)	१(१%)
३	थकवा जाणवणे	—	४(४%)	७(७%)	२(२)
४	रक्तक्षय	—	२१(२१%)	११(११%)	७(७%)
५	हार्टअटॅक	१	—	—	—
६	मधुमेह	१	—	—	—
७	गर्भपात	—	५(५%)	४(४%)	३(३%)
८	इतर आजार	—	५(५%)	६(६%)	२(२)

वरील सारणी नुसार २० ते २५ वयोगटातील २ टक्के स्त्रिया हया अविवाहीत असून त्याच्यामध्ये मधुमेह आणि हार्टअॅटक हे आजार बाढळून आले २५ ते ३० वयोगटातील ४४ टक्के स्त्रियामध्ये सर्वात जास्त रक्तक्षय २१ टक्के, हातपाय दुखणे ६ टक्के, डोकेदुखी ३ टक्के , गर्भपात ५ टक्के व इतर आजार ५ टक्के, आढळले ३० ते ३५ वयोगटातील स्त्रियामध्ये हातपाय दुखणे ७ टक्के, डोके दुखणे २ टक्के, थकवा ७ टक्के, रक्तक्षय ११ टक्के, गर्भपात ४ टक्के व इतर आजार ६ टक्के आढळले ३५ ते ४० टक्के वयोगटातील हातपाय दुखणे २ टक्के , डोके दुखणे १ टक्के थकवा २ टक्के, अॅनोमिया ७ टक्के , गर्भपात ३ टक्के, व इतर आजार २ टक्के स्त्रियामध्ये आढळले.

स्त्रियांना प्रात होणारे लोह दर्शक सारणी :—

वयोगट २० ते ४०

अ.क	व्यवसाय	प्राप्त होणारी सरासरी लोह	प्रमाणित लोह मि.ग्रॅम	टक्केवारी
१	मजुरी	१७.१०मि.ग्रॅम	३०मि.ग्रॅम	५७.००%

२	शेतमजुरी	१८.२०मि.ग्रॅम	३०मि.ग्रॅम	६०.६६%
३	शेती	२०.२५मि.ग्रॅम	३०मि.ग्रॅम	६७.५%
४	गृहीणी	२२.३०मि.ग्रॅम	३०मि.ग्रॅम	७४.३३%
५	नोकरी	२१.७०मि.ग्रॅम	३०मि.ग्रॅम	७२.३३%

वरील सारणी वरून असे निदेर्शनास येते की, २० ते ४० वयोगटातील मजुरी करणाऱ्या स्त्रियांसाठी प्रमाणित लोहाचे प्रमाण ३० मी ग्रॅम आहेय त्याना प्राप्त होणारी लोह १७१० टक्के ग्रॅम आहे. यावरून स्पष्ट होते की, प्रमाणित लोहाच्या ५७ टक्के लोह त्याना प्राप्त होतात शेत मजुरी करणाऱ्या २० ते ३० वयोगटातील स्त्रियासाठी प्रमाणित लोहाचे प्रमाण ३० मि. ग्रॅम आहे. व त्याना प्राप्त होणारे लोह १८.२० मि. ग्रॅम आहे. यावरून स्पष्ट होते की, प्रमाणित लोहाच्या ६०.६६ टक्के, लोह त्याना प्राप्त होतात. शेती करणाऱ्या २० ते ४० वयोगटातील स्त्रियासाठी प्रमाणित लोहाचे प्रमाण ३० मि.ग्रॅम आहे. व त्याना प्राप्त होणारे लोह २०.२५ मि. ग्रॅम आहे. यावरून स्पष्ट होते की, प्रमाणित लोहाच्या ६७.५ टक्के लोह त्याना प्राप्त होते. गृहिणीसाठी प्रमाणित लोहाचे प्रमाण ३० मि. ग्रॅम आहे. व त्याना प्राप्त होणारे लोह २२.३. मि. ग्रॅम आहे. यावरून स्पष्ट होते की, प्रमाणित लोहाच्या ७४.३३ टक्के लोह त्याना त्याना प्राप्त होतात. तसेच नौकरी करणाऱ्या स्त्रियासाठी प्रमाणित लोहाच्या प्रमाण ३० मि. ग्रॅम आहे. व त्याना प्राप्त होणारे लोह २१.७० मि. ग्रॅम आहे. यावरून स्पष्ट होते की, प्रमाणित लोहाच्या ७२.३३ मि. ग्रॅम लोह त्यांना प्राप्त होतात.

स्त्रियांचे हिमोग्लोबीनचे प्रमाण दर्शविणारी सारणी :–

अ.क	प्रमाणित हिमोग्लोबिन	प्राप्त होणारी हिमोग्लोबिन प्रमाण	टक्केवारी
१	११.१४ ग्रॅम %	७.९ ग्रॅम %	४७.००%
२	११.१४ग्रॅम %	९.११ग्रॅम %	३८.००%
३	११.१४ग्रॅम %	११.१३ग्रॅम %	१२.००%
४	११.१४ग्रॅम %	१३.१५ग्रॅम %	०३.००%

वरील सारणी वरून असे निदेर्शनास येते की, प्रमाणित हिमोग्लोबिनचे ११ ते १४ ग्रॅम आहे परंतु ४७ टक्के स्त्रियामध्ये हिमोग्लोबिनचे प्रमाण ७.०९ ग्रॅम आढळले ३७ टक्के स्त्रियामध्ये ९.११ ग्रॅम आढळले व ३ टक्के स्त्रियामध्ये १३.१५ ग्रॅम आढळले.

यावरून असे स्पष्ट होते की, अध्ययन क्षेत्रातील ८५ टक्के स्त्रियाना रक्तक्षय झाला तर केवळ १५ टक्के स्त्रियाचेच हिमोग्लोबिनचे प्रमाण सामान्य आहे.

सारांश :–

या सारणीवरून असे लक्षात येते की, या स्त्रियांच्या आहारामध्ये डाळी, दुध, फळे, सलाद, मोड आलेले कडधान्य यांचा वापर फार कमी प्रमाणात केला जातो तसेच इडली , ढोकळे यासारखे

आढळलेले पदार्थ यांना माहित नाही. त्यामुळे यामधुन मिळणारी आवश्यक प्रथिने, जीवनसत्व त्यांना मिळात नाही. त्यामुळे जीवनसत्वाच्या कमतरतेमुळे अनेक आजार झालेले दिसून येतात.

तसेच या भागामध्ये तादळाचे उत्पन्न जास्त होत असल्यामुळे आहारामध्ये पोळी , भाकरी चे प्रमाण कमी आढळते. व भाताचे प्रमाण जास्त असते तसेच स्वयंपाक करताना चुकीच्या पध्दतीचा वापर केला जातो. त्यामध्ये भाज्या आधी चिरून धुणे कुकरचा वापर कमी करणे या सर्व बाबीमुळे या विद्यामध्ये अनेक प्रकारचे आजार झालेले दिसून येतात.

सदर्भग्रंथ :–

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'भारतातील महिला सबलीकरण' : विशेष संदर्भ — पंचायत राज व्यवस्था

प्रा. डॉ. नरेंद्र माधवराव [illegible]
समाजशास्त्र विभाग प्रमुख
[illegible] महाविद्यालय,
[illegible], जि. [illegible].

प्रस्तावना :

भारतात स्वातंत्र्य मिळून ७२ वर्षे उलटून गेली या ७२ वर्षांच्या काळात देशात राजकीयदृष्ट्या, भौतिकदृष्ट्या परिवर्तन घेऊन आले पण अद्यापय आदिवासी आणि स्त्रियांच्या दर्जाच्या संदर्भात मुळापासून असा प्रकारचा बदल झालेला नाही. जर बदलले पण कुठे थोडे आणि शहरात राहणाऱ्या स्त्रियांचे जीवन बदलले नाही. स्वतंत्र भारतात पुरुषप्रधान संस्कृतीच्या स्त्रियांच्या संदर्भात चिंतन, मनन होण्याची गरज आहे. महिला सबलीकरण म्हणजे स्त्रियांना मुक्त आणि मुक्त या पारंपारिक चक्रातून बाहेर काढणे त्याचप्रमाणे स्त्रि म्हणजे कोणती निर्णयांना कारणाना नाही किंवा पुरुषांशी कमानी धार्मिक मशीन नाही तर मानवी मन असलेली, भावनाशील व्यक्ती, रक्त, मासाने सामाजिक व्यवस्थेत [illegible] समाजव्यवस्थेतील पुरुषप्रधान [illegible] स्त्रियांना त्यांच्या महत्त्वाची व्यक्ती आहे.

श्रीलता बाटलीवाला यांनी आपल्या Empowerment of Women in South Asia Concept and Practices या ग्रंथामध्ये लिहीले आहे की The Process of Gaining Control over the Self, over the Ideology and the resource which determine power may be term "Empowerment" सबलीकरण ही नियंत्रण प्राप्त करण्याची प्रक्रिया आहे.

स्त्रियांच्या अंगी असलेल्या क्षमतांना, गुणवत्तांना विकास करणे म्हणजे महिला सक्षमीकरण होय. महिला सक्षमीकरण हे पुरुषविरोधी आंदोलन नाही. महिलांचे अधिकार प्राप्त झाल्यास पुरुषांचे अधिकार कमी होतील आणि त्यांच्या स्वातंत्र्यावर मर्यादा येतील असे समजण्याचे कारण नाही. उलटपक्षी जीवनाच्या प्रत्येक क्षेत्रात पुरुषांच्या बरोबरीने सहकार्य करून [illegible] निभावण्यास त्या सक्षम होतील यातून पुरुषप्रधान [illegible] येईल की महिला सक्षमीकरणाचे पुरुषांना विरोध नाही तर विरोध आहे [illegible] पुरुषप्रधान प्रवृत्तीला [illegible] आणि [illegible] हा महिला सबलीकरणाचा भाग आहे.

महिला सशक्तीकरणाची आवश्यकता:—

२१ व्या शतकाच्या विज्ञान युगाची अशा, काही वर्षांपूर्वी प्रचलित असलेल्या मध्ययुगीन समाजाचा [illegible] सामाजिक विचारसरणीत बदल आहे. [illegible], [illegible], आदिवासी भारतातील पुरुषप्रधान संस्कृतीमुळे [illegible], कुटुंब ह्या भारताच्या समाजाच्या घटक [illegible]. १९ व्या शतकाच्या पूर्वार्धात स्त्रिया अज्ञान अंधकार व दास्यात खोल रुतून बसलेल्या होत्या. आपल्या स्वतंत्र अस्तित्वाची जाणीव नव्हती परंतु आज सर्व मानवता स्त्री देखील एक व्यक्ती आहे. तिला आपला विकास करुन घेण्याचा पुर्ण अधिकार आहे तेव्हा तिच्या विकासाच्या आड ज्या अनावश्यक रुढी व परंपरा येत असतील तर त्या निश्चितच दूर झाल्या पाहिजे ह्या करीता महिला सशक्तीकरण आवश्यक आहे.

स्त्री सशक्तीकरणामुळे तिला तिच्या अधिकाराची, अस्मितेची, कर्तव्याची, सर्वांगीण विकास व प्रगतीची परिपक्व जाणीव निर्माण होते तसेच स्वतःच्या आरोग्याची काळजी घेण्यास प्रेरणा मिळते. नोकरी व व्यवसाय प्राप्त करण्यासाठी आग्रह धरला जातो. शिक्षणामुळे आज भारतातील स्त्री ही शिक्षण, उद्योग, तंत्रज्ञान, संगणक, अंतराळक्षेत्र, सेवा, शेती, क्रिडा, साहित्य, इ. अनेक क्षेत्रात स्त्रियांची प्रशंसनीय कामगिरी दिसून येते. एका बाजूला भारतात राष्ट्रपती श्रीमती प्रतिभाताई पाटील या आपल्या देशाच्या विकासात योगदान करीत असल्या तरीही दुसऱ्या बाजूला अनेक स्त्रियांवरती दररोज बलात्कार, लैंगिक शोषण, हुंडाबळी, भ्रूणहत्या, वेश्यावृत्ती, स्त्रियांची विक्री, स्त्रियांची निर्भत्सना.

अमानुष अत्याचार, तसेच खेड्यातील येथील अमानुष अत्याचार व शोषण इ. सारख्या घटना आजही भारतीय समाजात घडत आहेत. त्यामुळे अशा अमानुष अन्याय अत्याचाराचा प्रतिरोध करण्यासाठी स्त्रियांना मानसन्मानाची व समानतेची वागणूक मिळण्यासाठी त्यांच्या न्यायीक मूलभूत हक्क व अधिकारासाठी भारतीय समाजात महिला सबलीकरणाची निरंतर आवश्यकता आहे.

महिला सक्षमीकरणाची सुरुवात महात्मा फुले, सावित्रीबाई फुले यांच्या प्रत्यक्ष प्रयत्नातून समाजात रुजविण्याचा प्रयत्न झाला परंतु त्यांच्या मार्गावर अनेक अडचणी आल्यात तरीही त्यांनी अस्पृश्य महिला, विधवा तसेच भारतातील संपूर्ण महिलांच्या सर्वांगीण प्रगतीसाठी प्रयत्न केले. जानेवारी १८४८ रोजी पहिली मुलींची शाळा पुणे येथील शनिवारवाड्यात सुरू केली व त्यातून शिक्षण देण्याचा भारतीय समाजात शुभारंभ केला. तेव्हापासुन महिलांच्या सक्षमीकरणाला व शैक्षणिक उन्नतीचा प्रारंभ झाला. कारण भारतीय समाज खऱ्या अर्थाने जगामध्ये सामर्थ्यशाली होण्याकरीता शिक्षण हा मुलभूत घटक आहे हे महात्मा ज्योतीबा फुले यांनी ओळखले होते.

शिक्षण आणि महिला सशक्तीकरण :—

स्त्री सशक्तीकरणात शिक्षणाची भूमिका अत्यंत महत्वाची आहे. शिक्षण हा कोणत्याही समाजाच्या सुदृढतेचा पाया आहे शिक्षणाचे प्रमाण वाढले तर अपेक्षित विकास साध्य करणे शक्य होते स्त्री शिक्षण हे आर्थिक विकासाठी आवश्यक आहे परंतु प्रजननता कमी करणे, मुलांचे योग्य पालन पोषण करणे तसेच माता आणि बालक यांच्या आरोग्यसाठी सहाय्यक ठरते. शिक्षणामुळे स्त्रियांतील सुप्त गुणांचा विकास घडून येतो. यांच्या व्यक्तीमत्वाला नवीन आकार मिळतो. नवीन क्षेत्रामध्ये यशस्वी होण्याची पात्रता लाभते. महिलांच्या शिक्षणाचे प्रमाण भारतात केरळ या राज्यात अधिक म्हणजे ८८ टक्के एवढे आहे. त्या खालोखाल महाराष्ट्रात ६६ टक्के एवढे आहे. महाराष्ट्रात शालांत आणि पदवी परीक्षांमध्ये उत्तीर्ण होणाऱ्यांमध्ये मुलींचे प्रमाण अधिक आहे. उदा. अभियांत्रीकी, वैद्यकीय, विज्ञान, माहिती संगणक अशा विविध क्षेत्रात महिला सुद्धा नेतृत्वात सक्षम असल्याचे सिद्ध करीत आहे. असे असले तरीही प्रमाण असमाधानकारक कुठल्या भारतीय समाजात आज आहे.

या मागील कारणे म्हणजे शिक्षणाचे बाजारीकरण व व्यापारीकरण मुलींना गतिबद्ध समजण्याची, समाजाची प्रवृत्ती, मुलींनी घरकाम करावे समजण्याची प्रवृत्ती, मुलीपेक्षा मुलांना शिकविण्यास प्राधान्य देण्याचा पालकांचा कल, मुलींना शिकविले तर आपल्या घराण्याला कलंक होईल अशी मानसिकता, मुलीचे जास्त प्रमाण अल्प वयात होणारे बालविवाह, आपल्या भावंडांना सांभाळण्याची, मुलींना घरची लागणारी जबाबदारी, कौटूंबिक दारिद्र्य, कौटूंबिक बेकारी ही प्रमुख प्रमुख कारणे आहेत.

शोध निबंधाचा उद्देश :—

प्रस्तुत शोध निबंधाचा उद्देश प्रामुख्याने भारतातील महिला सशक्तीकरणाच्या संदर्भात पंचायत राज व्यवस्थेच्या संदर्भात केल्या जात असलेल्या महत्त्वपूर्ण बदलांना मांडणे, तसेच यामध्ये असलेल्या उणीवा अडचणी व त्यावरील त्याकरीता आवश्यक त्या सुधारणा कोणत्या होऊ शकतात त्या मांडणे हा आहे. त्याचबरोबर सद्यस्थितीचे वर्णन करणे हा आहे.

शोध निबंध अभ्यास पध्दती व माहिती संकलन:—

प्रस्तुत शोधनिबंधाच्या लेखनाकरीता विविध मासिके, वृत्तपत्रे, पुस्तके व अहवालांना आधार घेण्यात आलेला आहे. तसेच या माहितीचे संकलन करून ही माहिती तथ्य विश्लेषण करीत असतांना मुद्दे व तक्त्यांना व आकडेवारीचा आधार घेवून विश्लेषित करण्यात आलेली आहे. या शोध निबंधाकरीता भारतातील पंचायत राज व्यवस्थेची आकडेवारी आधारभूत मानली गेली आहे. त्याचप्रमाणे आशय विश्लेषणाचे तंत्र वापरण्यात आले आहे.

महिला सशक्तीकरण व पंचायत राज व्यवस्था:—

आज महिला सशक्तीकरणाच्या प्रक्रियेला वेग आलेला आपण पाहतो. येथे आपल्याला भारतातील महिला सशक्तीकरणाच्या संदर्भात पंचायत राज व्यवस्थेला मोलाचा वाटा असलेला दिसून येतो. आज भारतासारख्या देशात ग्रामीण स्तरावर महिला सशक्तीकरणाची प्रक्रिया ही पंचायत राज व्यवस्थेमार्फत प्रभावीरित्या अमलात आणली जात आहे. भारतात इ. स. १९५२ या साली

[illegible]

निष्कर्ष व समारोप —

[illegible]

संदर्भ :—

१. [illegible]
२. डॉ. [illegible]
३. डॉ. [illegible]
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A STUDY ON MULTIFUCTIONAL APPLICABILITY OF CARBON NANOTUBE, GRAPHENE AND THEIR COMPOSITE

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ABSTRACT:

Carbon based materials such as carbon nanotube and Graphene is one of the most promising materials in the field of nanotechnology and which has attracted a tremendous amount of research in the last few years. Because of its high surface to volume ratio, high electrical conductivity, high mechanical strength, high thermal conductivity,high electronic mobility, and high chemical stability. dew to such property CNTs and GNS is extremely attractive materials. In this review paper we are studied about multifunctional applicability about carbon nanotube and graphene and their composite with various semiconducting metal oxides such as ZnO,TiO2,SnO2,CuO,ZnS,etc and conducting polymers such as polyaniline (PANI).etc and studied there applicability in various filed such as gas sensors, bio sensors, supercapacitors, photocatalysis activity and many biological applications.

Keywords :- Carbon nanotube, Graphene, nanotechnology, semiconducting metal oxides, conducting polymers.

INTRODUCTION :

Carbon is an IV group of element. Carbon is known to be associated with its rich and diverse form of chemistry. Carbon atoms participate in the formation of a great number of molecules. carbon nanomaterial's have a unique place in Nano science due to their exceptional electrical ,thermal, chemical, and mechanical properties; which have applications in various areas such as composite materials ,energy storage conversion ,sensors, drug delivery, field of emission devices, and Nano scale electronic devices. development of nanofabrication techniques and nanomaterials that have progressed within the last two decades, graphite is now being actively used as a starting material to engineer various types of carbon-based nanomaterials (CBNs), including single or multi-walled nanotubes, fullerenes, nanodiamonds, and Graphene. In the last few years, study of carbon based nanomaterials have become the most studied for developing of gas sensors, biosensors, supercapacitors , photocatalytic activity , photoluminescence and lithium ion battery etc. carbon nanomaterials are used Specially because of their outstanding and remarkable physical and electrical properties. carbon nanomaterials e.g., carbon black (CB), fullerene, carbon fiber (CF) , carbon nanotubes (CNTs) and graphene(GNS)(fig 1) Graphene and CNTs are allotropes of carbon. Graphite is a multilayers form of carbon. Graphene is a single layer of graphite and it is 2 dimensional and when graphene is in cylindrical form then it is called as carbon nanotube ,this are obtained in single layer and multilayer form and it is 1 dimensional nature which have received a great covenant of attention as materials, With

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their inherent physical and electrical properties, such as high surface-to-volume ratios, high electrical or heat conductivities, chemical inactivity, and high tensile strength. With the deeper gratefulness development of nanofabrication techniques and nanomaterial's that have developed within the last two decades, graphite is now being actively used as a starting material to engineer various types of carbon-based nanomaterial's (CBNs), including single or multi- walled nanotubes, fullerenes, Nano diamonds, and Graphene [1] These carbon based materials possess excellent mechanical strength, electrical ,thermal conductivity, and optical properties much of the research efforts have been focused on developing these advantageous properties for various applications, such as high-strength composite materials and electronics. Each member of the carbon family exhibits unique features and has been broadly exploited in various biological applications including bio sensing, drug delivery, tissue engineering, imaging, diagnosis and cancer therapy [2]

Carbon-based nanomaterials, such as carbon nanotubes (CNTs),and graphene(GNS) can be found in functionalized or non-functionalized forms. graphene or carbon nanotubes can be functionalized with –COOH and –OH groups via chemical oxidation methods to produce GO and functionalized carbon nanotubes, which are highly dispersible in water compared to their pristine counterparts. These nanomaterials can also be functionalized with metal or metal oxides. such as ZnS, SnO_2 , TiO_2,WO_2 .[3]. With increasing interest in nanotechnology, many types of metallic and carbon-based nanomaterials have emerged. Initial interest in these nanomaterials was for application in the electronics industry, due to their exceptional thermal and electrical properties.[3] Nanocomposites are the combinations of two or more nanoparticles synthesized by various techniques which shows unique physical properties and extensive application potential in different areas.

Applications of carbon based materials

Carbon based materials Such as SWCNT, MWCNT and GNS	Biological Applications	Electronic	Sensing Applications
	Drug delivery, tissue engenearing, imaging diagnosis, cansor theapy, antibacterial study, dye detection	Solar cell, semiconductor chip, supercapacitor. Batteries, photocatalitic activity	Gas sensors detection of flammable and toxic gasses Bio sensors used as dye removal

Types of carbon-based nanomaterials

There are various types of carbon nanomaterials such as carbon black, fullerence , carbon nanotube and graphene all this nanomaterials their properties and applications discus as follows

Carbon black

Carbon black is produced by the incomplete combustion of coal and coal tar, petroleum products or vegetable matter. Carbon black is a form of Para crystalline carbon that has a high surface-area-to-volume ratio, although lower than that of activated carbon Carbon black is used as a colorant and reinforcing filler in tires and other rubber products; pigment and wear protection additive in plastics, paints, and ink pigment. It is used in the as a food colorant when produced from vegetable matter Carbon black is available with surface areas that are higher than 1000 m2/g, particle size lower than 50 nm, and density much lower than the theoretical value for graphite (2.25 g/cm3).[4]

Fullerenes

Fullerene is nothing but an allotrope of carbon it consist of carbon atoms that are connected by single and double bond .the structure is quite

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similar to that of graphite and is made up of sheet connected hexagonal cage like structure ,they are referred as buckyballs and buckytubes like structure. Fullerenes are stable, but not totally unreactive. Fullerenes are used in the medical field as light activated antimicrobial agent.it is used as conductor, it is used in making cosmetics product

Carbon Nanotube

Carbon nanotubes can be considered as cylindrical formed by rolling or folding of Graphene sheet. There are two types of carbon nanotubes 1) single walled carbon nanotube (SWCNT) and 2) multi walled carbon nanotubes (MWCNT). CNTs were discovered in 1991 by Iijima et al., there has been a rising interest among researchers to discover their unique mechanical stiffness, strength, high thermal conductivity, electrical, chemical, mechanical and physical properties to develop high performance devices in nanotubes for their numerous applications. CNT can be observed as one of the most promising materials among their Nano scale material. Carbon nanotubes are a very sensitive material because they can easily interact with many gases and change their conductivity in the presence of several studies at room temperature, even if these investigates have different chemical behaviour Because of the arrangement of the atoms on the surface of the MWCNTs and their high area/volume ratio, adsorption processes are highly preferred, which increases their sensitivity to the surrounding atmosphere[5]. MWCNTs can vary greatly, which includes variations in outside diameter, number of concentric walls along with growth-induced structure, such as internal caps of nanotube walls, and other defects in the graphitic structure. Furthermore, depending on the growth conditions, nanotubes can be quite straight or highly entangled in their bulk forms. This wide range of variability in nanotube structure and the structure/size dependence of nanotube properties is a key barrier towards applications of carbon nanotubes in structural and functional composites.[6]

The carbon nanotube has been attractive in various applications such as energy storage devices, sensors and actuators. The one-dimensional Nano scale structures of nanotubes, nanowires, and nanoparticles have a large surface area to volume ratio, which is an advantage to maximize the surface response.[7] The fibre like structure of the CNT can have tremendously large aspect ratios (length/diameter) which is particularly necessary for both mechanical strengthening and the creation of electrically conductive ways for electrical property variation[6] CNTs have attracted growing attention as a highly competent vehicle for transporting various drug molecules into the living cells because their natural morphology helps penetration across the biological membranes. Carbon nanotubes are widely used in biomedical applications due to their versatile properties. These are the attractive candidates for the carrying of anticancer drugs, genes and proteins for chemotherapy [2]

Carbon nanotubes (CNTs) attract more attention because of their unique properties and have become the most promising materials for high-sensitive gas sensors. As a kind of promising sensing material, CNTs, have been found to possess electrical properties and are highly sensitive to extremely small quantities of gases, such as alcohol, ammonia (NH3), carbon dioxide (CO2) and nitrogen oxide (NOx) at room temperature,[8] Among the different carbon allotropes, CNTs have attracted escalating attention as a highly competent vehicle

CNT Based Nano composite materials

Nano composites are the mixtures of two or more such Nano sized substances or nanoparticles synthesized by some appropriate techniques shows unique physical properties

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.The wide scientific and technical interest in developing of composite materials, wherever can take advantage of the unique properties of carbon nanotubes, has resulted in a tremendous amount of literature on the processing, characterization, and demonstrating of CNT-based composites.

Carbon nanotube /polymer composite are synthesized as a promising materials for industrial devices with advanced applications such as supercapacitors, sensors, electromagnetic absorbers, photovoitaic cells, photodiodes and optical limiting devices (murat ates et al,2017) The elastic behavior and strength of SWCNTs and MWCNTs have been studied extensively. One of the major reasons for the interest in utilizing carbon nanotubes as reinforcements in polymer nanocomposites is their reported exceptionally high stiffness and strength as compared to existing high-performance carbon fibers [6] multiwall carbon nanotube (MWNT) doped polyaniline (PANI) composite thin films for hydrogen gas sensing applications.[9] A pristine CNT exhibits low sensitivity or response signals for many pollutant gases such as NO2, CO or NH3 Therefore, dopants or many metal nanoparticles have been introduced to CNTs to enhance their sensing performance such as response signal, recovery time and operation temperature [10]

Graphene

Graphene is a 2D single layer of carbon atom with hexagonal packed structure. Nanomaterial consist of single atom thick layer. Structural arrangement is of sp2-hybridized carbon atoms. This structure offers unique optical, mechanical, and electrical properties, including high strength, thermal conductivity, flexibility, and biocompatibility. Among these properties, Over the last two decades, research on Graphene has greatly increased, and various exceptional properties have been observed by investigators. Graphene is described as the planar graphitic sheet of graphite, consisting of sp2 hybridized carbon network with a carbon-carbon distance of 1.42Å and an interlayer spacing of 3.4Å (Figure no 2) The two dimensional graphene is a promising conductor because of optical and electrical properties. Among the various allotropes of carbon, graphene is the most attractive material due to its unique intrinsic properties. Around 70 years ago, in 1947, Wallace evaluated the electronic structure of graphene and McClure deduced the corresponding wave equation in 1956. The name "graphene" was first introduced in 1987 by Mouras and co-workers as "graphitic intercalation compounds[2] In principle, electrons in individual graphene sheets delocalize over the complete sheet, which provides ballistic charge transport [11]

Nanocomposite materials

As compared to the study of single GNS based material, composite of Graphene with many materials such as in metal oxide ZnO, SnO2,TiO2,WO2,MnO2, Fe2O3,NiO,CuO,ZnS ,CdS and so on and conducting polymers such as Polyaniline , polypayrrole which shows better electrical ,mechanical, chemical and magnetic properties , and they shows better applicability as compare to study of individual material Graphene and graphene-based nanocomposites have also been used in bacteria detection and antibacterial applications. It has been reported that GO presents antibacterial effect, although the mechanisms and efficacies are under certain debate.[12] The attachment of commercial TiO2 powders to graphene has also been extensively researched for improved photocatalytic performance. The development of graphene/TiO2in photo catalysis should first be attributed to the improved absorptivity of pollutant molecules, which is a requirement for good photo catalytic activity. It is well known that carbonaceous materials have outstanding absorption properties this is used in various

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environmental applications. [13] G-based composites have emerged and exhibited applicable properties. One of the most commonly used ones is PANI/G or PANI/GO super capacitors. PANI/GO is utilized in super-capacitors with high performance, durability, and environmentally friendly features [14] GO/PANI composites have shown higher specific capacitances than PANI, as well as a higher stability after 1000cycles (i.e., capacitance retention was around 86%)[15] Likewise, PANI/G displayed higher conductivity and electromagnetic interference (EMI) shielding than PANI at room temperature The GO/PANI composite displays an excellent electrochemical performance due to a synergistic effect between PANI and GO. Besides,[15]

Multifunctional Applicability of carbon based Nano composite

Carbon based composite materials	Method for preparation of composite	Morphology and particle size	Field of applications	Referen-ces
GNS/TiO2	Hydrothermal method	100 nm and 20nm	Electrochemical biosensor assess the freshness of meat	[16]
PANI/ GNS and Ppy/GNS	Chemical oxidation polymerisation	5% GNS highly porous clearly seen	Electromagnetic interference shielding	[5]
PANI/MWCNT (Nanofiber)	Electrospinning	272nm(at 0.1g/ml)	L.P.G.gas sensing	[5]
PANI/TIO2 PANI/GNS	Situ chemical oxidation polymerisation	2micro-meterfor PANI/Tio2 1 micro-meter for Core shell type structure indicating more surface area	Dye Removal	[5]
GO/IONP	Two step process	100 nm	Antibacterial study	[12]
GNS/PANI	Modified hummers and composite by situ polymerization	3 to 5 micro -meter	Super capacitors	[17]
PANI/MWCNT	Situ oxidative polymerisation	30-40 nm , obtained interwoven fibrous structure	Transport properties	[9]
AuNPs/MWCNT PdNp/MWCNT		100nm 100NM	For No2 gas sensing(at 45 to 250 ^{0} C)	[10]
CuO/SWCNT	Hydrothermal method	1.5 to 6(micro-meter)	Highly sensitive wireless H2S gas sensor	[18]
TiO2/GNS	In situ growth and reduction process or a facile, one-pot growth method.	100 to 400 nm	Photo catalytic performance	[13]
PANI/GO	Chemical oxidation polymerisation method	layered and fibrous structures .(100nm)	High performance super capacitors	[15]

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CONCLUSIONS :

Carbon based materials such as carbon nanotubes and Graphene both are extremely very promising materials in the field of material science; due to their unique properties and multifuctionality. As compared to the study of single carbon based materials. Composite with many metal oxide such as ZnO,TiO2, SnO2 etc and conducting polymers such as polyaniline (PANI) which shows potential application in various field of super capacitor, gas sensors ,photo catalytic activity ,and bio sensing applicability

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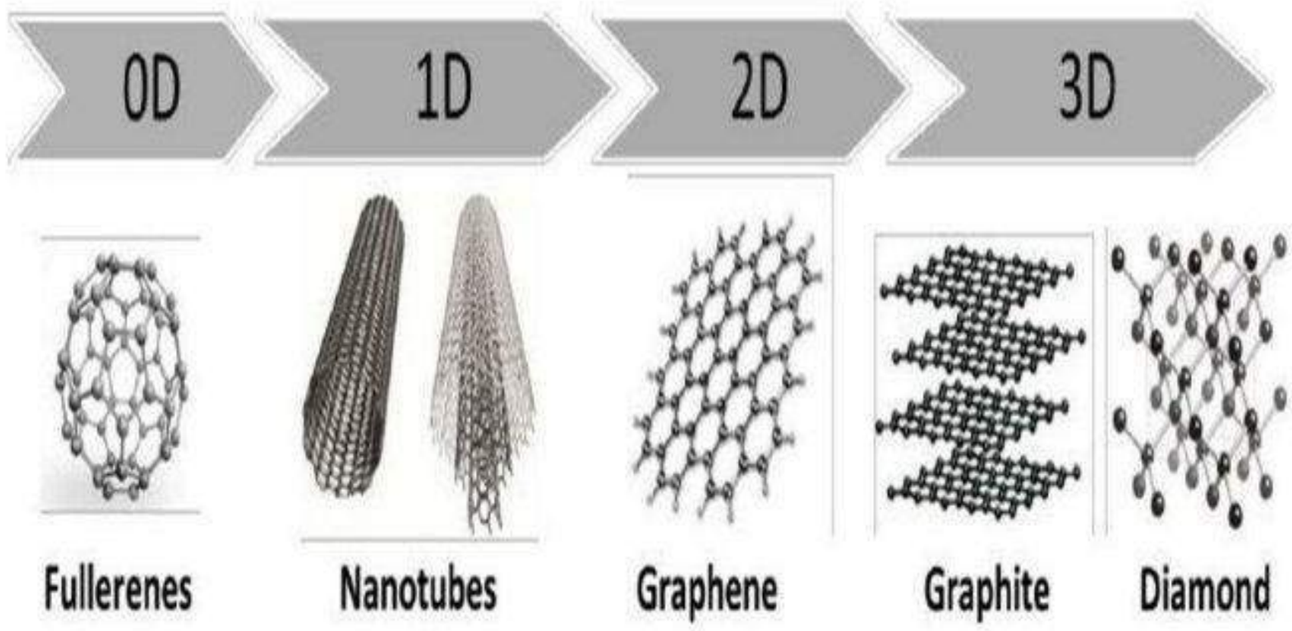

Figure 1:types of carbon based materials. © Source by, @phdthesis{phdthesis, author = {Srivatsa, Thushar}, year = {2017}, month = {08},title = {Graphene Based surface coatings on ceramic membranes for water desalination}

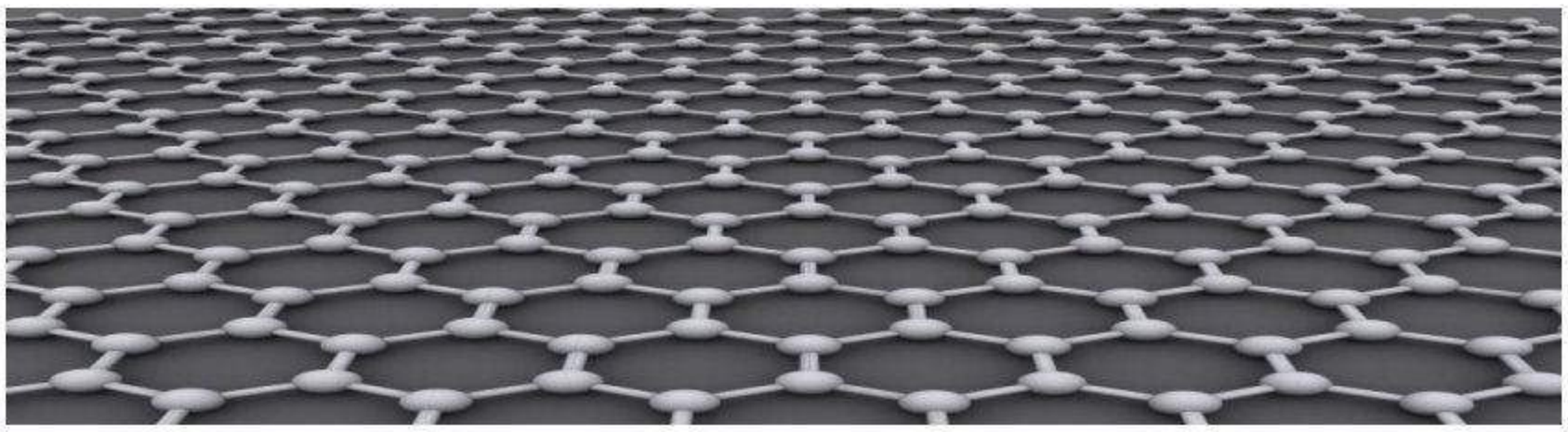

Figure no-2 structure of Graphene (source by https://en.wikipedia.org/wiki/Graphene)

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Ethnomedicinal Review on Cassia fistula L.

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ABSTRACT

Cassia fistula is the medicinal plant which is used in Ayurveda, Unani and traditional medicine since long time. The plant parts of the species used for the treatment of around more than forty diseases. Almost every Indian knows this species and it is commonly used in traditional medicine. People of India have great knowledge about this species. The present review compiled the ethnomedicinal data concern *Cassia fistula* which will be helpful for Indians, other than Indians as well as researcher communities those are involved in research of pharmacognosy, phytochemistry, phytomedicine and phytoneutraceutical industries.

KEY WORDS

Cassia fistula, traditional medicine, ethnomedicine

INTRODUCTION

Cassia fistula L. is the ethnomedicinal plant which belonging to family Leguminosae. Some synonyms are as follows, 1. *Bactyrilobium fistula* Willd, 2. *Cassia bonplandiana* DC, 3. *Cassia excelsa* Kunch, 4. *Cassia fistuloides* Collad., 5. *Cassia rhombifolia* Roxb., 6. *Cathartocarpus excelsus* G. Don, 7. *Cathartocarpus fistula* Pers., 8. *Cathartocarpus fistuloides* (Collad.) G. Don, 9. *Cathartocarpus rhombifolius* G. Don. Golden shower, purging cassia, Indian laburnum, pudding- pipe tree are the English names of this species. In Sanskrit, it is known by names vyadhighat, nripdrum, Aaragwadh and Karnikar. In Hindi, it is known by name as Amaltas and in Marathi by Bahawa.

Flowering and Fruiting

MATERIAL AND METHODS

Literature survey was carried via Google search engine. Related research papers were downloaded and scrutinized and shortlisted. All shortlisted 51 relevant articles directly reported traditional and ethno medicinal uses were finalized for the study. Articles were screened and studied for this investigation.

BOTANICAL DESCRIPTION

Trees, about 8- 10 m tall. Leaflets 4-8 pairs, 5.0-12.5 x 2.5-6.0 cm, ovate. Flowers yellow, in 24-40 cm long, lax, drooping racemes. Pods 2.0-2.5 cm across, indehiscent. Seeds numerous, embedded in dark coloured pulp. Fls. & Frts. : April- October[1].

TAXONOMIC POSITION

Kingdom: Plantae
Division : Magnoliophyta
Class : Magnoliopsida
Order : Fabales
Family : Leguminosae
Genus : Cassia
Species : fistula

ETHNOMEDICINAL USES

For the present review fifty one research papers were studied and compiled ethnomedicinal information in the following paragraphs.

Amoebiasis: For the treatment of Amoebiasis seed powder used by tribals of Nankura districts of West Bengal[2]. **Anemia:** Traditional healers (Vaidya, Hakim, Janata and Maharaj) of Nanded district used root powder for treatment of anemic disorders[3]. **Asthma:** Fruits are used in asthmatic troubles in Srikakulam district of Andhra Pradesh[4]. One to two seeds are taken for the treatment of asthma and also bark is chewed for the same[5]. **Breast cancer and wounds:** Fruit crushed in water and applied at the affected parts till cure by people of Bidar district of Karnataka[6].

Burns: Leaves grounded with Coconut oil and paste is applied externally for a week for the treatment of burns[7]. **Constipation:** About 2gm tamarind (mucilaginous pulp surrounding the seeds) given to children and pregnant woman to remove constipation by local people of Panurti taluk of Cudallore district of Tamil Nadu whose inhabited near sacred groves[8]. Tribes of Kalahandi district take in small quantity to cure constipation[9]. Ripe pulp also used by tribal and rural communities of Rajasthan[10]. Leaves and fruits used in constipation are reported from Ajoydha Hill region of Purulia district of West Bengal[11]. **Cough:** Ash of the pod given with honey to cure cough of children by local people of Solan district of Himachal Pradesh[12]. **Cuts and wounds:** Leaf juice is applied to clearing cuts and wounds by people of Chatara region of Sonebhadra district of Uttar Pradesh[13].

Diabetes: For treatment of diabetes, people of Dhar district of Madhya Pradesh given fruit pulp[14]. **Dye:** Trunk bark is used as dye with bark of Terminallia bellirica, Pterocarpus masupium by local people of Aravalli Hills of North Gujrat[15]. **Dysentery and diarrhea:** Konda Reddi and Koyas tribes of Khammam district of Andhra Pradesh crushed stem bark with five pepper grains and extract is given for three days to cure dysentery and diarrhea[16]. Khasis tribe of Meghalaya used fruit pulp for the treatment of dysentery occurs in new born babies[17]. **Dysentery and indigestion:** Paste of fruit with sugar used to control dysentery and indigestion problems by local people of Udayagiri forest in Eastern Ghat, Odisha[18].

Earache: Fruit pulp extract dropped into ear to the treatment of ear pain by Billa tribe of Maharashtra[19]. **Enlargement of The stomach:** Paste of pods grinded with tamarind and given to cattle for the treatment of enlargement of stomach by Gond tribe of Bhandara district of Maharashtra[20]. **Erysipelas:** Leaves are used for the treatment of erysipelas by the people of Jawadhu hills in Tamil Nadu[21]. **Fever:** People of Rajouri Poonch district of Jammu and Kashmir used plant for the treatment of fever[22]. **Fever in Infants:** Seed powder is given for the treatment of fewer in infants by local people of Mokhada, Thane district of Maharashtra[23].

Gonorrhoea: Gond and Baiga tribe women of Achanakmar wildlife sanctuary of Bilaspur, C.G. applied flowers on the affected part to the treatment of Gonorrhoea[24]. **Headache:** Stem bark applied on forehead to relief pain in head by People of Thuamul Rampur area of Kakahandi district[25]. **Indigestion:** Leaf extract of this plant is used in indigestion by Khamptis tribe of Arunachal Pradesh[26]. Seed decoction used with honey to cure indigestion problems in children by local people of Katei Baba sacred grove of Akole taluk of Ahmednagar district of Maharashtra[27].

Indigestion in Children: Decoction of seed with honey given for the treatment of indigestion in children by villagers of Adhalwadi who living near Katei Baba sacrred grove in Akole taluka in Ahmednagar district[27]. **Infantile diarrhea or irregular bowels in newborns:** In Meghalaya, Khasis people used fruit pulp to the

treatment of germs in infantile diarrhea or irregular bowels in newborns[28]. **Jaundice:** Root powder given in the treatment of jaundice by traditional practioners of Nanded district[29]. **Laxative:** Rella chettu is the local name of Cassia fistula in Srikakulam district of Andhra Pradesh. Local medicine men used root bark and leaves as laxative[30].

Leprosy: Seeds used in the treatment of Leprosy by tribals of Sonebhadra district of Uttar Pradesh[31]**. Neck pain:** Leaf extract applied in neck pain by ethnic people of Sheshachala hill range of Kadapa district of Andhra Pradesh[32]. **Nervous disorder:** Root bark pounded with root of *Cryptolepis buchanani* and used to revival of nervous system paralysed by alcoholic intoxication by Malamalasar tribe of Parambikulam wildlife sanctuary of Kerala[33]. **Nose infection:** Leaf paste and bark applied in the treatment of nose infection by tribal of Amrawati district[34]**. Reduce bitter taste:** Garasia tribe of Rajasthan put mango fruits with flowers of the same plant to reduce bitter taste[35]**.**

Rheumatism: Thuamul Rampur block is coming under Kalahandi district of Orissa. Paraja, Kutia Khdnha, Tekeria and Jhadia are the tribes inhabited in the same block. These tribes used fruit decoction for the treatment of rheumatism[36]. **Ringworm and Skin diseases:** Leaf paste is applied on ringworm by inhabitants of Solan district of Himalchal Pradesh[37]. Leaves and flowers are used in ringworm by tribes of Satpuda region of Dhule and Jalgaon districts of Maharashtra[38]. Kanikkar tribe of Kanyakumari district uses this plant for the skin diseases[39]. **Scorpion bite:** Seeds are used as antidotes by tribals of Sonebhadra district of Uttar Pradesh[13]. **Smelling mouth:** Young leaves of Casssia fistula given for the treatment of foetid smell of mouth by local people of Ivanur Panchayat of Cuddalore district of Tamil Nadu[40]. Leaf extract given orally for the treatment of jaundice by tribals of Mayurbhanj district of North Orissa[41].

Snakebite: For the treatment of snake bite, one teaspoonful fruit powder given internally by Halakki, Kadukurba and Lambani tribes of Bidar district of Karnatka[42]. Sahariya tribe of Gwalior applied seed extract on snakebite and Gond tribe of Bastar applied fruit pulp, seeds and leaves in snakebite[43]. Roots are used for snakebite by people of Kalrayan and Shervarayan Hills, Eastern Ghats of Tamil Nadu[44]. **Stomach pain:** Gond, Halba and Kawar tribe of Darekasa hill range of Gondia district Maharashtra used fruit pulp for the treatment of Stomach pain in adults as well as infants[45]. **Stomachache:** Traditional healers (Vaidya, Hakim, Janata and Maharaj) of Nanded district used fruit pulp as purgative[46]. Bark decoction given with garlic and pepper powder to cattle as purgative by local healers of Madurai, Dindigul and Theni districts of Tamil Nadu[47].

Stomachache and stomach tumor: Seeds are boiled and taken orally to cure stomachache and stomach tumor by the people of Sanchor and Mount Abu regions of Sirohi district of Rajasthan[48]. **Typhoid:** Bhil, Menna, Garasia, Damor, Sahariya, Gujar, Kathodia, Dindor, Ahari, Raot are the tribes of Rajasthan. These tribes used pods decoction for the treatment of Typhoid[49]. **Urinary disorders:** Poultice of fruit pulp applied externally in the treatment of urinary problems by tribals of Balaghat district of Madhya Pradesh[50]. **Weakness:** Gonds of Adilabad district of Andhra Pradesh used fruit pulp with crushed paste of pepper, garlic and tamarind as tonic in weaknesses[51]. **Wound healing:** Stem bark decoction employed to wash wound healing by the people of Solan district of Himachal Pradesh[52].

CONCLUSION

Cassia fistula L. is tremendously used plant species for traditional medicine since long decades by Indian tribes. Near about all parts of the plant species have medicinal properties. People of the Indian continents have great knowledge about this plant to cure the diseases.

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Editors Message...

In globalised era Higher Education Plays very crucial role in Development of Nation, as it empowers the individuals with necessary competence for achieving important personal, social and higher level of professional goals. Its importance depicted by words of first Prime Minister Jawaharlal Nehru "A university stands for humanism, for tolerance, for reason, for the adventure of the ideas and for the search of truth. It stands for onward march of human race towards even higher objectives. If the universities discharge their duties adequately, then it well with the nation and the people". India's higher education system is the world's third largest in terms of students, next to China and the United States. Policies and approach adopted by Indian government after implementation of economic reforms are not favorable to the higher education. Since the reforms period there has been a continuously decline in the budgetary allocations made by the government to fund higher education in India. Present paper aims to find out new trends in higher education in India. Paper also discusses various challenges in the field higher education in India.

India has the largest higher educational system with respect to the number of institutions. After the independence of the country, the state and central governments have given great attention to the development of higher education. As a result, the system of higher education in India has seen an impressive growth in terms of a number of universities and colleges. The share of the unaided private sector has increased significantly since 2001 in terms of the number of institutions and enrollment. Indian higher education System comprises three stages – under graduate level, post graduate level and doctorate level. The Ministry of Human Resource Development (MHRD) is highest body of Governance which is responsible for supervising the higher education system through UGC. Higher education in India has expanded rapidly over the past two decades. This growth has been mainly driven by private sector initiatives. India's Higher Education sector has witnessed a tremendous increase in the number of Universities/University level Institutions & Colleges since independence Indian higher education presently includes 892 universities out of which 48 central universalities, 394 state universities, 125 deemed universities and 325 private universities. Apart from the above universities, other institutions are granted the permission to autonomously award degrees. However, they do not affiliate colleges and are not officially called 'universities' but 'autonomous organizations' or "autonomous institutes". They fall under the administrative control of the Department of Higher Education. These organizations include Indian institute of Technology, Indian Institutes of Management, National Institute of Technology and All India Institute of Medical Sciences.

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Joshua's Gabbilam: A Voice against Untouchability and Indian Caste System

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Abstract:-

The present paper aims at critically studying the pathetic condition of the downtrodden with a special focus on Gurram Joshua's efforts to raise their voice against unjust untouchability in his great epic poem Gabbilam with the help of its translated versions in English penned by Madhav Rao and Chinnaiah Jangam. . It's a sad tale of the woes and worries of the people belonging to lower castes and being suppressed since ages by the upper caste men. The poet deftly selects the bird Gabbilam (bat) symbolizing the predicament of untouchables in India as a principal figure for his noted poetic venture. The bird is shown carrying the message of the suppressed to the lord Shiva with a fervent appeal for the eradication of untouchability and the restoration of the freedom to the oppressed people from the age old cruel clutches of caste and religion based discrimination for the welfare and development of the nation.

Key Words:- Gabbilam, untouchability, discrimination, upper caste, lower caste, caste system

Introduction:-

Gurram Joshua's 'Gabbilam' is regarded as the epic of downtrodden communities in India because it speaks about the pains and agonies of the people who were suppressed over ages. He cleverly uses the bird bat, which is considered ominous by Hindus, as the messenger of subaltern classes of India, especially the Dalit people in the context of Joshua's 'Gabbilam'. Unlike the auspicious and privileged birds such as swan, peacock, parrot, pigeon, the poet opts the inauspicious bird bat having nocturnal movements and the one that hangs upside down indicating the inner and implicit motive of Joshua to invert the traditional cultural and social hierarchy which had been responsible for the suppression of untouchables. 'Gabbilam' was inspired by Kalidasa's noted epic 'Meghdoota' in which the principal character of Yaksha chose cloud to be his messenger to his beloved, from whom he had been separated by the curse of his master for a short period of one year. On the contrary, the untouchables have been deprived of their right to live as human beings with equal status and opportunities for several centuries and even today continue to suffer at the hands of privileged sections of the society. The poet tries to present the contrast between the malediction of a year for Yaksha and that one of awfully long-long span for the downtrodden people. Chinnaiah Jangam talks about this analogy in similar tone in his translated version of Joshua's 'Gabbilam" as:

Gabbilam means bat. Jangam continues, "Jashuva read Meghaduta and he inverted it." Kalidasa had chosen the cloud to be the messenger of the Yaksa pining for his beloved. Jashuva chose the bat to tell the story of Dalit life to India standing on the threshold of Independence and to the maker. The lines run thus: "When you hang upside down inside the temple/ You will be closer to the ear of the God Shiva/ Make sure the priest is not around/When you recount the story of my life." But Gabbilam's protagonist, the Dalit, is a heroic figure. In the preface to Part I, Jashuva writes, "The protagonist in Meghaduta was sentenced to one year, but my hero was sentenced from birth without any end for generations.[1]

Gurram Joshua's "Gabbilam" is a mod-

ern epic with a subtle attack on untouchability. Joshua chooses the bird bat with a special intent to present it as a messenger, having some significant symbolic importance, to Lord Shiva. Joshua's voice, raised through the bird bat, represents the feelings, emotions, pains and pangs of millions of downtrodden people who had been deprived of their right to live as a human being for hundreds of years in India. Joshua's bird-messenger starts its journey from Tanjore in Tamil Nadu and further moving through several towns and places of Andhra Pradesh, Orissa, Bihar and Uttar Pradesh, finally reaches Lord Shiva in the Himalayas. Thus, Gabbilam's nationwide journey imparts a wider and broader identity to it. Joshua gives vent to the voice of entire suppressed community living in India and across the globe. In his epic, Joshua appears to be desperately raising certain serious questions regarding age old rotten caste system of India rendering the particular section of the society helpless and depressed. Unfortunately the oppressed have to still struggle for their right and just status as a man. Certain privileged sections have intentionally and heartlessly imposed the untouchability on Dalits. He describes in his autobiography that some well-known poets such as Tirupati Venkata Kavulu and Koppurapu Sodarulu inspired him a lot. One day Koppurapu gave visit to Jashuva's village Vindukonda. On this occasion, a public meeting was arranged wherein the villagers were asked to recite poems in his honor. As Jashuva was keenly interested in poetry, he composed a poem on Subba Rao and presented it in the meeting. He was admired by the esteemed poet but the people started shouting at him. Jashuva depicts that humiliating experience as:

How can an untouchable enter the meeting? By making uproar some people boycotted the meeting. They shouted and looked like angry cobras. I went out of the meeting with much guilt. [2]

Shri.K.Madhava Rao brought Joshua's poetry to National and even International level. Coming from the same social background as that of the poet, Madhava Rao expressed the spirit of the original poetry in English. The translator, with devotion, has given praiseworthy contribution to Telugu literature. Joshua's Gabbilam is a sad story of the tribulations of the suppressed people. Joshua's was a tormented, passionate call for righteousness and equal opportunity in the preeminent customs of humanism. Gabbilam depicts, with poignant pathos, the dilemma and spirits of dalits, who for ages have been maltreated and oppressed. It portrays the sufferings and resentment of the Dalits in the modern and ancient communal context. The story of Gabbilam is the agonizing account of the miserable life of downtrodden people – also the story of the journey of social reform movements in India. Only those who personally went through the pains and pangs of the oppressed communities, can genuinely express it through their writings and Joshua was the same person who experienced the trauma of being an untouchable and put it into the words through his poems.

Joshua has strongly criticized the Hindu caste system in his epic poem "Gabbilam". He raises certain questions regarding age old caste system of India that rendered the particular sections of the society helpless and depressed. Unfortunately the oppressed have to still struggle for their right and just status as a human being for ages unknown. The poet has intentionally used the bat for carrying a message up to the God Shiva as it is believed to be an ominous bird by the Hindus. It was thought that the entry of the bird bat into the house is an inauspicious thing. The bird stands for the pathetic condition of the untouchables who were also not allowed to come to the houses of the upper caste people and compelled to live in the outskirts of the villages. There is even one more relevant analogy that we can notice between this bird and the oppressed people of India as

the former moves during the night only, while the Dalits had also the permission to enter the villages only in the absence of the upper caste people. The same analogy, the poet has capitalized to lash out at the cruel and ugly Indian Caste system that hampered the progress of particular section of society in the name of caste. The fact is that it was fully based on the principle of birth and not on the principle of caliber and quality. The heart-rending fact, according to Joshua, was the maltreatment given to the Dalits through the practice of untouchability based on Indian caste system. It's this pain that made him write his master piece 'Gabbilam'. He mocks at the kind and sympathetic attitude of people towards the ants to which they offer food out of charity and in a similar way milt to the poisonous snake but can't give human treatment to his fellow men and women belonging to lower castes. He warns the nation of this odious mentality of upper caste people predicting the fall of the country due to such callous and heinous narrow mindedness

To gauge the complexity of the anguish of Joshua in this epic poem, one needs to have knowledge of the harsh and brutalizing caste system which has been an insegregable part of the Hindu religion for thousands of years. The book, 'Manusmrithi' which is known as Manu Dharma Shastra, was written by the king Manu. The treatise deals with how a man should maintain relation with the society and his attitude towards elders, ladies and others. It tells how he should conduct himself as a family man and as an individual in various stages of his life. The part dealing with the caste system has the greatest impact on the lives of untouchables. A person, who is not familiar with the realities of India might find it difficult to believe all this. But untouchability is as real as the inhuman slavery and as ugly as racial discrimination. No doubt, there has been considerable improvement in the conditions of downtrodden people. But unfortunately, the system is not totally dead yet. No wonder Ambedkar was driven to burning the Manusmriti and Joshua spent his whole life decrying religious discrimination and untouchability imposed by Manu and his successors. Buddha did not believe in the caste system. Dr.Ambedkar became the voice of the untouchables and he demanded separate electorates, freedom and protection for his caste men with a greater priority than political independence from the British. Mahatma Gandhi started a movement for abolition of untouchability. He declared the practice of untouchability as the biggest blot on Hinduism. Joshua has badly criticized the perverted caste system that made a slave out of a human being in the name of religion and subjected quite a big part of the society to senseless agonies, pains and unbearable humiliations in his great epic poem 'Gabbilam'. In this regard, Chinnaiah Jangam expresses his view in a dialogue with Geetha Hariharan as:

The primary purpose of the title Gabbilam is to turn the literary and cultural canons upside down. Jashuva uses a subversive strategy to counter status-quo writings by exposing their hypocrisy. The title begins this project of subversion, as a counter-narrative to dominant Brahmanical narratives. It questions the legitimacy of caste, and it protests the inhuman treatment of untouchables and their dehumanization.[3]

Thus, Jashuva's 'Gabbilam' is a peaceful revolt against the age old Indian caste system and untouchability that crippled people of lower castes with the burden of discrimination and humiliating treatment depriving them of their right to live as a human being. The poet comes up with the bird which doesn't have acceptance and recognition as an auspicious and normal creature in the society. The bat is considered to be an ominous bird that keeps hanging upside down. The poet aims at turning the traditional societal psyche upside down like that of the bird, bat. All things considered, Gabbilam is a strong and patient voice against the Indian caste system and the untouchability.

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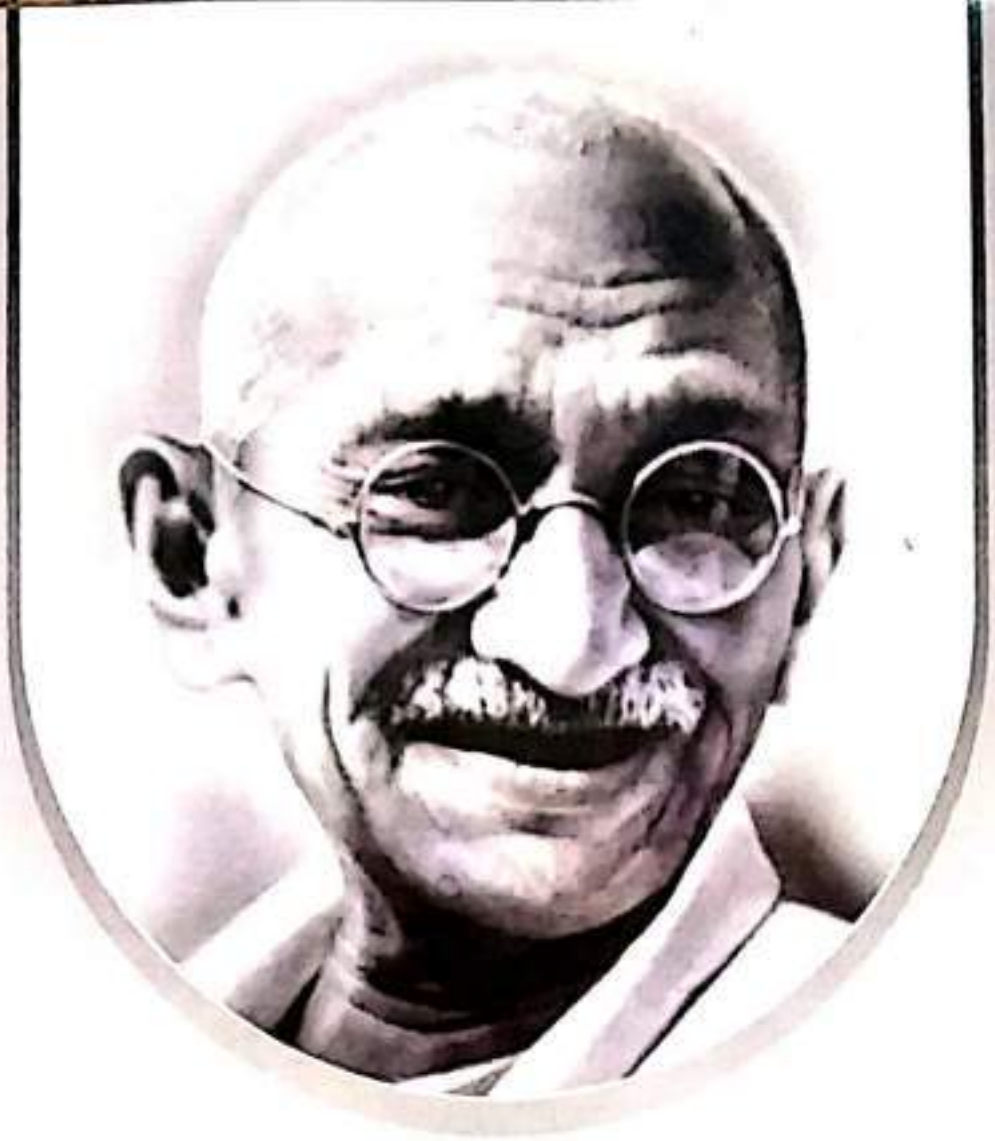

गांधीवादी विचार

(स्वरूप आणि प्रासंगिकता)

संपादक

डॉ. संजय पी. धनवटे

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महात्मा गांधी यांचे शैक्षणिक विचार

भोजराज व्ही. बोदेले
सहायक प्राध्यापक यशवंतराव चव्हाण कला, वाणिज्य व विज्ञान महाविद्यालय लाखांदूर जि. भंडारा,
Email- bhojrajbodele@gmail.com, मो. नं. ९४०३२३७८३१

सारांश :

गांधीजींची शिक्षणविषयक कल्पना ही श्रम, नीती व ज्ञान यावर आधारीत होती. मातृभाषेतून शिक्षण, कमीत कमी पाठ्यपुस्तके वापरून श्रमाधारीत शिक्षण हे गांधीजींच्या उत्तम शिक्षणाची सूत्रे होत. त्यांच्या दृष्टीने शरीर, मन, हृदय यांचा समतोल विकास होय.त्यांच्या मते केवळ साक्षर होणे म्हणजे शिक्षण नव्हे. शिक्षणाद्वारे उच्च–नीच जात–पात, धर्म यासंबंधीचा भेद भाव नष्ट व्हावा. सर्व धर्माची तत्वे, आदर भाव, उदार सहिष्णुता यांची आकलन करून देण्याची वृत्ती विद्यार्थ्यांत निर्मान व्हावी व ती जोपासली जावी हा होता. शिक्षणाने ग्रामीण उद्योगांचा ऱ्हास थांबवावा.

प्रस्तावना :

महात्मा गांधी यांचा जन्म २ आक्टोबर १८६९ मध्ये पोरबंदर येथे झाला. त्यांचे शिक्षण विषयक विचार शिक्षणशास्त्रातील विद्वानांपेक्षा गांधीजींचा शिक्षण विषयक विचार अगदी वेगळा होता. आजचे शैक्षणिक धोरण पुस्तकी आहे. गांधीजींच्या मते, शिक्षण म्हणजे श्रम, नीती व ज्ञान यांवर आधारित होती. सगळा समाज, विशेषत: कष्टकरी जनता स्वावलंबी व स्वाभिमानी बनू शकेल अशी शिक्षणव्यवस्था त्यांना हवी होती. त्यांच्या मते केवळ साक्षर होणे म्हणजे शिक्षण नव्हे ! व्यक्तीमत्वाचा संपूर्ण विकास साधणे हेच शिक्षणाचे घ्येय असले पाहिजे थोडक्यात गांधीजींच्या विचार प्रणाली नुसार 'शिक्षण म्हणजे माणूस घडविणे होय'.

हे शिक्षण मुख्यत: मातृभाषेतूनच असावे याविषयीही ते आग्रही होते. त्यांच्या 'वर्धा शिक्षण योजने'चे शिक्षण क्षेत्रात एक क्रांती केली. गांधीजींचे असे सर्वस्पर्शी व सर्वोपयोगी विचार होते.

बीजशंब्द :शिक्षण, श्रम, नीती, ज्ञान, स्वावलंबन, स्वाभिमान, साक्षरता.

शिक्षण म्हणजे काय ? :फक्त अक्षर–ज्ञान एवढाच त्याचा अर्थ असला तरी ते एक साधन मात्र ठरते. त्याचा चांगला किंवा वाईटही

उपयोग होऊ शकतो. बहुतेक लोक त्याचा वाईटच उपयोग करतात. त्यातुळे हे सिद्ध होते की अक्षर – ज्ञानाने जगाचा फायदा कमी, नुकसानच अधिक झाले आहे.''शिक्षण प्राथमिक असो की उच्च, आम्ही ते घेतल्याने मनुष्य बनत नसू, आपली कर्तव्य काय आहेत हे जाणून घेत नसू तर ते शिक्षण व्यर्थ आहे''. ते पूढे म्हणतात, ''मी सर्व स्थितीत अक्षर ज्ञान निरर्थक मानतो असा गैर समज होऊ नये आम्हाला त्या ज्ञानाची मूर्तीसारखी पूजा करायला नको तर त्याचा उपयोग तर त्याचा उपयोग नीती मध्ये आहे तेच खरे शिक्षण होय''.

वर्धा शिक्षण योजना :–१९३७ ला वर्धा येथे भरलेल्या अखिल भारतीय राष्ट्रीय परिषदेत गांधीजींनी ही योजना मांडली होती. त्यातील काही सुत्रे पुढील प्रमाणे १. शिक्षण हे मातृभाषेतूनच हवे. २. केवळ परीक्षांवर जोर देणारे पुस्तकी शिक्षण नको. ३. शिक्षणात पाठ्य–पुस्तके कमीत कमी असावी. ४. शिक्षण मुख्यत: श्रमाधारित असावे.

शिक्षण म्हणजे समतोल विकास : गांधीजींच्या दृष्टिने शिक्षण म्हणजे शरीर, मन व हृदय याचा समतोल विकास होय. शिक्षणाने बुद्धी वाढते तसे शरीरही मजबूत व्हायला हवे. व हृदयाची विशालताही वाढावी. 'साविद्या या विमुक्तये' असे आपल्याकडे म्हणतात. त्याचा अर्थ सर्व प्रकारच्या गुलामगिरीतून सुटका. ज्ञान हे आपल्या व्यक्तीगत अभ्युदयासाठी नसते. ते सर्वसामान्य लोकांच्या उपयोगी पडण्यासाठी असावे.शिक्षण हे सृष्टीचे संचालन करणाऱ्या गूढ गोष्टीचे भान देणारे असावे. तसेच बुद्धी, कृती व भावना यांचा समतोल विकास होत गेला की कुणीही या 'माणूस' बनण्याच्या प्रक्रियेच्या अगदी जवळ पोहचतो. एकुणच सहिष्णुता, क्षमा, समता, सहकार्य इत्यादी गुणामुळे स्वयंपूर्णता, निष्कलंक वाढीस लागते.

चौफेर शिक्षण : गांधीजींचा शिक्षणविषय विचार चौफेर होता. त्यांनी समाजातील प्रत्येक घटकाला दिल्या जाणाऱ्या व आवश्यक असणाऱ्या शिक्षणावर सुक्ष्मपणे विचार केलाहोता. स्त्रिया, मूले, प्रौढ, हरिजन, शेतकरी या सर्वांना कसे व कुठले शिक्षण द्यावे याचे स्वच्छ गणित त्यानी मांडले होते. स्त्रिचे क्षेत्र कित्येक युगे चूल आणि मूल हेच मांडले जायचे. तिचे स्वंतत्र अस्तित्व नाकारले गेले होते. एक व्यक्ति म्हणून तिचे मूल्य अगदी नगण्य असायचे. या स्त्रिंयाचे अस्तित्व व स्वत्व जागवण्याचे काम प्रथमत: गांधींजींने केले. स्त्री ही खरे म्हणजे पुरूषांची जननी आहे. एक स्त्री साक्षर झाली तर एक संपूर्ण कुटूंब

सुधारते. मुलांना तोंडी ज्ञान दिले तर त्यांचा विकास अधिक वेगाने होतो. लहानपणापासून आपण मुलांना पाठ्यपुस्तकांचे गुलाम बनवतो याचा गांधीजींना खेद होता. तर त्या ऐवजी मुलांना आधी चित्रकला, व्यवहारोपयोगी व धार्मिक ज्ञान द्यावे. त्यांच्या दृष्टीने घर म्हणजे खरी शाळा होती. आई व वडिल हे मुलांचे प्रथम शिक्षक आहेत. घरातच संस्कार चांगले असले तर मुलांचा विकास लवकर होतो. प्रौढांना खेडेगावचे गणित, तेथला भूगोल, इतिहास, आरोग्यशास्त्र या सर्वांचे ज्ञान असावे. ते त्यांना व समाजालाही अधिक उपयोगी ठरते. विशेषत: ग्रामीण भागातील शेतकरी, कष्ठकरी वर्गांना शिकविणे म्हणजे त्यांचा सर्वांगीन विकास करणे होय. केवळ अक्षर ज्ञानाने हे काम होण्यासारखे नाही. तर त्यांच्यात असलेले अज्ञान, अशिक्षितपणा, खेळवळपणाचे गंड काढले पाहिजे. त्यांच्यात नैसर्गिकरित्या असलेल्या गुणांचा विकास साधला जावा. त्यांनी हरिजनांच्या सेवेसाठी आपले जीवन वाहून टाकले होते. केवळ शिक्षणात नव्हे तर एकूणच जीवनातून उच्च–नीच, जात–पात, धर्म यासंबंधीचा भेदभाव नष्ट व्हावा असा त्यांचा प्रयत्न होता. मंदिराप्रमाणे शाळा–महाविद्यालय व अन्य शिक्षण संस्थांमधून हरिजनांना मुक्त प्रवेश असावा. त्यांना स्वच्छ पाणी व उत्तम शिक्षण मिळावे हा त्यांचा आग्रह होता. वर्षानुवर्षे समाजाने हरिजनांना सन्मानाने, सभ्यपणेव स्वच्छतापूर्ण रितीने जीवन जगणे नाकारले होते. आता विशेषत: स्वराज्यात त्यांना सन्मानाने जगण्याचे सर्व हक्क आहेत हे आम्ही मान्य करायला हवे. केवळ मान्यच करायला हवे असे नाही तर त्यांना जगण्यासाठी तशी संधीही उपलब्ध करून द्यायला हवी.

म. गांधी आणि शिक्षक: शिक्षणाविषयी विचार करतांना गांधीजींनी शिक्षकाविषयी खूप अपेक्षा व्यक्त केल्या आहेत. शेवटी जे शिक्षण मिळते ते शिक्षकाच्या माध्यमातुनच मिळते शिक्षण देने हा काही केवळ एक व्यवसाय नाही. विद्यार्थ्याचे जीवन घडवणे व त्यांना अडचणीच्या वेळी मदत करणे हे शिक्षकाचे आद्य कर्तव्य ठरते. खर म्हणजे शिक्षकाचे कार्य विद्यार्थ्याच्या विचारांना चालना देण्याचे आहे. गांधीजी म्हणतात, ''आपन मानसे विचार करणारे, ज्ञान प्राप्त करूण घेणारे ज्ञानी आहोत आणि या काळात सत्य कोणते व असत्य कोणते, कटू भाषण कोणते व मधूर कोणते, शुध्द वस्तु कोणती अशुध्द वस्तु कोणती हे आपल्याला समजले पाहीजे.''

म. गांधी आणि विद्यापीठीय शिक्षण:म. गांधीजी उच्च शिक्षणाचे कार्य करणाऱ्या विद्यापीठातील शिक्षणाविषयी भूमिका मांडतात. महाविद्यालयाचे व विद्यापीठे हे पवित्र मंदिरे आहेत. ही चरित्र संवर्धनाची केंद्र असली पाहीजे उच्च शिक्षण घेतलेल्या तरूणांनी काहीतरी समाजउपयोगी नवे शोधन्याचे प्रयत्न केले पाहीजे असे गांधीजींचे विचार होते. आज उच्च शिक्षणाचे स्वरूप बदलले आहे उच्च शिक्षण हे केवळ पदवी मिळविण्यापुरते मर्यादीत झाले असून समाजपरिर्वनाची उद्दिष्टये शिक्षणप्रणालीतून नाहीसी झालेली दिसते म्हणूनच उच्च शिक्षणाच्या क्षेत्रात म. गांधीजींची भूमिका ही समाजकेंद्री दिसून येते. म. गांधीजींच्या शिक्षण विषयाच्या विचाराला त्यांच्या सपुर्ण तत्वज्ञानाचे अधिष्ठान लाभलेले दिसते.

शिक्षण व धर्म : गांधीजींना धर्म व शिक्षण यांची सांगड हवी होती. मुला–मुलीमध्ये सर्व धर्माबद्दल समाजात आदराची व प्रेमाची भावना असावी. त्यांनी सर्व धर्माच्या, पंथांच्या व उपासनांच्या मार्गांचा आदर करावा असे त्यांना वाटे. गांधींनी धार्मिक शिक्षणात खालील गोष्टींचा अंतर्भाव केला आहे. १.आपल्या धर्माव्यतिरिक्त अन्य धर्माच्यां सिद्धान्तांचाही अभ्यासक्रमांत समावेश करावा. २.सर्व धर्मांची तत्वे आदर भावाने व उदार सहिष्णुवृत्तीने बाळगावी. ३.विद्यार्थ्यांची आध्यात्मिक श्रद्धा दृढ करावी.४.यर्व धर्मामध्ये मौलिक एकता कशी आहे हा विचार विद्यार्थ्यांच्या मनावर बिंबवावा. ५.कोणत्याही धर्मांविषयी लोकांच्या भावना दुखावतील अशा आशयाला स्थान देऊ नये.

म. गांधी यांचे शिक्षण विषयक निवडक विचार :

१.शिक्षण आणि चारित्र्य :''चारित्र्य संवर्धनाच्या सखोल पायावरच आपल्या प्राचीन शिक्षणपद्धतीची इमारत उभारलेली आहे.''

२.चारित्र्यहीन शिक्षक हा रूचिहीन मिठासारखाच असतो ''राजकारणपटू चारित्र्यहीन असला तरीही तो यशस्वी होईल, परंतु समाजशिक्षकाला चरित्र्यहीन असून चालायचे नाही''

३. विद्यार्थ्यांना संदेश ''विद्यार्थ्यांनो, तुम्ही आशावंत असले पाहिजे. जर तुमच्यामध्ये त्यागभावना आणि संयम नसेल तर तुम्ही यशस्वी होणार नाही. धर्मराज्य हे जर तुमचे ध्येय असेल तर त्यागावाचून ते संपादन करणे मुस्कील आहे. जरी त्याग न करता ते तुम्हाला मिळाले तरी त्यागावाचून ते टिकविता येणार नाही. जर तुम्हाला काम

करावयाचे असेल तर तुम्ही स्वःताचा आणि देशाचा उद्धार केला पाहिजे''

४. स्वावलंबन व शिक्षण : शिक्षणातून सर्व विद्यार्थ्यांचा विकास साधण्यासाठी एखाद्या फायदेशीर व्यवसायाचा अवलंब केला पाहिजे.

५.ज्ञानाची कसोटी : शिक्षणातून स्वावलंबी बनणे ही त्याच्या ज्ञानाची कसोटी नव्हे, तर वैज्ञानिक पद्धतीने शिकवल्या गेलेल्या अभ्यासातून व्यक्तीची सारी सुप्त गुणवैशिष्ट्ये विकसित होणे ही खरी कसोटी आहे.

६.श्रम आणि शिक्षण : शिक्षण केवळ साहित्य प्रधान करणे हा एक गुन्हाच आहे. अशा साहित्य प्रधान शिक्षणामुळे विद्यार्थी शारीरिक श्रम करण्यास असमर्थ ठरतात. यासाठी बाल्यावस्थेपासून मुलांच्या मनावर श्रमाचे महत्त्व बिंबविले गेले पाहिजे.

७.अहिंसा शिक्षणाने उत्पन्न होते : अहिंसा ही यांत्रिक कृती नाही. अहिंसा हा हृदयाचा अत्यंत सूक्ष्म गुणधर्म आहे. तो शिक्षणानेच उत्पन्न होतो. अहिंसा हे दुर्बलाचे हत्यार नाही, ते बलिष्ठांचे आहे. अहिंसा म्हणजे दुष्कृत्याला क्षमा करणे, सूड घेणे नव्हे, 'क्षमा हे शूर पुरुषांचे भूषण आहे' हे वचन खरे आहे.

८. शिक्षणाचा पाया : शुध्द चरित्र्य आणि पवित्र अंतकरण हा जर तुम्हा विद्यार्थ्यांच्या शिक्षणाचा पाया बनवायचा असेल तर दररोज प्रामानिकपणे आणि धार्मिक वृत्तीने प्रार्थना करणे यासारखे कोणतेही दुसरे साधन नाही.

९. शिक्षणाचे उद्दिष्टये :विद्यार्थ्यांचे शिल जर तयार झाले नाही तर तो अयोग्य प्रकारचे ज्ञान मिळविण्याचा संभव आहे. विद्यार्थ्यांमध्ये नैतिक वृत्ती दृढ करणे हे शिक्षणाचे मुख्य उद्दिष्ट आहे.

१०. स्वच्छतेचे प्रशिक्षण : श्रिमंताने पैशाच्या रूपाने तज्ञानी आपल्या ज्ञानाने आणि प्रत्येकाने स्वच्छतेसाठी हौसेने मदत केली पाहीजे. आजचे काम चालले आहे ते अज्ञान, बेपर्वाई आणि विरोध या सर्वांना तोंड देऊन शहर स्वच्छ ठेवण्यासाठी स्वयंसेवकाने पुढे का येऊ नये? शाळांच्या आणि महाविद्यालयाच्या विद्यार्थ्यांना स्वच्छतेचे प्रशिक्षण का मिळू नये व स्वयंसेवक म्हणून त्यांनी का पुढे येऊ नये? 'जर शालेय शिक्षणात मुले आणि मुली शिस्त शिकू शकली नाही तर त्यांच्या शिक्षणावर खर्च केलेला पैसा आणि वेळ व्यर्थ होय'

११. आध्यात्मिक शिक्षण: प्रार्थना म्हणजे धर्माचा आत्मा आणि सार होय. म्हणून मनुष्याने आपल्या जीवनाच्या गाभ्यात प्रार्थनेला स्थान दिले पाहीजे. कारण कोणताही मनुष्य धर्माशिवाय जगूच शकत नाही.

निष्कर्ष : —

१.म. गांधीजींच्या शैक्षिणिक विचारामध्ये शिक्षण मातृभाषेतून असावे असे ते म्हणतात.

२.शिक्षण हे चौफेर असावे. त्यात स्त्री, मुले, प्रौढ, शेतकरी, हरिजन, ग्रामीण इत्यादींचा समावेश असावा.

३.शिक्षणात पाठ्य–पुस्तके हे मर्यादीत असावेत.

४.शिक्षण हे पुस्तकापेक्षा कृतीशिल असावे.

५.शिक्षणात निसर्गाचा समावेश जास्त असावा. कारण निसर्ग हा सर्वात मोठा गुरू असतो.

६.शिक्षण हे चारित्र्य सपन्न असावे वशिक्षक हे चारित्र्यवान असावे.

७.शिक्षणातून सर्वधर्मसमभाव वाढीस लागावे.

८.शिक्षणातून आत्मिकता व आध्यात्मिकता वाढावी.

संदर्भ ग्रंथ

१. भगत रा.तु. शिक्षणातील थोर विचारवंत चैतन्य प्रकाशन, कोल्हापूर (२००५).

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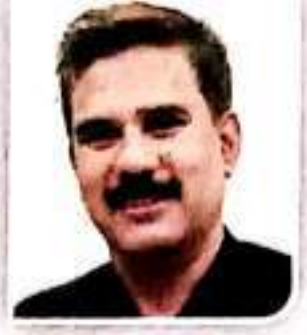

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आजादी का अमृत महोत्सव

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के संयुक्त तत्वावधान में आयोजित

अंतरराष्ट्रीय संगोष्ठी

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"स्वतंत्रता संघर्ष में हिन्दी–मराठी साहित्य का अवदान"

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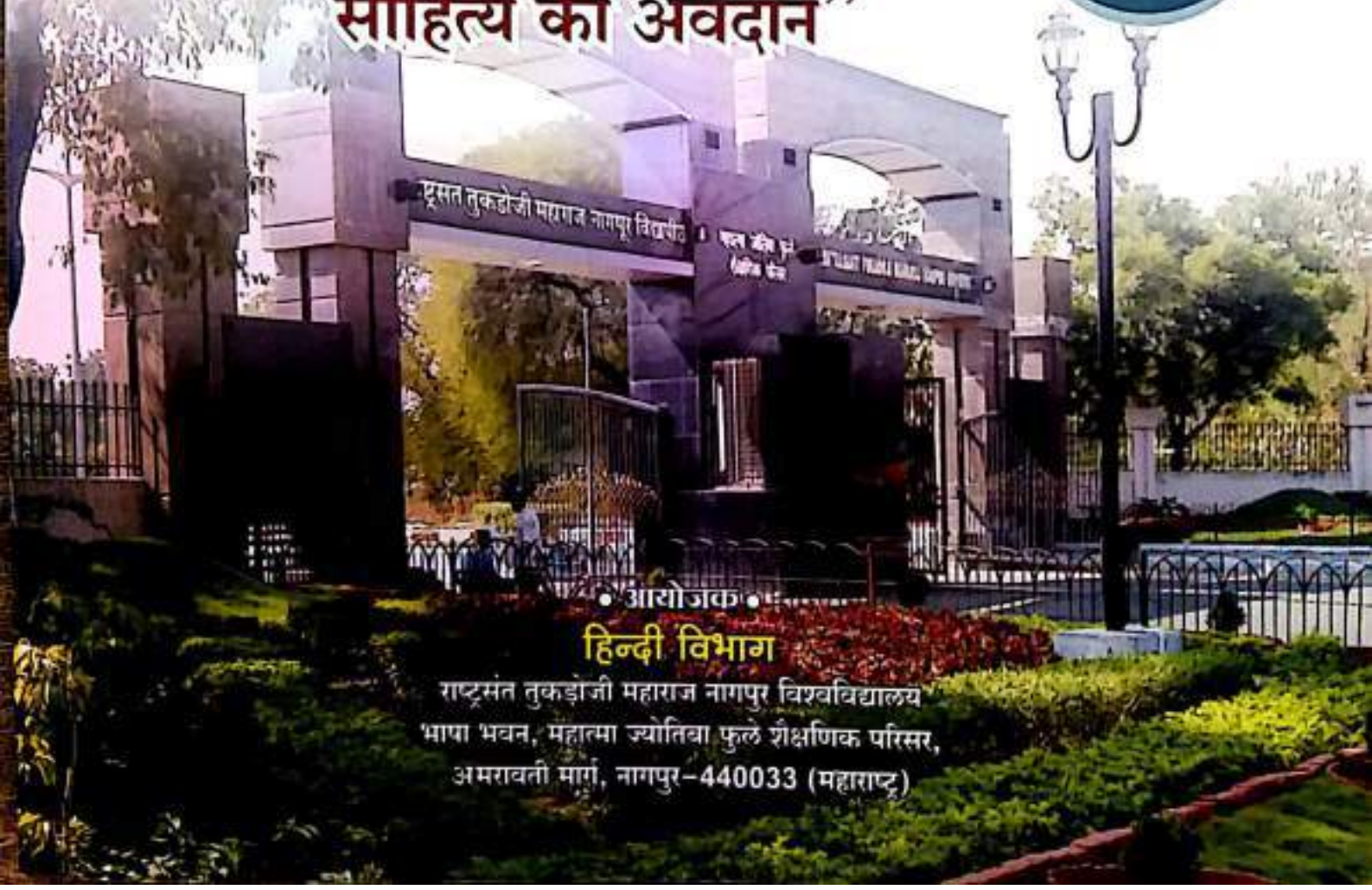

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हिन्दी विभाग

राष्ट्रसंत तुकड़ोजी महाराज नागपुर विश्वविद्यालय

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अनुक्रम

भारतीय स्वातंत्र्य लढ्यात सयाजीराव गायकवाड यांचे योगदान

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ब्रिटिश सरकारच्यासोबत राहूनच आपल्याला आपले स्वातंत्र्यांचे लढे मोठ्या हूशारीने लढावे लागतील हे महाराज समजून होते. कारण त्यावेळचा लॉड कर्झन हा मोठा हट्टी व हुशार इंग्रज अधिकारी होता. त्यामुळे यांच्यासोबत मित्रत्वाचे तह करून वागावे लागेल हे गायकवाडांना समजले होते. लॉर्ड कर्झनला महारांजानी पत्र पाठवून सांगीतले आपण सरकार आहात तर आमच्या मिळालेला करातील काही भाग आमच्यासाठी असावा असे महाराज त्या इंग्रज अधिकाऱ्याना सांगत असत. स्वातंत्र मिळविण्याकरिता अभिनव भारत क्रांतिकारक संघटना स्थापन केली होती. तसेच बडोद्यात तरूण संघाची स्थापना केली. महाराजाचे ब्रिटिश सरकारसोबत असलेले मित्रत्वाचे करार असल्यामुळे त्यांनी आपल्या राज्यकारभारात आम्ही इंग्रज सरकारचे गुलाम नाहीत. आमचे करार हे मित्रत्वाचे आहेत याची वारंवार आठवण करून देत. संस्थानिकांना राज्यात स्वातंत्र्य द्यावे अशी त्यांची मागणी रास्त होती. कारण संस्थानिक हे मोकळेपणाने आपले राज्य कारभार चालवू शकतील. महाराजांनी भारतीय राष्ट्रीय कॉंग्रेस आणि विलायतेतील क्रांतिकारकांना महाराजांची वेळोवेळी मदत केली. आपले तरूण हेच देशाच्या पारतंत्र्याच्या बेड्या तोडण्याचे कार्य करू शकतात असे ठाम भूमिका महाराज सयाजीराव यांची होती. स्वातंत्र लढ्यात कार्य करणाऱ्या तरूणांना आर्थिक मदत करीत, तसेच उमद्या तरूणांना आपल्या संस्थानात प्रत्यक्ष सेवेत घेवून त्याच्या पाठीशी नेहमी खंबीरपणे उभे असत. यावरून असे म्हणता येईल की, महाराज सयाजीराव गायकवाड हे भारतीय स्वातंत्र लढ्यातील क्रांतीकारकांचे पाठीराखे होते.

स्वातंत्र्यपूर्वकाळात भारतात साडेपाचशेहून अधिक लहान-मोठी संस्थाने राज्य होती. या संस्थानातील बहुतांशी राजे आपल्या ऐश्वर्याच्या डामडौलात मश्गूल राहून सार्वभौम सत्तेचे नम्र मांडलिकत्व सिद्ध करण्यासाठी धडपडत होते. याउलट एकट्या सयाजीराव गायकवाडानी राट्रीय चळवळीला आणि क्रांतीकारकाना उघडपणे मदत केली. आयुयभर त्यांनी ब्रिटिश सत्तेशी हिमतीने सघर्ष केला. सयाजीराव गायकवाड यांचे बडोद्यातील प्रशासन, सामाजिक सुधारणा ब्रिटिश प्रशासनापेक्षा चांगल्या होत्या. अशी तुलना होऊ लागली. ही गोट ब्रिटिश सरकारला न आवडणारी होती. राट्रवादी विचाराचे जहाल क्रांतीकारक अरविंद घोष यांना महाराजांनी बडोद्यात नोकरीस बोलावले. त्यांच्या सोबतच खासेराव जाधव, बॅ. केशवराव देशपांडे या महाराजाच्या अधिकाऱ्यांची साथ मिळाली. बडोद्यातील मानिकरावांचा आखाडा देशभरातील. क्रातीकारी चळवळीचा अड्डा बनला लोकमान्य टिळक, लाला लचपतराय या राट्रीय चळवळीच्या मंडळीचे बडोदा केंद्र बनले. या चळवळीला या मंडळीच्या माध्यमातून सयाजीराव गायकवाड यांचा आश्रय आणि मदत मिळू लागली. ही गोट ब्रिटिश सरकारच्या नजरेतून सूटली नाही. हिंदूस्थानचेसी. आय. डी. प्रमुख सी. आर. क्लीव्हलॅड यांच्या मार्गदर्शनाखाली हेरांनी माहिती जमवून वरीष्ठ सरकारला पाठवू लागले. गव्हर्नर जनरलकडून लंडन भारतमंत्र्यांना सयाजीरावांच्या देशद्रोहाचा अहवाल जाउ लागला. येवढे असून सुद्धा सयाजीराव गायकवाड ब्रिटिश सरकारला घाबरले नाही.

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Chapter 6

NANO-MAGNETIC ADSORBENTS FOR REMOVAL OF HEAVY METALS FROM WASTEWATER

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ABSTRACT
Heavy metals exist in maximum of the industrial wastewaters and water components are amongst the maximum severe environmental contaminants. As such, elimination of those metals from water and wastewater is a vital technique for protective public health and the environment. Thanks to its biocompatibility, flexibility, low cost, and excellent results, the adsorption approach has been widely used for this kind of purpose, making it essential to increase cheaper adsorbents in eliminating those metallic contaminants. In latest years, using magnetic adsorbents has received interest due to the fact of their magnetic property, which enables the separation and elimination of the adsorbent the usage of an outside magnetic composites, mainly the nano-sized ones, show off superiority over different adsorbents. Given their excessive adsorption yields, those were used as green and cost-powerful adsorbents for eliminating heavy metallic contaminants.

KEYWORDS: Adsorption, waste water, Magnetic Nanoparticle, Heavy metals

INTRODUCTION

Water is important and essential part of the universe and it plays a vital role within the proper functioning of the earth' ecosystems. Water stocks on earth can be divided into two categories i.e. salt water and fresh water. The total volume of water on earth is about 1386 million cubic km. Only 2.5 % of the total volume of water is fresh water and less than 1 % of all fresh water is directly available for human use (Amin et al., 2014). From a global point of view, water is unevenly distributed, with great natural variations in availability at the local level. Water pollutants are one of the most important modern-day issues which could pose a hazard to human health and the environment. The presence of poisonous chemical substances and organic agents above natural ranges maybe described as water pollutants. Pollutants contained in wastewater can be chemical contaminants which include heavy metals, natural and inorganic particles, toxins, pharmaceuticals, and hormones, or other risky substances. (Unuabonah & Taubert, 2014). Despite the presence of vast bodies of

water, drinking water is not readily available in most parts of the world. This is most dramatic in regions with rapid industrialization and population growth like large cities. Over seven hundred organic and inorganic micro pollutants are mostly toxic and carcinogenic while some have long residence times in the environment and are neither biodegradable nor bio transformable. Drought and desertification are day-to-day realities for many people and have a devastating impact on people's livelihoods. Availability of water for purposes like drinking, irrigation and industrial use are the major concerns.

Several techniques available to remove these and other micro pollutants from water and industrial wastewater: chemical precipitation, ion-exchange, electrodialysis, electrolysis and adsorption (Dąbrowski et al., 2004; Demirbas, 2008; Leta, 2017). Among these, ion- exchange is expensive technique and chemical precipitation leave behind secondary pollutants however adsorption is a less expensive technique that removes both organic and inorganic pollutants from water (Demirbas, 2008). It is therefore extremely engaging for water treatment, particularly within the developing countries that are most heavily plagued by water contamination.

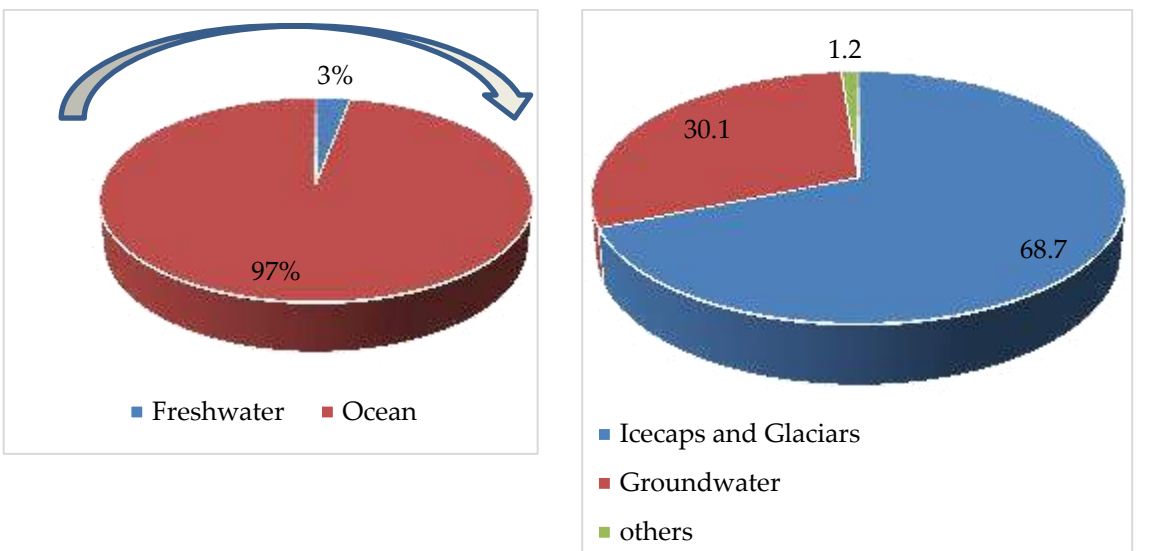

Fig. 1: (a) Water Distribution on the Earth and (b) Freshwater Distribution on the Earth.

TYPES OF WATER CONTAMINATION

Water resources in most developing countries are being impure on the so much aspect their capability to sustain ancient uses as a result of high increase rates. Increasing urbanization and manufacture have exacerbated the case by creating really big purpose sources of pollution. Major centres of population and rural agro-industry have seriously broken

surface water quality, even in very massive rivers and groundwater has together been contaminated. There are varied ways of water contaminations a number of them at intervals the subsequent subsections are shortly mentioned.

AGRICULTURE

The agricultural sector is the most important consumer of worldwide fresh resources, with farming and livestock production exploitation concerning 70 % of the earth's surface water supplies, however it's conjointly a heavy water polluter. Round the world, agriculture is the leading reason for water degradation. When it rains, fertilizers, pesticides, and animal waste from farms and cattle operations wash nutrients and pathogens—such micro-organism and viruses—into our waterways. Nutrient pollution, caused by excess element and phosphorus in water or air, is the number-one threat to water quality worldwide and may cause algal blooms, a cyanogenetic soup of blue-green algae which will be harmful to people and wildlife.

SEWAGE AND WASTEWATER

Used water is also one kind of wastewater. Wastewater comes from our sinks, showers, and toilets (suppose sewage) and from commercial, industrial, and agricultural activities (suppose metals, solvents, and poisonous sludge). The time period additionally consists of storm water runoff, which happens whilst rainfall contains street salts, oil, grease, chemical substances, and particles from impermeable surfaces into our waterways More than eighty percent of the world's wastewater flows returned into the surroundings without being dealt with or reused, in step with the United Nations; in a few least-evolved countries, the discern tops ninety five percentage. These centers lessen the quantity of pollution which includes pathogens, phosphorus, and nitrogen in sewage, in addition to heavy metals and poisonous chemical substances in commercial waste, before discharging the treated waters returned into waterways.

RADIOACTIVE WASTEWATER

Radioactive waste is produced from industrial, medical and scientific processes that use radioactive material. Radioactive waste can have detrimental effects on groundwater, surface water and marine resources. Radioactive waste comes from many sources like operations conducted by nuclear power stations produce radioactive waste, mining and refining of uranium and thorium are also causes of marine radioactive waste, waste is also produced in the nuclear fuel cycle which is used in many industrial, medical and scientific processes and many more.

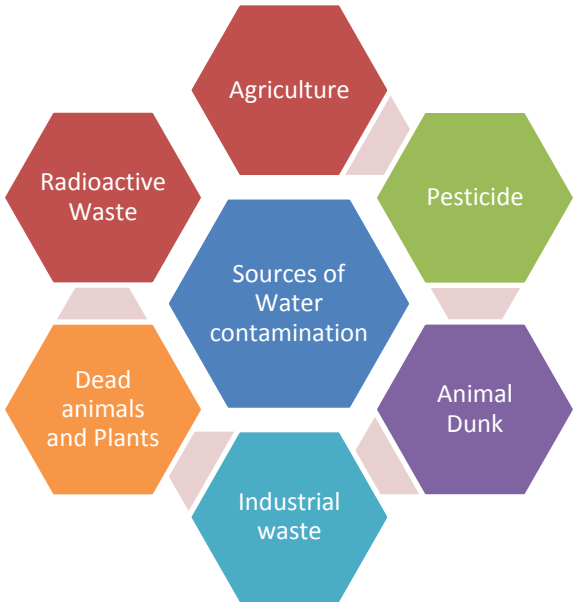

Fig. 2: Major source of water contamination

HEAVY METALS

Heavy metals are the most non-unusual maximum contaminants that can be found in industrial wastewater, these cause damage to the nearby environment and pose various health risks to humans (Ruthiraan et al., 2019). Such metals are non- decomposable with inside the surroundings and generally tend to modify the physical, chemical and organic qualities of water. The supply through which metals are launched into the ecosystem consist of volcanic eruption, soil, and rock weathering and human activities which include using polluting chemical compounds from metals, mining, manufacturing, etc. Additionally, heavy metal storage is found at significant depths in surface waters which are followed by streams / springs to lakes / rivers. However, factors contributing to the concentration and identity of heavy metals in surface water involves chemical aspects containing oxyhydroxides / aquatic vegetation scavenges heavy metals causes bioaccumulation in living organisms (Khan et al., 2015). Metals with density more than 5 g/cm3 are referred to as heavy metals, for instance, lead, mercury, arsenic, zinc and chromium are few of the heavy metals. In 1987, United States Environmental Protection Agency (USEPA) posted a listing of the contaminants discovered in wastewater that impose critical dangers into the human health, which include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, zinc, silver, thallium, and selenium(Ramos et al., 2002). In fact, the systems present in these metals can impose excessive damage and trouble on features of the cardiovascular system, liver, kidneys,

blood, skin, glands, reproductive system, immune system, nervous system, urine and digestive system("Heavy Metal in Drinking Water Its Effect on Human Health and Its Treatment Techniques – a Review," 2018). These metals have been classified based on their atomic weight, density, chemical properties, and toxicity. Based on the periodic table, one can categorize heavy metals under three general classes

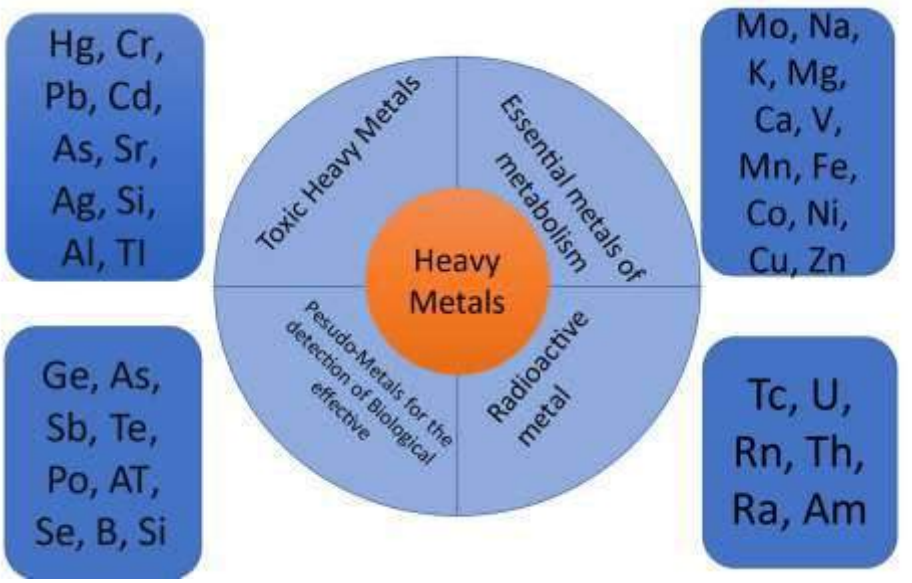

Fig. 3: Classification of Heavy Metals by Toxicity (Tamjidi *et al.*, 2019)

ARSENIC

Environmental pollution by arsenic is due to natural phenomena such as volcanic eruptions, soil erosion and human activities (Ungureanu et al., 2015). Inorganic arsenic may be a confirmed substance and is that the most vital chemical stuff in drinking-water globally. Arsenic may also occur in an organic form. Inorganic arsenic compounds (such as those found in water) are extremely toxic whereas organic arsenic compounds (such as those found in seafood) are less harmful to health. The on the spot signs and symptoms of acute arsenic poisoning encompass vomiting, stomach ache and diarrhoea. These are observed with the aid of using numbness and tingling of the extremities, muscle cramping and death, in intense cases.

CADMIUM

Cadmium (non-degradable) ions particularly maintain big toxicities in addition to accessibly developed to organism through food that makes it tough to rip off and causes organic damage. Cadmium introduces into the surroundings via gradual erosion and rocks

and soil abrasions, along with volcanic eruptions. Furthermore, cadmium is a pollutant that immediately affects human health in numerous methods along with limiting cell growth, bone infections and lung damage. Due to these kind of health issues, WHO (World Health Organization) has said that the restriction of cadmium in blood need to now no longer be greater than 0.005mg/L(Boparai et al., 2011).

CHROMIUM

Chromium is widely distributed in the earth's crust. It can exist in oxidation states of +2 to +6. Wastewater contamination by chromium is of great concern because of its widespread 29 applications in industrial processes such as metallurgy, tanning industries, refractories and 30 foundries and its high toxicity. In fact, hexavalent chromium Cr (VI) has significant toxic 31 effects on humans and animals (Jobby et al., 2018). Moreover, Cr (VI) compounds have been classified by the 32 International Agency for Research on Cancer (IARC) as carcinogenic to humans. The 33 World Health Organization (WHO) fixed the upper limit value for Cr (VI) compounds in drinking water to 0.05 mg L-1 34 (*Cadmium in Drinking-Water Background Document for Development of WHO Guidelines for Drinking-Water Quality*, 2011).

WATER-TREATMENT TECHNOLOGIES

A multiple number of techniques are available for waste water treatments Fig. 3 shows list of important techniques used for water treatment and their classification on the basis of conventional techniques, established techniques and ongoing research techniques.

Each method has its personal benefits and barriers in time period of the nature of pollutant it could treat, cost, performance and environmental impact. Combination of various strategies for powerful and monetary elimination of contaminants is a primary studies vicinity those days. This section discusses about various treatment techniques mentioning their recent use in the removal of heavy metal with the help of nano-magnetic material by adsorption methods.

NANO-MAGNETIC ADSORPTION

In the past decade, nanoscale solid materials became vital as a result of their special properties and therefore the nanomaterials field has gained increasing attention from scientists and engineers. A key reason for the modification within the chemical and physical properties of tiny particles as their size decreases is that the increased fraction of the "surface" atoms, that happens beneath conditions (coordination number, symmetry of the local environment, and so forth) that are totally different from those of the bulk from the energy purpose of view, a decrease in the size of a particle ends up in a rise of the surface energy fraction. Nanomaterials possess a series of distinctive physical and chemical properties. A very vital one is that the majority of the atoms that have high chemical activity and adsorption capability to several metal ions are on the surface of the nanomaterials. The surface atoms are unsaturated and are so subject to combination with different component ions by static electricity. Therefore, nanomaterials will powerfully sorb many substances as well as trace metals and polar organic compounds (*Mercury in Drinking-Water Background Document for Development of WHO Guidelines for Drinking-Water Quality*, 2005). Presently, the distinctive physical properties of nanomaterials are becoming vital attention, specially the salient magnetic properties. Alteration within the characteristics of nanoparticle such as size, composition, shape and structure will enhance the material's magnetic properties.

Magnetic nanoparticles are extremely recyclable, non-toxic, reusable associated possess magnetic characteristics that provide advantages of convenient separation upon using an external magnetic field (Ambashta & Sillanpää, 2010). The sorption on the surface of solid adsorbents demonstrates an excellent perspective for the treatment of heavy metal ion contaminated water. It's a lot of advantageous than alternative ways as a result of its simple design and low investment in terms of initial cost and space needed.

The adsorption method becomes extremely cost effective if the adsorbent used is recyclable. Because of these properties, adsorption process is gaining a great deal of attention from researchers within the treatment of industrial waste water contaminated with heavy metal ions (Wang & Chen, 2009). Ideally an adsorbent need to offer enough binding sites for suitable adsorption of heavy metal ions. Main traditional adsorbents used for heavy metal ion removal are activated carbon, metal oxides, clay etc. to name a few (Moreno-Piraján & Giraldo, n.d.; Sharma et al., 2018). These traditional adsorbents suffer from certain constraints comparable to low sorption capacities, lack of functional tunability, reusability and recyclability. To beat such limitations, new sorbents in nano dimensions are being synthesized and adopted for water decontamination.

The advantages of support magnetic nanoparticles, in addition to changed magnetic nanoparticles as an appropriate candidate for adsorption, are indexed as follows: (1) a huge variety of particles produced the usage of easy and convenient methods. (2) The capability

of adsorption is significant because of the huge surface area. (3) Toxicity is decrease and offers precise magnetic strength, and (4) metal-weighted down sorbents conveniently separate from processed wastewater via an external magnetic field. However, water pollution are ordinarily non-magnetic. Therefore, it's far most efficient that the magnetic nanoparticles blend at the side of the pollution competently, and captured cautiously with pollution because of their maximum ferromagnetism.

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CONTENTS

Chapter 3

ETHNOMEDICINAL & AGRO-ECOLOGICAL PRACTICES IN CROP-PEST & DISEASE MANAGEMENT

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ABSTRACT

Modern agricultural and farming practices have exponentially increased crop yield, variety and availability almost year-round contributing to the growth of economy and country. However, over time, indiscriminate and excessive use of chemical fertilizers and pesticides have also led to the degradation of soil fertility, ecology, human and animal health. High input and maintenance in machine farming, crop failures, resistance of insects-pests/diseases to synthetic pesticides/microbicides, deteriorating soil and environment etc. further increased difficulties in agriculture sector especially for low-income group/small land holders. Rural and Tribal communities, with their limited natural resources, traditionally passed down certain crop pest & disease management practices and seed preservation techniques using wild/local medicinal plants or plant-products which may provide an alternative to toxic synthetic pesticides/herbicides, and favour sustainable, eco-friendly agro-ecological practices maintaining biodiversity. Identification and validation of such indigenous practices and processes could provide a sustainable solution to present day crisis and potentially benefit wider farming communities. In this chapter, ethnomedicinal and agro ecological practices used for crop pest and disease management, particularly in rural and tribal parts of Eastern Vidarbha (Maharashtra), are discussed.

KEYWORDS: Ethnomedicine, Agriculture, Pesticides, Phytochemicals, Biodiversity.

INTRODUCTION

In India, on an average a farmer holds a small agriculture land (about 1 hectares) and the small land holders cultivate about 83 percent of total landholdings. However, its contribution to GDP has declined from 51% to 16% since 1951 to present day although dependency on agriculture has increased from 70 million households to 120 million households (Down to Earth, 2021; Chandra Babu & Joshi, 2019). Since the green revolution

agriculture was on the path of fast paced modernization in India including use of machine-based sowing-to-processing processes, irrigation systems, chemical fertilizers, pesticides, herbicides, etc. This had positive impact on the growth of economy and food security of our country, however, concurrently affected the traditional farming practices negatively (John & Babu, 2021). Furthermore, overuse of chemical fertilizers and pesticides rendered soil & environment heavily polluted creating numerous health hazards to plants, humans & animals, alike. Modern agricultural practices, having high maintenance cost cumulated with crop damage due to pests and diseases, emergence of pest/disease-resistance, became non-sustainable overtime especially to small scale farmers leading to migration to other jobs and even to extremes such as suicides. The rural and tribal farmers, still practicing traditional agriculture, have potentially sustained with some locally adapted ingenious low input low risk agricultural practices not only addressing agro-biodiversity but the food security of local community. Such practices may include but not limited to seed preservation, use of ethnomedicinal formulations against pests and diseases and various agro ecological methods. The identification and evaluation of such ingenious practices could potentially benefit a large section of farmers especially the small land holders. Also, this could potentially add new climate specific, soil specific crop varieties (seed/gene pool) to existing knowledge.

ETHNOMEDICINAL PRACTICES IN OTHER COUNTRIES

Several of the published studies report the uses of various local or wild medicinal plants by ethnic groups and their formulations against agriculture pests and diseases as general remedy. Kamanula *et. al.*, (2010, 2011) report on pesticidal plants for stored maize and beans and as ethno-veterinary product against ticks (Southern Africa) especially the high potential of *Tephrosia vogelii*, also known as fish-poison-bean is a herb/small tree native to tropical Africa & tropical America is also used to improve soil nutrition (30% increase) and 23-26% higher crop yield (Bucagu, et. al., 2013). Nyahangare et. al. (2015) reports from Zimbabwe on some ethnoveterinary plants against ecto-parasites such as *Cissus quadrangularis, Lippia javanica, Psydrax livida* and *Aloe sp.* Guimaraes et. al., (2006) report on control of pests by peasant farmers in Brazil using pest-repellent plant marigold (*Tagetes minuta*) while laboratory experiments supporting the above findings that *T. minuta* extracts significantly controlling or inducing mortality in *Sitophilus* spp. and termites (Termitidae) (Santa Cecilia & Rossi, 1991, Cosmas, et. al. 2012). Hikal et. al. (2017), has extensively reviewed various botanical extracts as insecticides and their physiological effects against several pests. It reports the various botanical extracts as having insect-repellent or cidal, as antifeedants, ovicides or oviposition inhibitors and interfering with physiology of insects. Several of the plants described having repellent activity included *Ziziphora tenuiore, Myrtus communis, Achillea wilhelmsii, M. piperita* and *Zanthoxylum species, etc,* while some plants described as

having antifeedants or toxic activity against pests were *M. alternifolia, Neem (Azadirachta indica), Thymus vulgaris, etc.*

ETHNOMEDICINAL PRACTICES IN INDIA

In India, it's a general observation as well as profoundly published in literature that the rural and tribal communities have a rich traditional ethnomedicinal knowledge passed down from generations as well as peri-urban farmers also use or adapt certain ethnomedicinal practices for crop pest/disease management. However, several of these publications were concerned with the phytotaxonomic evaluation of plants and/or treatment of ailments or diseases of mankind while some for veterinary use. There have been few attempts to collect ethnomedicinal information on plants or their formulations used against crop pests and diseases by ethnic communities in India. (Kumar, et. al., 2009, review). In Maharashtra state, Gupta, et. al., (2010), Kamble et. al., (2010) and Dhale (2013), have reported tribal communities' (Gond, Bhill) usage of ethnomedicinal formulations as insect repellent, insecticides against animal/crop pests.

In the state of Maharashtra, particularly the eastern parts of Vidarbha region, that includes districts of Gondia, Bhandara, Gadchiroli, and Chandrapur, is a hotspot of biodiversity having huge forest cover, national parks, wildlife sanctuaries, rivers, ponds, natural dams and diverse wildlife flora and fauna, with various indigenous communities carrying a wealth of traditional knowledge.

Fig. 1: Geographical area of Eastern Maharashtra with Forest Cover

Several ethnobotanical surveys have been conducted in this Eastern part of Maharashtra to explore the vast reserve of flora and fauna as well as to collect the ethnomedicinal information from the rural and tribal communities (Gond, Madia, Gowari, Rajgond, Halba,

Gawali, Pradhan, etc.). However, reports on their ethnomedicinal and agroecological practices crop pest and disease management are scarce.

Some of the ethnomedicinal and ethnoveterinary plants and formulations reported from eastern Maharashtra region are summarized in Table 1.

Table 1: Some Ethnomedicinal & Agro-veterinary Practices in Eastern Maharashtra

Koche et. al. (2008)	Nagzira wildlife sanctuary, Gondia	70 plants (32 families), ethnomedicinal use for human diseases
Kulkarni et. al. (2009)		Review, Nerium and Argemone plant extracts against pests of Cotton, tomato, pigeonpea
Cherian & Ramteke (2009)	Gondia district	13 species of pteridophytes (Ethnomedicinal ferns) used for human ailments
Gupta et. al. (2010) (2007-2008 survey)	Bhandara district	Plants used by Gond tribe; 53 plants species used for diarrhoea to skin diseases
Harney (2013)	Chandrapur	62 plants reported for ethnomedicinal use for human diseases
Bakare (2014)	Chandrapur	48 plants species for human diseases
Gadpayle et. al. (2014)	Bhandara District	Ethnoveterinary practices, 41 plant species recorded
Wadekar & Tondare (2015)	Gadchiroli	23 plants species of Asteraceae, used for human diseases
Tiwari (2017)	Gadchiroli	Ethnomedicinal uses were corroborated with chemical and biological activities available in published literature
Shambharkar & Gogle (2017)	Gadchiroli	Ethnomedicinal plants for cancer
Sushil kumar (2020)		Neem oil as insecticide & biopesticide in brinjal crops
Mishra et. al., (2021) Plants as insecticides & pesticides	Gadchiroli	plants belonged to 30 families and 57 genera of the angiosperms used against 34 ailments

THE ETHNOMEDICINAL FORMULATIONS

The ethnomedicinal formulations are made using wild or locally available medicinal plants, weeds, herbs or trees. The ethnomedicinal formulation vary depending upon the geographical area, type of pest, availability of plants and season, ease of usage etc. The parts of plants used in such ethnomedicinal formulations may include whole plant (small plants or all distinct parts of a large plant), aerial parts or stem, swollen part on stem, climber, bark, gum, latex, flowers, pods, fruits, rind/peel, seeds, roots, rhizomes or bulbs. A formulation may have one or many parts of the same plant or a combination of different parts of various plants as ingredients.

The ethnomedicinal formulation used are mostly in the form of liquid extracts made by crushing of plant parts and mixing in water to be used directly or after a brief period of fermentation. Such preparation may be sprayed on standing crops against aerial pests or mixed in soil or seeds to prevent attack of soil insects. The dried powder of some ethnomedicinal formulations (usually made of leaves) are used against stored crop-pests. The following table summarizes some of the common ethnomedicinal preparations used against insect pest diseases in Gondia-Bhandara region (Table 2).

Table 2: Some Common Ethnomedicinal Formulation against Insect Pests.

Ethnomedicinal plants/ formulation	Process/Preparation	Practice/Intended Usage
Neem leaves, neem oil, (*Azadirachta indica*)	Spray on crops, soil (neem cake)	Nutrition and pest-control
Garadi leaves (*Cleistanthus collinus*)	Spray on crops	Anti-insecticide preparation, anti-bacterial/fungal (Karpa/blast of rice disease by *Pirricularia oryzoae)*
Neem leaves, Flax seeds, asofoetida mixture	Crushed, mixed and water extract made	Chili, brinjal and other plant roots dipped in extract during replantation from nursery bed, anti-rot, anti-fungal, anti-parasitic activity
Compost plus Pig manure	Mixed manure	Soil nutrition enhancement and crop disease prevention
Charota (*Cassia tora*), Dhaincha (*Sesbania bispinosa*) Sutari (*Calotropis*), San boru (*Crotalaria*), Ambada (*Hibiscus canabinus*)	green compost	Soil/crop nutrition and crop pest inhibition (soil insects/root borer/termites)

Fig. 2: A Collage of Locally Available Ethnomedicinal Plants used for Insect Pest Control in Gondia-Bhandara Region.

THE ETHNOMEDICINAL PHYTO-CONSTITUENTS

The plants synthesize a large number of primary and secondary metabolites commonly termed as phytochemicals. A large number of the secondary metabolites have been isolated and identified from different plants and found to exert a wide range of physio-chemical properties. The secondary metabolites may be the phytochemical signature of a plant species and may or may not be present in another plant. The secondary compounds and their derivatives were used and explored as potential anti-oxidant, anti-microbial, anti-insecticidal, anti-cancer, anti-inflammatory, stimulant. Irritant, repellent, drug, and so on. In traditional system of medicine, rural and tribal communities through generations of trial and error, without access to modern tools of phytochemical analysis, have accumulated wealth of information regarding potential biological properties and usage of wild and local medicinal plants/weeds/herbs against various human, animal diseases and insect pests and diseases of crops.

The active components present in the formulations for ethnomedicinal or agro-veterinary usage (liquid, powder or fumigant) are the phytochemicals of the plant parts used as ingredient and various by-products or chemical derivatives formed during preparation and may change over standing/fermentation period. Thus, the potency of a preparation depends upon the active ingredients (phytochemicals and derivatives), processing method and storage time.

The major types of phytochemicals especially the secondary metabolites shown to exert various physio-chemical effects are describes as follows.

i) Essential Oils: These are concentrated aromatic, volatile liquid (oil) extracts from plants derived through steam distillation. Essential oils extracted from a variety of aromatic herbs have been shown to possess insect- repellent, insecticidal, anti-nutritional property and interfering to insect reproduction. In rural settings, essential oil extraction is not practices, however, herbs/bushes are burned to produce aroma & smoke as insect repellent or insecticide against certain insect pests.

ii) Alkaloids: Alkaloids are one the most important group of secondary metabolites that are synthesized by plants as defense against plant pathogens and herbivores Alkaloids, besides other physiological effects in humans and animals have shown to exert potent insecticidal or inhibitory activity.

iii) Flavonoids and isoflavonoids: These are a group of plant phytochemicals having variable phenolic structures. These have been well studied for their health benefits in humans and animals. These group of phytochemicals have been found to inhibit several key enzymes thereby preventing growth of larvae of several insect species.

iv) Glycosides: Glycosides are natural compounds having sugars attached to another group of phytochemicals like flavonoids, terpenes, etc. Glycosides play important role as plant defense molecules and have been shown to exert potent-insect inhibitory properties.

v) Esters and fatty acids: fatty acids are organic compounds containing long hydrocarbon chain with carboxylic acid group at end that reacts with different alcohols to form esters. Some fatty acids and esters have been shown to possess insecticidal properties.

The plant phytochemicals as an active component against insect pests are shown in the following figure 3.

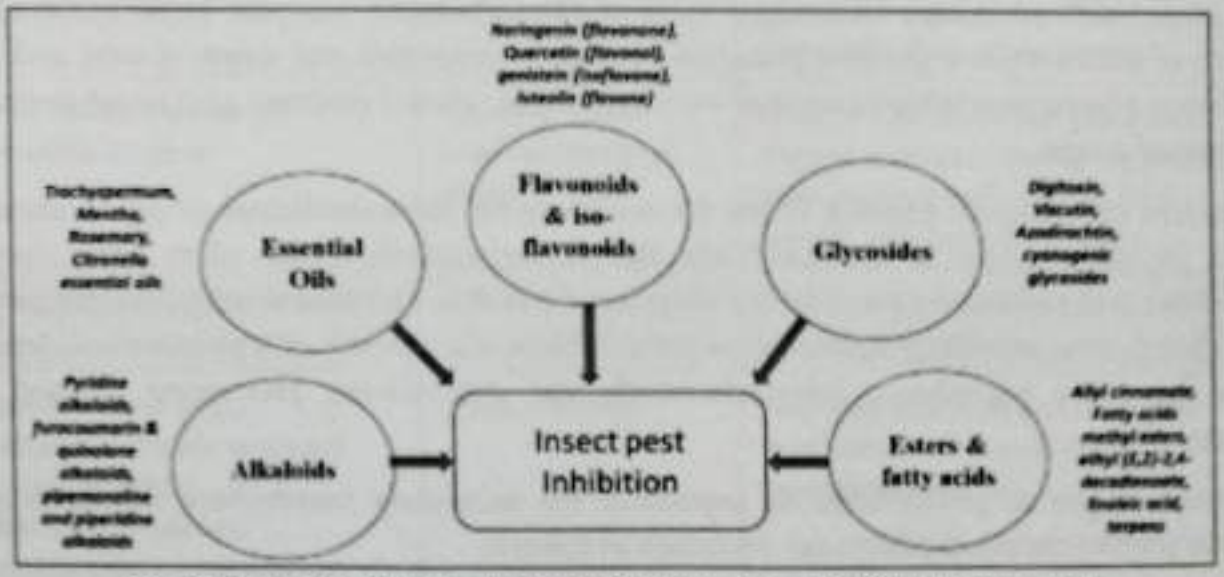
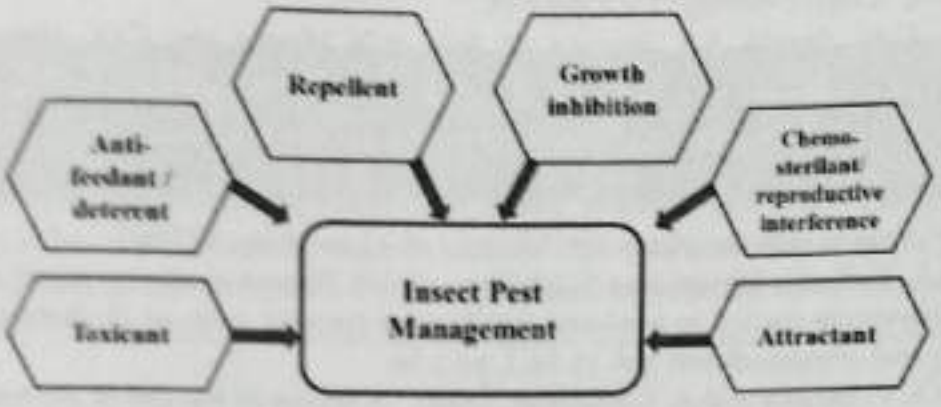


Fig. 3: Phytoconstituents of plants with insect pest inhibitory properties

The active phyto-components present in the ethnomedicinal formulations have a wide variety of physiological effects on the insect including modification of feeding behaviour, metabolism and reproduction. Some of the insect inhibition processes or effects of ethnomedicinal formulations are shown in the Fig. 4 as follows.



Physiological effects/processes effecting insect pest inhibition

Fig. 4: Insect Inhibition Processes/ Effects of Ethnomedicinal Formulations.

CONCLUSION

The phytochemicals with insect inhibition properties are the natural, biodegradable, minimally toxic, cheaper and potently active alternatives to chemically synthesized insecticides. Moreover, due to local availability of several of such plant species, and based on ethnomedicinal knowledge of rural and tribal communities which have been using insect pest inhibitory formulations since generations, these offer a safe alternative to toxic chemicals in sustainable way. We recommend that such potential insecticidal/inhibitory formulations should be identified and more research is needed to ascertain their insecticidal effects in crude formulations for the wider benefit of farming community.

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Chapter: 13

Structural, Morphological, Magnetic, Electrical Study of Ni-Zn Spinel Ferrite Synthesized by Sol-Gel Route.

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Abstract: *$Ni_{0.65}Zn_{0.35}Fe_2O_4$ spinel ferrite was prepared by using sol-gel auto combustion route. The sample were characterize with XRD, FE-SEM, TEM, Magnetic, Electrical and optical properties. Particle size, lattice constant, porosity, induced lattice strain, X-ray density, Bulk density were calculated. Particle size of synthesized sample is 18.09 nm confirmed from SEM images. A slight agglomeration is observed in SEM image. The saturation magnetization, remenance, anisotropy constant (K) and Coercivity (Hc) of the NiZn ferrite sample were determined from vibrating sample magnetometer study. The dielectric loss tangent and dielectric constant of ferrites sample have been investigated in the high-frequency range $1000H_z - 1\ MH_z$*

Keywords: Spinel ferrite, Magnetic material, XRD, FESEM, TEM.

I. Introduction

Nickel zinc ferrites are scientifically important class of soft magnetic materials for their widespread industrial applications, ranging from microwave to radio frequencies such as microwave devices, computer memories, and magnetic recording [1]. During the last few decades, ferrites have achieved very much importance within the family of magnetic materials because of their excellent physical properties. In all TV sets have ferrite cores, while in portable radios make use of a pencil of ferrite as an antenna core. Long-distance carrier telephone circuits are employing ferrite cores in high-quality filter coils and transformers. The various properties of nano-crystalline ferrites were highly influenced by the cations distribution among the sub-lattices, nature of the grain, grain boundaries, in homogeneities, voids, surface layers, contacts, etc. [2]. One of the important characteristics of ferrites is their high values of resistivity and lowest eddy current losses [3], which make them ideal for high-frequency applications. For microwave applications, dielectric properties such as dielectric loss and dielectric constant are very important as the dielectric constant affects the thickness of the microwave absorbing layer and the dielectric loss factor (tanδ) of a material determines dissipation of the electrical energy. There are so many researchers who studied the magnetic properties of Ni-Zn ferrites but non-magnetic properties such as dielectric properties and electrical conductivity are seldom reported.

In this work, a chemical route technique has been selected for the synthesis of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ nanoparticles. The various techniques such as XRD, FE-SEM, Magnetic and dielectric measurements have been used to study their structural, electrical and magnetic properties [4].

II. Experimental Procedure

Ni–Zn ferrite powders with compositions of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ was synthesized by sol–gel auto combustion method. The analytical grade $Fe(NO_3)_3 \cdot 9H_2O$, $Zn(NO_3)_2 \cdot 6H_2O$, $Ni(NO_3)_2 \cdot 6H_2O$ and citric acid ($C_6H_8O_7 \cdot H_2O$) was used as raw materials. The appropriate amount of nitrates and citric acid is first dissolved into deionized water to form a mixed solution with molar ratio of nitrates to citric acid 1:1. The pH value of solution is adjusted to about 7 using ammonia. Then, the mixed solution is poured into a bicker and heated at 80 °C. The appropriate amount of nitrates and citric acid is first dissolved into deionized water to form a mixed solution with molar ratio of nitrates to citric acid 1:1 and constant stirring with magnetic needle transform into a dried gel. Being ignited, the dried gel burnt and form loose powder. The solutions were evaporated by continuous heating at 100 °C with agitation until the formation of viscous gel [5]. The detail process is as shown in Fig. 1 [6]. The samples are dried and the dried powders were sintered in air furnace at 700 °C for 7 hrs. Then slowly cooled to the room temperature. Finally, the sintered powder was ground using the mortar and pestle. The equation used for calculating the stoichiometric values of the metal nitrates is as follows:

$$0.65[Ni(NO_3)_2.6H_2O] + 0.35[Zn(NO_3)_2.6H_2O] + 2[Fe(NO_3)_3.9H_2O] = Ni_{0.65}Zn_{0.35}Fe_2O_4 + H_2O + \text{Volatile}$$

The Structure, microstructure and the chemical composition of the samples are investigated by X-ray diffraction using Cu K_α (λ=1.5406 Å), scanning electron microscopy (FESEM) and TEM. The values of the coercive fields, saturation and remnant magnetizations are obtained from the hysteresis loops obtained from a vibrating sample magnetometer (VSM). The dielectric properties of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ferrites were studied using impedance analyzer [Wayne Kerr, 6500 series] depending on the various frequency ranges. In this study, electrical AC conductivity was measured in the temperature range from 30K to 673K. The dielectric, AC conductivity and impedance spectroscopy measurements were carried out in the frequency range 1000Hz–1MHz and in the temperature range of 303K to 673K.

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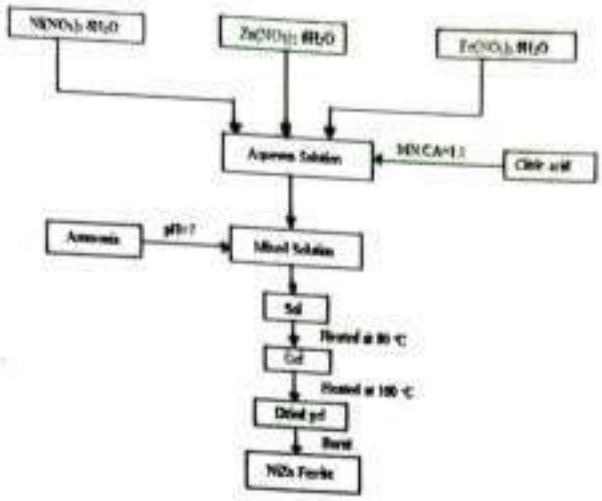

Fig.1 sol-gel method for the synthesis of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ spinel ferrite.

III. RESULTS AND DISCUSSION

1. XRD Study

The XRD pattern of the samples under investigation is shown in Fig. 2. Higher intensity peaks in pattern show the peaks which are indexed corresponding to (220), (311), (222), (400), (422), (511) and (440). All XRD patterns show the single phase structure of the Ni-Zn spinel nanoferrites. These spectra were confirmed from JCPDS card no's 008-0234. The crystallite size is estimated by using the Debey Scherrer's formula [7, 8].

$$D = \frac{0.9\lambda}{\beta cos\theta} \quad (1)$$

Where D is the particle size, β is the full-width at half-maximum; λ is the wavelength of x-ray (1.5406Å); and θ the angle of diffraction. The particle size for this sample obtained is 18.09 nm. The x- ray density of the samples is calculated by relation

$$\rho_x = \frac{8M}{Na3} \quad (2)$$

Where M is the molecular weight of the sample, N the Avogadro's number and a^3 the volume of the cubic unit cell. The measured density is calculated by using relation,

$$\rho_m = \frac{m}{\pi r2t} \quad (3)$$

Induced strain in the NiZn ferrite was calculated from Williamson –Hall method [9].

$$\beta cos\theta = 4\varepsilon sin\theta + \lambda/D \quad (4)$$

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Where D is particle size, λ is wavelength of X-ray, β is FWHM measure in radian, ε is the induced lattice strain and θ is the Bragg angle. The induced lattice strain obtained using above formula is shown in table 1.

Table 1. Shows the structural parameters

a(Å)	Particle size(nm)	Grain size (nm)	Dx (gm/cm^3)	Porosity	Strain %
8.410	18.09	31.4	5.20	0.494	0.145

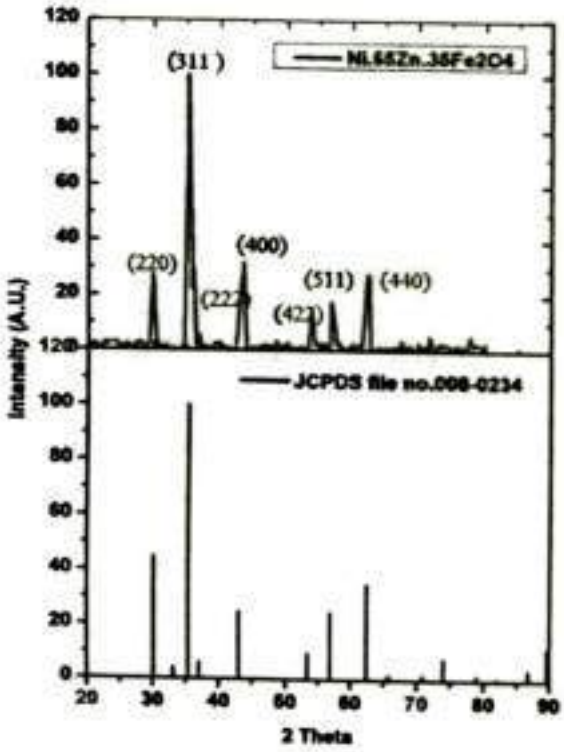

Fig.2 Shows the XRD pattern of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ spinel ferrite.

2. SEM and TEM study

The microstructure of the studied ferrite samples is analyzed using SEM micrographs as shown in Fig. 3. The micrographs show the agglomerated grainy structure [10]. Nanosized of the particle is confirmed from SEM and TEM images. The SEM image revealed that the grains have an almost regular shape and homogeneous distribution.

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Fig. 3 SEM micrograph of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ spinel ferrite.

Fig. 4 **TEM micrograph of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ spinel ferrite.**

3. Magnetic Properties

The Room temperature hysteresis loops of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ nanoferrites are recorded under the maximum applied field of 15000 Gauss. The magnetic loops as shown in the Fig. 4. Table.2 depicts the magnetic parameters which are calculated from M-H loops. The saturation magnetization and magnetic remanence decreases with the Gd substitution and also the coercivity decreased accordingly [11]. It is noticed that the magnetic parameters are influenced by the extrinsic factors such as porosity, homogeneity, morphology, density and distribution of cations at lattice [12]. The Bohr magneton, magneto crystalline anisotropy constant (K) and initial permeability are also calculated using the following relations [13].

$$\text{Anisotropy constant (K)} = \frac{H_c \times M_s}{0.96} \quad (5)$$

$$\text{Initial Permeability } (\mu_i) = Ms^2 \times \frac{D}{K} \quad (6)$$

$$\text{Bohr magneton}(\mu_B) = \frac{M \times M_s}{5585} \quad (7)$$

Where, M_s is the saturation magnetization, M is the molecular weight of the samples, D is the grain size and H_c is the coercivity. Table 2 shows the magnetic parameters of the sample.

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Table 2: magnetic parameters of $Ni_{0.65}Zn_{0.35}Fe_2O_4$ ferrite.

Mr (emu/g)	Ms (emu/g)	Mr/Ms	Bohr Magneton (μB)	Hc (Oe)	Anisotropy Const.(erg/Oe)	Initial Permeability(μ_i)
6.119	42.98	0.1423	1.821	168.62	7549.25	4.4265

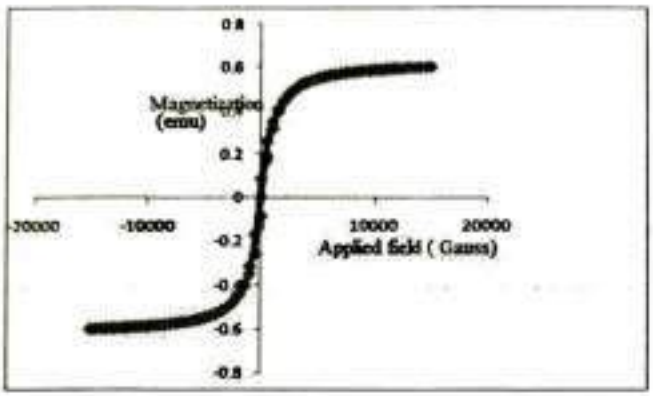

Fig. 5 Variation of saturation magnetization of $Ni_{0.65}Zn_{0.35}Fe_2O_4$

4. Electrical Properties

The variations in the conductivity may be explained by Verwey's hopping mechanism According to Verwey, the electrical conductivity in ferrites is mainly due to hopping electron between ions of the same element present in more than one valance state and distributed randomly over crystallographically equivalent lattice sites [14]. Ferrite structurally from cubic close packed oxygen lattice with the cation at the octahedral [B] and the tetrahedral (A) sites. The distance between two metal ions on [B] sites smaller than the distance between two metals ions on [B] and (A) site, therefore the hopping between A and B has very small probability compared with that for [B]–[B] hopping. The hopping between (A)–(A) sites does not exist, because there are only Fe^{3+} ions at A sites and any Fe^{2+} ions formed during processing preferentially occupy [B] sites only [15]. The temperature dependence of σ_{AC} shown in Figure 6, as the temperature increases, σ_{AC} is also increases indicating that the studied samples have the semiconductor behaviour. This behaviour was observed earlier for Mn-Zn ferrites [16]. The increase in the electrical conductivity as temperature increases may be related to the increase in drift mobility of the thermally activated charge carriers (electron and hole) according to hopping conduction mechanism. The important dielectric and electrical parameters were determined using the following formulas:

$$\varepsilon' = \frac{Cp}{Co} \tag{8}$$

$$\varepsilon'' = \frac{1}{2\pi f CoRp} \tag{9}$$

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$$\tan\delta = \frac{\varepsilon''}{\varepsilon'} \quad (10)$$

$$\sigma_{a.c.} = 2\pi f \varepsilon_0 \varepsilon'' \quad (11)$$

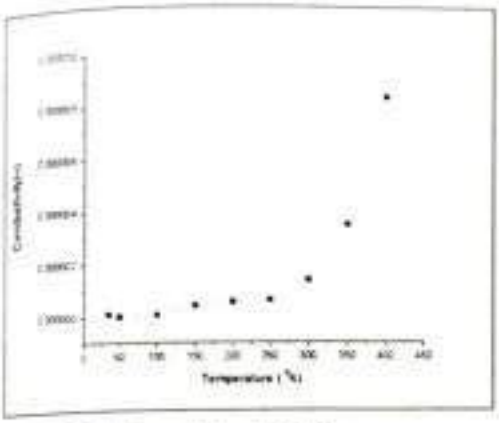

Fig. 6 Variation of Conductivity with Temperature

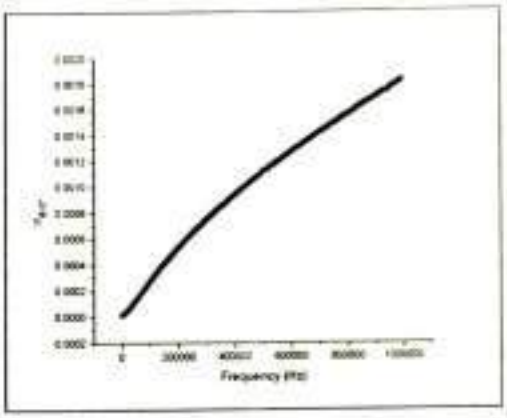

Fig. 7 Variation of Conductivity with frequency

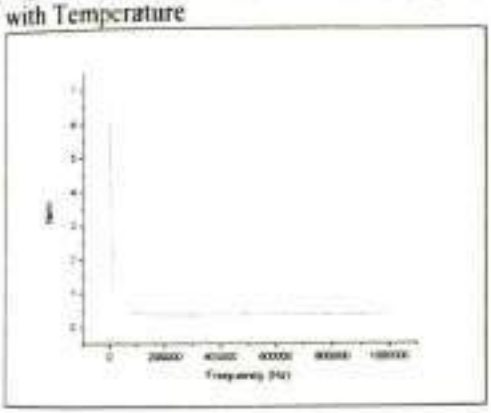

Fig. 8 Variation of tanδ with frequency

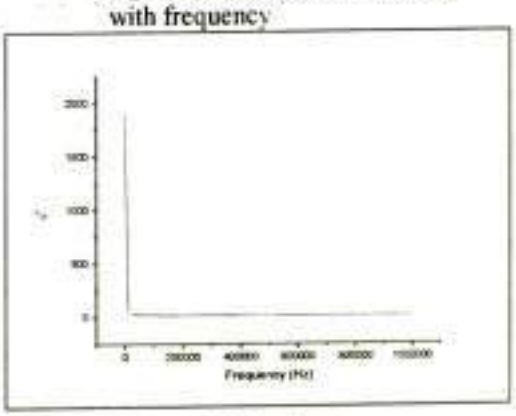

Fig. 9 Variation of dielectric constant With frequency

Where, C_0 represents capacitance without the sample in between the parallel electrodes, f is the frequency of the applied field and ε_0 represents the permittivity of vacuum equal to 8.85×10^{-14} F/cm [17]. Spinel Ni-Zn ferrites are considered good dielectric materials and the high frequency dielectric behaviour is mainly dependent upon the particle size and method of synthesis of nano particles [18]. Dielectric parameters (real and imaginary parts of relative permittivity, dielectric loss tangent) for the prepared sample $Ni_{0.65}Zn_{0.35}Fe_2O_4$ have been studied in the frequency range 1000 Hz to 1MHz at room temperature. The effect of frequency (Hz) on dielectric loss factor tan δ and each of the real dielectric constant ε' at room temperatures is illustrated in figures 8 and 9 respectively. Both ε' and tan δ decreases as the frequency increases, this is the normal dielectric behaviour in ferrites. The decrease is rapid at lower frequencies and becomes slow at higher frequencies. The decrease in ε' and tan δ takes place when the jumping frequency of electric charge carriers cannot follow the alternation of applied AC electric field beyond a certain critical frequency [19,20]. The high values of ε' could be explained on the basis of Maxwell-Wagner theory which is a result of the inhomogeneous nature of dielectric structure [21].

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IV. Conclusion

The sol–gel auto combustion method is very convenient for synthesis of nano-sized Ni–Zn spinel ferrites. In this method gel exhibits a self-propagating behaviour after ignition in air. XRD and SEM micrographs confirm crystalline nature of synthesized sample and confirmed the nanoparticle size of the sample. The sintered Ni–Zn ferrites samples possess fine-grained microstructures as well as good electromagnetic properties, making them good materials for electronic applications with high performance and low cost. Zn content has significant influence on the electromagnetic properties, such as dielectric constant, dielectric loss tangent and magnetic properties for Ni–Zn ferrites.

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Chapter 6
Lacustrine Records of Anthropogenic Change and Precipitation in the Monsoonal Core Zone of Central India since the Last Century

Samaya S. Humane, Sumedh K. Humane, and Snehal Juare

Abstract A sediment core from the Navegaon Bandh Lake (NBL) was studied for diatoms and sediment geochemistry to investigate the anthropogenic impact and climatic variability over the past century. The declined geochemical concentrations show three major impacts on the NBL coinciding with the drought events in the foremost parts of India around 1918, 1975, 1965 and 1991. The rise in the geochemical content of the NBL core was evident in the post dam construction period (i.e., ~1917–1919) with the two major peaks around 1975 and 1998. These major peaks are indicators of the higher rate of soil erosion and improved precipitation in the catchment of the NBL. Anthropogenic activities have caused five major changes in diatom assemblages and ecology in the NBL around 1946, 1956, 1972, 1978 and 2006. The increased agricultural activities in the catchment of the NBL are evident since ~1906–1966 as the fertilizers (K, P) are mainly derived other than soil particles of the catchment. Similarly, deforestation in the region was evident during ~1967–1975 coinciding with the period of the highest soil erosion. Another major phase of soil erosion caused by anthropogenic activities was noticed during ~1992–1998. The hypolimnetic oxygen of the NBL has declined for the past ~80 years indicating increased eutrophication in the lake till the present. The nutrient input in response to climatic conditions and anthropogenic activities has played a vital role in the diatom shift of the NBL. *Aulacoseira granulata* was predominant during ~1906–1914, ~1920–1922, ~1941–1943, ~1948–1956, ~1972–1976 and ~1973–1982 in the NBL signifying the increased soil erosion and flux, persistent wet period and increased nutrient levels. While the major period of the profusion of *Rhopaloidea musculus* in the NBL core was during ~1919–1921, ~1933–1940, ~1956–1972 and ~1978–2004, respectively, indicating a mesotrophic, Meso

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euhyaline and alkalibiontic condition of the lake linked with the long dry period/less rainfall prevailed in the NBL watershed. The planktonic form *Discostella stelligera* was common during ~2007–2012 and indicates the existence of alkaline lake waters with moderate nutrients coinciding with the comparatively dry period/less rainfall and changing water level and deforestation in the catchment of the NBL. Overall, the investigation of the past evidence shows the importance of the study of fossil diatoms and geochemistry to understand the anthropogenic and precipitation changes along with the trophic status of the lake, which may be used for the management of the tropical wetlands in India.

Keywords Diatoms · Geochemistry · Soil erosion · Tropical Lake sediments · Eutrophication · Central India

Introduction

The sediments deposited at the bottom of a lake provide a variety of information that can be used to understand the past conditions of a lake, its watershed, and climate (Meyers and Teranes 2001). Lakes are mostly fed by some rivers or streams and hence the lake consists of autochthonous and allochthonous sediments (Smol 2008). A stream serves as the major source of allochthonous sediments. The allochthonous sediments carry with them the dissolved chemicals and particulate inorganic and organic matter (OM). The autochthonous sediments on the other hand have with them a significant assemblage of remains of macrophytes, phytoplankton, zooplankton, bacteria, microorganism and aquatic invertebrates, which thrive in that environment. Hence, the source of autochthonous material includes biological activity and chemical precipitation within the lake (Smol 2008). The geology of the lake's watershed, climate and land use, including anthropogenic activities, directly affect the quality and quantity of material that enters a lake ecosystem (Cohen 2003). The past changes in the pH, salinity, nutrient status, climatic changes and lake level fluctuations can be inferred by studying the sediment geochemistry and diatoms from the core extracted from the lakes/reservoirs (McFadden et al. 2005; Mullins et al. 2011). The paleolimnological studies were also done using diatoms owing to their sensitivity to environmental changes (Batterbee et al. 1999; Bennion et al. 1995; Liu et al. 2012; Schroeder et al. 2016).

The Indian economy is mainly based on agricultural production which depends upon favourable monsoonal conditions. The central Indian region has been experiencing unreliable climatic conditions with low precipitations for the past few decades affecting the farmers depending upon agricultural produce. The increasing agricultural practices in the region have also been impacting the water quality of the area. Thus, the present chapter provides a good insight into the shift in the past climatic patterns mainly the hydrologic conditions in the parts of the central Indian region determined based on the study of sediment geochemistry and diatoms from the core sediments of the Navegoan Bandh Lake (NBL), Central India. The NBL is one of the major lakes of the Gondia district present in the eastern part of the

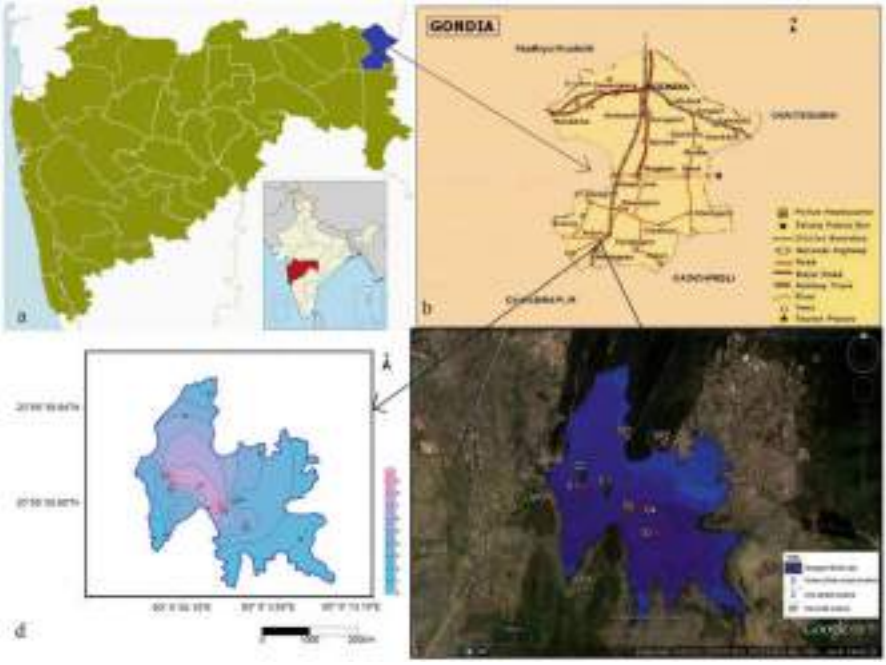

Fig. 6.1 (**a**) Map of Maharashtra State, India, showing the location of Gondia District, (**b**) Map of Gondia District showing the location of Navegaon Bandh Lake (NBL), (**c**) Satellite Image of NBL and (**d**) Bathymetric map of the NBL

Maharashtra state, India (Fig. 6.1a–c). The NBL (latitude 20°53′ to 20°56′N and longitude 80°06′ to 80°09′E) has a circumference of ~27 km and a water surface of ~20 km^2. The average depth of the lake is about 21 m with a catchment area of about 90 km^2 (Fig. 6.1d). Various factors such as adjoining lithology, soils, agricultural practices, animal excrements, aquatic plants and vegetal matter influence the water quality of the Navegaon Bandh Lake.

Climate and Rainfall

The Gondia district has tropical climatic conditions and experiences very hot summers and cold winters with temperature variations from ~7 °C to 48 °C, respectively. The summer starts in March and continues till mid-June, while the winter begins in October end and continues till February with December being the coldest month. The district receives rainfall from southwest summer monsoonal winds mainly from June to September. The maximum rainfall generally occurs during July and August with an average annual rainfall of 1197 mm (Gondia District Gazetteer 2013).

Land Use Pattern

The land use pattern of the major portion of the NBL watershed shows the presence of the deciduous forest, agricultural land (mainly used for kharip crop and a very small part used for rabi crops), some wastelands associated with the dense scrubs and very little land is covered by rural build-up (Fig. 6.1c). Fishing takes place in the lake with no other human activities. However, a zoological garden was developed near the lake and has been used as a recreational centre which attracts tourists thereby increasing the plastic pollutants around the lake.

Geological Setting

The Navegaon Bandh Lake is geologically surrounded by the granitic gneiss of the Tirodi gneissic complex, quartzite-gritty quartzite, amphibolites and hornblende schist of the Amgaon gneissic complex. It is also surrounded by the meta gabbros and quartz veins of the Mesoproterozoic age. There are occurrences of phyllites, pelitic schist and basic tuffaceous andesite of the Khairagarh group around it. The pockets of laterites are also distinctly seen around the lake (DRM 2000).

Materials and Methods

Core Sampling, Processing and Chronology

In January 2013, a sediment core (Latitude: N 20° 54′ 55.8″ and Longitude: E 80° 7′ 3.4″) of 78 cm length was recovered in the polycarbonate barrel from the deepest part of the NBL using a gravity corer. The total weight of the retrieved sediment core was calculated in the laboratory. Further, the sediment core was vertically cut into two halves and photographed in addition to the description of the core profile. One of the halves of the core was sub sectioned at an interval of 1 cm for the bottom sections and an interval of 0.5 cm for the top 20 cm. It was used for diatom processing and other analyses. The other half of the core was retained as an archive in the laboratory. The chronology for the present study of the NBL follows the already published paper (Humane et al. 2016). The results of the Constant Rate Supply (CRS) model for the sediments of each depth of the NBL core were further used to calculate the bulk sediment accumulation rates of the geochemical elements (g/m^2/year) by the related amount (mg/g) of each component in the bulk sediment (Fig. 6.2; Garrison and Laliberte 2010). The uncertainty of the age prevails in the older sediments deeper than ~50 cm of the core. Therefore, the ages of the NBL sediment core up to 48 cm were considered for the calculation of the accumulation rate of geochemical elements at various depths and discussed in this chapter (Fig. 6.3). Diatom analysis was

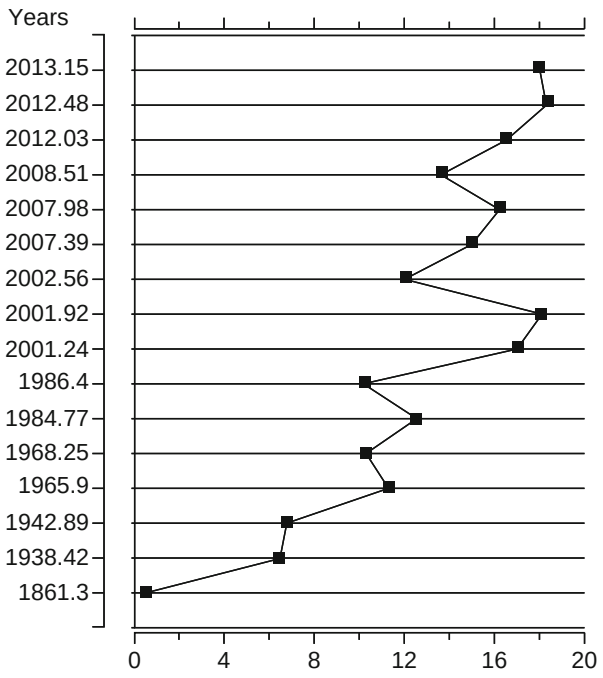

Fig. 6.2 Sediment accumulation rate (g m^{-2} $year^{-1}$) of NBL since 1861, using constant rate supply (CRS) model

done by processing some uncrushed core samples. The accumulation rate of geochemical elements for a sediment core is shown in the vertical diagram prepared by the computer program C2, version 1.5 (Juggins 2007).

Maceration for Diatom Study

About 1 gm of a core sample obtained through conning and quartering at 1 cm intervals was used for the maceration to prepare diatom slides following the standard methods (Batterbee et al. 2001). The prepared slides were studied for diatom identification and enumeration under a Leica microscope (DM-350) at 630× and 1000× (oil immersion) along with the microphotography of each species. Minimum 300 valves were measured wherever possible in the slides. The occurrences of individual species were converted into a percentage. The identification of diatom species was done with the help of important literature (John 2012; Karthick et al. 2013; Liu et al. 2017; Metzeltin et al. 2005; Metzeltin and Lange-Bertalot 2007).

The recognition of the diatom groups was made based on their division in the complete length of the core and the constrained incremental sum of squares (CONISS) by the computer program TILIA (Grimm 1991).

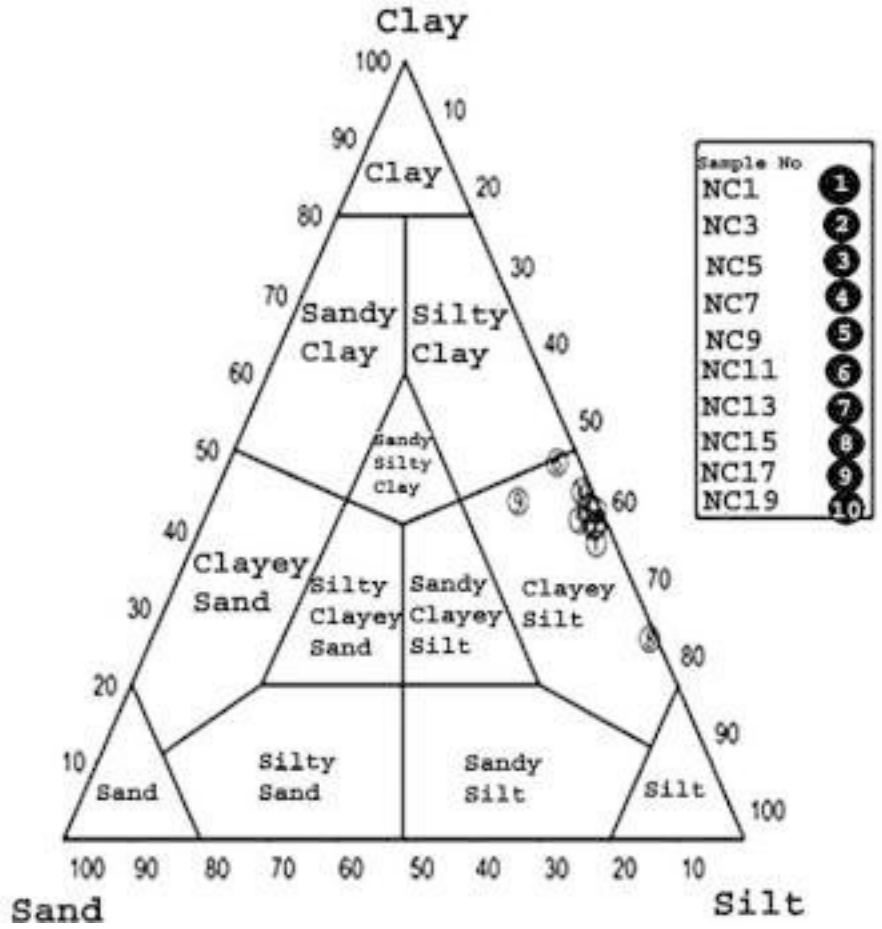

Fig. 6.3 Distribution of sand, silt and clay in the sediment cores of NBL

Results

Description of NBL Core Section

The colour of the entire core varies from light brown to dark brown with a smooth transition. The overall grain size of the core lies in between clayey silt, with intermediate variation from slight sandy-silt to silty clay (Fig. 6.4). The higher organic matter content in the core was demarcated by dark bands representing increased soil erosion coinciding with the wet periods. A few fragments of rotten plant roots/stems are also observed along with a few fish scales and shell fragments. The annual laminations are quite distinct in the core, although not very prominent in the photograph.

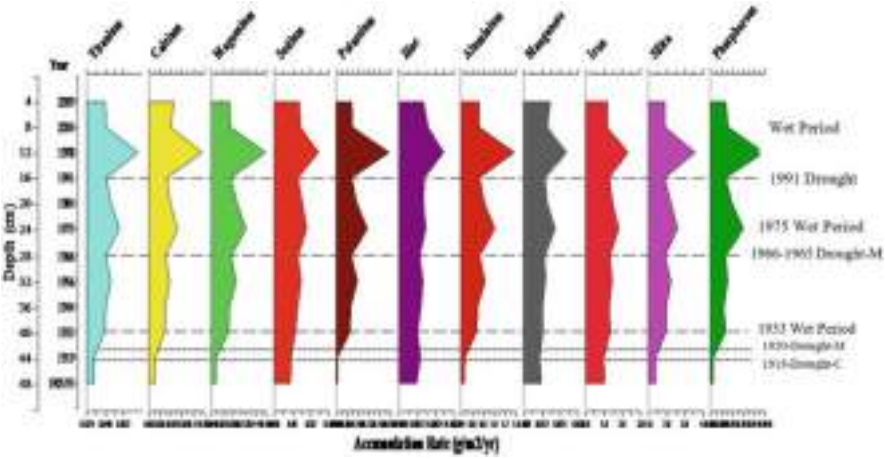

Fig. 6.4 Vertical profile of accumulation rate of the geochemical element in a sediment core of NBL (M – moderate; C – Calamitous)

Geochemical Analysis

The trophic status and changing precipitation patterns were investigated using major and trace elemental content of the NBL core. The past changes in the precipitation trends and the trophic condition of the NBL have been inferred employing the varying accumulation of geochemical elements. The impact of anthropogenic activities other than soil erosion on the trophic status of the NBL is also interpreted (Fig. 6.5).

Chemical Weathering Intensity (CWI)

The deforestation and the enhanced agricultural practices in the catchment have affected the NBL by augmenting the weathering and erosion of soils of the region. In this context, the chemical weathering intensity (CWI) in the catchment of this lake is calculated using the formula $\{(CaO+MgO+Na_2O)/Al_2O_3\}$ to know the strength of weathering and soil erosion (Sun et al. 2009; Fig. 6.6).

Diatom Stratigraphy

The stratigraphic data shows the abundant diatom species in the NBL (Fig. 6.7). The four diatom assemblage zones (DAZ)/units and ten sub-zones were identified for major species abundance and the constrained cluster analysis for the NBL core using

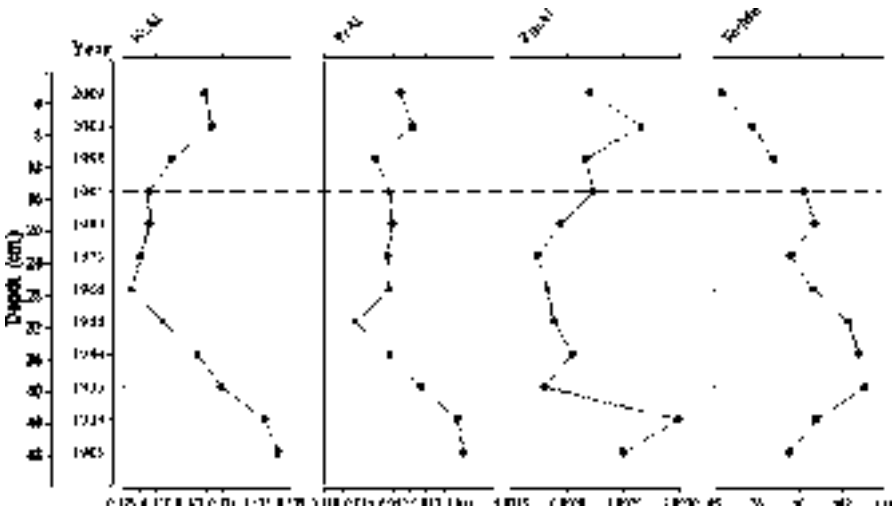

Fig. 6.5 Vertical profile of sediment core of NBL showing K: Al, P: Al, Zn: Al and Fe: Mn

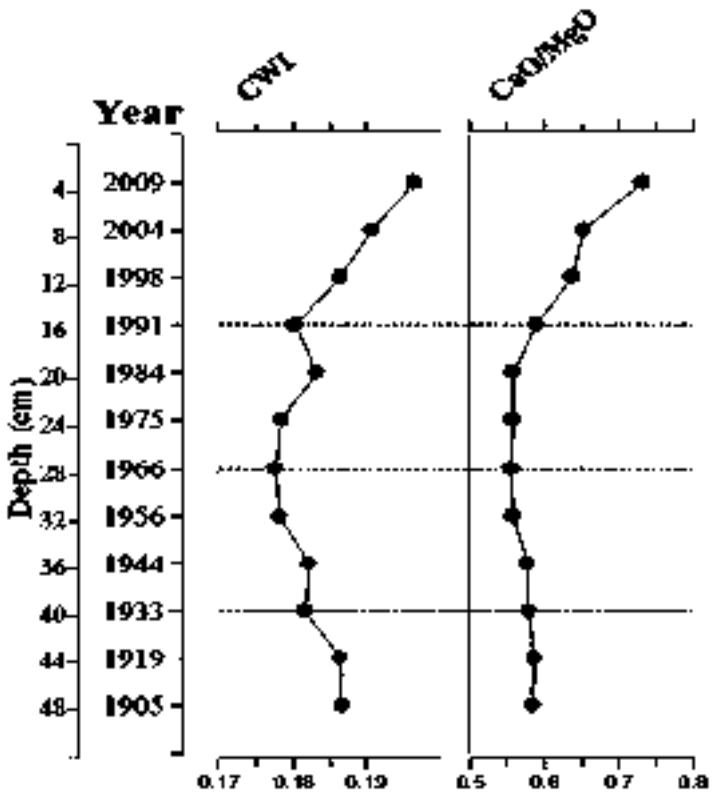

Fig. 6.6 Chemical weathering intensity (CWI) and CaO/MgO ratio of sediment core of NBL

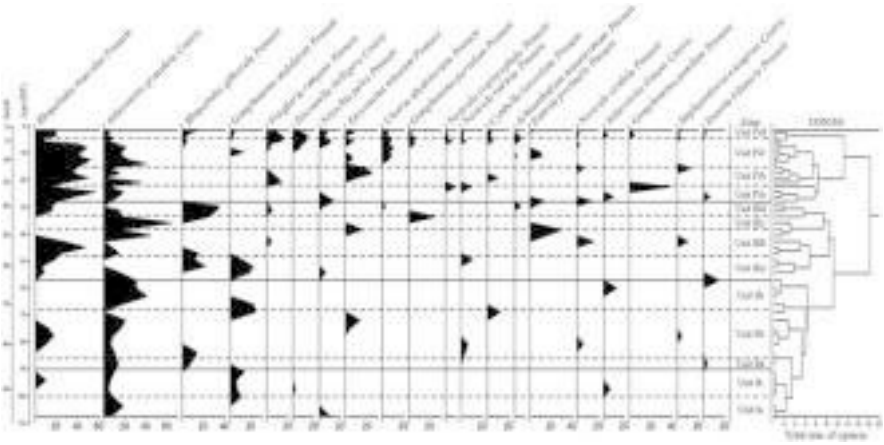

Fig. 6.7 Diatom succession in NBL between (1906 and 2012 A. D.). Only the major taxa (Species with ≥1% in at least one sample) were shown. The right is the constrained incremental sum of squares (CONISS)

the program TILIA (Grimm 1991). A total of 62 diatom taxa were observed in the NBL core of which 20 attained a maximum abundance of >1% in at least one sample. Diatom assemblages were categorized as 1) Planktonic diatoms, such as *Aulacoseira granulata* (Ehr.) Simonsen (4–65%), *Discostella stelligera* (Cleve & Grun.) Houk & Klee (2–14%), *Aulacoseira distans* (Ehr.) Simonsen (1–12%), *Stephanodiscus niagarae* Ehrenberg (0.8–13%) and 2) with benthic diatoms such as *Rhopalodia musculus* Müllar (6–57%), *Rhopalodia gibberula* Müllar (3–35%), *Gomphonema undulatum* Hustedt (3–25%), *Fragilaria rumpens* (Kutzing) Carlson (3–18%), *Nitzschia palea* (3–10%), *Encyonema minutum* (Hilse) Mann (4–26%), *Gomphonema parvulum* Kutzing (2–25%), *Navicula cryptocephala* Kutzing (0.6–10%) and *Eunotia bilunaris* (Ehr.) Schaarschmidt (1–15%).

The planktonic diatoms were dominated by *A. granulata* (Fig. 6.8a, b) and *D. stelligera* (Fig. 6.8k), whereas benthic diatoms were represented by *R. musculus* (Fig. 6.8e, i), *R. gibberula* (Fig. 6.8j), *Gomphonema undulatum* (Fig. 6.8g), *Encyonema minutum* (Fig. 6.8h), *Amphora ovalis* (Fig. 6.8c), *Diploneis ovalis* (Hilse) Cleve (Fig. 6.8f, g) and *Cocconeis placentula* Ehrenberg (Fig. 6.8d). *A. granulata* was abundant during ~1906–1980 and progressively decreased on the top of the core (~1983 and above), while *R. musculus* dominated the core with the decline in *A. granulata*. The other benthic diatoms present in the NBL core are *Ulneria ulnabiseriata* Liu et al., *C. placentula*, *D. ovalis*, *A. ovalis* Kutzing, *Epithemia adnata* (Kutzing) Brebisson, *Cymbella affines* Kutzing, *Cymbella lanceolata* (Agardh) Kirchner and *Rhopalodia gibba* Müllar. There are four Diatom Assemblage Zones (DAZ)/units identified in the NBL core (Fig. 6.7).

Unit I (48–43 cm; ~1906–1922) was categorized into two sub-zones. This zone is characterized by the dominance of planktonic diatoms in the entire core. Unit I-a (48–46 cm; ~1906–1918) shows an abundance of the planktonic species *A. granulata*

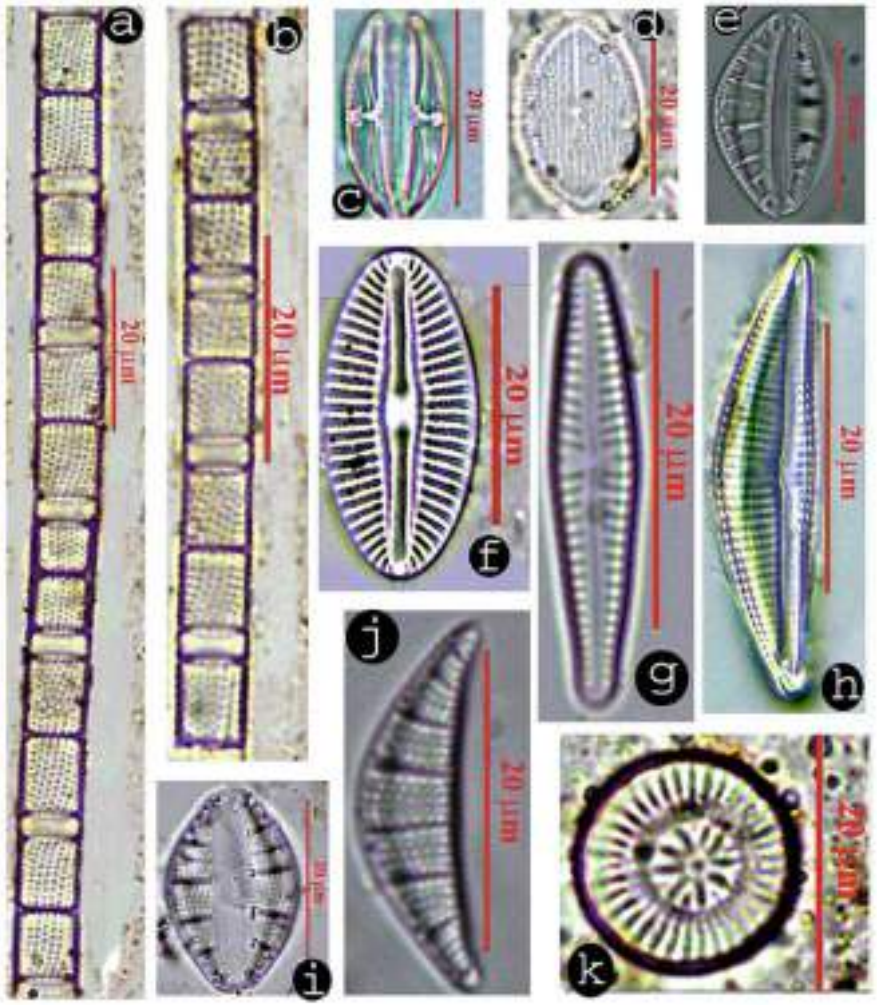

Fig. 6.8 (**a**) *Aulacoseira granulata*; (**b**) *Aulacoseira granulata*; (**c**) *Amphora ovalis*; (**d**) *Cocconeis placentula*; (**e**) *Rhopaloidea musculus*; (**f**) *Diploneis ovalis*; (**g**) *Gomphonema undulatum*; (**h**) *Encyonema minutum*; (**i**) *Rhopaloidea musculus*; (**j**) *Rhopaloidea gibberula*; (**k**) *Discostella stelligera*

(~13% on average) and benthic species (~10%) present in this zone. The ratio of Planktonic and benthic taxa (P/B) had an average of 2.63. Unit I-2 (45–43 cm; ~1919–1922) was represented by an abundance of benthic diatom species *R. musculus* (~10% on average) and *G. undulatum* (~8% on average). The planktonic diatoms present are *A. granulata* (~6%), *A. distans* (~7%) and *Discostella stelligera* (~2%). The ratio of Planktonic and benthic taxa (P/B) had an average of 0.82. Unit II (42–32 cm; ~1921–1956) is classified into three subzones. Unit II-a (42–40 cm; ~1921–1933) represents the abundance of benthic diatom taxa

G. undulatum (~14%), *R. gibberula* (~ 7%) and *Eunotia bilunaris* (~4%). The only planktonic diatom species present in this zone is *A. granulata* (~12%). The ratio of Planktonic and benthic taxa (P/B) had an average of 1. Unit II-b (39–36 cm; ~1932–1946) shows the dominance of benthic diatom taxa *R. gibberula* (~14%), *R. musculus* (~13%) and *Encyonema minutum* (~9%). The planktonic diatom species present in this zone are *A. granulata* (~13%) and *Stephanodiscus niagarae* (~ 4%). The ratio of Planktonic and benthic taxa (P/B) had an average of 0.76. Unit II-c (35–32 cm; ~1945–1956) has an abundance of planktonic diatom taxa *A. granulata* (~ 30%) and *A. distans* (~12%). The benthic diatom species present in this zone is *G. undulatum* (~23%). The ratio of Planktonic and benthic taxa (P/B) had an average of 1.71. Unit III (31–20 cm; ~1955–1983) is represented by the four subzones. Unit III-a (31–29 cm; ~1955–1966) shows an abundance of benthic diatom taxa such as *G. undulatum* (~17%), *R. gibberula* (~ 17%) and *R. musculus* (~11%). The other benthic diatom taxa are *Nitschia palea* and *Eunotia bilunaris*. The planktonic diatom species present in this zone is *A. granulata* (~23%). The ratio of Planktonic and benthic taxa (P/B) had an average of 0.29. Unit III-b (28–25 cm; ~1967–1972) has an abundance of the benthic diatom taxa *R. gibberula* (~ 15%), *R. musculus* (~33%) and *Fragilaria rumpens* (~5%). The common planktonic diatoms present in this zone are *A. granulata* (~23%) and *Stephanodiscus niagarae* (~11%). The ratio of Planktonic and benthic taxa (P/B) had an average of 0.52. Unit III-c (24–22 cm; ~1973–1978) shows the presence of the abundant planktonic diatom taxa such as *A. granulata* (~40%). The benthic diatom species present in this zone is *E. minutum* (~16%). The ratio of Planktonic and benthic taxa (P/B) had an average of 1.71. Unit III-d (21–19 cm; ~1979–1983) shows the dominance of the benthic diatom taxa *R. musculus* (~ 16%) and *R. gibberula* (31%). The other associated benthic diatom taxa are *F. rumpens, N. palea* and *G. parvulum.* The planktonic diatom species present in this zone is *A. granuata* (~16%). The ratio of Planktonic and benthic taxa (P/B) had an average of 0.18. Unit IV (18-0 cm; ~1982–2012) is divided into four subzones. This zone shows the maximum concentration of benthic diatom species. Unit IV-a (18–16 cm; ~1982–1991) indicates an increase in *R. musculus* (~38% on average) with a decrease in *A. granulata* (~ 13% on average). The other prominent benthic diatom species are *N. palea* (~11% on average) and *E. binularia* (~7% on average) and the other planktonic species commonly present is *A. distans*. The Planktonic and benthic ratio of taxa (P/B) had an average of 0.28. Unit IV-b (15–12 cm; ~1990–1998) was characterized by dominant benthic species *R. musculus* (~33% on average) and planktonic diatom species *A. granulata* (~19% on average). The second dominant benthic diatom species was *Encyonema minutum* (~18% on average) followed by *Fragilaria rumpens* (~10% on average) and *Navicula cryptocephala* (~10% on average). The planktonic and benthic (P/B) ratio is 0.21. Unit IV-c (11–6 cm; ~1999–2006) prominently shows an abundance of the benthic species *R. musculus* (~40% on average) and planktonic species *A. granulata* (~18% on average). The other benthic diatom taxa present in this zone are *R. gibberula, G. undulatum, F. rumpens, N. palea, E. minutum, G. parvulum* and *E. binularis*. The other planktonic diatom species present in this zone are *D. stelligera* and *S. niagarae*. The ratio of P/B is 0.34. Unit IV-d (5–0 cm;

~2007–2012) indicates a decline in *R. musculus* (~17% on average) and *A. granulata* (~6% on average). Other planktonic species *D. stelligera* (~11% on average), *A. distans* (~2% on average) and *S. niagarae* (~3% on average). The other benthic forms present in this zone are *R. gibberula* (~7% on average), *G. undulatum* (~3% on average), *F. rumpens* (~12% on average) and *N. palea* (~6% on average). The ratio of planktonic and benthic taxa (P/B) had an average of 0.27.

Discussion

The sediment core of the NBL, Central India is studied to investigate soil erosion, trophic state and past rainfall since the last century using some proxies. The watershed of the NBL is present in the tropical region and has had a nearly stable temperature since the last century. Hence, the amount of rainfall in the catchment area of the lake has been the controlling factor for the soil erosion, accumulation of geochemical elements and diatom assemblage. Therefore, various proxies such as (1) Geochemical elements and their normalized ratio with erosional indicators, (2) Chemical weathering intensity (CWI) and (3) Diatoms are studied from the sediment core of the NBL of Central India.

Soil Erosion and Trophic State

The intensity of the impact on the lakes of a different watershed can be analysed using geochemical variables (Table 6.1; Garrison and Laliberte 2007, 2010). The chemical elements titanium (Ti) and aluminium (Al) are derived from detrital aluminosilicates and thereby the fluctuations in their profiles will suggest the transformation in the rate of soil erosion (Garrison and Laliberte 2010). Phosphorous and nitrogen are important nutrients for the growth of aquatic plants and algae. The synthetic fertilizers and soils contain potassium (K). Thus, soil erosion and the input of commercial fertilizers in the watershed can be distinguished from the variation in the profile of potassium (K) (Garrison and Laliberte 2010). The urban runoff is mostly accompanied by zinc (Zn) as it is a component of galvanized roofs and tires

Table 6.1 Important chemical indicators of catchment or lake processes

Process	Chemical elements
Soil erosion	Aluminium, potassium, titanium
Synthetic fertilizer	Potassium
Urban	Zinc, copper
Ore smelting	Zinc, cadmium, copper
Nutrients	Phosphorus, nitrogen
Lake productivity	Organic matter

After Garrison and Laliberte (2010)

(Garrison and Laliberte 2007). The addition from the smelting of lead–zinc ores is seen in the zinc (Zn) profile of the cores (Dean 2002). Similarly, the use of soil modifications for the development of amenities is reflected in the calcium (Ca) profiles and the changes in the oxygen levels in the bottom waters are indicated by the manganese (Mn) profiles (Garrison 2008).

The accumulation rate gives information about the impact of watershed processes on the lake ecosystem (Garrison and Laliberte 2010). The calculation of the rate of accumulation of some geochemical elements of the NBL was done by adding the geochemical concentrations with the rate of sedimentation (Calculation by ^{210}Pb dating and CRS model). The elemental deposition in the NBL through time was determined from the accumulation rate. The accumulation rate of phosphorous was similar to the erosional indicators (Ti, Al) in the NBL. The phosphorus content has been progressively increased since ~1919 and reached its highest level in ~1998, with its further decline since ~2000 till present at the top of the core (Fig. 6.4). Therefore, it can be surmised that the phosphorous content of the NBL is mostly derived from the sediment and soils from the watershed and played an important role as a major source of the nutrient. The profile of phosphorous and nitrogen may not reflect the lakes eutrophication history due to diagenesis (Anderson and Rippey 1994 and Fitzpatrick et al. 2003) and the breakdown of phosphorous and nitrogen into the inorganic components with some of the material then recycled into the water column and removed out of the sediments (Garrison and Laliberte 2010). The calcium content of the NBL is similar to the titanium till the top of the core and indicates that the major part of it was derived from the sediments and soils of the watershed (Fig. 6.4). The geochemical elements such as silica, manganese and sodium also show a similar increasing trend like Ti and Al, which reflects that the major concentration of these elements is derived from the sediments and soils in the watershed of the NBL (Fig. 6.4).

The selected geochemical elements from the NBL are normalized to aluminium (Al) to distinguish the anthropogenic inputs other than mineral sediments. Thus, the factors which influence the lake in addition to sediment/soil input from the watershed can be known. The anthropogenic impact both from the concerned watershed and atmospheric transport through time on the sediments of the NBL have been observed from the elemental profiles normalized to Al (Fig. 6.5). The ratio of these elements would be the same throughout the core if soil particles/sediments were the only sources of potassium, as both aluminium (Al) and potassium (K) are found in sediments/soil particles in the watershed (Garrison and Laliberte 2007). There is a gradual depletion in the K: Al ratio in the NBL since ~1906–1966(Fig. 6.5). This decline in the ratio till ~1966 indicates that potassium was not mainly derived by the erosional processes in the watershed considering the increase in the concentration of erosional indicators (Ti and Al) (Fig. 6.4) and other anthropogenic sources in the form of potash fertilizers in the nearby agricultural lands of the NBL. The K: Al shows an increasing trend during ~1967–~1975 similar to the profile of Al. This indicates that K is an important source derived from soil particles or sediments from the catchment of the NBL. The phosphorous content shows a declining trend, while the K: Al ratio slightly increased during ~1976–1991 indicating the mixed source

of K, i.e. from soil particles along with some anthropogenic origin. The K: Al ratio once again shows a rising trend during ~1992–1998 similar to the profile of K. This points to the increased maximum rate of soil erosion in the NBL watershed. From ~1999 till ~2009 the rise and decline in K: Al ratio indicates mix origin of K, i.e. soil particles and potash fertilizers used in the agricultural lands in the catchment of the NBL (Figs. 6.4 and 6.5).

Phosphorous and nitrogen are important nutrients for algal growth (Garrison and Laliberte 2010). The ratio of phosphorous to aluminium (P: Al) shows a continuous decline from ~1906 to ~1956, while the P profile shows a continuous rise in its content during this period. It shows that during this period P was mainly derived through the excessive use of synthetic fertilizers in the agricultural land of the catchment area of the NBL rather than soil particles mainly after the construction of the rockfill dam in ~1917. The P: Al ratio shows a peak during ~1957–1975 more or less similar to the P profile indicating its origin through soil particles or sediments of the catchment area of the NBL. There is little rise in the ratio of P: Al during ~1976–1991 in contrast to the major decline of the P profile suggesting the possible mixed origin of the P. The trend of the P: Al ratio has declined from ~1992 till ~1998 with the highest peak of the P profile. It indicates that most of the P was derived from the erosion of soils or sediments from the catchment of the NBL during this period. The P: Al ratio from ~1999 to ~2009 shows a mixed origin of the P (Figs. 6.4 and 6.5).

The Zn: Al ratio in the NBL core is highest post ~1917 coinciding with the year of the dam construction till ~1933 similar to the Zn profile indicating an increased rate of soil erosion in the catchment area (Figs. 6.4 and 6.5). The increased rate of soil erosion could be attributable to the clearing of forest area for the development of the agricultural fields in the catchment of the NBL. A more or less uniform profile of the Zn: Al ratio is observed from ~1934 to ~1991 pointing to a consistent moderate level of supply of Zn mainly through soil erosion in the catchment. The profile of the Zinc concentration remained highest from ~1992 to ~2009 with its highest content in ~1998. The Zn: Al ratio declined a little from ~1992 to ~1998 indicating some part of the Zn could have derived from a source other than the soil particles. This Zn could have possibly derived from unknown sources and transported through the air and precipitated in the NBL basin during this period. The increasing trend of the Zn: Al ratio post ~1999 similar to a higher Zn profile could be attributed to a rise in soil erosion in the catchment of the NBL (Figs. 6.4 and 6.5).

The manganese (Mn) preferentially migrates to iron once the bottom water loses oxygen (Engstrom et al. 1985). This manganese generally moves from the sediments into the deepest water causing the environment of manganese in the deeper waters sediments (Garrison 2008). The iron and manganese tend to remain in suspension for a long period with their preferential movement together (Jones and Bowser 1978). Thus, the ratio of iron to manganese (Fe: Mn) declines (Mn increases) with the loss of oxygen (Garrison 2008). The profile of iron (Fe) to manganese (Mn) in the core of the NBL shows an increasing trend from ~1906 to ~1933 (Fig. 6.5), which shows the existence of a fairly good oxygenated environment during this period. However, the ratio of Fe: Mn started showing a declining trend after ~1933 till ~2009. This

indicates that the bottom water of NBL had started losing oxygen progressively after ~1933 and the lake bottom became more and more anoxic till ~2009. Thus, the hypolimnetic oxygen of the NBL has declined for the past 80 years indicating increased eutrophication in the lake till the present.

Paleo-Rainfall and Droughts

The Indian sub-continent experiences >80% of rainfall as a result of the seasonal monsoon, which is the lifeline of Indian agriculture (IPCC 2007). Therefore, it is vital to forecast the future climate, particularly rainfall trends considering global warming and its adverse effects (Church and white 2006). Hence, the investigation of the past monsoonal fluctuations is highly essential to forecasting rainfall and understanding past extreme weather events. The paleoclimatic studies in India particularly from the last ice age to the present add comprehensive knowledge on rainfall and droughts (Singhvi and Kale 2008). The different proxies have been used by the various workers to investigate past monsoonal fluctuations. The responses of the diatom community to climate change have been studied by several workers (Anderson et al. 2012; Chen et al. 2014). The other proxies used are chemical weathering intensity and geochemical ratios normalized with erosional indicators like Ti and Al (Colin et al. 1998; Achyuthan et al. 2007; Kotlia et al. 2010 and Veena et al. 2014).

The sediment accumulation rate of the NBL was increased after the construction of a small rockfill dam in ~1917 (Fig. 6.4). The sediment input in the NBL is dependent upon the amount of rainfall that occurred in its catchment area. A higher rainfall is coupled with an enhanced deposition of sediments into the lake. The reduced deposition of sediments in the NBL till ~1919 is coeval with calamitous and moderate drought events that occurred in major parts of India during 1918 and 1920, respectively (De et al. 2005; Fig. 6.4). The exceptional flood in India in ~1933 coincides with the initial rise in the concentration of the geochemical elements of the NBL (Fig. 6.4). The gradual rise in the accumulation of the majority of the geochemical elements was continued and reached peaked in ~1956. This continuous rise of the geochemical elements could be attributed to improved precipitation in the catchment of the NBL. There was a gradual decline in the geochemical content from ~1957 till ~1966. The maximum fall in the concentration of a geochemical element in ~1966 is again coinciding with the other moderate drought event in India in ~1965. Another rise in the geochemical content started in ~1967 and reached its peak in ~1975 (Fig. 6.4). Another decline in the concentrations of geochemical elements of the NBL was noticed after ~1976 and the same trend was continued till ~1991. Many parts of India experienced severe drought in 1987 (De et al. 2005). Thus, the central Indian region in general and the catchment area of the NBL, in particular, had suffered a major drought from ~1987 to ~1991. The highest level of deposition of the geochemical elements in the NBL was observed in ~1998 and possibly could be attributed to the occurrence of maximum rainfall or flood event in

the eastern part of the Vidarbha region of Maharashtra, Central India (Fig. 6.4). The post ~1998 period showed a gradual reduction in the rainfall till ~2004 and the low rainfall condition prevailed up to ~2009 (Fig. 6.4). The peaks of the geochemical elemental content also suggest the increased soil erosion in the catchment of the NBL during ~1933, ~1956, 1975 and 1998, respectively (Fig. 6.4). The increased agricultural practices have led to deforestation in the NBL catchment resulting in a rise in soil erosion coupled with varying strength of rainfall in the monsoonal core zone of Central India.

The Chemical Weathering Intensity (CWI)

The oxide such as Al_2O_3, TiO_2 and SiO_2 is used as the most resistant and insoluble elements in the environment during weathering and erosion, whereas CaO, MgO and Na_2O are more soluble and mobile (Engstrom and Wright 1984; Veena et al. 2014; Garrison and Laliberte 2007). The chemical weathering intensity (CWI) is calculated to know the fluctuations in weathering intensity (Sun et al. 2009). The higher value CWI points to more weathering. This corresponds to wetter conditions and heavy monsoonal rainfall in the study area (Central India). The more intense development of anthropogenic carbonate in the soil of the sediment source area corresponds to higher CaO/MgO ratios in sediment, which points to warm climate with alternating wet and dry periods (Veena et al. 2014; Wang et al. 1990; Wang 1992).

The CWI and CaO/MgO ratio with the depth (cm) of the NBL core are compared for the past 100 years (Fig. 6.6). The CWI and CaO/MgO ratio started declining after ~1918 till ~1933 coinciding with the one calamitous drought event in ~1918 and a moderate drought event in ~1920 in many parts of India. The further decline in the ratio of the CWI and CaO/MgO after ~1920 till ~1933 points to a gradual reduction of rainfall (dry period) in Central India. The further decline in this ratio from ~1934 to ~1975 indicates the prevalence of low rainfall in the catchment of the NBL. The moderate drought event of ~1965 and the severe drought event of ~1972 in India (De et al. 2005) also corroborate our findings of low rainfall conditions from ~1934 to ~1975. The CWI, CaO/MgO ratio further shows a declining trend after ~1984 indicating the reduction in the rainfall till ~1991. The severe drought event in India during ~1987 also supports the present finding. The CWI and CaO/MgO ratios show increasing trends after ~1992 indicating moderate to high rainfall in Central India till ~2009 (De et al. 2005; Fig. 6.6).

Diatom Analysis

The significant shift of diatoms from benthic to planktonic assemblage has been attributed to climate warming (Chen et al. 2014). Lake sediments from stratification during summer and climate warming periods and thus more stratification would

point to increased length and strength of warm/dry periods (Wang 2012). The small size and fast-growing planktonic diatoms in the sediment cores indicate longer and stronger thermal stratification (Smol et al. 2005; Rühland et al. 2010; Chen et al. 2014). The NBL falls in the tropical climatic region. Thus, the temperature variation in the region has not been significant since the last century. However, the diatom species may respond to fluctuations in the precipitation (rainfall) and dry periods (droughts) existing in the region. The changing patterns of planktonic to benthic diatom assemblage (P/B) are recorded in the NBL core from ~1906 to ~2012 (Fig. 6.7). The planktonic diatom *A. granulata* is dominate throughout the NBL core along with the appearance of another planktonic diatom taxa *D. stelligera* after ~2004. However, the comparative decline in abundance of *A. granulata* was associated with the increase in the concentration of benthic diatoms such as *R. musculus, R. gibberula* and *G. undulatum.* The concentration of *A. granulata* remained higher since ~1906 and more or less constant till ~1961. A major shift in speciation was seen at ~1920, ~1933, ~1966 and ~ 1983 till ~2005 with the preponderance of the benthic species *R. musculus* coeval with a decline in planktonic forms. The abrupt disappearance of *R. gibberula* was observed from ~1983 to ~2005. The nutrient input in response to climatic conditions and anthropogenic activities has played a vital role in the diatom shift of the NBL. The aridity/low rainfall mainly affects the water chemistry and inflicts salinity (Winder et al. 2009). *D. stelligera* indicates changing water levels and deforestation, while *A. granulata* exists in varying trophic status (Costa-Bödeker et al. 2012). *R. musculus* is a mesohalobus and alkalibiontic species found in the swamp, swampy lakes, springs and oozing areas (You et al. 2009). The major period of the profusion of *R. musculus* in the NBL core was during ~1919–1921, ~1933–1940, ~1956–1972 and ~ 1978–2004, respectively. Thus, the NBL water was mainly mesotrophic, Meso euhyaline and alkalibiontic. The longer dry/less rainfall period that prevailed in the NBL watershed could have possibly developed swampy conditions in the lake during these years. The existence of a low rainfall/dry period also corroborates several drought events recorded in India, for example, in ~1918, ~1920, ~1965, ~1972 and ~1987 (De et al. 2005; Fig. 6.7). *A. granulata* was predominant during ~1906–1914, ~1920–1922, ~1941–1943, ~1948–1956, ~1972–1976 and ~ 1973–1982. The increased concentration of *A. granulata* during these periods in the NBL mainly points to the accelerated soil erosion and flux, persistent wet period and increased nutrient levels. It also clearly signifies that the NBL was highly eutrophic with high phosphorus and nitrogen values. A decline in the *A. granulata* population is linked with an increase in the population of *R. gibberula* and *G. undulatum* also coincides with dry/low rainfall periods (De et al. 2005; Fig. 6.7). The major dominance of *R. musculus* was observed on the top of the core during ~1983–2006. The prevalence of the longer dry/low rainfall periods could have again led to swampy conditions in the NBL with the mesotrophic waters. *R. musculus* and *A. granulata* both decreased drastically at the top of the core during ~2007–2012, while other small benthic and planktonic forms became predominant during this period (Fig. 6.7). *D. stelligera* was the common abundant form observed during this period. Diatom assemblages dominated by *D. stelligera*

indicate a thermally stable environment and alkaline conditions (Cardozo et al. 2014). The abundance of *D. stelligera* also indicates a decline in the nutrient concentration due to enhanced stratification in response to the warming trend in the region (Stone et al. 2010). Thus, the abundance of planktonic diatom species, *D. stelligera* during this period suggests low nutrient, mesotrophic, alkaline lake waters with comparatively dry/less rainfall period indicating changing water level and deforestation in the catchment of the NBL. Thus, differences in aquatic habitat, duration and strength of dry and wet periods could have resulted in the different diatom responses in the NBL.

Conclusions

Nutrients such as phosphorous are mostly derived from the sediment and soils from the watershed of the NBL. The concentration of geochemical elements like K, Si, Fe, Mn, Zn and Na are also mainly derived from the sediments and soils in the watershed of the NBL. From ~1906 to ~1956, P was mainly derived through the excessive use of synthetic fertilizers in the agricultural land of the catchment area of the NBL rather than soil particles mainly after the construction of the rockfill dam, i.e. ~1917. The hypolimnetic oxygen of the NBL has declined for the past 80 years indicating increased eutrophication in the lake till the present. The decline in the deposition of the geochemical elements till ~1919 was coeval with the calamitous and moderate drought events that occurred in major parts of India during 1918 and 1920. Similarly, the exceptional flood in India in ~1933 coincides with the initial rise in the concentration of the geochemical elements of the NBL. The gradual rise in the accumulation of the majority of the geochemical elements till ~1956 could be attributed to improved precipitation in the catchment of the NBL. The maximum fall in the concentration of a geochemical element in ~1966 again coincides with the other moderate drought event in India in ~1965. The central Indian region in general and the catchment area of the NBL, in particular, had suffered a major drought period from ~1987 to ~1991. The highest level of deposition of the geochemical elements in the NBL in ~ 1998 possibly could be attributed to the occurrence of maximum rainfall or flood event over Central India. The post ~1998 period showed a gradual reduction in rainfall till ~2004 and the low rainfall conditions existed up to ~2009. The CWI record of the NBL shows that the accumulation of the geochemical elements was mainly controlled by the changing climatic conditions, namely wet and dry periods in the catchment area along with the enhanced soil erosion caused by anthropogenic activities. The changes in the aquatic conditions are mainly caused by varying duration and strength of dry and wet periods over the central Indian region and enhanced anthropogenic activities such as deforestation, use of synthetic fertilizers, etc., in the catchment area and could have resulted in the diverse diatom responses in the NBL.

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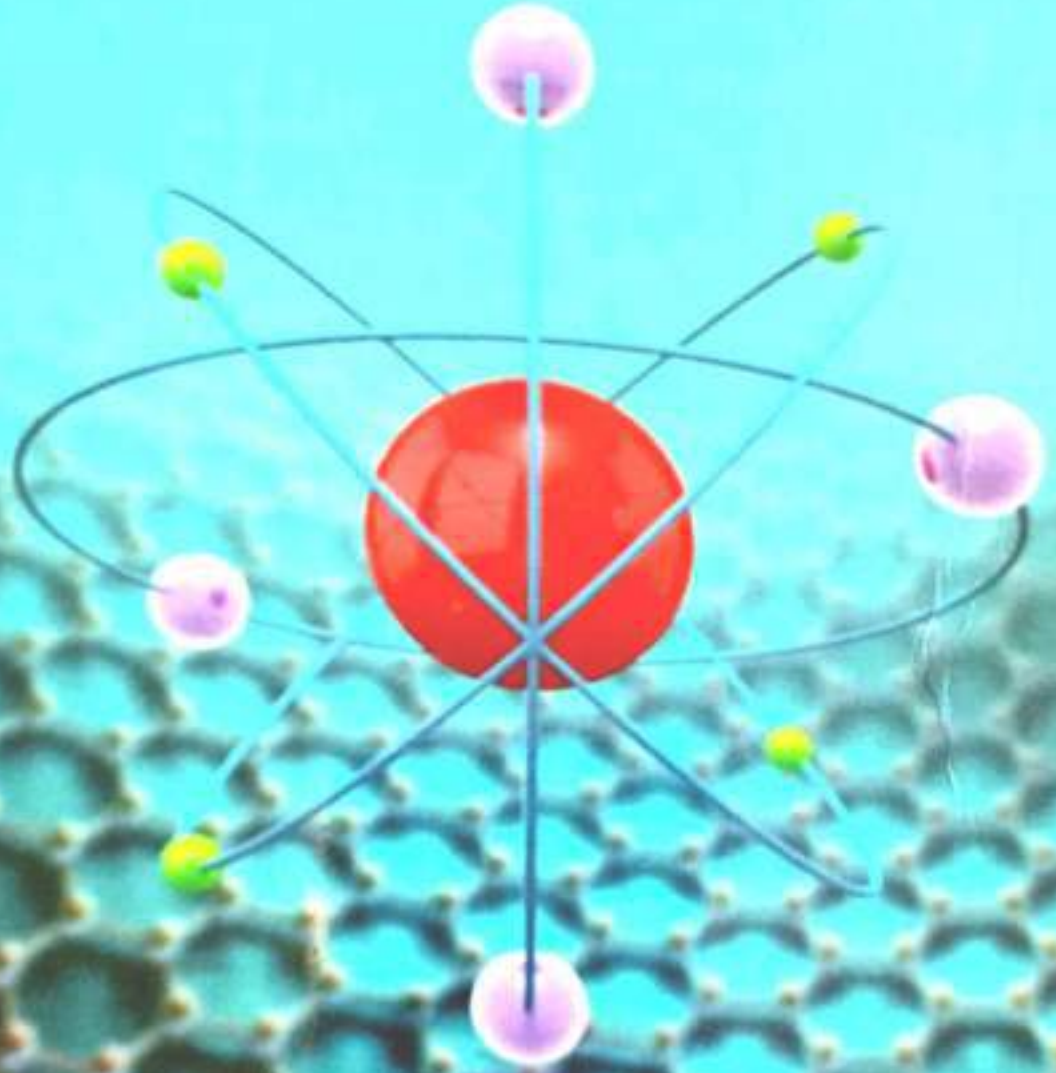

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Application of Carbon Based Nanomaterials: A Review

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Abstract:- Recent years nanotechnology is a flourishing area in research work and received prodigious interest due to applications in various fields. Nanotechnology is the branch of science and technology and deals with the fabrication of nano-size substances, characterization and their applications. Nanotechnology is a developing field that brings materials into the nanoscale level ie. Nanomaterials and they have shown to have a wide range of applications. However, a marked and rapid growth of interest has been shown by the scientific and engineering communities in the carbon-based nanomaterials. They are challenging due to their superior behaviors and interesting applications over other materials. Nanocarbon included carbon dot, carbon nanotube, and grapheme. Carbon dots (CDs) by their unique structure and fascinating properties, they have various application such as solar cells, drug delivery, biological sensing, and photo catalysis. Carbon nanotubes (CNTs) are cylindrical molecules that consist of rolled-up sheets of single- layer carbon atoms. They can be single-walled (SWCNT) and multi-walled (MWCNT) structure. They have been applicable for absorbents, electronics, biosensing, and chemical sensing. Grapheme has applications in the energy, construction, health, and electronics sectors. Carbon- based nanomaterials have gained tremendous attention in the scientific community for their potentials application in all fields in current scenario.

Keywords:- Nanotechnology, carbon-based nanomaterials, Carbon dots, Carbon nanotubes, Grapheme.

1. Introduction

The carbons have atomic mass number of twelve and atomic number of six and which is present in p-block in periodic table. This carbon is the fourth most abundant element in the universe. It has been reported that nearly 18% of total body mass of a healthy human being consist of carbon element. The chemical literatures suggest that more than one million compounds of carbon exist in nature and chemists are adding many new compounds every year to the existing bag of carbon compounds. It is a major constituent of all organic compounds found in living systems such as carbohydrates, proteins, vitamins, nucleic acid and fats. In nature, the carbon is known to exist in many allotropic forms such as charcoal, diamond, graphite, amorphous carbon and many more. *[1]*Among these various allotropes, some allotropes of carbon like carbon dots (CDs), carbon nanotubes (CNTs), graphene etc. have one dimension in nanoscale range. Due to the confinement to nanoscale size, each member of the CNMs family behaves in a different way and shows different properties as compared to their bulk counterpart. Hence, they became popular as a family known as carbon based nanomaterials (CNMs)[2]. Carbon-based nanomaterials have gained tremendous attention in the scientific community for their potentials in biological applications including drug delivery, biosensing, imaging and other application optoelectronics and energy-related applications. The unique properties of engineered carbon-based nanomaterials have attracted great interest to large-scale industrial production[3]. Structure of carbon based nanomaterials like carbon nanotube, carbon dot, graphene and fullerene shown in fig-1.

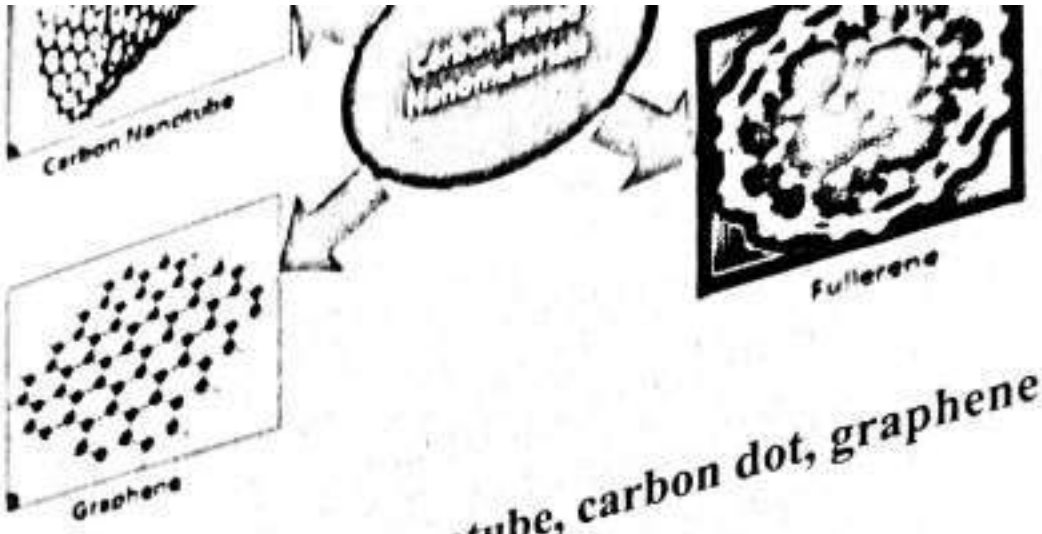

Fig :- Structure of carbon nanotube, carbon dot, graphene and fullerene

2. Carbon dot

Carbon dosts(CDs) were first accidentally discovered by Xu and co-workers in 2004, during the purification experiment of single-walled carbon nanotubes. Carbon dots (CDs) are known as the rising star of carbon-based nanomaterials and, by virtue of their unique structure and fascinating properties and can be used in several applications in various fields. The CDs synthesis techniques are straightforward and inexpensive. CDs are prepared from a large number of organic molecules that can be readily available in nature. CDs are also prepared from vegetables fruit, juice, grass, plant leaves, coffee, and vegetable waste[4]

2.1 Application of Carbon dot

2.1.1 Sensing

A wide variety of biological and chemical sensors have been developed using CDs based on their excellent fluorescent properties. CDs have sensors with better performance because of

the other hand, the arrangement of concentric graphene cylinders with an interlayer space of 0.34 nm and a diameter typically of the order of 10–20 nm leads to the formation of MWCNTs[7].

3.1 Application of Carbon nanotube

3.1.1 Electrical properties

The electrical properties of carbon nanotubes arise from such confinement of the electrons. MWCNTs are a good electrical conductor and the property can be enhanced through suitable modification as a composite material. However, the outer wall alone has conductive properties, but the inner walls MWCNTs are normally not active for conductivity.The band gap energy, changes with degree of change in crystalline nature of layers, chirality, and thickness of tube are effect electronic properties of carbon nanotubes[8].

1.3.2 Field emission properties

Both MWCNT and SWCNT are excellent field emitters. The small diameter of carbon nanotube is highly favorable for field emission. The carbon nanotubes based field emitters are used in various applications including flat panel displays, lamps, x-ray sources and microwave amplifiers due to its unique properties[9].

1.3.3 Energy Storage

Carbon nanotubes have unique characteristics desired for material used as electrodes in batteries and super capacitors. The high surface area, good electrical conductivity, reversible capacity and their linear geometry makes them as a potential material for energy storage devices. Carbon nanotubes have also been used in a variety of fuel cell devices[10].

1.3.4 Biomedical

The research on carbon nanotubes application in biomedical field is just underway, but has significant potential as it is a

biocompatible material for human and animal body. The possibility of carbon nanotubes to be functionalized or chemically modified leads to biomedical applications such as vascular stents, neuron growth, demonstrated that a single strand of DNA and regeneration[11].

4. Graphene

Graphene, a one-atom thick planar sheet of sp2 bonded carbon atoms packed in a honeycomb lattice, is considered to be the mother of all graphitic materials like fullerenes, carbon nanotubes, and graphite.Graphene has emerged as a revolutionary material since its isolation in 2004 by Novoselov and co-workers. Graphene formed by chemical activation possesses high electron transfer promoting ability, excellent catalytic behavior, large surface area it has been widely used in novel chemical sensors on glassy carbon electrodes (GCEs). Graphene possesses several exceptional properties such as high electrical conductivity, high tensile strength, high thermal conductivity and chemical inertness. There are two different types of methods to produce graphene which are exfoliation methods and direct growth of graphene layer which can be known as Topdown and Bottom-up methods[12].

4.1 Application of Graphene

4.1.1 Electrical properties

Graphene has potential applications in nanoelectronics, super capacitors, solar cells, batteries, flexible displays, hydrogen storage, sensors, and has been explored for versatile applications ranging from electronic devices to electrode materials. It exhibits outstanding electronic properties, permitting electricity to flow rapidly through the materials. In fact, it has been shown that electrons in graphene behave as massless particles similar to photons, zipping across a graphene layer without scattering. This outstanding electronic property is crucial for many device applications and it is expected that graphene could eventually

replace silicon (Si) as the substance for computer chips, offering the prospect of ultrafast computers/quantum computers operating at terahertz speeds[13].

4.1.2 Actuators

The extraordinary mechanical, optical, and electrical properties of graphene have been exploited by many scientists to develop actuators. Park et al. designed a bilayer paper composed of adjacent graphene oxide and multi-walled carbon nanotube layers and demonstrated a macroscopic graphene-based actuators. The actuation motion was induced through asymmetric charging and discharging. A bimorph microactuator has been developed based on graphene-on- organic hybrid film. The graphene-on-organic film actuator generates a flapping and bending motion that can be controlled by varying the frequency and duration of the applied potential[14].

4.1.3 Supercapacitors

Recently, grapheme-based electrode material has been used for supercapacitor applications Subsequent development of grapheme-based nanocomposites using conducting polymers is an important step of improvisation in the area of nanoscience and nanotechnology. This kind of graphene-based polymer nano-composites can be used as electrode material in supercapacitors. The main conductive polymer materials that have been inve-stigated for the supercapacitor electrode are polyaniline (PANI), polypyrrole (PPY), polythiophene (PTH), and their derivatives [15].

6. Conclusion

This review article perfectly presents an introduction on carbon nanomaterials such aslike carbon dots (CDs), carbon nanotubes (CNTs), graphene, and fullerene.Carbon dots (CDs) are known as the rising star of carbon-based nanomaterials and, by

virtue of their unique structure and fascinating properties and can be several applications in various fields such as sensing, bioimaging and optoelectrical .The discovery of CNTs represents a major breakthrough in nanotechnology development which has different application such as electrical properties, field emission spectroscopy, optical properties, energy storage and biomedical application.Graphene formed by chemical activation possesses high electron transfer promoting ability, excellent catalytic behavior, large surface area it has been various application electrical field, actuators, and supercapicitors or utracapacitors. . Carbon-based nanomaterials have gained tremendous attention in the scientific community for their potentials application in all fields in current scenario.

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Authors are highly thankful to Dr. Sachin Khobragade Sir, secretary shri. Kisanrao Khobragade Education Society Armori for his valuable guidance, moral support, timely help and constant encouragement during the course of this investigation. Authors are also thankful to **Dr. J.V. Dadve** Sir Principal, Yashwantrao Chawhan Arts, Commerce and Science, Lakhandur for providing necessary facilities.

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लेखक परिचय

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ग्रामस्वराज्याचा कर्मयोगी

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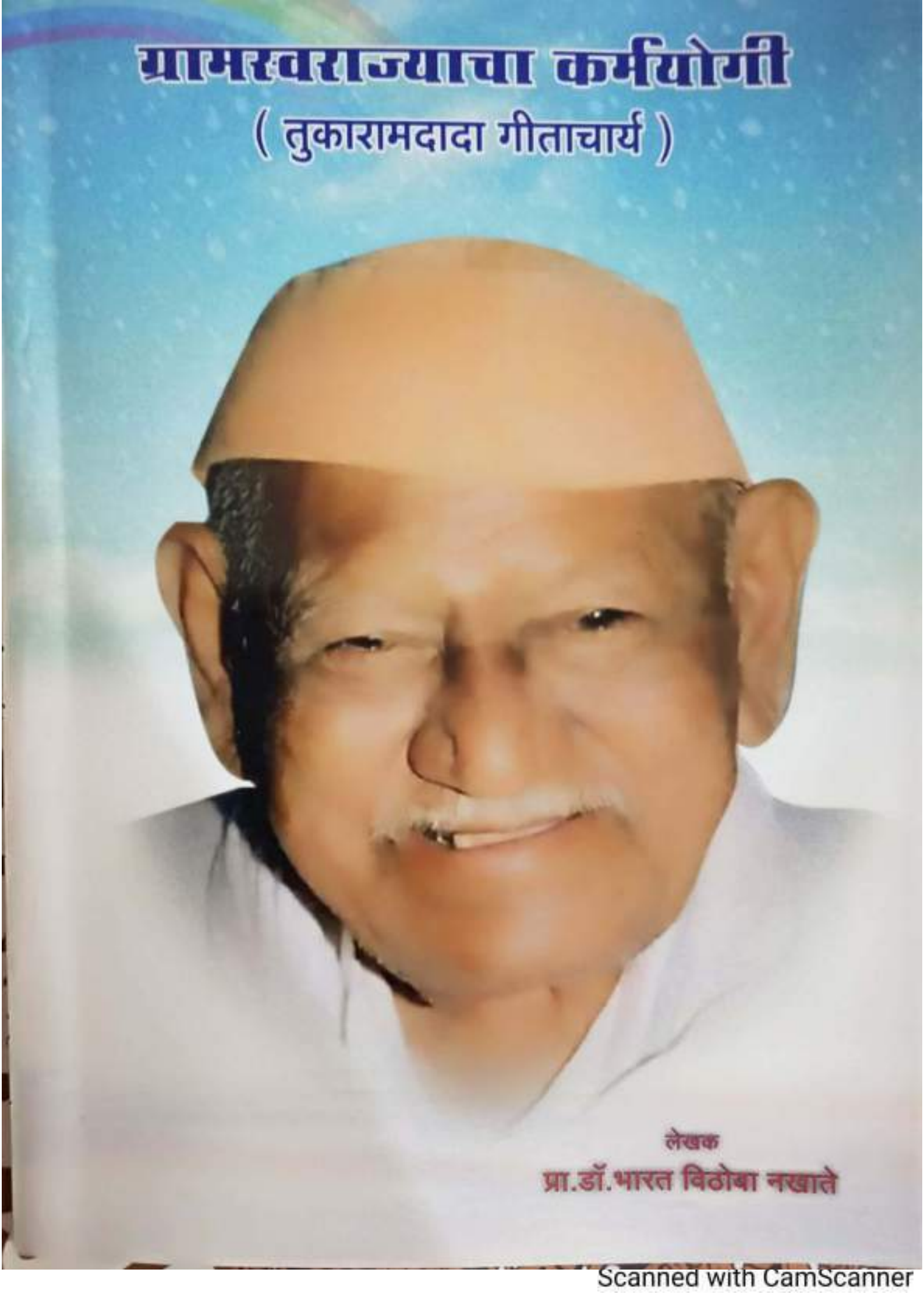

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अर्पण

वंदनीय राष्ट्रसंत श्री. तुकडोजी महाराज आणि गुरुदेवप्रेमी,
भारतातील गावखेड्यांमध्ये वास्तव्य करणारे
अन्नदाते - शेतकरी, शेतमजूर, माता-भगिनी व
ग्रामीण जनताजनार्दनास
सादर समर्पित.

भारतीय संविधान आणि सर्वसमावेशकता

- संपादक -
डॉ. रक्षित बागडे
डॉ. किशोर वासनिक

अनुक्रमणिका

EDUCATION IN CONSTITUTION OF INDIA

Prof. Parsharam Maroti Thakare

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Education is important to cultivate ethos and values of Indian Democracy in citizens.The Indian constitution has provisions to ensure that the state provides education to all citizens . The Indian Constitution in its original enactment defined education as a state subject. In the 42nd constitutional amendment act, five topics were moved from State list to Concurrent list, including education .Now education is available to both parliament and state assemblies to legislate upon. Under the constitution of India Central government has been specifically vested with several educational responsibilities.

India is signatory to number of international covenants i.e. MDGs , SDGs,SAARC charter for children which id binding on its commitment for making education a reality for all children.

Articles which are related to Education are -

Article 14, 15, 21A, 28, 29, 30, 45, 46, 51A (k), 337, 350, 351 .

Some major constitutional provisions on education in India are as follows:

1. **Right to Education** - 86th Constitutional Amendment Act 2002 of constitution of India made important changes in Fundamental

   Rights , Directive Principles of state policy, Fundamental Duties in education.

   It provides Right to Education for age of 6 to 14 years and early childhood care until the age of six. It has inserted Article 21(A) - Right to education as fundamental right and replaces Article 45 – Early childhood education and amended Article 51A .

   Article 45 – "The state shall endeavour to provide within a period of ten years from the commencement of this Constitution, for free and compulsory Education for all children until they complete the age of fourteen years"

   It is clearly directed in Art 45 that provisions of Universal, free and compulsory education becomes joint responsibility of centre and the states.

Article 21A (Right to Education) - " to provide free and compulsory education of all children in the age group of six to fourteen years as a Fundamental Right in such a manner as the State may, by law, determine "

Government of India passed Right of children to free and compulsory education(RTE) Act ,2009 Came into force in April 2010. Eighty years after constitution was amended to make education a fundamental right. Act mandates that even private educational institution have to reserve 25 percent seats for children from weaker sections.

RTE made implementing body National commission for protection of child rights (NCPCR).

Article 51A (k) – 11th fundamental duty was added by 42nd CAA 1976- duty of parents for providing education to his child ." Provide opportunities for education to his child or ward between the age of six and fourteen years"

2. **Religious Institution** - In Constitution Minorities are given rights to establish Educational Institutions.

   Article 28 (1) - "No Religious instruction shall be provided in any educational institution wholly maintained out of state fund."

   Article 28 (2)- Nothing in clause (1) shall apply to an educational institution which is administered by the state but has been established under any endowment or trust which requires that religious instructions shall be imparted to such institution.

   Article 28 (3) – No person attending any educational institution by the state or receiving aid out of state funds , shall be required to take part in any religious instruction that maybe imported in such institutions or to attend any religious worship that may be conducted in such institutions. Distinguishes educational institutions into 4 types - 1) Wholly maintained by state. 2) Administered by the state but established under any endowment or trust. 3) Recognized by state. 4) Receiving aid from state.

   It gives freedom from attending religious instructions .In India minorities whether based on religion or languages are given full right to establish educational institution.

3. **Minorities** - Article 29 and 30 guarantee cultural and educational rights to religious and linguistic minority groups in India, to enable them to preserve their distinct culture, language, or script.

Article 29(2)- No citizen shall be denied admission into any educational institution maintained by the State or receiving aid out of State funds on grounds only of religion, race, caste, language or any of them.

It provides Article 14 (Right to equality) to all but Article 15 (Prohibition of Discrimination) clearly signifies that distinction can be made on basis of any position , caste , class , or creed .

Nothing in article 29 prevent state from making any special provision for advancement of any socially or economically backward classes of citizens or for weaker sections of scheduled caste and scheduled tribe . It grants protection to both religious minorities and linguistic minorities.

Article 30 - Right of minorities to establish and administer educational institutions.

(1) All minorities, whether based on religion or language, shall have the right to establish and administer educational institutions of their choice.

They independently choose its governing body, staff, eligible student, fee structure.

In making any law providing for the compulsory acquisition of any property of an educational institution established and administered by a minority, referred to in clause (1) the State shall ensure that the amount fixed by or determined under such law for the acquisition of such property is such as would not restrict or abrogate the right guaranteed under that clause.

(2) The State shall not, in granting aid to educational institutions , discriminate against any educational institution on the ground that it is under the management of a minority , whether based on religion or language.

Article 30 is also called the "Charter of Educational Rights"

4. **Weaker Section**-There are so many provisions made in our constitutions for the upliftment of weaker sections of our society like, Article 14, 15, 46, 338, 339, 340. Important articles are 15 and 46 as it provides special provision related to education of Women, Scheduled caste and Scheduled tribe.

Article 15-The State shall not discriminate against any citizen on grounds only of religion, race, caste, sex, place of birth or any of them.

Women- Art 15(3)) Nothing in this article shall prevent the State from making any special provision for women .

It empowers state to create special provisions for women including Education

Weaker Section- Article 46- Promotion of educational and economic interests of Scheduled Castes, Scheduled Tribes and other weaker sections.

5. **Union Territory** – Article 239 – states Administration of Education in Union territories. Education is responsibility of central government (administered by president by creation special department) in UTs.

6. **Language** – Secondary Education Commission (1952-53) for secondary school stage and Kothari Commission (1964-66) for higher education made provisions related to use of mother tongue in education .

Article 350 A- Facilities for instruction in mother-tongue at primary stage.—It shall be the endeavor of every State and of every local authority within the State to provide adequate facilities for instruction in the mother-tongue at the primary stage of education to children belonging to linguistic minority groups; and the President may issue such directions to any State as he considers necessary or proper for securing the provision of such facilities. In constitution it is clearly given that study of ones own language is fundamental right of the citizens. Constitution of India also made provisions for promotion and spread of Hindi as National language in Article 351.Hindi is largely used language in India . Central ministry of home affairs has a directorate of Hindi . It is considered as a medium of instruction and should be known to citizens of India as it is beneficial for communicating throughout country. Therefore, Indian Education system should consider it as responsibility to teach hindi at different levels .

7. Article 337 – states provision about education for Anglo - Indian community.

8. The seventh schedule of the Indian Constitution contains legislative power under three lists viz. The Union list , State list , and concurrent list.

The union list contains 97 subjects where the following entries are related to education –

Entry 13 - Educational and cultural relations with foreign countries.

Entry 62 - Institutions known at the commencement of the constitution as Library, museum, memorial.

Entry 63 - Institutions of National Importance.

Entry 64 – Instituions of scientific and technical education financed by the government of india wholly or in part and declared by law to be institutions of national importance like IITs and IIMs.

Entry 65 - Union agencies and institutions for professional , technical , vocational training , research and scientific or technical assistance.

Entry 66 – Coordination and determination of standards in the institutions higher education or research and scientific and technical institutions.

The State list contain 66 subjects education related entry is-

Entry 12 - Libraries , museum , institutions financed by state other than those declared under law made by parliament of india to be of the national importance.

The Concurrent list - It comprises of 47 entries , among then related to education are –

Entry 20 - Economic and social planning

Entry 25 - Education subject to provisions of entry 63, 64, 65, 66 of union list

Entry 34 - Newspaper , books , and printing presses . Reservation in Education .

ıber of other provisions directly or indirectly related to education are given in different cles and clauses which makes education as one of the most important subject in constitution ndia.

Recent Advances of NANOTECHNOLOGY in Chemical Sciences

Voulme-1

Dr. W.B. Gurnule
Dr. Priti Mishra
Dr. Krishna Kumar Verma
Dr. Anita Baghel

Index

Nanofillers-Bio Source Rubber Nanocomposites

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Abstract:

Elastomers are unusual types of polymeric materials with some distinct properties like elasticity, flexibility, and hardness. Elastomeric materials such as Natural rubber, Synthetic rubber and other polymeric materials like thermoplastic elastomers are known to everyone. Rubber compounding involves the different properties and applications of rubber and additives, such as filler, accelerators, activators and curing agents in proper proportions to get a regular mixture that will have desirable properties to encounter processing at cheapest cost and get good results. Nanofillers are generally used in rubber compounding to enhance the properties of rubber. Over the past few years rubber nanocomposites seemed to discussed by scientist that believing the number of different nanofillers such as carbon based reinforcing, hybrid nanofillers and bio- sourced nanofillers. The hybrid nanofillers coordination favors effective dispersion without destroying nanoparticles structures, leading to improves percolation threshold and better properties of the ternary nanocomposites. The bio-sourced nanofillers are based on plant fibers that reduce the compatibility with the rubber matrix. The miner size of the filler improves the interaction between the filler and the rubber, and accordingly mechanical, thermal and environmental properties of nanofillers/rubber composites have been improved.

Keywords: nanofillers, nanocomposites, bio sourced nanofillers, hybrid nanofillers

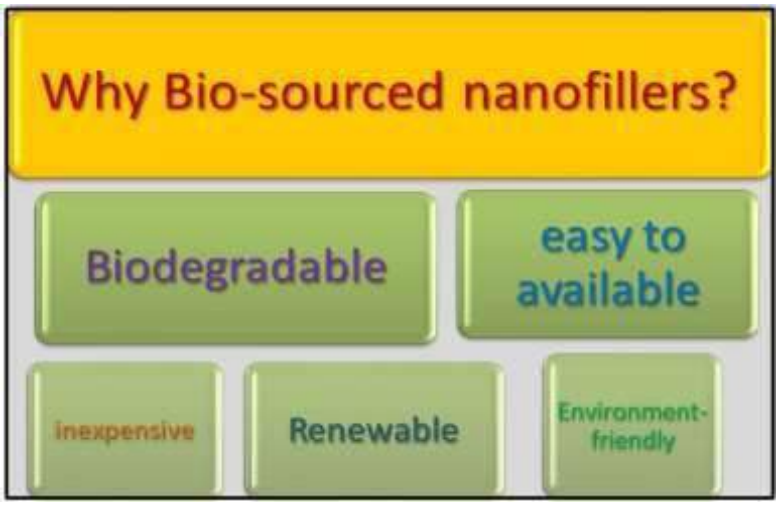
1. Introduction

The innovation of renewable, degradable and sustainable bio based composites is the best solution to handle environmental problems like climate change, pollution and steady consumption of petroleum resources associated with material development [1]. Nanocomposites have wide interfacial area available for stress transfer compared to conventional microcomposites, due to their nanoscale size. Therefore, nanocomposites show innovative and reinforced properties compared to pure polymers or their conventional composites. These include improved mechanical, thermal, barrier, and flame retardancy, electrical and environmental properties [2]. Generally, properties of pure rubber are fails to fulfill the practical applications and hence addition of filler is very essential for enhancing the properties as well as introduction of new properties into rubber. Hence in recent years researchers around the world working on the development of rubber nanocomposites instead of rubber composites [3].

Currently, carbon black (CB) and silane-modified silica are the most commonly used reinforcing fillers in rubber composites because of their strong reinforcing effects. Other additives such as crosslinking agents, activators, antioxidants, heat stabilizers, dyes, pigments, plasticizers, oils, etc [4]. However, the production of CB is very energy consuming and is not sustainable. Also CB is petroleum in nature is the another disadvantage. Furthermore, for better reinforcement higher loading is needed, which may be reduce the processability of rubber components [5].

Bio based fibers extracted from some of the popular natural fiber plants and used as fillers for green composite preparation [6]. Recently, agricultural wastes and co-products have been majorly used to develop bio composites because of their inexpensiveness,

availability, and excellent performances [7]. Nowadays, rubber composites with hybrid nanofillers are also a hot topic for researchers. Because synthesized hybrid fillers show great synergistic reinforcement towards polymer compared to individual filler [8].



2. Carbon based nanofillers

There are various studies manifesting improvement in properties of polymers and their composites by adding carbon based nanofillers like carbon nanotubes, carbon Nano fibers, and nanographites [9]. Size and shape of nanofillers are major factors in polymeric composites reinforced with nanoparticles [10]. Moreover, the formation of free surface and interphase boundary between the polymer and filler results high aspect ratio and can contribute the improved interaction due to the presence of nanofillers in polymer matrix [11]. Carbon nanotubes (CNTs) and carbon nanofibers (CNFs) are the examples of those nanofillers with high aspect ratios [12]. Previous studies found that CB, CNTs, and GE had a great impact on the mechanical properties, electrical and thermal conductivity, and fatigue properties of rubber composites, due to the different topological structure of

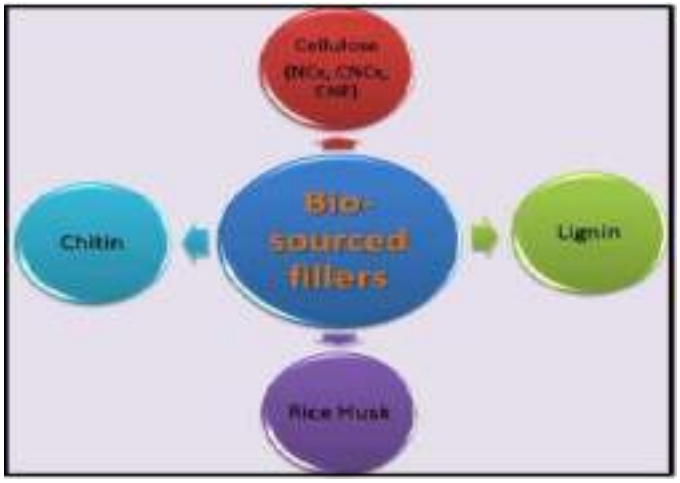
fillers [13]. Also the CB, CNTs, and GE all evidenced contribution on the gas barrier properties of rubber composites [14].

3. Hybrid nanofillers

The word “hybrid” is derived from the Greek–Latin word, which means mixing of more than one materials or composition. Many areas of research associated with chemistry, physics, materials science and biomedical penetrated the concept of “hybrid”.The development of hybrid organic–inorganic nanocomposites consisting of polymer matrix and a layered silicate has been studied [15]. Graphene oxide and halloysite nanotube as hybrid nanofillers shows much better reinforcement efficiency towards the mechanical properties of NBR than individual GO and HNT [16]. Also GO and nanoclay hybrid filler [17], silica hybrid nanofillers [18], SiO2 and ZnO hybrid Nanofiller [19] and some bio-based hybrid nanofillers are used as an reinforcing fillers to enhance the properties of rubber polymer.

4. Bio-sourced Nanofillers

Bio-sourced materials include all ranges of plant fibers, biomasses, and agricultural wastes such as rice husk, sugar beet, starch, sawdust, corn stalk, etc. Presently, natural fibers (NF) are the most widely investigated and accepted bio-source constituent for the preparation of bio composites. In order to reduce environmental pollution and global warming, there is increasing interest to replace CB and other inorganic mineral-based fillers in rubber materials with more sustainable bio-sourced fillers as an alternative. Biobased fillers including cellulose nanocrystals (CNC) or cellulose nanofibers (CNF), lignin, starch, eggshell, rice husk, soy protein, etc. have been studied as reinforcements in rubber composites [20]



4.1 Cellulose nanocrystals/nanofibers

Cellulose nanoparticles extracted from different sources and in different forms have been used in nanocomposites in combination with different polymer matrices. With time, research work on cellulose filled polymer composites has been studied significantly where cellulose has been used in various forms such as nanocrystals, microcrystals, nanofibrils, and whiskers. Cellulose nanocrystals (CNC) and cellulose nanofibers (CNF) are the most researched nanocellulose species as a filler for rubber biocomposites [21].

The main advantages of these CNCs over other nano-fillers are their renewability, abundance, low density, availability of reactive groups, low energy consumption during processing, etc. To boost tensile strength and produce better dispersion in the NR matrix, zinc-modified CNCs can be employed. Whereas oxidised NR latex compatible with CNC to attain enhanced tensile qualities, and maleated NR latex employed to get better surface compatibility with CNC [22].

4.2 Lignin

There has been huge focus on incorporating lignin as eco-friendly filler in various polymer nanocomposites production. Lignin can be extracted from lignocellulosic biomass in various ways, including soda pulping and Kraft processing. For lignin incorporation in NR latex, the approach of coagulation and roll milling has resulted in improved dispersibility and tensile mechanical properties. Plant cells are joined by lignin and hemicellulose, resulting in a composite with outstanding strength and elasticity [23].

4.3 Chitin

Chitin (Poly-[1 → 4]-β-N-acetyl-D-glucosamine), is a natural amino polysaccharide having abundant availability in earth crust as a marine biomass with good biodegradability, hydrophilicity and biocompatibility. Chitin is a long chain biopolymer that can be extracted from many sources like marine animals, microorganisms, and insects. Chitin nanoparticles like nanofibers and nanocrystals are chitin's 1D nanomaterials shows high specific surface area, crystallinity and modulus [24].

Additions of the chitin in rubbers, the resulting composites are possessed to have good strength in mechanical properties. Chitosan is one of the important biomaterials used for food and nutrition, waste water treatment, biomedical, textile, CO2 adsorption and drug delivery. Generally the chitosan can be produced by the deacetylation of chitin.

5. Application of bio-sourced nanocomposites

Performance and sustainability of the products are key factors in the development of bio composites for industrial use. As a result, there is an expanding trend in research that emphasizes the overall performance of natural fiber composites. The use of bio-based composites in industrial applications can be found in the

food packaging industry as well as in the automobile, building, cosmetics, aerospace, electrical, and electronics industries. The advantages of bio-based composites are their superior corrosion resistance, high strength to density ratio, and outstanding mechanical properties. Nevertheless, fiber reinforced composites have anisotropic behaviour, and the rate of loading as well as the environment may have an impact on their mechanical characteristics. The blockage of hydrophilic groups on CNC surfaces, which can lower water absorption and transport, is one application- specific advantage of surfactant addition. The hydrophilic character of negatively charged CNCs can work against this objective because reduced water vapour permeability (WVP) has been found to stop bacterial growth in packaging materials. Comparing biobased rubber composites to commercial NR compounds that contain CB and silica, we found that the crosslinking rate was higher and the apparent activation energy was lower. A partial substitution of CB with waste-derived materials was discovered to be able to decrease the power consumption during rubber processing while maintaining sufficient mechanical performance. It was discovered that adding various types of protein from bio sources with NR, it reduced the bulk viscosity and improved thermo-oxidative stability [25].

6. Conclusion

The use of sustainable and renewable biomass-based fillers, particularly agro-waste waste resources, in rubber composite applications is gaining popularity in line with global sustainable development. This chapter gave a thorough analysis of how fillers made from renewable and bioresources could be improved for use in rubber composite applications. Biofillers have a significant potential to replace or supplement the current petroleum- derived carbon black or the unwantedly high density mineral fillers in rubber composites with the proper processing, purification, and occasionally surface modifications. Developing high-performance

rubber biocomposites for practical applications continues to be inhibited by the biofillers thermal stability and their incompatibility with hydrophobic polymers and hydrophilic biofillers, respectively. To use biofillers in commercial rubber products, research is required on both hybrid filler systems and rubber composites based on biofiller. While ongoing research and development on various biofiller-reinforced rubber composites to support sustainable development, a streamlined and efficient green processing technology with high-quality products is required to shift the rubber industry's future towards a more sustainable development.

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ATMANIRBHAR BHARAT

DEVELOPING A SUSTAINABLE AND INCLUSIVE ECONOMY

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Atmanirbhar Bharat: Developing A Sustainable and Inclusive Economy

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CHAPTER 9

INTERNET OF THINGS: A NEW ERA WITHIN INDUSTRY FIELD

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ABSTRACT:

Internet is the Network of many computers. Computers, smart phones, tablets are connected with peoples by internet. Except that we also connect with that devices which are working on sensor point like alarm, guizer, fridge, electric bills, motorcycle, car and many things we use regularly in our life. What if all of these things could talk to each other or act in harmony with each other? We can say for this ***Internet of Things****. It is playing a vital role in a huge area of Industry development. This can increase the demand for hardware, software, coding, programming language. So, in such a situation, employment will be available but the right skill is required for the young generation who can get opportunity. Hence, the structure of Internet of Things is very expanding through modern technology and it will help in reforming human behavioral. Definitely it will becontributed in Indian Economy.*

Introduction

The Internet of Things consists of device connectivity, the appearance of physical objects, software-hardware attachment. Things means a combination of software, hardware, data and services. One important feature of IoT is sensor power which is always used in IoT Applications. With the help of internet connectivity we attached to many things like industrial motors, wearables like watch, vehicles, shoes, heart monitoring implants, biochip transponders, automobiles, food measuring etc.There is a huge opportunity to who having skill of computer in industry sector. Students must need to take education with coding, programing language with computer-based skill but need to maintain updating.Things that we do easily in today's daily life like bank transactions, movie theater bookings, food orders, goods purchasing or travel by GPS to any desired

place have become possible due to internet. Every transaction can made easily by internet.We can call this as Internet of Computers.Everything around us is going to be interconnected beyond our imagination.This is called Internet of Things.IoT is going to become an integral part of our life in future. Internet of Things means that things which are available around us in electronic form.For example:computer, mobile, watch, CCTV, car, Refrigerator, Washing Machine, A.C., Oven, Kitchen Apparatus, Water pump, T.V., Door Bell, Music System, Lights Fans etc's, Internet enabled electronic devices are easily available in the market.Various modern devices with internet facility are easily available in market.All these devices are going to have different sensors, software and electronic circuits to connect all the electronic devices with each other. With the help of sensor and electronic facility, the fridge can communicate with another object. We can control all objects with the help of internet through our mobile.Through this network one device can send information to another device. This study is focus on how the effect of internet of things can reach to the human behaviors.

Keywords- Internet, Human Behaviors, Human Creativity, Applications, Employment

Objectives of the Study: The study is very useful to young generation as point of their hidden skills. Hence the object in this study is taken for addressing the young people about availability of new corner of working skill in network world.

1. To determine the result of implementation of "Internet of Things".
2. To analysis the effect of such creativity on human behavioral.
3. To know the functions of "Internet of Things".
4. To search the limit of human capacity Vs "Internet of Things".

Area of Internet: Currently, the IT sector in India is booming.Meanwhile, the IT sector has provided employment in the economic development of the country by achieving a large development. IT sector provide many easiest applications for people which are suitable to operate their work. Many sectors are attached with IT sector and a huge area of economy is occupied with such different sectors like medical, education, cultural, agriculture, industrial etc.The internet has made it easy from small tasks to large tasks.Budgeting, reporting, all types of account preparation, presentation, messaging, transportation, travel, accommodation all the facilities provided by the IT sector made the work of the office faster and

physical world and information world.

3. **Heterogeneity-** The devices in the internet of things are heterogeneous constructed on different hardware platforms, applications and networks. They can coordinate with another devices or services platforms including different network.

4. **Dynamic changes-** A device's position is suddenly dynamic.Physical activity such as sleeping, walking, the process of connecting devices from location and motion

5. **Enormous scale-** The number of devices that need to be managed and that communicate with one another will be at least in an order of magnitude larger than the devices connected to the current internet. The management of created data and their construal for application objects will be more effective. This recounts to semantics of data, as well as resourceful data handling.

6. **Safety-**We need to stay safe in this world. IoT must be planned with security in mind. It can include the safety of our personal data and the safety of our physical devices also.Safeguarding the endpoints, the networks and the data affecting across all of it means making a safety paradigm in Internet of Things.

7. **Connectivity-**Connectivity enables network accessibility and compatibility. Approachability is found on a network while compatibility provides the common capability to utilize and create data. The intermittent connectivity is desirable in IoT as when device is no longer in use, the connection can be detached whereas the device needs to be connected when it wants to generate, transfer or receive data.

8. **Naming and Addressing-** Thenames and addresses of devices connected to IoT should be unique. The renovation and translation of addresses from a network to the another should take place resourcefully.

Scope of IoT a Think that can touch to the sky by providing a way like special things that is a device which can control things anywhere and can everyone control it.Likea A.C. room can automatically set the temperature as needed by the person in that room. If the bottle of soft drink in the fridge is low, the fridge will send a message to your mobile or automatically ask the regular shop for soft drinks. Without going to the hospital, the doctor can prescribe the medicine to patient on mobile.

Modernization of farm equipment will automatically turn on and off the water pump as needed by predicting the weather thetechnology of the internet of things will not have to come to us. Let's know some examples of internet of things industry.

1. **IoT in Automobile Industry-** Nowadays, internet is available in the dashboardof all cars.Henceforth the car can track its own mileage, speed, temperature, fuel etc.Being able to easily communicate with the outside world with control.Dashboard can give answer for how to reach at any place, do we have to wait for thatetc.A Dashboard can do all kinds of work of smart phones. like Dashboard can automatically deliver any kind of information to car owner or dashboard driver like voice of driver, road traffic, climate, storms etc.

IoT in Houses

All the devices in the house will be connected to a control monitor and will know and control temperature, humidity, smoke, pollution in the house. If an unknown person enters this 'Smart Homes', an alarm will sound immediately and the notification will be received on the home owner's mobile phone.TV and music system will help you play the same songs by recording your favorites channels and songs. The world-famous Philips company, which manufactures electrical appliances and lighting, is changing the light accordingly. 'Smart Mirror' is one such type. While looking in this mirror based on 'IoT' it will communicate with you and give information about today's date, wind, temperature, changing environment.

2. **IoT in Healthcare-** It will no longer require hospitalization of a patient to treat an ailment. Because the doctor will know condition of the patient by attaching the devices with various senses to the patient body at the patient home. ECG, Heart Rate, breathing rate, temperature, blood pressure and patient movements records will be automatically sent to the doctor.On this the doctor will prescribe the medicine online and if needed, the ambulance will be sent a message and it will go to the given address.It can be treated immediately

3. **IoT in Industry-** A worker can manage and operate the machine effectively even without being present at the work site.From raw material processing to finished goods processing, all components will be connected by IoT.Then the second production process starts from the information of how much goods have been sold and how much is left.That is, the supply will be as much as the demand.

4. **IoT in Communication-** The complete information about the delivery of the goods, remaining space in the godown, coordination of trucks and manpower, means of transport, parking, etc. will already be available on the mobile of the goods supplier.

5. **IoT in Sports-** Ralph Lauren is the first American clothing company for athletics that has installed sensors on the smart shirt, thereby connecting the athlete's heart rate, breathing rate, blood pressure, calorie burn, all information with an iPhone or Apple watch to improve the athlete's habit.

6. **IoT in Car, Agriculture, retailer, management, poultry, smart dust** in relation to the car, it can be said that if a car is coming in the opposite direction, the car driver will be informed about it and he will become alert.Government has added technology for agriculture.A special scheme has been implemented to get return on investment from it.From that, soil moisture, nutrients, proper use of water and determining the quantity of fertilizers have become convenient.

Limitations of IoT

Various applications of IoT have created a distinct niche in the industry sector.But these same applications have some drawbacks such as lack of personal security.Lack of security can be seen due to theft, problems in data usage.Your information cannot be kept secret unless there is privacy.It always needs approval.Difficulties arise when communicating data about the environment.As usual network connectivity issues occur.It has to be carried with power battery and electric connection where necessary.More cloud creates a problem.

Suggestions

As above given limitation, we have to need focus on the advantages of IoT not on its demerits. The matter of security is very important but many things can connect to us at anywhere whenever we want to use it for controlling a system.So, think about that. It provides a new employment. so be ready to capture its area.While moving towards the future, it is very important to keep in mind its disadvantages and move forward.Don't let technology overpower humans, it should be used to a certain extent.

Conclusions-

In the future, a different form will be seen in the industry.A new ray of employment will be seen in it.There will be a huge demand in the industry

for the youth who have knowledge of artificial intelligent and IoT in software, computer skills etc.For that, students need to think about commercial matters rather than giving 100 % behind their degree or higher education and competitive exams.If they learn coding programs, languages and computer skills, they can definitely set up their careers.It needs to be updated.

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people liked to do their work easily from home, the importance of internet increased and today internet is the need of all. PhonePe, PayTM, Google Pay, UPI, Banking Apps, Government Apps, E-Commerce Apps, Shopping Apps etc's are become easy to handy due to IT sector contribution. In FY 2022, the contribution of IT Sector in Indian GDP is 7.4%. Direct Employment in IT services is above 5 million and indirect employment is above 12 million.So, in services, IT sector primarily taking place as provider of employment.Social media also taking place for joining people at single platform.

Human Behavioral in digital platforms: Incorona pandemics, more than thousands of people where experienced internet facility depends on nature of work. From that period, people engaged with internet facility by making it platform for their work. People have understood the importance of internet since corona and most of the employees of companies are still completing their office work from home.It shows how convenient the internet has been made by the IT sector.Even in the field of education, by creating various apps through the Internet, the education of various arts could reach the masses.Now people are so used to internet that they don't feel comfortable working offline.It seems that the work of online official format has become more online.Various tasks related to the entire office through special App for Auditing, income tax, budget, meetings report, file maintenance etc. can done by IT sector. People can communicate, can listen songs, can call to any person, can operate business on mobile, can handle everything everywhere by network connectivity. Now we see in advertisement that Mahanayak Amitabh Bachchan played a role in advertisement of wifi inverter A.C. He can operate A.C. from a long distance by using mobile. He can control temperature and speed through his mobile. Many peoples are having such devices at their home in the form of Fan,T.V., Fridge etc. Peoples are ready for accepting this new concept. They can operate device from outside area.1

Characteristics of IoT- Commonly some characteristics of IoT are found out.

1. **Interconnectivity-** With the help of internet of things, every type of thing can connect with global information and communication infrastructures.

2. **Things related services-** Internet of Things can provide application about services within its criteria such as privacy protection and semantic consistency among physical things and their related virtual things.There will be a change can occur in between technology of

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SERVICE SECTOR : A MEDICINE FOR STRONGEST INDIAN ECONOMY

Dr. Rita R. Raut*

Abstract :

The service sector has taken the lead in many places in India.Agriculture and industry sectors are developing at a large rate while services are being developed.Generally service work is transferred from one person to another in an invisible form.Services are also in intangible, invisible and visible form. The development of industry sector, agriculture sector, education sector, trade sector and various sectors mainly depends on service sector. The progress of other service organizations depends on the availability and readiness of the service.So, in the current situation the service areas are expanding day by day and continuously. It mainly pushed and boosted capital development, employment Generation, proper utilization of human resources, increase in technology, customer satisfaction, economic and industrial development etc. It also helps in day-to-day life cycle. In 2021-22 total expenditure on medical fare is only 2.1% of GDP as compare to Japan or other countries. The highly contribution of Travel and Tourism industry in India by 178 billion dollars to Indian GDP. The total contribution of service sector in Indian GDP is 60%.In India, the expansion of the service sector has given a major boost to job creation.It has helped a lot in solving the problem of unemployment in the country. Services are also expanding due to current globalization.

Keywords : Service, Indian Economy, Start Up, Digital Platforms, Employment

Introduction

Services are not visible like goods. Service is the main part of any humanity and with the help of service factor, we maintain connectivity in society. In the modern era, the importance of marketing has increased and the role of the service sector is important in it.Along with goods, the demand for services has increased.But services cannot be measured like goods. Some services are not visible like medical services, entertainment service, travelling services etc. Service Sector is played an important role in developing economy

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of India. Service sector is wide area. It includes various contents like trade, hotel, transport, storage, communication, financing, business services, personal services etc. There is need of service of schools, hospitals, administrative and accountings for development of Indian Economy. Increase in service sector of India is a unique example of traditional model of development of Indian Economy. But it providing less employment.

Agriculture and production department still contain high employment. Start-up concept provide many new employments with grateful services. It proposes digital platforms to societies which give new inspiration to young generation. Service sector increases its importance after Corona Period. It is third source of earning in Indian Economy. Service sector includes all contents which are taken by people using time and knowledge for improvement in productivity, uses, capacity, possibility, durable etc. The object of this study is to provide awareness about employment providing sector i.e., service sector which is giving positive approach in young generation.

Objectives of Study :

India has tremendous structures nearby creativity in ability development content. India Government has started the "Digital India" notion overall India. Within this concept, many peoples were coming under service factor and the purpose of India Government providing the digital platform is self - employment.

On this basis, in this study the purpose is taken according to the need of employment at present date. Some Objectives are here-

1. To provide awareness within society about service sector in India.
2. To maintain Sustainable Development through service area.
3. To provide knowledge about role of service sector in employment.
4. To study the startup features about service sector

Research Methodology :

In this study, some data is taken from secondary sources like books, newspapers, periodicals, articles, websites etc. some data is primary type was usual by online survey. As well as it primarily be contingent upon exploratory in countryside. The study is based on quantitative and qualitative methods.

Review of Literature :

The aspect of FDI i.e., foreign direct investment in India service sector(a study of post liberalization) are analyzed by most of the scholars and researchers that are Dr. Arjun Singh Sirari and Mr. Narendra Singh Bohra.2011 examined the role of FDI in service sector.

Indian Economy and service sector: When the importance of online increased during the Corona period, online services were increased according to the needs of households.When the importance of online increased during the Corona period, online services were increased according to the needs of households.And the benefit of this is the increase in the number of unicorns that offer large-scale online services.Out of which a large number of employments were generated.It shows that the demand for service sector is more.More than 6 lakh jobs created by unicorns in India. It includes Ola, Big Basket, Paytm and so on.

The economy is depending upon three criteria which are agriculture, industrial and

service.Out of these the third sector is very helpful for creating employment and to boo
Indian economy by giving contribution in many fields like medical, tourism, leisure, e
In 2020-21, the gross value added at current price is 53.89% of total India's GA
Industry Sector contribute% as well as agriculture sector contributes 20.19% in GAV
gets highest range in country's Net National Product.As usual the agriculture sector
mostly contributed sector in Indian Economy.

The following table shows the sector wise GAV in India and their shares.

Table No.1.1 GAV in Indian Economy (2020-21)

Sr.No.	Sectors	GAV Rupees in Crore.	Shares in %
1	Public Administration, Defense and other services	2,761,996	15.42
2	Financial Real Estate and prof. services	3,950,786	22.05
3	Trades, hotels, transport, communication and services related to broadcasting	2,941,477	16.42
Total GAV at basic prices		**9,654,259**	**53.89%**

Source : Ministry of Statistics and Programme Implementation 2020-21

From above table, there is 53.89% in shares of Indian Economy.Financial Real Esta
and prof. services contribute 22.05% in it. Agriculture sector contributes 20.19% in GA
same as Industry Sector contributes 25.92% in GAV.

The contribution of service sector in Indian GDP is increased for continuously accordi
to many peoples. Foreigners are taking interest in Indian Service Facilities because
India has a big group of skilled worker, low charges and high education. Practically, it h
quality which is liked by people in other country. So, on this basis, many other countri
are started out sourcing in business services and in ITsector services.Due to this,servic
facilities have been providing a boosting power to Indian Economy and the result is show
in GDP growth.

FDI and Service Sector :

FDI increases job opportunities in country and help to create skill-based thing. It al
boosts Indian export system and encourage to international organization for entering
domestic market. In March 2021, FDI in insurance sector is increases from 49% to 7
FDI helps in reforming economy of many countries and it is very essential factor for growi
economic globalization. FDI means investing in a company in another country.RBI contro
FDI under FEMA.FDI inflow of foreign currency into India leads to creation of la
infrastructure in India, increase in productivity and in turn increase in employment.
service sector accounts for the largest share of foreign investment inflows to India.In t
first half of 2021-22, foreign direct investment of USD 16.73 billion has flowed into t
services sector."The Economic Survey report shows a significant increase in foreign dir
investment in financial, business, outsourcing, research and development, courie
technology testing and analysis and education sub-sectors.Currently ENCUBE
announced a new R&D Center of Excellence at Palava.

Trade in Service Sector :

Services are the backbone of the global economy, accounting for more than two-thirds of global GDP and attracting three-quarters of FDI. Globally, new job creation takes place on a large scale.Service trade has become very important.First sea trade was seen only then insurance trade increased.Service is mainly seen in it. Now the importance of IT sector is increases day by day. Specially in communication technology, services are popular by peoples. It brings new service pattern in society. That's why some companies are economically developed. It includes legal, engineering, professional services, computer services, telecommunication etc. GATTS provides special rules for service market which help to determine the status of transaction whether it is residents or non-residents. Basically the "the mode of supply" is known for the service provide on the basis of transactions between supplier and customer at territorial place which contracts about the trade services. India has a lion's share in exporting services globally. In 2020, India has taken place in First Ten's list in service exporter. In 2020, services are covered at 4.1% contribution in commercial services as compared to 2019 which was 3.4%. The Net export growth rate in 2021-22 is 22.8%.

In the year 2021-22, the IT sector will provide 5 million jobs in India and account for 51% of services exports. IT sector provide more than 290 M&As by focusing digital platforms. Industry and digital revenue contribute five times more than service sector in Indian economy by various new skills in employees.

Start-Up and Digital platforms :

Currently, start-ups have taken over the services marketing.The start-up helped the youth to find employment.Many service professionals have gained a foothold in the market.Many service professionals have gained a foothold in the market.Among the various ecosystems in India, startups are becoming important.Among the various ecosystems in India, startups are becoming important.The services sector has captured the market share in the Indian economy.The services sector has captured the market share in the Indian economy. Service base business growing fastest in India because it contributes in GDP growth, employment, trade, and in investment also. There is also major contribution of E-Commerce in pie. By Morgan Stanley study says in 2020 that the business of E-Commerce market has been increases from $ 102 billion to $ 119 billion. Many start-ups in India having advantages because of service based businesses.There are some reasons for successful a start-up project like low capital cost, faster to launch, lower business risk, flexibility and adaptability etc. There is some successful service-based startups in India are Zomato, Practo, Rentomojo etc.Zomata is working for search a particular restaurant by online and provide choices for taking decision within 1 million options in 23 countries. This service is launched in 2008 by providing service to 3,31,200 restaurants in 19 countries.Practo is known for health tech company with more than 1 lakhs doctors and more than 20 million patients across the worlds. Rentomojo is providing online rental facility for furniture.

Service Sector and Sustainable Development :

Sustainable development is achieved by managing the natural processes of things. Business of services in it is certainly a pollution-free matter. Big factories have to be set up

for the production of goods and this leads to destruction of the structure of nature. Servi businesses can avoid these side effects. Service marketing plays its role after the goods a manufactured.Services include travel, hoteling, medical as well as religious and soc culture. It receives a large amount of foreign investment. Service sector is based on onli mode also. Hence it similar to digital economy. Service can reach everywhere by fro online to offline way.so, each and every person can get the benefits of any products at an place. ITU's contributed in 17 SDGs goals. It also taking place in service area. Servi Area provide a huge number of services which are paperless also. So, day by day th importance of service sector is increases though various platforms which are helpful f growth in digital economy.

Conclusion

The service sector plays an important role in developing Indian Economy as well a digital economy. It helpful in creating digital jobs, pollution free environment, increas FDI. It also helpful in maintaining sustainability. IT sector and Banking Sector are providi best services to peoples by many securing applications. Due to service sector, from urba to rural area all type of peoples can involve and make themselves economically stron One thing is it difficult in requirement of skill which are not properly gathered. Vision o people need to be change for implementation of the sector.

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SERVICE SECTOR : A MEDICINE FOR STRONGEST INDIAN ECONOMY

○ Dr. Rita R. Raut*

Abstract :

The service sector has taken the lead in many places in India.Agriculture and industry sectors are developing at a large rate while services are being developed.Generally service work is transferred from one person to another in an invisible form.Services are also in intangible, invisible and visible form. The development of industry sector, agriculture sector, education sector, trade sector and various sectors mainly depends on service sector. The progress of other service organizations depends on the availability and readiness of the service.So, in the current situation the service areas are expanding day by day and continuously. It mainly pushed and boosted capital development, employment Generation, proper utilization of human resources, increase in technology, customer satisfaction, economic and industrial development etc. It also helps in day-to-day life cycle. In 2021-22, total expenditure on medical fare is only 2.1% of GDP as compare to Japan or other countries. The highly contribution of Travel and Tourism industry in India by 178 billion dollars to Indian GDP. The total contribution of service sector in Indian GDP is 60%.In India, the expansion of the service sector has given a major boost to job creation.It has helped a lot in solving the problem of unemployment in the country. Services are also expanding due to current globalization.

Keywords : Service, Indian Economy, Start Up, Digital Platforms, Employment

Introduction

Services are not visible like goods. Service is the main part of any humanity and with the help of service factor, we maintain connectivity in society. In the modern era, the importance of marketing has increased and the role of the service sector is important in it.Along with goods, the demand for services has increased.But services cannot be measured like goods. Some services are not visible like medical services, entertainment service, travelling services etc. Service Sector is played an important role in developing economy

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Recent Trends in the Basic Science

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PREFACE

The present book focuses on the development of theories and applications, and also promotes interdisciplinary endeavour among Basic Science.

The present volume is based on contributions made by various authors on the topics of their interest about " Recent Trends in the Basic Science" and introduces the subject along with the following topics: FIRST PRINCIPLES CALCULATIONS ON THE OPTICAL PROPERTIES OF AAA STACKED TRILAYER SILICENE,
GRADED RESPONSE ACTION PLAN (GRAP), DESIGN AND DEVELOPMENT OF COLPITTS OSCILLATOR USING NMOS TRANSISTOR IN THE FORM OF NANO TECHNOLOGY AND SOME AUDIO FREQUENCY RANGE, TIME SERIES ANALYSIS OF ATMOSPHERIC TEMPERATURE USING ARIMA MODEL, BLACK HOLES AND ITS DYNAMICAL CHARACTERISTICS, AN INNOVATIVE CIRCUIT TO DESIGN A LOW POWER CONSUMPTIONS HIGH SPEED CLASS -A AMPLIFIER, NITROGEN CONTAINING POTENT HETEROCYCLES: AN OVERVIEW, AIR QUALITY AND UNDERSTANDING THEIR ROLE IN ADVERSE HEALTH AND ENVIRONMENTS, A NEW REVERSIBLE 10*10 GATE AND ITS APPLICATION, ANALYSIS OF INDUSTRIAL PROSPECTS AND AVENUES EMPLOYING INTERACTIONS OF BIOPOLYMERS AND IONIC LIQUIDS, AN APPROACH ON NETWORK SECURITY WITH CRYPTOGRAPHY, A PRACTICAL APPROACH TOWARDS DETECTION OF FACE MASKS IN PUBLIC SECTOR.
So, the purpose of this book is to gather into one volume many of the topics.

We must place on record our sincere gratitude to the authors for their endless efforts in order to help the reader to build a high-quality book chapter.

We must place on record our sincere gratitude to the authors not only for their effort in preparing the papers for the present form, but also their patience in waiting to see their work in print. Finally, we are also thankful to our publishers for taking all the efforts in bringing out this volume in short span time.

Editor

Contents

Chapter 8

AIR QUALITY AND UNDERSTANDING THEIR ROLE IN ADVERSE HEALTH AND ENVIRONMENTS

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Abstract

Pollution is introduction of harmful substance or product into the environment. Air pollution is one of the biggest trends for the environment and effect everyone human being, plants, animals and aquatic ecosystem. Air pollution effect on global climate change due to increases of Co2 and other greenhouse gasses. Polluted air in atmosphere such as Sulphur dioxide and nitrogen oxide particles in the air can create acid rain. Recently in India as due to rapid growth of industrialization, over population, vehicle emission and urbanisation, Air quality index (AQI) of most of the major cities has been rapidly increases and it becomes going to most hazardous situations. There are many pollutants that are major factors of disease in humans, Air pollution is one of them that causes major public issues such causing respiratory and cardiovascular diseases, asthma, bronchiolitis, cardiovascular events, central nervous system dysfunctions, cutaneous disease, reproductive, and lung cancer. Recent studies we have provided estimates of this environmental effect and effect on human health through correlations of air quality.

Keywords: **Air pollution, environment, greenhouse gasses, climate change, air quality index, respiratory diseases.**

Introduction

Now a day's human activities have an adverse effect on the environment by the air we breathe, polluting the water we drink and the soil in which plants grow. At the present day's air pollution is a major public issue. So, question is arising that, what means air pollution? Air is contamination of many chemical, biological and physical agents which contaminate or pollute the air are called air pollution. It is the world largest environmental health risk which is leading to the millions of death risk. In our earth atmosphere is consist of many particles and gasses such as Nitrogen 78 percent, Oxygen 21 percent, Argon 0.93 percent, Carbon dioxide — 0.04 percent (appro) and amounts of neon, helium, methane, krypton and hydrogen, as well as water vapour. Most of these gasses are not visible for our naked eye. an atmospheric gas, these gasses are polluted when they emitted by cars, power plants, industrial boilers, refineries, and other sources chemically react in the presence of sunlight. Toxious gases, which are include carbon dioxide, carbon monoxide, nitrogen oxides (NOx), and sulfur oxides (SOx), are components of motor vehicle emissions and by-products of industrial processes. It is now generally recognized that exposure to outdoor air pollution pays to a broad array of acute and chronic health effects, ranging from minor physiological effects to death from respiratory and cardiovascular syndrome. It is also recognized that the effects on human health are large and widespread [1]. Air pollution are from the combination of both unfavourable weather and high emissions. Air quality executes to protect public health through emission controls. The resulting developments in air quality may be controlled by changes in weather statistics, i.e., changes in climate [2] Air pollution hazards are normally enumerated for ambient household air pollution, particulate matter pollution and to a smaller extent tropospheric ozone. The main sources of ambient particulate matter pollution in India are residential and commercial biomass burning, industrial emissions, agricultural stubble burning,

waste burning windblown mineral dust, coal burning for energy generation, construction activities, brick kilns, transport vehicles, and diesel generators [3]. There are two types of air pollution one is the outdoor air pollution and other is indoor air pollution but according to The World Health Organization (WHO) reports on six major air pollutants, namely particle pollution, ground-level ozone, carbon monoxide, sulphur oxides, nitrogen oxides, and lead. Air pollution can have a disastrous effect on all components of the environment, including groundwater, soil, and air [4]. Vehicle emissions, fuel oils and natural gas to heat homes, by-products of manufacturing and power generation, particularly coal-fuel power plants, and fumes from chemical production are the primary sources of human-made air pollution. Nature releases hazardous substances into the air, such as smoke from wildfires, which are often caused by people; ash and gases from volcanic eruptions; and gases, like methane, which are emitted from decomposing organic matter in soils.

Traffic-Related Air Pollution (TRAP) from motor vehicle emissions, may be the most recognizable form of air pollution. It contains most of the elements of human-made air pollution: ground-level ozone, various forms of carbon, nitrogen oxides, sulphur oxides, volatile organic compounds, polycyclic aromatic hydrocarbons, and fine particulate Matter. Toxious gasses, which include carbon dioxide, carbon monoxide, nitrogen oxides (NOx), and sulphur oxides (SOx), are components of motor vehicle emissions and by products of industrial processes. Particulate matter (PM) is composed of chemicals such as sulphates, nitrates, carbon, or mineral dusts. Vehicle and industrial emissions from fossil fuel combustion, cigarette smoke, and burning organic matter, such as wildfires, all contain PM. A subset of PM, fine particulate matter (PM 2.5) is 30 times thinner than a human hair. It can be inhaled deeply into lung tissue and contribute to serious health problems. PM 2.5 accounts for most health effects due to air pollution in the U.S. Volatile organic compounds (VOC) vaporize at or near room temperature—hence, the designation volatile. They are called organic because they contain carbon. VOCs are given off by paints, cleaning supplies, pesticides, some furnishings, and even craft materials like glue. Gasoline and natural gas are major sources of VOCs, which are released during combustion.

Impact on Human Health

In phrases of health hazards, every unusual suspended material withinside the air, which causes problems in regular function of the human organs, is described as air toxicants. According to available data, the primary toxic results of exposure to air pollutants are especially at the respiratory, cardiovascular, ophthalmologic, dermatologic, neuropsychiatric, hematologic, immunologic, and reproductive systems. However, the molecular and cell toxicity can also result in loads of cancers withinside the long term [5]. Even small quantity of air toxicants is proven to be risky for susceptible groups including youngsters and elderly human beings in addition to sufferers suffering from respiratory and cardiovascular diseases [6].

Respiratory disorders

Although the bronchopulmonary tract has more than one protective mechanisms, together with mucosal cilia and air-blood barrier, air pollution are able to build up in or pass via lung tissues depending on the dimensions and chemical nature of pollutants[7]. Negative health effects of air pollutants have been shown on multiple respiratory diseases, including respiratory infections asthma, chronic obstructive pulmonary disease, lung cancer, even in combination with stroke and heart diseases We briefly outline these direct negative effects of air pollutants on major respiratory diseases as below.

Respiratory infections

Air pollution enhances the severity of respiratory infections, especially in youngsters. Especially, outdoor pollutants in big cities is related to a excessive burden of numerous acute respiratory infections, which collectively are accountable for almost a third of all deaths in youngsters below five years old [8]. However, indoor pollution contributes to excessive rates of chronic bronchitis of non-smoker cooking mothers in hilly areas of Nepal [9], suggesting that indoor pollutants is possibly greater related to breathing infections in growing international locations and rural areas. The destructive effect of air pollution may be highlighted mainly in people with pre-current lung infections or other lung diseases, due to the fact they may be possibly at more risk, and additionally in youngsters, probably due to the fact youngsters have a relatively large lung floor region and greater outside bodily sports with a more threat to show to air pollutants.

Asthma and COPD

Ambient air pollution will increase the chance of respiratory mortality, however evidence for influences on lung function and obstructive lung disease is less well established. Recent research and reviews have reported suggestive proof linking outdoor air pollution and lung function and chronic obstructive pulmonary ailment (COPD) [10]. Emergency visits for asthma are mostly related to the exacerbation effect of environmental exposure. Both major outdoor and indoor pollutants, including O3, CO, NO2, SO2, PM10, PM2.5, dust mite, pollen, pet dander, and smoke, contribute to more severe allergic responses. Specifically, allergic immunoglobulin E (IgE) responses to pollen or ovalbumin can be triggered by diesel exhaust particles (DEP) exposure[11] and airway responsiveness in asthmatic patients with house dust mite challenge can be potentiated by short-term exposure to nitrogen oxides. Similarly, long-term exposure to indoor air pollution from second-hand cigarette smoke and biomass fuel is able to induce chronic inflammation that contributes to COPD, while exposure to PMs is linked to the acute exacerbation-related hospitalization of COPD patients. Overall, more epidemiological associations have been reported to link the exposure to air pollutants with the development of asthmatic and chronic inflammation [12].

Lung cancers

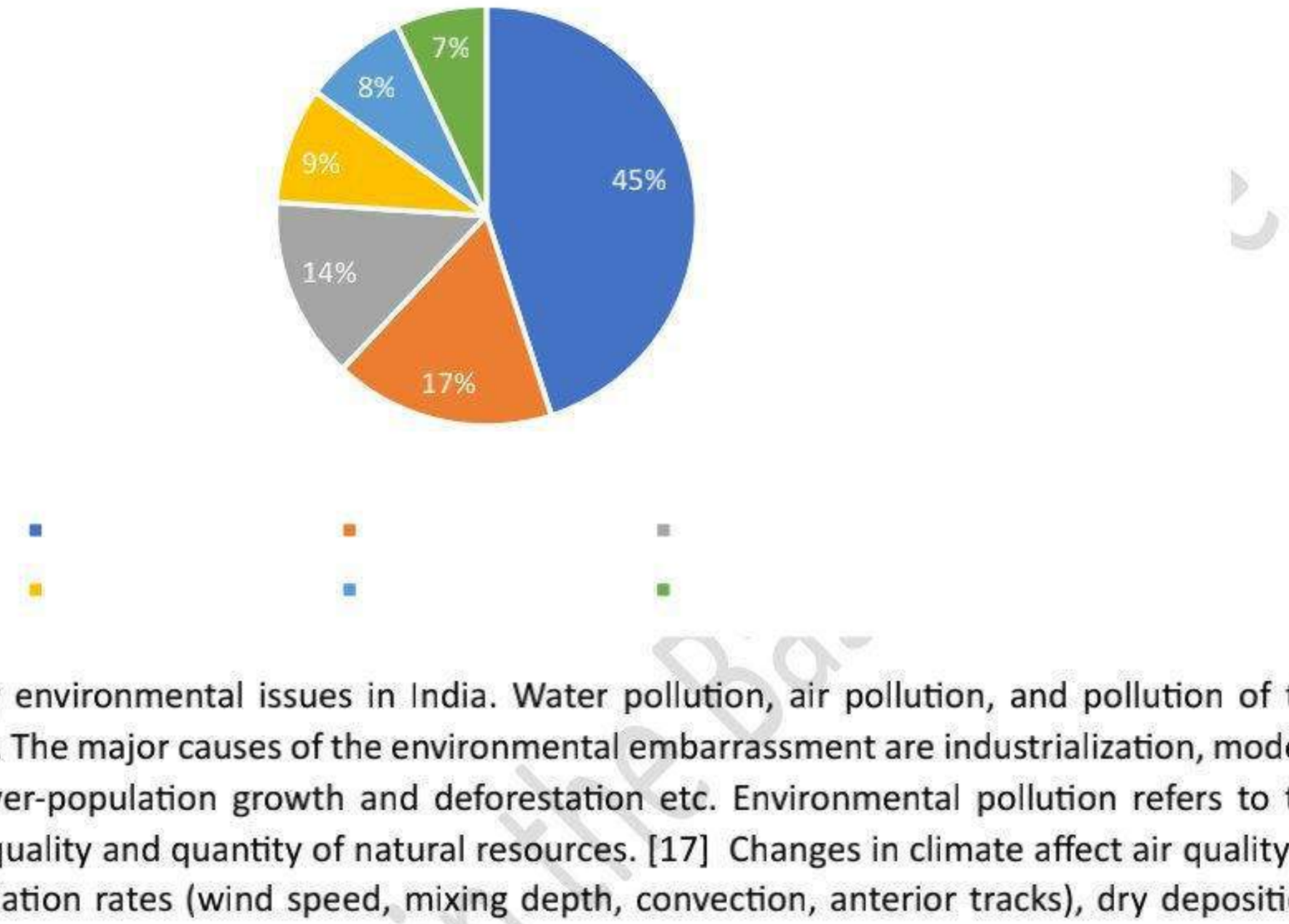
Epidemiological studies have clearly demonstrated that air pollution is associated with lung cancer incidence and mortality[13]. Lung cancer is the primary killer of all cancer death globally, lung cancer in non-smokers if taken into consideration as a separate entity, might be ranked the 7th maximum lethal most cancers, inflicting an estimation of 200,000 lung cancer deaths globally. Despite robust epidemiological evidence linking air pollutants with lung cancers, even in non-smoking subjects, there are limited studies elucidating the molecular mechanism of carcinogenesis in air pollutants-associated lung cancer[14]. The most important purpose for the gradual developing frame of proof in this discipline is because of the more than one demanding situation confronted in air pollutants research. To elucidate the gene/molecular interplay in air pollutants associated lung most cancers, it's far crucial to understand each the bodily and environmental factors of air pollutants.

Air Quality Index Levels of Health Concern	Numerical Values	Effect
Good	0 to 50	Air quality is considered satisfactory and air pollution possess little or no risk
Moderate	51 to 100	Air quality is acceptable however for some pollutant there may be a moderate health concern for very small number of people who are unusually sensitive to air pollution
Unhealthy for Sensitive groups	101 to 150	Member of sensitive groups may experience health effect. The general public is not likely to be affected
Unhealthy	151 to 200	Everyone may begin to experience health effects: Member of sensitive groups may experience more serious health effect
Very Unhealthy	201 to 300	Health warning of emergency conditions. The entire population is more likely to be affected
Hazardous	301 to 500	Health alert: Everyone may experience more serious health effects

Fig Air quality index ©source by Understanding the air pollution respiratory health association. https://www.google.com/search?q=effects+of+air+quality+on+environment&rlz)

Every adult male will breathe on average 15 m^3 (approx. 15kg) of air in every day. Yet those invisible gases, from ground level ozone to particulates, often cause enormous health problems when they enter our more sensitive systems, such as the lungs or eyes. In fact, air pollution is directly responsible for the death of over 7 million people each year, and approximately 90% of the world's population is exposed to air pollution at some point. Carbon monoxide (CO) has a significant effect on hospitalizations for asthma among children ages 1–18, while none of the pollutants considered has a clear impact on hospitalizations for infants. Multiple cardiovascular effects have been observed after exposure to air pollutants Changes occurred in blood cells after long-term exposure may affect cardiac functionality also Neurological effects have been observed in adults and children[15] after Approximately 5 million children in the United States have asthma. It is the leading specific reason for school absence and the most frequent cause of paediatric emergency room use and hospital admission [16] . In developing countries, the women of the household seem to transmit the highest risk for disease development due to their longer duration exposure to the indoor air pollution[15]

Effect on environment



There are many environmental issues in India. Water pollution, air pollution, and pollution of the natural territory. The major causes of the environmental embarrassment are industrialization, modern urbanization, over-population growth and deforestation etc. Environmental pollution refers to the degradation of quality and quantity of natural resources. [17] Changes in climate affect air quality by disturbing ventilation rates (wind speed, mixing depth, convection, anterior tracks), dry deposition, snow hunting , chemical production and loss rates, natural emissions, and related concentrations [18] Maximum of the e-waste in India is recycled in unauthorized workshops that execute operations such as irreplaceable metals recovery and the removal of repairable parts in whatever ways are fastest and easiest, irrespective of environmental considerations. A number of investigations have suggested that the natural environment (soil, air, water, plants, etc.) is contaminated by contact to the toxic substances released at these workshop sites [19] To quantify the impacts of climate and air pollution trends on Indian agricultural production, we constructed a dataset of rice and wheat yields, surface air temperature, precipitation, and aerosol and ozone precursor emissions for major Indian wheat- and rice-producing states from 1980 to 2010[20] Acid rain is rainwater containing harmful amounts of sulphuric and nitric acids. These acids are formed primarily by sulphur and nitrogen oxides and released into the atmosphere when fossil fuels are burned Toxic pollutants in the air, or deposited on soils or surface waters, can impact wildlife in a number of ways. Like humans, animals can experience health problems if they are exposed to sufficient concentrations of air toxics over time[21].

At the world-wide level, the speedy growth in motor vehicle activity has serious energy security and climate change effects. Transport already consumes nearly half of the world oil. Energy consumption and carbon dioxide emissions due to transport raised by about a third in just one decade since the 1990 [22]

Conclusion

This paper presents an assessment of available information on vulnerability and ambient air pollution using the risk framework. Individuals and population groups can be differentially vulnerable to the health effects of air pollution due to differences in biological characteristics, time spent on daily activities, and/or social–economic conditions. These inspect of air pollution provide solid evidence that air pollution is significantly associated with mortality and morbidity, provide clues to possible mechanisms and interactions with infections, and confirm that reducing air pollution can improve public health

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Prof. R.K. Shukla is Professor in Department of Physics at University of Lucknow, Lucknow. He has published more than 200 research paper in prestigious international journals. His research interests focus on Free Electron Laser, Fibre Optics Sensors and Material Science. He has supervised several Ph.D. Thesis in the field of Material Science and Sensors. Prof. Shukla has earlier authored several books like Mechanics, Optics, Quantum Mechanics, fibre Optics, Practical Physics etc. Prof. Shukla has two Patents on Refractometer Sensor to his credit. He has established thin and thick films laboratory in his department. He also participated and delivered his talk in number National and International Conferences. He has successfully completed major research Projects funded by DST, Govt. of India and UGC, New Delhi.

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Role of Solar Energy for Sustainable Development

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Abstract

Sustainable development is that which beat the need of present without compromising the ability of future generation to meet their own needs. With the help of such a development we reduced the pollution and make eco-friendly environments. In the World most of electricity generated with the help of coal and natural gas. These resources are limited and create more air pollution which effect on human and environmental ecosystem and produces greenhouse gas emission.so now days it is very essential need to find out clean, environment friendly and pollution free energy resources. Solar energy is one of them. Solar energy is very prominent source for generation of electricity. Solar energy is clean source of energy it is pollution free and eco-friendly. In the paper written about, what is solar energy, how solar panel work and there mechanism. also discussing about role of solar energy for sustainable development.

Key words: - Sustainable development, environmental, eco-friendly, greenhouse gas emission, solar energy

Introduction

Sustainable development is the way of organizing society so that it can exist in the long term. There are manly three pillar of sustainability first one is economic then environmental and social. Such a development is future centric. Example of sustainable development is renewable energy resources it is very useful energy that is collected from natural resources.it is most effective in the long term. Examples renewable resources are sunlight, wind, rain, tides, waves, biomass plants, solar cooker, and geothermal heat. Such a renewable energy creates 5 times more effective than fossil fuels, such a energy generating energy that produces no greenhouse gas emission from fossil fuels and reduces some types of air pollutions and creating economic development and jobs in installation, manufacturing and lots more. Energy is an essential need for the existence and growth of human communities. Consequently, the need for energy has increased gradually as human civilization has progressed.(Maka & Alabid, 2022) The increasing environmental disturb is about the contribution of coal-fired power generation to air emissions, mainly due to the poor quality of Indian coal with an average ash content of 40% or more. Studies have shown that power sector contributes about 40% of the total carbon emissions.(Mallah & Bansal, 2010) Progress in energy use and emissions is expected to be principally noticeable in some sectors. The sectorial contributors to progress in energy consumption are expected to be power generation (35%), industry (15%), transport (12%) and buildings (6%) in developing countries, followed by power generation (11%) and transport (8%) in OECD countries (Kaygusuz, 2012) Additionally environmental pollution as well as global warming or climate change that caused by the resources of conventional energy can be counted as the most significant issue in the world which all are the main reasons to find a suitable alternative energy source(Mekhilef, Faramarzi, Saidur, & Salam, 2013) One of the most important factors of today's global energy production system are Greenhouse gas emissions from power plants around the world which are considered to be one of the main factors leading to climate change.(Karakosta, Pappa, Marinakis, & Psarras, 2013). Most of the scientists predict that if atmospheric concentrations of greenhouse gases continue to increase, as present trends in fossil fuel consumption suggest will occur, the earth's temperature may increase in the next century by another 2°C and perhaps by as much as 4°C.(Dincer, 2000) Eighty-five per cent of the world's commercial primary energy is supplied by fossil fuels. Conventional (renewable) hydro, nuclear and new renewables provide the rest as depicted. In the last few years, renewable energy technologies in India have been promoted through R&D, demonstration projects, dissemination projects/programmes supported by government subsidies and fiscal incentives(Naidu, 1996)

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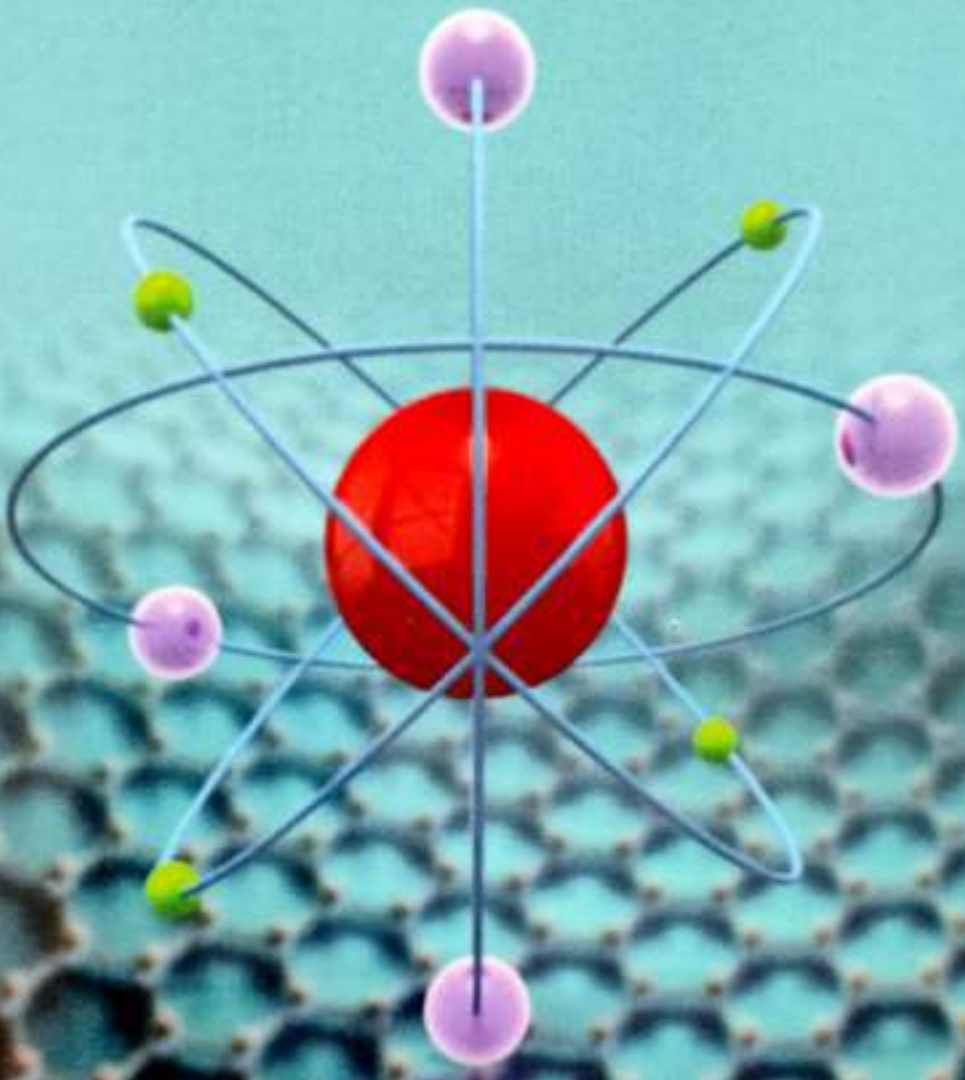

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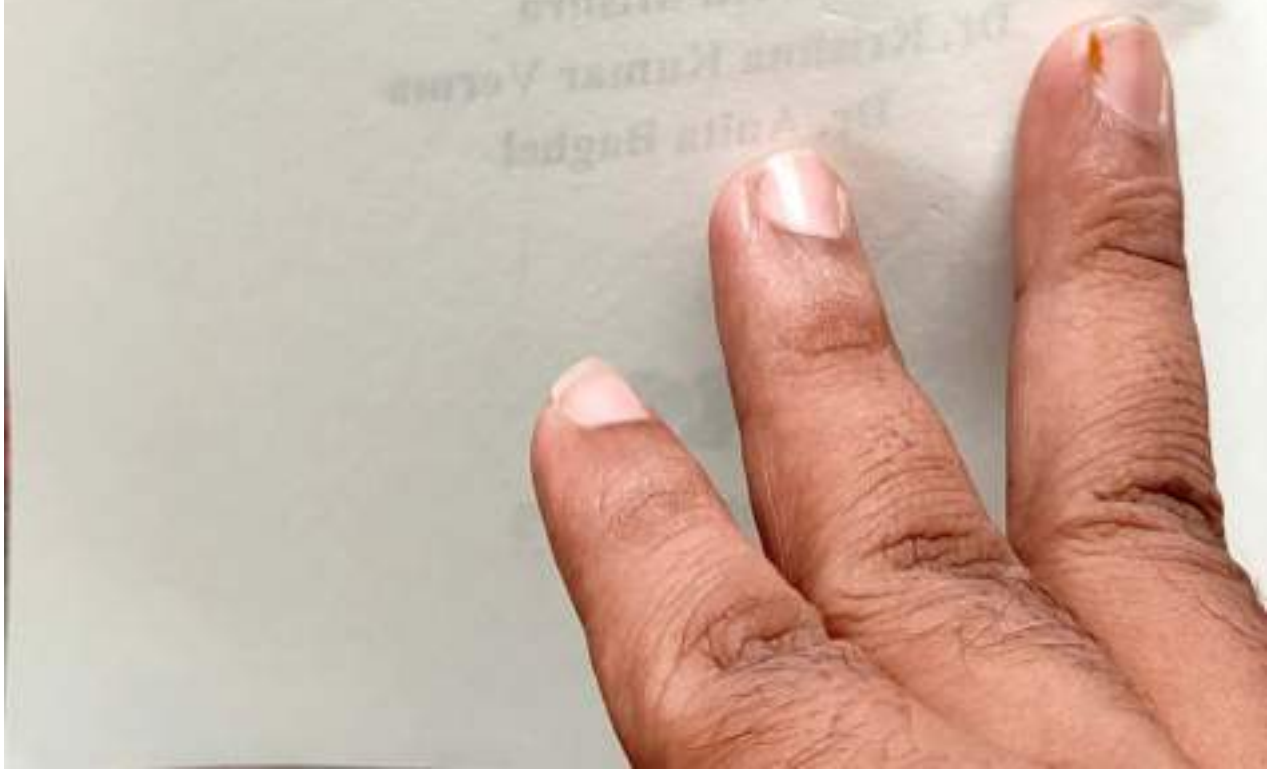

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Graphene; The Miracale Nanocarbon Material

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ABSTRACT

Graphene is an amazing material yet it was only discovered in 2004.graphene is a single thin layer of graphite, it is a soft flashy material used in pencil lead. Atom are arranged in a hexagonal arrangement, it is just a one atom thick and first 2-Dimmensional material ever discovered .it is one of the thinnest materials and it was hundred times stronger than an equivalent weight of steel, it is an flexible as rubber and could stretch to 12% of its length. It is the hardest material even than diamond. Graphene takes on some miraculous properties such as high electrical, optical, and thermal properties, but the two-dimensional atomic sheet structure of graphene assists more diverse electronic characteristics. This material carries electricity more quickly, more precisely and more efficiently than any other known materials.it much better than silicon. Graphene due to its high electron mobility, mechanical/thermal stability, high surface area volume and capacitance, has been utilized in various applications. Graphene acts as a material for the future application of water purification, super capacitors, gas sensor and as a composite in antibacterial activity, solar cells and coatings. This paper discus about various characteristics and properties of graphene and discus their multifunctional applicability.

Key words:- Graphene, graphite, 2- Dimensional material, electronic characteristics, high surface to volume ratio

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Dr. Krishna Kumar Verma
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Layered Double Hydroxide-Multi functional Nanomaterials to remove Heavy metals.

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Abstract

Layered double hydroxide are multipurpose and growing class of two dimensional inorganic layered Nanomaterials, also known as hydrotalcite like compounds are well known for their strange character including modifiable composition, simple synthesis procedures, stability, large surface area, and formation of various nanocomposites that conferred LDH's significant adsorptive capability towards elimination of heavy metals (pollutant) from environment. The High-valence heavy metals with high ecotoxicity are generally found in water in the form of anions, and this increases heavy metal pollution intensity and treatment difficulty. Sorption by layered double hydroxides Nanomaterials (LDHs) and precipitation in alkaline media are two of the main remediation techniques for remove these heavy metals. This chapter focused on different technique use for synthesis of layered double hydroxide, Various LDH Nanomaterials to removal of heavy metals ion from environment, we discussing the adsorption mechanism of LDHs on heavy metal anions, as well as the current state of research and future directions for microscopic interaction mechanisms.

Keywords:- Hydrotalcite, Nanomaterials, Heavy metals, Adsorption.

Introduction:- Water is one of the utmost fundamental natural sources in the world, that is important for the survival of all residing beings and the progress of humans. Along with the increase of rate of industrialization and urbanization, the consumption of water is increasing quickly and water shortage crisis has grow up to be an significant restriction for financial improvement. Meanwhile, water pollution, in particular heavy metals pollution inside water, has appear as a universal environmental crisis. Heavy metals will be on the rampage into water in particular in the mining, electroplating, metallurgy, chemical flowers, agriculture and household wastewater etc. Heavy metals such as Hg, Zn, Cu, Pb, and so on. May want to pretense a too much hazard to human's health due to the fact they may be combined biologically within the food chain. As an example, heavy metals must to cause damage to the kidneys, mental and vital frightened functions, lungs, and other organs (Azimi *et al.,* 2017). in addition, heavy metals also can make use of harmful results on the surroundings and other ecological receptors, as they can't be degraded by means of microorganisms once they're launched into the environment, on the converse, they may meet on all sides of thru the food chain. Heavy metals are absolutely poisonous, the majority of that are to be carcinogenic (Sall *et al.,* 2020). So, the elimination of heavy metals from water is of incredible importance and has drawn most attention. So far, many technology had been evolved to preparation this problem, such as chemical precipitation, ion exchange, adsorption, membrane filtration, electrochemical remedy and so on (Shrestha *et al.,* 2021). Adsorption is one of the most significantly used techniques since of its low cost and easy process. In current years, Layered double hydroxide nanomaterials have also proven their advantage in removal of off hazardous materials from the environment due to their huge/tunable porosity, pore capacity, and numerous pore structure and so forth(Rojas, 2014). These days, nanomaterials have also furnished a promising approach to

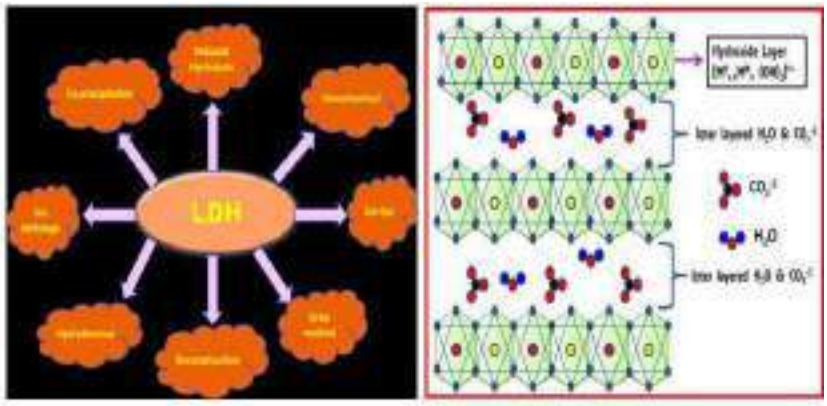
eliminating heavy metals from wastewater. Since long time , Nanomaterials have received practically a few attention. many nanomaterials were exploited in many fields, together with electron gadgets, health care, strength, and so on(Yang *et al.,* 2019). The past decades have also witnessed the growing applications of nanomaterials in the environmental safety area. In standard, nanomaterials are substances whose outside size are within the nanoscale (commonly 1–100 nm) or the ones who have a nanoscale inner structure. Under the nanoscale, nanomaterials normally show a few unique properties, which includes a surface effect, small size effect, quantum effect, and macro quantum tunnel effect(Murty *et al.,* 2013).

These characteristics giving to their reactivity and adsorption capacity and reactivity, each of which might be favorable for the elimination of heavy metal ions. Up to now, high-quality research on nanomaterials have been done to analyze their application on heavy water process and that they have exhibited fantastic ability as a promising opportunity to adsorbing heavy metals from wastewater (Wang, 2012).

Layered double hydroxides is hydrotalcite like materials are a group of layered material with a common formula of $[(M^{II})1_{-x}(M^{III})_x\ (OH)_2]^{x+}(A^{m-}{}_{x/m})\bullet nH_2O]$ and a structural arrangement as shown in following figure. The layer contain divalent (M^{II}) and trivalent (MIII) metal ions and the interlayer area is occupied with charge-balancing anions. Divalent metal ions are often Ca^{2+}, Mg^{2+}, Fe^{2+}, Co^{2+}, Mn^{2+}, Ni^{2+}, Cu^{2+}, or Zn^{2+}. Trivalent metal ions are usually Al^{3+}, Fe^{3+}, Co^{3+}, and Ni^{3+}.The anions, such as $CO_3{}^{2-}$,NO_3-, and Cl^-, in the interlayer galleries can be readily replaced (Forano *et al.,* 2006).

Synthesis of Layered double hydroxide:-

Co-precipitation method



In co-precipitation method, LDHs are prepared by the adding up of two solutions, one containing metal salts of M^{2+} and M^{3+}; and one more containing base, such as NaOH,Na_2CO_3, NH_4OH and so on. In this method, firstly metal hydroxides are produced and further addition of base results in the change of metal hydroxides into LDH during precipitation mechanism. In co-precipitation method, pH is an important factor as it remarkable affects the structural and chemical properties of the LDH phases. throughout the addition, the pH of the solution mixture is kept at constant in the range of 8–10 in order to reach high chemical homogeneity in LDH. The constant pH is maintained by the concurrent addition of a base solution to the reaction mixture. The final solution mixture is allowed for aging for a long period of time to get a material of very well crystallized structure. The obtained solid precipitate is collected by filtration, washed thoroughly with deionized water and dried for the night (Theiss *et al.,* 2016).

Sonochemical method

In this method, LDHs are prepared by co-precipitation technique followed by sonochemical treatment. In first step, two solutions containing M^{2+} and M^{3+} metal salts are mixed gradually

with another solution containing base. throughout the mixing, the pH of the solution mixture is maintained at constant in the range of 8–10 depending on the character of the metal ions. later than completion of addition, the resultant solution is exposed to ultrasound irradiation at a fixed time and temperature. The solid precipitate is filtered, washed carefully with deionized water and dried out in oven overnight. This method helps in increasing the crystallinity of LDH phases.

The observable fact of sonochemical method is based on the acoustic cavitations. When the solution mixture is exposed to ultrasonic irradiation, speedy movement of the fluid leads to cavitations in which microbubbles are formed and collapsed. This oscillating microbubbles construct unique hot spot arises due to the compressional heating from breaking up of bubble and thus produces remarkable environment within the bubble with particularly high temperature, pressure and cooling rates (Pahala-gedara *et al.,* 2014).

Urea method

In this synthesis, Urea is added to an aqueous solution of chosen M^{2+} and M^{3+} metal salts and heated under reflux condition for few hours. The precipitate obtained is collected by filtration, washed thoroughly with deionized water and dried up overnight. The rate of urea hydrolysis can be possible to increase upto 200 times by increasing the reaction temperature to 100 °C.

The urea molecules undergo decomposition to produce ammonium carbonate, which finally causes in the precipitation into LDH with $CO3^{2-}$ as interlayer anion. The urea method provides high degree of crystallinity and a narrow particle size distribution (Hibino & Ohya, 2009).

Sol-gel method:-

In sol-gel synthesis of MgAl LDHs. In this method, ethoxide solution of M^{2+} metal is added to another solution containing acetylacetonate/ tri-sec-butoxide of M^{3+} metal and heated under refluxed condition. The pH of the suspension is maintained at 10 by adding base like, NH4OH and allowed to stir constantly until the gel like precipitate of LDH is formed. The as obtained gel like product is filtered, washed appropriately by deionized water and dried up overnight. The LDHs synthesized using sol-gel method is thermally very stable, but not as much of crystalline than those synthesized via the co-precipitation method (Prinetto *et al.,* 2000).

Hydrothermal method:-

In this method, two solutions containing M^{2+} and M^{3+} metal salts are added drop wise to an another solution containing base under strong stirring at room temperature. Then, the suspension is transferred into a Teflon-lined autoclave and heated at higher temperature for several hours depending upon the metal ions. The pH of the supernatant ranges 8–10. The solid precipitate is collected by centrifugation washed thoroughly with deionized water and ethanol and dried overnight. The hydrothermal method is useful for synthesis of highly crystalline LDHs (Forano *et al.,* 2006).

Ion exchange method

The ion exchange method is depend on the exchange of anions in interlayer space with other anionic species. In typical method, the precursor LDH is suspended in an aqueous solution containing the anionic species to be exchanged. The suspension is then allowed to stir for several hours at room temperature. The precipitate is then collected by filtration, washed several times with deionized water and dried overnight (Forano *et al.,* 2013).

Reconstruction method

This method involves the reconstruction of the layered structure of brucite-like LDH by hydrating the calcined LDH. The reconstruction method is based on one of the unique properties of LDHs i.e. memory effect. In first step, the LDHs are calcined at a particular temperature to obtain mixed oxides and then subjected to rehydration in aqueous solution with the anion to be intercalated. The solid precipitate is collected by filtration, washed several times with deionized water and dried overnight. The structural improvement however, depends upon some experimental condition such as, calcination temperature, duration and rate of heating. The reconstruction method is useful mainly in the preparation of large organic anions intercalated LDH (Mascolo & Mascolo, 2015).

Induced hydrolysis method

In this method, metal oxides are added drop wise to an acidic solution having M^{3+} metal salts. The metal oxides are dissolved progressively in the acidic solution and precipitated into LDH provided the pH is buffered by the oxide suspension. The obtained solid precipitate is filtered, washed thoroughly with deionized water and dried overnight. The method of induced hydrolysis can also be used for synthesis of LDH with di-divalent, di-tetravalent and tri-trivalent systems(Guo *et al.,* 2010).

Different LDH Materials to Remove Heavy Metals:-

Different mechanisms have been suggested for removal of heavy metals by LDH materials from waste water like ion exchange, chemical bonding physical adsorption in which electrostatic attraction, van der Waals force, hydrogen bonding and π-π interaction, etc.

Liangguo yan et al. synthesized chitosan-Mg-Al-LDH based Nanomaterials using an emulsion- crossing method. The chitosan was immobilized in side the gallery of LDH materials to form CS-

LDH by using epichlorohydrine. The CS-LDH show high specific surface area and having many functional group. The adsorption kinetics ,isotherms and mechanisms the CS-LDH show more adsorption capacity of Pb2+ and Cd2+ as compare to chitosan and LDH Mg-Al-LDH this effect was due to precipitation, surface complexation and isomorphic substitution. Liangguo yan et al Again doing similar type of work in which modification of Mg-Al-LDH by L-cysteine using facile co-precipitation method to remove Cu2+ , Pb2+and Cd 2+ in water solution . Due to the presence of Carboxyl, thio and amido group the materials show good adsorption performance in water sample(Lyu *et al.,* 2019).

Shan et al. synthesized Mg-Al-CO_3 and magnetic $Fe3O_4$/Mg-Al-CO_3 LDHs. While studied the mechanisms of Cd^{2+} adsorption on surface of materials they found that sorption was due to precipitation as $CdCO_3$, Substitution of Cd^{2+} by Mg^{2+} inside the gallery of LDH layers and interaction between Cd^{2+} and deprotonated hydroxyl groups with generation of outer-sphere complexes (Shan *et al.,* 2015).

Removal of Cr^{6+} from water was studied by Deng et al. synthesized a magnetic CoFe2O4/MgAl-LDH materials.They found that adsorption of Cr^{6+} onto above materials by three different ways (1) Adsorption into the LDH pore of heavy metals. (2) by electrostatic attraction between positively charge LDH surface. (3) Exchange of NO_3^- present in the interlayer LDH materials with anions containing Chromium in the +6 state (Deng *et al.,* 2015).

Mostafa et al. studied the removal of Pb^{2+} from water by synthesized CoMo-LDH. They observed that the black parts of Pb^{2+} adsorbed on LDH surface supported by scanning electron microscopy. They also suggested that adsorption of Pb^{2+} on LDH materials via coordination between the negative oxygen atom of nitrate anions and the Mo6+ of the brucite layers(Mostafa *et al.,* 2016).

Zubair et al try to improve adsorption properties of LDHs materials by combining with graphene oxide (GO), carbon nanotubes (CNTs), carbon quantum dots (CQDs) by using this idea magnetite-graphene-LDH (MGL) synthesized by Wu and coworker for removal of arsenate. They found that arsenate adsorption capacity for the MGL nanomaterials higher than LDH materials due to the presence of iron oxide and graphene results in increase the surface area of modified nanomaterials with more active sites for sorption of arsenate (Al-harthi, 2017).

Conclusions:

For the removal of heavy metals we are fortunate to have nanotechnology as biggest ongoing technique in this area. The most beautiful feature of Nanomaterials is size of materials decreases, surface area increases results in increasing adsorption capacity of nanomaterials to remove heavy metals. LDH is one of the most promising nanomaterials use as sorbent. LHD have specific feature like high surface area , high porosity ,layered structure, exchangeable cation inside the layer could be exchange by cationic and anionic pollutant. Also electrostatic attraction, π-π interactions, van der waals forces , hydrogen bonding take part in the sorption of heavy metals. But LDH materials having some limitation like weak attraction with heavy metals low sorption capacity and low reusability. To overcome these problems following approaches proposed and perform .

- Surface modification and functionalization of LDH materials.
- Synthesis of hybrid LDH materials like CNT/LDH, GO/LDH and QDs/LDH etc.
- Fabrication of polymer/LDH nanocomposites by using bioplymer as chitosan.

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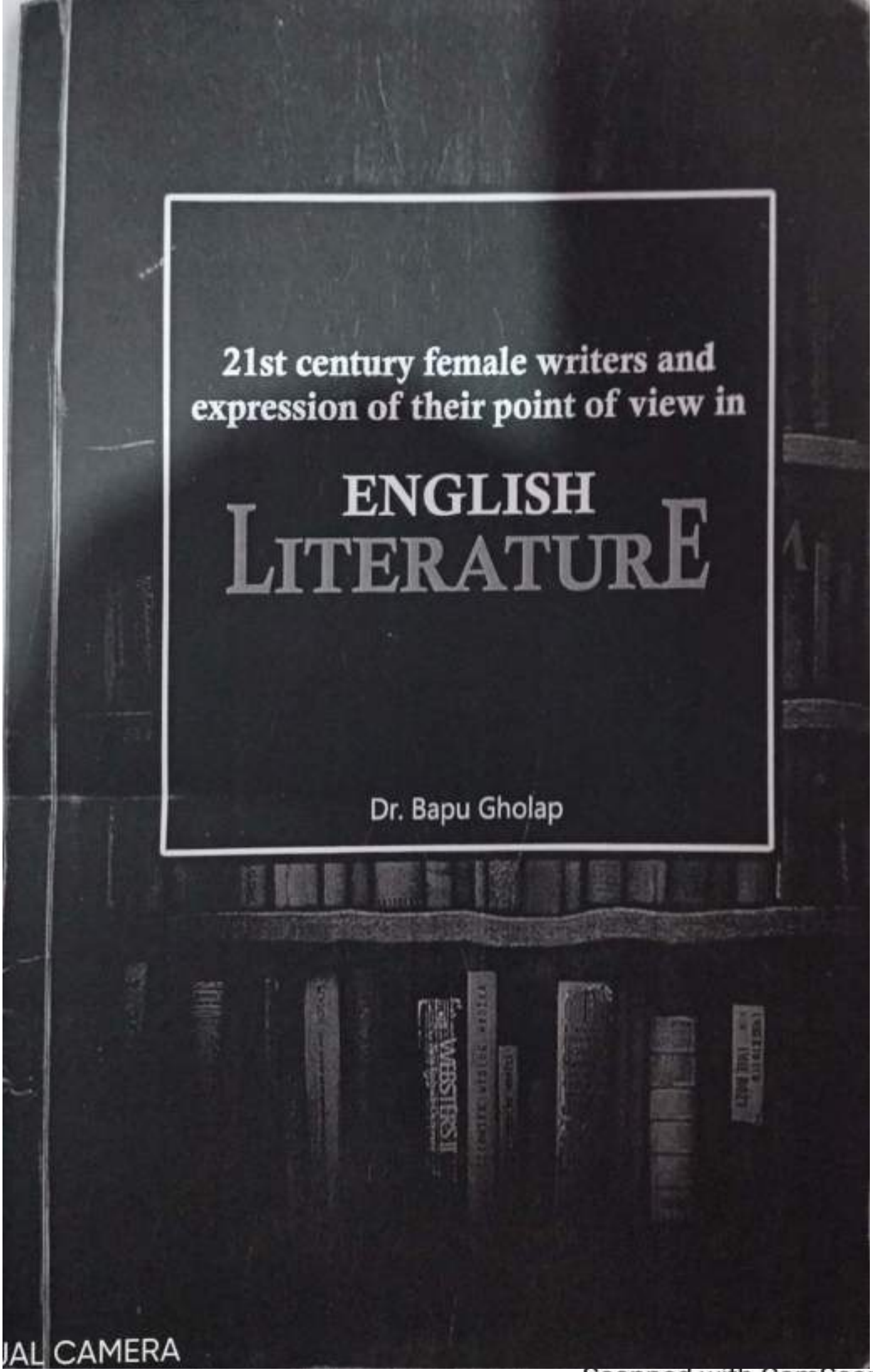

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Githa Hariharan's Point of View in Her Novels

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==========**********==========

Abstract

Point of view is the way of story gets told. The author presents the characters, dialogue, actions, setting and events which constitute the narrative in a fiction. It is always great concern of the novelist to find out point of view in modern fiction. They have different aspect in the fiction having limitless subjects.GithaHariharan is a prolific writer of 21st century in Indian writing. In her novels she convey the human psychology and the problems of the society in different ways. She puts forward the 21st century scenario and various concerns through her point of views in her novels.

Keywords: Patriarchy, Psychology, Feminine, Narrative, Indian

GithaHariharan's novels are about how women deal with the given space in the Indian society. Her novels present patriarchal limitations for the women of different social classes and ages. The problems of marriage and battles of women in their relation with men and society and their intense passion for quest for identity are some of the other concern of her novels. These are classified as an extraordinary novel, about

women's lives by a woman writer. In some of her novels, she excavates the men psyche in an amazing ways which put forward her point of view about both female and male part of the society.

Githa Hariharan won the 1993 Common wealth prize for her first novel, 'The Thousand Faces of Night' (1992). Hariharan wrote this novel when she was on maternity leave. She was surrounded by women, especially old women. Hariharan took inspiration from their lives and used both real and imagined world to develop her point of view for her novels.

The celebrated Githa Hariharan's debut novel 'The Thousand Faces of Night' can be seen as the depiction of a single face of thousand lives. It is the face of thousands of Indian women who are caught in the old customs and traditions. The novel has the smell of our mother and grandmother's laps and their weak fingers will once again pacify our tired forehead as we go through this novel. The novel is woven around three generations of women – Devi, Sita and Mayamma. The novel brings forth the idea how despite generation, background and the education that an Indian woman attains, her fate is to fall back into the century old customs at least to a small extent. The Indian society demands at least a pretension from their women that they are obeying the centuries old routines. When Devi returns from her education at America, tradition and the old order of things are ready to reclaim her into an arranged marriage. As she gets exhausted with her self-important husband Mahesh, she learns the vital duty of any Indian wife pretend to be a good wife. She further learns to love entertaining husband's family and friends, pretending never sick or angry. Devi learns the vital duty from her old family retainer Mayamma, who got married when she was still a girl to a drunken husband and abused by mother-in-law, husband as well as her own

ment on hollowness of the contemporary education system and the limitations of prescribed texts.

The Ghosts of Vasu Master is narrated by a newly retired teacher. Having spend most of his life teaching at the private P.G.Boys' School, in the Indian town of Elipettai, Vasu Master moves a bit uneasily into retirement. His farewell present from his students was a notebook, and among the things he does is to begin to make notes-jotting down observations, memories and thoughts about teaching. He also continues to teach a bit, becoming a tutor. He doesn't have many students, however, and eventually he is only left with one, the most complicated and stubborn case, Mani. The boy is twelve when he comes to Vasu Master but it seemed the brain of a six or a seven-year-old. He doesn't speak, either, and has been through numerous schools and doctors, without anyone being able to draw him out or keep him under control.

Vasu Master has no great immediate success with Mani, but eventually finds at least one thing that seems to keep him entertained and interested with stories. Vasu Master himself wasn't brought up on proper stories, discovering in his childhood that the ones he was told weren't at all like the ones other children heard. Now, however, he can see their power and finds them useful for himself too. Vasu Master doesn't live only in the present: the past also haunts him, and part of what he is trying to do is to "make peace with memory". His wife, Mangala, died many years earlier, and she only gradually becomes a strong presence in the book. Scenes from his childhood and his past are recounted, all in trying to understand the present.

Hariharn's novel is very ambitious, as her acknowledgements suggest, as she thanks the authors of works that have influenced her. Everyone she credits from Ivan Illich and R.D. Laing to Susan Sontag and Oliver Sacks. She also mentions the influence of works such as the

dose of "magic realism".

A novel is about storytelling and storytellers, especially female, typically powerless ones. Hariharan takes the myth of Shahrzad and begins after it ended, with her sister Dunyazad returning to Shahrzad's palace to help her husband construct her tomb. Dunyazad and a scheming maidservant with a peculiarly hairy mole meet and share stories, including many of a hair-covered woman who was eventually ostracized by her community, revolving around the possibility that Shahrzad escaped and they can too, from the entrapments of the old 1001 Night story and the present concerns of their lives. 'When Dreams Travel', is a curious, meandering novel, beautifully written.

Githa Hariharan's last novel 'In Times of Siege' (2003), specifies her angst for fundamentalism and extremism. She boldly comments over the betrayal of the secularist vision that can shape the nation. The novel chillingly reflects the realities of contemporary India. Sometimes it seems exciting but it is often moving. It is stark contemporary narrative, which unfolds the story of ordinary life besieged, of men and women struggling to make sense of hatred, ignorance, love and loyalty individual's ideas and notion. It focuses our gaze at the increasing gulf among people who love peacefully co-existed for centuries together. It emphasizes the general apprehension about the future of India a pluralist society. Various characters surrogate to unveil their identity from unusual circumstances of their lives. While talking about the inspiration for 'In Times of Siege', Hariharanmentiones,

More than inspiration, I would have to talk about compulsion. Both in India and elsewhere, we are living in times that allow less space for debate and dissent. As for as specific incidents are concerned when I was midway through the novel. There was actually a case in India of two by rightwing watchdogs. This was not so much inspiration for me as a

strange parallel track being taken by both the reality around me, and the fiction I was writing. (Luan, via e-mail).

'In Times of Siege', covers the span of two months (late August – October, 2000) in the life of Shiv Murthy, a fifty-two year old professor of History at Kasturba Gandhi Central University. It's an odd academic setting, with the students, an Open University, where Murthy is no longer teaches students; as his Department head likes to put it, he coordinates resources for his educational clients as a correspondence course.

Two events unsettle Murthy's settled life. He is the 'Local guardian' for Meena, a student at one of the other Delhi Universities whose mother had asked him to watch out for her while she was in Delhi. He has barely done anything for her since she arrived, but when she breaks her knee in an accident she calls on him and he takes her in until she can walk again. Murthy's wife is in America, where their daughter has just gotten a job, and so he's left pretty much to deal with Meena alone. The trouble explodes around some material he prepared for one of his B.A. History courses. Murthy wrote about Basava (Basavanna), the ttreasurer of a twelfth-century Hindu city, Kalyana. Basava has classless ideas that threatened the order of the day, undermining the caste system, though he was ultimately not able to overturn it. This version of history did not appeal to certain Hindu fundamentalists, and reading it in Murthy's lesson they raise a reek.

He has hurted the sentiments of a Hindu watchdog group, and things must be put right again. But Murthy isn't willing to give in so easily, and he refuses to apologize. The militant fundamentalist make a lot of fuss, the media takes as interest, people inside and outside academia choose sides. Hariharan nicely allows the dispute to unfold. This is a novel about politics and political correctness and academia, but her focus on Murthy, who often remains a bit on the edge of

events, and his day to day life prevents the book from bogging down in petty politics alone. Meena enthusiastically takes up Murthy's cause, and is of great help in enlisting help and organizing. The relationship between guardian and ward also becomes a more complicated one, also nicely handled by Hariharan. It all remains an episode, two months out of his life, but it brings with it change and some understanding. Murthy's is coming to terms with his own father's disappearance many years earlier that was a freedom fighter. The novel could have done with a bit more specificity and solidity; more fleshed out scenes, more explanation.

The lyrical luminous and sharply perceptive, the novel 'Fugitive Histories' is perhaps GithaHariharan's most mature work to date. While deft at the weaving of political events into private lives, Hariharan has often been accused of structuring a somewhat cerebral narrative, and some critics hold that she is better at the art of short story than at a longer narrative structure. Yet this work is clearly a deeply felt one, even though the reader may sometimes wish for a loosening up of the tightly held characterization that is the writer's trademark.

Practically in her life, Hariharan has been a social reformer and an idealist. All her novels are a great experiment of her point of view on various issues of the society. She is staunch follower of feminism. She believes that woman has her own individual identity, which has been suppressed in Indian society. Hariharan fought in Supreme Court and won the case of mother as natural guardian of a child. Almost all her novels have revealed the fact and the point of view that every woman has a self-identity, which ignores patriarchy.

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B.Sc. Semester - IV Paper - II

Dr. J. B. Chawla
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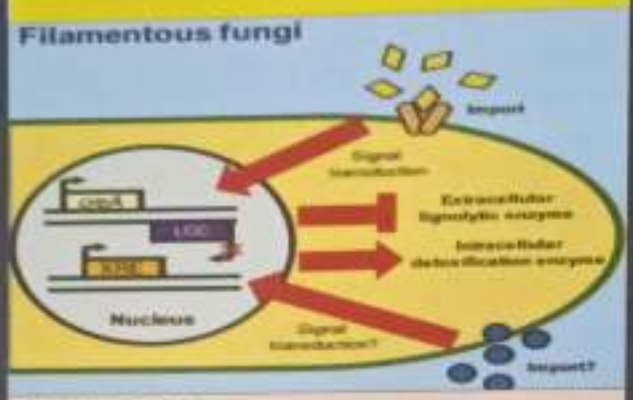

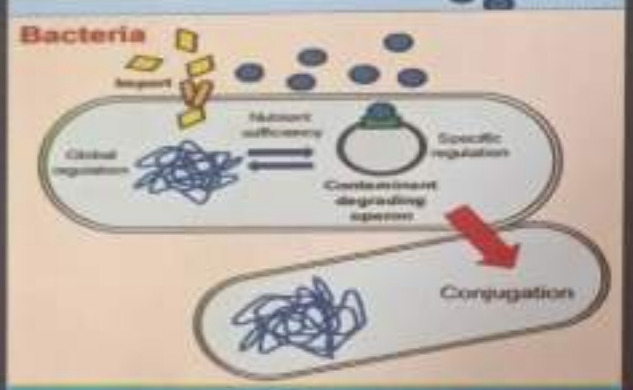

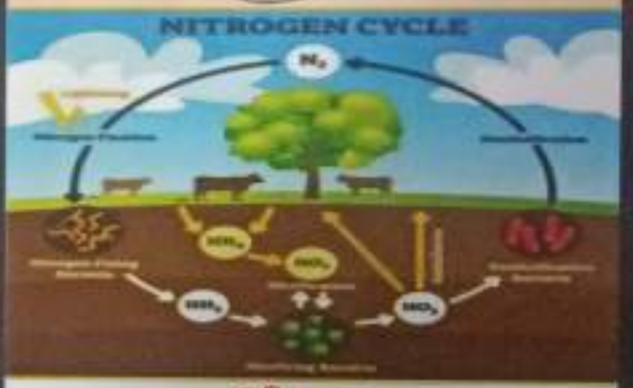

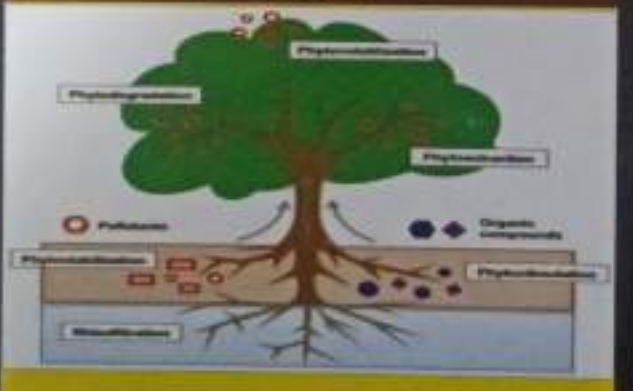

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(Volume - III)

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Chapter 6

Environmental Impacts of Climate Change

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ABSTRACT

Convincing evidence that the Earth's climate is changing dramatically and alarmingly has built quickly in recent years, particularly during the last three decades. Global warming, on the other hand, is a fact backed up by a massive body of evidence from a variety of sources. Indeed, scientific efforts have switched away from proving the presence of global warming and toward determining its causes. Although the precise level of damage caused by global warming is difficult to estimate at this time, it can be argued with certainty that the negative impacts of global warming on the climate will far outweigh any potential advantages. The chances are highly high that human-made greenhouse gases, particularly carbon dioxide, are the principal cause of today's well-documented global warming and climate change. Climate change has a number of negative consequences for agriculture, water resources, forests and biodiversity, health, coastal management, and temperature rise. Climate change would add to the stress placed on natural and socioeconomic systems, which are already under immense strain as a result of rapid industrialization, urbanization, and economic expansion. This study discusses the impact of climate change and its many components.

KEYWORDS: Global warming, Climate change, Carbon dioxide, Methane, Sea level rise, Greenhouse gas.

INTRODUCTION

Human beings have had a long history of influencing the environment. However, human activities have only recently begun to have a worldwide impact since the beginning of the industrial revolution. As a result of scientific evidence about the increasing concentration of greenhouse gases in the atmosphere and the changing temperature of the Earth,

environmental issues have become the most pressing concern of humanity today. The amount and distribution of rainfall are changing globally as the temperature rises. Global warming and climate change have become a major global problem that transcends national and geographical boundaries. As a result of the continued overproduction of greenhouse gases, more and more heat is trapped in the earth's atmosphere, causing us to heat up. Global warming is the term for this situation.

The world's temperature continues to rise, which is extremely distressing. When sunlight reaches the Earth, global warming begins. About 30% of sunlight is reflected back into space by clouds, atmospheric particles, reflective ground surfaces, and ocean surfaces, while the rest is absorbed by seas, air, and land. As a result, the planet's surface and atmosphere heat up, making life possible. As the Earth warms, solar energy is radiated through thermal radiation and infrared rays, which travel directly into space and cool the planet. Some of the emitted radiation, however, is re-absorbed by carbon dioxide, water vapors, ozone, methane, and other gases in the atmosphere and radiated back to the Earth's surface. Because of their ability to trap heat, these gases are frequently referred to as greenhouse gases. It should be mentioned that this re-absorption process is beneficial since without greenhouse gases, the Earth's average surface temperature would be extremely cold. The problem began when people began to artificially increase the quantity of greenhouse gases in the atmosphere at an alarming rate over the last two centuries.The earth's temperature has risen by 0.7 degrees since industrialization, and if we do nothing soon, temperatures could rise by up to 5 degrees by 2100. This rise in temperature will have a significant and disastrous impact on the environment around us, causing more extreme weather occurrences and the extinction of many animal and plant species.

WHAT CAUSES CLIMATE CHANGE?

Climate change is triggered by a shift in the earth's energy balance, or how much of the sun's energy enters the planet and is released back into space. Human activities have sent massive amounts of greenhouse gases (GHG) into the atmosphere since the Industrial Revolution began over 200 years ago. Instead of allowing the sun's energy and heat to reflect back into space, these GHG behave as a greenhouse, trapping it. When GHG concentrations are too high, too much heat is trapped, and the earth's temperature rises above its usual range.

Carbon dioxide (CO_2) is the GHG that has caused the most warming to yet. The majority of CO_2 is produced by incomplete combustion of fossil fuels such as coal, oil, and gas, which are utilized in electricity generation, transportation, and industrial activities. Methane, nitrous oxide, black carbon, and other fluorinated gases are all important GHGs. Despite the fact that these gases are emitted in lower quantities than CO_2, they trap more heat in the atmosphere.

Global Warming Potential is a measurement of the ability to trap heat (GWP). (See table 1).

Table 1: GWP Values and Lifetimes

Greenhouse Gas	Lifetime (years)	GWP time Horizon 100 years
Methane	12.4	34
HFC-134a (hydro fluorocarbon)	13.4	1550
CFC-11 (chlorofluorocarbon)	45.0	5350
Nitrous oxide (N2O)	121.0	298
Carbon tetra fluoride (CF4)	50000	7350

(Source: Myhreet al., 2013)

CO_2 has a GWP of 1 since it is the most prevalent and plentiful greenhouse gas, therefore all other GHG warming potentials are compared to it. Fluorinated gases, for example, have GWPs thousands of times bigger than CO_2, implying that they have a considerably greater impact on climate change pound-for-pound than CO_2.

Table 2: GWP Values and Sources

Name	% of U.S. GHG Emissions 2013	Sources	Lifetime in the Atmosphere	Global Warming Potential (GWP)
Carbon Dioxide (CO2)	82%	Electricity production, transportation, numerous industrial processes.	Approximately 50-200 years. Poorly defined because CO2 is not destroyed over time; it moves among different parts of the ocean–atmosphere–land system.	1
Methane (CH4)	10%	Livestock manure, food decomposition; extraction, distribution and use of natural gas	12 years	25
Nitrous oxide (N2O)	5%	Vehicles, power plant emissions	115 years	298
Black carbon	>1%	Diesel engines, wildfires	Days to weeks	3,200

(soot, PM)		biomass in household cook stoves (developing countries)		
Fluorinated gases: PFCs, HFCs, NF3, SF6	>5%	No natural sources. These are synthetic pollutants found in coolants, aerosols, pesticides, solvents, fire extinguishers. Also used in the transmission electricity.	PFCs: 2600 – 50,000 years HFCs: 1-270 years NF3: 740 years SF6: 3200 years	PFCs: 7,000–12,000 HFCs: 12–14,000 NF3: 17,2000 SF6: 22,800

GLOBAL WARMING

The term "global warming" or "climate change" refers to an increase in average worldwide temperatures caused by an increase in the greenhouse effect caused by increased greenhouse gas emissions. Forest fires, volcanic eruptions, methane release from thawing permafrost on the ocean floor and release of methane gas from cattle, wet lands and anthropogenic sources of exhausts from all types of combustion, industrial production of greenhouse gases, agricultural water lodging activities such as paddy cultivation, artificial wet lands, and deforestation are examples of natural events. As the earth warms, pre-existing weather patterns change quickly. There are various signs that changes with the warming earth, according to the National Oceanic and Atmospheric Administration (NOAA).

FACTORS INCREASES WITH GLOBAL WARMING

- Temperature of land
- Sea surface temperature
- Troposphere temperature
- Temperature over oceans
- Ocean heat content
- Sea level
- Humidity

FACTORS DECREASES WITH GLOBAL WARMING

- Glaciers
- Snow cover
- Sea ice

GREENHOUSE GASES

Greenhouse gases are the primary cause of climate change. Greenhouse gases are gases that trap heat energy; all greenhouse gases are positive radioactive forcing agents capable of

disrupting the energy balance in the atmosphere. Many greenhouse gases are emitted primarily as a result of human activities.

Table 3: Major Sources of Greenhouse Gases

Sector	Activities	Gases
Energy	Forest fuel combustion Natural gas leakage Industrial activities Biomass burning	CO_2, CH_4, N_2O, O_3
Forest	Harvesting Clearing Burning	CO_2, CH_4, N_2O
Agriculture	Paddy fields Animal husbandry (ruminants) Fertilizer usage	CO_2, CH_4, N_2O
Waste	management Sanitary landfill Incineration Biomass decay	CO_2, CH_4, N_2O, O_3, CFCs
Industrial	Metal smelting & processing Cement production Petrochemical production Miscellaneous	CO_2, CH_4, N_2O, CFCs, SF_6, CF_4, C_2F_6

(Source: Kemp, 2004)

IMPACTS OF CLIMATE CHANGE ON ENVIRONMENT

Fig. 1: Causes and Effect of Global Warming and Climate Change.

IMPACT ON AGRICULTURE

Climate change and its variability are causing widespread worry about their effects on agricultural production. While crops would respond positively to increase CO2 in the absence of climate change, the associated effects of high temperatures, altered precipitation patterns, and possibly increased frequency of extreme events such as drought and floods will most likely depress yields and increase production risks in many world regions, widening the gap between rich and poor countries.

Because of the dominance of agriculture in their economies, the scarcity of capital for adaptation measures, their warmer baseline climates, and their heightened exposure to extreme events, a consensus has emerged that developing countries are more vulnerable to climate change than developed countries. As a result, climate change might have a particularly negative impact in the developing world, where 800 million people are undernourished. A group of more than 40 'least-developed' countries, mostly in Sub-Saharan Africa, is of particular concern, with domestic per capita food production falling by 10% in the last 20 years.

Plants have evolved to maximize yields in specific temperature and humidity conditions. The rate at which a plant develops is influenced by the amount of CO2 and the temperature in the environment. The rate of development in plants alters when temperatures and CO2 concentrations rise, impacting the plants or crops growing time. Rice productivity is expected to decline by 10% for every 1% increase in growing season mean temperature between 30 and 400 degrees Celsius. The effect of a rise in the minimum temperature on rice grain output will be greater than the effect of a rise in the maximum temperature, which will be negligible.

Rabi crops are likely to lose more than Kharif crops. Wheat and other hypothermophilic crops such as cauliflower and cabbage are anticipated to be affected by global warming in Central India, whereas temperate crops such as cherry, apple, plum, and peach are likely to be harmed in Northern India. In Northern India, frost damage is likely to be less frequent. Global warming may threaten the viability of indigenous crops such as Basmati rice and litchi. Food trade imbalance due to favorable effects in Europe and North America and negative effects in tropical and subtropical nations such as India, Brazil, and Mexico.

IMPACT ON BIODIVERSITY

Increased land and ocean temperatures shifted the home ranges of numerous species pole ward or upward from their current location, with droughts and deserts speeding up the process. Species with a limited habitat requirement or that are stationary (coral reefs) or that have a limited climatic or geographic range (mountain top or island habitats) are more vulnerable to climate change. As atmospheric CO2 levels rise and opportunists (weeds) win the competition, this may also boost net primary productivity. Sea turtles, crocodiles,

amphibians with permeable skin, and eggs are more prone to temperature-dependent sex determination. Many habitats, such as marshes, beaches, grasslands, and sea grass beds, are disappearing, and species that are already endangered face extinction. Climate change-related reductions in Arctic and Antarctic ice affect marine mammals' seasonal distribution, migratory patterns, nutritional and reproductive status, as well as plankton distribution. This has an impact on the marine food chain, and the loss of a keystone species causes the entire food chain to collapse. Long-lived plants, such as perennial trees, display signs of climate change over time and gradually recover. Phenology, breeding seasons, behavioural changes, and migration patterns (in birds, for example) have all been documented.

IMPACT ON HEALTH

Heat and cold have direct physiological effects; high heat killed several people in Indian states in early 2015; continuous exposure can cause skin damage, eye disease, adverse effects on the immune system, and skin cancer; temperature raises blood pressure, viscosity, and pulse; thus, death from cardio vascular disease rises; and increased stress and malnutrition also have negative effects on health.

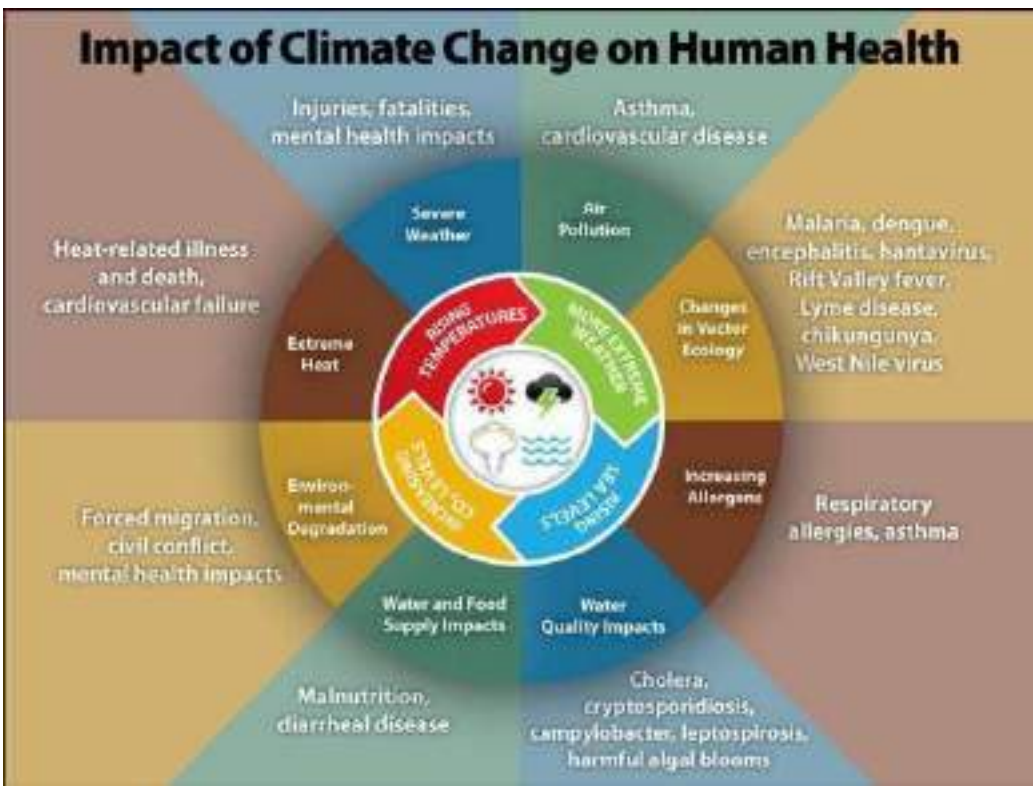

Fig. 2: Impact of Climate Change on Human Health

Flooding increases mosquito vector breeding sites, and damage in water pipes, septic tanks, sewers, drainage, and storm water causes leaks and pollution in portable water sources, resulting in epidemics of water-borne and vector-borne diseases.

Diarrhea, cholera, and dysentery are all waterborne diseases.

Falciparum malaria, vivax malaria, dengue fever, elephantiasis, yellow fever, and west Nile fever, rodent-borne infections plaque, Lyme disease, and tick-borne encephalitis, and hanata virus pulmonary syndrome are examples of vector-borne diseases.

CONCLUSION

Global warming and climate change have received some attention in the preceding analysis. Greenhouse gas emissions are thought to be the cause of global warming and climate change. CO2, CFCs, CH4, and N2O are four primary gases that contribute significantly to global warming and climate change. Natural and man-made activities both release these gases into the atmosphere. The long-term consequences of global warming and climate change on the environment may be seen in the late twentieth and early twenty-first centuries. Changes in sea level, global average temperature, ice cap melting, altering weather patterns, impact on agricultural productivity, heat wave intensity, and drought conditions are all frequent repercussions of global warming and climate change on our planet. It disrupts the lives, property, farmland, and ecosystem of millions of people. Future generations should focus on comprehending the phenomenon of climate change and its consequences.

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Wasudeo Gurnule obtained his M.Sc. degree in Chemistry in 1989. He obtained his Ph.D. degree in 2000 in Polymer Chemistry from RTM Nagpur University, Nagpur. Dr. W. B. Gurnule is presently working as a Professor in the Department of Chemistry, Kamla Nehru Mahavidyalaya, Nagpur, India. During his research career, he is involved in the synthesis and characterization of nanomaterials as well as the development of SBR nanocomposite materials, Semiconducting materials, Ion-exchange resins, Biodegradable polymers, Conducting polymers, TLC and Epoxy resins, Dr. Gurnule published more than 200 research papers in National and International reviewed journals and presented more than 110 research papers in National and International conferences. He is a Reviewer of 41 International journals of Elsevier, John Wiley, Springer, Marcel Dekkar, Bentham, RSC publishers having an impact factor of more than 2.0.

He has received CRSI Best Teacher Awards-2011 for outstanding contribution in Polymer Materials Presented by Chemical Research Society of India, Bangalore at CRSI Symposium at Bhuwneshwar in 2011. He is also received Distinguish Scientist Award-2016 for their contribution to research work at Chennai by the Centre for Advanced Research, Chennai. He has also been received Aufbau International Outstanding Researcher Award-2016 by ACS publication Salem. He has also received the Best researcher award by the Vishwashanti society at MDI Singapore in 2017. His academic achievement includes best research paper presentation awards for 07 Research Papers in conferences. He has published more than 360 Science Articles in daily Newspapers for the people of society aiming to popularize science. He has successfully guided 26 students for a Ph.D. degree and 8 are currently registered for Ph.D. with him. He has successfully guided 21 M. Phil. Students for their dissertation work. He has successfully completed 03 Research Projects of a total amount of Rs. 46, 00,870/- of UGC. He is the author of 32 Books/11 Book Chapters, 07 of which are of International level published by Apple Academic Press Inc. Canada, Elsevier, and Springer. He is the Secretary of the Society for Promotion of Material Science, Nagpur. He is Secretary of West Zone of Association of Chemistry Teachers, Mumbai. He is a Life Member of more than 12 various academic societies. He is recently honored with the Best Researcher Award by Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur on 5th Sep. 2018.

Recently ISCAS prestigious Silver Medal Award was received in the 11th ISCAS National Conference at Nagpur, on 20th Dec. 2019.

He has delivered more than 60 Invited Talks at National and International Conferences. He has organized 07 National and 11 International Conference/Webinars for the researcher in India and abroad. He has visited countries like Malaysia, Singapore, Indonesia, Thailand, Nepal, Taiwan, Hong Kong, Bangladesh,

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