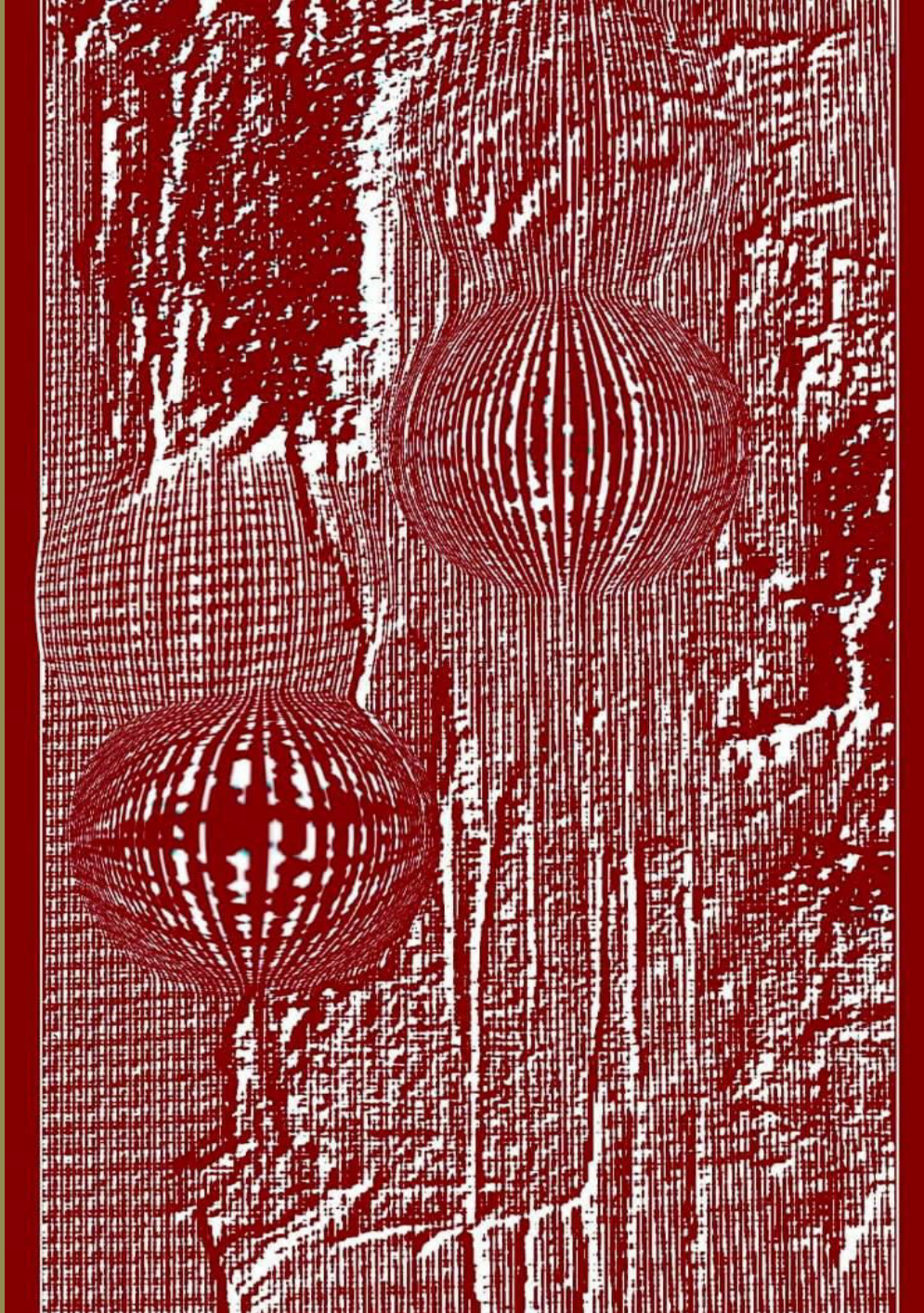


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**VOLUME-1**

**INTERNATIONAL JOURNAL  
OF  
INTEGRATED RESEARCH AND DEVELOPMENT  
(Peer Reviewed and Multi-Disciplinary)**



**Artist: Basudev Mondal. Title: Recovery.**

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- [1] Bhattacharyya, Nabarun, Herbert, Deys Publishing, Kolkata, ISBN 978-81-29-16-6, Pp 32-33, 1<sup>st</sup> ed., 2004.  
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 [4] Socio-affective Neuroscience & Psychology 2013. 2013 Donald L. Hilton. This is an Open Access article distributed under the terms of the Creative Commons Attribution 3.0 License (<http://creativecommons.org/licenses/by/3.0/>).

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Volume: 1/Issue: 19/June. 2021-ISSN: 2278 8670

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Volume: 1/Issue: 19/June. 2021-ISSN: 2278 8670

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Volume: 1/Issue: 19/June. 2021-ISSN: 2278 8670

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**COVER:**

- Artist Basudev Mondal** Assistant Professor & H.O.D, Bengali, Dr. B. R. Ambedkar Satabarshiki Mahavidyalaya, Helencha, W.B., India.



## PREFACE

The June, 2021 issue of our journal has been published. I want to convey that we have been delayed in publishing some of the issues of our journal due to the pandemic situation. I hope our function will be regularized from our next issue that is, from December, 2021.

In this issue we have published some of the conference papers and placed under a separate heading as “Biodiversity Conservation”. The said conference was “National Conference on Biodiversity Conservation (NCBC)” which was based on biodiversity. It included a series of webinars named ‘Biodiversity 1’ and was organized by the Department of Botany, Seva Bharati Mahavidyalaya, Kapgari, W.B.; Admin, Flora and Fauna Asia Facebook Group & Department of Botany, Govt. General Degree College Lalgah, Lalgah, Jhargram, W.B in collaboration with Drishticon Organization, Panskura, Purba Medinipur, W.B.

We have placed one beautiful digital painting of renowned artist Basudev Mondal on the cover page of the journal. The title of the painting is ‘Recovery’. The justification of the title of the painting in today’s perspective is that we are gradually recovering from the adverse situation, that we are in for last one and a half years. Basudev Mondal is Assistant Professor & H.O.D, Bengali at Dr. B. R. Ambedkar Satabarshiki Mahavidyalaya, Helencha, W.B. Apart from his teaching profession he is a renowned artist. He is one of the members of the board of associate editors of our journal. He has achieved various awards and honours in the field of art and painting. Some of the achievements are mentioned here:

### Awards:

1. Triple Champion Medalist, Calcutta University.
2. Honour and Felicitations from Kolkata Theatre for Human Development at Rabindra Sadan Kolkata.
3. Bina Pani Samman from Barasat Suti Sanskriti Sanstha, 24 Pgs(N).
4. Honour and Felicitations from Bongaon Charukala Prasad, 24 Pgs(N).
5. Honour and Felicitations from Cultural Unit of Duttafulia, 24 Pgs(N).
6. Honour from ‘DOUR’ Bengali Magazine, 24 Pgs(N).
7. Honour from ‘NOUKA’ Bengali Magazine at Bangla Academy, Kolkata.
8. Honour from ‘BALMIKI’ Bengali Magazine at Bangla Academy, Kolkata.
9. Honour and Felicitations from ‘AMAR EKUSHE’ Bengali Magazine, 24 Pgs(N).
10. Honour and Felicitations from ‘EKATA SANGHA’ 24 Pgs(N).
11. West Bengal Govt. CRIRA O YUBAKALYAN BIVAG Award (2<sup>nd</sup>).
12. Certificate of Proficiency (1<sup>st</sup>) C. R. Roy Memorial Art Contest.

### Solo Exhibition:

1. 2012 AJANTA ART GALLERY, Kolkata-124.
2. 2009 EKATA SANGHA, Mandapghata, 24 Pgs(N).
3. 2007 Barasat Suti Sanskriti Samsad, 24 Pgs(N).

### Invited Exhibition:

1. 2012 All India Annual Paintings Exhibition, Ajanta Art Gallery, Kolkata-700124.
2. 2011 Boi Mela Exhibition Ashoknagar, 24 Pgs(N).
3. 2010 Charukala Prasad, Bongaon, 24 Pgs(N).
4. 2010 Book Fair Exhibition Ashoknagar, 24 Pgs(N).
5. 2009 Book Fair Exhibition Ashoknagar, 24 Pgs(N).
6. 2009 Charukala Prasad, Bongaon, 24 Pgs(N).

### Group Exhibition:



**Volume: 1/Issue: 19/June. 2021-ISSN: 2278 8670**

1. 2012 All India Annual Painting Exhibition, Ajanta Art Gallery, Kolkata-700124.
2. 2011 Japan, Tokyo-CHUWA GALLERY, Tokyo-104-0061 Japan.
3. 2011 Birla Academy of Art and Culture.
4. 2011 Academy of Fine Arts, Kolkata.
5. 2011 Kala Mela Academy of Fine Arts, Kolkata.
6. 2011 Bongaon Charukala Parsad, 24 Pgs(N).
7. 2010 Academy of Fine Arts, Kala Mela Kolkata.
8. 2010 Chemould Art Gallery, Kolkata.
9. 2010 Banipur Art Society, 24 Pgs(N).
10. 2009 Birla Academy of Art and Culture, Kolkata.
11. 2009 Barasat Sanskriti Sanstha, 24 Pgs(N).
12. 2009 Charukala Parsad, Bongaon, 24 Pgs(N).
13. 2009 Book Fair Exhibition Ashoknagar, 24 Pgs(N).

Our effort is to present a good quality journal before the society as a whole and before the intellectual community in particular.

Thank you.

**Dr. Barin Kumar Roy,  
Editor-in-Chief, IJIRD.**



### EDITORIAL-1

The second wave of Covid-19 in India was four times worse than the first wave in terms of infections and deaths seen in the country. The National Council of Applied Economic Research (NCAER) report says that the second wave disrupted the already battered growth process from the first wave. The economic activity declined sharply at the peak of the second Covid-19 wave in April and May, 2021.

According to NCAER report in June, 2021 India will see activities pick up, signaling recovery during the gradual unlocking process. It has stressed on a strong positive push combined with a strong expansionary macroeconomic policy thrust to restore the growth. The Indian economy is likely to grow 8.4 – 10.1% for the current financial year as against a contraction of 7.3% in the last fiscal. Indian economy turned a corner this month and began regaining momentum in June, 2021. It has been estimated that the gross domestic product (GDP) will grow 11.5% in Q<sub>1</sub> (first quarter) and 8.4 – 10.1% for the whole year 2021 – 2022. It indicates that the economy will reach the level where it was in 2019 after suffering the two Covid-19 waves. These high growth rates are also a reflection of strong base effects since 2021 – 22: Q<sub>1</sub> (first quarter) follows the very steep decline in 2020 – 21: Q<sub>1</sub> (first quarter). At the end of 2021 – 22 GDP on constant prices, would still be about the same at ₹146 trillion (₹146 lakh crore) as in 2019 – 20.

The World Bank report says, Indian economy is expected to expand 8.3% in the fiscal year 2021 – 22. An enormous second Covid-19 wave is undermining the shaper than expected rebound in activity seen during the second half of financial year 2020 – 21, especially in services. India will benefit from policy support, including higher spending on infrastructure, rural development and health and a stronger than recovery in services and manufacturing.

So both the report highlighted that the Indian economy is going to rebound after the second wave during unlock period. Now let us see what will be the effect of the third wave of Covid-19 on the Indian economy if so happens.

**Dr. Barin Kumar Roy,  
Editor-in-Chief, IJIRD.**



## EDITORIAL-2

There are different publishing platforms where people express their studies, findings, views and plans. The most important one is newspaper. Newspapers are regarded as the mirror of the society. They provide day to day information from all walks of life be it social, political, economic, religion, scientific discoveries, art and culture, infotainment and what not. Some important issues are often discussed in the editorial section. In some newspapers, a weekly section is provided to publish some special articles from renowned thinkers in a particular field. Also, there are some weeklies attached to different newspapers specific for them, devoted to the kids and school children or for the religious persons or businessmen. Some newspapers allow in a small section, people to express their views on some burning issues of the moment. Some of us have the habit to start our day with a newspaper in one hand and a cup of tea on the other. Those who face shortage of time in the morning take it with them and go through it while travelling to their office or read it in the period of break in the office. Also, people sit together with a newspaper in the evening to discuss on some very important issues of the day. Without newspaper our day seem incomplete. They have the ability to create a mass movement, but they must stick to the truth and are restricted to ethics. But to our utter despair, it is found that newspapers today are becoming commercialized and politicized, sometimes publishing twisted news and partial views. These are harmful to the society at large when are looked from greater perspective. Hope they will be in safe hand, free of all sorts of evils to be the mirror of the society in true terms.

On the other hand, we have other form of publishing platforms, where details of the findings, views and plans are published for the specific group of people with specific interest. They are specifically meant for developmental purposes. These are periodicals, magazines or journals. Some love travel magazines and some religious, some other cinema magazines and some business. But, we, those who are in academics, love journals to write our findings or read these to gather knowledge from the published articles of others. Different journals are meant to publish articles on some specific subject, viz., Journal of Physics, Journal of Mathematics, Journal of Economics, Journal of Medicine, Journal of literature and such. Form some times past, it is observed that research and developmental studies are becoming too interdisciplinary. For example, modern medicinal practices and diagnosis are becoming more and more dependent on sophisticated instruments and robotics, those, in turn, need instrumentation and electronics in one hand and mathematical tools for the analysis on the other hand. The same is true for agriculture or social studies, economics and market analysis or travel and entertainment. These need mathematical modeling to find peoples' choice and the development of logistic facilities for their growth. And obviously, the issue of conservational and sustainable development, which is the need of the day, has to be addressed from proper scientific basis and social perspective. Any researcher working in these fields has to consult and subscribe many a journals for their work, since a specific one is not having all sorts of articles. In view of this, it is important to have an interdisciplinary journal that does publish all sorts of articles from art and literature to science and mathematics to provide the researchers of their need. It is a bit difficult, but we have tried our best from the society of IJIRD comprising of academicians, engineers, doctors and social scientists to frame our journal in a form to publish it as multidisciplinary and multilingual one to fulfill the need of the day to some extent.

**Dr. Biswajit Maiti,  
Managing Editor, IJIRD.**



**EDITORIAL-3**

Greetings from the Journal committee to all of our well-wishers on behalf of IJIRD society. I convey my sincere thanks and respect to the seniors for their full co-operation and help as and when required. I also convey my gratitude to our editor-in-chief, managing editor, authority, publication press, all board members and all the reviewers. Special thankgoesto Dr. Pampi Ghosh, Secretary, National Conference on Biodiversity Conservation (NCBC), whose efforts helped us to successfully set up the conference. I also thank the special body and co-reviewer team of senior faculties, scientists and experts who reviewed all the papers. I convey my sincere thanks to those who gave us the inspirationfor this conference. Lastly, I thank all paper presenters for their time-based work to make it complete in due time. Hope all will enjoy the publication of June issue, 2021 and again show their interest in the next issue.

Regards,

**Dr. Debabrata Das,  
Additional Editor, IJIRD.**



**FROM THE DESK OF THE SECRETARY, CONFERENCE COMMITTEE:**

National Conference on Biodiversity conservation (NCBC) is a conference based on the webinar series 'Biodiversity 1' organized by Department of Botany, Seva Bharati Mahavidyalaya, Kaptipada, W.B.; Admin, Flora and Fauna Asia Facebook Group & Department of Botany, Govt. General Degree College Lalgarh, Lalgarh, Jhargram, W.B in collaboration with Drishticon Organization, Panskura, PurbaMedinipur, W.B.

First series of "Biodiversity" from 2020-2021 ended with 30 lectures on different topics which were presented through the online platform. Due to the pandemic, online platforms like Zoom, Cisco-webex and Google meet (Free version) were used for the same. People with different professional and cultural backgrounds like professors, scientists, scholars, teachers, directors, entrepreneurs, farmers, school students from different countries other than India and even from various organizations including Botanical Survey of India (BSI), Zoological Survey of India (ZSI) and some NGOs like Bombay Natural History Society (BNHS) participated in the event.

It was a wonderful programme and we received lots of valuable feedbacks which indicated the same. Inspired by all this we took an initiative to bring out the informative papers and research articles by different scholars and professors. During this pandemic time, due to lockdown and professional pressure, we postponed the programme and re-scheduled it on May, 2021. Papers from different categories were collected in due time and evaluated by experts. After proper 3 tier-peer-reviewed process we submitted the papers to International Journal of Integrated Research and Development (IJIRD) for publication in the June volume of 2021. But unfortunately, due to serious health situations, we had to cancel the programme for the second time. It was again re-scheduled and dates were fixed for July, 2021. The confirmed conference will be held from 28<sup>th</sup>- 30<sup>th</sup> July, from 7:00 p.m to 8:30 p.m. We hope that the conference will be a success in presence of many experts, dignitaries and our participants. We hope to see you there and also join the journal of IJIRD for future updates.

Thank you and hope to see you all in the conference,

Best wishes,

Dr. Pampi Ghosh

HOD Botany, SBM, Jhargram, W.B

&

Secretary, Conference committee, NCBC.

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## INDEX

1. Gender Role-Reversal as a Step towards Establishing Sexual Equality: A comparative study of Austen's *Emma* and Sand's Mauprat Anindita Saha 01 – 12
2. The Dowania: A Brief Study on its Interpretations from the Perspective of the Singpho Tribe of Arunachal Pradesh Dr. Goken Geyi 13 – 21
3. Ethical elements in the Philosophy of Religion of Vivekananda Dr. Iti Chattopadhyay 22 – 33
4. Path to the Professionalization of Teacher Education: NCFTE 2009 Mousumi Periwal 34 – 44
5. Evaluation of Strawson's Criticism of Russell's Theory of Descriptions Dr. Sumita Dutta 45 – 59
6. Effects of Educational and Economic Backwardness on Birth Control: A Study from Rural West Bengal Dr. Suman Kalyan Samanta 60 – 69
7. □□□□□□□□□□ □□□□ □□ □□□□□□□□ : □□□□□ □□□□□□□□□□ □□□□□□□□□□  
□□□□□□□□□□ Agnimita Sil 70 – 81
8. Pandemic versus Immunity from Natural Resources Anindita Chatterjee 82 – 91
9. The Changing Perception of Ageing—A Curse or a Blessing: A Socio-Economic Critique Dr. Tulika Kar 92 – 103
10. An Analytical Discussion on Human Error in Learning Language Dr. Madhuri Ray 104 – 111
11. A Glimpse of Changing Nature of Paddy Cultivation in Nadia District Susmita Mandal 112 – 118
12. Creativity and Aspects of Thinking Dr. Debasree Bhattacharya 119 - 125
13. The New Urban Space in Medieval Bhagalpur: The Study of the Growth of Markets Varun Kumar Roy 126 – 143
14. Siliguri in the Era of Globalisation Minakshee Kumari 144 - 164
15. Tribals in Jalpaiguri District: A Study of the Trends in Literacy Rate (1869-2011). Susmita Pandit 165 - 177

### **Biodiversity Conservation:**

16. In Vitro Stable Regeneration of an Important Medicinal Herb *Bacopa monnieri* (L.) Pennell - A Way of Conservation Dipu Samanta<sup>1\*</sup> and Debleena Roy<sup>2</sup> 178 – 191
17. Diversity and distribution of Ectomycorrhizal fungi in pine plantation stands of Manipur Dr. Irungbam Jamuna Devi 192 - 196





18. Study of Physicochemical Parameters of Rhizosphere Soil of Pea (*Pisum sativum* L.) from the Two Localities of Purander Tehsil and Fergusson College Botanical Garden of Pune district  
Jaya Thakur and B.P.Shinde 197 – 209
19. Conservation of *Ficus racemosa* (Linn)  
*Wonderful Feeder of Wild Animals*  
D.Thangamani, S.Poopathi Rajan, T.Arul Prakash, O.M.Mohammed Nawas and S.Lalitha 210 - 218
20. Diversity of Ascidians from Thoothukudi Harbour Barge and their Conservation  
S. Gomathy 219 - 224
21. Identification of Volatile Chemical Constituents of Fruit Pulp by GC-MS Analysis of Some Traditional Mango Varieties of Malda and Murshidabad District for Increasing Consumer Acceptability and Conservation  
Mitu De<sup>1</sup> and Santi Ranjan Dey<sup>2</sup> 225 – 237
22. Floristic diversity of Chupi beel in Purba Bardhaman in West Bengal  
Tanay Shil<sup>1\*</sup>, Pritha Basu<sup>1</sup>, and Onkar Nath Maurya<sup>2</sup> 238 - 249

### **From the Desk of the Secretary, Conference Committee**

National Conference on Biodiversity conservation (NCBC) is a conference based on the webinar series 'Biodiversity 1' organized by Department of Botany, Seva Bharati Mahavidyalaya, Kapgari, W.B.; Admin, Flora and Fauna Asia Facebook Group & Department of Botany, Govt. General Degree College Lalgah, Lalgah, Jhargram, W.B in collaboration with Drishticon Organization, Panskura, Purba Medinipur, W.B.

First series of "Biodiversity" from 2020-2021 ended with 30 lectures on different topics which were presented through the online platform. Due to the pandemic, online platforms like Zoom, Cisco-webex and Google meet (Free version) were used for the same. People with different professional and cultural backgrounds like professors, scientists, scholars, teachers, directors, entrepreneurs, farmers, school students from different countries other than India and even from various organizations including Botanical Survey of India (BSI), Zoological Survey of India (ZSI) and some NGOs like Bombay Natural History Society (BNHS) participated in the event.

It was a wonderful programme and we received lots of valuable feedbacks which indicated the same. Inspired by all this we took an initiative to bring out the informative papers and research articles by different scholars and professors. During this pandemic time, due to lockdown and professional pressure, we postponed the programme and re-scheduled it on May, 2021. Papers from different categories were collected in due time and evaluated by experts. After proper 3 tier-peer-reviewed process we submitted the papers to International Journal of Integrated Research and Development (IJIRD) for publication in the June volume of 2021. But unfortunately, due to serious health situations, we had to cancel the programme for the second time. It was again re-scheduled and dates were fixed for July, 2021. The confirmed conference will be held from 28<sup>th</sup> - 30<sup>th</sup> July, from 7:00 p.m to 8:30 p.m. We hope that the conference will be a success in presence of many experts, dignitaries and our participants. We hope to see you there and also join the journal of IJIRD for future updates.

Thank you and hope to see you all in the conference,

Best wishes,

Dr. Pampi Ghosh  
HOD Botany, SBM, Jhargram, W.B  
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### **Desk from the Additional Editor, IJIRD**

Greetings from the Journal committee to all of our well-wishers on behalf of IJIRD society. I convey my sincere thanks and respect to the seniors for their full co-operation and help as and when required. I also convey my gratitude to our editor-in-chief, managing editor, authority, publication press, all board members and all the reviewers. Special thank goes to Dr. Pampi Ghosh, Secretary, National Conference on Biodiversity Conservation (NCBC), whose efforts helped us to successfully set up the conference. I also thank the special body and co-reviewer team of senior faculties, scientists and experts who reviewed all the papers. I convey my sincere thanks to those who gave us the inspiration for this conference. Lastly, I thank all paper presenters for their time-based work to make it complete in due time. Hope all will enjoy the publication of June issue, 2021 and again show their interest in the next issue.

Regards,

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## **Gender Role-Reversal as a Step towards Establishing Sexual Equality: A comparative study of Austen's *Emma* and Sand's *Mauprat***

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### **Abstract**

*Feminism refuted the ideology promulgated by the conservatives that women's place is in the home with children and they are naturally inferior to men. The feminists uphold the view that gender roles are social, not natural, and the ideology of the conformists has created sexual inequality and is responsible for the oppression of women throughout centuries. To compare the female characters of Jane Austen, the famous late 18<sup>th</sup> century or early nineteenth century British novelist with those of George Sand, the famous 19<sup>th</sup> century French novelist, keeping in mind how the two novelists disproved the conformists' view by reversing the gender-role in their novels and attributing 'masculine qualities' to the heroines is quite an intriguing and interesting task. In this paper, however, I would focus primarily on Austen's *Emma* and George Sand's *Mauprat* to show how both the novelists have applied the gender role-reversal as a tool to redefine the role men and women play in society and to uphold the view that both sexes are equal.*

**Key-words:** *patriarchy, gender role-reversal, feminism, conservatism, sexual equality, phallogentric.*

(Paper published on 1<sup>st</sup> June, 2021.)

Gender roles were well established in England and France throughout the eighteenth and the nineteenth century. The point of view of the conservatives was that men were the main bread winner of the family and women were the housekeeper doing all the household chores including raising children and fulfilling all the needs of the husbands, "a subordinate role ...in society" (Augustin 2). Foley asserts, "The woman was to inhabit a 'private' sphere created specifically to contain her" (Augustin 2). So they did not need the same education like the men because they were excluded from the jobs that were performed by the men. Besides a woman had to be dependent, meek, passive, and obedient. Marriage was their only future and they were not allowed to inherit property or travel alone without a male companion. In short, patriarchal society placed men in superior position, and women were required to be subservient to men accepting the double sexual standards without challenging them. This society dictated gender role created all kinds of inequality between men and women such as social inequality, financial inequality, and educational inequality. In such a social condition, Austen and Sand penned their novels



In my paper, I am going to present how through their novels, *Emma* and *Mauprat*, by employing gender role-reversal and attributing ‘masculine qualities’ to heroines, Jane Austen and George Sand respectively demonstrate that if women were provided with the same opportunities as men were provided with in the phallogocentric society, they would be capable of performing the same role as men were capable of, thus denying the conservative assumption that women were inferior to men.

In *Emma*, we find, Emma Woodhouse, a motherless child who is brought up by her father, Mr. Woodhouse, and a governess, Lady Taylor. She is “handsome, clever, and rich, with a comfortable home and happy disposition, seemed to unite some of the best blessing of existence; and had lived nearly twenty–one years in the world with very little to distress or vex her” (Austen 5). She is a privileged woman as she is the daughter of a rich landowner. Emma is able to live her life the way she wants to because she is financially independent and so she has no desire to get married: “And I am not only not going to be married are present, but have very little intention of ever marrying at all... Fortune I do not want; employment I do not want; consequence I do not want” (Austen 70). Here Austen pinpoints the fact that economical dependence on men compels women to get married for their sustenance, and as Emma is independent, it depends on her will whether she will get married or not. Thus she represents a modern, intelligent, independent woman who does not see the goal of her life in finding a husband. She is satisfied in her situation but there is a hint in her words that love can change her mind: “And, without love, I am sure I should be a fool to change such a situation as mine” (Austen 70).

As a result she has more leisure in her hands. So, she is into matchmaking to occupy her time and it is also entertaining for her. But this inappropriate use of her time can be explained through Emma’s conversation with Harriet about the things that young women could do. Her “response reveals that performing amateur art, such as drawing, music, and carpet-work, and reading literature are the main activities available to women and suggests these do not provide adequate interest for some women of leisure with active, busy minds.” (Tanner 403).

However, her financial independence and the power she exerts in her household and also out of it, place her in an unusual position for a young woman in Austen’s time and it is



through Emma's power, Austen explores the boundaries of 'feminine' and 'masculine' aspects of her heroine's personality. We come to know from the novel that she was brought up without a mother: "[h]er mother had died too long ago for her to have more than an indistinct remembrance of her caresses" (Austen 5). Thus, motherless Emma acquires full authority over the household from a very young age with a governess who is more like a sister to her, an elder sister who is married and a sickly father. Besides no one has checked her in exerting authority as Mr. Knightley says: "In her mother she lost the only person able to cope with her. She inherits her mother's talents, and must have been under subjection to her" (Austen 31). Emma has always done "just what she liked, highly esteeming Miss Taylor's judgement, but directed chiefly by her own" (Austen 5). In short, she seems to be able to overpower even those above her, be they female or male, by her more 'masculine' treatment of power.

Actually, *Emma* is centered on women power. As Johnson argues, Mr. Knightley is the only male character in the novel, with true authority in the novel; the rest of the authority positions are filled by women with varying levels of power, with Mrs. Churchill at the one and Mrs. Elton at the other end (Johnson 126). These characters exert power in their own ways and, strangely, their authority is not challenged by any male characters in the novel. Mr. Woodhouse accepts his daughter's authority completely. No decision in the household is taken without consulting her, for example regarding sleeping arrangements for their guests: "Have you thought, my dear, where you shall put her—and what room there will be for the children?" (Austen 79). It is seen in the novel that her father and her governess who should exert authority over Emma are actually under her authority. Harriet also unquestionably accepts her authority. It is true that Mr. Knightley openly disputes her authority throughout most of the novel but in the end it seems that he too recognizes her authority: "But the plan which had arisen on the sacrifice of this he trusted his dearest Emma would not find in any respect objectionable: it was that he should be received at Hartfield" (Austen 357). He also acknowledges that he is "owing" all his "happiness" to her (Austen 367).

In the novel, we notice that Emma and her mother are described as strong and intelligent, while her sister and her father are described as weak and not so much intelligent like Emma and her mother. She is described as "passing her life with those she doted on, full of their merits, blind to their faults, and always innocently busy" (Austen 113). In this way,



Isabella has been presented as an ideal woman as per the eighteenth century patriarchal conservative society: a doting wife and a mother who is busy with her ‘innocent’ hobbies. But Austen does not want to show Isabella as an epitome of “feminine Happiness” (Austen 113). Isabella’s character as depicted by Austen reminds us a passage in *A Vindication of the Rights of Woman* where Wollstonecraft highlights the shortcomings of many mothers: “The formation of the mind must be begun very early, and the temper, in particular, requires the most judicious attention- an attention which women cannot pay who only love their children because they are their children... It is this want of reason in their affections which makes women so often run into extremes, and either be the most fond or most careless and unnatural mothers.” (Wollstonecraft 346).

I have already noted that Isabella is a doting mother or ‘a fond mother’ and at the same time she is “not a woman of strong understanding” or she is lacking in ‘reason’ (Austen 76). In short, Austen presents Isabella as the “most fond” mother without sense. Here ideas of Wollstonecraft have been echoed by Austen. Again Austen says that “Isabella might have been a model of right feminine happiness” (Austen 113). This line strikes us. Here Austen uses the word ‘might’, not ‘was’. This word turns a conservative statement into a progressive interrogation. It is an example of Austen’s ‘double-voiced’ style of writing. In fact, she has used the genre of conservative courtship novel, and by using this genre, she questions those very conservative values within that genre covertly. What Johnson said in this respect is worth quoting: “Conservative fiction was Austen’s medium because it very quickly became the only fiction there was, other voices became quelled, and Austen persistently subjected its most cherished mythologies to interrogations from which it could not recover”(Johnson 166). Thus, Isabella, her elder sister, acts as a foil to her. As Johnson argues, “In the character of Isabella, Austen shows that the good little wife cannot hold a candle to Emma” who is not presented as quite ‘perfect’, either in looks or accomplishments (Johnson 142). She is “quick and assured” and does “just what she liked”(Austen 31,5). She is not perfectly accomplished. Her power of judgement is very bad which is proved by her efforts at matchmaking for the wrong couples. Therefore, we can say that Austen favours ‘less-feminine’ but sensible female characters over other female characters in her novels. Despite all her imperfections, she is Austen’s favourite among all the characters in the novel irrespective of male and female: “Highbury [...] afforded her no equals” (Austen 7).



Emma does quietly know that she herself is less ‘feminine’ and Harriet has, according to her, “thorough sweetness of temper and manner, a very humble opinion of herself, and a great readiness to be pleased with other people” which she believes are the qualities in women which attract men: “I am very much mistaken if your sex in general would not think such beauty, and temper, the highest claims a woman could possess” until “they do fall in love with well-informed minds instead of handsome faces” (Austen 67,66). Marilyn Butler argues that “Harriet is a primitivist’s heroine, seen with a satirical eye. She is innocent, and in all her instincts ‘good’; but the shortcomings of such goodness are apparent in her speeches: ill-judging, indecisive, beneath rationality” (Butler 267). With ‘satirical eye’, Austen criticizes this idea: “It was rather too late in the day to set about being simple-minded and ignorant; but she left with every previous resolution confirmed of being humble and discreet, and repressing imagination all the rest of her life” (Austen 149). In this statement, Austen implies that Emma is far superior to Harriet because Emma has sense. Even Mr. Knightley also acknowledges that she has sense, a quality which was praised by even Wollstonecraft: “Better be without sense than misapply it as you do” (Austen 67). What Butler says in this respect is worth quoting: “Emma makes mistakes in the first instance because, like all other human beings, she is fallible” (Butler266). Conservatives always want to see women as ‘perfect’ and Emma is certainly not presented conforming society’s expectations. Again, her imperfection does not imply that she is inferior to men in general, and Mr. Knightley in particular.

The novel ends with marriage and so many critics argue that ending of the novel confirms Austen’s conservativeness but we must remember that Emma was not compelled to marry. It was her own choice to marry Mr. Knightley and she chooses him because “her happiness depended on being first with Mr. Knightley, first in interest and affection”(Austen 385). Before that she herself argued that “a single woman, of good fortune, is always respectable, and may be as sensible and pleasant as anybody else” (Austen 91). She has no need to marry to remain respectable as she is rich but when she realizes the risk of losing Mr. Knightley’s regard if she is replaced by her future wife, in other words, when she realizes her love for Knightley, she becomes ready to marry him.

After her decision to marry which goes against her father’s wishes, she and Mr. Knightley figure out how to convince Mr. Woodhouse move to Donwell Abbey. It is resolved





later that Mr. Knightley should move to Hartfield as the first plan of moving Mr. Woodhouse to Donwell seem unfeasible and all these decisions are taking even without consulting Mr. Woodhouse. All these decisions are taking considering the comfort of Mr. Woodhouse, and this concern for his comfort is based on “the risk [it might pose] to her father’s comfort, perhaps even of his life”, not on their respect for his authority (Austen 370). It is to be noted here that in this arrangement Emma was happy: “This proposal of his, this plan of marrying and continuing at Hartfield - the more she contemplated it, the more pleasing it became” (Austen 371).

It was her own choice to marry Mr. Knightley. Sometime it is argued that her authority comes to an end after her marriage with Mr. Knightley. But as they belong to same social standing, their marriage puts them on equal footing. What Emma says of their conversations is worth quoting here: “We always say what we like to one another” (Austen 11). This statement also shows their equality. Again Emma’s referring many male characters as her friends places her in a position of equality to them. Above all we must note that by moving to Emma’s house after marriage, Mr. Knightley is actually playing the women’s role. As Johnson puts it: he is “placing himself within her domain” and by doing so, “gives his blessing to her rule” (Johnson 143). Thus, through the conservative genre, Austen, actually, reverses the men-women role play, or we can say, she defies the social convention, by giving Emma the most authority and shows that when the same opportunities are provided to them as men are used to get, they are capable to act in the same way as men are capable to act, thereby proving that men and women are equal.

The social status of women in France was not very much different from that of England, and George Sand, “the advocate of woman as Schiller had been the advocate of humanity”, like Jane Austen criticizes the parochial society, but much more vehemently and overtly than Austen, she attempted to prove that gender roles are created by society and women are not inferior to men and they can prove it if they enjoy the same rights as men do (Herrmann, 128).

In *Mauprat*, “a solid, masterly, manly book”, Sand has portrayed a strong female character, Edmee, an educated, enlightened woman, who is raising a man, Bernard, from his bestial positions (James 120). We find in the novel that Mauprat is the name of a powerful,



feudal family in the Varenne, which has two branches. Edmee's father, the Chevalier Hubert de Mauprat, is the head of the educated, younger branch and they live in the plain, in the Chateau de Sainte-Severe. The head of the other branch is Tristan de Mauprat. He with his eight scoundrel sons and grandson, Bernard, lives in the castle of Roche-Mauprat situated in a ravine, on a vast moor, in the wildest part of the country.

During the course of the novel we come to know that Bernard, a fatherless child, at the age of seven, after his mother's death, had been seized and brought to Roche-Mauprat. There he was treated cruelly and became a daily witness of the debauchery and oppressions of his uncles. Almost ten years later he became almost as scoundrel as his uncles. So when Edmee, his beautiful cousin, in a stormy night arrives at Roche Mauprat, after her horse has bolted from a wolf-hunt, and is held captive, Bernard's first intention was to rape her. He agrees to help her to escape from Roche-Mauprat on a condition, and the condition was that she will marry him. Then we find that Roche-Mauprat is besieged, but, somehow, Bernard manages to escape with Edmee to the refined household of her father at the Chateau of Sainte-Severe.

According to Herrmann, Bernard lived by the code that men are to be exploited and women to be enjoyed (129). It is Edmee who transforms her cousin, Bernard, a wild savage, into sympathetic human respecting women, and thereby makes him worthy of marriage. Bernard also happily acknowledges Edmee's contribution in her life to the narrator: "I am an old branch, happily torn from a vile trunk and transplanted into good soil....The kind fairy who transformed me is here no more to take pleasure in her work" (Sand 2).

Sand, thus, deconstructed the norms of the phallogocentric society by portraying a strong, educated, powerful and dominating female character challenging the male character's extensive reign over her. In sexual power role-reversal, the female protagonist sometimes assumes the role of domination typically held by male character, which in turn compels the submission of the male protagonist to the female. Here by employing the gender role-reversal, Sand tries to transform the condition of women in society by placing them in an equal footing with men. So we notice that it is Edmee who takes charge of her own safety at Roche-Mauprat by convincing Bernard through her persuasive abilities by appealing to his weakness i.e, his desire for her to save her from his barbaric uncles. Here Bernard, in spite of



his efforts, finds him defeated at the game of domination, and finds no other alternative but to hand over the control of the situation to Edmee. The recognition of Edmee's triumph by Bernard shows his acceptance of the submissive position in the gender power role-reversal. Thereafter, we find Bernard in a continuous state of powerlessness in relation to Edmee., the physically powerful man is not able to take what he believes to be his and herein lies an irony in the character of Bernard and this incapability actually demonstrates the inner struggle of Bernard. The irony reaches its climax, when from Edmee's father, he comes to know: "If,...they had granted you to my loving care, you would have been brought up with my daughter and you would certainly have become her husband. But God would not have it so. You have now to begin your education, whereas hers is almost finished" (Sand49). He is not only unable to seize what he believes his "fairly won prize", but also learns that Edmee would have his if circumstances had been different" (Sand49). At the same time, we find it is education that places Edmee at a position that is superior to Bernard. Martine Reid affirms this superiority in her article, "Mauprat: marriage et maternite chez Sand", by describing Edmee as a self-made woman who manages a small masculine society (Sand52). Edmee, in this way, has been portrayed as a woman capable not only of controlling Bernard, but all of the male characters who surround her.

On the contrary, Bernard struggles to manage the situation, but failing to do so, he behaves in a way which is uncharacteristic of a male character in a traditional conservative society: "...burying my face in my hands, I broke into heart-rending sobs. My sturdy breast heaved convulsively, but tears would not bring the relief I longed for" (Sand 51). The power role reversal is fully established when Bernard reminds her of the agreement and Edmee declares: "I will never be yours...if you do not make some changes in your language, and manners, and feelings....when you appeared to me good and generous, I might have yielded to you.... But from the moment I cease to care for you, I also cease to be afraid of you. Improve your manners, improve your mind, and we will see" (Sand 103).

Here Bernard finds himself in a situation where there is no option but to yield himself to the new system if he wants to gain the affection of the Edmee. It is Edmee who forced him to realize the importance of education: "Education will teach you, Bernard, what you ought to think about the things which must concern you – about your position, your duties, your feelings.... And I, who am accustomed to question myself on all subjects and to discipline



my life, how can I take for master a man governed by instinct and guided by chance?" (Sand 59).

Sand is here clearly advocates for such an education for both male and female, providing importance on the need to gain understanding, compassion and respect for life and one's place in the world. It is through education one treats and views another on equal footing irrespective of genders. It is his education, overseen by Edmee, enlightens him and helps him to see the world with new eyes. Keith Wren is quite right when she says: "...Bernard's learning to understand the only relationship that Edmee will accept, a contract between equals, implies his learning to understand that the nature of the only genuine bond is similar" (Sand 361). Actually this bond is based on love and equality.

Traditionally a woman desires to please her man. But in this case it is the man who desires to please his woman in order to win over the affection of her. Bernard submits himself to the condition of Edmee, and agrees to accept the education imposed by her only because he feels that the submission is the only way to be united with Edmee, and he devoted himself to transform himself into a man worthy of her and he takes long six years to complete his education.

In a traditional conservative society, the men generally view themselves as the manipulators or controllers of the situations, considering the women only just dependent on them. In *Mauprat*, Edmee, the woman, rejects this traditional dependency on Bernard, the man, by acting in her own free will. On the contrary Bernard, the man, acknowledges his dependency on Edmee, the woman. In this way, Sand redefines the gender roles of the male and female characters in *Mauprat* This role-reversal also serves to educate the male and female characters by experiencing the situation of the other in an effort to achieve a level of what Jessica Benjamin, the famous feminist theorist in *The Bonds of Love*, calls 'mutual recognition' which in turn places them on equal footing and serves to form ideal couple based on gender equality (Sand 5). This role-reversal also highlights the fact that gender roles are not fixed. Everything would have been status quo, if there had been no role-reversal. Through this role reversal Sand disproves the status quo as natural, and attempts to change the society's perception and understanding of gender roles. Edmee abandons her traditional submissive role as a woman to assume the dominant position typically held by men in



society, and she exercises her authority over Bernard. On the other hand, Bernard gives up his traditional dominant role as a man and submits himself to the desires of Edmee. In this way both the characters recognize the role of the other. The woman learns what it means to be recognized as well as what it means to recognize the value of the other, and the man recognizes the authority of other. This kind of mutual recognition establishes some sort of sexual equality.

It is to be noted here that Sand's critique of society does not end with a rejection of man and marriage. Sand recognizes here that the problem is not with men and marriage; it is the societal roles that men and women are taught to play. So the main problem lies with the norms of society. Therefore, if the society changes its rules and regulations pertaining to the status of men and women, then everything is possible. What Naomi Schor says in this respect is worth mentioning here: "In Sand, socialist idealism entails the idealization of marriage" (Sand 89). Edmee and Bernard ultimately becomes an ideal couple. Through the development of this couple, Sand demonstrates how individuals can change their mindset from the parochial social order of the past to the egalitarian, ideal society of the future. Edmee in her conversation with Bernard clearly states the problem lies in marriage based on inequality: "You would have made me blush for your ignorance; you would have wanted to rule me, and we should have fallen foul of each other" (Sand 195). This novel also shows that women can manipulate men; they can educate men; they can control their emotions and feelings; they can learn from their mistakes. Thus women can have all the essential qualities of men if they are provided with the same education and opportunity as men are provided with. Sand, 'the Romantic Rebel', has the courage enough to articulate these ideas in the context of the late 18<sup>th</sup> and early 19<sup>th</sup> century. Naomi Schor is quite right when she says: "her idealist politics is rooted in a refusal of the gender arrangements both reflected and constructed by romanticism and realism"( 71). In fact she advocated for a society based on gender equality which is possible if only the societal structures are transformed.

To conclude, Emma and Edmee belong to two different countries, cultures, and society but the era in which they belong is more or less the same. Both the heroines have some similarities and dissimilarities. Both of them are motherless and they loved their fathers dearly. Both of them are financially independent and authoritarian. Both of them are kind and generous to the poor. They live their lives in their free will. Both of them marry



ultimately, but they marry out of love and exert their power to choose their husbands. They control the male figures with whom they live. Emma has some male friends whereas Edmee's instructor was a man. But whereas Emma engages herself in matchmaking and fails in her task due to her poor judgement of characters, Edmee engages herself in a more difficult and noble task. She raises a savage man from his bestial condition and transforms him into a civilized, educated person. In this respect, the two characters bear no similarity. But one thing is evident from the above discussion that both these heroines have defied the rules and regulations of conservative parochial society by their acts and authoritative behaviours, and have proved that they are capable to do the same tasks as men are capable to do if opportunities are provided to them thus conforming the view that gender-roles are created by society and men and women are equal.

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## The Dowania: A Brief Study on its Interpretations from the Perspective of the Singpho Tribe of Arunachal Pradesh

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### Abstract

*Arunachal Pradesh is the largest state among the eight states of the North East India. It is a home for twenty six (26) major tribes and numbers of sub-tribes. These tribes speak their own distinct languages and maintained an identical cultural institutions and practices. Due to distinct cultural identities and language variations among the tribes the state is endowed with affluent cultural mosaic and indigenous institutions. According to the most accepted tradition, the Singpho people migrated from Kachin state of modern day Upper Myanmar especially from Hukang valley. Since 18<sup>th</sup> century, the Singpho began to migrate from there and enter their present homestead through Patkai Range.*

*The Singpho people who inhabited the plains came into limelight in the later part of the 18<sup>th</sup> century during the reign of Gaurinath Singha. In the Moamaria revolt against the Ahom the Singpho joined the rebels. Again, when the Myanmarese invaded the Ahom the tribe again joined the Myanmarese invaders. The Singpho tribe had proved to be very strong ally to the Moamaria rebels and the Myanmarese invaders. The Ahom power also had realized their political strength. Therefore, the tribe considers that there is a political reason behind the term Dowania in order to create disunity among the Singpho.*

*The present paper provides an overview of the earlier interpretations of the term Dowania. Traditionally, they are interpreted as the offspring of the Singpho and their slave women. But the Singpho tribe vehemently disagree with the earlier interpretations and considered it as misinterpreted and incorrect. During the fieldwork, the present researcher had found some different explanation on the term Dowania from the Singpho people. Although there is no written records however, the Singpho society is broadly divided into three social strata i.e; Dufan (royal family), Shanga (commoners) and Mayam (domestic help). The Dowania is not included in the social stratification but they are given a different derogatory identity in the Singpho society. Therefore, the present researcher had presented an argument and a different perspective from the Singpho tribe regarding the misinterpretation of the term.*

**Keywords:** Ahom, Moamaria, Kachin, Dowania, Patkai, Hukang, Dufan, Shanga, Mayam.

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

The Singpho tribe is one of the major tribe of the state. They have rich history, culture institutions and traditional practices. The Singpho are found in the Yunnan Province of China, the Chengmai Province of Thailand and the Kachin state of Myanmar. In Arunachal Pradesh the tribe is found in Changlang, Lohit and Namsai Distircts. The major concentration of the Singpho population is found in the Bordumsa Administrative Circle of the Changlang district





of Arunachal Pradesh. The empirical data used in the present paper had been collected from Bordumsa area. The Singpho are at present largely found in the Changlang district of Arunachal Pradesh. There are other tribes inhabit in the district along with the Singpho like Tangsa, the Thikak Tangsa, the Lisu.<sup>1</sup> Besides these communities the Tibetan and the Chakma-Hajong refugees who migrated to the district in the recent past also settled in the Changlang District.

The neighboring tribes of the Singpho tribe are the Nocte, the Khamti, the Chakma, the Hajong, the Tangsa, the Khamiyang and the Lisu. In order to live peacefully and to maintain communal social harmony an inter-community cultural hall had been constructed by the people at Diyun Circle of Changlang District.<sup>2</sup> This hall facilitates the different communities to showcase their cultural activities by organizing cultural exchange in the hall. While doing research for the Ph.D dissertation the present researcher has come across the term Dowania through the secondary sources. However, during the fieldwork the present researcher did not get any mention of Dowania by any of the resource person who have been interviewed. They freely talk about their neighboring tribes, social stratification, history, culture etc. However, the people never mentioned about the term Dowaniya. It may be because the tribe did not accept the earlier interpretation of the term Dowaniya or Doania. Although there are numerous of works that mention the term Dowaniya however, none of the earlier work have discussed the term in detail. Thus, earlier interpretations cannot be considered as a proper interpretation. The tribe is also not in favour of earlier interpretation of the term Dowaniya. Therefore, the present researcher began to collect primary data by interviewing the local Singpho intelligentsia on the term Dowaniya. Consequently, a new and a different interpretation of the term Dowania came into light. Besides their perspective on the term Dowania the researcher had get certain information regarding the origin of the term Dowania from the local Singpho intelligentsia. Although they present a theoretical arguments but it is worth enough to be noticed. Thus, the present study is based on the Singpho

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perspective on the interpretation of the term Dowania with whom they lived since long time. Thus, the study is confine to the Singpho inhabited areas of Arunachal Pradesh and the secondary sources are use for the sake of footnotes only.

### **Social Structure of Singpho Society:**

It is observe that the Singpho society is broadly divided into three social strata. The *Dufan*, the *Shanga* and the *Mayam*. As the Singpho have a chieftainship political system, thus they consider the family lineage of their respective chief as the royal family. This traditional royal family is known as the Dufan means family of the chief. The Shanga are the commoners and the Mayam are the domestic help in the Singpho society. The people traditionally accepted this social division however there is no written records on their social stratification. In their traditional social stratification also the term Dowania is not mentioned thus it is clear that the term Dowania was not in existence among the Singpho society since time immemorial.<sup>3</sup> Before the Singpho migrated from upper Myanmar they practiced the keeping of domestic help in their house. However, the slavery system was intensified after the Singpho joined the Myanmarese invaders.

During the Myanmarese war, thousands of Assamese captives were carried off by the invaders particularly by the Singphos.<sup>4</sup> During the Myanmarese invasion there was plunders everywhere in the plains of Assam in which the Singpho joined the Myanmarese troops. The Singpho invaded Assam through the Patkai Pass and later settled themselves in the eastern extremity of the valley. By this pass, the Burmese army under MahaThilwa in 1818 and an second under the celebrated Bundu La in 1822 both advanced and affected the conquest of Assam.<sup>5</sup> While talking about the Myanmarese menace A.Mackenzie once noted that; “when

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the Burmese (Myanmarese) invaded the province in 1817, an era of plunder and misrule supervened and every petty chief who could get together a following pillaged of the Assanese on his own account.<sup>6</sup> The Singpho along with the Myanmarese invaders captured huge numbers of people from the plains of Assam. These captives later on became their slaves.

It is maintained by the tribe that the Mayam are the descended from Assamese origin whom the Singpho people captured during the Myanmarese invaders from the plains of Assam.<sup>7</sup> Later on, these captives began to work for their Singpho masters and eventually being a domestic help became their social identity in the Singpho society. Within short time their population grow rapidly and a section came into existence whom the Singpho began to called as *Mayam*. J.F.Michelle first noticed the possession of slaves among the Singpho and writes; 'In 1825 it was calculated that each Singpho possessed from 40 to 60 slaves valued from Rs.20 and Rs.80 each.'<sup>8</sup> The Myanmarese invasion of Assam intensified the slavery system among the tribe, which they also agree. With the passage of time, a gradual matrimonial relationship established between the Singpho and other neighbouring tribes including the Mayam. As a result, the offspring of this mixed or union of inter-racial marriage probably facilitated the emergence of a new group or clan in the Singpho society that is often referred to as Dowania. Regarding the presence of Dowania in Singpho society S.Rajkumar writes that; 'In 1911, the dowanias who are considered to be a mixed race, descended from Singpho and their Assamese slaves. They now live in about 80 houses in each around Margherita and Digboi.'<sup>9</sup> These days the population of dowania is living along with the Singpho people and culturally they are completely mingled with the tribe.

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Thus, it became virtually not possible for the outsiders to recognise the dowania. When the people themselves do not like to maintained their different identity then there is no point in dividing the people who are living peacefully in a society.<sup>10</sup> During the fieldwork, the present researcher had found that neither the Singpho nor the dowaniya people accepted the earlier interpretation of the term dowaniya. They consider it as a completely misinterpreted explanation and incorrect to make derogatory categorisation of certain people only because their parents belong from different community.

From social point of view, it seems that by the virtue of their social adaptability and also because of prolonged social contact between different racial groups it in not possible to distinguish between dowania and the original Singpho. In this matter, the tribe believed that as they shares the same socio-cultural life style and traditional institutions there is no point in dividing the society based on racial origin. Otherwise, we will be repeating the same what ahom and British have done to divide the Singpho society.<sup>11</sup>

#### **Political Cause for the Origin of the term Dowaniya:**

The tribe believe that the term Dowaniya was originated because of the political reason during the last part of Ahom rule especially during the Moamaria rebellion. Some of the tribesmen maintained that the concept of Dowaniya was started by the Ahom in order to disunite the Singpho by creating a kind of social differences. During the Moamaria revolt, the Singpho joined the Moamaria against the Ahom monarch. They have proved themselves as a strong political ally to the rebels. The Moamaria rebellion broke out in the year 1769 due to the religious diffences between the royal Ahoms and the Moamaria. This religious tension turned into political revolt against the Ahom power. After making alliance with the Moamaria rebels the Singpho began to bring troops from Myanmar. It is noted that the Moamaria rebels backed them in inviting Myanmarese soldiers to Assam on two occasions.<sup>12</sup> The Singpho

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proved to be a strong political ally to the Moamaria rebels by strengthening their revolt against the Ahom by bringing troops from Myanmar.

After Moamaria rebellion, it was during the Myanmarese invasion of 1817, 1819 and 1821 the Singpho have joined the invaders and have created havoc in the plains of Assam. Thus, the ahom adopted divide and rule policy in order to weaken the Singpho by creating social differences. In this process, they created a new social group called dowaniya that does not have any meaning. In this regard one of the Singpho local who have command over Singpho history explained; 'Dowaniya is a corrupted version of the Assamese word *Dora ana*. It Literal meaning is to bring back something or someone after it has been taken away from its original place. In the context of Assam, it means those people who were once captivated by invaders. After these people were bring back to their original place they began to known as *dora ana*. After the British entered in the politics of Assam they began to pronounce it *Dowaniya*. Later on they have intensified the social differences among the Singpho by giving these people a distinct social identity.'

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The British came in direct contact with the Singpho after the Myanmarese were ousted from Assam in the year 1826. The British strictly implemented slave abolition policy in the Singpho homesteads in the same year. Most probably during this time period the British came across the term *dora ana* thus, from this time mentioning of the term *dowania* is found in the British records. The British officials might have understood the term from the local people of Assam thus the British records maintained that the Doaniya or Dowania are the half-breed with their Assamese slaves.<sup>14</sup> After the British came to know the definition of *Dora ana* it became easy for them to create social and political disunity among the Singpho by stressing that the Dowaniya are different from the Singpho. The tribe maintained that the term Dowaniya was an Assamese word that was either use to address a person who can speak two

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languages or those people who were once again taken back after being parted from their own people.<sup>15</sup>

These line of William Robinson may substantiate the present argument; ‘The first Sebundy Regiment of the East India Company was composed of the released natives of Muttock Duaniyas who were seized and enslaved by the hilly tribes.’<sup>16</sup> In this sentence one can observe the term ‘Muttock Dowania’ which shows that Dowania was not a tribe rather a person from any tribe who was once captured by the invaders. Here Robinson might have talked about those Muttock people who were once captured by the invaders and then later on who got released by the British during the process of slave abolition policy. Later on, the local researchers and writers have define the term Dowaniya as it was interpreted in the earlier works. The present researchers have come across numerous works mentioning the term Dowaniya as the children of the Singpho and their assamese slave women. But none of the work discuss the term in detail and no one have tried to make critical analysis on the origin of the term.

### **Findings:**

Nowadays the native intelligentsia and researchers argued and denounced such assertion and interpretation as factually incorrect and misconceived notion. The Singpho people believed that the nomenclature dowania/dowaniya is misinterpreted and they consider the term as derogatory term used against the tribe by the outsider in the early days. In the light of these arguments , the tribe maintained that it is a common practice among many tribes of the state to marry girl from other tribes but it is not correct to give their offspring a derogatory term or name. From this point of view the issue seems to be quite sensitive which needs to be handled with caution to avoid any kind of social discontentment in the society. It is observed

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that the tribe totally reject the definition of the term Dowania as an offspring of the Singpho and their Assamese slaves.

They are not giving emphasis on dividing society into different groups rather the people believed that all are equal as a citizen before the constitution of India. The fact of the matter is that the Singpho vehemently reject the earlier researchers' interpretations of Dowania as derogatory and incorrect.<sup>17</sup> Therefore, the tribe wanted the researcher to handle the term with utmost caution and avoid the wrong interpretation. Obviously, it is a sensitive and debatable issue among the people. Hence, in the present study an attempt had been made to analyse with utmost caution so that a proper interpretation of the nomenclature Dowaniya could be presented. In the recent past there is a changed of social outlook on the derogatory interpretation of the term Dowaniya among the people in the society.

Under given arguments, it would be prudent that there should be further research and thorough investigation on the historicity of the word in order to establish a trustworthy fact to enable the tribe understand the correct nomenclature or the word Dowaniya in the society. After observing the social sensitivity and complexity of the term Dowaniya it is found that the tribe is highly concerned about misinterpretation of the term so they are still keen to engage on critical discussions on the issue in future among the members of the community. In the present study, the researcher used the existing available literature on the term Dowaniya only for the sake of footnotes and tried to understand and interpret the term from tribe's point of views.

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## Ethical elements in the Philosophy of Religion of Vivekananda

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### Abstract

*Religion is an important affair in our life. From the very dawn of human civilization religion appeared. No nation has ever been found without religion. Though there is no unanimously accepted definition of the term religion, we find it plays important role in our life. If we go through the sacred text of different organized religions, we find they contain pictures of both violence and non-violence. We find religion can play an important role in creating and promoting violence, nevertheless, there is no reason whatsoever that we should give up religion. Science also cannot disprove religion. Religion can give us values required for making a good nation and a quality life. Because religion embodies some guiding and sustaining ideals in order to promote common good such as truthfulness, honesty, love, peace, selflessness, righteousness, justice, compassion, non-violence, detachment, brotherhood, solidarity and lots more that act as the bedrock of a society or nation and thereby can uphold the society. Here lies the significance and necessity of religion in our lives and society. This article attempts to explore the ethical merits in the Philosophy of Swami Vivekananda that help us to build a peaceful world.*

**Keywords:** Religion, Violence, Non-violence, Swami Vivekananda, Philosophy of Religion, Ethical Values.

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

Religion is an age old phenomenon. It plays important role in our lives. But at the same time we find that after the end of cold war people started to believe in an emergence of peaceful and harmonious era free from violence, but to the contrary we are witnessing a considerable increase of violence mainly in the name of religion. Though we know that all religions embody values and ideals that act as guiding and binding principles in our lives, now it is time to regenerate them. We need inner development. We need to transform our consciousness in order to realize the Oneness in all religions. It is here the study of the Philosophy of Religion of Swami Vivekananda gets importance as it seeks to establish the unity and harmony of all religions that helps man to attain peace and happiness. In fact, the message conveyed by his Philosophy of Religion is really thought provoking and can be helpful for establishing a peaceful world.

### Vivekananda's analysis of Religion:

Vivekananda believes in the necessity of religion because it is one of the most powerful forces in human life that can mould human destiny. It is the greatest bond that unites man with



greater strength and firmness. He believes that man consists of body, mind and spirit. Religion springs from the spiritual nature of man. He thinks that man's attempt to go beyond this material world proves that this sensual world cannot satisfy him. He longs for something higher and this yearning for something higher according to Vivekananda is religious. He emphasizes that religion exists from time immemorial and its survival from antiquity to the present proves its importance and necessity in our lives. He announces that:

“Life will be a desert, human life will be vain, if we cannot know the beyond..... if man rests content with the present and gives up all search into the beyond, mankind will have to go back to the animal plane again”<sup>i</sup>

He firmly believes that as religion is an inevitable element in man's very constitution and as it is an attempt to answer man's innate urge about the infinite, it, therefore, cannot be ruled out. He observes:

“Religion is fundamental in the very soul of humanity; and all life is the evolution of that which is within, it, of necessity, expresses itself through various peoples and nations”<sup>ii</sup>.

Though we find that the word religion does not have any all agreed definition, he sheds light on some of the aspects of religion.

1. He distinguishes between two aspects of religion- inner and outer. The outer part of religion which is the secondary part of religion consists of dogmas, doctrines and rituals that vary from religion to religion. On the other hand, the inner part of religion that does not vary from religion to religion is the essence and core of religion.
2. Religion has a super-natural element and the nature of this super-natural element is abstract which is called differently by different religions such as ‘Personal God’ or the ‘Absolute’ or ‘Supernatural Law’ or ‘Moral Law’ or anything like this. Thus, every religion has a supernatural content.
3. Religion is an attempt to go beyond both the senses and intellect. Thus, it is trans-empirical and trans-rational. It is a matter of pure realization.



4. Religion provides a secure foundation to morality. Again, as religion is an attempt to go beyond the limitations of this material world, it has capacity to raise man above the evils and ills and thereby can bring peace and harmony. He says: “Take religion from human society and what will remain? Nothing but a forest of brutes”<sup>iii</sup>.

5. Every great and recognized religion has three parts- philosophy, mythology and ritual.

Swami Vivekananda not only believes in the necessity of religion, but accepts religious pluralism. According to him, religious pluralism is a normal phenomenon. To quote him:

“...religious thought is in man’s very constitution, so much so that it is impossible for him to give up religion until he can give up his mind and body, until he can stop thought and life. As long as a man thinks, this struggle must go on, and so long man must have some form of religion. Thus we see various forms of religion in the world”<sup>iv</sup>.

He emphasizes that all religions contain values and difference amongst them is only in doctrines, dogmas and rituals which lead to conflicts and other type of violence. Under this circumstance he proposes One Universal Religion which is rooted in the Philosophy of Advaita Vedānta. The core teaching of Advaita Vedānta is: only Brahman is Ultimate Reality, world is false and the finite soul is identical with the Infinite Soul or Brahman. Thus, according to Vivekananda, as every individual soul is identical with the Supreme Soul, each soul possesses divinity which is covered by the veil of ignorance and the manifestation of such inherent divinity is religion. “Religion is the manifestation of the Divinity already in man”<sup>v</sup>.

In his view the sole purpose and function of religion is to awaken such divinity or actualize it which is potent in us. We find, as the principal teaching of Advaita Vedānta is Oneness in all existence, so the quintessence of the Philosophy of Religion of Vivekananda is also Oneness in variety. In fact, his Philosophy of Religion wants to make a grand unification of all existence where all the apparent differences between race and race, man and man, man and woman and the like get disappeared and all are treated as essentially equal.

Vivekananda does not think that Universal Religion can be formed by the process of conversion of the followers of other religions into one. It is an impossible task as variation is an



obvious and true fact. It is the plan of the universe. He, indeed, accepts all religions are important and necessary as they have their own unique ideals required for the progress and betterment of humanity.

The following ethical merits can be found in the profound Philosophy of Religion of Vivekananda.

### **Practicality:**

Swamiji's Philosophy of Religion is practical because he does not only re-interpret the Advaitic truth that every individual soul is identical with the Supreme Soul (Brahman), his main goal is to make the mystical and intellectual Vedānta 'practical' i.e. attainable by all people in all walks of life. That is why he announces:

“Each soul is potentially divine. The goal is to manifest this Divinity within by controlling nature, external and internal. Do this either by work, or worship, or psychic control, or philosophy- by one, or more, or all of these- and be free. This is the whole of religion. Doctrines, or dogmas, or rituals, or books, or temples, or forms, are but secondary details”<sup>vi</sup>.

Thus, the essence of his religion is practice not theory. He combines Advaitic truth with practice and service. He believes that not only realization, but the ideal of religion i.e. Oneness should be expressed in our thoughts, words and deeds.

He, however, believes that the ideal of Universal Religion does not mean to give up one's own self-interest rather it can be reconciled with his/her self-interest. He says:

“Now if any man comes to preach to me a certain ideal, the first step towards which is to give up selfishness, to give up self-enjoyment, I think that is impractical. But when a man brings an ideal which can be reconciled with my selfishness, I am glad at once and jump at it. That is the ideal for me”<sup>vii</sup>.

We can hear the echo of this observation of Vivekananda in Arthur Schopenhauer who admits the importance of the practical application of a philosophy in our lives. He says:



“A Philosophy in between the pages of which one does not hear the tears, the weeping and gnashing of teeth, and the terrible din of mutual universal murder is no Philosophy”<sup>viii</sup>.

### **Attitude and Motive:**

The attitude of almost all major religions is to exclude other faiths as false in order to establish that their own religion is best and only true. They treat religiously others as strangers and even enemies and try to eliminate them.

In the sharp contrast, we find, there are two fundamental elements in Swamiji’s analysis of religion viz, respect for all religions and acceptance of religious diversity. In it we find that religions are not competitive, rather complementary and thus it ignores the contradictions amongst religions as superficial. The motive of the Philosophy of Religion of Vivekananda is thus constructive. In it, other religions can find their place and act harmoniously. Because he does not eliminate other religions, rather considers them as parts in the service of mankind. Thus, his concept of Religion is capable of accommodating all religions without destroying their own identities and ideals which can lead to total harmony and peace. So, Vivekananda may be called Pluralistic Universalist. He is pluralist as he accepts all religions are true. At the same time He is Universalist, because he embraces all ideals and values embedded in each and every religion and thus is not confined by any particular set of ideals, whereas, each great and organized religion is limited by its own ideals and values. He believes that One Eternal Religion that is divinity is present in all religions and each religion is the partial fulfillment of such divinity.

### **Purity:**

In many institutionalized religions, we find the difference between righteous and unrighteous or the holy and sinner is one of kind, not of degree. We find people who follow the divine statutes are righteous and pure and who do not follow are unrighteous and sinners and are subjects to be tormented and punished.

But in Vivekananda’s Philosophy of Religion, such violence is absent because in his Philosophy, we find there is no concept of impurity and sin because in his view, every man is nothing but Pure Consciousness and thus essentially divine. As the secret of everything is



divinity, thus the difference between purity and impurity, righteousness and unrighteousness is only one of degree, not of kind. Thus no one should be called sinner or unrighteous because it is only ignorance that obstructs the manifestation of one's own true nature that is Pure Consciousness. He declares:

“The background, the reality, of everyone is that same Eternal, Ever Blessed. Ever Pure, and Ever Perfect One. It is the Ātman, the Soul, in the saint and the sinner, in the happy and the miserable, in the beautiful and the ugly, in men and in animals; it is the same throughout. It is the shining One”<sup>ix</sup>.

Again he says:

“.....arise and awake, and manifest your own nature. It is not fitting that you think yourself a sinner. It is not fitting that you think yourself weak”<sup>x</sup>.

#### **Peace:**

In many religions, we find war plays a vital role in order to establish and expand their supremacy over others.

As the Philosophy of Universal Religion does not aim at to establish its supremacy and sovereignty over others, therefore there is no room for war and violence. It only aims at to preach peace and harmony.

#### **Love:**

In many great religions, we find that the basis of divine instructions is fear and God intends to enforce His guidelines by means of punishments. Here we find God is very angry and revengeful. He does not tolerate any kind of disbelief. Breaching any divine rule intentionally or unintentionally invites severe divine punishment. We also find that in many cases God is worshiped mainly for blessings and boons that cover health, wealth, descendants, land, paradise etc. To acquire these divine blessings and boons, followers of God have been fighting for centuries. Even in the life after death, they are promised to be given various material gifts if they honour divine instructions.



Contrary to this, as Vivekananda does not believe in any 'extra-cosmic' agent, there is no question of fear to such agent. Actually the foundation of the Philosophy of Religion of Vivekananda is pure and unconditional love. It does not frame any hard and fast rule and thus there is no question of any divine punishment rather it preaches true love. In fact, the principal aim of his Philosophy of Religion is to spread love that knows no limitation and expectation. Here, love means feeling and expressing of Oneness in all existence.<sup>xi</sup>

### **Inspiration, Strength and freedom:**

In Swamiji's view, true religion should provide courage, strength and inspiration in all situations of life. We find Swamiji's Universal Religion whose principal teaching is based on the manifestation of the inherent divinity in the soul, can provide such strength and inspiration.

### **Absence of Hell and Heaven:**

Unlike many great and institutionalized religions, Vivekananda's Philosophy of Religion does not contain the concepts of hell and heaven. According to him, as everything is the manifestation of Brahman so everywhere there is divinity and thus every place is pure and holy. Thus, there is no distinction between the sacred and the profane in Swamiji's Philosophy of Religion which we find in every major religion and which gives birth to violence as we have found in the case of Jerusalem viewed as sacred city by three major Semitic religions who have been fighting with each other for centuries in order to maintain its sacredness along with other interests.

### **Equality:**

We find the chief aim of God in many religions is ethnic cleansing. God wanted to destroy all those who belonged to other religious traditions. We find how much hatred and anger were poured down on those who were religiously others. Moreover discrimination was made between race and race, man and man, man and women, human and non-human animals etc.

To the contrary, the ultimate goal of the Philosophy of Religion of Vivekananda is to embrace all irrespective of faith, race, gender etc. It wants to make a grand unification where all the differences will vanish. His concept of equality is based on the Oneness in all existence. He observes:





“If you go below the surface, you find that Unity between man and man, between races and races, high and low, rich and poor, gods and men, and men and animals. If you go deep enough, all will be seen as only variations of the One, and he who has attained to this conception of Oneness has no more delusion”<sup>xii</sup>.

This passage clearly shows that Vivekananda is an advocate of human rights. As Vivekananda’s analysis of religion teaches that there is One Truth, One Life; therefore, there is no real distinction amongst human beings.

### **Reverence for Life:**

In many great and organized religions, killing both humans and non-human animals were considered as sacrifice to God in order to either please Him or appease His wrath.

But as there is no question of pleasing or appeasing divine wrath in Vivekananda’s Philosophy of Religion, thus it is free from any kind of killing. Moreover, when a man realizes that human body is the temple of God, he/she refrains from killing or hurting that abode of God. Thus, here man is given an elevated place. Vivekananda thinks;

“The only God to worship is the human soul in the human body. Of course all animals are temples too, but man is the highest, the Taj Mahal of temples. If I cannot worship in that, no other temple will be of any advantage. The moment I have realized God sitting in the temple of every human body, the moment I stand in reverence before every human being and see God in him.....”<sup>xiii</sup>.

### **Image of God:**

We find in many religions, God fights on behalf of His followers. Sometimes He fights Himself, at other times He permits His followers to be engaged in fighting with those who do not follow His commandments.

But this fighting image of God is altogether absent in the Philosophy of Religion of Vivekananda which teaches that God is not something ‘extra-cosmic’, but every soul is God. In his own words:



“You are God, I am God, and man is God. It is this God manifested through humanity who is doing everything in this world”<sup>xiv</sup>.

Thus, in his Philosophy, there is no conception of disbelievers, atheists and heretics who are subjects to be tortured in many religions.

### **Sound Metaphysics:**

Vivekananda’s Philosophy of Religion has a solid metaphysical basis. We find, in Christianity, it is said that “Love thy neighbor as thyself.” Judaism also has its moral precept that “You shall not kill”. But why should we love others or why should we not kill others? The answer lies in the Philosophy of Advaita Vedānta. According to Advaita Vedānta, we should love our neighbours or we should not kill others because we all are essentially One. If we hurt others we actually hurt ourselves and if we love others we love ourselves. From this sound Metaphysics on which Vivekananda’s Philosophy of Religion is founded, the ethics of mutual love and brotherhood automatically follow because when we are all same at least essentially, then there is no scope of hatred and enmity amongst us. Thus unlike many religions, the morality of mutual love, brotherhood, compassion etc. are not imposed from outside in the Philosophy of Religion of Vivekananda rather it is a natural outcome. Pandit Dr. Sarvepalli Radhakrishnan significantly observes:

“Any ethical theory must be grounded in metaphysics, in a philosophical conception of the relation between human conduct and ultimate reality. As we think ultimate reality to be, so we behave. Vision and action go together”<sup>xv</sup>.

### **Non-sectarian:**

All great religions of the world have many sects which have been quarrelling to each other throughout history and century. But Universal Religion of Vivekananda is non-sectarian. It only aims at the spiritual unity amongst all world religions.



### **No Conversion:**

Conversion is a normal and universal phenomenon of all major religions which can be a major source of violence. Vivekananda's Philosophy of Religion is free from this kind of mentality and emphasizes that one does not need to change one's own religion, rather should remain steadfast to his/her own religion and at the same time should accept and assimilate the best elements of other religions. It is illogical to think that one set of beliefs and practices should be accepted by all in order to attain salvation, because, what is normal to one, may not be normal to others. Thus, it is a great mistake when institutionalized religions claim that if one does not follow a set of beliefs and practices, he/she is not worthy of achieving liberation. Conversion by force is not religion, it is fanaticism. Religion is not a set of doctrines and dogmas which should be followed blindly. Religion is, according to Vivekananda, 'Being and Becoming'. It is the science of the soul.

### **Rational:**

Vivekananda advocates that religion is realization, it is "Being and Becoming." Thus, unlike many institutionalized religions, which are based on heresy, tradition, sacred texts, prophets and the like, Swamiji's concept of religion is founded on reason and experience.

### **Scientific:**

Vivekananda's analysis of religion is in harmony with the aims and conclusions of modern science. Modern science tries to find out unity. For example, Darwin's theory of evolution says that there is one life from which we all came into being gradually. The Big Bang Model claims that the universe came into existence from one singular form of matter and energy. In this way modern science tries to find the unity. Swamiji too finds unity. Again, the knowledge of truth which is one without second is the goal of both science and Universal Religion. Like modern science Vivekananda's religion says that there is One Spirit or Life that is all-pervading and is working in and through all the forms whether vegetable, animal and human. There is One Soul that is manifested through various things. Thus, Universal Religion must be regarded as science of the soul.



Further normally most of the major religions try to incite strong emotional feelings among their followers that suppress their rationality and lead to fanaticism and bigotry. But it is Vivekananda who stresses on the rational and scientific approach to religion. When he says that religion is not a matter of emotion, it is not based on blind faith of following certain rules and regulations; it is 'Being and Becoming', it is pure realization-indicates rational and scientific approach to religion. In this way Vivekananda frees religion from fanaticism, irrationalism, anti humanism and like this.

### Conclusion:

We have found that Vivekananda's Philosophy of Religion embodies all the ethical elements and values like love, empathy, unselfishness etc and free from all violence generating elements. Thus, Vivekananda's Philosophy of Religion contains all ethical elements required for making a peaceful world.

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## Path to the Professionalization of Teacher Education: NCFTE 2009

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### Abstract

*Teaching is a profession and teacher education is a process of professional preparation of teachers. A teacher possessing high degree of 'professionalism' approaches each professional tasks and responsibilities in a planned and systematic manner with high level of efficiency. Hence, professionalism needs to be instilled in each and every phase of teacher preparation to prepare professionals and to improve the quality of education. The present study tries to draw a systematic analysis of teacher education curriculum reforms in India and its effectiveness in professionalizing the teacher education programmes. The curriculum of teacher education has been revised in 1978, 1988, 1998 and 2009 by the policy planners to meet the diverse requirements of contemporary educational needs of the society and to develop professional personnel. Whereas all the earlier frameworks urged for qualitative and quantitative improvement of teacher education programmes, National Curriculum Framework for Teacher Education 2009 (NCFTE) is a substantial departure from the earlier frameworks as 'professionalization' gets its distinct status and this framework works as a catalyst for developing and ameliorating professional competence in teachers through pre-service, induction training, in-service training and on-going professional development programmes. So this paper attempts to show NCFTE (2009) as a benchmark curriculum framework towards preparing a professional and humane teacher.*

**Key words:** *Teacher education, curriculum framework, professionalization, NCFTE.*

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### Introduction:

Teaching is a profession indeed a noble one, conceptually and ideally and teachers are the assets, the cornerstone for multidimensional growth and development of any education system. The Education Commission (1964-1966) of India accepted the influence of teachers in powerful words "The destiny of India is now being shaped in her classrooms" (p.1) so did the National Policy on Education (1986), "no people can rise above the level of its teachers..." (p.25). Such instances are indeed an expression of the important role played by teachers as transmitters, inspirers, promoters of man's eternal quest for knowledge (NCFTE, 2009). Accepting this goal



emphasis is to be given on developing reflective teachers with positive attitudes, values and perspectives, along with skills for the craft of teaching through teacher education programmes. Notably teaching is the profession which is different from others because of its multitude of dimensions where teachers required to be much more accomplished and professionalized. This is a multi-skill and multi-action area to develop a professional teacher upon which the quality of education in general and students' learning outcomes in particular depend on. A general view of professionalism is considered as the continuous process of developing and fostering professional competence in teachers through pre-service, induction training, in-service training and continuing professional development programmes.

To instill professionalism in teacher education, Curriculum Framework is the first step in the ladder of developing professional personnel. In this respect Schulman's (1987) conceptualization of teacher's knowledge that "a teacher should possess content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts and goals and should be able to use this knowledge creatively to deal with ever changing classroom situations" provides the base of teacher education curriculum structure (p.8). The report of the Education Commission (1964-1966) and the National Policy on Education (1986) are the two essential documents that influenced the process of curriculum reform for teacher preparation in India. An analysis of the recommendations of various commissions and committees reveal the efforts of policy planners to bring qualitative improvement in teacher education along with professional development of teachers. This concern has also been reflected in the curriculum framework of 1978, 1988, 1998 and finally in 2009. All the earlier curriculum frameworks stressed on the need for quality and flexibility of teacher education, integration of theoretical understanding with practical experience and moreover breaking the isolation in teacher education institutions but here it has been hypothesized that the National Curriculum Framework for Teacher Education 2009 (NCFTE) works as an enzyme for professionalization of teacher education in India and this framework rigorously instilled professionalism in practicing teachers through pre-service and in-service teacher education programmes.



### **Who is a Professional Teacher?**

A teacher possessing high degree of 'professionalism' approaches each of his/her professional tasks and responsibilities in a planned and systematic manner with high level of efficiency (Dixit, 2014). A professional teacher is not simply one who does teach, but also one who has a duty to teach. Most specifically, a professional teacher, as Prof. Radha Mohan pointed out (Mohan, 2016):

- Possesses sufficient level of mastery over the content knowledge of the subject and constructs new knowledge based on experiences, observations, reflections and encourages students to do the same.
- Continuously strives to update knowledge through self study, reflections, discussion with colleagues and participate in orientation or training programmes.
- Is a keen observer of children's attitude and behavior in different settings inside or outside the school.
- Is sincerely committed to the students and teaching profession, strives to contribute towards its further development.
- Is well aware of social obligations and does nothing to violate the basic principles of our Constitution and to lose the moral and social fabric of society.
- Is well versed in providing guidance and counselling to students and is always willing to help them solve their problems.
- Possesses a fair amount of expertise in various professional tasks such as teaching, testing, curriculum making, textbook writing, preparing teaching aids etc.

### **Policy Initiatives for Teacher Education Curriculum Reform:**

Teaching all over the world is considered as a profession and teachers are given a professional status. Preparing one for a profession calls for systematic evaluation of all facets of the professional training- knowledge and understanding of educational theory, practical field skills and competencies related to learning and teaching and professional attitudes and values (NCFTE, 2009). The curriculum of teacher education has been modified and modernized from time to time to meet the social, cultural, political, economic and geographical demands of society





and to keep pace with the changing knowledge structure of the world. One of the crucial landmarks in the history of Indian efforts towards bringing qualitative improvement in education in general, and teacher education in particular is the recommendations of the Education Commission (1964-66) popularly known as the Kothari commission. Accepting that the existing teacher education programmes are largely divorced from the realities of the schools, the Commission recommended reorientation of subject knowledge, vitalization of professional studies and to root the entire curriculum in Indian conditions, development of special courses and programmes along with revision and improvement of curricula (Gehlawat, 2016). The commission recommended for organization of orientation courses for university teachers and if possible for college teachers also. Matters related to teaching-learning, research, discipline and mechanics of the profession should be discussed openly before the best teachers of the institution as well as some distinguished teachers from outside (The Education Commission, 1966). In pursuance of the NPE 1986, the Central Government took a significant step to enhance the professional capacity of many teacher education institutions. Its recommendations led to launch District Institute of Education and Training (DIET), Colleges of Teacher Education (CTE) and Institute of Advanced Studies in Education (IASE) for professional development of teachers in India (CFQTE, 1998). The DIETs were charged with the responsibility of organising pre-service and in-service programmes in addition to being the nodal resource centres for elementary education at district level. Likewise, CTEs and IASEs have been responsible for introducing innovations in teacher education programmes at the secondary and higher secondary stages and vocational education (Rajput, 2003). Despite these efforts teacher education still remains isolated from the mainstream academic life of universities.

The pioneering effort of designing a curriculum framework for teacher education was made by National Council for Teacher Education (NCTE), way back in 1978. This Teacher Education Curriculum: A Framework (1978) firstly, visualized the curriculum structure for different stages of education and secondly, it advocated semester approach to the curricula. It recommended a task-orientated approach for teacher trainees by involving them in actual work situations; rural-urban contexts, different stages of child development, core skills for teachers, simulated teaching, micro-teaching etc. were highlighted in this framework. A significant feature of this framework was the conceptualisation of paper- 'teacher and education in emerging Indian



society' replacing 'philosophical and sociological foundations of education', and the space provided for core training and skill developing programme (Dwivedi, 2020).

The curriculum framework of 1988 developed against the backdrop of NPE (1986) had significant implications for strengthening and restructuring the curricula of all the stages of teacher education. Pandey's (2011) study highlighted the recommended areas of the curriculum framework of 1988 that "the future teacher will be a competent professional and skilled teacher emphasizing on integration of theoretical understanding with practical application in pre-service and in-service teacher education" (p.6). Learner centred approach, practical or field-based work, technological knowledge, vertical and horizontal mobility etc. were suggested in this curriculum framework.

Further, a revised version of the curriculum framework for quality teacher education by the statutory NCTE was Curriculum Framework for Quality Teacher Education 1998 (CFQTE). This framework (1998) tried to address and reflect on the changing international scenario as the result of globalization, privatization, and communication technology etc. The framework discussed the existing problems of teacher education and focused on culture-specific pedagogic practices, research and innovation, national values and goals enshrined in the constitution; moreover measures were taken to remove isolation among teacher education institutions. This framework urged for the separation of course structures into primary and elementary levels, and Academic and Vocational streams (Gupta, 2017). Moreover, it aimed to prepare futuristic, dynamic and forward-looking teachers with high competencies, commitment and willingness to perform (CFQTE, 1998).

However, despite the policy recommendations proposed in all three revisions of the framework 1978, 1988 and 1998 teacher education in India remained markedly disconnected from the ground realities of Indian classrooms due to the indifference of theory from practice. Way back in 1985 an important document Challenge of Education: A Policy Perspective which preceded the NPE (1986) made statement:



We are on the threshold of development of new technologies likely to revolutionize teaching in classroom. But unfortunately the process of updating the curricula of teacher education has been very slow. Much of the teacher education is irrelevant even to contemporary requirements leave alone those of the future. We, therefore, face a paradox of having better books, and research but progressively more indifferent teachers. (p.54)

In a turning point, policy reforms in 2005 known as National Curriculum Framework (NCF) urged teacher-directed pedagogical approaches to be moved towards learner-friendly approaches for India's overall national education system. So learning shifted from passive absorption of knowledge to active construction of knowledge. But it soon became clear that such a reform in constructivism could only succeed if teachers were trained in the new pedagogy of engaging in reflective, constructivist, and inclusive classroom practice (Gupta, 2017). With increasing school enrolments and the launch of pan Indian primary education development programmes such as the SSA (2002) to achieve Universal Elementary Education (UEE), the Operation Blackboard (OB) 1986, and the District Primary Education Programme (DPEP) 1995, there was also an increase in the demand for quality and professional teachers. Since then major restructuring efforts had been underway in the area of teacher education in India. At last, an updated and upgraded version of a new National Curriculum Framework for Teacher Education (2009) is introduced by the effort of NCTE. Finally, this framework (2009) visualizes a change in the profile of teacher education in the country by proposing reforms in the contents, teaching-learning and professional rigour of the curricula.\

### **National Curriculum Framework for Teacher Education (2009) - Move towards**

#### **Professionalization:**

A major effort to rejuvenate teacher education towards modernization, contextualization and professionalization has been made through NCFTE (2009). This framework elaborates the context, concerns, and vision underscoring that teacher education and school education have a symbiotic relationship and developments in both these sectors mutually reinforce the concerns necessary for qualitative improvements of the entire spectrum of education including teacher education as well (NCFTE, 2009). The Education Commission (1964-66) stressed that "in a world based on science and technology it is education that determines the level of prosperity,



welfare and security of the people” and that “a sound programme of professional education of teachers is essential for the qualitative improvement of education” (CFQTE, 1998, p.3). NCFTE (2009) developed by NCTE tries to ensure that teacher education courses are reoriented to align with the epistemological shift (from behaviourism to constructivism) envisaged in the NCF (2005) and will develop teachers as facilitators of learning. Issues related to inclusive education, perspectives for equitable and sustainable development, gender perspectives, role of community knowledge in education and introducing ICT in schooling as well as e-learning became the centre-stage in the framework.

According to this framework the curriculum for teacher education dealt with three broad curricular areas: (A) Foundations of Education which include courses under three broad rubrics, namely, Learner Studies, Contemporary Studies and Educational Studies; (B) Curriculum and Pedagogy which include courses under two broad rubrics, namely, Curriculum Studies and Pedagogic Studies; and (C) School Internship leading to the development of a broad repertoire of perspective, professional capacities, teacher sensibilities and skills (NCFTE, 2009). Together, these areas constitute the common core curriculum for teacher education programmes across pre-school, elementary, secondary and senior secondary schools. Pre-service and in-service teacher education programmes being inseparable from each other, considerable focus is given on continuing professional development strategies. The attempt was to organize the entire teacher education curriculum as an organic, integrated whole and develop professional knowledge, capacities, sensibilities and skills for the teacher.

The main principles of curriculum reforms that were proposed included the following: (i) A holistic approach to curriculum; (ii) an emphasis on engagement with theory and foundational perspectives on education; (iii) preparation for future teachers to be reflective, humane and professional practitioners; (iv) longer and intense internship/school experience; (v) preparing would-be teachers to organise teaching learning in a child-centred manner; (vi) stage specificity in training for various school levels; and (vii) location of teacher education programmes in interdisciplinary environment (Sharma, 2019). Additionally, this framework suggests a two year teacher preparation programme along with the four year integrated teacher education courses. It is felt that longer duration of teacher preparation will provide enough time and opportunity for



self-study, reflection and engagement with teachers, students, classrooms and pedagogic activities that is essential for developing professionalism in teachers. The District Primary Education Programme (DPEP) and Sarva Shiksha Abhiyan (SSA) have put in place a system of sites which are to provide professional development to all government school teachers through block and cluster resource centres. In addition, there are DIETs, IASEs and various departments and colleges of teacher education and several networks of teachers and teacher associations. Several Non Governmental Organisations (NGOs) and other agencies are recommended to provide training for teachers' professional development. Teacher Learning Centres (TLCs) in teacher education institutes can act as the hub of both pre-service education and continued professional development for teachers in service. They could also provide special services to their alumni, continuing to mentor and keep track of their developments. Overall this framework provides opportunities for both theoretical and practical experiments and takes the initiative to make a professional teacher through pre-service and in-service teacher education programmes.

The need and importance of professionally trained teacher educators have been underscored in statements on educational policy time and again. The diverse routes recommended by NCFTE (2009) are likely to tap talented and motivated young people to become successful professional teacher educators. The recommendations are the under mentioned (Mohan, 2016 & NCFTE, 2009):

- Setting up of Schools of Education including centers for pre-service teacher education, curriculum research policy and educational development, professional development of teacher educators and teacher education curricula.
- Instituting Specialized Centres of Education in lead national level institutions like IISC, Homi Bhabha Center, TIER to offer B.Ed and M.Ed courses to develop a specialized cadre of Senior Secondary school teachers and teacher educators.
- The Center for Professional Development of Teacher Educators will offer Master's programme with specialization in curriculum and pedagogic studies in mathematics/science/social science education and assessment.



- Focused professional development programmes for DIET/SCERT faculty in curriculum and pedagogic studies and disciplinary knowledge base.
- Special emphasis to be given for professional renewal of teacher educators through Refresher Courses.
- About 200 or more fellowships for teacher educators to undertake research and periodic academic enrichment activities for teacher educators.

The recommendations of NCFTE (2009) promise to enhance the status of educational studies in teacher education and steer the way for professional development of teacher educators in the country. This framework (2009) provides a plethora of opportunities and avenues for continuous professional development of teachers' by involving themselves in academic activities, professional discussions, formulating educational policies, preparing textbook and training modules and appointing them as resource persons in Block and Cluster Resource Center. To strengthen knowledge-base and professional skills it was recommended for teachers to be engaged in short and long term courses, use distance media, sabbatical for study and research, attend professional conferences, meetings and faculty exchange visits etc. NCFTE (2009) tries to broaden the path for professionalization but it can be said that the ethos of professionalism needs to be infused and instilled in all areas of teacher education.

### **Conclusion:**

Teaching is a globally appreciated profession and teachers are the professional personnel. So teacher education needs an effective curriculum framework that will induce professionalism and bring qualitative improvement of education. It has been found from the study that before the NCFTE (2009), many curriculum frameworks were developed by several commissions and committees for up-gradation of teacher education but NCFTE (2009) severely acts as a catalyst to change the profile of teacher education and to prepare a professional and humane teacher. The article also shows that the NCFTE (2009) provides diverse challenging routes for professional development of teachers. To conclude, this framework acts as an architect to translate the vision of professionalizing teacher education into reality and takes the initiative to prepare professional,



humane and reflective teachers through pre-service and in-service teacher education programmes.

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## Evaluation of Strawson's Criticism of Russell's Theory of Descriptions

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### Abstract

*This paper intends to evaluate Strawson's criticism of Russell's theory of descriptions. That is, to what extent his arguments are tenable. So, Strawson's criticism of Russell's theory of descriptions is the main focus point. Strawson's method of ordinary language analysis is reflected in his criticisms of Russell's Theory of Descriptions. In his article "On Referring" published in 1950, he launched an attack against Bertrand Russell's Theory of Descriptions. Hence, in order to understand Strawson's criticism against Russell's theory of descriptions, we have to understand Russell's theory of descriptions – his problem which lead him to expound the theory of descriptions. This in turn would pursue us to understand Meinong's theory of non-existent entities. All these discussions would provide a complete backup for the discussion I would likely to take up.*

**Key words:** *descriptions, proper name, non-existent entities, assertion, presupposition etc.*

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### Introduction:

Strawson in his article "On Referring" published in 1950, had launched an attack against Bertrand Russell's Theory of Descriptions.<sup>1</sup> Strawson's method of ordinary language analysis is reflected in his criticisms of Russell's Theory of Descriptions. His criticism of Russell's theory of descriptions from the standpoint of ordinary language philosophy is a landmark in the history of analytic philosophy. In order to understand his criticisms of Russell's theory of descriptions a brief account of Russell's theory of Descriptions – his problem in expounding the theory of descriptions must be understood.



### Exposition of Russell's theory of descriptions:

Ramsay has called Russell's theory of descriptions, the "paradigm of philosophy".<sup>2</sup> According to Ayer, this is the model of philosophical analysis. Question is : Why did Russell offer the theory of descriptions ? What motivated him to formulate this theory? Early Russell was very much influenced by the realistic view of Alexius Meinong but later he revolted against Meinong and formulated the theory of descriptions. So, Russell's theory can best be understood against the background of Meinong's theory.

To Meinong, the problem is : how to account for the meaningfulness of statements containing descriptive phrases or statements containing empty terms like i) "the golden mountain does not exist" or ii) "the present king of France is bald". A basic assumption of Meinong is that the meaning of any expression is its denotation or reference. From this it follows that if an expression lacks denotation it is meaningless. Meinong further holds that corresponding to every expression there is an object. In statement (i) the subject is – 'the golden mountain'. So, if the statement is to be meaningful then the statement must be about the subject, i.e. the golden mountain, that is, we must say that there is a golden mountain which is denoted by the phrase 'the golden mountain'. But we do not find golden mountain in this world. Meinong says that since this statement is meaningful we must say that the golden mountain subsists in some sense, in some other world, though it does not exist in this world. Thus as the statement is meaningful the golden mountain must have a logical being. According to him, realm of being is wider than all that exists. Thus, Meinong solves the problem of meaningfulness of sentences containing empty terms by assuming the subject of the statement denotes an object which though not present in the actual world, has a logical being and subsists in some sense in some other world.

Later on Russell realized that such a theory would lead to the increase in the number of objects to infinity. But the law of parsimony does not warrant this. That is the difficulties of Meinong's theory lies in that it leads to the proliferation of entities. For according to this theory, whenever we talk about any object we have to admit the existence /subsistence of object. That is, we have to postulate odd, queer, strange entities like golden mountain, round square etc. Now Russell had two alternatives before him – i) to treat these statements to be meaningless or ii)



accept Meinong's theory. But Russell accepts neither. He has revolted against Meinong's theory and offered the theory of descriptions as a solution. He points out that we need not have to postulate such queer or strange entities, such as golden mountain, the present king of France in order to show the meaningfulness of statements containing such phrases. It is possible to account for the meaningfulness of such sentences in a much simple way. This is what he accomplished by his theory of descriptions.

Though Russell denies Meinong's theory, he does not reject the denotative theory of meaning. What he does not accept is the Meinongian thesis that each expression denotes an object. Fundamental to Russell's theory of descriptions is the distinction he makes between a name and a description. According to Russell, there is an irreducible contrast between name and description. One cannot be reduced to the other. A name is not a description and a description is not a name. By name he means a proper name. Russell, however, has made a distinction between ordinary proper name and logically proper name; 'Ram, Shyam, Socrates, Plato, are, according to Russell, ordinary proper names. They are disguised descriptions. According to Russell, only demonstratives like, 'this', 'that' etc. are logically proper names. Their meaning is denotation or reference i.e. the object which it denotes. If the object does not exist then the name is meaningless. To know the meaning of a name is to know who it's bearer is. A proper name has independent meaning. It has meaning in isolation. But descriptions have no meaning in isolation. They have contextual meaning i.e. meaning in use. The meaning of a description is obtained through an analysis of the statement in which it is used. We have to find its meaning from the context in which it is used.

If we consider Meinong's theory in the light of this difference, we find that Meinong was misguided in thinking that descriptive phrases function like name. Descriptive phrases do not function like names. According to Russell, in order to bring out the meaning of a descriptive phrase like "a so and so" or "the so and so", we have to analyse the given statement. According to Russell, the meaning of the descriptive phrases can be obtained through an analysis of the statements in which they are used. On analysis we find that the descriptive phrases have a semantic role in the meaning of the statement. But it does not have any independent meaning. Meinong had been misled by grammatical form. But grammatical form differs from the logical



form. In ‘the present king of France is bald’, baldness is predicated of the present king of France. This statement has the same grammatical form as ‘the present prime minister of India is bald.’ Meinong had supposed that since the present king of France is the grammatical subject, it is also the logical subject and if it is to be the logical subject then the object denoted by it must exist/subsist. But according to Russell, though the statement is grammatically of the subject-predicate form, it is not so logically. It cannot be said that whatever is a grammatical subject will be the logical subject. In some cases the two coincide, as for e.g. ‘This is white’, but not always. As ‘the present king of France’ is not the logical subject, the admission of an object denoted by it is not necessary for the sentence to be meaningful.

Let us consider the proposition – “The present king of France is wise” and see how Russell analyses this proposition. On Russell’s analysis the proposition “The present king of France is wise” is equivalent to the following three propositions:-

There exists atleast one person who now reigns in France.

Atmost one person reigns in France.

Whoever now reigns in France is wise.

We can symbolize it in this way :  $(\exists x)[Kx \cdot (y) (Ky \supset y=x) \cdot Wx]$

The above symbolization shows that the descriptive phrase is eliminated thereby removing the temptation that it is a name. It is not a simple statement of subject predicate form. It is a complex existential statement involving identity.

Since the first conjunct of this conjunctive proposition is false, the conjunctive proposition as a whole is false and therefore the original proposition which is equivalent to it is false and therefore meaningless. In this way Russell shows the meaningfulness of sentences containing descriptive phrases.

### **Strawson’s criticisms of Russell’s theory of descriptions:**

In “On Referring”<sup>3</sup> Strawson presented a critique against Russell’s theory of Descriptions. Russell formulates his theory of Descriptions in order to avoid the immediate consequences which follow from accepting Meinong’s theory of meaning. Meinong’s theory leads us to accept the subsistence or being of the object denoted by the subject term of a subject-



predicate type of sentence . That is, we have to accept the subsistence of odd queer entities like golden mountain etc., in order to make the sentences in which such phrases occur to be meaningful. Strawson characterised Meinong's arguments as bad arguments and he argued that Russell in devising his theory of descriptions had accepted certain spurious assumptions which are as follows: i) Although he rejects Meinong's theory but he maintains Meinong's theory of meaning that meaning is denotation and ii) if the subject of a subject –predicate sentence is a logically proper subject – that is not merely a grammatical subject and if the sentence is meaningful then there must be something to which its subject term refers. That is, Russell holds the referential theory of meaning. Russell recognises two ways in which subject –predicate type of sentence can be significant or meaningful: one is that if their grammatical and logical form are incongruent then they can be analysed to an existential sentence of a special sort specified by Russell and the other is that if the grammatical subject is the logical subject then its meaning is the object which it denotes. The subject term is a logically proper name. Let us now turn to Strawson's critique of Russell's theory of Descriptions.

In the first place, Strawson's main point of attack is directed against Russell's theory of meaning underlying his theory of descriptions. Strawson argues that there are neither logically proper names nor descriptions in the sense specified by Russell.<sup>4</sup> There are no logically proper names, according to Strawson, for there is no word or expression which has its meaning some designated object and which occur as logical subject of a subject-predicate sentence. And there are no descriptions in the sense specified by Russell means that sentences containing descriptive phrases of the form 'the so and so' cannot be analysed into a set of propositions which asserts the existence of some object or person. According to Strawson, meaning of a word or phrase is not its denotation as assumed by Russell. Meaning is an activity of language users not entities that the phrase or an expression designates. Strawson holds that meaning is synonymous with use. That is to give an account of meaning is to give an account of use. He says that to talk about the meaning of an expression or sentence is not to talk about its use in a particular occasion but about the rules, habits, conventions governing its correct use on all occasions.<sup>5</sup>

Secondly, Strawson argues that Russell fails to realize the differences between a sentence, a use of a sentence and an utterance of a sentence. Let us consider the sentence 'The



king of France is wise'. If this sentence is uttered in the reign of Louis XIV it might make a true assertion and while uttered in the reign of Louis XV it would make a false assertion depending on the nature of the king in question. These are the different uses of the sentence in question. Similarly, if two people used the same sentence during the same reign then their use would be the same. According to Strawson, a sentence can be meaningful or meaningless but it cannot be characterised as true or false. Truth and falsity can only be ascribed to the uses of sentence. That which is meaningful or meaningless and that which is true or false (i.e., sentence and uses of sentence) are different. The question of meaning is independent of the question about its truth and falsity. So, there is a difference between sentence, use of a sentence and utterance of a sentence. We cannot say the same kind of thing about them. Accordingly there is a distinction between an expression, use of an expression and an utterance of an expression. The expression in question is the description 'The king of France'. It cannot be said that this expression refers to or mentions the king of France but it can be used to mention or refer on a particular occasion of the utterance. Strawson says "Mentioning" or "referring" is not something an expression does; it is something that someone can use an expression to do. Mentioning or referring to something is a characteristic of a use of an expression, just as ... truth or falsity are characteristics of a use of a sentence.'<sup>6</sup>

According to Strawson, Russell fails to notice these differences between various types of linguistic forms. Russell confuses between description on the one hand and its use in a particular context, on the other hand. Strawson says that the question whether the sentence is significant or not is quite independent of the question that can be raised about a particular use of it (that is whether it is true or false).<sup>7</sup> Russell fails to realize the differences between sentence and its use, expression and its use and thus want to show the meaningfulness of sentence containing empty terms by ascribing falsity to it.

The third argument is directed against the way Russell analyses the sentences of the form 'the so and so'. Russell's analysis of the sentence 'The present king of France is wise' is wrong, because the sentence, according to Strawson, does not assert that 'there is a king of France'. Russell assumes that if one utters such a significant sentence then it must be true or false. As there is no king of France so it fails to refer someone and it is because of this condition the whole



sentence comes out as false but meaningful. According to Strawson, such a sentence does not assert but presupposes or imply that there is a king of France. As the presupposition is false so the statement ‘The present king of France is wise’ has no truth value. That is, it is neither true nor false. It is truth-valueless. ‘Implies’ in this sense is not equivalent to “entails” or “logically implies”. If one says that ‘there is no king of France’ in response to the statement “The present king of France is wise” one is not contradicting the statement ; that is he is not saying that it is false rather saying that the question of whether it is true or false simply does not arise.<sup>8</sup> The sentence “The present king of France is wise” is significant or meaningful but we simply fail to say something true or false if we use it now because we simply fail to mention anybody by this particular use of this perfectly significant phrase. The statement in question is truth-valueless. Thus Strawson admits truth-value gaps for statements where reference fails. But from this it does not follow that the sentence, ‘The present king of France is wise ‘ is meaningless.<sup>9</sup> It has meaning – that is , it can be used in particular circumstances to make statement , which can be true or false. Hence, according to Strawson, Russell’s tripartite division of the criterion of meaning is not correct. According to Russell’s criterion of meaning, every sentence must be meaningful or meaningless. If it is meaningful then it must be true or false. That is, on Russell’s criterion of meaning ,a sentence can be true or false and meaningless. According to Strawson such tripartite division is baseless and hence not acceptable. Moreover, Russell’s theory is unnecessary since the problem it was designed to solve does not exist. Strawson shows that Russell’s analysis fails as an account of our ordinary, actual uses of descriptive phrases.

### **Evaluation of Strawson’s criticisms of Russell’s theory of descriptions:**

Strawson’s arguments against Russell’s theory of descriptions are not as satisfactory as it appears to be. His arguments suffers from some defects which are as follows:

In the first criticism against Russell’s theory of descriptions, Strawson says: “There are no logically proper names and there are no descriptions (in this sense)”. By the phrase ‘in this sense’ he may intend to say ‘the sense as specified by Russell’. But this criticism is unsatisfactory. Here Strawson may intends to say (by considering the context) that, he has objections to belief that there are words which are significant only because there is something that they mean and if that something which they denote is not present then that word would be empty noises, not words. But the necessity of logically proper name should be admitted because of ostensive definition.



For instance, how do we know what is meant by such words as 'red', 'table' etc? We cannot know what these words mean unless we have seen red and table. By the word 'this' or 'that' etc which are logically proper name, as according to Russell, we point out the object before us, and this is necessary for communication in our ordinary life. And if there are no object corresponding to these words like 'red', 'table', 'this' etc, then we might have invent some elaborate descriptions on its behalf, in order to convey our thoughts. Hence, Strawson's objection regarding logically proper name cannot be accepted.

Secondly, Strawson objects to Russell's analysis of the sentence that 'the King of France is bald' is false if there is no king of France. Strawson admits that the sentence is significant but he holds that it is neither true nor false. Against this contention it can be said that Russell perhaps followed a particular linguistic convention, in which a sentence is meaningful or meaningless. And if meaningful must be either true or false. Strawson, on the other hand, might have followed a totally different convention, in which meaningfulness and meaninglessness can be ascribed to sentence but truth and falsity can be ascribed to the use of a sentence. That is, according to Strawson, questions of meaning are totally different from questions of truth and falsity. From this standpoint, Strawson's objection against Russell's analysis of descriptions, seem to lose its hold.

Besides, being an ordinary language philosopher he puts his emphasis on the circumstances and situation i.e. that is on the context and on the way the words are actually used in his criterion of meaning. Here we must explain; what is ordinary language philosophy as distinguished from ideal language philosophy. Ordinary language philosophy stands for the view that philosophical problems can be solved by an analysis of ordinary language. Ordinary language is all right. If any discrepancy is found in ordinary language, then it is due to the mishandling of the users of ordinary language. On the other hand, Russell was an ideal language philosopher. Ideal language philosophy holds the view that ordinary language is vague, imprecise, ambiguous and so we have to adopt an ideal or technical language to solve philosophical problems.





In my opinion, precision and accuracy should be given the utmost importance. To get accurate and precise result we have to shift from ideal to ordinary language and from ordinary language to ideal language, when necessary. At times, we have to adopt technical language to achieve our purpose. And Strawson himself admits that we can depend on ordinary language upto a certain point. For in the Introduction to his book *Individuals* he said that ‘ upto a point’ a close reliance can be made on the actual uses of words. That is, he also shows his inclination in adopting technical language as and when required. So, Strawson notion of meaning is not satisfactory, as it appears. Further Strawson’s position has been challenged and examined from various ends. Let us discuss them one by one:

In the first place, let us consider **Arthur Jacobson’s Criticism against Strawson’s theory of Meaning**. The major fault of Strawson ,as pointed out by Arthur Jacobson<sup>10</sup> , is that, the notion of meaning , as according to Strawson, is stated as “To give the meaning of an expression is to give general directions for its use to refer to or mention particular objects or persons ; to give the meaning of a sentence is to give general directions for it’s use in making true or false assertions”.<sup>11</sup>Jacobson points out that the concept of giving general directions covertly entails the very denotative theory of meaning. To give direction for using an expression, for example hammer, is not to give directions for using a hammer to drive nails. The person receiving the direction for using hammer will be at a loss if he does not understand the meaning of ‘hammer’. So, knowing how to use a term or expression is parasitic upon understanding what it means. That is, it is to admit denotative theory of meaning in disguise.

In the second place, let us consider observations of Keith Donnellan on Russell-Strawson controversy. In “Reference and Definite Descriptions”<sup>12</sup> Keith Donnellan recognises two uses of definite descriptions – attributive use of definite descriptions and referential use of definite descriptions. For example, let us consider the sentence “Smith’s murderer is insane”. From the fact that Smith has been brutally murdered, the speaker wishes to assert something about whatever or whoever fits that description. The speaker does not know who murdered Smith but can attribute insanity to him. This is called attributive use of definite description. But when we want to make our audience realize that it is this person who murdered Smith , that is, when we intend to refer or identify someone say, “Jones” to be the murderer of Smith then that



is called the referential use of definite description. This distinction is also referred to as referential and non-referential uses of definite description. A referential use of definite description is purely referential, that is, it has no other function other than referring. While the attributive use is not purely referential, besides the function of referring, it has other functions as well. In purely referential use, the reference made by it is singular, but in the case of attributive use the reference is general. So, the distinction to which Donnellan is trying to draw our attention is a distinction between two kinds of referential use, one, the purely referential and the other, not purely referential.

Donnellan accuses not only Russell but also Strawson for having failed to realize that there is a use of definite description which he calls referential. Both the referential and attributive uses of definite description presuppose or imply the existence of a thing answering to them. The presence of existential import is a sure mark of referential use. So, the attributive use is also referential in this basic sense. In the sentence, 'Smith's murderer is insane', Smith's murderer is used attributively. We can infer, by existential generalizations, that there is at least one  $x$  such that  $x$  is insane. Thus, the difference between referential and attributive is not a difference between the presence and absence of reference but between two different kinds of reference.

According to Donnellan, the analysis offered by both Russell and Strawson are unsatisfactory because they fail to recognize that there can be two uses of definite descriptions – attributive and referential and that a given description may have either uses depending on the use made of the sentence in which it occurs. Russell's analysis is unsatisfactory because his analysis of the sentence 'The present king of France is wise' entails that 'there exist one and only one king of France'. This might hold in the attributive case but does not hold in the case of referential use. Here, there is a presumption that 'there is a king of France' but this does not assert the existence of the king of France. It does not pick out any individual as the king of France. It only says that there is someone who happens to fit the description. Thus, Russell's analysis fits only the attributive case. It ignores the referential use of definite descriptions.

On the other hand, Donnellan criticizes Strawson on the ground that Strawson's analysis tries to show that descriptions have only referential use and ignored the attributive uses.



According to Donnellan , Strawson's theory consists of the following proposition which are as follows:

- i) If there is no  $\phi$ , then if someone makes the statement the  $\phi$  is  $\psi$  then he has not made a true or false statement.
- ii) If there is no  $\phi$ , then the speaker failed to refer to anything.
- iii) The speaker said nothing true or false because he has failed to refer.

The first proposition may be true in the attributive case. For if there is no murderer of Smith then 'Smith's murderer is insane' says nothing true or false. But if the description is used referentially , that is , if one pick out Jones and said that 'Jones is the murderer of Smith' then the statement " Smith's murderer is insane" is true. Thus , the first proposition will be false if it is interpreted referentially.

The second proposition also is true in the attributive case but is false if treated referentially. The third proposition also is true in the attributive case .That is, if the description is being used attributively then the speaker fails to refer to someone or something though it asserts that someone fits the descriptions. But this does not explain why a speaker fails to state anything true or false. In the referential case, the speaker fails to refer only where perceptual or epistemic error creeps in. In normal cases when a description is used referentially then something true or false can be said.

Hence, according to Donnellan , "neither Russell nor Strawson provides a correct account of the use of definite descriptions – Russell's because it ignores the referential use and Strawson's because it fails to make the distinction between referential and attributive and mixes together truths about each (together with some things that are false)".<sup>13</sup>

Further, it is to be noted that Strawson's concept of truth-valueless (he contend that some statements are neither true nor false and hence truthvalueless) may create problem. Some philosophers like Quine and the realist tries to maintain bivalence, that is, they hold that all statements are either true or false. Retaining this principle of bivalence is essential for adopting the extensionalist approach to philosophical issues. The thesis of extensionality states that truth value of a compound statement is functions of the truth values of their constituents. For example.



'p.q' is true if and only if 'p' is true and 'q' is true and 'pvq' is true if and only if at least one of 'p' and 'q' is true and so on. Abandonment of bivalence also leads to the abandonment of truth – functionality. It may also lead to the abandonment of the Law of Excluded Middle which states that 'everything is either A or not- A'. So, it can be said that admitting truth-value gaps is to admit at least a third truth value. And abandonment of bivalence brings a significant change in the approaches to deal with other philosophical issues.

However, regarding Russell-Strawson debate, it is sometimes said that Russell's theory was not wrong but inadequate and Strawson's theory worked as a supplement to Russell's theory. It compensates the inadequacies in Russell's theory. But this view is not correct for mere supplementation does not explain the intensity of the debate carried on between them. And if Strawson's theory worked as a supplementary to Russell then we would get a single coherent joint theory of Russell and Strawson. But there is no such theory at hand.<sup>14</sup> Nevertheless, it should be admitted that this controversy provide many other analytic philosophers of their time and beyond, the materials for thinking, and thus in a way contribute to the further development of analytic philosophy.

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## Effects of Educational and Economic Backwardness on Birth Control: A Study from Rural West Bengal

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### Abstract

*Birth control is a major issue today. It helps to control the population growth. In India, family level birth control programme has been taken up on a national basis by the Government to minimize the population. The success of birth control depends on various factors, which are not only demographic but also socio-economic. In reality lack of education and poor economic condition played a vital role in birth control procedures. The growth of population in the various communities differs and the types of adoption of birth control measures are also different as well as remoteness also appear as the influential factor. In the present paper, an attempt has been made to study the effects of educational and economic backwardness on birth control procedures in the rural areas of West Bengal. In this study, various standard anthropological field methods have been used with due importance.*

**Keywords:** Birth control, Multiethnic, Rural, Educational and economic backwardness, West Bengal

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### Introduction:

In India to restrict this huge population growth the implementation of proper birth control programme is very much essential. It is observed that a large number of couples are not using any birth control method due to lack of proper knowledge, fear of side effects owing to poor availability of proper methods on restricted contraceptive choice (Bansal & Dwivedi, 2020). Among the proximate determinants of fertility, generally as suggested contraception is perhaps the most crucial one. Contraception also becomes important in the context of the prevention of teenage and unwanted pregnancies. It is also observed that in most of the areas where birth control acceptance was high have a low fertility (Samanta, 2011).

Halli (1987), observed in his study that minority fertility is lower than that of majority at upper socio-economic levels and higher at lower socio-economic levels and also observed that level of income has a positive effect on knowledge of birth control which is related to birth control. According to Bhattacharya and Roy (2009), that the working status of women is likely to be associated with practice and decision making related to birth control. According to James et al. (2005), the age at marriage and the proportion of never-married in any often considered as strong indicators of cultural setting among the religious groups. The contraceptive has the highest impact on reducing fertility among all factors. Bhagat and Praharaj (2005), found that the birth control procedures emerges as the most proximate determinant influencing Hindu-Muslim





fertility differentials. On the other hand, Muslims use a higher level of spacing methods like pills, IUD and condoms and also traditional methods like periodic abstinence and withdrawal as compared to Hindu. Raymond Peart (1972), analyzed about the contraceptive effectiveness among religious groups found that the specific religious groups stood lowest proportion of using contraception in the whole religious group. Saksena (1973), examined attitudes towards birth control observed that the approval of family limitation after the first child was negligible among the women irrespective of their socio-economic characteristics. Moreover, a large portion of the women approving birth control after the second child. The higher education and better economic status have a positive correlation with birth control. It is a very common phenomenon of various Hindu castes of West Bengal. Mahadevan (1983) analysed determinants of religious and caste differentials in fertility in Rampuram village. This village is located near Tirupati in Chittoor District of Andhra Pradesh. He observed that the medium level fertility was declining among Muslims and Hindu Harijans. Muslims fertility level is closer to the Harijan's fertility level because relatively more of them have accepted birth control procedures. Dharlingam et al. (2005), examined Hindu Muslims differences in desired for additional children and use of contraceptives. They found that additional children and use of contraceptives are common across India and almost invariant across districts. Bhagat and Praharaj (2005) examined Hindu-Muslim fertility differential. They found lower levels of contraceptive use among the Muslims probably due to economic and educational backwardness. So, it is the most important factor responsible for the fertility differentials, the use of contraceptive has increased faster among Muslims in recent times. It is not to be disputed that the practice of birth control methods is low among Muslims, but it is also worthwhile mentioned that they use more spacing and traditional methods compared to Hindus (Samanta, 2011). On the other hand, among both Hindus and Muslims, female sterilization continues as the dominant method of birth control. According to Bhat and Zavier (2003), acceptance of birth control alone can account for almost all the current differences in Hindu and Muslims fertility.

### **Materials and Methods:**

In the present study, an attempt has been made to conduct the study in the rural areas where people of various communities are living in close surroundings. As a result, it is much easier to know the acceptance of birth control measures and its relationship with educational, economic and occupational status of the couple as well as other related conditions. At the same time, the decision-making process among the couples is also very important that is also considered with prime importance. Therefore, the present study has been conducted in a rural setting of Nandigram I Block of Purba Medinipur District where the Hindus and the Muslims resides for a very long time. Among the Hindus the Ponda Khatriyas that means the Pod, the Mahishyas, the Tanti along with others live here in a very close contact situation.

Data have been collected on the married couples who belong to their reproductive age group that means 14-44 years. Initially, a total number of 160 couples have been selected for the study. Special importance has been given on the views of both the husband and wife at the same time it is analyzed the views of the other senior members of the family especially the aged female members. Prime importance has been given on the couples who have accepted birth control measures. During the study due importance has been given on both the permanent and



temporary birth control users. At the same times, special emphasis has been given on the various types of birth control procedures as well as other different factors on them.

The different related aspects like subsistence pattern, economic activities, family structure and literacy have also been studied. The information relating to the specific problem under study has been collected separately from different sources. Here personal observation and previous knowledge about the field situation were of much help. Interview, census survey and case study based information have taken with prior importance. A structured schedule has been used to collect data on socio-economic condition which includes variables like age, occupation, educational level, monthly expenditure and so on. At the same time data also have been collected on reproductive history, knowledge and practice of various birth control methods, reason for selecting the particular type, and the role of husband and wife in deciding on adopting birth control methods and its types.

### **Results and Discussion:**

From the collected data, it can be easily said that due to the role of various programmes of birth control and their service providers, most of the members of different communities are more or less cautious to keep up their family small. They have adopted different types of process to keep their family small and happy. As there are differences observed in case of different castes and communities regarding the process of birth control.

Adoption of birth control measures

The villagers are generally adopted both permanent and temporary birth control measures to keeping their family small. There are 70 couples from Muslim community, 72 couples from Pod, 15 from Mahishya and 3 from Tanti community who belong to the reproductive age group. From the Table 1, it becomes clear that the temporary birth control measures adopted couples are much more in number rather the permanent birth control measures adopted couple. Approximately 19.38% couples out of the total number of studied couple have adopted a permanent birth control measure that means they are gone through permanent operation. In that case, 26.25% couples have adopted temporary birth control measures.

### **Adoption of permanent measures:**

There are two types of sterilization procedure have been maintained by the married couples of the village that is male sterilization or vasectomy and female sterilization or tubectomy (Jayaraman, 2018). From the numerical point of view, the female partners are gone through sterilization much more in comparison to the male partners (Table 1). Among the total studied couples, only 3.75% male partners have adopted permanent birth control measures in that case approximately 15.63% female partners have adopted permanent birth control measures.

The Muslims are the dominating group of the village in comparison to the others. Among the Muslims 6.88% out of the total number of studied couples who have adopted permanent sterilization. Among them, only 0.63% male partners have adopted the measures in that case approximately 6.25% female partners have adopted the measures. In comparison to the Muslims, the adoption rate is much more among the Pods i.e., 10.63% out of the total number of couples. Among the Pods, 2.50% males and 8.13% females have accepted permanent birth control



methods to restrict their family size. In that case, 1.88% Mahishya couples have also adopted this method.

### **Adoption of temporary measures:**

From the presented table number 2, it is observed that a significant number of married couples have used various types of temporary birth control measures to keep their family small. Different castes and sects have different ideas about birth control and they have expressed their different opinion about the process, which are in vogue. Among the study couples, 25% have used temporary measures. Among the temporary birth control users the Pod couples have used various temporary birth control measures at the maximum level i.e., approximately 14.38% out of the total population, whereas 7.50% Muslims and 3.13% Mahishya couples out of the total number of study couples have adopted temporary measures.

The oral pill users are 11.25% out of the total number of couples. In that case, 4.38% couples have used condoms that are generally adopted by the male counterparts. Among the oral pill users, the Pods are the highest acceptors i.e., 6.25%. In case of condom users, the Pod is the dominating community of whom 3.13% are using condom. A significant proportion of couples have generally used various types of birth control measures like as Copper-T, Ayurvedic medicine, Homeopathic medicine etc. The Muslims use Copper-T not at all, whereas to some extent the Pods and Mahishyas have preferred it. Some couples have depended mostly on the withdrawal system. Periodic abstinence is also considered to be another important method for birth control as it is used by the villagers. Among the various communities of the village, only the Muslims have used homoeopathic and allopathic medicine as the procedures of the birth control. The pods only have taken the help of withdrawal practice as the procedure for restricting unwanted pregnancies. The couples from both the Muslim and Pod community have taken help of periodic abstinence or safe period methods to keep the family size small.

Factors affecting permanent birth control measures

Small family and birth control measures adoption are related with some factors or matters. These dependable factors ultimately help to understand the major problems and prospects of birth control among different communities of the study areas especially when permanent birth control method acceptance level is concerned (Jayaraman, 2018).

### **Educational status:**

Birth control has a very close relationship with the educational status of the couples of different communities. The educational qualifications of husband and wife directly or indirectly influence to adopt different contraceptives (Table 3). In case of birth control measures adopted couples, almost all the illiterates belongs to the Muslim community i.e., among them permanent measures adoption rate is 3.75% and temporary measures adoption rate is 4.38%. In that case, only 0.63% illiterate Pod couples have adopted permanent birth control measures. The literates of various communities have a much more tendency to accept permanent measures rather than the temporary one. Among the birth control measures adopted couples maximum number of couples have attended secondary standard of education that means they have passed up to IX and X. However, one matter is that among the graduate couples only 0.63% couples have accepted



temporary as well as permanent birth control measures but to them they always remain conscious to keep their family size small.

The decision-making process for adopting birth control measures by the young couples is not a very peaceful one (Oliveira et al., 2014). Although the couples themselves should have decided birth control through contraceptive use or sterilization as per their knowledge, experiences and world views, but in reality from the case study based information it becomes clear that the aged females of the family have provided a very prominent role. Again, it is also mentioned here that among the Muslims, the religious personalities also put forwarding their more negative views regarding to adopt birth control measures due to lack of proper knowledge and education in that matter. Sometimes conservative family and community pressure are also played a vital role.

#### **Economic status (Income range):**

The economic condition of the family is very important among the causes that encourage man about small families and birth control. In the study area, the economic condition of the Muslims is very worse. Approximately 15% couples out of the total study sample have an average monthly income up to Rs. 1999 at the time of study. Not only this another 15% couples who have adopted birth control measures have an average monthly family income of Rs. 2000-3999, comparatively a few couple from more better economic condition have adopted birth control measures (Table 4).

Not only this a specific observation is that the lower economic standard couple has accepted permanent measures more in number whereas comparatively the economically better off couple tend to adopt temporary measures more. Among the Pods, the couples have a more tendency to accept temporary measures rather than the Muslims.

#### **Occupational standard:**

Occupation of both male and female partner is generally influencing in the economic condition of the family. This occupation may also directly or indirectly influences the process of birth control. Most of the Muslims of the study area are depending on the labour-based activities like as 5.00% adopted permanent measures and 6.25% adopted temporary measures out of the total number of couples (Table 5). A larger portion of the Muslims is working outside the state as a result they have come to their residence after long intervals that ultimately leads to an advantage in the process of birth control. The Muslims are not familiar with the occupation like agriculture instead of this; hawker and other ways of earning are very much familiar to them. In case of the Pods, agriculture is one of the most important primary occupations. The numerically significant portions of the Mahishya have depended on the agriculture-based occupation.

#### **Conclusion:**

In the foregoing analysis, an attempt has been made to focus upon the present condition of the population control through birth control. The present study belongs to the domain of Bio-cultural anthropology with a focus on socio-cultural significance.

Study area is situated in a very rural area. The various community of this area is more or less conscious about the growth of population and its effects. Owing to the increase of the number of family members various problems either old or new is increasing day by day. So they have adopted various types of processes to make their families small. As a result a large size family is broken into more than one simple families.

The married males and females of different communities of the study area show a very significant level of consciousness regarding birth control. But they differ from one another in respect of different birth control measures adoption. They use different types of contraceptives to prevent unwanted pregnancies under birth control programme. Married males and females in the village undergo vasectomy and tubectomy operation under permanent birth control measures. It is seen that females have adopted birth control measures to a great extent in comparison to the males. It is seen that the males in every community in the area are not eager for sterilization, and most of the males who are encouraged their wives for sterilization. One serious matter is that the Muslim males are afraid from sterilization that it must sick them as a result they cannot able to do their regular jobs as a result in most of the times they have given more pressure to their wives to go through sterilization. Another important matter is that most of the females of the study area are not very eager for permanent operation because after tubectomy operation number of females has brought another issue on account of defect of this operation. At the same time due to distance and perception, the Muslims have a very little faith on the Government measures about health, hygiene and birth control rather they go to the quacks in the area and buy a condom and oral pills. They are of opinion that medicine and other essentials that are provided by the Government hospitals or other sectors in free of cost are of low standard. On the other hand Pods and the Mahishyas though they go to the Government hospitals but have preferred private medical practitioners and purchase different kinds of birth control measures outside. Besides, it is seen that some of the villagers are against of birth control.

**Table 1: Adoption of birth control measures by the married couples of the study area**

Community	No. of couples	Birth control measures adopted					
		Permanent			Temporary		
		Male(%)	Female(%)	Total(%)	Male(%)	Female(%)	Total(%)
Muslim	70 43.75	1 0.63	10 6.25	11 6.88	1 0.63	13 8.13	14 8.78
Pod	72 45.00	4 2.50	13 8.13	17 10.63	5 3.13	18 11.25	23 14.38
Mahishya	15 9.38	1 0.63	2 1.25	3 1.88	1 0.63	4 2.50	5 3.13
Tanti	3 1.88	--	-	-	---	-	-
Total	160 100.01	6 3.75	25 15.63	31 19.38	7 4.38	35 21.88	42 26.25

(%) – Taken in respect of the total number of couples

**Table 2: Adoption of temporary birth control measures**

Community	Couples adopted types of temporary birth control measures							Total
	Pill	Condom	Copper-T	Home-pathic medicine	Ayurvedic medicine	Withdrawal practice	Periodic abstinence	
	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)
Muslim	5 3.13	1 0.63		2 1.25	3 1.88		3 1.88	12 7.50
Pod	10 6.25	5 3.13	3 1.88			3 1.88	2 1.25	23 14.38
Mahishya	3 1.88	1 0.63	1 0.63					5 3.13
Tanti								
Total	18 11.25	7 4.38	4 2.50	2 1.25	3 1.88	3 1.88	5 3.13	40 25.00

(%) – Taken in respect of total number of couples

**Table 3: Educational status of the birth control measures adopted persons**

Comm-unity	Illiterate		Literate		Primary		Secondary		H.S.		Graduate		Total (%)
	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	
Muslim	6 3.75	7 4.38	4 2.50	4 2.50	1 0.63	2 1.25		1 0.63					25 15.63
Pod	1 0.63		7 4.38	5 3.13	2 1.25	3 1.88	6 3.75	14 8.75			1 0.63	1 0.63	40 25.00
Mahishya					2 1.25	1 0.63	1 0.63	4 2.50					8 5.00
Tanti													
Total	7 4.38	7 4.38	11 6.88	9 5.63	5 3.13	6 3.75	7 4.38	19 11.88			1 0.63	1 0.63	73 45.63

(%) – Taken in respect of total number of couples

P – Permanent measures adopted

T – Temporary measures adopted

**Table 4: Average monthly family income of the couple who have adopted birth control measures**

Community	Average monthly family income of the couple						Total (%)
	A	B	C	D	E	F	



	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	
Muslim	5 3.13	10 6.25	6 3.75	4 2.50									25 15.63
Pod	6 3.75	2 1.25	9 5.63	3 1.88	1 0.63	3 1.88		2 1.25	1 0.63	5 3.13		8 5.00	40 25.00
Mahishya	1 0.63		2 1.25	1 0.63		1 0.63		2 1.25				1 0.63	8 5.00
Tanti													
Total	12 7.50	12 7.50	17 10.63	8 5.00	1 0.63	4 2.50		4 2.50	1 0.63	5 3.13		9 5.63	73 45.63

(%) – Taken in respect of total number of couples; P – Permanent measures adopted; T – Temporary measures adopted  
 "A" – Up to Rs.1999/-; "B" – Rs. 2000-3999/-; "C" – Rs. 4000-5999/-; "D" – Rs. 6000-7999/-;  
 "E" – Rs. 8000-9999/-; "F" – Rs. 10000/-

**Table 5: Primary occupation of the spouse of birth control measures adopted persons**

Community	Primary occupation of the spouse of measures adopted person												Total (%)	
	Labour		Agriculture		Business		Service		Household work		Artisan			
	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)	P (%)	T (%)		
Muslim	7 4.38	5 3.13				4 2.50				1 0.63	1 0.63	3 1.88	4 2.50	25 15.63
Pod	1 0.63	3 1.88	5 3.13	4 2.50	1 0.63	3 1.88	1 0.63	3 1.88	4 2.50	6 3.75	5 3.13	4 2.50	40 25.00	
Mahishya		2 1.25	2 1.25	1 0.63				1 0.63		1 0.63	1 0.63		8 5.00	
Tanti														
Total	8 5.00	10 6.25	7 4.38	5 3.13	1 0.63	7 4.38	1 0.63	4 2.50	5 3.13	8 5.00	9 5.63	8 5.00	73 45.63	

(%) – Taken in respect of total number of couples  
 P – Permanent measures adopted  
 T – Temporary measures adopted

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# রবীন্দ্রনাথ পতি না স্রষ্টি : কন্যা ও মানসকন্যাদরে ভিন্ জীবনস্রোত

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## Abstract

বাংলা সাহিত্যের মহীরুহ রবীন্দ্রনাথ; শুধু তঁর কালীন নয় সমকালীন চিন্তানায়করে ভূমিকাতো তঁর নাম উঠে আসে। কন্যা এবং মানসকন্যা দুইই তঁরই স্রষ্টি; কাজেই তাদের জীবনরে গতিমুখ নির্ধারণে স্রষ্টির জীবনদর্শনই মুখ্য ভূমিকা গ্রহণ করবে। এমন যুগ-যুগান্তরে দক্ষিণা যনি, তঁর জীবনরে কিছু ভুল সিদ্ধান্তে মাইল ফলক হয়ে থেকে যায়। ‘দনো পাওনা’-র লেখক যনি তঁর আত্মজাদরে সাথেই কঁকরে প্রায় একই ঘটনার পুনরাবৃত্তি ঘটবে! লাভগ্য, উর্মমিলা, চন্দরা যার কন্যা বলে, রানী, মীরাও তো তঁরই আত্মজা। এমনই কিছু বচিতির সত্যার অধিকারী আমাদরে চরি পরচিতি রবীন্দ্রনাথ। তবে এই দোষারোপে তঁকে কাঠগড়ায় দাঁড় করালে, তঁর প্রতি অবচার করা হবে। ঊনবিংশ শতাব্দীর একান্নবর্তী পরিবাররে দবেন্দ্রনাথ মুখাপেক্ষী রবীন্দ্রনাথরে, স্বাধীন চিন্তাধারা থাকলেও স্বাধীনভাবে সিদ্ধান্ত গ্রহণরে অনুকূল আবহাওয়া ছিল না। এছাড়াও নারীর গৃহলক্ষী রূপরে প্রতি তঁর একটি প্রচ্ছন্ন মোহ কাজ করে; তঁর ব্যক্তিগত চর্চাপিতর ও প্রবন্ধাবলী থেকেই সে ধারণা স্পষ্ট হয়। আসলে জীবন মানইে বিভিন্ন বিপরীত স্রোত ও ঘাত-প্রতিঘাতকে এক সরলরথায় মলিয়ে দেওয়া। এই প্রবন্ধে আমরা সেই দ্বন্দ্ব, স্ববিরোধিতা, সাবকেয়ানা সম্বলতি জীবনরে দর্পণে রবীন্দ্রনাথকে প্রত্যক্ষ করার চেষ্টা করব।

**KEYWORDS :** সত্তা, দ্বন্দ্ব, নারী, স্ববিরোধিতা, স্বাধীনতা

(Paper published on 1<sup>st</sup> June, 2021.)

“আমায় আমারি ধারা মলি যথো যাবে ক্রমে ক্রমে

পরপূর্ণ চতেন্যরে সাগরসংগমে

এই বাহ্য আবরণ, জানিনা তো, শেষে

নানা রূপে রূপান্তরে কালস্রোতে বড়াবে কঁভসে?

আপন স্বাতন্ত্র্য হতে নিঃসক্ত দেখবি তারে আমি,

বাহুরে বহুর সাথে জড়তি, অজানা-তীর্থ-গামী।”১



একটি মানুষ অনেকগুণী সত্যকে একত্রে ধারণ করে বঁচে থাকে। তার মধ্যে যে সত্যটি বাকগুণীকে ছাপিয়ে ওঠে, বাইরে জগৎ তাকে সেই পরচিহ্নে চেনে। যেকোনো শিল্পীর পরচিহ্ন তার শিল্পকলার মধ্যে দিয়েই গড়ে ওঠে। রবীন্দ্রনাথ ঠাকুরকেও বাঙালি চেনে তার সৃষ্টিসত্তার মধ্য দিয়ে। তিনি একাধারে বশিষ্টকবি, ঔপন্যাসিক, গল্পকার, সুরকার, গীতিকার, নাট্যকার। তাঁর শিল্পতত্ত্বে বর্ণালীর ছটা। তাঁর একক প্রতীতিয় বঙ্গ সাহিত্য উন্মোচন, সুরভিত, উদ্ভাসিত হয়েছে। এবং আজও হচ্ছে। কিন্তু রবীন্দ্রনাথ সর্বাগ্রে একজন মানুষ, একজন পিতা, স্বামী, স্নেহের ঠাকুরপো। তাঁর সাহিত্য সৃষ্টির সাথে ওতপোতভাবে জড়িয়ে আছে তাঁর ব্যক্তিগত জীবন। সাধারণত মনে করা হয় যে সৃষ্টির ব্যক্তিগত জীবনদর্শনের ছাপ পড়ে তাঁর সৃষ্টিতে। তাই রবীন্দ্রনাথেরও বহু লেখা তাঁর ব্যক্তিগত জীবন থেকে অনুপ্রাণিত হয়েছে। কিন্তু অদ্ভুতভাবে তাঁর বহু বখিঁষাত উপন্যাসে ও ছোটগল্পে বলশিষ্ট ও স্বাধীনচেতা নারীচরিত্রদের দেখা গলেও তাঁর নিজের আত্মজাদের জীবনে এই দখনি বাতাস কখনও আসেনি। তিনি নারী স্বাধীনতার জন্য লড়াই করছেন, পণপ্রথার বিরুদ্ধে প্রবন্ধ রচনা করছেন। অথচ নিজের জীবনে তাঁর এই আদর্শ বাস্তবে রূপায়িত করতে পারেননি। তাঁর কন্যাদের মেনে মুখে মুখরতা জাগতে পারেননি।

“জীবনের অর্থাৎ ছোটখাটো বসিয়াও পুরুষের যে স্বাধীনতা আছে ময়েদের

তা নই এই কথা মনে করই আমার মন ক্লিষ্ট ছিল। সমাজ শাসনে ময়েদের

সঙ্গে পুরুষের স্বাধীনতার পরবতপ্রমাণ তারতম্য দীর্ঘকালই আমাকে দুঃখ দিয়েছে-

আমার রচিত অধিকাংশ ছোটগল্পেরে ট্রাগেডি অংশই হচ্ছে এই।”২

ছোটো জামাইকে লেখা এই পত্রাংশে রবীন্দ্রনাথের মরমবদনা খুব স্বচ্ছভাবে পরিস্ফুট হয়েছে। তাঁর এই তিক্ত জীবন অভিজ্ঞতার রসে সঞ্চিত হয়েছে তাঁর সাহিত্য সম্ভার। তাঁর আত্মজাদের জীবনের লাঞ্ছনা-বঞ্ছনার ইতিহাস, অবশেষে মৃত্যুর মধ্যে দিয়ে পরিত্রাণ, রবীন্দ্রনাথকে দুঃখের আগুনে পরিশুদ্ধ করেছে। আর তাই হয়ত বধিতার কাছে তাঁর প্রশ্ন- নারীকে আপন ভাগ্য জয় করবার কনে নাহি দবি অধিকার হে বধিতা? কিন্তু আকস্মিক বসিয়া কবি শুধু প্রশ্ন করই ক্যান্ত হয়েছে। তাঁর কন্যাদের জীবনে এই প্রশ্নের কোনো সদুত্তর তিনি খুঁজে পাননি। এই স্ববিরোধিতা রবীন্দ্র সাহিত্যের অনুরাগী ও তাঁর জীবনীকারদের মধ্যে বহু বতিরক্রে সৃষ্টি করেছে।

উনবিংশ শতাব্দীর বাংলায় ব্রিটিশ উপনিবেশের বিরুদ্ধে যে সংগ্রাম গড়ে উঠেছিল তার একটি প্রধান অঙ্গ ছিল ভারতীয় সংস্কৃতি ব্রিটিশ শক্তি যখন ধীরে ধীরে সমগ্র ভারতকেই দখল করে ফেলেছিল, তখন ভারতীয়রা জাতীয় সংস্কৃতিকে হাতয়্যার করে ঔপনিবেশিক অগ্রগতিকে আটকানোর চেষ্টা করেছিল। এই সংস্কৃতির বৈদিক ও আধ্যাত্মিক কেন্দ্রস্থলে ছিল এই বঙ্গনারী সমাজ। নারীই হিন্দু সংস্কৃতির ধারক ও বাহক। তাই ভারতীয় নারীদের রক্ষণশীল করে তোলা হয়েছে, যাতো

বাঙালীর পারিবারিক জীবন পাশ্চাত্য প্রভাব মুক্ত করে রাখা যায়। গৃহ-সমাজ প্রাচ্য-পাশ্চাত্যের এই দ্বন্দ্ববে সবচেয়ে বেশি ক্ষতিগ্রস্ত হয়েছিলেন নারীরা। তাদের মধ্যে দিয়েই মনুসংহিতার কাঙ্ক্ষিত জহিয়ে রাখা হয়। হিন্দু সংস্কৃতির চরিত্রনতন ঐতিহ্যকে আঁকড়ে ধরার একমাত্র আধার হয়ে ওঠে এই গৃহবন্দী নারী সমাজ।

২

যে রবীন্দ্রনাথ হয়ে উঠেছেন বাঙালির আদর্শ – তাঁর কবিতা, তাঁর সৌজন্য, তাঁর হাতের লেখাও হয়ে উঠেছে বাঙালির অনুকরণের উপাদান। সেই রবীন্দ্রনাথই তাঁর জীবনের কিছু অন্যতম ভুল করে ফলেছিলেন, তাঁর কন্যাদের জীবনের সদিধানত গ্রহণের ক্ষেত্রে। ঊনবিংশ শতকে বাংলায় নবজাগরণ এলো সমাজের বহু উচ্চশিক্ষিত, প্রতিষ্ঠিত মানুষ তাদের কন্যাকে সেই আলোকে আলোকিত হতে দেননি। তারা তাদের অপ্ৰাপ্তবয়সী কন্যাদের বিবাহের উদ্যোগ করতে থাকেন। ১৯০০ সাল নাগাদ কবিন্দু শ্রীশচন্দ্রের মতো মনে ও দবেন্দ্রনাথ সেনের কন্যার বিবাহ স্থির হয়। বন্ধুকন্যাদের পাত্রসহ হওয়ার খবরই রবীন্দ্রনাথকে স্ব-কন্যার বিবাহের ব্যাপারে উদ্যোগী করে তোলে। কিন্তু এই পরিবারেরই অন্তর্ভুক্ত ইন্দুরা চৌধুরী, সরলা ঘোষালদের বিবাহ হয় যথাক্রমে ঊনত্রিশ ও ত্রিশ বছর বয়সে; যখনই রবিন্দু বেলোর বয়সে হয় চৌদ্দ বছর আট মাসে, রানীর দশ বছর বয়সে এবং কনিষ্ঠা কন্যা মীরার বিবাহের উদ্যোগও দশ বছর বয়সেই শুরু হয়।

কিন্তু আমরা যদি তাঁর সাহিত্যের আত্মজাদরে ঢুকে তাকাই তাহলে আমাদের মনে পড়ে ‘শষের কবিতা’-র লাবণ্যের কথা। উচ্চশিক্ষা লাভের পর সে হয়ে উঠেছে স্বাবলম্বী; পরত্যাগস্থান করেছে পতির সাহায্যকণ্ঠে। বি.এ, এম.এ পাস করা স্বাধীনচেতা নারী লাবণ্য বিবাহ করেছে পরণিত বয়সে, নিজের পাত্র পছন্দ করে। ‘শষের কথা’-র অচরিত্র এবং ‘রবির’ গল্পেরে বিভিন্নভাবে আমরা অববিবাহিত হিসেবেই দেখি সংসার নয় জগৎই তাদের জীবনের পাথরে। অচরিত্র ও বিভিন্নভাবে উপরে বিবাহের জন্ম কোনো পারিবারিক বা সামাজিক চাপ ছিল না। তারা বেড়ে উঠেছিল প্রকৃতির মাঝে স্ব-বিশেষিত্য নিয়ে। ‘ল্যাবরেটরি’ গল্পেরে রবীন্দ্রনাথ এ সব কিছুকেই ছাপিয়ে গেলেন। সামাজিক বিবাহের বন্ধনকে অগ্রাহ্য করে বিশ্বাস ও ভালবাসার বন্ধনকেই স্বীকৃতি দিয়েছেন নন্দকশির ও সৌহিনীর সম্পর্কের মধ্যে দিয়ে – ‘নন্দকশির ওকে যে দশা থেকে নিয়ে এসেছিলেন সটো খুব নির্মল নয় এবং নভিত নয়। কিন্তু ঐ একরোখা একগুয়ে মানুষ সাংসারিক প্রয়োজন বা প্রথাগত বিচারকে গ্রাহ্য করতেন না। বন্ধুরা জিজ্ঞাসা করত বয়সে করছে কি? উত্তরে শুনত, বয়সটো খুব বেশী মাত্রায় নয়, সহ্যমতা’

মহর্ষির জীবদ্দশায় ঠাকুর পরিবারের প্রধান্যায়ী বয়সেরে যাবতীয় খরচ তাঁদের সরকারি তহবিল থেকেই মটোনো হত। এমনকি ইন্দুরার নতুন সংসারেরে জন্ম বাড়তিভাড়াও দেওয়া হয়েছে। বেশ আড়ম্বরেরে সঙগেই সেই সরকারি খরচেই অনুষ্ঠিত হয়েছে মহর্ষির প্রপৌত্র দিনেন্দ্রনাথের বিবাহ। অনুমান, পারিবারিক এই ব্যবস্থার জন্মই চৌদ্দ পূর্ণ হওয়ার আগেই কন্যাদের বিবাহ সম্পন্ন

করতে চয়েছেনো। অপ্ৰাপ্তবয়স্ক কন্যার ববিাহরে জন্য উদ্যোগী হতে দেখে অনকেইে বস্মিতি হয়ছেনো। এখানরে ববিা জীবনীকার প্ৰশান্তকুমার পালরে প্ৰাসঙ্গিক মন্তব্যটি উল্লেখ –

“.....‘হিন্দুববিাহ’, ‘অকাল ববিাহ’ প্ৰভৃতি প্ৰবন্ধে ও চন্দ্রনাথ বসুর

সঙ্গে বতিরক্বে তনি বাল্যববিাহরোধ আইনপ্ৰণয়নরে যৌক্তিকতা

স্বীকার না করলেও তাঁর স্পষ্ট সমর্থন ছিল যৌবন ববিাহরে প্ৰতি

সক্ষেত্রে শ্ৰীশচন্দ্র মজুমদার, দবেন্দ্রনাথ সনে এমনকি সত্যপ্ৰসাদ

গঙ্গেপাধ্যায় তাদরে অপ্ৰাপ্তবয়স্ক কন্যাদরে ববিাহ দতিে ব্যস্ত হলও

তাদরে সঙ্গে রবীন্দ্রনাথরে অবস্থানরে পার্থক্য ছিল। কেবেল কবিনয়,

বাঙালি সমাজে তাঁর ভূমিকা ছিল চিন্তা নাযকরে। তাই ব্যক্তিস্বার্থে

তাঁর সামাজিক ভূমিকা বস্মরণরে ইতিবৃত্তটি অস্বস্তিকরি।”<sup>৩</sup>

আরো একটি কারণকে অনুমান করা হয়। কোনো একটি জ্যোতিষী রবীন্দ্রনাথরে হাত দেখে তাঁর দ্বিতীয় ববিাহরে ভবিষ্যতবাণী করেছিলেন, যা তাঁকে অত্বন্ত চিন্তান্বতি করে তোললে, তাঁর আত্মজ-আত্মজাদরে ভবিষ্যত নিয়ে কবিন্দু প্ৰয়িনাথ সনে এই অস্থিরতার যন্ত্রণা থেকে তাঁকে মুক্ত করেন ও আশ্বাস দনে।

মাতৃহীনা কন্যাদরে সপাত্রে পাত্ৰসহ করা এবং সংসারধর্মে প্ৰতিষ্টিতি করার তাগদি তাকে উৎসাহিত করে। কন্যাদরে বাল্যববিাহ দেওয়ার ক্ষেত্রে। কিন্তু এই হঠকারিতা তাঁর তনি কন্যার জীবনে সুখরে নরিল্লা আশ্রয় এনে দেয়নি বরং পতি হসিাবে তারও সারাজীবন নানান জটলিতায় কটেছে। এমনকি সন্তানদরে অকাল মৃত্যুর যন্ত্রণাও সহ্য করতে হয়েছিল। করছে পণ নবে না পণ বউ যদি হয় সুন্দরী,কিন্তু আমায় বলতে হবে স্বরণ দেবে কয় ভরী। সমাজরে এই অভিশাপ কন্যাদায়গ্ৰস্ত পতিরা যুগ-যুগান্তর ধরে বয়ে চলেছে। কালরে সাপক্ষে পণরে সামগ্রী বিবর্ততি হয়েছিল, কিন্তু সন্ত্যতার বুক থেকে অভিশাপ কাটনো।

আমরা জানি রবীন্দ্রনাথরে তনি ময়রে ক্ষেত্রেই এই একই ঘটনার পুনরাবৃত্তি ঘটলে। রবীন্দ্রনাথ হলনে বাঙালি সংস্কৃতির স্তম্ভ-স্বরূপ। তনি বঙ্গ সমাজরে বহু অপসংস্কৃতি ও কুসংস্কাররে বিরুদ্ধে লখনী ধরছেন এবং মানুষকে সচতেন করছেন, পণপ্ৰথা তার মধ্যে অন্যতম। ১৯০৪ সালে রচিত ‘বলিাসরে ফাঁস’ প্ৰবন্ধে রবীন্দ্রনাথ পণপ্ৰথার বিরুদ্ধে তীব্র মাত্ৰায় ক্ৰোধ প্ৰকাশ করেন। তবে ততদিনে তাঁর তনি কন্যারই সম্প্ৰদান হয়ে গেছে।

জ্যেষ্ঠ কন্যা মাধুরীলতা বা বলোর জন্য বহিরীলাল চক্রবর্তীর তৃতীয় পুত্র শরৎকুমারকে জামাতা হিসেবে গ্রহণ করেন। বি.এল. ডিগ্রিপ্ৰাপ্ত প্রতিষ্ঠিত বিদ্বান পাত্রকে জামাতারূপে নির্বাচন করতে যথেষ্ট বেগে পতে হয় রবীন্দ্রনাথকে। রবীন্দ্রনাথ-প্রয়িনাথ পত্রাবলীতে এর প্রমাণ পাওয়া যায়-

“বলোর যৌতুক সম্বন্ধে কিছু বলা শক্ত। মোটের উপর ১০০০০ পর্যন্ত

আমি চেষ্টা করতে পারি। সেও সম্ভবত: কতক নগদ এবং কতক

Instalment-এ। অবশ্য instalment-এর ব্যবস্থা আমার পক্ষে

হতিকর নয় – কিন্তু নতিন্তই যদি অনটন হয় তবে উপায় নহে।”৪

শেষ পর্যন্ত পণের পরিমাণ দশ হাজারে নামে এলোও বলা হয় বিবাহের তিন দিন আগে টাকা মটিয়িে দিতে হবে। কন্যাদায়গ্রস্ত পতি তা মনে নলিওে ঠাকুর পরিবারের প্রধান পুরুষ দবেন্দ্রনাথের পক্ষে শযেোক্ত শর্তটি খুবই অপমানসূচক মনে হয়। কন্যাবিবিাহকে কেন্দ্র করে কবি করিকম বড়িম্বতি হয়েছেন তার দৃষ্টান্ত রয়েছে। তাঁর আর এক চর্চিতে –

“আমাদের বাড়িতে অনেকে বিবাহ হইয়া গছে – আমার কন্যার

বিবাহইে প্রত্যকে কথা লইয়া দরদস্তুর হইল ইতঃপূর্বে এমন ব্যাপার

আর হয় নাই। এ ক্ষেত্রে আমার থাকবি। দশ হাজারের উপর আরো

দুই হাজার চাপাইয়া ব্যাপারটাকে আরো কুসতি করা হইয়াছে।

পরমাত্মীয়কে প্রসন্ন মনে দান করবার সুখ যে আমার আর রহলি

না, আমাকে পাক দিয়া নংড়াইয়া লওয়া হইল।”৫

দ্বিতীয় কন্যার বিবাহের যৌতুক নিয়ে এরূপ মল্লযুদ্ধ না হলেও কবিকে তার জামাতাকে নিজ খরচে বলিতে পাঠাতে হয়েছে। মাসে মাসে মাসেোহারা দিতে হয়েছে জামাতার মাকে। ব্যর্থ হয়ে ফরিে আসার পর তাকে ডিস্পেন্সারিও খুলে দিয়েছেন রবীন্দ্রনাথ। তৃতীয় জামাতা নগেন্দ্রর বলিতে পড়াশোনার যাবতীয় খরচও কবিই বহন করেছিলেন। দশে ফরোর পর তার জন্য বিভিন্ন চাকরীর সন্ধানও করেছেন। কিন্তু বহেসিাবি স্বভাব ও অমতিব্যয়তির জন্য তাকে ক্রমাগতই অর্থ সাহায্য করে যতে হয়েছে।

অথচ তারই রচিতে বখিযাত ছোটগল্প ‘দনো পাওনা’-তে দেখতে পাই পণ প্রথায় জর্জরতি সমাজের প্রতি তাঁর ভরুকসনা। বিবাহবাসরে পণের পরিমাণ নিয়ে যে কুসতি দরাদরি শুরু হয়েছিল তাতে কোথায় যনে আমরা বলোর বিবাহকালীন সমস্যার ছায়া দেখতে পাই। তবে গল্পে অবশ্য হবু জামাতাটি



মানবিকতার পরচয় দিয়ে বিবাহ সম্পন্ন করে। কিন্তু শেষে রক্ষা হয়নি; মনোঃকষ্টে, অবহেলায় নরীপমা মৃত্যুমুখে পতিত হয়। এবং সমাজে কনিষ্ঠের পরহাস, জীবিত থাকতে যার জীবনের কোনও মূল্যই কেটে দিল না, তার চিত্ত তরৌ হল চন্দন কাঠে, শ্রাদ্ধ হল মহা সমারোহে। গল্পটির প্রতীতি ছত্র লুকিয়ে আছে রবীন্দ্রের চিত্ত শ্লেষে, তাঁর শেষে বাক্যটিতে প্রকাশ পায় লেখকের তীব্র বদীরূপ- ‘এবার বশি হাজার টাকা পণ এবং হাতে হাতে আদায়।’ এই কাহিনী ১২৯৮ বঙ্গাব্দে রবীন্দ্রনাথ ঠাকুরের কন্যাদরে বিবাহের পূর্বে রচিত। আশ্চর্যের বিষয়, এমন দূরদ্রষ্টা ব্যক্তিদের দ্বারা কী করে এমন ভুল পদক্ষেপে গৃহীত হয়। বিবাহের মত একটি পবিত্র অনুষ্ঠান, যথানে দুটি হৃদয় ও তাদের পরিবার সারাজীবনের জন্য মিলিত হয় তাকে বচো কনোর পর্যায়ে নামিয়ে আনতে রবীন্দ্রনাথও কী করে সামলি হন? দরদির রামসুন্দর পণ দিতে না পারায় নরীপমার মৃত্যু হয়। কিন্তু কবিতার যথাসাধ্য দানরে পরেও বলা ও রানী তাদের ক্ষণস্থায়ী জীবদ্দশায় মানসিকভাবে সুখী হতে পারেননি এবং মীরা দবীর তে বিবাহবিচ্ছেদেই ঘটে গেছে।

উনবিংশ বংশ শতাব্দীতেই রামমোহন, বদীয়াসাগর নারী জাতিকে ‘অসূর্যমস্পর্শা’ বিশেষণ থেকে মুক্ত করার জন্য প্রচুর লড়াই করেছেন। কিন্তু সেই প্রভাব তখনও সমগ্র হিন্দু সমাজে দৃঢ় সংস্কারের ভিত্তিকে টলাতে পারেনি। তাই বাঙালি নারী সমাজ তখনও শিক্ষা গ্রহণের ছাড়পত্র পায়নি।

শ্রীমতী লীলা মতির কবিকে স্ত্রী শিক্ষার আদর্শ উদ্দেশ্য সম্পর্কে চর্চিতে জানতে চেয়েছিলেন। স্ত্রী-পুরুষের শিক্ষার বিভিদে ও মান সম্পর্কে ‘স্ত্রীশিক্ষা’ নামক একটি প্রবন্ধ লিখে রবীন্দ্রনাথ তাঁর মতামত জানান।

“ বদীয়ার দুটি ভাগ আছে। একটা বশিদ্ধ জ্ঞানরে, একটা ব্যবহাররে।

যথানে বশিদ্ধ জ্ঞান সথানে ময়ে পুরুষরে পার্থক্য নেই, কিন্তু

যথানে ব্যবহার সথানে পার্থক্য আছে। ময়েদেরে মানুষ হইতে

শখাইবার জন্য বশিদ্ধ জ্ঞানরে শিক্ষা চাই, কিন্তু তার উপরে

ময়েদেরে ময়ে হইতে শখাইবার জন্য... ব্যবহারিক শিক্ষাদানরে

একটা বিশেষত্ব আছে।”৬

রবীন্দ্রনাথ তাঁর কন্যাদরে শিক্ষাদানরে ক্ষেত্রে এই বিষয়গুলোর উপর যথেষ্ট জোর দেন। বাংলা ইংরজী, সংস্কৃত সাহিত্য, ‘মনুসংহিতা’, ‘বিষ্ণুপুরাণ’ প্রভৃতি পড়ানোর দিকে তিনি যতটা গুরুত্ব দিয়েছেন ইতিহাস, ভূগোল, বজ্রাণ, গণিত সথানোর তাগদি ততটা ছিল না। ‘বশিদ্ধ জ্ঞানরে’ পরিবর্তে ‘ময়েদেরে ময়ে হইতে শখাইবার’ দিকটাই তিনি বেশি আলোকপাত করেছেন। কন্যাদরে উচ্চশিক্ষাদানরে বা শান্তনিকিতেনে রেখে পড়াশোনা সথানোর বিষয়ে তিনি কখনই উদ্যোগ নেননি।



কিন্তু আমরা যদি তাঁর সাহিত্যেরে কন্যাদরেকেরে পর্যালোচনা করি তাহলে দেখবো ‘রবীন্দ্র’-এর বহির্ভা, ‘শেষেরে কবিতা’-র লাবণ্য ব.এ, এম.এ ডিগ্রী সম্পন্ন। ‘চার অধ্যায়’ এর এলাকে দেখি থিসিসি রচনা করত; এমনকি দেশেরে কাজেও নিজেকে নিয়োজিত করত। ‘ল্যাবরেটরি’-তে সোহনিকেরে তার স্বামী নন্দকশিরে জ্ঞানে নিজেরে সমগোত্রীয় করে নিতে চয়েছে, নীলাকে তার মা ডায়োসিসিনে পড়িয়েছে। ‘দুই বোনে’ উপন্যাসেরে উর্মিমিলা বশিবদিয়ালায় পড়াশোনা করছে, তার পতি তাকে ইউরোপে ডাক্তারি পড়ানোর স্বপ্নও দেখেছিলেন।

আসলে একান্নবর্তী, বনদৌ পরিবারেরে দবেন্দ্রনাথ মুখাপেক্ষী রবীন্দ্রনাথ ময়েদেরে স্বাবলম্বী করে তোলার বিষয়ে অতটা সাহস জুগিয়ে উঠতে পারেননি। আর্থিক স্বাধীনতার অভাব তাঁর ব্যক্তিগত জীবন ও সিদ্ধান্তেরে গতিমুখও বদলে দিয়েছে।

৩

ভারতীয় নারীরা নারী হয়ে উঠতে হয়ত পরেছেন কিন্তু মহিসী হওয়ার সম্মানটুকু তারা পাননি। নারীর য়ে একটি ব্যক্তিস্বাতন্ত্র্যও আছে সেকথা এদশে কেউ স্বীকার করত চায় না। সংসারেরে মান রক্ষার জন্য, সমাজেরে মান রক্ষার জন্য সকল প্রকার অসত্য, অত্যাচার ও অবমাননার সাথে আপস করে থাকাই য়ে ভারতীয় নারী-ধর্মেরে শ্রেষ্ট আদর্শ। এমনকি রবীন্দ্রনাথও মনে করেছেন-

“ময়েদেরে ভালবাসার উপরই সমাজ ঝাঁক দিয়াছে, এই জন্য ময়েদেরে

দায় ভালবাসার দায়। পুরুষেরে শক্তির উপরই সমাজ ঝাঁক দিয়াছে,

এই জন্য পুরুষেরে দায় শক্তির দায়।”৭

আর এই চিন্তারই প্রতফিলন দেখেছি আমরা তাঁর জীবনে। মজেরে ময়ে রানীর বয়ি ঠকি করেছেন তিনি দিনেরে মধ্য। তাঁর স্ত্রীর আপত্তি ও রানীর অনচ্ছা সত্ত্বও। শোনা যায় এই বয়ি রানীর পছন্দ হয়নি; তবু অবাধ্যতা করেননি। চরিত্রন বঙ্গনারীর মত অন্তরেরে প্রতবিদকে বাইরে রূপ দিতে পারেননি। মাথা নচি করে সকল বিবাহ আচার পালন করেছে। রবীন্দ্রনাথেরে পক্ষ্যে সম্বব হয়নি আজন্ম অভিমানিনী ময়েরে মনেরে খবর জানা, হয়ত তার প্রয়োজনও বোধ করেননি। কবির এই পুরুষতন্ত্রকি মনোভাবেরে পরিচয় পাওয়া যায় তাঁর জ্যেষ্টা কন্যার চর্চিত্তে। রবীন্দ্রনাথেরে চর্চিত্তি উত্তরে বলো তার বাবাকে লিখেছিলেন-

“তুমি আমাকে যা যা উপদশে দিয়েছে আমি তা প্রাণপণে পালন করতত্বে

চেষ্টা করব। আমার স্বামী য়ে আমার চয়ে সকল বিষয়ে শ্রেষ্ট এবং

আমিতার সমান নই, এটা বরাবর মনে রাখব।”৮





অথচ কবরির সৃষ্টি বশে কিছু নারী চরিত্র, যারা আত্মপ্রত্যয় ও চারিত্রিক দৃঢ়তার জোড়ে সমাজের সকল কলুষতার বন্দিধে জয়ী হয়েছে। তাঁর ‘যোগাযোগ’ উপন্যাসে আমরা দেখি কুমুদনিকে নিজের স্বামীর অধিকার বোধের সামনে ব্যক্তিত্বের প্রাচীর গড়ে তুলতে। ‘ঘরে বাইরে’ উপন্যাসে বমিলাকে দেখি স্বামীর জাতীয়তাবাদী মতাদর্শের সম্পূর্ণ বিপরীত মনোভাৱে দাঁড়িয়ে নিজের মতামতকে প্রতিষ্ঠা করতে। ‘চার অধ্যায়’ এর এলাহর মধ্যে খুঁজে পাই একজন সক্রিয় রাজনীতিবিদিকে। ‘দুই বোন’ এর উর্মমিলা গণতি বশিারদ রূপে দেখা দেয়। শূন্য শিক্ষিতা, আধুনিকারাই যে তাদের ব্যক্তি স্বাতন্ত্র্যের পরিচয় দিয়েছেন তা নয়; রবীন্দ্রনাথের লেখনীতে চিত্রায়িত হয়েছে। ‘শাস্তি’ গল্পের চন্দ্রার মত চরিত্র। এই অশিক্ষিতা গ্রাম্য বধুর আত্মভ্রমণ ও বলশিষ্ঠতা, তাকে স্বচেচায় প্রাণ ত্যাগে ইন্দ্রন জুগিয়েছে। কিন্তু আপসের পথকে বেছে নাতি দেয়নি। তবে তাঁর সবচেয়ে বৈশিষ্ট্য চরিত্রের নমুনা আছে। ‘ল্যাবরেটরি’ গল্পে। সোহনিকে সমাজের কনোনা শিকলই বেঁধে রাখতে পারেনি। নন্দকশির ও সোহনীর হিন্দু বিবাহের উর্ধ্বে উঠে একে অপরকে স্বার্থের পরিপূরক হয়ে উঠেছে। কারণ নন্দকশির বিবাহের ক্ষেত্রে হিন্দু শাস্ত্রের থেকে মানবধর্মশাস্ত্রকেই বেশি গুরুত্ব দিয়েছে। ‘স্বামী হবে এঞ্জিনিয়ার আর স্ত্রী হবে কন্ট্রোল-কন্ট্রোল, এটা মানবশাস্ত্রের নিষিদ্ধ। ঘরে ঘরে দেখতে পাই দুই আলাদা আলাদা জাত গাঁটছড়া বাঁধা, আমি জাত মিলিয়ে যাচ্ছি। পতিব্রতা স্ত্রী চাও যদি, আগে ব্রতের মলি করা’- রবীন্দ্রনাথের এই উক্তির সাথে বলোর সংসার ধর্মের শুরুর তাকে দেওয়া উপদেশের মধ্যে, চরম আসাম্য পরিলক্ষিত হয়।

8

সব ঘটনারই যমেন দুর্টি আঙুলি থাকে। তমেনই রবীন্দ্রনাথের জীবন ও সাহিত্যে এই স্ববিরোধিতারও একটি অন্য দিক আছে। সখোন। বদ্রসোহনীর পাশে আছে বরিসোহনী, উচ্চশিক্ষিতার সাথে আছে নপীড়িতা, স্বাধীনচতোর সঙ্গে আছে অবগুণ্ঠিতা।

‘জীবিত ও মৃত’-র কাদম্বরীকে তার অস্তিত্বের প্রমাণের জন্যই নিজের আস্তিত্বকে বসির্জন দিতে হয়। নরিপমাকে বলী হতে হয় পণপ্রথার যুগকায়টে। সমাজের পীড়নে অসহায় ‘সুভা’ এগিয়ে যায় এক করুণ পরিণতির দিকে। অন্তরে মরমবদনা নিয়ে রতন ও কুমুমও এক সময় নরিবাক হয়ে যায়। ‘মধ্যবর্তনী’র হরসুন্দরী ও ‘দুই বোন’ এর শর্মিলার মধ্যে দেখি এমন এক বঙগনারীকে, যিনি নিজের গৃহলক্ষ্মী হওয়া সত্ত্বেও প্রদীপের তলার অন্ধকারের মত তমসচ্ছন্ন তার জীবন। ‘চোখের বালি’-র বনিনোদনী তার বৈব্য দশা থেকে মুক্তি পতে হাজার ছলা কলার আশ্রয় নিলেও শেষে পর্যন্ত রবীন্দ্রনাথ তাকে কাশীতেই ঠাই দিয়েছেন। ‘যোগাযোগ’ উপন্যাসের কুমুদনীর মনের রাজ্য অধিকার করতে মধুসূদনের নিষ্ঠুরতা উত্তরোত্তর বাড়তে থাকে। সন্তানের মা কুমুকে রবীন্দ্রনাথ স্বাধীনতা দেননি, ফরিয়ে এনেছেন মধুসূদনের কাগার।



কিন্তু পণ্ডিত রবীন্দ্রনাথ সংসারের নানান তিক্ত অভিজ্ঞতা থেকে উপলব্ধি করেছেন – শূন্য পুরুষের সহচরীই নয়, আলাদা একটি জগৎ নারীরও প্রাপ্য। তাই অন্তিমি কন্যা মীরার জীবনে বর্চিছেদে অবশ্যম্ভাবী তা উপলব্ধি করেন এবং নিজের তত্ত্বাবধানে সেই বিবাহের সমাপ্তিকি, সমাজে প্রতিষ্ঠিত করেন।

“মীরার সঙ্গে তোমার লশেমাত্র বর্চিছেদে হয় এ আমার কছিতই ইচ্ছাসম্মত নয়।

এর দায়িত্বও আমার পক্ষ্যে কঠনি। তবু আমাকে পরম দুঃখে এটা স্বীকার করতে

হচ্ছো। এবার মাদ্রাজে যখন দেখেলাম মীরা তোমাকে ভয় করে, তোমার হাত

থাকে প্রকাশ্য অপমানের সঙ্কোচে একান্ত সঙ্কুচিত হয়, তখন স্পষ্ট দেখতে

পলেম তোমাদের দুজনের প্রকৃতির মূলসুরে মিলি নই।”৯

ছলেমেয়ে, স্ত্রী ও অন্যান্য আত্মীয়দের উপর জুলুম করবার যে শক্তিকে সমাজ স্বীকার করে সেই শক্তিকে রবীন্দ্রনাথ বর্বরতা বলেই মনে করেছেন।

রবীন্দ্রনাথ তাঁর যৌবনকালে পন্ডিতা রমা বাঈয়ের একটি বক্তৃতার উত্তরে বলেছিলেন যে, নারীকে স্বভাবকোমল ও হীনবল করেই গড়ে তুলেছে প্রকৃতি। এটাই প্রমাণ করে যে নারী পুরুষের থেকে দুর্বল। এটাই নারীর সহজাত বৈশিষ্ট্য এবং প্রকৃতিই নারী পুরুষের অধঃস্তন। তাঁর ‘Woman and Home’ প্রবন্ধে দেখা যায় তিনি নারীকে কেবলমাত্র পুরুষের সহকারিনী রূপেই ব্যাখ্যা করেছেন-

“If woman’s nature were identical with man’s, if Eve were a mere

tautology of Adam, it would only give rise to a monotonous

superfluity. But that she was not so was proved by the banishment

she secured from a ready-made Paradise. She had the instinctive

wisdom to realise that it was her mission to help her mate in creating

Paradise of their own earth, whose ideal she was to supply with her

life, whose materials were to be produced and gathered by her

comrade.....woman has to be ready to suffer.”১০

নারীর গৃহলক্ষ্মী রূপে এই সূচনিত্তি প্রশংসার আড়ালে ঢাকা পড়ে যায় নারী জীবনের বন্দীদশার ও আত্মবলদানির নরিমম সত্যা। তাই প্রথম জীবনে কবিরি লখনী ও তাঁর আত্মজাদরে জীবন সর্বত্রই



এই বগিত শতাব্দীর মনোভাবেরে দেখা মলোে কন্যারা এবং সৃষ্ট নারী চরিত্ররা কবেলমাত্র সংস্কারাবদ্ধ পুতুলে পরগিত হয়। এর ফল হয় বশিময়, কবকিে তাঁর কন্যাদরে অকাল-মৃত্যুর সাক্ষী হতে হয়। বাস্তব অভিজ্ঞতার মাধ্যমে তনি নারী স্বাধীনতার গুরুত্ব ও প্রয়োজনীয়তা উপলব্ধি করেন। মীরার ববিাহ সম্পর্কে তনি বিলনে-

“ওর জীবনে প্রতম দন্ড তে আমাি ওকে দয়িচে- ভাল করে না ভবে না বুঝে

আমাই ওর বয়িে দয়িছে। যখন দচ্ছলিম তখন মনে মনে খুব একটা উদ্বগে

এসছেলি। –বয়িরে রাত্রে মীরা যখন নাবার ঘরে ঢুকছলি তখন একটা গোখরো

সাপ ফস্ করে ফনা ধরে উঠছেলি- আজ আমার মনে হয় সে সাপ যদি তখনই

ওকে কাটত তাহলে ও পরত্ৰাণ পতো”১১

কতটা মরমবদেনায় পীড়িত হলে রবীন্দ্রনাথেরে মত একজন স্নহেশীল পতি অপত্বরে মৃত্যু কামনা করতে পারনে তা অনুমান করা যায়। ফলতঃ ১৯১৪ সাল নাগাদ তাঁর বহু লখোয়, পত্রে দেখা যায় এই লঙ্গভদেরে ববিদ্ধে বকিষোভ। এইসময় ‘ভারতী’ পত্রকিয় ‘পরবিারেরে দাসত্ব’ নামে তাঁর একটা প্রবন্ধ প্রকাশিত হয়। এই প্রবন্ধেরে বশিয় হচ্ছে কভাবে পরবিারেরে পুরুষ সদস্যরা যতচ্ছাচার করে বড়োয় অথচ ময়েদেরেকে নিয়মেরে বড়োজালে আবদ্ধ রাখা হয়। তাই হয়ত রবীন্দ্রনাথেরে পরেরে দকিরে সকল রচনায় আমরা এলা, উর্মমিালা, নন্দনী, চত্ৰাঙ্গদার মত চরিত্রদেরে পাই। কনিতু অদ্ভুতভাবে তাঁর তরুণ বয়সেরে প্রবন্ধ ‘ব্বাসীর রানী’-র ছত্রে ছত্রেও ছড়িয়ে আছে নারীর বীরত্ব ও শক্তির প্রশংসা।

সুতরাং কবমিনসে নারী আদর্শেরে ববির্তনেরে ইতহিস খুঁজতে গলে তা রবীন্দ্রসাহিত্যেরে প্রতী অবচার করা হবোে ববির্তন না বলে একে দ্বন্দ্ব বলা ভাল। রবীন্দ্রনাথ সারাজীবন নিজেরে মধ্যে এই দ্বন্দ্বকে লালন করেছেন। জীবনেরে আদ্যন্ত এই দোলাচলতা দুলায়িছে তঁকে। ঊনবংশ শতাব্দীর বাঙালি নাগরকিতায় অভ্যস্ত রবীন্দ্রনাথ, ঠাকুর পরবিারেরে আচার, সংস্কারই গড়ে উঠছেলিনো। সেই চার দেওয়ালেরে বাইরে এসে পাশ্চাত্য শকিষা-সংস্কৃতির প্রভাব তাকে ‘অচলায়তন’ ভঙে উদার ও মুক্তমনা রূপও দয়িছেলি। কনিতু সেই পুরাতন পারবিারকি ভিত্তিপ্ৰস্তরটি বনিষ্ট হয়নি। বুদ্ধ দুয়ার ও মুক্ত আকাশেরে দোটানায় তনি আন্দোলতি হয়ে চলছেলিনো। পৃথিবীর প্রতটি মানুষেরে মধ্যই এই দোলাচলতা বদিযমান। বভিন্ সত্তার সমষ্টি রূপই হল এই মানুষ। জীবদ্দশায় এই ভিন্ সত্তারই বহিঃপ্রকাশ ঘটে বভিন্ করমেরে মধ্যে দয়িে। রবীন্দ্রনাথ ঠাকুরকেও আমরা সেই সহজাত দ্বন্দ্ব-বকিষুব্ধ মানুষ রূপইে গ্রহণ করবা।

**উললেখপঞ্জী :**



১। রবীন্দ্রনাথ ঠাকুর, “সঞ্চারিতা”, পথের শেষে, ৬ আচার্য জগদীশ বসু রোড, কলকাতা ১৭, বশ্বভারতী, ১৩৩৮, পৃ: ৮২২

২। পূর্ণানন্দ চট্টোপাধ্যায়, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ”, ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭, পৃ: ৪২০

৩। রবীন্দ্রনাথ ঠাকুর, “রবীন্দ্র রচনাবলী(৪র্থ খন্ড)”, ৬ আচার্য জগদীশ বসু রোড, কলকাতা ১৭, বশ্বভারতী, ভাদ্র ১৩৯৪, পৃ: ৩২০

৪। পূর্ণানন্দ চট্টোপাধ্যায়, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ” ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭, পৃ: ৩৭৩

৫। পূর্ণানন্দ চট্টোপাধ্যায়, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ” ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭, পৃ: ৩৭৪

৬। প্রভাত কুমার মুখোপাধ্যায়, “রবীন্দ্রজীবনী ও রবীন্দ্রসাহিত্য প্রবশেক”, ৬ আচার্য জগদীশ চন্দ্র রোড, কলকাতা ১৭, বশ্বভারতী, ১৩৪৩, পৃ: ২২৫

৭। প্রভাত কুমার মুখোপাধ্যায়, “রবীন্দ্রজীবনী ও রবীন্দ্রসাহিত্য প্রবশেক”, ৬ আচার্য জগদীশ চন্দ্র রোড, কলকাতা ১৭, বশ্বভারতী, ১৩৪৩, পৃ: ২২৮

৮। পূর্ণানন্দ চট্টোপাধ্যায়, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ” ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭, পৃ: ৩৭৬

৯। পূর্ণানন্দ চট্টোপাধ্যায়, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ” ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭, পৃ: ৪২৩

১০। Tagore Rabindranath, Woman and Home, Google.Co.in, Date of accession:11/06/2014, <http://tagoreweb.in>

১১। পূর্ণানন্দ চট্টোপাধ্যায়, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ” ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭, পৃ: ৪১৫

### গরন্থপঞ্জী:

১। চট্টোপাধ্যায় পূর্ণানন্দ, “রবীন্দ্রনাথ ও রবীন্দ্রনাথ” ৪৫ বনেয়াটোলা লনে, কলকাতা ৭০০০০৯, আনন্দ পাবলিশার্স, ১লা আগস্ট, ২০০৭



- ২। ঠাকুর রবীন্দ্রনাথ, “সংস্কৃতি”, ৬ আচার্য জগদীশ বসু রোড, কলকাতা ১৭, বশ্বভারতী, ১৩৩৮
- ৩। মুখোপাধ্যায় প্রভাত কুমার, “রবীন্দ্রজীবনী ও রবীন্দ্রসাহিত্য প্রবশেক”, ৬ আচার্য জগদীশ চন্দ্র রোড, কলকাতা ১৭, বশ্বভারতী, ১৩৪৩
- ৪। ঠাকুর রবীন্দ্রনাথ, “রবীন্দ্র রচনাবলী(৪র্থ খন্ড)”, ৬ আচার্য জগদীশ বসু রোড, কলকাতা ১৭, বশ্বভারতী, ভাদ্র ১৩৯৪
- ৫। Tagore Rabindranath, Woman and Home, Google.Co.in, Date of accession:11/06/2014, <http://tagoreweb.in>



## Pandemic versus Immunity from Natural Resources

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### Abstract

*Our country, India was very much famous for its AYURVEDA MEDICINE. It's already proved that the viruses were present during that period when antibiotics were not introduced in the Middle East countries. The comparative study said that at that time mortality rate was much more less than during this phase. For every 100 years interval there was a chance of pandemic condition. So in previous centuries obviously human being fought against such type of viral diseases. In our country we are really grateful to our AYURVEDIC MEDICINE, obviously because at that time modern medicines were not known; we have lack of vaccine, lack of oxygen cylinders. At that time Ayurveda helped us in many ways by using such food substances like turmeric, cardamom, cinnamon, ginger, josthimadhu, adhatoda (pepper), cuminum cynaminum, piper longum, oscimum sanctrum, trachyspermum ammi fr., zingiber officinale.etc. There are enormous numbers of plants whose functions are not known to us. The vast plant kingdom is impossible for us to recognize and also their functions. So as per modern scenario it has been proved that the above said medicinal plants gave relief to them who were affected by disease or in after disease condition.*

Keywords: Ayurvedic Medicine, Bacteria, Turmeric, Cardamom, Cinnamon, Ginger, Immunity, Virus etc.

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

During this pandemic situation it's hard for us to cope with the corona virus. Maximum of us lost our near and dear ones during this time. To protect us from this disease we may not only be able to build our innate immunity but we can improve to build our herd immunity power before the third wave to come. On the basis of statistical analysis it's assumed that it may affect our new generation. CORONA is a RNA virus, so it easily changes its genetic or genomic structure. It is hard for us to think about which type of strain will be awaited for us or for our elders or for our future generation.

As a nutritionist I must have to look forward, at that period, and as a human being we shall not surrendered ourselves to an acellular particle like virus. As per my opinion, nature just



opened herself to protect us from this disease, by using Ayurveda we may be able to build our inner immunity not only to protect ourselves but also to prevent our elders and youngsters from being infected.

### **What is corona virus?**

At first we have to know why this virus affects us so much?

\*It is a RNA virus.

\*it has ability to change protein dimmer.

Corona viruses are a group of related RNA viruses that cause diseases in mammals and birds. In humans and birds, they cause respiratory tract infections that can range from mild to lethal. Mild illnesses in humans include some cases of the common cold (which is also caused by other viruses, predominantly rhinoviruses), while more lethal varieties can cause SARS, MERS, and COVID-19. In cows and pigs they cause diarrhea, while in mice they cause hepatitis and encephalomyelitis.

### **Correlation with Antibiotics:**

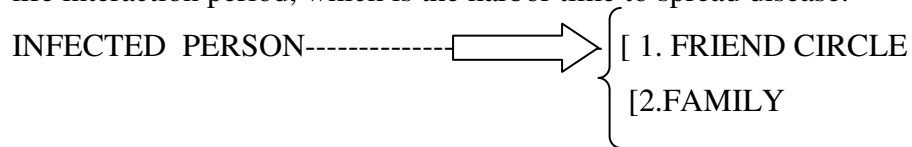
Although there is no role for antibiotics in the treatment of corona virus infection, 58% of patients in Wuhan were started on antibiotics. Further, the use of empiric antibiotics is endorsed by the WHO to cover bacterial super infections. Like other respiratory viral infections, unfortunately, there is no established treatment for COVID-19. The initial steps in the management of this pandemic are personal protection and social distancing. For patients who have already been infected, appropriate triage and supportive management are of paramount importance. Finally, in critically ill patients, the investigation of several experimental therapies is underway.

Since RNA virus mutates and can change its forms easily, so it can produce easy resistance against any particular antibiotics. For that reason any particular antibiotic works against these viruses for short period. It changes its mode of infection, strain-1 when shows Pneumonia sp. Fever, ultimately pulmonary arrest, heart attack or multi organ failure. But in case of 2<sup>nd</sup> wave it showed various types of symptoms like vomiting, diarrhea, nausea, blackout, high fever, sometime asymptomatic, sometime co-morbid.



### Actual Fact:

It's not at all the fault of co-morbid or asymptomatic person; it is because they are ignorant about the actual fact. Whenever they mixed up with normal individual, they can spread disease. Even in the family when we gather, we are unaware or we do not wear mask in our daily life interaction period, which is the harbor time to spread disease.



### Introduction of Spices in Daily Diet Plan:

We need diet plan because we have to build innate immunity. Basically immunity is built during the time of our birth. But due to mal food habits and taking different types of drugs we lose our immunity. To enhance our immunity spices play a vital role. The ancient Greek physician, Hippocrates, often referred to as the father of Western medicine, once said, "Let food be thy medicine, and medicine be thy food." Unfortunately, conventional over-the-counter cold and flu treatments are known to cause unwelcome side-effects that disrupt your digestion, energy levels and sleep. Prolonged use of some of these medications can even contribute to liver damage. The good news is there are many viable and centuries-proven alternatives that can give your immune system the boost it needs to combat the seasonal sniffles. Spices are wonderful because, unlike drugs, you don't need to "take" them. Instead, you can add them to your favorite dishes for a kick of flavor and increased immunity.

Here are five of the best spices to help your body bolster immunity levels and fight off viruses, infections and inflammation:

### \*Spices:-

#### 1. Ginger:

A universal ingredient in kitchens around the world, ginger is filled with nutritional properties that greatly benefit your health. Originating from China, ginger contains chemicals called sesquiterpenes that target cold viruses. This immune-boosting spice also has antibacterial properties that can help prevent nausea. Other functional chemicals include gingerols, shogaol





and paradols that have the potential to prevent various cancers. The spice's anti-inflammatory and anti-oxidative properties help control the process of aging, aid digestion and demonstrate the potential to treat degenerative disorders, as well as cardiovascular disease. Ginger also contains antimicrobial compounds that allow it to help in treating infectious diseases. Ginger contains terpene components like zingiberene, beta sabinol, beta sesquiphelladrene and curcumene. While phenolic compounds include gingerol, paradols and shogaol.

**Mode of Interaction:** It belongs to zingiberaceae family. We considered in AYURVEDA closely related to turmeric and cardamom. Gingerols used in digestion, reduce nausea, and help in reduce lung congestions. It has also anti-inflammatory factor also antioxidant property. It also reduces oxidative stress by produce excessive free radicals. It prevents tastelessness and smelling sensation which one of the symptoms of COVID. During this pandemic condition when hypertension and sugar level make higher risk factor but regular intake of ginger can reduce this, so it may be helpful for those person and helpful for them. Therefore, Gingerols help us to fight against viruses.

## **2. Turmeric:**

Turmeric comes from the root of a flowering plant of the ginger family and has been used medicinally for more than 4,500 years. Turmeric remains a staple treatment for skin conditions, digestive issues and bodily discomfort in Ayurvedic medicine, an ancient Indian healing system still practiced today. The active ingredient, curcumin, boosts the body's antioxidant capacity by being highly effective against free radicals. Turmeric has also been shown to inhibit fungal growth and suppress tumor cell growth. It contains curcumins, it has powerful anti-inflammatory effect, anti-cancerous effect and antioxidant property. Chronic inflammation contributes many common diseases. It improves the functions of the Endothelium and is an important anti-inflammatory and antioxidant material.

## **3. Garlic:**

Major civilizations, such as the Egyptians, Greeks, Babylonians and Chinese, have been using garlic for medicinal purposes since ancient times. A 12-week study found that, compared to a placebo, garlic reduced the number of participants with the common cold by 63%. Garlic supplements have also been shown to increase antioxidant enzymes in humans, in addition to



notably reducing oxidative stress in individuals with high blood pressure. High doses of garlic have also demonstrated the potential to protect the body against heavy metal toxicity.

3gms of garlic contains Mn -2%, vitamin B<sub>6</sub> 2%, vitamin -C 1%, Selenium -1%

During this condition though it contains vitamin-C in low value but gave positive impact whenever charring with fat.

#### **4. Cinnamon:**

The key ingredient in snicker doodles and your favorite Starbucks lattes, cinnamon has also been used for its medicinal properties for thousands of years. Made from the inner bark of the Cinnamomum tree, its use has been dated as far back as ancient Egypt. Cinnamon fights inflammation and helps ward off infections and heal damaged tissue. Containing large amounts of polyphenol, cinnamon outranked “super foods” like garlic and oregano in a study comparing the antioxidant activity of 26 spices. Some studies have shown that Cinnamon may have anti-diabetic effects and help cut the risk of heart disease.

#### **5. Black pepper:**

People have used pepper in traditional medicine for thousands of years, especially in Ayurveda, Trusted Source the traditional Indian system of medicine. Individuals used it mainly for treating menstrual and ear, nose, and throat disorders. However, consuming too much black pepper can lead to gastrointestinal side effects, so people need to be careful not to use too much. Piperine, the plant compound in black pepper, has strong antioxidant properties. The body creates free radicals, unstable molecules that can damage cells, both naturally and in response to environmental stresses. Excess free radical damage can lead to serious health problems, including inflammatory diseases, heart disease, and certain cancers. Research has shown that diets high in antioxidants could lessen free radical damage. For example, one review Trusted Source of both test tube and rodent studies found that black pepper and piperine supplements may prevent or slow the advancement of free radical damage and related diseases such as atherosclerosis, diabetes, and cancer.

The smokers have the tendency to be attacked by COVID because they already have nicotine. So free radicals are excessively produced in their body by the smokers, but black



pepper can reduce it. It has the potentiality of antioxidant piperine, which helps to prevent free radicals. So black pepper is very useful for smokers to reduce COVID and also reduce internal inflammation.

### **Importance of Lemon Juice:**

As per the recommendation of Food & Nutrition Board, Lemon Juice has a good effect on dehydration.

It's a good source of vitamin –C

It also reduces the chances of copd, cvd, stroke, and lower b.p. in moderate impact, it is available in the market, prices are negotiable at low cost and it has no zinc component as well, so no allergic {zinc} symptoms may develop.

### **Importance of Animal Protein:**

Animal proteins, such as meat, eggs, and milk, are complete proteins, meaning they provide all of the essential amino acids our body needs. Animal products provide the highest-quality protein sources. Protein is a source of amino acids, which are required by animals for the development of body tissue and cell regeneration, and it benefits almost every part of your pet's body, including muscles and ligaments, the heart, eyesight, cartilage, fur and skin.

a. Animal protein contains all types of essential amino acids.

b. Milk sometimes causes acidity but it contains lacto albumin, lacto globulin, lactose, sugar and various types of vitamins and minerals. From milk when protein is extracted out, the water which is left out also contain protein, it also contain very healthy food items. Whenever we discuss about yoghurt, one of an important product comes from milk, which has very important probiotics that helps us to increase intestinal microbial flora and fauna useful for water retention of our body.

### **Importance of Semi Boiled Raw Vegetables:**

In our country maximum people practices their food habit as vegetarian they must have to take much more amount of green leafy vegetables, carrot, beans, nuts, dry fruits, sprouts, pulses for rich source of vitamins, minerals carbohydrate and also proteins. As a nutritionist I think, I have the duty for my nation during this pandemic scenario, when nobody knows whether they



have attacked by this deadly virus or not. So after a long discussion, I came to the conclusion that it is not only to aware persons but also introduce them to follow a proper food practice.

### **Diet Plan for Different Age Groups:**

#### **Diet-chart (for middle age working person):**

Morning: One tea spoon of garlic paste + luke warm water + pinch of lemon juice.

Some free hand exercises like pranayam , breathing in and out etc.

After 30 mints later, take a cup of tea (raw) + biscuit.

Mid-morning: Toast, roti/chapati/veg salad with cucumber carrot little amount of yoghurt, homemade fruit juice,1 boilde egg, meddium size fruit (non-citrus).

Lunch: rice/toti/wrapper/tottila/burretto etc., vegetable curry, chicken /fish(50 gm raw weight).

Tiffin time: Light snacks like boiled sprouts, boiled gram seed, salad with peanut-poha, upma.

Dinner: roti/rice, curry (try to avoid heavy dinner at bed time).

#### **Diet plan for children at the age group of (5 -12yrs):**

Morning: It is very important to brush and clean your teeth along with your tongue and observe if any coating is formed in it or not. Coated tongue is one of the symptoms of disease.

10 minutes After Brushing: Half cup lukewarm water +salt (2pinch)+half spoon ginger juice+lemon juice(4spoon full) If anybody wants to mix honey (1spoonful/5 ml) or jaggery dust (instead of sugar). Take it in empty stomach.

After 5 minutes: Yoga or pranayam is to be done at least for half an hour. Breathing exercise must be done.



Morning Breakfast: Roti/bread/butter/chapattis/healthy wrapper with freshly cut vegetables or fresh green leafy vegetables, egg (boiled/pouch), any kind of fruits like guava, banana, pear, apple etc. Other citrus fruits/fruit juice alternatively may be taken during breakfast.

Lunch: Rice/roti/totilla/burette, Pulses of any kinds, Fish (50-60gm) /chicken.

A special pickle mainly prepared this time which gives relief from soare throats and enhance taste of taste buds (ginger paste 1 teaspoonfull +garlic sliced + lemon juice + salt left it for few hours then use it). Take yoghurt, Vegetable curry, Salad.

Tiffin (early @5:00pm): Milk, corn -flakes/milk+oats or Any kind of protein powder as per age.

Late tiffin@6:30pm: Home made any kind of snacks

Dinner: (within 10 pm): Rice/Roti/Chapattis, Vegetable soup/Fish vegetable curry/Chicken soup

No salad, Total water intake -1.5 liters to 2 liters (24 hrs),

10 minutes after dinner go to bed.

### **Diet for old age : ( normal patient):**

Recommendation:

- \* Ginger tea
- \* Carha tea (a special type of tea made of ginger, pepper, cinnamon, cardamom, mint, besil etc.)
- \* Herbal sip

Breakfast: Oats +milk/milk+ corn flakes or Roti+veg. curry+ egg white+ fruit (guava preferable).

This type of heavy breakfast may be divided in two half;

- \*morning: the carbohydrates+ protein
- \*mid morning: fruits/ fruit juice

Lunch: (within 1.00 pm): roti/chapati/rice/any kinds they prefer as main course meal

Pulses, vegetable (raw as a salad ), vegetable curry, fish/chicken, stricktly restricted organ meat, yoghurt (if no acidic problem).



Tiffin (5pm): Light snacks or Tea+ biscuit or Protein powder

Light Tiffin (7pm): Light Tiffin break like half bowl of flaked rice, with cheese (milk product) or Bread toast or Dalhia khichdi (without pulse) or Porridge etc. in a small amount.

Dinner (within 9 pm): \*Oats+milk (if it is persishable by the person) or \*Roti + sabji (very low oil)

Remember: 1. Dinner always should be in a low amount but the breakfast should be heavy or the quantity should be more. 2. Ten (10) minutes plain land walking after dinner, as it reduces the accumulation of extra fat, glucose, cholesterol etc. in our blood.

### **Conclusion:**

In conclusion let me recommend a special diet at low cost but rich in protein especially for country like ours where many people depend on food for work. But during this lockdown period maximum of them have lost their jobs. Is it the conclusion that we may say they have herd immunity, which they have earn from environmental and economical barrier? I don't think so. As per my opinion the numbers are so huge or uncountable that we are not in such position to bother about these below poverty line people. Our government different NGOs, clubs also played a great role to gave them minimum balanced diet. Here are some example of foods which are helpful for them and also contain high carbohydrate and protein.

\* Soya chunk: It contain large amount of protein and it is easily available also.

\*Whey-protein: Basically it is a byproduct of milk. It's rich with protein. In India it's denoted as '*channa ka pani*', this water may be taken as soup with vegetable or as strain soup, or mix with wheat during preparation of dough.

\* Rice -water: Basically in India we just sieved it from main rice, so it is used as waste product. But it contains starch and vitamin B, which help us to reduce dehydration during dysentery.

\*Khichdi: A traditional Indian food made up of pulses and rice. After boiling both of them, without taking water out, turmeric ginger other spices and vegetables were added. So it is a



complete food which contains all protein and carbohydrate. In this way we will innovate various types of protein rich foods for them, who are really in need of food at this moment.

### **Acknowledgement:**

I dedicate this article to my father. During this pandemic situation, I have lost my father. He was suffering from COVID. This is my tribute and a token of love towards his soul, who has spread his blessings all the time to me. I believe this piece of work may be helpful to maintain a good health for all, during this ongoing pandemic and at the situation of upcoming threat of the third wave that is to come. I am heartily thankful to my little daughter who gave me this space to complete it. I am thankful to Dr. Barin Kr. Roy and Dr. Ratna Nandi (Microbiology) who gave me support and flourished me with information. Last but not the least I am thankful to my entire family and the almighty God.

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## The Changing Perception of Ageing—A Curse or a Blessing: A Socio-Economic Critique

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### Abstract

*There are many processes of ageing; biological, psychological, social psychological and social ageing. Ageing has some positive and some negative outcomes. On the one hand, increasing age brings greater experience and expanded opportunities to become efficient. In a variety of activities ranging from politics to music, wisdom and experience can give an older person the kind of long range perspective that is invaluable in an advisor. Older people can also be keepers of tradition. They know about many unrecorded events that have taken place over the years in families, at the workplace, in communities and in the nation. Ageing can also bring a sense of personal peace and mellowing. Later life can be a time of extraordinary freedom and opportunity once the responsibilities of employment and child rearing are set aside. It is very necessary for every family to look after its ageing members and make them feel that they are not unwanted but they are an integral part of the family. If the elderly members are convinced of the intention and attitude on the part of the younger members of the family, they would really feel relieved and consoled. In the past, the elderly were respected for their sagacity and wisdom. Now the situation has changed in many ways, and the elderly do not receive the respect that they actually deserve. In a large number of cases their presence is tolerated; they are often not treated well. Those who can afford, therefore, do not wish to stay with their children or relatives. In every community, elderly should be encouraged to form associations which can plan activities which are useful for the community and demonstrate to others that they are still useful citizens.*

**Keywords:** *Ageing, Community, Physical, Population etc.*

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

Ageing is a broad concept that includes physical change in our body over adult life. Physical changes in our minds and mental capacities, social psychological changes in what I think at home are viewed, what we can expect and what is expected of us. What we can expect and what is expected of us.

There are many processes of ageing; biological, psychological, social psychological and social ageing. Ageing has some positive and some negative outcomes. On the one hand, increasing age brings greater experience and expanded opportunities to become efficient.

In a variety of activities ranging from politics to music, wisdom and experience can give an older person the kind of long range perspective that is invaluable in an advisor. Older people can also be keepers of tradition. They know about many unrecorded events that have taken place over the years in families, at the workplace, in communities and in the nation. Ageing can also bring a sense of personal peace and mellowing. Later life can be a time of extraordinary freedom and opportunity once the responsibilities of employment and child rearing are set aside. On the other hand, ageing is a losing proposition for some people. They may lose physical or mental capacities. Good looks, opportunities for employment and





income or position in organisations to which they belong. They may outlive their spouse and friend.

### Global Trends:

In both developed and developing countries the age structure of population indicates a trend towards ageing. Table 1 gives the world situation of estimated and projected percentage of total population in major functional age groups. It is evident from the data that in the world as a whole the proportion of children (0-14 years) is projected to decline from 37.5 per cent in 1960 to 24.7 per cent in 2025 while that of ageing (60+) is projected to raise from 7.8 per cent in 1960 to 13.9 per cent in 2025. In case of less developed regions also the proportion of children (0-14years) is projected to decrease from 41.5 percent in 1960 to 25,7 percent in 2025 and of the people 60+ to increase from 5.6 percent in 1960 to 11.9 percent in 2025. The table also shows that by 2025, in Developing Regions, 23.6 percent of the population will be almost double the percentage in the Less Developed Regions. Further, the difference in the percentage of population 60+ between More Developed Regions and Less Developed Regions shows rising trends till 2020. In 1960 it was 6.9 per cent and in 1980 it was 9.2 percent and it is projected to be 10.8 per cent in 2000, 11.8 percent in 2020 and 11.7 per cent in 2025.

However, percentage does not give the complete picture of the complete picture of the dimension as the data in Table 2 will show. Most of the population 60+ will be Less Developed Regions.

Thus, whereas in 1960, 233.915 million of the world's population i.e. 115.356 million were in the Less Developed Regions. In 2025 the number of people 60+ in the Less Developed Regions is projected to be 805.963 million (71 per cent) whereas the projected population in the world to be 1135.457 million.

**TABLE 1: Estimated and Projected Percentage in Major Functional Age Groups (0-14, 15-59, 60 and over) in Major World Regions:**

	1960	1980	2000	2020	2025
Regions	0-14 15-59 60+	0-14 15-59 60+	0-1 15-59 60+	0-1 15-59 60+	0-1 15-59 60+
World	37.5 54.8 7.8	35.6 56.0 8.3	30.4 59.9 9.7	25.8 61.6 12.6	24.7 61.4 13.9
More Developed regions	28.6 58.9 12.5	23.0 61.8 15.2	20.8 60.9 18.3	19.8 57.8 22.4	19.8 56.6 23.6
Less Developed regions	41.6 52.9 5.6	40.0 54.1 6.0	32.9 59.6 7.5	27.1 62.3 10.6	25.7 62.4 11.9

Source: Periodical on Ageing, Vol-1 , No. 1, 1984, United Nations, New York, 1985

### Trends in India:

The sharp decline in mortality since 1950 and a steady recent decline in fertility have contributed to the process of population ageing in India. India currently ranks fourth among the countries of the world with a large elderly population. By the year 2000 it is likely to be second only to China.

**Table 2- Estimated and Projected Population of 60 and Over in Major World Regions**

	1960		1980		2000		2020		2025	
Regions	Persons 60 and above	%	Person 60 and above	%	Person 60 and above	%	Person 60 and above	%	Person 60 and above	%
World	233.915	100.0	370.818	100.0	593.301	100.0	987.232	100.0	1135.457	100.0
More developed regions	118.559	50.7	172.73	46.6	233.681	39.3	308.308	31.2	329094	29.0
Less developed regions	15.356	49.3	198.116	53.4	361.619	60.7	678.925	68.8	805.963	71.0

Source: Periodical on Aging, Vol. 1, No. 1, 1984, United Nations, New York, 1985

Generally, we can define ageing by the way of two processes. Ageing at the base and ageing at the apex of populations, the former results from a decline in fertility and the latter results from a reduction of mortality among the elderly. In India, both processes are a present phenomenon.

The consequence of high birth rates followed by high death rates until 1951 kept the proportion aged 60 or more at a low level. Since 1961, there was a sharp decline in death rates along with an increasing expectation of life at age 60 that set a gait in the process ageing in India; finally a steady decline in the birth rate since 1971 accelerated that process.

**Table 3- Crude Birth Rates (CBR), Crude Death Rates (CDR) and Expectation of Life at Age in Census Years**

Census Year	CBR	CDR	Expectation of Life at 60	
			Male	Female
1961*	41.7	22.8	11.8	13.0
1971*	41.2	19.0	13.6	13.8
1981+	33.9	12.5	13.8	14.7
1991++	29.7	10.7	14.5	15.5
2001++	23.7	8.7	15.2	16.4

Notes: \* = Census, + = Sample Registration Scheme, ++ = Expert Committee on Population Projection  
Source: www.globalaging.org



The joint family system, which used to provide a form of social security in disintegrating. If we consider the case of villages where approximately three fourths of India's population live and where the process of changes has been slow, changes have been taking place which are unfavourable to the elderly. But fortunately, this problem has not assumed serious proportions, despite the increased vulnerability of the aged.

**Table 4- Percentage Decadal Increase in the General Population and the Population Aged 60 Years and Over**

Years	General Population			Population Aged 60		
	Rural	Urban	Total	Rural	Urban	Total
1951-1961	20.54	26.33	21.64	22.66	26.28	23.25
1961-1971	21.85	38.22	24.80	30.03	45.17	32.39
1971-1981	19.67	46.39	25.00	25.93	50.75	29.97
1981-1991	15.54	44.06	22.19	23.28	52.71	28.94
1991-2001	8.71	41.67	17.77	29.56	68.61	38.46
1951-2001	170.29	273.9				

Source: www.globalaging.com

Since 1951, the population aged 60 years or more has grown steadily. The projected population for the decades 1981-1991 and 1991-2001 also show increasing trends in the growth of the elderly sector of the population. When we consider the percentage decadal variation of the general population with the population 60 or more, it is found that mainly because of an increase of the expectation of life, the elderly population has grown faster than the general population. The Expert Committee of Population Projections reveals that the decadal percent increase in the elderly population for the 1991-2001 would be 38.5 percent which is more than twice the rate of increase in the general population.

#### **Percentage Increase in the Elderly Population:**

The elderly population was 5.6 percent of the total in 1961, which was 6.2 percent in 1981. According to the Expert Committee, it is likely to increase to 7.7 percent in 2001. During the period 1961-1981 the total increase in this portion of the population was around 10 percent i.e. about 0.5 percent per year. According to the Expert Committee during the period 1981-2001, the increase would be around 1.2 percent.

**Table 5- Percentage of Population Aged 60+ by Place of Residence and Old Age Dependency Ratio**

Place of Resident	Years				
	1961	1971	1981	1991	2001
Rural	5.82 (21.0)	6.21 (27.3)	6.53 (34.3)	6.97 (42.3)	8.31 (54.9)
Urban	4.74 (3.7)	4.93 (5.4)	5.12 (8.2)	5.43 (12.5)	6.46 (21.1)
Total	5.63 (24.7)	5.96 (32.7)	6.20 (42.5)	6.55 (54.8)	7.70 (75.9)
Old Age Dependency Ratio	10.6	11.4	11.5	11.3	12.6

Source: [www.globalaging.org](http://www.globalaging.org)

#### Dependency:

The relatively faster increase in the elderly population will contribute to a higher dependency ratio of the population in the non-productive age group. The old age dependency ratio was 10.6 in 1961, which increased to 12.6 in 2001. Therefore, responsibility for caring for the elderly will fall either on young wage earners or on the government.

#### Sex Ratio:

The sex ratio has been more favourable among 60+ than in general population and is projected to be so in the remaining part of the century. However, unlike western countries, even in the age group 60+ females do not outnumber males.

**Table 6- Sex Ratio of Elderly Population and General Population by Place of Resident**

Year	Place of residence	Age group (years)				
		60-64	65-69	70+	60+	All Ages
1961	Rural	975	971	1062	1000	963
	Urban	939	916	1072	947	845
	Total	969	962	1064	1000	941
1971	Rural	926	921	957	936	949
	Urban	908+	895	978	928	858
	Total	923	916	961	937	930
1981	Rural	937	984	958	949	951
	Urban	933	994	1051	1000	878
	Total	936	986	976	950	935
1991	Rural	904	954	1025	958	958
	Urban	957	1009	1084	1016	897
	Total	916	966	1038	971	941

Source: [www.globalaging.org](http://www.globalaging.org)



### Marital Status:

The marital status relating to persons 60+ shows that there is a progressive decline in the percentage of the widow in the case of both males and females, which shows the improvement of life expectancy. However, the majority of the females are widowed, and along with the never married and divorced, contribute two-thirds of females 60+ in 1981 as compared to only about one-fifth of males in this category.

**Table 7- Distribution (%) of Widowed Persons Aged 60 and Over by Place of Residence and Sex**

Place of Residence	1961		1971		1981	
	Male	Female	Male	Female	Male	Female
Rural	27.89 (3.0)	75.15 (7.9)	22.70 (3.2)	68.18 (9.0)	20.13 (3.5)	63.86 (10.7)
Urban	25.12 (0.5)	76.52 (1.4)	17.86 (0.5)	69.23 (1.8)	16.32 (0.7)	66.38 (2.7)
Total	27.46 (3.5)	75.35 (9.3)	22.48 (3.7)	68.35 (10.8)	19.40 (4.2)	64.40 (13.4)

Source: [www.globalaging.org](http://www.globalaging.org)

### Rural Urban Residence:

The distribution of the population 60+ by rural and urban residence shows that in the rural areas the percentage of the total population is slightly higher than in the urban areas. There are several factors behind this-migrants to cities leaving elderly persons behind to take care of the house, land, livestock etc. in the village while they are trying to gain a support in the city through more stable employment, fewness of accommodation in the cities, reluctance of the old to leave the village where they have their roots and social network or other factor. There is progressive rising in the difference between the percentage of population 60+ in rural areas and the percentage of general population resident therein.

### Working Population:

According to the 1981 census of the work force participation, the manpower participation rate for the main workers shows that about two-thirds of the males even at age 60+ are economically active, particularly in rural areas, which compares quite favourably with the percentage of workers in the population 15+. This is so because the bulk of the workers in both urban and rural areas are self-employed in the unorganized sector where there is no statutory age of retirement. In rural areas the participation rate is higher. The 1981 census shows that distribution of main workers 60+, 79.6 percent of the male workers are in



the primary sector, 8.8 percent in the secondary sector and 11.6 percent in the tertiary sector. In the case of females 84.3 percent are main workers in the primary sector, 6.6 percent in the secondary sector and 9.1 percent in the tertiary sector.

By industrial categories the distribution of main workers 60+ in rural areas in case of both male and female shows that almost nine tenths are agriculture. The percentage distribution of main workers 60+ by industrial categories shows that in rural areas among the male workers 60+ only 17.3 percent are agriculture labourers and 46.3 percent among females.

### **Literacy:**

The education level of a person 60+ in India shows that 2/3 of the males and more than 9/10 of the females are illiterate. The illiteracy in the population 60+ for both males and females is much higher than the general population. Only 10.3 percent males 60+ and 1.3 percent females 60+ had an education level higher than primary.

### **Senior Citizen and Their Care:**

Due to new technology, life-saving drugs, better knowledge of health and nutrition and effective treatment of diseases have increased life expectancy, delayed the onset of old age and its attendant health problems and mitigated suffering. As a result the number of senior citizens has increased and in its trail, several problems have emerged which imposes a great strain on their families as well as society not excluding the state, particularly in the Opulant West. The developing countries like India give little attention to the problems of the aged though they display a profusion of sympathy for them.

In the developing countries the number of cemeteries is increasing at a first place though they were few in number two decades ago. Even in India it is not surprising that shortly one in every five families has a third and fourth generation, which phenomenon, though impressive, like to impose great strain on families. The grandfathers and great grandfathers with their mixed feelings of pleasure and pain may witness this. Because of the happy new arrival they feel pleasure and they feel pain because the elder cannot yield place to the youngest. Due to limited housing, restricted resources and expenses the elders cause tension.

In developed countries the family society and government realized the need for caring for the aged people long ago. In America Senior Citizen Centres provided a variety of Services. Government agencies and voluntary organizations work hand to hand to organise programmes for the care of the aged.



It is necessary to draw up a plan of action and implement it in India. The task of helping the aged person is delicate because they are very sensitive. The achievement can be obtained through;

- \* Co-operation from the family with its ageing members.
- \* Counseling from the society with senior citizen centres offering guidance on all matters
- \* Help from the government, special amenities and concessions
- \* The aging are helping themselves.

### **Role of the Family:**

It is very necessary for every family to look after its ageing members and make them feel that they are not unwanted but they are an integral part of the family. If the elderly members are convinced of the intention and attitude on the part of the younger members of the family, they would really feel relieved and consoled. On their part, they should overlook minor shortcomings and domestic irritants and assist in the smooth running of the family. At home an elderly person can do a variety of jobs such as maintaining cleanliness, attending to the garden, doing shopping, entertaining children, taking them to school, guiding them in their growth and helping them with homework.

### **Neighbourhood and Society:**

Generally the society and the neighbourhood can play an important role in the life of the senior citizen and make it worth living. The person with the same mind can form groups and develop common hobbies and play games of the same interest. They can give their services in schools, colleges and social and commercial institutions. There are several activities like guiding the unemployed, helping the disables, tree-planting activities, tuition to poor students and adult literacy programmes which besides the pleasure of helping the needy persons may even bring monetary returns.

### **Government Duty:**

The government can take a number of steps to help the senior citizens. By rebating income tax the government should take care of aged persons. To senior citizens free insurance cover should be provided against accidents and for health care. It is very much regrettable that very little has been done by the government for senior citizens. The



government should allot suitable plots of land free of cost where geriatric services can be provided. Senior government officers or those who have retired from higher positions can be very effective in influencing government decision-making which will be advantageous to the aged; they can also be helpful in securing grants-in-aid.

In formulating any approach for the care of the elderly, it is important to bear in mind that they are not a homogeneous group. Their needs and problems vary and can be considered under three heading - financial, health and socio-psychological. These problems are interdependent.

### **Financial Problem:**

In India, a large number of people in old age are left with very inadequate income. There are a large number of women, who have only been housewives and have never been workers whether in wage employment or in self employment. There are men, who have been agricultural labourers employed in lowly paid jobs, or been self-employed all providing marginal earnings. There may be retired people who have been working in the organised sector now have to live on reduced incomes. Studies show that within about five years of retirement, a large number among them exhaust the savings and become dependent on their children and relatives. Pensioner's earnings are also affected by inflation. These need to carry out surveys and gather factual information about the magnitude of the problem.

### **Health Problems:**

When one becomes old, his health declines. But there are individual differences. Even in old age some individuals continue to enjoy good health whereas even in their forties and fifties some have poor health. Studies have shown that there are some common diseases among the elderly people (asthma, rheumatism, etc). In very old age, difficulties are experienced in carrying out day to day activities. Therefore, the very old have to lead restricted lives. Usually hospitals and public dispensaries are overcrowded and it is difficult for these people to receive help. The elderly may require some aids to lead a normal life such as spectacles, hearing aids and crutches. To maintain their health, old people need medicines, vitamins and tonics at subsidized rates. They also need advice on how to maintain their health properly.





### **Socio-Psychological Problems:**

In the past, the elderly were respected for their sagacity and wisdom. Now the situation has changed in many ways, and the elderly do not receive the respect that they actually deserve. In a large number of cases their presence is tolerated; They are often not treated well. Those who can afford, therefore, do not wish to stay with their children or relatives. To some extent, this unfortunate situation can be mitigated by the elderly themselves.

The psychological problems faced by the elderly can be a matter of great concern. Failing health, continuing ailments, poor financial situation and humiliations in the family can all add up to feelings of helplessness, hopelessness, anxiety and depression among the elderly people. Such people need assistance. In every community, elderly should be encouraged to form associations which can plan activities which are useful for the community and demonstrate to others that they are still useful citizens.

### **Impact of COVID19 on Aged Person in India:**

The COVID-19 pandemic in India is a part of Worldwide pandemic of coronavirus diseases in 2019 caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The first case of coronavirus in India, which originated from China, was reported on January 30, 2020. Currently, India has the second largest number of confirmed cases in the World.

In India The COVID-19 situation affected the health condition of 26 percent of the elderly population. According to a new study 24.95 percent said the pandemic has caused psychological issues to them.

For the study, Agewell Foundation NGO interacted with 10,000 senior citizens across 27 states and Union territories. During the study, in addition to determining the changing needs of the elderly people, it also attempt to access the impact of pandemic on them. The study revealed that The COVID-19 pandemic has not just hit the health condition of the elderly population, but has also damaged their social lives adversely affected their psychological and financial well-being.

The study said that about 29.5 percent of the respondents said COVID-19 and the resultant lockdowns affected their social lives and as regards the impact of the pandemic this was their primary concern. About 26 percent of the respondents said the COVID-19 has



affected their health condition the most and ranked it as their premier cause of concern. On the other hand, according to 24.95 percent, the pandemic has caused psychological issues. The study also said that 64.6 percent of the respondents said their health is very poor or poor in old age while 23.9 percent said their health condition is average and almost 11 percent said it is better. It also found that elderly women are living a healthier life in old age compared to their male counterparts.

R Subrahmanyam, Secretary, Ministry of Social Justice and Empowerment, said elderly care requires not only financial investment but also the emotional investment and intergenerational bonding,

Agewell Foundation on the basis of survey findings and observation recommended healthcare services for elderly people such as free medical counselling, home visit, healthcare awareness, hygiene and sanitation services, registration of all bed-ridden, differently-abled, critically ill, elderly people and doorstep medical assistance services for them at the local level and multi-activity centres and multi-skilling platforms for them. The study also recommended dedicated helplines for elderly people for extending advisory services, grievance redressal and counselling for various issues, including on financial, legal, medical, social, safety and security matters, and review of the old-age pension and other social benefit distribution schemes and laid a special emphasis on timely and fast delivery of benefits.

### **Conclusion:**

The demographic features and the sub-economic characteristics as they emerge from the analysis of census data clearly indicate that not only is India's population ageing but its characteristics, too, are undergoing a change. The emerging patterns will have to be borne in mind in developing programmes and services. In view of the country's large demographic base, the numbers involved are considerable, an added dimension is the large proportions which live below the poverty line. The elderly have now become vulnerable on account of the changing family composition, structure and values. Some positive initiatives have therefore come from the State and Community. The short-term and the long term implications of the ageing of population for developing social services and for providing support to the family to enable it to discharge its obligations for the protection of the elderly therefore merit immediate attention.



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## An Analytical Discussion on Human Error in Learning Language

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### Abstract

*Human error in learning is a fascinating issue. We never want to commit errors, but without engaging them, we cannot accomplish lessons. According to subject or discipline, errors are different. There are some common factors behind all type of errors, but in analyzing human error in learning, it is necessary to exploring errors according to a specific field. In this paper, errors are studied in English, mainly where English is learning as the second language. This article tries to provide a comprehensive view of different types of errors committed by students in this specific field with a rational discussion. It also highlights how this kind of error analysis helps in reducing language errors.*

**Key words:** *effective teaching, language error, meaningful learning.*

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

*Human error* is an action that leads to deviations from an operational person's intentions or expectations. However, in learning, errors have a crucial role. They indirectly guide both a teacher and students to make the teaching-learning process meaningful. Learning is the process of development to a perfect life. Learning may be formal or informal, and in both systems, as language is the prime medium, language errors affect learning immensely. That is how language-related errors are very relevant in the context of error analysis. Our goal in analyzing errors is to reduce them, so we always try to understand why they happen. Thus, this article is going to explore mainly different types of language error with good examples and analysis to highlight the factors behind them that will enlighten a path in reducing error in learning.

### Aims and objectives:

1. Clarifying the positive impact of human error in learning
2. Importance of error analysis in teaching and learning
3. Explain different types of error committed by the learner in learning language
4. Finding the cognitive factors lying behind those errors



### Relevance of error analysis:

As language error affects all types of learning, we need to emphasize it. Some common interests behind all type of learner's error analysis are:

- a) Error may reflect learners' level of understanding. Without proper knowledge of the language, a teacher cannot provide their lecture correctly at the same time; without adequate understanding of the language, students will be failed to achieve an appropriate lesson.
- b) Error may show inadequacy in the teaching process.
- c) Error may point to students' abilities and disabilities.

Richards and Sampson (1974) support that error analysis is an essential tool for teachers to evaluate learners' learning ability to set the priority to solve learners' problems from the most frequent errors made by them. Therefore, error analysis is regarded as a diagnosis and prediction of the issues and difficulties of learners.

### Types of language error:

Error in learning English may be categorized in many ways. We select some examples among them. This categorization is followed by the cognitive factors of the learner. So, with each error type, it is provided with an analytical discussion on it.

A) According to the learner's background, errors may be divided into pragmatic errors and performance errors.

- i) **Pragmatic error:** Usually, this type of error is committed by young learners. Pragmatic errors take place due to the use of limited linguistic knowledge. This type of error is also known as *competence error*. When the speaker misquotes a message or when learners do not understand the meaning of some messages, they try to identify its meaning by pragmatic force. Pragmatic failure was firstly coined by Jenny Thomas (1983). She defines pragmatic failure as the inability to understand what is meant by what is said.<sup>1</sup> If a young learner does not know how to use language for different purposes, they may commit this error. For example, we use "hello/ goodbye" for greeting; but if a learner fails to express their exact intention in his target language, it will be a pragmatic error.

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<sup>1</sup> Thomas, J. (1983). Cross-cultural Pragmatic Failure. *Applied Linguistics*, 4 (2), 91-112



ii) **Performance errors:** Performance errors are committed by learners when they are tired or are in hurried. Normally, this type of error can be reduced by the learners with a little effort. Any type of error re included in this type of error.

B) According to the pattern, language error may be divided into encoding or decoding and composing errors. These errors are happened due to lack of concentration and misconception, and physical and mental disability of the learner. Wrong teaching technique may also be another issue behind them. A detailed explanation of this kind of errors are discussed below:

**i) Encoding or decoding error:** These errors are phonological or graphological system-related errors. Mainly misspelling or wrong pronunciation are included in this type. These errors may be categorized into four types (Wenfeng Yang, 2010): punctuation errors, typographic errors, dyslexic errors, and confusables errors.

**a) Punctuation errors:** Wrong usages of punctuation are called punctuation error. Generally, these errors happen due to a lack of knowledge or slip. An example of misusing comma in the place of the semicolon is given below:

**Error:** Call me *tomorrow*, I will give you my answer then.

**Correction:** Call me tomorrow; I will give you my answer then.

Here the violated rule is "Use a semicolon in place of a period to separate two sentences where the conjunction has been left out." <sup>2</sup>

**b) Typographic errors:** Error in typewriting is typographic errors. Typist with poor skill often commits this type of error. Error in letter space, mixing front, and mixing capital letter with a small letter are also included in this type of error.

**c) Dyslexic errors:** Reading disorder (Dyslexia) is generally characterized by difficulties with the alphabet, word recognition, decoding, spelling, and comprehension. So error due to dyslexia may be called dyslexic errors. For example, *using 'deb'* instead of 'bed' is a Dyslexic error.

**d) Confusables errors:** When a learner has confusion between similar sounding morphemes of the similar meaning of words, it is called confusable error.

For example,

**Error:** I'll stay here *to* next month.

**Correction:** I'll stay here *till* next month.

Here both the 'to' and 'till' (preposition) obtain similar meaning but according to rules "Use *to* with distance, and *till (until)* with time".<sup>3</sup>

<sup>2</sup> Ibid, Straus, J. (2008). *The Blue Book of Grammar and Punctuation* (10th ed.), New Jersey John Wiley & Sons, Inc, P.59



**ii) Composing errors:** When a language learner commits an error in composing a text, it is called composing error. Following Chomsky, we may divide composing errors into two types: lexical errors and grammatical errors.

a) **Lexical errors:** These errors are related to the words or vocabulary of a language. We may classify lexical errors from two perspectives: formal or syntactic error and semantic error:

**Formal or syntactic errors:** Errors related to sentence structure, coordination/subordination, and orders are called formal errors. These errors occur when a learner chooses any wrong form or structure in the target language. Misselection, Misformation, and Distortion are examples of this type of error.

**Misselection:** Misselection denotes error due to lexical forms (visual and auditory similarity) of words. Two examples of misselection are given below where learner selects incorrect suffix:

**Error:** Damage to the building was *considered*.

**Correction:** Damage to the building was considerable.

Here two words have the same root but with different suffixes containing different meanings.

**Misformations:** these errors occur when a learner uses a word that does not exist in the target language. They happen by the influence of the learner's mother tongue. It is also called 'interlingual misformation errors'.

For example,

**Error:** We have to find a car to bring us *go* to the hospital.

**Correction:** We have to find a car to bring us to the hospital.

**Distortion:** Like misformation, in distortion learner uses words or rules which are not applicable in the target language. However, these errors are not influenced by the native language of the learner. It may take place due to insufficient knowledge of the lexis of the target language.

For examples,

1. Omission: *interesting* instead of interesting
2. Over inclusion: *dinning* instead of dining
3. Misselection: *delitouse* instead of delicious
4. Misordering : *littel* instead of little
5. Blending: *travell* instead of travel or travelled

**Semantic errors:** James (1998) classifies semantic errors in lexis into two main types: Error due to the confusion of sense relations and collocation errors.

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<sup>3</sup>Fitikides ,T.J., (2002). *Common Mistakes in English* Sixth edition Malaysia ,Pearson Education,p.83



Error due to confusion of sense relations: A sentence meaning normally depends on the concepts of words and their relations in the lexical fields. When one uses a more general term (superonym) where a specific one (hyponym) is needed, it may seem due to confusion of sense relations.

For example,

**Error:** We have modern *equipment* in our house.

**Correction:** We have modern appliances in our house.

Collocation errors: Collocation is a word or phrase that is frequently used together with another word or phrase. Errors due to inappropriate collocation are called collocation errors.

For example,

**Error:** The city is *grown*.

**Correction:** The city is developed.

**b) Grammatical errors:** Following James (1998) and N. Kittiporn (2013) we may divide grammatical errors into four types: omission, malformation, disordering, and overgeneralization.

**Omission:** Omission is the lack of a specific grammatical form that is supposed to have in the sentence. In this error the learner omits necessary main verb/ helping verb/ preposition/ punctuation/article etc. In the given example preposition 'for' is being omitted. For example:

**Error:** She came and asked my book.

**Correction:** She came and asked for my book.

**Malformation:** Malformation is using the wrong forms of words or structures in a sentence. It includes incorrect word selection, wrong form of verbs, wrong form of adverbs, wrong form of adjectives, and wrong form of nouns. For example:

**Error:** I *will* go tomorrow if it's fine.

**Correction:** I shall go tomorrow if it's fine.

It breaks the rule as "To express simple futurity in the first person say *I shall* don't say *I will*."

**Disordering:** Disordering refers to putting words or sentences in the wrong order or sequence. Incorrect placement of adjectives, nouns, or verbs is included in this type. For example,

**Error:** It's *hot too* in Rome in the summer

**Correction:** It's too hot in Rome in the summer.

(Here, the adjective 'too' is placed incorrectly)





**Overgeneralization:** Overgeneralization is using over grammatical forms in a sentence. Putting a preposition when it is not needed, applying 'ed' as a past tense signal with irregular verbs is an example of this type of error. For example,

**Error:** He *goed* to the farm.

**Correction:** He went to the farm.

(Here it is applied 'ed' as past tense form with an irregular verb 'go')

B) There always some external factors behind human error. We often ignore them and make the agent only responsible for the error. In language influence of other languages is also such an external factor. Following the influences of different languages, languages error may be divided into Inter-lingual errors and Intra-lingual errors.

**i) Inter-lingual errors:** Errors due to the influence of the native language are called *inter-lingual* errors. These errors are also called transfer or interference errors. Inter-lingual errors are caused by mainly mother tongue interference. Inter-lingual error is found as one of the most important factors affecting the learning of the target language. According to Bhela (1999), it is obvious that these errors result from the word for word translation strategy or thinking in the mother tongue language. For example:

**Error:** we must guard ourselves *from* bad habit.

**Correction:** we must guard ourselves against bad habits.

(It may occur when the learner's mother tongue is Bengali.)

**ii) Intra-lingual errors:** Intra-lingual errors take place due to the learner's insufficient knowledge of the target language. Intra-lingual errors reflect the improper application of rules of the target language. Faulty generalization and ignoring the exception of the applying rule are two examples of this type of error. For example,

**Error:** The child is learning word *by* word.

**Correction:** The child is learning the word for word.

### **Factors behind language error**

So, explaining these errors, there are many cognitive and external factors behind language errors. We may divide these factors into three categories:

1. Students related factors
2. Language related factors
3. Teaching process-related factors

Students related factors are a misconception, a wrong technique of learning and ability-based factors (physical or mental). Effective teaching is significant for meaningful learning. There are many factors related to effective teaching. Ineffective teaching methods or Faulty teaching, Lack of proper teaching materials are some critical issues among them. In learning a second language,



some other associated factors cause errors in another language that may be a spoiler. Inter-lingual errors and Intra-lingual errors are examples of these types of errors.

### Conclusion:

In conclusion, we may say, because of error, men are imperfect; on the other hand, errors show them the right path to be perfect. It is almost evident that error is an unavoidable issue for the human being. In learning, error plays a more critical role. Knowing different types of errors committed by the learners, a teacher can prepare his or her lesson plan, arranging study materials or providing other supports for the students. Undertaking a systematic analysis, the teacher can understand the progress and difficulties of the students. Not only that, For the researcher, errors provide evidence about how the learners learn a specific lesson and what strategies or procedures they employ to achieve the learning goal. Errors are vital to the learners themselves also since they are the virtual device for them to test their hypotheses during learning. Finally, it can be said; each learner is different. Their personalities are also different. Naturally, their learning graph follows different parameters. So it is evident that only knowing the underlying factor behind the errors committed by the learners a teacher can make their teaching effective.

**Study Method:** The qualitative analysis method was used for the present study.

**Data Collection:** Data was collected through books, journals, etc.

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## A Glimpse of Changing Nature of Paddy Cultivation in Nadia District

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### Abstract

*Rice is the main staple food crop of West Bengal. Paddy cultivation is an age-old practice. The district Nadia is an important rice-producing district of West Bengal. The climatic physiographical conditions are very much suitable for this cultivation. The main occupation of the people is agriculture and the riverine lands encourage cultivating of the rice. Before the green revolution and introduction of irrigation facilities the rice cultivation was mainly monocrop in nature but after the introduction of HYV seeds and irrigation facility rice is cultivated almost throughout the year.*

**Keywords:** *rice cultivation, local seeds, HYV seeds, Irrigation.*

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

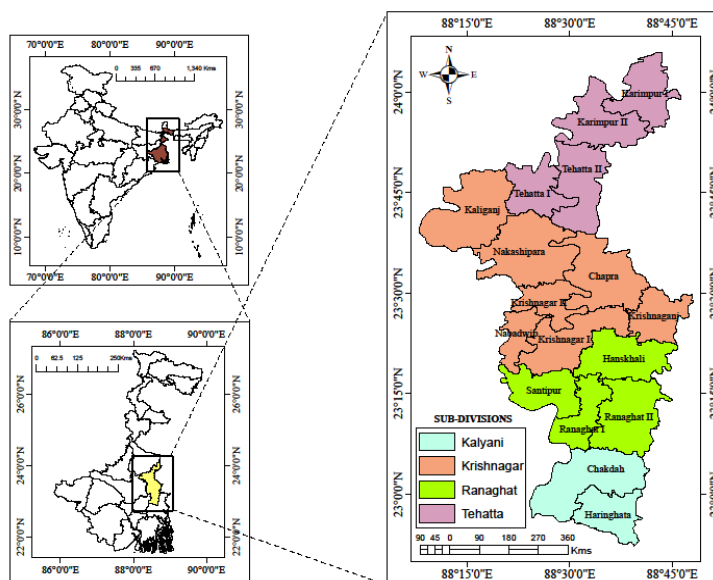
Nadia is one of the agriculture-based districts of West Bengal. Before the sixties, there was monocropping agricultural practice by the indigenous method. The north western part of the district was known as *kalantar* infertile lowland. After independence, the situation changes gradually with the introduction of the Green Revolution in this area. Various irrigation schemes were introduced in this area and there was a drastic change in the sowing pattern of the agricultural field. The population pressure is high in this part due to the infiltration of people in the international border location. At the same time, the man-land ratio is also high as a result cropping pattern also changes with the availability of the modern facility to feed the excess population.

### Study Area:

The study area is the Nadia district of West Bengal, which is extended north to south parallel to river Bhagirathi, the area is surrounded by Bangladesh in the East and Bardhaman District in the West, Murshidabad district to the North and South 24 Pargana and Hoogly in the South. Nadia district bounded by 22<sup>o</sup> 53" N to 24<sup>o</sup>11" N latitude and 88<sup>o</sup> 09" E to 88<sup>o</sup> 48" E longitude and covered an area of 3927 sq km.. The area is a part of the biggest agro-climatic zone of West Bengal. There are four administrative subdivisions these are Kalyani,

Ranaghat, Tehatta, Krishnanagar. However, there are three agricultural subdivisions – Krishnanagar Sadar, Kalyani, Tehatta.

**Location Map of Study Area**



Map no-1

**Climate**

The climate of Nadia district can be called the humid subtropical type of climate. As in West Bengal, four types of seasons can be experienced throughout the year, Nadia district is not an exception to it. The effect of South West Monsoon is quite pronounced here. The summer season is hot and humid. The range of temperature varies from 27 to 42°C. The monsoon rainfall is well distributed in this district, The monsoonal rainfall occurs from June to September. The average rainfall is about 150 cm which triggers better crop production.

**Soil**

Major soils are deep loamy soils and deep clayey loamy soils and fall under new alluvium agro-climatic zone, which is suitable for paddy cultivation.

**River**

Six rivers are flowing over the district, though Bhagirathi and Jalangi are the most important river. A huge number of bow lakes are also found in this area.

**Population**

Population scenario of the study area is a remarkable increase from 1981 to 2011. The rate of increase in the last three decades is almost double in the case of Kaliaganj, Nakashipara and Krishnanagar – I. For the rest of the 4 blocks, the rate of increase is also quite high. Thus we can deduce that within 30 years the pressure of population on land has almost doubled thereby creating great pressure on the agricultural field

**Objective:**

The objective of the study is to attempt to analyse the use of modern technology in rice cultivation and their impact on change in nature and yield of rice cultivation in the study area.

**Agricultural Scenario:****Irrigation:**

Over the last four decades from the present, the district witnessed impressive growth in crop production due to the adoption of semi-dwarf high yielding varieties coupled with intensive input-based management. There are two types of irrigation systems found in Nadia – i) groundwater irrigation and ii) river lift irrigation (RLI). River lift irrigation is only possible where a river or an ox-bow lake persists. The most popular irrigation method practised in the district is the use of private shallow tube wells. These facilities help the farmers to adopt various new farming systems.

**Paddy Seed Variety:**

There are two types of rice seeds - one is local or indigenous another is high yielding seeds.

**Indigenous Seeds:** The production of Indigenous rice variety is less but it has high nutrition and medicinal values. These are important genetic characters and valuable traits. The Aus paddy cut down at the month of Vadro-Aswin (September October). The local name is vadui. Local varieties of Aous are Satika, Swetjamra, Kelemota, Aouslona, Hanuman Jota, Lakshmi jota, Kham janmuni, Benamuri, Chandmuni, Aous Lona, Mudo, Patharkuchi, Dhanga, Patjol, Vutmari, Katak tara, kele Sona etc. Local varieties of very fine quality Amon paddies are



kartiksal, Vasa manik, Jhinge Sal, Kheer Sal, kele, GobindoVog, Badshavog, Deb muni, muktahar, Boira, Banku, mahasal, Sal Kele, Dudhkalma etc. Local varieties of Boro paddy are kali boro, SadaBoro, Lal tulomukhi.

**High Yielding Seeds:** At present, various high yielding varieties of seeds are used in the agricultural sector, but in the late 70s, it was a challenge to introduce new seeds to the farmers. At the first stage, HYV seeds were introduced on wheat, paddy and jute. Later it was implemented on pulses, oilseeds and vegetables. Presently HYV cultivated rice varieties in Nadia are Swarna, Pratikshya, Swarna sub-1, IET-4785(Shatabdi), Shabhazi Dhan, Nayanmoni, Banstara, Kalabhat(Deshi variety), Gotra Bidhan-1. IET 4786, the Average yield is 4500-5000kg./ha for these varieties.

Newly introduced varieties are Rajdeep, Swarnali, Manisha, Sukumar, Ajit, Kaushalya, Mukdashree(Arsenic tolerant variety), Amala. Average yield 4.5 to 5.5 ton/ha.

Hybrid Rice varieties are presently cultivated in few pockets e.g. Arize6444Gold, Arize6129Gold, ArizeTej,JKRH3333, PAC807 Average yield 5.5 to 6.5 ton/ha.

#### **Seeds, Fertilizer, Pesticide-Insecticide:**

Farmers of Nadia district generally cultivate HYV seeds, for bumper production, For high yielding varieties Seed required 45-50kg/ha and for hybrid varieties 15kg/ha.

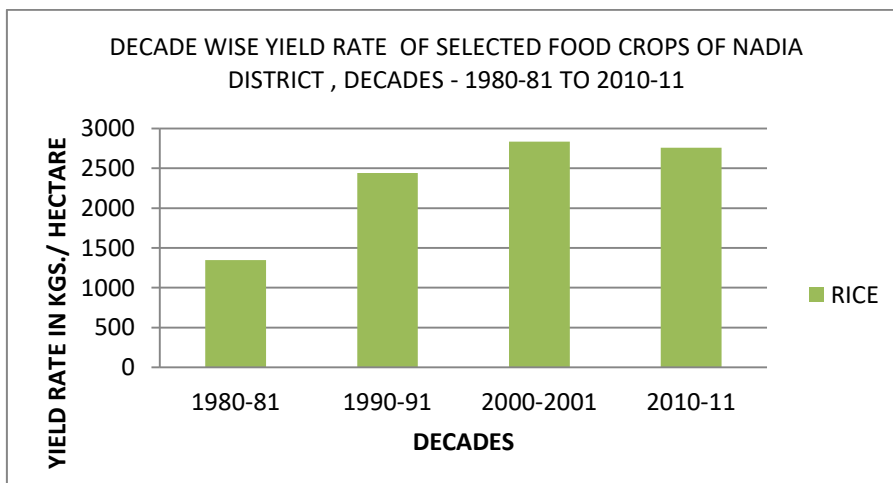
Fertilizers are also needed. But ignorance about the application of fertilizers makes the soil in precarious nutrient conditions. Negligence in the practice of soil testing and generally habituated in the use of a higher percentage of Nitrogen and a comparatively lower percentage of phosphorus and potassium proves the farmers' irresponsible nature of the farming practice. The recommended ratio for Nitrogen (N), Phosphorus (P) and Potassium (K) is 2:2:1. Fertilizers rate 80:40:40 kg./ha.in Kharif and 120:60:60 kg./\_ha. In Boro season

Besides the above inputs Insecticides, fungicides, herbicides are required for plant protection, Insecticides for controlling insects. Fungicides for disease and herbicides for controlling weeds it is very important that the farmers' awareness about the combination of fertilizer is a very important task which is used for the production of a particular crop.

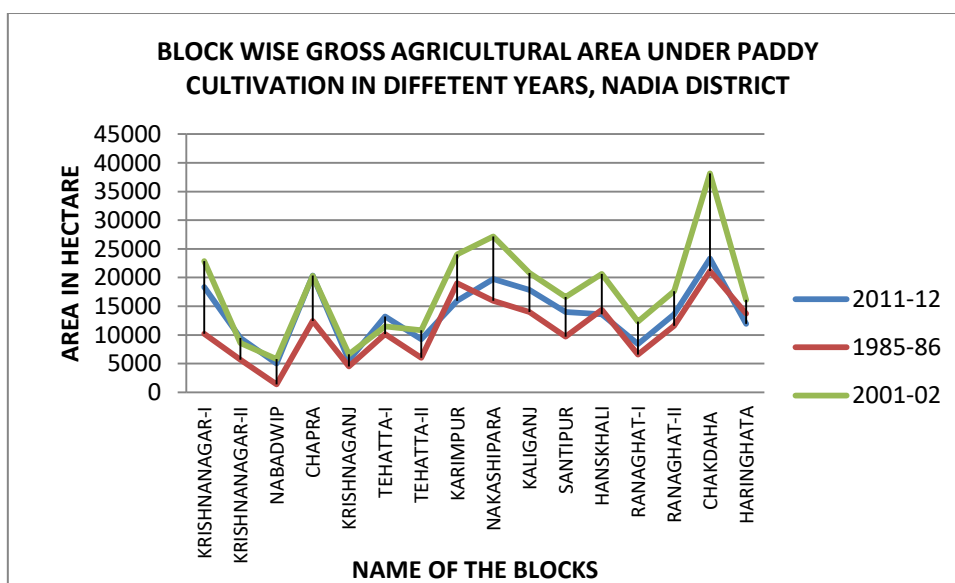


### Change in yield rate

In the last four decades, the agriculture sector has grown rapidly in Nadia district. As a result, the agricultural fields remain green throughout the year. The rice cultivated in three seasons, Aous , Aman and Boro. Now a day's Aus is less important, Aman sowing time June July and Boro sowing time Nov-Dec. The cropping intensity is very high in this district. According to NATMO in the year 2005-06 the national average of crop intensity was 135.88% and in Nadia district, it was recorded as 278% which was the highest in India. The net cropped area is decreasing slowly due to population pressure, but the total production is not affected. The main crop of the district is paddy the others crops are jute, pulses, oilseeds, wheat, vegetables, fruits and flowers.



Data source: Office of the Deputy Director Of Agriculture(Adm) Nadia



Data Source: Office of the Deputy Director Of Agriculture (Adm) Nadia





The area under cultivation decreased with time but the same land, use in different seasons for cultivation, so that gross area for paddy increased with time but not same in every year, this is depending on climate and market condition. The agricultural status of Nadia district can be well assessed with the help of the yield of crops that has increased remarkably. If we take into consideration the major food crops like Paddy, wheat, sugarcane, oilseeds and pulses, it can be very easily concluded that the yield in kg per hectare of every crop has increased. In the case of some crops like Paddy and Pulses, the yield has almost doubled in 25 years for some blocks.

### **Problems:**

- i) Indiscriminate use of zinc in Aman paddy.
- ii) Application of herbicide in high dose in Aman paddy.
- iii) Indiscriminate use of chemical pesticides and insecticides.
- iv) Post-harvest management is not done scientifically
- v) Water, is also polluted with Agrochemicals such as fertilizers, pesticides and herbicides.
- vi) Changing holding size due to population pressure.

These are the main problem found in rice cultivation of Nadia district, these are basically due to less knowledge and awareness among the farmers. The priority of crops are not same in every year - depending on market needs the rice was replaced with different cash crops like flowers and vegetables, but during the pandemic situation and cyclonic condition again the farmers back to the crop cultivation.

### **Suggestion:**

Modern agricultural practice in Nadia district has developed with remarkable pace during the last four decades. And with the use of different modern varieties of seeds in paddy cultivation numbers of local varieties are almost lost, the soil conditions are also hampered due to indiscriminate use of chemicals. Therefore, we need to protect the environment by educating the farmers and a seed bank is another good option for the endogenous rice species. Loss of crop due to the various climatic phenomenon is also common in the cultivation of paddy, therefore, the government have to take some responsibility in this matter to support the economically weak farmers of this area.

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## Creativity and Aspects of Thinking

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### Abstract

*This paper at the outset deals with the aspect of thinking. The act of thinking is an activity aimed at finding an answer to a question or the solution of any practical problem. Human beings communicate with one-another using of variety of different language. Here lies the intriguing question, can one think without language? It however may be presumed that thinking pre-supposes a definite language. When Descartes says 'cogito ergo sum', I think, therefore I am, the question whether thinking and language are inseparable becomes all the more bewildering. If the very being or existence is preceded by thinking, or the thought process, then thinking may not necessarily require a medium of a structured language. This hypothesis is however apparently absurd Language is a creation of human beings through a complex system of signs. In the primitive times, human language was a 'closed' language limited or confined to certain symbols and signs denoting some specific messages for primitive man's day to day necessities and existence. Human language at this point of time was 'closed' confined to limited meaning. This was basically meant for the struggle for survival.*

*Through the ages, this 'closed' language gradually became "open" and developed many-fold enabling language to develop the medium of every sphere of human knowledge. This immense empowerment of language naturally felicitated the domain of creative thinking.*

*Thinking thus gradually became an intellectual activity which can be related to the domain of cognitive psychology which investigates the mental process that mediate between stimulus and response. The area of thinking therefore covers a wide range including solving problems, decision making, imaginative thinking etc. This paper also throws light on the observation made by the psychologists on the different dimensions of human mind encompassing joy oriented mind, love or hate oriented mind, fear oriented mind etc. Considering all these aspects, this paper makes an attempt to observe how the act of thinking in ordinary human beings differ from the act of thinking among creative thinkers such as poets, painters or musical composers.*

**Keywords: Creative, Empowerment, Existence, Symbol and Sign.**

(Paper published on 1<sup>st</sup> June, 2021.)

As the story goes, a Western philosopher was once asked, “What is mind?”

He replied, “No Matter”.

He was asked again, “What is matter?”

And he replied, “Never mind”.

The implication of what the philosopher said was that mind is not matter.



Hindu Philosophy emphatically declares that mind is matter - although extremely subtle matter.

Humans by virtue of extra ordinary cognitive abilities have transformed every aspect of lives. Thinking primarily is an intellectual activity aimed at finding an answer to question or the solution of any practical problem. The branch of psychology which probes into the internal mental process like problem solving or articulating language is known as cognitive psychology. The domain of cognitive psychology investigates the mental processes which mediate between stimulus and response. It covers a wide area of thinking like decision making, solving problems, imaginative thought etc. Cognitive psychologists ever since 1950's tried to figure out the subtle nuances in diverse types of thinking. Many of them attempted at 'annotating the complexity of the differences in varied levels of cognition'. In this area noted psychologist Benjamin Bloom developed a hierarchical listing or taxonomy which covers a wide range starting from the simplest forms of thinking down to more complex thought processes such as comprehension, knowledge, analysis, synthesis culminating into evaluation.

From such observations made by Bloom his long time colleague David Krathwohl and others further revised the approaches towards synthesis and evaluation in the act of creation.

Noted Psychologist Gray Davis said "*Creative thinking is much more than using your imagination to crank out lots of new ideas. Creative thinking is a lifestyle, a personality trait, a way of perceiving the world, a way of interacting with other people, and a way of living and growing.*"

Humans communicate with one another using large variety of languages, each different from the next in innumerable ways. Do the languages we speak shape the way we see the world, the way we think and the way we live our lives? It is often asked: can we think without language? Is it possible to think about anything at all without using language? That is to say, does it mean that nothing exists without language? Martin Heidegger said, "What is most thought provoking in these thought provoking times, is that we are still not thinking".

The ideas and arrangements that result from thinking may be regarded as 'thought'. However, there is no generally accepted agreement as to what thought is or how it is created. Therefore thoughts are the result of either spontaneous or willed act of thinking.



Some Scholars have felt the necessity to augment thinking into two types: Convergent thinking and Divergent thinking. Any act of creation or innovation according to this school of thought presupposes series of steps involving both diverging and converging ideas.

Divergent thinking primarily denotes the ability to elaborate, and thinking of diverse and original ideas. Cognition in divergent thinking is a process that motivates to think of possibilities and connect them to generate new and innovative ideas.

Convergent thinking on the other hand generates the 'ability to use logical and evaluative thinking to critique and narrow ideas to ones best suited for given situations or set criteria'. While in divergence it is expanding the ideas, converging is narrowing those possibilities until a solution is achieved.

Psychologists often pointed out that human mind has different dimensions. These dimensions include: joy oriented mind, love or hate oriented mind, fear oriented mind, etc. At the same time these psychologists take into consideration the aspects of negativity in the orientation of human mind. Different types of negativity such as suppression, over-sensitivity, cynicism, greed, arrogance, jealousy, self-pity etc constitute different types of minds.

Approaches in the way of understanding 'thought' however saw a paradigm shift from the cognitive or rational interpretations with the phenomenological analyses of existential structure of man in Martin Heidegger's 'Being And Time'. However in modern western philosophy phenomenology is not the ultimate approach to thinking. The branch of philosophy called the 'Philosophy of Mind' studies the relationship of human body to the mental properties, mental functions and the nature of mind. The prime concern in philosophy of mind is the relationship of the mind to the body.

Cognitive psychologists emphasise on the mental process that mediate between stimulus and response and apply psychophysical and experimental approaches towards understanding and solving problems.

The terms 'creative' and 'imaginative' are often used inter-changeably. Imagination is important for creative thought. Kant recognised a connection between imagination and creativity:

"So the mental power whose combination (in a certain relation) constitutes genius are imagination and understanding. One qualification is needed however. When the imagination is used for cognition, then it is under the constraint of the understanding and is



subject to the restriction of adequacy to the understanding's concept. But when the aim is aesthetic then the imagination is free, so that, over and above that harmony with the concept, it may supply, in an unstudied way, a wealth of undeveloped material for the understanding which the latter disregarded in its concept (Kant [1790] 1987:185)

Kant practically makes a distinction between imagination used for conceptual understanding and imagination used for artistic ends. Dustin Stokes in his article on "The Role of Imagination in Creativity" elaborates on this observation: "By way of this distinction, Kant intimates two features of imagination endorsed today. First, imagination provides a kind of cognitive freedom important for creative thought and action. Second, imagination can be used in more or less constrained ways".

The Philosophy of Mind basically addresses the nature of one aspect of reality.....the 'mind'. Thus, Philosophy of Mind may generally be regarded as part of 'Metaphysics'. This branch of study deals with questions of consciousness. How consciousness interacts with both the body and the outside world is the prime concern of this area.

In this regard it may further be asked whether human consciousness can be solely explained by material and natural processes. Whether something else like supernatural and immaterial is involved or physical brain alone is responsible for our mind and consciousness? Evolution has produced creatures with minds capable of communicating with symbols...spoken and written languages. This has enabled us to develop extensive knowledge of history and diversity of civilisations.

The human mind is the source of all thought and behavior. It is complex and mysterious. Psychology is the science of mind. For the Psychologists, human behavior is the raw data for formulating theories. Human behavior is the clue for the psychologists to study the workings of the mind. The Central issue surrounding the philosophy of mind is the mind body problem.

Descartes sought to distinguish mind from matter by characterizing 'mind' as 'that which thinks':

"I Think Therefore I am"

Descartes believes that the original and basic certainty lies in the idea of myself as something existing. One can doubt anything, but I cannot doubt that I, the doubter, exist, insists Descartes.



In ancient philosophy Aristotle selected rationality, the capacity to think as the defining attribute of Man. But we rarely think about thinking. What happens when we think and what conditions influence our performance? Psychologists in recent times have been trying to address these questions.

Let us now look at some different connotations of the term 'thinking':

- (a) The attempt to recall: I am trying to think when I bought my Digital Camera:
- (b) 'Think' meaning 'believe': What do you think about globalisation?
- (c) Autistic thinking: Fantasies, Day-dreams.

But Thinking in the sense of 'reasoning' or 'cogitating' is essentially a performance or 'activity'. This act often referred as "reflective thinking".

It is understood that 'thinking' is a remarkable human achievement. In this paper it is also being observed how the act of thinking in ordinary human beings is different from the act of thinking among creative thinkers such as musical composers, poets, painters and so on? Psychologists have discussed whether the creative thinker a special kind of man or merely a man on whom special skill, training and personal style were thrust upon to make them somewhat more competent than others? In what ways a creative thinker is: Original, Creative or Imaginative?

Ancient Greece, Ancient China, and Ancient India lacked the concept of creativity. They looked at art as a form of discovery and not creation.

Notion of 'creativity', it is commonly believed originated in Western Culture through Christianity, as a matter of divine inspiration.

Noted historian Daniel J. Boorstin opined "the early Western conception of creativity was the Biblical story of creation given in the Genesis". Creativity according to Judaea Christian tradition was the sole province of God, humans were not considered to have the ability to create something new. This rejection of creativity in favour of discovery and the dogma that creation was a prerogative of the divine dominated the West until Renaissance. The modern concept of creativity begins with the Renaissance when creation began to be perceived as having originated from the abilities of the individual and not God. Creativity thus received no attention as a direct and independent topic of study until the 19<sup>th</sup> century.



Still, the question of creative thinking is apparently ambiguous. There are always differences between the genius and the average performer. Different kinds of creativity depend on different conditions, aptitudes, capacities, needs, skills and motives. In **The Creative Process** edited by Brewster Ghiselin, several creative thinkers discuss the way they think when engaged in making a novel, a poem or a painting. What makes Rabindranath Tagore greater than other writers in Bengali literature? Is it social conditions? Specific training on some unknown factors in personality?

While discussing the difference between ordinary language and language of poetry the Russian Formalists made some important observations. The Ordinary language is language which abides by the norms of language. This language is expected to follow the grammar, Syntactic norms and other rules of language.

Ordinary language therefore, is presumably not creative in nature. The language of poetry is different from this ordinary language. The language of poetry, according to the Russian Formalists, is an organised attempt to opt for an organised violence on this 'norm' of 'ordinary language'. Hence poetic language or the language of creativity is a deviation from norm.

Deviation from norm may not necessarily be creative, it can be destructive either. Only creative thinking would apply deviation with a constructive approach. Creativity in a way presupposes an ability to conscious deviation from norm for the sake of creation.

Stephen Spender in *The Making of a Poem* says that although much hard work goes into a poem, nevertheless at its centre is a deeply personal experience, in which something of the poet's individuality is expressed. The poets' talent here is uniquely his. It may therefore be resolved that the creation of poetry involves the disciplined application of techniques and skill, to a specific problem: but there is also the immense experience of 'inspiration'; the sudden springing of a germ of thought which catches the artists interest and demands exploitation into a finished product at the hands of the artist. True there are many other questions about thinking and many approaches. Deviations from normal thinking are discussed by psychiatrists and psycho-therapists.

Thinking has been a topic for discussion since the time of Plato and Aristotle.

Thought has developed as an instrument for controlling and mastering a difficult environment. Originally, thinking was a "weapon in man's armoury for defence and attack





in the struggle for survival”. But, once the environment has been partly tamed thought has become capable of various refinements.

I have discussed in this paper at length that thinking, primarily an intellectual activity, covers a wide range of situations in day to day living of each human being . In matter of fact situation, it is used in solving problems or decision makings of various kind. I have tried to make a binary between 'matter of fact thinking' and 'imaginative thinking'. In order to establish this, I have made a comparison of this binary with that of the binary between 'closed' and 'open' language. Traffic signals clapping , or gestures denote specific and limited meanings, where as meanings are wide and endless , leaving enormous space for any imagination and creative thoughts in an 'open' language .

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## The New Urban Space in Medieval Bhagalpur: The Study of the Growth of Markets

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### Abstract

*The town Bhagalpur is situated on the right side of the bank of River Ganges. For the first time we find the reference of Bhagalpur in Akbar Namah<sup>1</sup>. Bhagalpur was called as 'Champa nagar' before the Mughals set its foot on the soil of this town. However, in the East India Company records it is mentioned in different names – 'Boglipor', 'Bhagalpoore', 'Boglypore' and 'Bhaugulpore'<sup>2</sup>. The main source to study Bhagalpur during the medieval period is available in English Persian, Urdu, and Bengali scripts. The manuscripts include the records and papers preserved belonging to some important families of Bhagalpur. The town of Bhagalpur became a place for commercial importance in the 17<sup>th</sup> & 18<sup>th</sup> centuries. Initially its economic condition and its elevation was the result of the river bound trade, especially along the Southern Ganges strip. But the commercial importance was boosted when it found that apart from the Ganges the town was also connected with road highways which touched not only the prominent urban centers but also joined the neighboring provinces.<sup>3</sup>*

**Keywords:** Markets, River, Urban, mohalla, towns

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Prior to the advent of the Mughal's in Bhagalpur the main township was concentrated on the western side of the modern city in the vicinity of the areas known as Champanagar, Kargarh, Nath Nagar, Lakshmipur and Kabirpur all of which existed in the ancient pasts because the existing buildings speaks loudly about their past.<sup>4</sup>

During the Mughal period, several areas in the Bhagalpur town have been recorded as marketing centers. On the western fringes of the town Champanagar and Nathnagar were the two Mohallas which had flourished prior to the days of Emperor Akbar. From these areas the businessmen spread their commercial activities to other

<sup>1</sup> Abul Fazl, Akbarnamah, Eng tr. H. Beveridge, Vol. III, Cal 1912, Pg 143-44, 150

<sup>2</sup> By company records. I mean the contemporary literature written by the East India Company officials. In the coming pages I have tried to mention the names to the fullest extent.

<sup>3</sup> For detailed description see K.K. Basu, "An Account of Trade in Bhagalpur in the 19<sup>th</sup> C." JBORS, Vol.XXIX, 1943, p.105.

<sup>4</sup> Sunity Kumar Singha, "Bhagalpur through Centuries", JBRS, Vol.XLVII, 1961, p.18.



areas. In the 17<sup>th</sup> Century, some members of the family of Jagat Seth<sup>5</sup> came here in connection with textile trade. In the centre of the Bhagalpur town a chain of marketing places gradually came into prominence. The most famous part was Shujaganj<sup>6</sup> named after the Prince Shahsuja. Close to this some satellite commercial centres also sprang up. Among them Khalifabagh was the most important. It was developed by the family of the reputed saint Pir Damaria. The whole area covered 40 bighas known as Bagh-e-Khalifa whose owner was Jamal-ul-Lah. In 1662 A.D., Maulana Syed got possession over the land & subsequently erected a Khanqah, mosque and Madarsa.<sup>7</sup> A market complex close to these establishments known as Mullah Market<sup>8</sup> was established. Before going into detailed part it would be imperative to discuss on the factors that elevated the cause of the establishment of commercial markets.

The local zamindars and other officials also played an important role in the growth and development of commercial complexes. They received parwans either from the Later Mughals or by the high government functionaries for performing different functions. They established shades within their jurisdiction on the main road where hats (small shops) were auctioned to the private merchants for a fixed period, they also fixed the prices of labour and commodities settled petty disputes and maintained the supply demand.<sup>9</sup>

Sarai or the imas formed an integral part of the immemorial activity of the town where adequate facilities were available for the protection & accommodation of

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<sup>5</sup> P.C. Nahar, Jain Inscriptions, part I (Cal.) 1948, p.32.

<sup>6</sup> Shah Shuja is supposed to have halted in this town. Shujaganj has been referred to in a Mughal Parwana dated 1114 A.H. published in Report of Regional Record of Regional Record Survey Committee Bihar (1962-63), K.K. Datta ed. (Patna, 1960), pg.58.

<sup>7</sup> Report of Regional Record Survey Committee Bihar (1962-63) K.K. Datta ed., Patna, p.48.

<sup>8</sup> In a Mughal Parwana, there is mention of the Existence of Markets in Khalifabagh, See Report of Regional Record Survey Committee, Bihar 1962-63, K.K. Datta ed., Patna, p.43-44.

<sup>9</sup> M. Martin, Eastern India, Vol.II, Delhi 1876, p.282.



incoming traders. Two imas were constructed close to the bank of the Ganges in the town during Mughal age.<sup>10</sup> A mohallad is still known as Sarai.

Bhagalpur was easily accessible by both land water routes. This facilitated the growth of commerce through the river Ganges the town was linked with the capital of Bihar as well as with the neighbouring provinces of Bengal, Orissa and Assam. A large number of traders and travelers sailed from Calcutta after its establishment in 1690 to Bihar on the bed of Ganges and remain in closed touch with the Bhagalpur town. During the Mughal period Gola Ghat & Sakhi Chandra Ghat were probably the two halting stations for beats and small ships. Through the water routes trade in the town was chiefly carried to and from Bengal and other parts of Bihar. Several small streams which flow in the northerly direction into the Ganges also touched the town and connected it to the neighbouring districts. European traveler, manrique in 1640 A.D. found over 200 boats assembled from surrounding districts at Rajmahal, a nearly riverine part. Some of them must have been frequently sailing to and from the town of Bhagalpur.

Besides, the water transport, land transport was also fairly developed during the Mughal age. The land routes served both as military roads and highways of commerce. The town was joined by road to the Jharkhand area of Santhal Pargana and Chota Nagpur which continued right up to Orissa. An important highway also touched Bhagalpur which ran from Delhi to Luckhauri. A road of the 17<sup>th</sup> C also passed by the bank of the Ganges and touched Calcutta Rajmahal, Bhagalpur, Munger & Patna. Prince Shah Shuja is said to have built a soad covering a distance of one kos which connected Rajmahal (which was than the head quarter of Eastern zone)

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<sup>10</sup> The Sarai in Bhagalpur of Mughal period has been described in M. Martin, op.cit., p.289



with the road running to Bhagalpur town.<sup>11</sup> Some other roads also intersected Bhagalpur town and connected it with the surrounding areas.

An account of the condition of the roads in Bhagalpur has been submitted by George Dickenson, then Collector of Bhagalpur in 1794.<sup>12</sup> According to it from Bhagalpur eastwards to Gayas Khan's tomb, five miles the road was in good condition, but from thence to twentieth mile up to Kahalgaon the route was much down during five to six months in the year.

The earliest site was Champanagar situated on the bank of Champanala and is believed to represent the ancient city of Champa, the capital of the Kingdom of Anga during 6<sup>th</sup> C. .C. located strategically at the confluence of the Chandan with the Ganges.<sup>13</sup> It was also an important transit point for the traders coming from north-eastern Bihar and Nepal. Hence a large number of Jains, belonging to the trading community came and some of them constructed temples. The place he remained sacred to the Jains as the birth place of Vasupujya their twelfth Tirthankara. Some Jain temples were reported to have existed in that area in the 17<sup>th</sup> and 8<sup>th</sup> centuries. At Champanagar<sup>14</sup> a temple was built where Oswals, numbers of one of the Jain sects, worshipped Parasnath, their twenty third Tirthankara. There were other two temples of considerable size built of brick, and covered with plaster. Both the temples, according to Frances Buchanan's account were constructed entirely at the expense of the family of Jagat Seth, the famous banker<sup>15</sup> of the 17<sup>th</sup> and 18<sup>th</sup> centuries. These two

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<sup>11</sup> K.K. Basu, "Some Old Accounts of Bhagalpur", JBORS, Vol.XXXI (Patna, 1936), pp.144-72.

<sup>12</sup> BDCR, Vol.XIII. Letter dated 31<sup>st</sup> August 1794, pp.217-22.

<sup>13</sup> JFBB, p.5.

<sup>14</sup> Ibid., p.5.

<sup>15</sup> Ibid., p.5.



building were of same style and consisted of the storeys. Colonel Franklin<sup>16</sup>, an army of Bhagalpur in his account also refers to these temples of which one was built in about 1766 A.D. by the Svetambaras of Mushidabad. Blochman<sup>17</sup> who visited Bhagalpur in 1903 noticed two inscriptions on the two marble images of the temples, one dated 1468 A.D. and the other was dated 1824 A.D.

The land of this area was paralleled out to the different zamindars of the town who were supposed to maintain the roads in good condition and regulate the revenue collection.<sup>18</sup>

The antiquity of the Champanagar is also corroborated by the tomb of an unidentified Muslm saint situated on the bank of Champanal. The name of the saint inscribed on his tomb is Muskan-i-Barani, literally meaning” dornicile of virtues.<sup>19</sup> The holy saint seems to be one of the earliest Muslim settlers on record in that area na dhe soon attracted a large number of his fellowwomen, who came to reside in that area. A chain of small pockets of Muslim inhabitants son grew and subsequently many mohallas took Muhammadan nanus such as Nagra, Mir Ghyas Chak, and Murgis chak etc. it is interesting to note that close to Champanangar there is a cave known as Barani-ka-kuppa<sup>20</sup> attracted the attention of almost all the travelers of the 18<sup>th</sup> & 19<sup>th</sup> Centuries. During the reign of the Mughal emperor Jahangir, a mausoleum was constructed on the grave of the revered saint. The work was undertaken under the direction of the Faujdar of Munger by the order of Prince Parvana, who was then

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<sup>16</sup> Col. Franklin’s account quoted in D.R. Patil’s *The Antiquarian remains in Bihar*, K.P. Jayswal Institute (Patna, 1963, p.32-33.

<sup>17</sup> *Ibid.*, p.33.

<sup>18</sup> BDCR, Vol.22, pp.296-300.

<sup>19</sup> Col. Frankliv’s account devoted in D.R. Patills “*The antiquarian remains in Bihar*, K.P. Jayswal Institute (Patna, 1963), p.80.

<sup>20</sup> *Ibid.* p.80.



the governor of Bihar sulsha. The date of construction i.e. 1032 A.H.(1622 A.D.) is recorded in an inscription placed on the outer wall of the mausoleum.<sup>21</sup>

Close to Champanagar is located a large hillock or flat topped mound, popularly known as Karngarh which, though in ruins in the 17<sup>th</sup> & 18<sup>th</sup> Centuries, yet retained the interest of the local inhabitants and attracted foreign visitors. It is considered to be chief residence of Raja Karna of ancient times. Till the close of the 18<sup>th</sup> Century there were two small lampas, one of siva & the other of the goddess Parwati served by a Pujari Mr. John Glass, the Surgeon of Bhagalpur, on his initiative dug a tank in the immediate vicinity of Karngarh during the closing years of the 18<sup>th</sup> Century & four small images of brass were discovered which further attest to the antiquity of the area.<sup>22</sup> Francis Buchanan is of his view that the Mughals were so conscious of the rich legacy of these enter territory that they erected two small forts for there protection.<sup>23</sup> Subsequently tribal generally occupied this old site & are referred to in the early English East India Company documents as 'Pahariyas' or 'Hill-people'. Their lawlessness led to prompt action by the then collector of Bhagalpur, August us Cleveland. He requited a body of troops raised from among the hill people in 1780.<sup>24</sup> a School for the pahariya was also opened there on this initiative and the enter expenditure was to be met by the govt. the school building contained a room for the lodging of the school-master, who taught in the language of the hill people.<sup>25</sup>

A little south from Champanagar was busy commercial pocket known as Nathnagar. Before the establishment of the Mughal rule in Bhagalpur this Muhalla seems to have been populous further physical growth towards the east did not late place. According to a local tradition' Nathnagar has been derived from the name of a

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<sup>21</sup> RRR,SC (1958-59), P.11

<sup>22</sup> M. Martin, op. cit., p.33.

<sup>23</sup> Ibid. P.33.

<sup>24</sup> Byrne referred to by P.C. Roy Choudhary, op. cit, p.619.

<sup>25</sup> Bishop Heber, op. Cit, p.206.



Maithil saint, National who once took his abode at this place and gradually converted a large number of local inhabitants who resided in that area<sup>26</sup> as his followers. Buchanan has described Nathnagar as a god town, containing perhaps so houses.<sup>27</sup> This area was generally surrounded by the grain traders. In this vicinity a famous bankers family known as the family of Sukhraj also settled down in the 17<sup>th</sup> Century.<sup>28</sup>

After the conquest of Bhagalpur by the Mughals, and the subsequently elevation of the town as the seat of Nathnagar with its local point at kotwali. Kotwali has been mentioned in various Mughal documents granted to the local families of Bhagalpur. In a Parenana of Emperor Jahangir the official of the Kotwali has been directed that the residents of neighbouring place Khalibagh should not be put to trouble in view of the fact that Maulana Ali Ahmad, a descendent of Pir Damaria family resided in it<sup>29</sup>. Another Parwana of Alamgir's reign dated 1084 A.H.(1675 A.D.) conveying the previous message was transmitted to the official of Kotwali.

In the 18<sup>th</sup> Century there was enormous physical growth of the town in all the directions of the Kotwali. This fact has been attested to in the travel account of Francis Buchanan, who during his visit in the opening decade of the 19<sup>th</sup> Century found Kotwali a small division which included the capital Bhagalpur. The statement confirms that the centre of the city was near the locality of Kotwali. Buchanan has also narrated that the area near the town was excellently cultivated. The north to the Kotwali was liable to inundations of the Ganges, but was extremely fertile, the south from the town, though low-lying was not inundated.<sup>30</sup>

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<sup>26</sup> P.C., Roy Choudhary, op. cit., p.623.

<sup>27</sup> M. Martin, op. cit, p.28.

<sup>28</sup> Jharkhandi Jha, op. cit., pp.306-10.

<sup>29</sup> RRRSC (1962-63), p.43.

<sup>30</sup> M. Martin, op cit, p.26 81. JFBB, P.9.





The most compact part of the local market close to Kotwali in the 17<sup>th</sup> & 18<sup>th</sup> Centuries comprised of Shyaganj and Khalifababgh. Shyaganj lakes after the name of Prince Shah Shiya, the son of the Mugahl emperor Shahjahan. The prince frequently visited Bhagalpur in course of his emptying expeditions and created a hunting box in Banahra, a few miles from the town.<sup>31</sup> Later on, he captured the whole of Bhagalpur after destroying the Khetri Chiefs<sup>32</sup> subsequently he resided there. Even during the war of succession among his brother, he made Bhagalpur town his main defence gave tough resistance to Mir Jumtor, the general appointed by his brother Aurangzeb to chastise him. But after the defeat he had to retreat to Munger.<sup>33</sup> A popular tradition associated with the town is that the daughter of Shah Shuja died in Bhagalpur in the area near Shujaganj. Where was a pucca tomb<sup>34</sup> Shrygnaj has been quoted in a Parwana dated 1114 A.H. 9<sup>th</sup> Safar, 50 Julus.<sup>35</sup> Francis Buchanan has deserved the place as the busiest in which there were three or four streets closely built.<sup>36</sup>

Khalibagh was another place which developed as a prominent shopping centre during the period under the review the whole area was known as Bagh-Khalifa<sup>37</sup> (garden of a Khalif) and consisted of forty beghas of land initially owned by Janualullah, a pious and learned man. Whose tomb is located in this area. A parwana of 1054 A.H. (1645) has referred to two villages namely Ambal Dinapur located near Khalifabagh, which were in the possession of syed Hussain of Pir Damarian family. He was allowed

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<sup>31</sup> JFBB, p.9.

<sup>32</sup> Ibid. p.21.

<sup>33</sup> J.N. Sarkar, op, cit., pp.239-40.

<sup>34</sup> Q. Ahmad. Croopus of Arabic & Pension Inscription of Bihar, K.P. Jayaswal Institute, (Patna, 1973), p.104.

<sup>35</sup> RRRSC (1962-63), p.58. M. Martin, op. cit. p. 29.

<sup>36</sup> M. Martin, op. cit. p.29.

<sup>37</sup> The origin of the name is suggested by syed Manzar Hussian, family member of Pir Damaria Baba, whose ancestors got possession over the entire area during the period of emperor Aurangzeb Bagh-Khalifa is also cited in RRRSC(1962-63), p.48.



to enjoy the Jahangir of those lands.<sup>38</sup> In 1662 A.D. emperor Alamgir granted 40 bighas of land at Khalifabagh to Pir Damaria family member Maulama syed Ali ahmad Jiv for the construction of Madarsa, khangah mosque & a residence. This was further ratified through a Parwanan<sup>39</sup> dated 27<sup>th</sup> Shahr Zidada 21 Julus in which it was stated that the grantee should be allowed to retain possession of the lamp.

A couple of years after receiving the pant, Ali Ahmad along with his family members came to reside at Khalifabagh. He took promot initiative in promoting educational facilities & established a madarsa & a Khangah<sup>40</sup> close to his residence where bodying for the students was adequately arranged. He was a reputed scholar whose fame even reached the Mughal Emperor, Aurangzeb. He through a Parwanan<sup>41</sup> dated 21<sup>st</sup> Janiadiul Autual 1081 A.H. (1672 A.D.) instructed the local officials that syed Ali regarding in Khalifabagh was exempted from all taxes. In a next Parwana<sup>42</sup> dated 1084 A.H (1675 AD) Alamgir warned the officials of Pargana Bhagalpur that Mulana syed Ali Ahmad who resided in Khalifabagh should not be troubled on account of the demand of Begari & Farmaishi taxes. The grant continued even in the days of the later Mughal Emperors. A certified saved persisted in the Pir Damaria family bearing the seal of the poengal Nawab sirgh-dDowla stated that several mauzas situated in Pargana Bhagalupur were given to the ancestor of syed Muhammad Mir on rental of Rs. 800 by virtue of a Farman for the maintenance of a Khhandah at Khalifabagh.<sup>43</sup> He also constructed a mosque<sup>44</sup> in 1667 A.D. which was initially 75 feet long. Even more remarkable service he rendered for the town was that he

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<sup>38</sup> RRRSC (1962-63), p.45.

<sup>39</sup> Ibid. p.48.

<sup>40</sup> Ibid.p.42.

<sup>41</sup> Ibid. p.46.

<sup>42</sup> Ibid. p.44.

<sup>43</sup> Ibdi. Pp.50-57.

<sup>44</sup> According to the family sources the mosque was completed in 1667 A.D. and further additions were made in the mosque by Ali Ahmads successors.



established a marketing complex in the vicinity which was popularly known as Mulla-Market. This fact has been established through a Parwana dated 21<sup>st</sup> Shahr Rajab-ul-Murajjab, 50 JUlus. In this document it has been stated that syed Ali Ahmad had been exempted from all the taxes, that the markets then in existence at halifabagh were allowed to continue.<sup>45</sup>

The other important market places north of Kotwali & on the side of the Ganges were Sarai, Jogsar & Mansurganj. Being situated the backbone for the development of the town in the 17<sup>th</sup> 18<sup>th</sup> centuries. Sardi was an important link in the trade organization. It provided shelter to the travelers as well as traders. Besides, govt. officials also exerted profound influence on the local inhabitants through it. According to the local people there existed two Sara is in the town of Bhagalpur.<sup>46</sup> One Bhatyari Sare meant for the public, and the second exclusively reserved for the got. functionaries. Buchaman has given account of 86 families of Bhatiyaras of the Bhagalpur district who kept Sarae.<sup>47</sup> John Marshal, an European traveler who visited Bhagalpur in 1670 found that the sarai at Bhagalupur was dirty & dingy. Hence he had to spend the night in the courtyard of Sarai.

Sari also figures in the travel account of Buchanan who described it as an important market place which had some compact buildings.<sup>48</sup> Close to the sarat there is an old type construction now is a ruinous state.

In the vicinity of Sarai few other mohallas spring: Mansoorganj & Jogsar. The former was a grainmarket where many Golahs we established.

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<sup>45</sup> RRSC (1962-63), p.43.

<sup>46</sup> Information procured through interviewing several old families of the Bghagalpur town; Jharkhandi Jha, op. cit., p.65.

<sup>47</sup> M. Martin, op.cit., p.112.

<sup>48</sup> M. Martin, op.cit, p.27.



It has an easily navigable route through the Ganges for trade & close to it Golahghat flourished as water highway junction. Golah ghat monitored other local ghats of the town e.g. Bibignaj Ghat, Bararighat, and commented several important cities of Bihar & Bengal. This place has also been describable by Buchanan.<sup>49</sup> During the eighties of the 18<sup>th</sup> Century the collector of Bhaglpur, Cleveland opened several shops close to Mansoorganj soon there emerged a shopping centre, known as Nayabazar.<sup>50</sup>

Yogsar, which literally means a place of living of the yogas (saints), also formed an integrated marketing pocket in the above locality. It has remained a dwelling place for both the Hindus & the Sikhs. Birdnanth Mandir in this Mohalla is considered to be centuries old temple where shiva is worshipped. It was constructed by a zaminadar of Munger Shahkarpur named Rai-Bahadur Lakshami singh, the Mughal general, who gave extensive land grants for the maintenance of the temple.<sup>51</sup> Close to these temples there are two sangats, one Bari & the other Chhoti. It has been centrally established that several Sikh Gurus including Teg Bhadur in course of their missionary march visited the town of Bhagalpur where they gave.

Medieval mohalla also exists in this area known as Mandaroja, which according to the municipality records of Bhagalpur is named after Shah Madar Rouza. The Bengal list of antiquarian remains published in 1896 A.D. says that the buildings located here were two hundred years old.<sup>52</sup> A prominent garden known as Rani-Bibi

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<sup>49</sup> Ibid. p.27.

<sup>50</sup> J. Jha, op.cit., p.65.

<sup>51</sup> Ibid. p.94.

<sup>52</sup> D.R. Patil, op. cit, p.19.



bagh was also located here. An old inscription dated 850 A.H. (1446 A.D.) was found in this Mohalla.<sup>53</sup>

Further south of the above Mohalla stood. Tatarpur which is probably named after tatar khan who was probably a local official during emperor Akbar's reign. Some also believe that the place was associated with the Mughal army since the Mughal were also know as 'Tatars'. Half of the area constituted as jagir of Pir Damaria Baba.

An important pent of the township flourished to the south of Kotwali, now constituting the area south of the railway line. At the centre of this stod Maulana Chak (just south of the railway station) which gained prominence of account of the Patronage given by Maulana Shahber, a contemporary of emperor Jahangir.

Even Prine Khurram it said period visit to this place & got blessings from the holy saint. Shabaz died in the year 1050 A.H.(1640 A.D.)<sup>54</sup>. After his death the place came to be known as Mulla Chak or Maulana Chak as mark of respect to the departed spiritual guide. He was lowied in this area where a tomb was erected. Buchanan has given description of the tomb which according to him was claose to the Thana, it was considered to be as most holy place of worship by the Muslims. It was erected on a brick movement with four minarets. It was by no means remarkable either for size or elegance. But Buchanan is of his view that daily offerings were made by the people of the vicinity and many stranger frequently visited the mazar in the monthly from Sep to Oct. A fakir was in charge of the emolument, who was called Mozouwar.<sup>55</sup> Even after the demise of founder, the place continued to be in lime light during the great Mughals & the later Mughals. This place further gained in importance when Prince Shah Shuja in 1063 A.D. gave 519 bighas of land to the family of Maulana Shahbaz. Out of this 19

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<sup>53</sup> Q. Ahmad, op.cit, p.93.

<sup>54</sup> Ibid. p.185.

<sup>55</sup> M. Martin, op.cit., p.28.(28)



bighas were allotted in Maulana Chak for the erection of the Madarsa buildings mosuq and a residence. 500 bighas of land were given to rent free for the maintenance of the poor and the relief of the travelers and the construction of wells, and assistance to the students.<sup>56</sup> Emperor Aurangzeb gave as many as 16 land grants. The later Mughals Monarchs, such as Farukhsiyar, Muhammad Shah, Alamgir II, and Ahmad Shah continued to increase the grants for the maintenance of the Shahbazia family as well as for meeting other expenses in connection with humanitarian works.<sup>57</sup> During the reign of the Emperor Faruksiya a new mosque was added in educational complex which was constructed in the year 1714<sup>58</sup> A.D. Jabbar Saheb, the successor of Maulana Shahbaz gave his name to one of the mohalla in the vicinity now located near the new railway station.

South of the existing railway over-bridge there are some mohallas which gained, prominence during the Mughal rule. Most of them are located on lands given in the Jagir to Pir Damaria family. Hussainpur as a mauza was granted to Syed Muhammad Pir Damaria in as rent free land. After securing the royal sanad he shifted his residence from Sultanpur (a sub-urb on the southern outskirts of the town) and came to settle in Hussainpur.

Habibpur was also attached to the Pir Damaria family during the Mughal age. It is located east of Shahjungi and a mile south of the railway station. Habibpur was probably named after a member of the aforesaid family named Syed Nizamuddin alia Syed Habibullah, son of Ali Muhammad. Habibpur has been referred to in an 18<sup>th</sup> century document bearing the seal of Nawab Siraju-d-Dowla.<sup>59</sup>

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<sup>56</sup> BDCR, Vol. III, 1783, p. 186.

<sup>57</sup> Ibid, p. 186.

<sup>58</sup> P.C. Roy Choudhary, Bihar District Gazetteer Bhagalpur, p. 154.

<sup>59</sup> RRRSC (1962-63), p. 51.



Close to the railway overbridge is located an old mohalla, called Mujahidpur. It is believed that Mojahid was a local official in the reign of Akbar. But there are several Mughal documents which refer to the name Mojahidpur. The 1<sup>st</sup> is a true copy of the sanad under the seal of Prince Shah Shuja, which records that in accordance with Emperor Farman and previous sanadas 1000 bighas of land as madad-a-mass has been settled with Syed Mir in Mauza Mojahidpur, who was incharge of the Khanqah. It is dated 25<sup>th</sup> Rajjab-ul-Murajjab 1055 A.H. (1645 A.D.)<sup>60</sup> A patta of Emperor Alamgir dated 29<sup>th</sup> Sehr Rajab, 1087 AH. 1084 Fasli (1677 A.D.) also mention mojahidpur. It is stated in this document that Syed Gazamnffer & Syed Mir had made a lease of land in Mojahidpur.<sup>61</sup> The last document is from 18<sup>th</sup> century which is a Tassihah bearing the seal of a Sadr, dated 5<sup>th</sup> Rabi-ul-Anwal, 29 Jalus, 1168 A.H. The document confirmed that the descendants of Syed Muhammad Mir of Pir Damaria family had to enjoy a rent free grant of 2000 Bighas of land in the past. In the aforesaid directive the officials of Pargana Bhagalpur were directed to restore 1000 bighas to the family and assign other land to one mosemmat chandau. On the back of this paper Mahahidpur had been referred to as a village.<sup>62</sup>

Sikandarpur is the neighbourhood of the above mohalla is also referred to in several Mughal records. In 1048 A.H. (1638 A.D.) the Emperor Shahjahan through a farman gave 50 bighas of land in Sikandarpur to Bibi Jiv wife of Syed Mir Kalan Damaria. The farman was subsequently burnt to ashes. And a Mohzamanah in support of this fact was certified by senior officials of pargana Bhagalpur. On the basis of the said Majharnamah, the then Emperor Aurangzeb through a parwana the previous grant of 50 Bighas in mauza Sikandarpur to Bibi Jiv as Madad-i-mash. It is

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<sup>60</sup> Ibid, pp. 50-51.

<sup>61</sup> RRRSC (1962-63), p. 54.

<sup>62</sup> Ibid, p. 47.



dated 25<sup>th</sup> Sahar Rajjab-ul-Murujjab, san 23 Julus, 1099 A.H., 1689 A.D.<sup>63</sup> A another parwana of Alamgir's reign repeated the same order. Even the later Mughal Emperor Farukh Siyar in accordance with the previous farmans further allowed the grantee to continue in the possession of the land. It is dated 4<sup>th</sup> Zillijja 13 Julus. 1126 A.H. (1719 A.D.).<sup>64</sup> During the middle of the 18<sup>th</sup> century, the Emperor Mohammad Shah further confirmed the previous grant in mauza Sikandarpur.<sup>65</sup>

An old mohalla in the vicinity of Mulla Chak in the town of Bhagalpur is still popularly called as Qazi Chak which was probably the seal of judicial functionaries during the 17<sup>th</sup> & 18<sup>th</sup> centuries. The judicial letters of the Bhagalpur district under East India Company have given details regarding the functions, mode of payments, and the salaries of the Qazis of the Bhagalpur town.<sup>66</sup> Buchanan has also admitted that Bhagalpur had been seat of many good Persian Scholars. Among them many people served as Qazis, associated with judicial administration. He met some of the Qazis personally who were Syeds & belonged to very respectable families. In some places of the district they sent their deputies who officiated for certain portion of their respective jurisdiction.<sup>67</sup> In the 17<sup>th</sup> century a mosque was constructed in Qazi Chak. In inscription affixed on the outer wall of the mosque seems to record the date of the commencement and completion of the mosque respectively. the year inscribed is 1095 A.H. (1683-84 A.D.). The second inscription dates the completion of another mosque in the year 1097 A.H. (1685-86 A.D.).<sup>68</sup>

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<sup>63</sup> RRRSC (1962-63), p. 52.

<sup>64</sup> Ibid, p. 53.

<sup>65</sup> Ibid, pp. 48-49.

<sup>66</sup> SJRBD, letter dated 9<sup>th</sup> Nov. 1792 from S. Davies, Magistrate of Bhagalpur to John Fombell, Registrar to the Nizamat Adalat.

<sup>67</sup> JFBB, p. 6.

<sup>68</sup> Q. Ahmad, op. cit., p. 284.





The town of Bhagalpur was further pushed to the east kotwali and Khalifabagh towards the bank of Ganges during the 17<sup>th</sup> and 18<sup>th</sup> centuries. The chief mohallas which emerged were Adampur, Khanjirpur, Mayaganj and Barari. Adampur is cited in a Mughal document Chaknamah<sup>69</sup> with the seal of Prince Shah Shuja in form of a rent-free land grant of 30 bighas 12 kathas to Mir Syed Ali for the construction of his residence, a madarsa and Hijra. The grant was made in 1066 A.H. (1656 A.D.). The land situated in mauza Adampur was given a fresh Chakbandi in the year 1068 A.H. (1658 A.D.). The pre

Khanjerpur is located close to the above mohalla which presently houses court, collector and commissioner's offices. The tomb of Khanjerbagh stands in this area. A more prominent monument of the 17<sup>th</sup> century located here is the tomb of Ibrahim Hussain Shah, which has been described in detail by Buchanan. According to him it was 150 years old, yet it was in excellent condition. He further adds "it is a square building, roofed by five neat domes, and is built in a style of plain neatness, so that the grace of its proportions is not as usual frittered away in an outward search after ornament".<sup>70</sup> Buchanan has also given an interesting episode regarding the construction of the tomb. According to him, "the nawab by whom it was built, cut off the hands of the architect. Last he should ever design a rival to this favorite work". He however was so impressed with that existing structure that he wrote "in a far better style than any Mohammadan structure I have seen in the three northern districts of Bengal."<sup>71</sup> He found the tomb in a remarkably fine situation. Prior to the visit of Buchanan, the building was repaired by a gentleman who resided adjacent to the

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<sup>69</sup> RRRSC (1962-63), p. 52.

<sup>70</sup> M. Martin, op. cit, p. 27.

<sup>71</sup> JFBB, p. 8.



structure and whose founder of the family was buried nearby.<sup>72</sup> Near the mausoleum, two old canous were found lying in which one had an old Bengali inscription dated Saka 1580 (1658 A.D.) citing its capture from the Mohammadans by the Assamese king Jayadhwaja Simha. It appears that in 1662 Emperor Aurangzeb's general Mir Jumla invaded Assam and brought back a number of canons of which this was one was left in Bhagalpur.<sup>73</sup>

A little east from Kotwali, there is a place of most remarkable antiquity called Mayaganj. The site had attracted attention of several European travelers. Buchanan was the first among them who inspected this place & gave various relating to the popularity of the whole area including a mysterious cave attached to this. Buchanan on the basis of information procured from local pundits reports that the cave was the abode of Kashyap Muni, the son of Kashyap who was made by Brahma at the creation of man. The peasants of that area conveyed him that once a saint who lived about 150 or 200 years ago, that is in 16<sup>th</sup> and 17<sup>th</sup> centuries made it this residence. There is yet another tradition related to the historicity of this place. Thus, in nutshell, looking at the both aspects, i.e. the growth of economic activities and mushrooming of marketing centers. We can vehemently provoke the thought that the Mughals proved a boon, and through their generosity this regional area gradually developed into a prominent urban center.

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<sup>72</sup> Ibid, p. 8.

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## Siliguri in the Era of Globalisation

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### Abstract

*Siliguri, the gateway to North-East India, is not only of vital importance to the state of West Bengal but to India as a whole. It is signified by four T's – tea, timber, tourism and transport in north Bengal. Its hinterland consists of North Bengal, Sikkim, Bhutan, Nepal and Assam. It is one of the most rapidly developing metropolises of the state. Situated in Darjeeling district, it is the district's largest city; however, the district headquarters is located at Darjeeling. Siliguri is a unique city as 15 out of the 47 wards of Siliguri Municipal Corporation (SMC) fall in the neighboring Jalpaiguri district. The southern part of the district forms a part of SMC. This paper looks in the changes that Siliguri experienced after Globalisation.*

**Keywords:** *tea, markets, warehouse, facilities, municipality.*

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Settlements in Siliguri started with the setting up of tea plantations, and a junction station (in July 1881) for passengers to board the famous toy train bound for Darjeeling. In 1878, Mr. Franklin Prestage (an agent of the Eastern Bengal Railway Company) first proposed the laying of a train line from Siliguri to Darjeeling to the Government of Bengal with a detailed scheme. Sir Ashley Eden, the Lieutenant-Governor, appointed a committee to examine the project. This committee found the project to be feasible and reported it would be of great advantage to the government and public; the same was accepted in 1879.

Construction started that very year and by 1880, the railway line had reached Tindharia. Later that year, the line was completed till Kurseong. By July 1881, it was opened for traffic right through to Darjeeling. The name given to the railway line was "Darjeeling Himalayan Railway Company."



A hundred years ago, in 1907, it was declared a sub-division (Mahakuma) in Darjeeling by the British administration. The land measurement of the area started in 1891. It was a small village at that time.

Siliguri really grew after India's Independence. First, thousands of refugees poured in from East Pakistan after Partition, followed by refugees from Assam in the 1960s who lost their home in anti-Bengali riots there. During this period, there were several wars in which Siliguri took centre stage – the 1962 Indo-China war, the 1965 Indo-Pak war and ultimately the 1971 war with Pakistan culminating in the creation of Bangladesh. Each event triggered major inflow of refugees to the town.

Siliguri was initially covered with deep forests and inhabited by tigers, leopards, elephants, and a variety of deer, reptiles and birds. The names of places like Bagdogra and Hatighisha in the region testify to the same. Siliguri is spread over two districts in West Bengal, viz., Darjeeling and Jalpaiguri. Naxalbari, Jalpaiguri, Rajgunje, and Malbajar are some important towns near Siliguri. Siliguri is the headquarters of the plains sub-division of Darjeeling district of West Bengal and is situated 392 feet above mean sea level in the foothills of the Himalayas on the banks of the river Mahananda. It is located in the Siliguri Corridor, a narrow strip of land linking mainland India to its north-eastern states. (Refer to Figure 8.) The city is popularly known as the gateway or the chicken neck of north-east India because its corridor establishes a connection between the rest of India and the north-eastern states.

Siliguri connects three international borders (Bangladesh, China, and Nepal). It also connects hill stations such as Gangtok, Darjeeling, Kalimpong, Kurseong and Mirik and the northeast states with the rest of India. Moreover, as a gateway to the wonderful sights of the Himalayan peaks and ranges in Darjeeling, Siliguri offers important tourist activities that



stimulate the economy of the town. During the initial period of its growth, people also flowed in from the hinterland states of Bihar, Uttar Pradesh and Assam; with the passing of time, Siliguri town acquired a cosmopolitan character.

### **Economic linkages:**

There was also a major influx of business communicates from other parts of India such as Bihar and Rajasthan, people who came to Siliguri to foster business opportunities latent in the town and eventually gave it a cosmopolitan character. The place was also a major hub for trading in jute. Jute was purchased here and stored in godowns before being sent to Kolkata's jute factories.

Siliguri Municipality was established in 1949 and housed in a wooden construction on Hill Cart Road. The first chairman of the municipal corporation was the then sub-divisional officer (SDO) Sri. Sachindra Mohan Guha. On 18th October 1952, the then Governor of Bengal, Sri.Harendrakumar Mukhopadhaya, laid the foundation stone of Gour Bhawan, the municipality's present office. On 26th January 1960, the building was inaugurated by Sri.Bireswar Majumdar.

Till 1994, Siliguri Municipality had 30 wards under it. After the declaration of Siliguri Municipal Corporation in 1994, 17 new wards were added to its jurisdiction. The total area is 41.9 sq. km. The Siliguri Municipal Corporation caters to two districts – Darjeeling and Jalpaiguri; 14 out of 47 wards of the Siliguri Municipal Corporation fall in the neighbouring Jalpaiguri district. Siliguri City is situated in the Siliguri Jalpaiguri Planning Area (SJPA) and the responsibility for planning and development of the city lies with the Siliguri Jalpaiguri Development Authority (SJPA). The land area under the jurisdiction of the Siliguri Jalpaiguri Planning Area (SJPA) is 1,266.64 sq. km. after the recent inclusion of a portion of Phansidewa.



Six police stations, viz., Siliguri, Matigara, Naxalbari, Jalpaiguri, Bhaktinagar and Rajganj come under SJPA. The area has been divided into five community development blocks, namely – Matigara, Naxalbari and Phansidewa in Darjeeling district and Jalpaiguri and Rajganj in Jalpaiguri District. The Siliguri Agglomeration Area consists of Siliguri Municipal Corporation and four census towns – Kalkut, Dabgram, Binnaguri and Chakiabhita. Figure 9 shows the administrative boundaries of the region. Siliguri is located at 26.71°N and 88.43°E in the foothills of Himalayas. Siliguri can be reached overnight by both road and train from the state capital Kolkata. It is connected to Kolkata by NH-31 and to the other cities of West Bengal, Assam and Bihar by road. From Siliguri, the villages and towns in the Himalayas can be reached by road using private vehicles like jeeps and SUVs. Siliguri is also rail-linked via the New Jalpaiguri Station and air-linked via Bagdogra Airport to Kolkata, Delhi, Mumbai, Bangkok, and Thimphu/Paru.

### **Roads:**

The Tenzing Norgay Central Bus Terminus situated next to the North Bengal State Transport Corporation (NBSTC) bus stop is a major stop for most private and state-owned buses in the region. The Royal Government of Bhutan also operates buses from Siliguri to its border town Phuentsholing.

Air-conditioned sleeper coach bus service is available from Siliguri to Kolkata, Patna and Assam. Jeeps also link Siliguri to the neighboring hill towns of Darjeeling, Gangtok, Kurseong, Kalimpong, Mirik, Jorethang, Namchi, etc.

The Sikkim Government buses reach various destinations of Sikkim from the Sikkim Nationalized Transport (SNT) bus station near the Tenzing Norgay Bus Terminus. There is another bus terminus named P.C. Mittal Bus Stand at Sevoke Road. All buses heading for the



Terai and Dooars region start from here. Siliguri lies on Asian Highway 2. Figure 10 shows the road connectivity of Siliguri.

### **Railways:**

Siliguri has three railway stations:

Siliguri Town – The oldest station in Siliguri opened on 23 August 1880 during the British Raj. This station served as the terminus for trains coming from Kolkata and the starting point for the world-famous Darjeeling Himalayan Railway, built to transport passengers to Darjeeling. This station has historical value; many famous visitors to Darjeeling accessed North Bengal via this route. This station is situated in the heart of the city. Since it generates almost no traffic today, a need to shift this station and lines, to free valuable land is felt, but the feasibility of the proposal is being debated.

Siliguri Junction – This station was opened in 1949 and used to be the point of departure of all trains to the north-eastern states, until the broad gauge was extended to New Bongaigaon. Siliguri Junction is the only station in India with tracks of all three gauges (broad, meter and narrow) used in India.

New Jalpaiguri, Siliguri Station or commonly called NJP – This station was opened in 1964 as a greenfield project, 2.5 km south of Hasmi Chowk. Initially named New Siliguri (but later renamed New Jalpaiguri as it is located in Jalpaiguri District), this is now the most important station in the region. This station connects Siliguri to most stations in India by railway. The Darjeeling Himalayan toy train is the main attraction of this station. It is the largest railway station in the entire north-east with a wide parking area.

There are a few more railway stations in the urban agglomeration:





Bagdogra, Siliguri – With the extension of the broad-gauge railway track to Siliguri Junction Station, people can now travel directly to the heart of the city without having to alight at New Jalpaiguri. This new broad-gauge track extends to the old Dooars metre-gauge track up to Alipurduar and beyond.

Naxalbari, Siliguri – It is situated at further western part of greater Siliguri city, in the heart of Naxalbari. The railway station has strategic importance as it facilitates not only the people of Naxalbari and Panitanki to connect with other parts of the country but also enables the people of Nepal (of places like Kakarvita, Dhulabari, and Bittamore) to utilize the railway station as a means of communication with the rest of India. The station is to be revved up with a computerized railway ticket reservation center soon. The new broad gauge track that passes from Siliguri Junction to Aluabari Road (Islampur, Uttar Dinajpur) through Bagdora, Naxalbari, and Thakurganj (Bihar) provides an impetus to travel and trade in this part of the country.

#### **Airways:**

Bagdogra International Airport, Siliguri, situated about 15 km from the city, is the only airport in the region. The airport is connected to Bengaluru, Chandigarh, New Delhi, Kolkata, Guwahati, Mumbai, Chennai, Bangkok (Thailand) and Paro (Bhutan). Bagdogra airport is a customs/army airport.

#### **Population and urbanization post Liberalisation:**

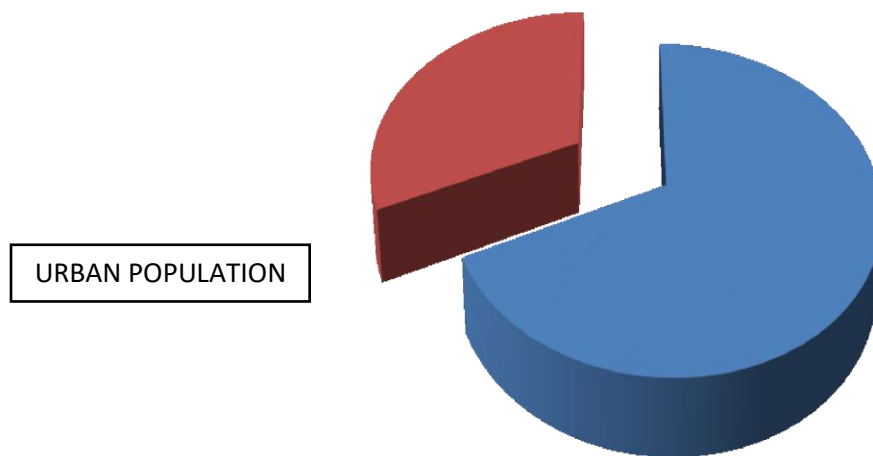
As per details from Census 2011, West Bengal has a population of 9.13 crores, which marks an increase from the figure of 8.02 crores in 2001 census. The total population of West Bengal as per the 2011 Census is 91,276,115 of which males and females number 46,809,027 and 44,467,088 respectively. In 2001, the total population was 80,176,197 among which males



were 41,465,985 and females 38,710,212. The total population growth in this decade was 13.84 percent while in the previous decade it was 17.84 percent. The population of West Bengal formed 7.54 percent of India in 2011. In 2001, the figure was 7.79 percent.

Of the total population of West Bengal, around 31.87 percent live in urban areas. In actual numbers, males and females were 1,49,64,082 and 1,41,28,920 respectively. The total population of the urban areas of West Bengal state was 2,90,93,002. The population growth rate recorded for this decade (2001-2011) was 29.72% in the urban areas.

### Rural-Urban Population in West Bengal, 2011



Source: *Source: Census of India, 2011*

West Bengal has 31.87% of its population living in urban areas. These urban areas are spread across 19 districts of the state. Siliguri city falls in the Darjeeling as well as in the Jalpaiguri districts. Siliguri Municipal Corporation has 47 wards; of these, 33 wards fall under the Darjeeling District and 14 wards under the Jalpaiguri District.



Darjeeling district is the northernmost district of the state of West Bengal in eastern India, located in the foothills of the Himalayas. The district is famous for its beautiful hills and Darjeeling tea. Darjeeling is the district headquarters. Kalimpong, Kurseong and Siliguri, three other major towns in the district, are the sub-divisional headquarters of the district. Mirik, another town of the district, has been developed as a lake resort since the late 1970s. Geographically, the district can be divided into two broad divisions, the hills and the plains. As of 2011, it is the second-least populous district of West Bengal (out of 19), after Dakshin Dinajpur. According to the 2011 Census, Darjeeling district has a population of 1,842,034. This gives it a ranking of 257th in India (out of a total of 640). The district has a population density of 585 inhabitants per square kilometer (1,520 /sq. m). Its population growth rate over the decade 2001-2011 was 14.47%. Darjeeling has a sex ratio of 971 females for every 1000 males, and a literacy rate of 79.92%. Darjeeling has 2.5% of its population living in urban areas.

Darjeeling district has 2.02% of total West Bengal's population. It is the second-least populated district of the state after Dakshin Dinajpur which has a population of 16.76 lakh and which constitutes 1.84% of the total population of the West Bengal state. North Twenty-Four Parganas and South Twenty-Four Parganas are the most populated districts of the state.

The urban population of the Darjeeling district is 7.27 lakhs which is 39.41% of the total population of the district and 2.5% of the total urban population of the state.

The district comprises four subdivisions: Darjeeling Sadar, Kalimpong, Kurseong and Siliguri. Darjeeling is the district headquarters. There are 17 police stations, 12 community development blocks, 4 municipalities, one Municipal Corporation and 134 gram panchayats in this district. Darjeeling and Kalimpong contain one municipality each and Kurseong has two. Siliguri has a



municipal corporation instead. In all, there are 9 urban units, 4 municipalities, 1 municipal corporation and 4 census towns.

In the Siliguri sub-division, there are the:

Siliguri Municipal Corporation (Area under Darjeeling District)

- a. Matigara (Community Development Block) consists of rural areas within 5 Gram Panchayats and one Census town: Bairatisal
- b. Naxalbari (Community Development Block) consists of rural area within 6 Gram Panchayats and one Census town: Uttar Bagdogra.
- c. Phansidewa (Community Development Block) consists of rural area within 7 gram panchayats.
- d. Kharibari (Community Development Block) consists of rural areas within 4 gram panchayats.

The Jalpaiguri District district situated in the northern part of West Bengal has international borders with Bhutan and Bangladesh in the north and south respectively and borders with Assam and Darjeeling hills in the east, west and northwest. The entire topography is crisscrossed with rivulets, rivers and hills. The district is primarily rural with more than 80% rural population. It has also a high percentage of SC/ST population. A relatively sizeable population resides in the tea gardens and forest villages which are isolated and mostly inaccessible. The district is the gateway to the entire north-eastern states and Bhutan and has a high percentage of migrated population of different cultural groups.



As of 2011, it is the 12th most populous district of West Bengal (out of 19), after Maldah. According to Census 2011, Jalpaiguri district has a population of 38,72,846. This gives it a ranking of 66th in India (out of a total of 640). The district has a population density of 622 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 13.87%. Darjeeling has a sex ratio of 953 females for every 1000 males, and a literacy rate of 79.95%. Jalpaiguri has 27.37% urban population from the total population of the district. Jalpaiguri district has 4.24% of total West Bengal's population. It is the 12th most populated district of the state after Maldah which has a population of 39.88 lakh, which is 4.37% of the total population of the West Bengal state. North Twenty-Four Parganas and South Twenty-Four Parganas are the most populated districts of the state.

The urban population of Darjeeling district is 38.72 lakhs which is 27.37% of the total population of the district and 3.64% of the total urban population of the state

### **Siliguri city**

Siliguri is one of the urban centre's and a fast-growing cities. According to Census 2011, the city had a population of 5.13 lakhs. Out of 47 wards, Siliguri has 14 wards in Jalpaiguri district and the remaining 33 wards in the Darjeeling district. The SMC population which falls in the Darjeeling district accounted for 0.32% of the total state's population and SMC population which falls in the Jalpaiguri district accounted for 0.24% of the total state's population. SMC population which falls in the Darjeeling district, accounts for 15.93% of the total Darjeeling population and SMC population which falls in the Jalpaiguri district accounts for 5.53% of total Jalpaiguri's population. SMC's population accounts for 1.01% of the urban population of the state in Darjeeling district and 0.75% of the urban population in Jalpaiguri district.

### Population Growth Trend post Liberisation:

Siliguri was a tiny village of less than 800 population in 1901 and received its recognition as a municipal town with a population of 32,480 with an area of 15.54 sq.km in 1951. The original town was the areas known as Hakim Para near the Siliguri town railway station; it started expanding towards north and north east towards Ashram Para. The town showed its vital potentiality as it grew as a centre port for the trade between India, Sikkim, Bhutan, Nepal and Tibet. Assam rail link in 1950's made this town a gateway to North-East India. The NH-31 and other road networks ushered a new era in the transport horizon in the entire North-East India.

Table 6.1: Showing Population growth trends of Siliguri from 1991 to 2011

Census Year	Population	Decadal Change	Decadal Growth Rate	Area sq.km
1991	216,950	63,125	41.04%	15.4
2001	472,374	255,424	117.73%	41.9
2011	513,264	40,890	8.66%	41.9

*Source: Siliguri Draft Development Plan (2008), Census-2011*

The growth of the town received momentum just after independence of India with immigrants from Nepal, Southern Bhutan and adjacent Indian states apart from eastern Bengal. There was also major influx of business communities from other parts of the country. After 1981, some important State Government offices have been established in Siliguri. The sudden increase in population in 2001 is attributed to the formation of Siliguri Municipal Corporation in



1994 and addition of 17 wards within the corporation limits. This is due to intra city migration from core city to peripheral areas. During the last decade (2001-11) the town recorded a net population increase of forty one thousand persons.

Population density has grown from 6,331 persons per sq. km in 1971 to 14,088 persons per sq. km in 1991. In the subsequent decade, population density has decreased to 11,274 persons per sq.km. This was due to expansion of SMC's limits to 41.9 sq. km and furthers the city's elevation to the level of a corporation. As per URDPFI guidelines, medium size cities densities may vary between 100 and 150 persons per hectare. As per census 2011, Siliguri city having around 106 persons/ha, this shows the scope for further densification in the city.

Siliguri has witnessed a constant increase in the total number of household during the past four decades. In 1991, Siliguri had 0.42 Lakh households which increased to 0.98 Lakh household in 2001. During 2001-2011 Siliguri saw an increase in 0.18 lakh households and at present there are 1.16 lakh household in Siliguri. The huge leap in the number of household is primarily due to the increased Municipal Wards in the Siliguri municipal corporation limits.

Household size in SMC is 1.16 lakh as per 2011 census which is almost 0.58% the state figure of 200.67 lakh.

The average household size during the year 1991 was 5.08. During the year 2001 an increase in the household size was noticed. The average household size in 2001 was 4.81 which reduced to 4.43 in 2011 as indicated in the table below

Table 6.2: Showing Number of Household and Average Household size from 1991 to 2011



Number of Household and Average Household size Year	Number of Households in Siliguri (Lakhs)	Average Household Size in Siliguri
1991	0.42	5.08
2001	0.98	4.81
2011	1.15	4.43

Source: Census of India

### **Economic profile of the city post liberisation:**

Siliguri is the commercial hub for the entire North Bengal, North-Eastern States and some parts of Bihar. The market of Siliguri caters to a large hinterland of Dooars, Darjeeling, the entire state of Sikkim, parts of the Kingdom of Bhutan as well as parts of North-East India. It is the point of location from where the cargo must be transferred from one carrier to another. Naturally trading has become one of the traditional mainstays of business in Siliguri. Apart from trading, the three T's that is, Tea, Tourism and Timber have accounted for major economic produce.

In 2011, Siliguri witnessed an economic boom in the organized retail, hospitality and real estate industries due to population growth and its strategic geographical location. Siliguri is a rapidly developing metropolis in the Indian state of West Bengal. It is the largest city of North Bengal, the second-largest city of West Bengal and connects hill stations like Gangtok, Kalimpong, Kurseong, Mirik and Darjeeling with the rest of India. Siliguri has a large number of trade centres and readymade markets for consumer goods and is thus home to myriad retailers, wholesalers, dealers, distributors and small-scale entrepreneurs. It is the commercial nerve centre of North Bengal. The city's strategic location makes it a base for essential supplies to the north-east region. Siliguri has gradually developed as a profitable centre for a variety of businesses. As





a central hub, many national companies and organizations have set up their offices here. Siliguri is the headquarters of the Federation of Chamber of Commerce and Industry of North Bengal (FOCIN).

### Primary Sector

Agriculture production is not significant in the Siliguri Municipal Corporation area. However, the surrounding areas, especially the north and north-western parts of the city, host a few tea estates. The city mainly depends on its surrounding villages for vegetables and dairy activities.

#### Tea Industry

Siliguri has emerged as the third-most important centre of tea trade in the country. The setting up of the Siliguri Tea Auction Centre in 1976 for better marketing of local tea products, gave a major fillip to the tea industry. Both domestic and foreign sales from tea gardens situated in the North-Bengal districts and Assam are now routed through Siliguri. The tea auction centre has greatly reduced the travel time of tea growers of North Bengal to market the end product.

Table 6.3: Showing Tea auction sale at Siliguri Auction centre from 1984 to 2004

Tea auction sale at Siliguri Auction centre Year	1984	1887	1990	1993	1997	1999	2004
Tea leaf sale million kg	72.2	80.6	90.1	75.8	80.2	85.3	103.2

Source: Tea auction centre report, Siliguri, 2010

### Secondary sector

Siliguri region is fast emerging as the industrial capital of northern Bengal; small-scale industries dominate the scene. Within Siliguri, there are 3,725 units which currently employ



24,921 people and account for 15.76% of the total work force of the SMC area. The leading small-scale industry (SSI) categories in the region are engineering, chemicals, paper and tea. Six of the 26 tea processing units in SJDA are located in Siliguri municipality.

A chunk of 21 acres of industrial estate has been developed by West Bengal small scale industries development corporation (WBSSIDC) in 1981 at 2nd mile location (Sevoke road) in Siliguri. It has around 103 plots which are allocated for different industries. Siliguri Flour Mills Ltd. is one of the prime industries in this cluster.

Apart from that, the Darjeeling district is one of the largest tea producers in India. West Bengal produces 225,600 metric tonnes of tea 23.14% of the total tea produced in India and has around 307 tea estates.

#### Timber industry

Siliguri has tremendous potential for wood and timber-based industries, the region being rich in these natural resources. It has a number of West Bengal Forest Development Corporation Ltd. (WBFDC) joinery and carpentry units that supply high-quality furniture and joinery items to the public at competitive prices. Besides, sawn timber is sold to buyers and dealers in bulk from Government saw mills in Siliguri. WBFDC is responsible for selling sawn timber like sal, teak, dhupi and jarul at fixed prices to the public through its retail sales centres in West Bengal including in Siliguri.

#### Tertiary sector

Trade and commerce play a major role in the local economy of Siliguri city. A considerable number of small-scale and cottage industries (grill factory, atta mills and steel



furniture) are spread over the municipal area, predominantly in the wards of the Sevoke Road area and Burdwan Road.

The formal service sector also contributes significantly to the local economy within the municipal corporation. It encompasses academic institutes (schools, colleges and other academic institutions), automobile repair centres, banks and post offices, health institutions, hotels, retail outlets and trading centres which are located along transportation corridors like Burdwan Road, Sevoke Road, and other major local roads. These outlets of the service sector are served by local people. A great number of outsiders also come from various parts of the districts of Jalpaiguri, Maldah and Uttar Dinajpur. Employment details of the formal sector are summarised in the table below.

Table 6.4: Showing Commercial establishments (trade) in Siliguri

S.No.	Category type	Approximate Establishments	no.of
1	Fish, meat Poultry	384	
2	Fruits and vegetables	5,341	
3	Groceries and provisions	356	
4	Eating Places	4,314	
5	Pan and Cigarettes	3,500	
6	Textile and Clothing	2,500	
7	Medical	2,000	
8	Computer and Electronics	136	
9	Electrical	2,135	
10	Gifts, books, stationery	754	
11	Hardware, building materials	1,211	
12	Household merchandise	331	
13	Furniture and Interior	157	
14	Jewelry	953	
15	Optics and watches	478	
16	Footwear	1,231	
17	Recreation	17	
18	Transport	500	
19	Service Outlets	5,000	
20	Miscellaneous	150	
21	Hotels	533	



Total	<b>31,981</b>
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*Source: Socio-economic study, SJDA, 2008*

### **Information Technology:**

Siliguri is fast emerging as an information technology (IT) hub, an alternative destination for Kolkata, for info-tech companies. Siliguri already has good infrastructure and modern amenities for people who work in IT parks. Some major IT companies have already set up base in Siliguri and more will be heading there soon. The West Bengal Government has set up an IT park in Siliguri recently, to provide bigger opportunities to IT/ITES companies to start their businesses in Siliguri. However, the IT firms are located outside the municipal boundaries.

### **Malls:**

A few malls have come up in Siliguri in recent years, signalling growth of modern infrastructure facilities in the city. The national and international branded goods' shops in these malls facilitate trading and commerce. Some of the malls are:

Cosmos Mall, Sevoke Road, a large and up-scale mall

City Mall, Sevoke Road

Orbit Mall, Sevoke Road, includes an INOX movie theatre

City Center, Uttarayon

### **Tourism Industry:**

The tourism industry of Siliguri is also flourishing day by day. As part of the tourism infrastructure, a large number of hotels are being established to cope with the demand of tourists. Tourists are attracted by the great variety of flora and fauna of Siliguri, its beautiful landscapes, and the magnificent Himalayan range – Siliguri is fast becoming a preferred destination for domestic and international tourists. The tourists going to Sikkim also pass through Siliguri and



this is important component of the local economy. In the coming years tourism is expected to further contribute to Siliguri's development.

### Informal Sector:

Tourism industry of Siliguri is also flourishing. Tourists are attracted by the great variety of flora and fauna of Siliguri, its beautiful landscapes, and the magnificent Himalayan range – result, Siliguri is fast becoming a preferred destination for domestic and international tourists. As part of tourism infrastructure, a large number of hotels are being established to cope with the demand of tourists. Several units of local self-help groups are engaged in making soft toys, envelopes, shola ornaments, bidis and other handicraft products. A list of various skills found in different zones of the municipality is furnished in the table below. All these indicate the importance of the various sectors that contribute to the local economic scenario.

Table 6.5: Showing Employment Details of Informal Sector in Siliguri

Employment Details of Informal Sector Sl. No.	Sector	Persons employed	Average Daily Income (Rs.)
1.	Rickshaw puller	10,000	150-200
2.	Van pullers	2,000	200-300
3.	Auto (Rickshaw) driver	651	200-300
4.	Taxi / Car driver	5,325	300-400
5.	Mason	15,000	150-200
6	Construction labour	30,000	100-150
7.	Hawkers	4,000	150-200
8.	Plumber	1,500	150-200

Source: Draft Development Plan 2008, SMC



### **Markets in Siliguri:**

Commercial establishments in the SMC area number 45,230; of these, 33% are registered and 67% unregistered and informal in nature. About 8% of the commercial establishments are wholesale shops. The important commercial centres in SMC are Bidhan market, Nivedita market, Khalpara and Mahabirstan market.

Most of the economic activities in Siliguri are found in the two streets of Sevoke Road and Hill Cart Road. Many traditional stores and hotels dot the former street while Sevoke Road flaunts sophisticated stores and most of the city's banks.

Positioned on the West Bengal and north-east border, Siliguri amalgamates the cultures of both places. The most preferred item in Siliguri is Darjeeling tea; the city is also well-known for its woollen garments, Tibetan paintings and wooden handicrafts that are sold a-plenty on Hill Cart Road and Sevoke Road. There is also another famous market for electronic goods, which goes by the name of Hong Kong Market. Most of the gadgets available are quite cheap and thus allure tourists. Well-known automobile companies are coming into Siliguri with various showrooms. Some of the showrooms belong to Mahindra & Mahindra, General Motors, Hyundai, Ford, JCB, Tata, Toyota Kirloskar, Honda Sael, and Maruti Suzuki. Two-wheeler brands such as Honda Scooters, Bajaj, TVS Suzuki, Yamaha, Kinetic, Hero Honda, and LML have also clinched their positions in Siliguri's economy

Bidhan market is in the heart of Siliguri city, bounded by Bidhan Road, Sevoke Road and Hill Cart Road. Daily market, New Market and the Hong Kong Market are located within the Bidhan Market area. The Hong Kong Market is popular with locals as well as tourists who visit



the city for cheap imported goods, usually from the Chinese market as well as from places like Nepal and Thailand. There are 550 shops in Hong Kong Market; these sell foreign goods like electronic items, cosmetics and clothes and employ as many as 1,500 persons. One peculiarity of the shops is that they have an average area of 2.0 sq.m.

Table 6.6: Showing Prominent Markets in Siliguri and Work flow

Prominent Markets in Siliguri and Work flow S.No.	Market Name	Major Goods/articles	Category of Vendors	Number of Vendors (Approx.)
1	Hong Kong Market	watches, cosmetics, electronic goods, eateries, food courts, materials for women, bags,etc.	Stationary	550
2	The Seth Srilal market,	Dress material for women, artwork, handcrafted products and bags, eateries, food courts	Stationary	400

*Source: Discussion with local vendors and SMC officials*

Hong Kong Market deals especially in imported goods which are brought usually from Chinese market as well as from places like Nepal, Thailand, etc. Seth Srilal Market is another busy shopping area in the centre of the city, which gives tourists good deals and has also gained a name for selling momos.



Other than important commercial establishments, the city region shows vibrant trading. Informal trade contributes greatly to the city's economy. Hence, one cannot overlook the importance of informal economy in the city. The migrant population living in slums is mainly engaged in the informal sector and comprise rickshaw-pullers, vendors, and daily wage labourers. There are also small-scale shops in the markets of the city which sell some timber and bamboo handicrafts.

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## Tribals in Jalpaiguri District: A Study of the Trends in Literacy Rate (1869-2011).

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### Abstract:

*The Jalpaiguri district was the last and newly formed area in respect of political context on behalf of British ruler in the map of Uttar bangya. Jalpaiguri district has formed in 1869 as the younger district of North Bengal. This district mainly composed by the people of tribal community. The basic foundation of human civilization is depending upon the educational system of that particular society. During that mentioned period education failed to burn light within this community. There are some reasons of the underdevelopment of the education among tribals of Jalpaiguri. Out of that need, they (the British Indian power) took the initiative to introduce education in India. Since independence from 1947, the govt. of India took special care in advancing the education of the tribal community. The 'BENGALISATION' (BANGIOKARAN), which has happened in southern portion of North Bengal, but not in northern section of North Bengal.*

**Keywords:** *Bengalisation, Community, Tribal, Bangiokaran, Globalization.*

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The Jalpaiguri district was the last and newly formed area in respect of political context on behalf of British ruler in the map of Uttar bangya. "Soon after its formation as a new district, Jalpaiguri was subjected to major structural changes comparable with few others. From a feudal and theocentric society, it entire in to an imperial system which subjected to various changes".<sup>1</sup> The people who have been known as the inhabitants of this Jalpaiguri district since its inception, are Koch, Mech, Rava, Garo, Toto and the ones we see from the colonial period are Santhal, Oraon, Munda etc. They are known as scheduled tribe. The development of any society depends on the progress of that society and this progress depends on the outline of education in that society. Now we are going to observe at the outline of educational status in the tribal society of Jalpaiguri district.

After the analization of geographical location, it can be seen that the North Bengal of geographical location, it can be seen that North Bengal is the junction of North –East India and Aryabartya. For this reason, the geographers say that the North Bengal is the gateway to North-East India.

Being the centre of this particular geographical location has brought various types of people from different parts of the Indian sub-continent to this region since the dawn of history. In respect of quantity, except for the Punjab region of India, foreigners did not come to any other region like North Bengal. The foreigners came here as a migrated people and



eventually remained as we can say turns into local inhabitant for a further time of period. This is the fundamental character of settlement in this region and this trend has been following since time immemorial.

Jalpaiguri district has formed in 1869 as the younger district of North Bengal. Now-a-days the Jalpaiguri district has reached its present form through various evolution. We have passed about 150 years, since the establishment of this district. During this long journey healthy constructive relation were formed with various fields including political, social literary and economic history always speaks about moving forward and look into ahead. Hence, normally we cannot avoid the part also. So it is natural to have a less comparative judgement of what the history of education was then and what it is today. It is impossible for any country to get its complete shape without proper education. The basic foundation of human civilization is depends upon the educational system of that particular society.

Our country – India is one of the ancient civilization of the world. It had its own education and initiation. Depending that particular unique features of civilization and education – it has created its own significant role. The basic foundation of human civilization of the ancient civilization of the world. It had its own education and initiation. With that ancient flow, a unique feature of money, education and culture has been created.

To review the outline of education of the Scheduled Tribes branch of Jalpaiguri, it can be divided into three parts,

1. Pre-colonial period of education in Tribal community,
2. Colonial period of education in Tribal community,
3. Post-colonial period of education in Tribal community

It is taken from the pre-colonial period; it can be said that there was no special light of education at that time. This community was mainly remaining busy in cultivation or farming. During that mentioned period education failed to burn light within this community. As they fond of 'Jhum Chas', so they were very accustomed to the nomadic way of life. One of the main reasons for the lack of education is economic weakness. There are also geographical means that this scheduled tribe is far away from the educational institution, this distance created a barrier to the period of education. In the calculation of totality on per head educational research, the tribal community is surely lacking behind with respect of the others. In respect of 1961's research whereas the percentage of the community is 36% the tribal's is



7%. “It is well known fact that literacy among the scheduled Tribes of west Bengal is extremely poor”.<sup>2</sup>

There are some reasons of the underdevelopment of the education among tribals of Jalpaiguri. “There are historical, economic, social, cultural, infrastructural and psychological reason responsible for the low achievement of the tribes in the field of education”.<sup>3</sup>

They are four types – 1. Geographical, 2. Social, 3. Economical, 4. Educational and mental problem.

The Tribals mainly live in the areas which are remote and far away from educational facilities and it is the main cause of hindrance of educational growth.

Economic problem is the chief reason and growth of education can be obstructed in two ways- i) the students leave schools early due to economic problems or tender aged pupils to works in many places for the reason of their livelihood.2) For caring the children at home, the tribal women often stay at home, as these are as prohibition of women based labour work culture. For this reason, men can go out of their houses for earning their livelihood.

The students often find no inspiration for education from the home as they themselves are far away from education. “The family support system for the education of the tribal children is too weak, the parents are not adequately educated to be able to help their children at studies.”<sup>4</sup>They also do not get proper help and sympathy in their schools, as it has been the situation known to everyone. “Arthonaitiksamoyasobhabotoiprodhansamosya. Hoi arthnoikkaronevidayalayatejogdansambhob hoi na, natubaalpoboisichelemeyeragramelibhinyokaj kore uparjon kore”.<sup>5</sup>(Financial problem is the main problem. Either for the lack of money they are not able to continue the school based education or the young aged boys and girls have been earning through different kind of activities in the village area). This type of help and sympathy are required especially for the first level of students. They do not find the educational curriculum attractive, as lessons are taught in different language and matters are of different society, culture and environment.

In other words, these Scheduled tribes did not receive much encouragement from their families for education, they were especially busy earning money from it to help their father or help with the housework on the field. That is why according to a 1951 research percentage, the literacy rate in the general community is 36% while in the scheduled tribes, it is 7%. It is well known fact that literacy among the scheduled tribes of west bengal is extremely poor



chapter. But during the colonial period, the whole picture of education in India and west bengal gradually began to change. Although the British came to India for purely economic purposes but later, when they got the administrative power, they needed a group of educated youth to run the country. Out of that need, they (I, e- the British Indian power) took the initiative to introduce education in India. The Macaulay's minute and Wood's dispatch is particularly significant in this context.

Through these two steps British Indian power introduced western or modern education in India. Christian missionaries took the initiative to spread this teaching to different ends.

It is pertinent to note that the expansion of education by the Christian missionaries for the scheduled caste community was not well observed in Jalpaiguri district during the colonial period. But the workers in the tea-garden have been influenced by this Christian missionary, and have converted. Thus religion is thought have been influenced by education.

Regarding spread of education in Colonial Bengal; Kolkata and its adjacent mofussil towns been prime centres for either literary or pedagogical activities. Birth of western educated middle class intelligentsia, formation of prime educational institutions etc took place only around Kolkata and obviously in these respect North Bengal lagged behind. Apart from the state patronage received by the literary circles in the Koch Behar state, nothing tangible could be seen in North Bengal in the colonial period.

The main moto of the colonial rulers to come Hindustan was to do business which ensure their profit margin as far as possible and hence to come on the administrative structure of their colonial govt. they need some so called educated people. These people become the office clerk or servant for the British Sahebs which Macaulay called the infiltration theory of education ensure or made its entry to India. It is relevant to mention here woods dispatch and Macaulay's minute are the important steps for the educational development in India. Thus the Indian society is effected by the modern educational system inaugurated by the British and it has reasons to get impact in the every is positive or negative in process that debatable matter in respect of clinical outlook. And with the so called Hindus the tribal communities in some area come forward in this line for securing their socio-economic ground. "Under usual circumstances, formal education practically boosts general awareness of the people".<sup>6</sup>

The progress of education in Jalpaiguri district during Colonial period was not satisfactory one or encouraging one. Alipurduar was one of the most prominent towns of Jalpaiguri. Let's see, the educational picture of Alipurduar. The scenario of Alipurduar was



same like other part of North Bengal. Little exception was Mac William lower Primary school, established on 19,08,1936 by sub- divisional officer, P.N. McWilliams and his wife. McWilliams studied that, “Before we moved to Mymansingh, my wife and I had a little school built not far from the courts and our bungalow. It was then a lower Primary school and bore our name<sup>3</sup> This school not only achieved affiliation of higher secondary school, but also got affiliation from Calcutta University. Another name was very famous related with this school was Nilkanta Mukherjee who was considered as the real architect of this school.

In the initial phase, Alipurduargirls school was started as a primary school. Later with the contribution of Mr. J.K. Biswas and his wife it was flourished. Prominent educationist of Alipurduar were, Jatindra Kumar Biswas, Bijay Chandra Roy, Sudhangshu Kumar Bhowmick etc.

Since pre-colonial period, Maynaguri was remain under the clutches of British period. Maynaguri has been described as a village “.....situated on the Jarda river, seven miles from Jalpaiguri; Maynaguri was the headquarter of the Tehsil of the same name. In 1895 Maynaguri Police station had one sub-inspector, one head- constables and eight constables”.<sup>7</sup>

The earlier picture of Maynaguri regarding development of education was not inspiring at all. “The name of the school of Maynaguri at first was Paul Whale. It was established in 1892 at Domhani. In 1895 Maynaguri middle school was established. Both Maynaguri High School and Maynaguri Girls’ High School were established in 1946.”<sup>8</sup>

This is the educational scenario is the time colonial period which is some quantity helps them to achieve the target not in complete form. In the colonial period through hands of missionaries the education spreads its branches to every place of Bengal. But it does not ensure the proper and overall development of the tribal’s. But after the independence of India, the newly formed government has taken so many steps to eradicate the imbalance condition in education in respect of race-clay and community.

Since independence from 1947, the govt. of India took special care in advancing the education of the tribal community. NCERT had been created in 1961 by Central Government. The foundation of NCERT was to formulate principals of educational advancement for both the central and state and advising them likewise the education commission created special status for the tribes ex-the creation of SIT and maintaining the limit of the age margin.



In 1986, the Prime Minister created new educational policy keeping in mind the condition of the Schedule tribes. The new policy of education paid focus on the following agendas –

- 1) Establishing of Primary schools for ST.
- 2) Selling up of AnganWaris in ST domination areas.
- 3) Establishing of Residential schools in tribe areas.

The educational policy prevalent in North policy prevent in North Bengal was following.

### **Centralized Policy:**

Education plays pivotal role in the matter of progress in social and economic stature there after the centre had formulated many steps like Ashrama wise educational institution – vocational training centre etc. Together with this many scholarships had also been started/processed like post metric scholarship – Rajib Gandhi fellowship and others.

The pro creation of feeder school to spread it education in the primary level, the feeder schools had been formed, it ranged from standard (I) to (V) class. They are mainly recognized to feed Lava's model residential school.

E. Models Residential school: the Eklabya School spread education among the ST's in the middle and higher level. Reservation in the sector of Central or State govts. Jobs and reservation in educational system were also created.

The post Matric Scholarship formulated form 1944-45. Their motive was to spread higher education through economical grants besides this Rajiv Gandhi fellowship project has helped the ST's in getting more facilities vocational training and book grants.

Before the independence there is an attempt to put aside the tribals from the main stream of Indian culture and traditions. At present this situation is created on behalf their protection from other upper classes, that thus they will not be extorted by the others. Now-a-days the main moto is holding their culture and tradition mainly with the large part of India.

The overall development of tribals is the main moto of taking the special developmental project for the tribals by the state. The projects are mainly divided into two categories –

- (i) One is community based,
- (ii) Another is area based.



It is meant that where the community is situated the project runs there and in larger society where the tribals became marginal there also these projects showed works in its own course. So it is granted that the advantages of the first project is available everywhere but the second one is area based or locality based. This various projects are mainly three types –

- (i) Financial agenda
- (ii) Educational agenda
- (iii) Health developmental agenda

*Sex-Wise Distribution of Literate and Illiterate Tribal Population  
District Wise of North Bengal, 2001*

District	Category	Literate		Illiterate	
		Male	Female	Male	Female
Darjeeling	Rural	364483	252990	192150	279117
	Urban	216937	173878	57074	72543
Jalpaiguri	Rural	84837	536470	592319	820665
	Urban	237738	191038	76251	101855
Cooch Behar	Rural	722947	491457	434294	604839
	Urban	93249	79312	21604	31453
Uttar Dinajpur	Rural	467358	248968	636866	794159
	Urban	116602	90549	38911	48381
DakshinDinajpur	Rural	388207	264439	281589	372089
	Urban	79089	67744	21450	28571
Maldah	Rural	709933	454824	855721	1089050
	Urban	91837	76110	31915	41078

(iv) (Source: Census of India, 2001, Primary Census Abstract, West Bengal)

<sup>7</sup>Among the ten communities of tribes 7 communities are in the advance position in the Jalpaiguri district of Uttar Bangya region. The census report of the 1971 observes that only 33.20% of the full population of west Bengal is literate and only 3.92% tribes among the community is literate. It is noticed after a close observation- that only Asur tribal communities has hold the above position or we can say the top most position in the field of education. Their's percentage 50.09% in respect of the whole according to the mentioned years census report. In respect of the total general population of literacy percentage is 22.42% of the females where the tribal female is holding near about 3.09 person. Only 8.92 is ST in respect of total population is literate.



The 1971's census report of the literacy clearly shows the literacy level with the interest of knowledge and aspiring knowledge with prominently not up to the mark in comparison with others parts of contemporary India and obviously the literacy level of the ST is poor in eventually than the total population of West Bengal. But the overall development and expansion of education of this land is not desirable for total upliftment of the all. The percentage is not in the balance condition in every area of the region. They need special care and sympathy and in some cases empathy also. It can be said on the basis of information that most of the areas of Duars are full of uneducated and semi-educated or under-educated people. They are taught different culture. The Schedule Tribe literacy percentage of Duars was 29.20 and among them 34.34% people could only do their signature. It can be said that the literacy rate is of moderate range in dooars.

Now we can focus on the graph of development of education the tribes in the district of Jalpaiguri by conducting some sample survey.

Malbazar, an area under the district of Jalpaiguri is largely or highly populated with the Tribals. The ST. Bartholomew School of this area had been established mainly for the Tribal based students. Besides the Pushpika Girls School has been established for the Tribals girls. Apart from these, in the Schools like Mal AdarshoVidyalaya, Subhasini Girls High School, Parimal Mitra SmiritiMahavidyalaya, the presences of the tribal students are high in proportion. Along with this Government reservation is observed in normal course.

Jaigaon, is another town under the district of Jalpaiguri, is infested with the Tribal population. The prominent Schools of this area are as follows: -

1. ST. Anthony Convent School,
2. S.H.M.D. School,
3. And alsoJaigaon College

All above mentioned schools and college are infested with huge number of Tribal students. This displays the growing tendency of educational mind-set of the tribal people of this area.

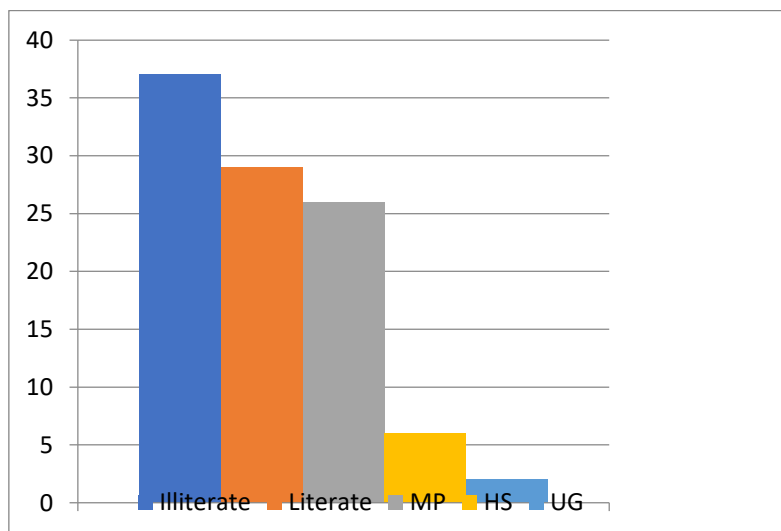
Birpara is another Tribal belt area of Jalpaiguri district. The scenarios of Birpara High School or Birpara College tell us that the Tribals have not been established with the Primary





education and they long for higher education also. They understood the need of Higher education and it is reflected in their daily life.

Educational Scenario of the Tribal Communities in Peripheral areas of Gorumara National Park



Source: Field Survey 2019

In this context, Alipurduar can be said to be the most tribal infested area of Jalpaiguri district of said period. Through survey among it comes to us that five blocks of Alipurduar (ex- Khoardanga, Santosh, Amarpur, Turturi and Newlands) are literate. Khoardanga, among five is an area of higher education. The four left out blocks, though not filled with but the presence of people with education of Madhyamick and below Madhyamick level are observed prominently.

Kolkata was centre of 19<sup>th</sup> century Bengal Renaissance. If we look at the higher education system of Jalpaiguri district, we could see the starting of Colleges began in 1942 at Jalpaiguri district with the establishment of Ananda Chandra college. So the year of 1942 can be said to be the turning point of education.

The Prassanadeb Women’s College had been established in 1950 and in 1956 it got UGC affiliation, i.e, 2f12b and also did receive affiliation from North Bengal University. Alipurduar College had been established in 1959 and in1962 we could see Ananda Chandra College of Commerce, in 1981 the Falakata College and SukantaMahavidalaya of Dhupguri had been established. In 1999 Maynaguri College was established.



All of these above mentioned institution are government aided and UGC recognized and under affiliation of North Bengal University. So all of these institution abide by the government rules which secure the seats for the tribals. Using all these quotas of reservation the tribals can now higher their graph of education.

The Banarhat Hindi College had been established lastly in the year 2014 as a recognition of the long standing demand of the Schedule Tribes.

In the matter of tribal education, the distance based learning had played a major role and the IGNOU played the pivotal role here. We may now know what is IGNOU?

The full name of IGNOU is Indira Gandhi National Open University which is central university. It was established in the year 1985. It had coined its name from our prime minister Indira Gandhi. The main purpose of the university was to offer distance based and free education to the Indians. From 10 plus to MA, IGNOU offers the total education to a learner. The learners could adopt their choice based subjects to educate themselves.

In the district of Jalpaiguri we could see the presence of IGNOU centre in the College of Maynaguri. Later in Malbazar, Jaigaon, Alipurduar had been the centre of ignou. In addition to that in, we could see the school based branch of in Binnaguri. All these stated places were tribal dominated. As sample list, we could discuss the learner's list of Maynaguri College as a data.

Learner list of Maynaguri College: - (2014)

Sl-No	name
01	Amit Lakra
02	Anu Baraily
03	Ashok Tamang
04	Balika Chhetri
05	Augustine Birijiya
06	Avinash Pradhan
07	Dipika Chhetry
08	George Ekka
09	Eden Thessring Lepcha
10	James Bhengra



On the basis of literacy progress of the tribal, North Bengal in to two parts, i) the tribals of the North side of North Bengal, ii) the tribals of southern side of north Bengal.

The northern tribals are mainly Hindi- speaking and therefore Hindi medium schools like Pushpika School, Banarhat College have been established in this area. Besides these school and colleges other school and colleges of Maynaguri, Dhupguri etc. are also filled with Hindi speaking so many tribal students. In the southern part of North Bengal, the tribals are well acquainted with Bengali language and Bengali speaking people. This mix up inspire them to learn Bengali language by which they can mix up with society normally. The tribals of the southern part of North Bengal started their education through Bengali language like the local inhabitants of that said area. In this way Bengali became their mother language. So those tribals are called “Bengali tribals”. Whereas the tribals of northern part of North Bengal are habituated with Hindi language. So, we can say that totally two different type of picture prevails regarding education, in the two part of North Bengal. Then could it say them galat the education of the Tribal society dependent on the local condition or local need? “Among the communities like Santhal, Munda, Rabha, Garo etc. used to producer good numbers of educated people”.<sup>9</sup>

The tribal society of the southern part of North Bengal was very much attached with the agricultural activity or in other words we can say that the tribals of this mentioned area were very much depended upon agriculture. Thus they get an opportunity to assimilate themselves with the Bengali community of that said area as they were the major community of the then southern part of North Bengal.

The question is that what is the nature of that relationship? At primary stage it is beyond level of understand but now-a-days it is comfortable in nature and healthy in figure. The language is somehow now-a-days synthesized The tribals of the southern section of North Bengal at the beginning phase of their education uses or adopts the Bengali language as their medium of education and gradually it becomes their mother tongue also. They are recognized by the scholars as the Bengali tribal of this land.

But the Lohars, Santhals, Oraons, Mundas etc. are communities are not using Bengali as their medium of education. This region means the northern part North Bengal was mainly populated by the different people who came here from different part of India by the Colonial Masters here, used Hindi as their medium of communication. So, the tribals who came from Santhal Paragana, Chotonagpur etc. as a tea labourer by the British administrator were also



grabbed this language as their medium of instruction. They mean the above mentioned tribal communities virtually adopt Hindi as their medium of education and that's why they continuously Hindi based curriculum and set up an education for them. Thus the Banarhat Hindi Government College is the output of their demand. In their educational system, there is neither effect of Bengali nor any initiative taken for them to learn Bengali language. One section of this tribal community was affirms their faith upon Christian ideology and another section was the worshipper of 'Nature'. We can't see any effort from the society head to 'BENGALISED', those mentioned tribal communities at the northern part of North Bengal where as in the southern part this process of Bengalisation had been taken place with the help of society head.

As a result, it can be said that the 'BENGALISATION' (BANGIOKARAN), which has happened in southern portion of North Bengal, but not in northern section of North bengal.

The tribals of Jalpaiguri district could take education from diverse educational institution apart from the government created mode of education for the tribals.

From the two years' data we could say their almost 40% to 50% of schedule tribes used this mode of learning as the way of higher education. Together with this we have NSOU (Netaji Subash Open University). Here the learners can achieve from under-graduate to post-graduate. The branches of NSOU can be seen in Jalpaiguri college of commerce, Maynaguri College, and SukantaMahavidyalaya.

Using these mediums, the tribals can now higher their educational graphs time and again, because they realized that, "No education no work." So it can be said that the spread of education in the post-independence period helped them achieving education that had brought changes in their lifestyle.

It is worth mentioning at the end of the review that the outline of the education of the scheduled tribes increased considerably from the pre-colonial period.

Today they are doing a good job by being educated in modern education or it can be said that the development of education has improved their work or also increased their efficiency.

Abandoning their mythical, thinking they are well established in society today on an equal footing with modernity and globalization. But the question remains is the development



of Scheduled Tribes in the field of education enough? Does the current situation point a picture of their development?

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## In Vitro Stable Regeneration of an Important Medicinal Herb *Bacopa monnieri* (L.) Pennell - A Way of Conservation

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### Abstract

*Loss of plant resources has made necessary development of ex situ conservation. In vitro regeneration is suitable alternative method for conservation to fulfill the demand of raw material. Bacopa monnieri (L.) Pennell (Scrophulariaceae), a medicinally important plant, used in treatment of many diseases. Bacoside A, one of the active principle, known as 'memory chemical', responsible for improving memory. Progressive increase in demand and unorganized harvesting lead the loss of Bacopa monnieri. In this study we reported an effective, easier, low cost reliable, rapid production of disease free system of cultures. The present study comprised of micropropagation, callus induction, organogenesis and somatic embryogenesis. Highest shoot bud multiplication and root induction were obtained in cytokinin 2 mg/l and IAA 1 mg/l respectively. Organogenic callus was obtained in BAP 5 mg/l using leaf explants followed by regeneration of plantlet in hormone free culture. Callus obtained in 2,4-D 1 mg/l using internode explant, was used for somatic embryo induction and MS basal media was the suitable for embryo maturation. MS media supplemented with Kn 0.2 mg/l was the best for somatic embryo to plantlets formation. The survival rate of the regenerates was 80%- 90%. In all experiment it was seen that the best results obtained when single hormone used than the combination of hormone used. The stability of the micropropagated plants were evaluated through chromosomal and biochemical analysis. Chromosomal analysis revealed that 2n= 64 chromosomes and number and type of chromosome, karyotype formula remained same in both in vivo and in vitro plants. Biochemical analysis also revealed their genetic stability.*

**Keywords:** *Bacopa monnieri, genetic stability, micropropagation, organogenesis, somatic embryogenesis*

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### Abbreviation:

2,4-D= 2,4-dichloro-phenoxyacetic acid; BAP= 6-Benzyl Amino Purine; IAA= Indole-3-Acetic Acid;  
Kn= Kinetin; MS= Murashige and Skoog.



### Introduction:

*Bacopa monnieri* (L.) Pennell (Scrophulariaceae), commonly known as 'Brahmi', 'water hyssop' and 'Indian pennywort' etc. The plant is commonly growing in damp and marshy places throughout India, Nepal, Sri Lanka, Taiwan, Vietnam, Florida, Hawaii, and other southern states of USA. The leaves are succulent, oblong to oblanceolate and are arranged oppositely on the stem. The flowers are small. It can grow in brackish conditions. Propagation is often achieved mainly through stem cuttings.

*Bacopa monnieri* has been used for centuries as a brain tonic, memory enhancer, revitaliser of sensory organs, anti-anxiety, cardio-tonic, diuretic, antidepressant and anticonvulsant agent (Sharma et al., 2010). The pharmacologically active constituents include alkaloids, saponins and steroids. The plant contains many alkaloids like brahmine, herpestine, saponins d-mannitol, hersaponin. The constituents responsible for its cognitive effects are bacoside A and bacoside B. It also used to treat asthma, insanity, epilepsy, hoarseness, enlargement of spleen, snake bite, rheumatism, leprosy, eczema and ring worm, as a diuretic, appetitive and cardio tonic (Basu and Walia, 1994). *B. monnieri* was placed second in a priority list of most important Indian medicinal plants on the basis of its medicinal importance, commercial value and potential for further research and development (Mohapatra and Rath, 2005; Sharma et al., 2007).

According to the National Medicinal Plants Board (NMPB) during the year 2004-2005, the annual demand of this plant is 6621.8 tons. This requirement is rising rapidly due to popularity of the *Bacopa* based drugs. (Rahman et al., 2002). Due to progressively increasing demand, more than 90% of plant species used by industry are collected from the wild source of which 70% involves unorganized harvesting, leading to extinction of the plant. It also needs immediate conservation and also to meet the growing demand of raw material of medicinal plants. Tissue culture techniques may be used as alternative way for propagation and the conservation of germplasm of this important medicinal plant in many countries. Most of the work has been carried on plant regeneration by adventitious organogenesis from shoot tip, leaf and other parts of the plant.

The objectives of our present study is regeneration of this important plant through tissue culture in short period of time with desirable traits and most importantly in a cost effective manner and to study the genetic stability, different marker based analysis like somatic chromosome study, quantitative and qualitative analysis of total protein content of



the plants are also carried out.

**Material:** Healthy, young and disease free plants of *Bacopa monnieri* (L.) Pennell were collected from the Medicinal Garden of Department of Botany, Lady Brabourne College, Kolkata. The plants were identified by the experts of CUH.

**Methods:**

### **Establishment of culture:**

#### **Surface sterilization**

The explants included apical or axillary bud, internodes and leaves. These explants were washed in Tween 20 solution for 15-20 minutes and finally explants were surface sterilized with 0.1% (W/V) aqueous solution of mercuric chloride for about 5 minutes and then washed with sterile distilled water.

#### **Culture media**

Media used for *in vitro* culture was Murashige and Skoog's (MS) (Murashige and Skoog, 1962) modified basal medium supplemented with 3% (w/v) sucrose and 0.25% (w/v) Gelrite®.

#### **Shoot bud multiplication**

For shoot bud multiplication BAP (1-4 mg/l), Kn (1-4 mg/l), 2-ip (1-4 mg/l), BAP+ Kn (1-4 mg/l) were used (pH 5.7).

#### **Root induction**

For root induction IAA, IBA, NAA were used in various concentrations (0.25- 2.0 mg/l) (pH 5.8).

#### **Acclimatization**

Well-developed plantlets were transferred to a conical flask containing a mixture of soilrite and soil (1:1). This mixture was suitable for hardening. The mouth of the conical flask was surrounded with a layer of parafilm, keeping the top of the mouth open. Liquid MS basal medium was added to the plantlet as a nutrient source through the opening of the conical flask for few days, and then the growth of the plants were recorded. Then the plants were transferred to the field.

#### **Culture conditions:**

Culture tubes were kept in the culture room at  $23\pm 2^{\circ}\text{C}$ , with a light intensity of  $48 \mu\text{mol m}^{-2}\text{s}^{-1}$  photosynthetic photon fluxes and a photoperiod of 16 hour light, 8 hour dark and 76% humidity.



**Induction of callus culture:**

For callus induction, MS basal medium supplemented with various concentrations of 2,4-D and BAP were taken (pH 5.8).

**Organogenesis:**

Shoot and root formation was observed when callus was transferred in MS basal media (pH 5.7) without any hormone.

**Somatic embryogenesis:**

For different stages of somatic embryo development and maturation, callus grown in 2,4-D 1 mg/l was transferred to MS basal media. Somatic embryo were then transferred to MS media supplemented with Kn 0.2 mg/l (pH 5.7)

**Statistical analysis:**

Each experiment comprised of 15 replicates and each experiment was repeated thrice. Mean as well as standard errors were calculated. The one-way analysis of variance (ANOVA) was carried out to detect the significance of differences among the treatment means. Dunn Kruskal-Wallis multiple comparison test was followed for analysing of different hormonal treatments used for shoot bud multiplication. Here, *p*-value was adjusted with the Benjamini-Hochberg method.

**Somatic chromosome analysis:**

For chromosome analysis roots were pretreated in a mixture of saturated aqueous solutions of *p*-dichlorobenzene (PDB) and 2.0 mM 8-hydroxyquinoline (1:1). Pretreatment was carried out at 18°C for 5 h, after an initial shock treatment at 0°C for 5 min. (Samanta et al, 2015). The root tips were then fixed in a mixture of propionic acid: absolute ethanol (1:3) for overnight. To remove dense cytoplasmic content, hydrolysis was carried out using 1N HCl for 12 min at 60°C. Root tips were stained in 2% propionic-orcein at room temperature for 3 h before squashing in 45% propionic acid (Samanta et al., 2016). The chromosomes were classified into different types based on their *i*-values (Levan et al., 1964). The total chromosome length was calculated by adding the whole lengths of all the chromosomes present in a complement. Chromosome volume was measured from the formula: chromosome volume ( $v$ ) =  $\pi r^2 h$  (Mukhopadhyay and Sharma, 1987).

### **Biochemical analysis:**

#### **Extraction of total protein**

2 g of fresh tissue was weighed, mixed with 1 ml of protein extraction buffer (PEB), [pH 6.8] and pulverized in a pre-chilled mortar and pestle (Samanta and Mukhopadhyay, 2018). The crushed material was taken in 1.5 ml Eppendorf tubes and centrifuged at 12,000 rpm for 20 minutes at 4°C in a cold centrifuge. The supernatant was collected and re-centrifuged again at 20,000 rpm for 10 minutes at 4°C. The supernatant was stored at -20°C for further analysis.

#### **Quantitative estimation of total protein**

The quantity of total protein was determined and expressed as milligram of protein per gram of fresh weight (mg/g FW). Extracted protein sample was mixed with Bradford reagent and incubated at 37°C for 10 minutes. Absorbance was measured by spectrophotometer at 595 nm (Bradford, 1976).

#### **Qualitative estimation of total protein**

Qualitative estimation of total protein was carried out following SDS-PAGE using 15% resolving gel (Sambrook and Russell, 2001). 50 µg of protein were mixed with equal amount of 1X SDS-gel loading buffer (SLB) and the gel was run at a constant voltage of 60V. After electrophoresis, the gel was immersed in staining solution for overnight and destained with the solution of 5:4:1 mixture of methanol, water and acetic acid. The image was taken under illuminator and analyzed in a computer with software Gel Analyzer. The electrophoregrams were evaluated based on band mobility and relative intensity.

### **Result:**

#### **Shoot bud multiplication**

Apical bud showed maximum multiplication frequency. Bud breaking was found after 11 days of culture initiation. The highest percentage of multiple shoot induction was 90% on the medium augmented with 2.0 mg l<sup>-1</sup> BAP. So, BAP 2 mg/l was the best hormone for *Bacopa monnieri* (L.) Pennell (Table 1) in respect to percentage of shoot bud formation and number of bud formation per explants (Fig. 1a).

#### **Rooting**

Shoots were transferred to rooting media. 1 mg/l IAA was the best hormone for *Bacopa monnieri* (L.) (Table 2). Pennell in respect to percentage of root formation (90%) and number of root formed per shoot (Fig 1a).

### **Acclimatization**

The success of acclimatization process was 80%- 90%.

### **Statistical analysis:**

Statistical analysis showed that the growth regulators differ significantly among themselves.

### **Organogenesis:**

Callus formation started after 10- 17 days of culture at the cut ends of the explants. Leaf was the best explants for organogenic callus formation and BAP 5 mg/l was optimum for organogenic callus formation. After 50 days of induction, vigorous growth of organogenic callus was obtained. Formation of plantlets was observed after 10-15 days of culture when leaf callus were transferred to MS basal media without any hormone. After 12 weeks, 60- 72 number of shoots were found to be regenerated from the inoculated callus. As, basal media was enough for regeneration of shoot and root from callus, no exogenous hormone was applied, so this protocol was cost effective (Fig. 1b- 1e).

### **Somatic embryogenesis:**

After 10 days of culture the first swelling response for callus was seen in 2,4-D 1mg/l followed by vigorous growth of callus. Internode was the most suitable explants for embryogenic callus formation (Fig. 1f). Higher concentration of 2,4-D (>2 mg/l) caused blackening of callus and when <5 mg/l 2,4-D used, no callus formation occurred. Different stages of somatic embryogenesis were produced when callus was subcultured in auxin free media. It is inferred that withdrawal of auxin hormone embryo maturation occurred due to polar auxin transport.

### **Somatic chromosome analysis:**

The somatic chromosome number was found to be  $2n= 64$  in both *in vivo* and *in vitro* root tips (Samanta et al, 2019). The chromosomes are mostly medium sized with graded karyotypes. Karyotype formula (KF) was expressed in numerically based on the type of chromosome and number of chromosomes in each type. Total chromosome length was 50.00  $\mu\text{m}$  in both the cases and total chromosome volume was remained same in both the cases

( $40.80 \mu\text{m}^3$ ). No changes were found in karyotype formula in *in vivo* and *in vitro* plants (Fig. 2), thus it can be concluded that the regenerates were stable at cytological level.

#### **Biochemical analysis:**

Quantitative analysis revealed noticeable variations. The *in vivo* leaf tissues showed a total protein content of 1.975 mg/g Fresh Weight, whereas the *in vitro* tissues showed a total protein content of 4.583 mg/g Fresh weight. Thus, the *in vitro* tissue showed 2.321 times more protein than *in vivo* tissue. Thus, it can be inferred that some morphogenic changes occurred due to differential gene expression during *in vitro* regeneration. Qualitative analysis showed that in *in vivo* tissue 15 bands were obtained whereas in *in vitro* tissue 16 bands were found (Fig. 3).

#### **Discussion:**

BAP 2.0 mg/l was the best medium for shoot bud multiplication. Shoot multiplication also depends on the initiation and activity of meristems which were hormonally controlled mainly by cytokinin. In case of rooting, MS basal media supplemented with 1.0 mg/l IAA showed 90% of root formation. In fact, there were also many reports showing the use of different combinations of IAA, IBA, & NAA for root induction and regeneration. Many studies related to the effects of auxins (IAA, NAA & 2,4-D) and cytokinins (BAP, Kn & TDZ) on shoot induction and IAA & TDZ on root induction was assessed by different authors. MS basal medium supplemented with 1 mg/l BAP + 0.4 mg/l Kn + 0.4 mg/l NAA showed best results for shoot formation by using nodal segment, stem, leaf as explants. In this combination, the shooting response was observed 100%. So different combinations and concentrations of plant growth regulators play the most important role in the clonal multiplication methods and also in achieving elite clones.

MS basal medium supplemented with 1mg/l 2,4-D plant growth regulator (PGR) showed highest frequency of embryogenic callus induction using internode as the explant and the callus were thick, compact and yellow in colour. MS basal media supplemented with 2 mg/l 2,4-D showed a comparatively lower frequency of embryogenic callus induction and the callus was yellowish-white. It was observed that higher concentration of 2,4-D (i.e. > 2mg/l) caused blackening of the callus. Proliferation of globular stage and successive stage development were found when the embryogenic callus was transferred to the MS Basal media excluding the hormone.



On the other hand MS basal medium supplemented with 5 mg/l BAP showed very good frequency of organogenic callus induction using leaf explants with thick green callus and when a concentration of less than 5 mg/l BAP was used, no callus formation was seen. Another report showed that maximum callus formation was recorded for naphthalene acetic acid (NAA) (3 mg/l). A combination of IBA+ BAP (3mg/l) showed highest shoot formation and multiple shoot. It has also been noticed that activated charcoal with IBA (2 mg/l) exhibited maximum root formation and number of roots per shoot. This study concluded that activated charcoal plays a very vital role by promoting root induction and formation from *in vitro* shoots in Brahmi. Another study showed remarkable callus induction from leaves used as explants and appearance of *Bacopa monnieri* (L.) Pennell. Rapid callus growth was observed in the MS medium with 0.5 mg/l NAA, 0.5 mg/l 2,4-D and 0.25 mg/l TDZ individually and 2,4-D 0.5 mg/l with TDZ 0.15 mg/l, TDZ 0.05+ NAA 0.4 mg/l and TDZ 0.05 + NAA 0.5 mg/l in combination of growth regulators. Thus, our protocol proved to be more cost effective and less time consuming than many other protocols, as it showed the use of single hormone showed the optimum result for shoot bud multiplication, root induction, embryogenic callus and organogenic callus formation where as no hormone was needed for plantlet regeneration from callus through organogenesis.

The stability was determined by cytological analysis. Somatic chromosome number, total chromosome length, total chromosome volume and karyotype formula remained the same in *in-vivo* and *in-vitro* plantlets.

Bradford analysis revealed that *in vitro* tissues have 2.3 times more protein content as compared to the *in vivo* tissues. Similar results were found by different authors (Mahapatra and Rath, 2005), that tissue culture grown *Bacopa monnieri* (L.) Pennell plants having a higher protein content as compared to the field grown. It was also reported that *Bacopa monnieri* (L.) Pennell plants were grown in salinity stress, an increase in the amount of proline was observed. Hence changes in environment adversely affect the protein content and gene expression. The protein profile also gave an idea about the differential gene expression in same species, with respect to changes in the environment of a plant, as different new molecular weight proteins (represented by unique bands) are seen to be expressed in different tissues, growing in different conditions (Kalyani et al., 2013).

### **Conclusion:**

This research was undertaken to establish optimal *Bacopa in vitro* clonal propagation,



callusing and regeneration. Results showed that callus induction, shoot and root regeneration are influenced by explant type and culture medium including type of hormone. The important part of the present study was the preparation of contamination free explants. BAP (2 mg/l) was optimum for shoot bud multiplication. Stable plant regeneration was established from this study. Somatic embryogenesis was influenced by the presence and absence of embryo induction and maturation. The highest amount of callus developed in BAP 5 mg/l media whereas the organogenic calli and somatic embryo induction was influenced only in presence of 2,4-D 1 mg/l, but for embryo maturation and germination MS Basal media and Kn 0.2 mg/l showed the best responses respectively. Our result on *in vitro* culture showed the considerable importance for large scale propagation. These protocols described in the present study were reproducible and can be used in future for further developments of the crop. So, present study on callus induction and regeneration of *Bacopa monnieri* (L.) Pennell may help conservation of the species and possibly will lead to the production of secondary metabolites and extraction of active compounds from callus sources.

#### **Acknowledgement:**

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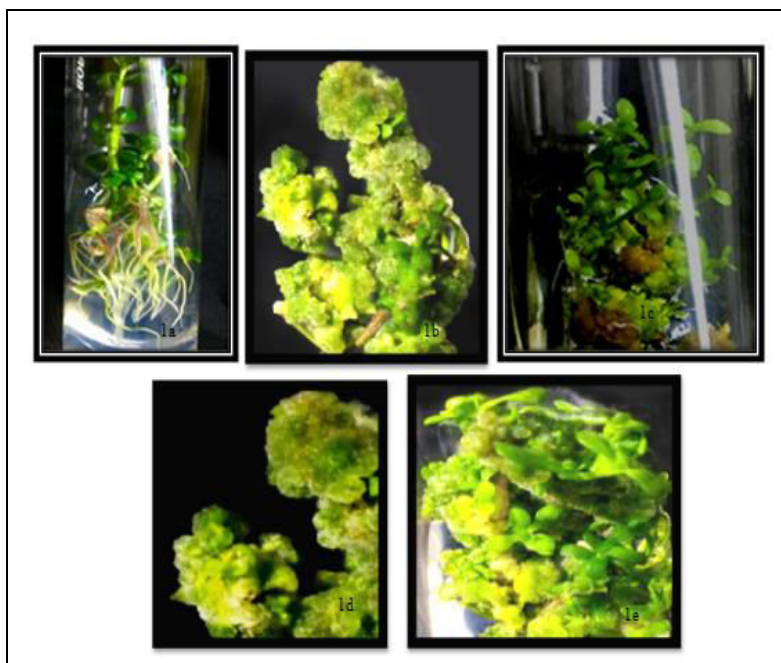
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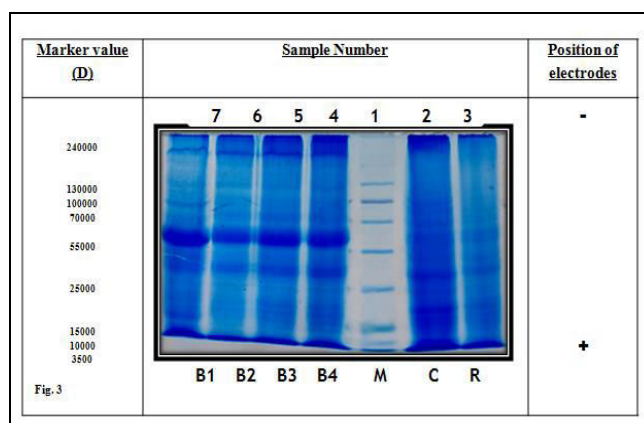
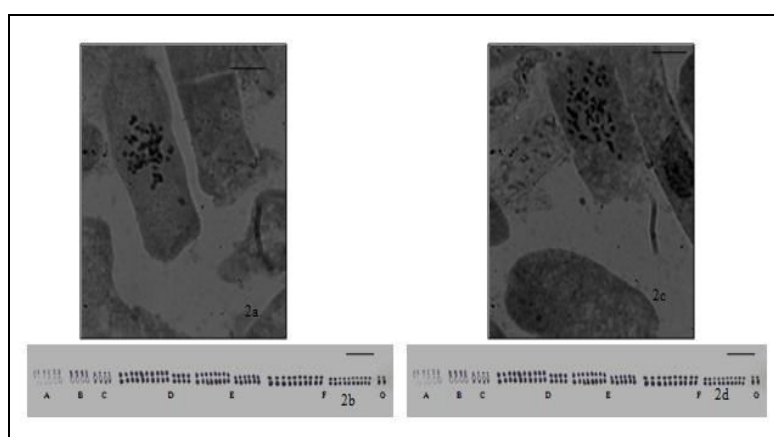
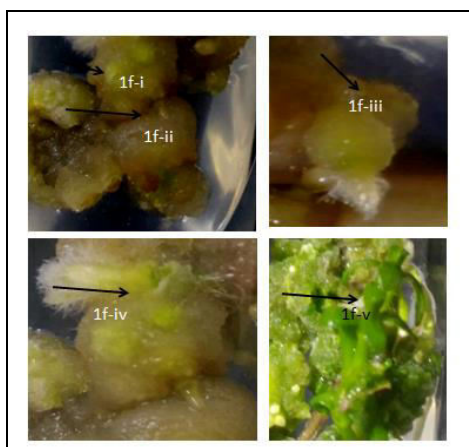
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**Fig. 1.** 1a: *In vitro* plant of *Bacopa monnieri*, 1b and 1d: organogenic callus, 1c and 1e: regeneration from callus, 1f: different stages of somatic embryogenesis (1f-i: globular, 1f-ii: heart shaped, 1f-iii: torpedo, 1f-iv: bipolar and 1f-v: plantlet)

**Fig. 2.** 2a and 2b: Metaphase plate and karyogram of *in vivo* plant ( $2n= 64$ ) chromosomes (ca  $\times 2200$ ) , bar= 5  $\mu\text{m}$ ; 2c and 2d: Metaphase plate and karyogram of *in vitro* plant ( $2n= 64$ ) chromosomes (ca  $\times 2200$ ), bar= 5  $\mu\text{m}$

**Fig. 3.** B1: Lane of *in vivo* leaf protein, B2: Lane of protein, from *in vitro* leaf, grown in media with BAP 2mg/l, B3: Lane of protein, from *in vitro* leaf, grown in media with BAP 3mg/l, B4: Lane of protein, from *in vitro* leaf, grown in media with BAP 4mg/l, M: Lane of Marker protein, C: Lane of Callus tissue protein, R: Lane of regenerated tissue protein

**Table 1.** Role of PGR in shoot bud multiplication

Growth regulators (mg/l)	% of shoot formation (%)
BAP 1.0	70
BAP 2.0	90
BAP 3.0	70
BAP 4.0	60
Kn 1.0	60
Kn 2.0	70
Kn 3.0	55
Kn 4.0	50
2-ip 1.0	20
2-ip 2.0	30
2-ip 3.0	30
2-ip 4.0	30
BAP 1+Kn 3	52
BAP 2+Kn 2	50
BAP 3+Kn 1	48

**Table 2.** Role of PGR in root formation

Growth regulators (mg/l)	% of root formation
IAA 0.25	80
IAA 0.50	80
IAA 1.00	90
IAA 1.50	90
IAA 2.00	80
IBA 0.25	60

IBA 0.50	60
IBA 1.00	70
IBA 1.50	65
NAA 0.25	60
NAA 0.50	65
NAA 1.00	70
NAA 1.50	70

**Table 3.** Types of chromosome with morphology found in *Bacopa monnieri*

Chromosome Type	Range of i value	Position of centromere	Secondary Constriction
A	>15.38-32.00	Sub-terminal region (St) & Sub-median (Sm)	present
B	>18.18-45.45	Sub-terminal region (St) and Median region (m)	present
C	>27.27	Both constrictions Sub-median (Sm,Sm)	present
D	>50.00	Median (M)	absent
E	>42.85-43.75	Median region (m)	absent
F	>28.57-30.76	Sub-median (Sm)	absent
G	>20.00	Sub-terminal (St)	absent

**Table 4.** Biochemical analysis of *in vivo* and *in vitro* tissue

Plant Material	Total protein content ( mg/g Fresh Weight)	Total number of protein bands	Molecular weight range (kDa)
<i>In vivo</i> tissue	1.975	15	12.9-399.7
<i>In vitro</i> tissue	4.583	16	12.6-387.4



## Diversity and distribution of Ectomycorrhizal fungi in pine plantation stands of Manipur

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### Abstract

*The pine forests of Manipur are of sub-tropical pine forest type. The indigenous species Pinus kesiya is extensively found in these forests. Although most of the pine forest is naturally regenerated forests, extensive pine forests having different ages have also been developed through plantation programmes especially in the central and eastern divisions of the state. The ectomycorrhizal fungi have a very important role in the nutrient cycling of forest ecosystems. They are important in preserving higher plant species diversity by providing host trees with necessary nutrients from soil minerals and organic matter. The survey of ectomycorrhizal fungi associated with pine forests especially in plantation stands of Chingmeirong, Heingang, Iroisemba, Keibul Lamjao, Chingphu and Loukoipat Maring hill were undertaken. Seventeen ectomycorrhizal fungi were identified and the most commonly distributed ectomycorrhizal fungi were Phallus, Russula, Scleroderma verrucosum and Amanita.*

**Keywords :** *Ectomycorrhizal fungi, diversity, Pinus kesiya, nutrient cycling, Plantation stand.*

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

The forests of Manipur which are distributed in the hilly and valley regions are the offshoots of the Himalayas.

The forest area is approximately 17418 sq.km. consisting about 78.01% of the total geographical area of the state. Climate in the western part of the state is tropical whereas the rest part of the state experiences sub-tropical climate with average annual rainfall ranging from 1,200mm to 2,700mm and the average annual temperature ranging from 14.5<sup>o</sup>C to 38<sup>o</sup>C. Most of the forests of Manipur are developed through natural regeneration. The indigenous species *Pinus Kesiya* Royle ex. Gordis extensively found in the forests of Manipur.

Although most of the pine forests are naturally regenerated, extensive pine forests having different ages have also been developed through plantation programmes especially in the central and eastern divisions of the state. Plantations of pine have also risen in Sadar, Sawabung, Kakching, Keibul, Sugnu, Moirang, Singhat, Sekmai, Noneh, Moreh and Chakpikarong ranges. Thus, pine is not only one of the most important indigenous timber producing tree species but also one of the few species which have been chosen for extensive afforestation programmes. Ectomycorrhizal fungi are indispensable for the growth of pines under natural conditions. Thus proper management of ectomycorrhizal association in forest nurseries has great implication at the present situation of continuous degradation of forest areas. A systematic investigation on the species diversity of Indian ectomycorrhizal fungi especially in Manipur is still lacking, so the survey of ectomycorrhizal fungi associated with pine forest especially in pine plantation stands of Chingmeirong, Heingang, Iroisemba, Keibul Lamjao, Chingphu and Loukoipat Maring hill were undertaken.

### Materials and Methods:

The Collection of ectomycorrhizal fungal fruiting bodies from the pine stands were made during the months from May to September of the year from 2017 to 2019.

The fruiting bodies were collected in polythene bags and kept at 4 degree Centigrade if identification was not made immediately. The identifications were made based on the morphologies of the fruit bodies and spores. The literature consulted for identification include those of Thind (1961), Singer (1967), Bakshi (1974), Bilgrami et al (1979), Ford et al 1985, Singer 1986; and Wei Jin *et al.*, (2021). However, whenever possible hyphal connection between the fruit bodies and the ectomycorrhizal roots of the host plant were established in the field. Those fungal species which could not be identified or have no previous reports associating with pine were neglected. For pure culture isolation and the characterization of the sporophores and the spores of the ectomycorrhizal fungal species, the methods described by Bakshi (1974) were followed.

### Results:

At the present investigations, a total of seventeen ectomycorrhizal fungi associated with the selected pine stands of Manipur state could be identified. These ectomycorrhizal fungi are listed in Table 1. The most widely distributed species were *Phallus* sp. and *Russula* sp. which found to be distributed in all the selected pine stands. Other species which have wider distributions include *Calvatia* sp., *Lycoperdon* sp., *Tricholoma* sp., *Scleroderma verrucosum* and *Scleroderma aurantium*. It was also found that though a number of fungal species occurred in a particular pine stand, one or a few species constituted the dominant ectomycorrhizal fungal flora.

**Table 1. Ectomycorrhizal Fungal Flora Associated with the Selected Pine Stand of Manipur**

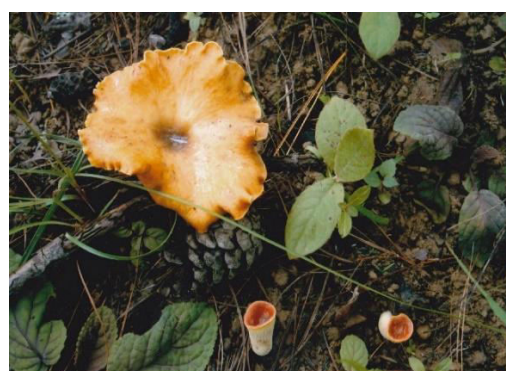
Sl. No.	Fungal Species	Family	Distribution
(1)	(2)	(3)	(4)
1.	<i>Agaricus trisulphuratus</i>	Agaricaceae	Keibul Lamjao Pine Forest
2.	<i>Amanita</i> sp.	Amanitaceae	Keibul Lamjao, Chingphu, Chingmeirong Pine Forests
3.	<i>Boletus</i> sp.	Boletaceae	Keibul Lamjao, Chingmeirong and Loukoipat Maring Hill Pine Forests
4.	<i>Calvatia</i> sp.	Lycoperdaceae	Chingmeirong and Keibul Lamjao Pine Forests
5.	<i>Laccaria laccata</i>	Tricholomataceae	Chingmeirong and Iroisemba Pine Forests
6.	<i>Cantharellus cibarius</i>	Cantharellaceae	Keibul Lamjao Pine Forest
7.	<i>Cantharellus</i> sp.	Cantharellaceae	Heingang, Chingphu and Iroisemba Pine Forests
8.	<i>Lactarius</i> sp.	Russulaceae	Keibul Lamjao Pine Forest

9.	<i>Lycoperdon</i> sp.	Lycoperdaceae	Chingmeirong and Loukoipatpat Maring Hill Pine Forests
10.	<i>Phallus</i> sp.	Phallaceae	All selected pine forests
11.	<i>Ramaria sanguinea</i>	Calvariaceae	Heingang, Iroisemba and Chingmeirong Pine Forests
12.	<i>Ramaria</i> sp.	Calvariaceae	Loukoipat Maring Hill Pine Forest
13.	<i>Russula amoenolens</i>	Russulaceae	Keibul Lamjao Pine Forest
14.	<i>Russula</i> sp.	Russulaceae	All selected pine forests
15.	<i>Scleroderma aurantium</i>	Sclerodermataceae	Iroisemba, Chingmeirong, Loukoipat Maring Hill Pine Forests
16.	<i>Scleroderma verrucosum</i>	Sclerodermataceae	Keibul Lamjao, Loukoipat Maring Hill and Iroisemba Pine Forests
17.	<i>Tricholoma</i> sp.	Tricholomataceae	Keibul Lamjao, Chingphu and Heingang Pine Forests

**Fig. 1–Fig. 4. Different ectomycorrhizal fungal species**



**Fig. 1** *Scleroderma aurantium*



**Fig. 2** *Cantharellus cibarius*



**Fig. 3** *Scleroderma verrucosum*



**Fig. 4** *Russula amoenolens*



### Discussion:

The geographical features and the climatic conditions of Manipur provide a conducive condition for the growth of ectomycorrhizal fungi owing to its ample rainfall, high humidity and a moderate range of temperature. The monsoon rain usually starts during April and May continue upto September. With high soil moisture, high humidity and warm temperature, the mycorrhizal fungi produce their fruit bodies in abundant during this period and rapid colonization of forest litters also occurs during these months. A pattern of succession in the production of fruit bodies by different fungal species was also observed. According to Bakshi (1974) the identification of ectomycorrhizal fungi may not always be guaranteed because of the difficulty of tracing their connection with the mycorrhiza and even if such a connection is found, the identification is not certain because in forest, sporophores of lignicolous and saprophytic fungi may also grown in association with pine and other tree species.

Thus, the only criterion, which is unanimous, for establishing the identity of an ectomycorrhizal fungus is by pure culture synthesis of mycorrhizal association between the fungus and the host tree species. Previous reports of confirming different fungal species to have ectomycorrhizal associations with pine are those of Thind (1961) regarding *Ramaria* spp.; Trappe (1962) regarding *Calvatia* spp.; *Cantharellus* spp., *Russula* spp. and *Scleroderma* spp.; Harley and Smith (1983) regarding *Amanita* spp.; *Boletus* spp.; *Lactarius* spp.; *Lycoperdon* spp.; *Phallus* spp.; and *Tricholoma* spp.; and Lakhanpal *et al.*, (1986-87) regarding *Laccaria laccata*. Bakshi (1974) reported *Agaricus trisulphuratus* to be associated with *Shorea robusta* plantations. *A. trisulphuratus* was found to be associated with pine stands at Bishnupur district in Manipur.

Wei Jin *et al.*, (2021) also reported *Scleroderma* spp. to be exhibited well developed ectomycorrhizal roots to *Quercus* tree.

### Conclusion:

The reported 17 ectomycorrhizal fungi which are associated with different pine stands of Manipur may not be considered as a complete list. A much more comprehensive study will be needed for proper identification upto species level and enumeration of the ectomycorrhizal fungal species associated with pine stands of Manipur. However, as a preliminary research work the present study will help in selection and artificial inoculation of ectomycorrhizal fungi in pine nurseries and further more comprehensive research work is to be needed.



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## Study of Physicochemical Parameters of Rhizosphere Soil of Pea (*Pisum sativum* L.) from the Two Localities of Purander Tehsil and Fergusson College Botanical Garden of Pune district

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### Abstract:

A field experiment was carried out in two different zones of Purander Tehsil and Fergusson College Botanical Garden of Pune district to check the physicochemical properties of the rhizosphere soil of the pea plant. The rhizosphere soil had been collected from the different sites and results indicated that the soil environmental factors were quite important for the pea plant which forms symbiotic association with Rhizobium and different AM fungi present in the soil. The physicochemical properties of soil affect the plant growth and the soil microbes. All the three localities of Fergusson College Botanical Garden, Narayanpur and Saswad showed a significant variation in all the parameters. The pH of the soil of all the surveyed localities was neutral to slightly basic ranging from 7.62 to 8.15. Electrical conductivity was recorded maximum ( $0.30 \text{ mmhos/cm}^3$ ) at Narayanpur site, intermediate ( $0.176 \text{ mmhos/cm}^3$ ) at Fergusson College Botanical Garden and at Saswad, it was reported ( $0.238 \text{ mmhos/cm}^3$ ). The OC percentage of the rhizosphere soil of all the surveyed localities was in between 0.50 % and 0.90 % in the rhizosphere soil of all three sites. Nitrogen was low to moderate (290 kg/hectare) at three localities, Phosphorous was recorded medium to moderate (31.39 kg/hectare) at different locations. Potassium ( $K_2O$  kg/hectare) content of the rhizosphere soil of host plant from three surveyed localities was ranging between 228.80 and 448.80 kg/hectare. The calcium (Ca) content of rhizosphere soil of pea was ranging in between 640 to 800 ppm. The Magnesium (Mg) content of rhizosphere soil of pea was recorded in between 288 and 480 ppm. The sulphur (S) content of rhizosphere soil of pea was recorded in between 11.62 to 14.832 ppm. The sodium (Na) content of rhizosphere soil of pea was recorded in between 180 to 360 ppm. The chloride (Cl) content of rhizosphere soil of pea was recorded in between 7.95 and 11.928 ppm. The water holding capacity (WHC) of rhizosphere soil of pea was ranging between 43.79% and 67.84%.

Keywords: Rhizosphere, pH, Electrical conductivity, Nitrogen, Pea plant

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

Soil is one of the last great scientific frontiers and the rhizosphere is the most active portion of that frontier in which biogeochemical processes influence a host of landscape and global scale processes. It is the fundamental resource supporting to agriculture and forestry, as well as contributing to the aesthetics of a green ecosystem. Soil becomes a major



determinant of atmospheric composition and therefore earth's climate. Soils contain an important pool of active carbon that plays a major role in the global carbon cycle (Lal, R., *et al*, 1995). A better understanding of these processes is critical for maintaining the health of the planet and feeding the organisms living on it (Morrissey *et al*; 2004). Examination of a wide variety of plant species has been conducted and it has been found that roots can release from 10 to 250 mg C/g root produced or about 10-40% of their total photosynthetically fixed carbon (Newman, 1985). Pea plants have high phosphorus requirements for nodule formation and its function and optimum photosynthesis (Powers and Thavarajah, 2019). Being a leguminous crop, pea have the inherent ability to obtain much of its nitrogen requirement from the atmosphere by forming a symbiotic relationship with *Rhizobium* bacteria in the soil (Schatz and Endres, 2009). Nitrogen which is essential as a major plant nutrient, is well documented due to its role in improving photosynthetic efficiency and thus enhancing the yielding ability of crop. Phosphorus has a key role in the energy metabolism of all plant cells and particularly for N-fixation in legume crops (Erman *et al.*, 2009). Potassium, unlike other vital nutrients does not become a part of chemical structure of plants but provide strength through thickness of cell wall. Hence, the present study was assigned to know soil characteristics from two localities (Narayanpur and Saswad) of Purander Tehsil and Fergusson College Botanical Garden of Pune District, Maharashtra which would be useful to increase the pea crop yield and maintain soil health.

### **Materials and Methods:**

#### **Analysis of soil samples**

**Physical parameter:** This includes the moisture content of the soil sample. For the estimation of the moisture content, 10 gm of the soil sample was taken and it was heated at 100 °C in an oven for 24 hours, so that the water content remained constant. It was reweighed and the percentage of moisture content was calculated.

#### **Chemical parameters:**

##### **A) Hydrogen ion concentration (pH):**

The pH is one of the important parameters that determine the chemical nature of a soil sample. For determining the pH, 50 gm of dried soil was mixed with 50 ml of water (1:1)



thoroughly with the help of a glass rod, and then it was allowed to settle for some time. The pH of the supernatant was measured using the pH paper by dipping it and comparing with the standard colour against its corresponding value. The pH requirements for germ tube production relates to the ability of different AM fungal isolates to survive and adapt to the environment. Very less attention has been given on the effect of pH on AM fungi (Bhadraiah *et al.*, 2006); however, for specificity of AM fungal species to pH and its effect, some attempts were made.

### **B) Organic Carbon:**

The estimation of organic carbon was done by the modified Walkley and Black method, (1934). Organic Carbon (OC) is the measure of the amount of organic matter in a soil sample. It plays a very crucial role in the soil composition and ultimately its water holding capacity. The percentage of OC was categorized as: Very low (<0.20), low (0.21-0.40), moderate (0.41-0.60), high (0.61-0.80) and very high (>0.81). The organic matter (OM) or humus present in the soil was oxidized by a mixture of potassium dichromate ( $K_2Cr_2O_7$ ) and concentrated sulphuric acid ( $H_2SO_4$ ) utilizing the heat of dilution of  $H_2SO_4$ . The unused potassium dichromate ( $K_2Cr_2O_7$ ) was back-titrated with ferrous sulphate ( $FeSO_4 \cdot 7H_2O$ ) or ferrous ammonium sulphate ( $FeSO_4 (NH_4)_2SO_4 \cdot 6H_2O$ ).

### **C) Electrical Conductivity:**

The Electrical Conductivity (EC) of the soil was measured with the help of electrodes inserted directly into the extracting soil solution using conductivity meter. Electrical conductivity was measured in ds/m or in mmhos/cm<sup>3</sup>. The capacity of soil to conduct the current was determined to check the quality of the soil as it affects uptake of major as well as micro nutrients, minerals and water by plants. The EC was measured for each collected soil sample to study its quality and effect on AM fungi. EC was expressed in mmhos/cm<sup>3</sup> and was grouped in to low (E.C. <1.00), moderate (E.C. 1.01-2.00) and high (E.C. 2.01-300). .

### **Estimation of Phosphorus present in soil:**

The presence of phosphorus in the collected soil samples can be determined by two methods. The Olsen's method (Olsen *et al.*, 1954) was used for neutral alkaline soils while the Bray and Kurtz (1945) method is used for acidic soils.

**Estimation of Potassium:**

The potassium is estimated by using a flame photometer and Ca and Mg either by EDTA titration or by using atomic absorption spectrophotometer. In soils with appreciable amount of soluble K, Ca and Mg, these cations are estimated in a saturation extract (Jackson, 1958) and deducted from N NH<sub>4</sub>OAc extractable K, Ca and Mg to obtain respective exchangeable cations.

**Procedure:** Shaking and filtration was done using the method proposed by Schollenberger and Simon, (1945) or shaking and centrifugation as described by Knudsen *et al.*, (1982).

**Shaking and filtration (Schollenberger and Simon, 1945)**

Five gm of soil sample was placed in a 150 ml Erlenmeyer flask and poured in 25 ml of neutral N Ammonium acetate. This solution was shaken on a reciprocating shaker (180+Oscillations/min) for 5 minutes and immediately filtered through Whatman filter paper No 1. First few ml of the filtrate was rejected.

**Shaking and centrifugation (Knudsen *et al.*, 1982)**

Ten gm of <2mm of air dried soil (or use 5 gm if the soil contains greater than 500 ppm K) was added in a 50 ml centrifuge tube. To this, 25ml of ammonium acetate was added and stopper was put on the same and shaken for 10 minutes. The tube was then centrifuged at 2000 rpm for 10 min or until the supernatant liquid clear. The supernatant liquid was then decanted into a 100 ml volumetric flask. Three additional extractions were made in the same manner. The combined extracts were diluted to 100ml with ammonium acetate. The resulting solution was mixed and K content determined in the extract using flame photometer and K filter after necessary setting and calibration of the instrument (Use 0 and 20 ppm working K concentrations). Similarly the different concentrations of K and the standard curve obtained by plotting the readings against the different concentrations of K.

**Estimation of Nitrogen:**

Nitrogen is essential to plants as it forms a part of amino acids, proteins, and nucleic acids. The nitrogen content in the soil was estimated using Kjeldahl method that was later modified by Jackson (1958).

**Method:-**

3 gm of digestion mixture was added to a 100 ml Kjeldahl flask, followed by 5 ml of treated soil solution. The solution obtained was kept on a flame until 5 minutes after a clear greenish-blue colour appeared. It was then cooled and volume made 15 ml by adding 10 N NaOH. The flask was then chilled and attached to a distillation apparatus, the receiving end of which contained a 100 ml conical flask having 10 ml of boric acid solution containing methyl red indicator. 20 to 30 ml of distilled water was added to the 100 ml flask containing boric acid solution to ensure the receiving end is dipped in the solution. 5 to 8 ml 10 N NaOH was then added from the edge tube into the Kjeldahl flask to neutralize the solution. This was then followed by heating the flask for distillation approximately 20 ml of solution, after which it was stopped. Once the distillation was stopped, the receiving end dipped in boric acid solution was thoroughly washed. The contents of the flask were titrated using 0.1 N HCl solution. The volume of HCl used was noted for calculation. A blank was run after and the value obtained was deducted from the titration figure.

**Water holding capacity:** The water holding capacity was determined as follows:

- 1) A suitable sized tin box container with perforated bottom was taken and weighed (a).
- 2) Filter paper was taken and weighed (b).
- 3) The filter paper was placed at the bottom of box container and oven –dried soil was uniformly placed in the container and weighed again (c). The container was covered with a screen at the top only to prevent the loss of soil from the top. This was then immersed overnight in a bigger tray containing water. The next morning the container was suspended to drain off water for 30 minutes. The superficial water on the outside was wiped then reweighed (d)
- 4) A separate filter paper similar to one used in container was taken and dipped in water, excess water if any was drained off, and weighed (e). The average amount of water absorbed by the filter paper was calculated (e - b).
- 5) The weight of dry soil = c - (a + b); weight of wet soil = d- (a + e) and Water in soil = [d-(a + e)] - [c-(a + b)]
- 6) The percentage of water holding capacity was calculated by using following formula-



Water holding capacity =  $\frac{\text{Amount of water in soil}}{\text{Weight of dry soil}} * 100$

Weight of dry soil

### Estimation of Ca:

4 ml of the soil extract was measured in glass vials and 1ml of reagent I was added to it. After 10 minutes and no longer than 2 hours, the transmission of light and the turbid solution was measured. (The turbidity developed is a measure of Ca.) 1ml of reagent II was measured and read after 20 minutes. If in the test for Ca, the photometer reading is less than 10, the process was repeated using smaller aliquot diluted with extracting solution to 4 ml. Proceed as above and multiply the results by appropriate dilution factor.

### Estimation of Magnesium:

**Procedure:** 1 ml portions of the Mg standard solutions was measured and to this 2ml of Reagent A was mixed. After this, 2ml of Reagent B was added. Photometer readings were taken within 5 minutes using the green filter. For the 100 settings, 1ml of extracting solutions containing 2 ml each of Reagent A and B was used. Readings were converted to meq Mg per 100 gm soil. Smaller aliquot was used if the readings are less than 40. In this case, sufficient extracting solution was added to a volume of 1ml and proceeded as above followed by multiplying the results by the appropriate dilution factor.

### Results:

In the present investigation, physicochemical parameters like pH electrical conductivity, organic carbon and macronutrients like nitrogen, phosphorus and potassium and micronutrients like Ca, Mg, Na and S etc. were recorded. The soil analysis was done for all the three sites. It included the pH, electrical conductivity of soil, organic carbon and amounts of N, P and K. The water holding capacity was also ranging between 43.79 % and 67.84 %. The texture was in general fine. Soil pH is an indication of the soil's chemistry and fertility.

**Table No. 1: Study of Physicochemical Properties of Rhizosphere Soil of Pea Plant from Three Localities**

S.N.	Parameter	L-1	L-2	L-3
1	pH	7.64	7.62	8.15
2	EC mmhos/ cm <sup>3</sup>	0.176	0.303	0.238
3	OC %	0.90	0.50	0.60



4	Nitrogen (N) kg/hectare	458	234	290
5	Phosphorus P kg/hectare	51.01	39.24	31.39
6.	Potash (K <sub>2</sub> O) kg/hectare	448.80	228.80	291.20
7	Ca %	7.1	7.1	6.4
8	Ca ppm	640	800	640
9	Mg ppm	384	480	288
10	Na ppm	180	210	360
11	Cl ppm	7.95	7.95	11.928
12	S mg/kg	11.62	11.97	14.832
13	WHC %	43.79	62.06	67.84

L1= Fergusson College, botanical garden, L2=Narayanpur, L3= Saswad.

The pH affects the chemical activity of the elements in the soil and other soil properties. The pH of soil controls chemical and biological activities that take place in the soil. The pH is measured on a logarithmic scale and represents the negative logarithm of the hydrogen ion concentration in moles/ L. When soil contains a high concentration of hydrogen ions, it is considered to be acidic and when it has a low number of hydrogen ions, it is considered to be basic. The pH 7 is considered to be 'neutral'. The pH scale ranges from 1-14 with pH 1 being extremely acidic and pH 14 being extremely basic.

The pH of the soil of all the surveyed localities was neutral to slightly basic ranging from 7.62 to 8.15 The pH of the soil at Saswad site was 8.15, at Narayanpur site it was 7.62 and at Fergusson College, botanical garden it was 7.64 (Table No.1 ).

Electrical conductivity (EC) is a measure of the ionic transport in a solution between anode and cathode. This means, EC is normally considered to be a measurement of the dissolved salts in a solution. As EC depends on the number of ions in the solution, it is important to know the soil/water ratio used. The EC of a soil is conventionally based on the measurement of the EC in the soil solution extract from a saturated soil paste, as it has been found that the ratio of the soil solution in saturated soil paste is about 2-3 times higher than that at field capacity.

In the present study, EC was measured for each soil sample to study the quality of rhizosphere soil at three localities and its effect on the AM fungi. The EC in mmhos/cm<sup>3</sup> was categorized as: low (EC. < 1.00), moderate (EC 1.01 - 2.00) and high (EC 2.01 - 3.00). The EC of the rhizosphere soil of all the surveyed localities was in between 0.1 and 0.30 mmhos/cm<sup>3</sup>. In general the EC recorded was moderate to high as per above categories. It was recorded maximum (0.30 mmhos/cm<sup>3</sup>) at Narayanpur site. At Fergusson College site it was reported intermediate (0.176 mmhos/cm<sup>3</sup>) and at Saswad, it was reported (0.238



mmhos/cm<sup>3</sup>). All soil samples have showed high EC which clearly indicates that the salinity was there at all the surveyed sites (Table No. 1).

OC plays an important role in soil composition and ultimately its water holding capacity. In the present study, OC was measured for each soil sample to study the quality of rhizosphere soil at three localities and its effect on the AM fungi. The OC in % was categorized as: very low (< 0.20), low (0.21 - 0.50), moderate (0.51 - 0.60), high (0.61 - 0.75), very high (> 0.76).

The OC percentage of the rhizosphere soil of all the surveyed localities was in between 0.50 % and 0.90 % in the rhizosphere soil of all three sites. The OC percentage was moderate (0.60 %) at Saswad locality. It was reported high (0.90 %) at Fergusson College, botanical garden. It was recorded low (0.50 %) at Narayanpur locality (Table No.1).

Nitrogen (N<sub>2</sub> kg/hectare) content of the rhizosphere soil of pea from three surveyed localities was ranging between 234 and 458 kg/hectare. It was recorded g) (Table No.1).

The Phosphorus (P) is used as part of the energy pathway in the plant. Because of its negative charge, phosphate is easily leached out from the soil. Plants are able to take up phosphate when the pH of soil ranges between 5.0 and 8.0. At low pH values (< 5.0), phosphate combines with iron (Fe) and aluminium (Al) to form phosphates that are not soluble and cannot be taken up by plants. At high pH values (> 8.0), phosphate combines with calcium (Ca) to form calcium phosphate, which is neither soluble nor available for plants to take up from the soil. In the present study, rate of phosphorus is examined to check the effect on AM fungal colonization as well as number of propagules. The phosphate (P<sub>2</sub>O<sub>5</sub> kg/hectare) was categorized as: low i.e. less than 22 kg/hectare, medium 23-56 kg/hectare and high more than 56 kg/hectare.

The phosphorous (kg/hectare) content of all the localities was ranging in between 31.39 kg/hectare and 51.01 kg/hectare in the rhizosphere soil of pea plants from three localities. It was recorded medium at Fergusson College, botanical garden (51.01kg/hectare), at Narayanpur locality (39.24kg/hectare) (Table No. 1). It was recorded moderate (31.39 kg/hectare) at Saswad locality. The phosphate content of soil is correlated with AM population in the rhizosphere soil. If the P content is low the number of species of AM fungi will be high in rhizosphere of such a soil.





Potassium (K) plays a role to activate cell enzymes in plants. It is readily available to plants in its elemental state ( $K^+$ ), and because of its positive charge, it is easily stored on negatively charged soil particles. Potassium is one of the macro-nutrients which play an important role in the growth of plants. The amount of potassium in soil affects the number of micro-organisms. Available potassium in kg/hectare was categorized as: very low (<120), low (121-180), moderate (181-240), high (241 - 300), very high (>301).

Potassium ( $K_2O$  kg/hectare) content of the rhizosphere soil of host plant from three surveyed localities was ranging between 228.80 and 448.80 kg/hectare. It was recorded very moderate (228.80 kg/hectare) at Narayanpur. It was recorded high (291.20 kg/hectare) at Saswad. It was recorded very high (448.80 kg/hectare) at Fergusson College, Botanical Garden (Table No.1).

The calcium (Ca) content of rhizosphere soil of pea was ranging in between 640 to 800 ppm. The Ca content was recorded high (800 ppm) at Narayanpur locality and low (640 ppm) at Saswad and Fergusson College botanical garden localities respectively (Table No. 1).

The Magnesium (Mg) content of rhizosphere soil of pea was recorded in between 288 and 480 ppm. The Mg content was recorded high (480 ppm) at Narayanpur locality and low (288 ppm) at Saswad locality (Table No. 1).

The sulphur (S) content of rhizosphere soil of pea was recorded in between 11.62 to 14.832 ppm. The S content was recorded high (14.832ppm) at Saswad locality and low (11.62 ppm) at Fergusson College botanical garden locality (Table No. 1).

The sodium (Na) content of rhizosphere soil of pea was recorded in between 180 to 360 ppm. The Na content was recorded high (360 ppm) at Saswad locality and low (180 ppm) at Fergusson College botanical garden locality (Table No. 1).

The chloride (Cl) content of rhizosphere soil of pea was recorded in between 7.95 and 11.928 ppm. The Cl content was recorded high (11.928 ppm) at Saswad locality and low (7.95 ppm) at Narayanpur and Fergusson College botanical garden locality (Table No.1).

The water holding capacity (WHC) of rhizosphere soil of pea was ranging between 43.79% and 67.84%. The WHC capacity was recorded maximum (67.84%) at Saswad locality and minimum (43.79%) at Fergusson College botanical garden locality. The other locality i.e., Narayanpur showed intermediate results (Table No. 1).



### Discussion:

The pH of the soil was neutral to slightly alkaline ranging from 7.62 to 8.15 in both the seasons. Soil pH influences VAM fungal species composition, colonization and effectiveness (Van Aarleet *et al.*, 2002; Hayman and Tavares, 1985). The genus *Acaulospora* and *Glomus* are the dominant mycospecies in the rhizosphere soil collected from different sites of Pune. The possible reasons for the predominance of *Glomus sp.* are that spores of *Glomus* species have different temperature and pH preferences for germination (Wang *et al.*, 1997) and *Acaulospora species* are often associated with acidic soils (Abott and Robson, 1991; Morton, 1986).

The EC of the rhizosphere soil in all the three localities was ranging in between 0.1 and 0.30 mmhos/cm<sup>3</sup>. The OC percentage of the rhizosphere soil of all the surveyed localities was in between 0.50 % and 0.90 % in the rhizosphere soil of all three sites. The OC percentage was moderate (0.60 %) at Saswad locality. It was reported high (0.90 %) at Fergusson College, botanical garden. It was recorded low (0.50 %) at Narayanpur locality. Arbuscular mycorrhizae helps in providing relatively high amounts of carbon (Smith *et al.*, 2003).

Nitrogen was recorded low (234 kg/hectare) at Narayanpur locality. . It was recorded moderate (290 kg/hectare) at Saswad locality and Fergusson College, botanical garden (458 kg/hectare). Several studies have demonstrated the transport of inorganic Nitrogen (N) by VAM fungi (Johansen *et al.*, 1992; Hawkins *et al.*, 2000; Blankeet *et al.*, 2005).

The phosphorous (kg/hectare) content was ranging in between 31.39 kg/hectare and 51.01 kg/hectare in the rhizosphere soil of pea plants from three localities. The phosphate content of the soil is correlated with number of AM propagules and percentage root colonization. Similar results were reported by Shinde and Nair (1995). VAM colonized plants absorb and accumulate more phosphorus (P) compared to non-colonized plants when plants are grown in soils that are low in P (Smith and Read, 1997; Harrier and Watson, 2003; Azconet *et al.*, 2003). Smith and Read (1997) reported that influx of P in roots colonized by VAM could be 3 to 5 times higher than in non-colonized roots.

Potassium (K<sub>2</sub>O kg/hectare) content of the rhizosphere soil of host plant from three surveyed localities was ranging between 228.80 and 448.80 kg/hectare. It was recorded very high (448.80 kg/hectare) at Fergusson College, Botanical Garden. The Ca content was



recorded high (800 ppm) at Narayanpur locality as compared to Saswad (640 ppm) and Fergusson College botanical garden localities respectively. The Mg content was recorded high (480 ppm) at Narayanpur locality and low (288 ppm) at Saswad locality. Enhancements in the acquisition of K, Ca and Mg are often observed in VAM colonized plants grown on acidic soils than neutral or alkaline soils (Harrier and Watson, 2003).

The S content was recorded high (14.832ppm) at Saswad locality and low (11.62 ppm) at Fergusson College botanical garden locality. Not only the uptake of P is enhanced by VAM colonization of plant roots, the uptake of other macro and micronutrients like N, Ca, Mg, S, Cu, Fe, Zn and B have also been enhanced (Allen *et al.*, 2003; Hodge, 2003; Clark and Zeto, 2000; Marschner and Dell, 1994).

The Na content was recorded high (360 ppm) at Saswad locality and low (180 ppm) at Fergusson College botanical garden locality. The Cl content was recorded high (11.928 ppm) at Saswad locality and low (7.95 ppm) at Narayanpur and Fergusson College botanical garden locality. Negligible effect was recorded on some micronutrients. Results from present investigation were slightly similar with the results obtained by Buwalda *et al.*, (1983). WHC capacity was recorded maximum at Saswad locality and minimum at Fergusson College botanical garden locality. The other locality i.e., Narayanpur showed intermediate results.

### **Conclusion:**

The selection of a standard set of specific soil properties as indicators of soil quality can be complex and may vary among soil systems. It has been found that all the three selected places of Pune District have medium or high mineral content. In order to study the effect of phosphate fertilizer, phosphorus, and application of nitrogen to increase percentage yield of crops. This information will help farmers to solve the problems related to soil nutrients, amount of which fertilizers to be used to increase the yield of crops. In the present study, the pH of the soil was neutral to slightly alkaline ranging from 7.62 to 8.15. The EC of the rhizosphere soil at all the three localities was ranging between 0.1 to 0.30 mmhos/cm<sup>3</sup>. The OC percentage was reported high (0.90%) at Fergusson College Botanical Garden and moderate at other two localities. Nitrogen was recorded low at Narayanpur and moderate at Saswad and Fergusson College botanical garden. The Phosphorus content was ranging between 31.39 kg/hectare and 51.01 kg/hectare in the rhizosphere soil of the pea plants from the three localities. Potassium (K<sub>2</sub>O) content of the rhizosphere soil of the host plant from three surveyed localities was ranging between 228.80 and 448.80 kg/hectare. It was recorded



high at Fergusson College Botanical Garden. The Ca content was recorded high at Narayanpur locality as compared to Saswad and Fergusson College botanical Garden respectively. The Mg content was recorded high Narayanpur locality and low at Saswad. The S content was recorded high at Saswad and low at Fergusson College botanical garden. The Na content was recorded high at Saswad and low at Fergusson College botanical garden. The Cl content was recorded high at Saswad and low at Narayanpur and Fergusson College botanical garden. The WHC was recorded maximum at Saswad and minimum at Fergusson college botanical garden locality.

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## Conservation of *Ficus racemosa* (Linn) Wonderful Feeder of Wild Animals

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### Abstracts

*Ficus racemosa* (Linn) (Moraceae) is a familiar tree webbed across all tropical habitats in India, which has long been used in Ayurveda, the ancient system of Indian medicine, to cure different diseases/disorders. Altogether, more than 1,200 species of birds and mammals feed on figs around the world and so they are a massively important food resource, and those animals are the dispersers of many other tree species. Fruiting trees are mandatory to sustain the population of frugivores. Fig tree is a special kind of trees needs the wasps during the right stage of fruiting and for effective pollination and it gives fruits randomly throughout the year. This relays that in an ecosystem, all the time figs supply food chain to bats, parrots, rattans, squirrels, and many other small creations in the forest. This tremendously valuable tree has been conserved, in that concept, ten accessions were identified from Western Ghats Siruvani foot hills forest area in Coimbatore. The clonal propagation was carried out to mass multiply the same. The well grown accessions will be planted in different forest ecosystem to maintain the biodiversity. It is evident that the fig trees will invigorate, combat and sustains and improves the livelihoods of the nourishing forest.

It's widely used to treat liver disorders, diarrhea, hemorrhoids, diabetes, asthma, hyperglycemia, diarrhea, to cure cancer etc. This tree is known to have chemical constituents such as triterpenes, sterols, polyphenols, flavonoids, coumarins, alkaloids and fumaric acid and other metabolites. *Ficus* tremendously valuable due to the excellent taste more competitive one in the market. The period of fruiting usually started after 8 years of cultivation, afterwards only the tree able to reproduce next generation offspring. Clonal propagations are a boon in this juncture, it bypasses all and it makes next generation exactly with mother plant within short period of time through vegetative propagules. Multiplication of this tree can be successfully obtained through branch cuttings, as it is an easy and less expensive technique. Survey of literature and our study proves that Indolebutyric acid (IBA) synthetic auxin induce the formation of adventitious roots on the stem cuttings of *Ficus racemosa*.

Key Words: Ficus, IBA, Stem cuttings, Conservation.

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### Introduction:

There is growing concern throughout the globe concerning the uncontrolled exploitation and depletion of the earth's natural resources, particularly touching the plant variety of tropical forests. The extinction potential of a species is expounded to the degree of its biological vulnerability and therefore the degree of threat by organic phenomenon and biotic factors. Therefore, the necessity for conservation is exceptionally high and of predominate importance to preserve this plant heritage for posterity. A forest tree provides natural resources such as fuel and fiber to meet human needs, and also protects the natural ecosystem in unique and diverse ways. It is the dominant member of many natural ecosystems, and also playing a major ecological role in the plant, and animal communities. It acts as a habitat for many other organisms, a genetic diversity within the species of the forest trees contribute the taxonomic diversity of the trees it will ultimately lead to the forest diversity [Shyam S. Phartyal et al., 2002]. The forest restoration is the low cost vital tool to reduce the world deforestation rates. *Ficus* trees are considered to be significantly important tropical ecosystems and produce large number of nutritionally enriched fruits to attract the seed dispersal organisms. [Cottee-Jones, H.E.W et al., 2016]. *Ficus* is the genus belongs to the family moraceae, it is commonly known as fig and contains most important group of trees with enormous medicinal properties [Mathew Get al., 2010]. They are found in all tropical habitat types, with about 100 species occurring in Africa and the surrounding islands. Altogether, more than 1,200 species of birds and mammals feed on figs around the world, and so they are a massively important food resource, and those animals are the dispersers of many other tree species. Fruiting trees are mandatory to sustain the population of frugivores. Fig trees (*Ficus*: Moraceae) give reliable dietary resources for frugivores together with birds in tropical forests, the birds maintain species diversity through seed dispersal mechanism [Daru B.H et al., 2015]. Fleshy and attractive fruits have been produced from the various *Ficus* species for seed dispersal through birds and bats [Whittaker and Jones, 1994]. The primates like Bonnet macaque, Common langur, Lion tailed macaque and Nilgiri langur fully depending to the *Ficus* species for their natural food sources in southern Western Ghats. Three-striped palm squirrel, Malabar giant squirrel, Grizzled giant squirrel, Palm also eat the *Ficus* fruits. Fallen the ripest fruits might have been eaten by terrestrial mammals. Other than the providing food for birds, insects, bats and also provide shelter and ideal nesting and also roosting places, for animals and birds through their spreading crown and dense foliage. *Ficus* trees provide ideal habitat for seed dispersers and



pollinator it is very much important biodiversity conservation, 16% of insectivorous birds visit the *Ficus* plant species to uptake their food [Vanitharani J et al., 2009]. The frugivorous bat species (*Rousettus leschenaultia* Desmarest and *Cynopterus sphinx* Vahl) are commonly distributed in Xishuangbanna and they continuously eat the fruits *F.racemosa* and *F. hispida* [Tang Z.H et al., 2007]. Fig wasp (Chalcidoidea, Agaonidae, and *Ceratosolen fusciceps* Mayr) are important for the success pollination in *F. racemosa*, mutually *F. racemosa* provide habitat for wasp to lay eggs and complete their life cycle [Zhang G et al., 2006]. It provides as a food plant for the caterpillars of the butterfly the Two-brand Crow (*Euploea sylvester*) of northern Australia [Bhalerao S.A et al., 2014]. Several species of the genus *Ficus* are used traditionally in a wide variety of ethnomedical remedies all over the world. They have long been used in folk medicine as antidiabetic, anthelmintic, hypotensive, mild laxative, antirheumatic, digestive and anti-dysentery drugs from previous studies, these plants are known to have chemical constituents such as triterpenes, sterols, polyphenols, flavonoids, coumarins, alkaloids and other metabolites. The *Ficus racemosa* traditionally used as medicine, the plant parts used to treat various health problems and diseases [Sivakumar P et al., 2019]. *Ficus* tremendously valuable due to the excellent taste make more competitive one in the market. The period of fruiting usually started after 8 years of cultivation, afterwards only the plant able to reproduce next generation offspring. Clonal propagations leads to lack these criteria and it will make next generation exactly with mother plant within short period through vegetative propagules. Stem cutting is the main method of vegetative propagation in many *Ficus* spp [Mathew G et al., 2010]. Stem cuttings method is easy and less expensive technique to multiply the desired taxa [Bhagwari P et al., 1993]. According to [Dhand, A et al., 2019] root promoting hormones play a major role on the success rooting of cuttings. Auxin treatments of cuttings facilitate the transverse roots formation. Indole acetic acid (IAA), indole butyric acid (IBA), and naphthalene acetic acid (NAA) are type of auxins commonly used due to its ability of stimulating root formations. IBA is the most widely used because its effectiveness as well as it is not affected by auxins destroying enzymes [Ahmed M.H.S et al., 2020].

### **Materials and Methods:**

**Collection of plant material:** Survey and field trip was carried out in and around Western Ghats (Siruvani foot hills) and Semi hardwood stem cuttings with 3- 4 node length and 1.5 - 2 cm diameter were obtained from healthy mother tree growing in Siruvani food hills, Coimbatore [Nagalakshmi M.A.H et.al 2018].





**Preparation of cuttings:** This experiment was carried out in green house at Forest Genetics Resources Management Division, Institute of Forest Genetics and Tree Breeding, Coimbatore, 2020. The experiment was done as completely randomized block design, with four replications, each with 100 samples of cutting. The treatments included nine concentrations of IBA (0, 500, 1000, 1500, 2000, 2500, 3000, 3500, and 4000 ppm) [Babaie H et al., 2014]. A 1000 ppm IBA was prepared by mixing 1g of IBA with 99 g of talcum powder, the same method has been used for preparation of all the concentrations [ShiriM et al., 2019]. Semi hard wood cuttings with 3-4 leaves selected, considering them to be 15 to 20 cm in length. Cuttings were pretreated with carbendazim 50% WP to prevent the fungal contaminations. IBA was applied to the bottom positions of the cuttings as a 10 second quick dip [Shirzad M et al., 2011]. Then the cuttings were placed into root trainers filled with vermiculite and kept under polytunnels. Rooting was observed after 45 days, the rooted cuttings were taken out from root trainers in polytunnels then transferred into polybags with red soil, sand and manure 2:1:1 ratio respectively and kept for hardening process under green house.

### **Results and Discussion:**

This study revealed that the I.B.A. has the potential of root initiation and vegetative growth of stem cuttings. IBA was very effective in rooting of *F.racemosa*. Some of the cells present in the perivascular tissues have the capability to dedifferentiate in to de novo produced root tips which are derived from the shoot structures [Davis and Haissig1994]. According to [Mathew C et al.,2009] *F. racemosa* shows only 10 - 12% of rooting and survival rate. However our results revealed that 40 - 80% of rooting within 45 days. Rooting percentage was varied with different concentrations of IBA. [Shirzad S et al., 2011] reported cuttings treated with different levels of IBA shown significant on root length of stem cuttings.

Figure: 1 *F. glomerata* tree

Figure: 2 Pre-treatment of cuttings



Figure: 3 planting of cuttings



Figure: 4 Shoot growth



Figure: 5 Root growth



Figure: 6 Hardening of plants

[Nagalakshmi M.A.H et.al 2018] observed effective rooting by IBA in *F. glomerata* L, *F. microcarpa*, *F. religiosa*, *F. benghalensis* and *F. carica*. Various concentrations of IBA treatments were carried out in order to facilitate the rooting of *F. racemosa*, The stem cuttings were treated with Indole-3-Butyric Acid, 3500 and 4000ppm showed higher root induction than other concentrations. Similarly [Siddiqui I.M et al., 2007] reported maximum sprouting percentages in cuttings were treated with 4000 ppm IBA. Maximum root length (14.6cm) was observed on plants cuttings of which were treated with 4000 ppm IBA. Similarly [Siddiqui I.M et al., 2007] reported maximum root length in cuttings was treated with 4000 ppm IBA. [Babaie H et al., 2014] also reported cuttings were treated with 4000ppm and 6000 ppm shows highest survival percentage, however highest new shoot length was observed only in 4000 ppm not in 6000 ppm, high concentrations of auxin has an inhibitory effect on growth of butts due to its apical dominance. Application of optimal level of exogenous IBA to the cuttings enhances the cambium de-differentiation, accelerated hydrolytic activity and enhanced callus formation which ultimately increases the root length [ShiriM et al., 2019]. According to our results 4000 ppm of IBA has highest rooting percentage in *F. racemosa*. However [Shirzad M et al., 2011] reported 6000 ppm of IBA also shown highest rooting in *F. benjamina*.



**Table 1 Effect of IBA on root number, root length and survival percentage of *F.racemosa***

S.No	No.of cuttings	IBA Concentrations	Initial root development (Days)	No. of roots	Length of root (cm)	Survival percentage (%)
1	100	-	59.6 ± 1.26	10.2 ± 0.91	7.33 ± 0.15	7.9 ± 1.10
2	100	500	47.4 ± 1.62	11.2 ± 0.91	8.72 ± 0.36	43.6 ± 2.17
3	100	1000	46.1 ± 1.52	11.7 ± 1.33	10.33 ± 0.46	65.1 ± 2.18
4	100	1500	45.5 ± 1.26	13.0 ± 1.05	10.58 ± 0.70	64.5 ± 2.54
5	100	2000	45.6 ± 1.07	13.3 ± 0.94	10.60 ± 0.45	65.9 ± 1.79
6	100	2500	45.3 ± 0.94	13.2 ± 0.91	10.68 ± 0.32	65.8 ± 2.34
7	100	3000	45.5 ± 1.20	13.8 ± 0.78	10.88 ± 0.24	65.3 ± 2.96
8	100	3500	46.1 ± 1.52	15.3 ± 1.15	15.25 ± 0.59	75.6 ± 2.79
9	100	4000	46.3 ± 1.15	15.7 ± 1.15	15.53 ± 0.42	79.7 ± 2.05

### Conclusion:

Conservation is usually stimulated by a threat to natural resources, either an immediate crisis or a professed future challenge. The trees play diverse roles in human and wild environments, the tree faces more kinds of threats than most classes of organisms. Species extinction has happened due to the over exploitation, land conversion, and deforestation especially in tropical regions. Global climate change and global warming in temperate latitudes threaten both rare and widespread tree species with mass population extirpation and possible species extinction. The vegetative propagation method is an important tool for the conservation of genetic resources and for the implementation of domestication programmes. The results of this studies reveals that the *F.racemosa* can be easily propagated by stem cuttings with the exogenous application of IBA at different concentrations. Concentrations of IBA affect the rooting percentage, root number and root length. Vermiculite as the best



medium for initial root formation, once root formation is occurred, combination of red soil, FYM and sand is ideal for growth of *F.racemosa* in polybags. Seasonal variations plays a major role in the vegetative propagation of *F.racemosa*, rainy season is more favourable for the root formation and growth of *F.racemosa*. Afforestation in southern Western Ghats with *F. racemosa* facilitates the biodiversity conservation due to growing nature of *F.racemosa* throughout the all forest types southern Western Ghats as well as interaction with all feeding animals of southern Western Ghats.

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## Diversity of Ascidians from Thoothukudi Harbour Barge and their Conservation

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### Abstract:

*Marine sedentary organisms known as ascidians are cosmopolitan in distribution found from the shallow intertidal rocky shores to the depth of the ocean. Approximately 3,000 species of ascidians have been reported from the world but only 263 species are known from Indian waters. They settle on natural as well as artificial substrates and play an important role in the fouling community. Studies on the diversity of ascidians from manmade structures is very rare. Hence in the present attempt, observations were made from the undersurface of barges berthed in the Thoothukudi harbour basin. Samples were collected from a depth of 4 - 5 metres with the help of a SCUBA diver, narcotized with a few crystals of menthol and fixed 4% sea water formaldehyde. A dissecting microscope was used to note the surface features followed by careful studies of the anatomy. Twentyfour species of ascidians were identified. Out of these, 16 species were colonial - *Aplidium indicum*, *Aplidium multiplicatum*, *Polyclinum madrasensis*, *Polyclinum nudum*, *Eudistomaviride*, *Distaplia athensis*, *Trididemnum clinides*, *Didemnum perlucidum*, *Didemnum psammathodes*, *Diplosomasimilis*, *Lissoclinum textile*, *Ecteinascidiadiaphanis*, *Ecteinascidiavenui*, *Eusynstyelatincta*, *Symplegmaoecia*, *Botrylloides magnicoecum* and 8 were simple ascidians - *Phallusia arabica*, *Phallusia nigra*, *Ascidia sydneyensis*, *Rhodostomum turcicum*, *Styelacanopus*, *Microcosmus exasperatus*, *Microcosmus helleri*, *Herdmaniamomus*. The results indicated that colonial ascidians are more diverse compared to that of simple. Ascidians are an important link in the food chain, source of many natural products and are even cultured for human consumption which necessitates their conservation.*

**Keywords:** *Ascidians, Thoothukudi and Conservation.*

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### Introduction:

Ascidians are an interesting group of marine, sedentary organisms found distributed from the tropical to the polar regions, littoral zone, intertidal, abyssal and even hadal zone. Phylogenetically, they are significant as they occupy a position between the invertebrates and the chordates being the members of the prochordates. They are classified into two groups – the simple and the colonial ascidians. The sedentary ascidians are



characterized by the presence of a free swimming larva with notochord present in the tail region. During metamorphosis, the notochord is lost. Adult ascidians are hermaphrodites. Some are incubatory species and some exhibit asexual reproduction.

They are excellent materials for several studies like tissue regeneration, immunology, budding, colony organisation and bioaccumulation of elements like vanadium, zinc etc. Many of them are important as food and are tonics to cure many diseases. Recently bioactive compounds having antitumor and antiviral potentials have been isolated from ascidians. These compounds are also found to inhibit the growth of DNA and RNA viruses as well as leukemic cells. A review of literature shows that studies on the GC- MS analysis, toxicity, antidiabetic, vitamins by HPLC, phenolic compounds, flavonoids by HPTLC, antimicrobial, hepatoprotective, CNS depressant, antitumor, antifertility, pharmacognostical evaluation, protection against myocardial ischemia, antihyperlipidemic, anaesthetic, analgesic, antipyretic, anti-inflammatory, wound healing, nutritional value and biochemical components of ascidians are available (1-18).

### **Materials and Methods:**

For taxonomical study, collection, narcotisation, preservation and identification are important aspects. The methodology suggested by Dr. Patricia Kott, Queensland Museum, Australia and the key to identification given by Dr. V.K. Meenakshi (1997) has been followed here for collection and identification (19, 20). Samples were collected from a depth of 4 - 5 metres with the help of a SCUBA diver. The collected specimens were transferred to a tray filled with fresh sea water. Care was taken to see that the samples were distributed uniformly with enough space between them. Few crystals of magnesium sulphate were placed in the four corners of the tray. This induces defaecation. After two hours, menthol crystals were sprinkled over the water, covered with a glass plate and kept undisturbed for 1-2 hours for complete narcotisation. This was tested by gently touching one of the extended apertures with a needle. When both or either one of the siphons contract, narcotisation was continued. Sea water formalin was found to be the best medium for preservation of the colour in ascidians. A mixture of 40% formaldehyde and sea water in the ratio 1:10 (effective concentration of 4%) was used for preservation. A dissecting microscope was used to note the surface features followed by careful studies of the anatomy.





### Results and Discussion:

Twenty four species of ascidians were identified. Out of these, 16 species were colonial

*Aplidium indicum, Aplidium multiplicatum, Polyclinum madrasensis, Polyclinum nudum, Eudistoma maveride, Distaplia nathensis, Trididemnum clinides, Didemnum perlucidum, Didemnum psammata hodes, Diplosomas similis, Lissoclinum*

*textile, Ecteinascidia diaphanis, Ecteinascidia venui, Eusynstyela tinctoria, Symplegma oceania, Botrylloides magnicoecum* and 8 were simple ascidians - *Phallusia arabica, Phallusia nigra, Ascidia*

*sydneyensis, Rhodosoma turcicum, Styelacanopus, Microcosmus exasperatus, Microcosmus helleri, Herdmania momus*. The results indicated that colonial ascidians are more diverse compared to that of simple. Ascidians are consumed as food in many parts of the world and are sufficiently important to merit an entry in FAO Year Book of Fishery Statistics (21). Some ascidians are widely enjoyed as food in Japan, particularly in Hokkaido and Tohoku districts because of the high amount of protein, carbohydrate and other essential micronutrients. Like other marine food products, ascidians are delicious, relatively easily digestible and offer minerals, iodine and vitamins. Like other marine food products ascidians are delicious, relatively easily digestible and offer minerals, iodine and vitamins. Ascidians are an important link in the food chain, source of many natural products and are even cultured for human consumption which necessitates their conservation.

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## Identification of Volatile Chemical Constituents of Fruit Pulp by GC-MS Analysis of Some Traditional Mango Varieties of Malda and Murshidabad District for Increasing Consumer Acceptability and Conservation.

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### Abstract

Murshidabad and Malda districts of West Bengal were once famous for their traditional mango (*Mangifera indica* L.) varieties. Different agro-climatic zones of these two districts gave rise to different traditional mango varieties. These traditional mango varieties have unique taste, flavour, texture and size. This difference in flavor is often due to varied volatile compounds and other bioactive compounds in mango. Many of them have unique taste viz. traditional mango variety Champa has an aroma like the champaka (*Michelia champaca* L.) flower. Aroma volatiles of mango determine consumer acceptability and subsequent conservation of these traditional mango varieties. In this investigation several unique bioactive compounds have been reported in some traditional mango varieties from Malda and Murshidabad by using Gas Chromatography-Mass Spectrometry (GC-MS). These indigenous mango varieties may survive alongside modern varieties if they are characterised by distinctive aromatic traits that increase their consumer acceptability and demand in the market. So on one hand these finding may aid in conservation of the indigenous plant resources and may also help in getting these traditional mango varieties registered under Geographical Indication of Goods (Registration and Protection) Act 1999.

**Keywords:** *indigenous mango variety, Murshidabad, Malda, aroma volatiles, conservation.*

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

Mango (*Mangifera indica* L.), which belongs to the family Anacardiaceae, order Rutales, is one of the most important tropical fruits marketed in the world and is ranked fifth in total world production of major fruit crops (FAO, 2006). India has one of the richest collections of mango (*Mangifera indica* L.) cultivars in the world. Mango is grown in all the states of the country. Characterization and documentation of indigenous mango varieties is important for identifying potential candidates for improved utilization of the genetic resource.

### Genetic erosion of flavour-associated traits in improved mango varieties:

Hybridization techniques resulted in several improved varieties which were released in India from various regions (Majumder *et al*, 1972; Singh *et al*, 1972; Iyer, 1991). However the breeding objectives for mango have been primarily associated with yield, resistance, and appearance (Sharma, 1987). There was less emphasis on the improvement of flavour-associated traits such as the fruit aroma. As a result, superior flavour traits originally present



in germplasmresources have been gradually lost during breeding, thus leading to largely similar fruit aromaamongst current commercial cultivars.

### **Flavour diversity among mango varieties:**

Aroma is specific to each mango cultivar (Lalel *et al*, 2003).Aroma volatiles of mango (*Mangifera indica* L.) determine consumer acceptability and influence selection of parents for mango breeding programs (Pandit *et al*, 2009). Both physical and chemical characteristics of mango viz. colour, texture, flavor, sweetness are some of the qualities which determine consumer acceptability of the different mango varieties (Mamiro *et al*, 2007). Different mango varieties have unique taste, flavour, texture and size. Aroma volatiles mango often determines the consumer acceptability and subsequent conservation of these traditional mango varieties. Worldwide there has been research work to study the aromatic profiles of mango cultivars. They are usually comprised of mixtures of monoterpenes, sesquiterpenes, and volatile oxygenates (monoterpenes, sesquiterpenes, esters, lactones, alcohols, aldehydes, ketones, volatile fatty acids, some degradation product of phenols, and some carotenoids) (Bender *et al.*, 2000; Pino *et al.*, 2005; Lebrun *et al.*, 2008; Pandit *et al.*, 2010; Bonneauet *al*, 2016; Li *et al.*, 2017). Gas Chromatography-Mass Spectrometry (GC-MS) has been used to identify unique bioactive compounds (Sanet *al*, 2017; Maet *al*, 2018). It was also found that this group of compounds that determine the characteristic aroma of the fruit is commonly present in small quantities, approximately 50 ppm or less.

This difference in flavour is often due to varied volatile compounds and other bioactive compounds in mango. Aroma chemicals are organic compounds with defined chemical structures. They are generated by organic or bio-catalytic synthesis or isolated from microbial fermentations (Zemlicka *et al*, 2013). Many of them have unique taste. The traditional mango variety Champa from the districts of Malda and Murshidabad of West Bengal has an aroma like the champaka (*Michelia champaca* L.) flower. The indigenous mango variety of Murshidabad, Anaras, which in the Bengali language means pineapple had a distinct, natural pineapple flavour. But even though these traditional mango varieties are unique they are not so well known beyond the district borders. There is not much demand for them as their uniqueness is relatively unknown among a larger section of society. Less demand dampens the eagerness of the orchard owners to grow them. This has lead to a steady



decline of these lesser known unique traditional mango varieties. If this trend continues there is a high risk of losing these plant genetic resources forever.

Aroma volatiles of mango determine consumer acceptability and subsequent conservation of these traditional mango varieties. It is very important to identify location-specific most suitable local mango landraces for developing 'conservation through use' strategies to reduce genetic erosion (Sennhenn *et al.* 2013). These traditional varieties will survive alongside modern varieties if they are characterised by distinctive traits that make them relevant in the farming system or demanded in the market (Berg, 2009). There is an urgent need to identify unique mango varieties and novel phyto-chemicals which account for the unique aroma and other characteristics. In this study the authors have collected some traditional mango varieties of Malda and Murshidabad district and used Gas Chromatography-Mass Spectrometry (GC-MS) to identify unique bioactive compounds.

## Material and Methods:

### Study Area

**Malda** is a district in West Bengal, India. It lies 347 km (215 miles) north of Kolkata, the state capital. The latitude range is 24°40'20" N to 25°32'08" N, and the longitude range is 87°45'50" E to 88°28'10" E. The district covers an area of 3,733.66 square kilometres (1,441.6 sq mi).

**Murshidabad** is a district of West Bengal in eastern India. Situated on the left bank of the river Ganges, the district is very fertile. Covering an area of 5,341 km<sup>2</sup> (2,062 sq mi). The district comprises two distinct regions separated by the Bhagirathi River. To the west lies the Rarh, a high, undulating continuation of the Chota Nagpur plateau. The eastern portion, the Bagri, is a fertile, low-lying alluvial tract, part of the Ganges Delta. The district is drained by the Bhagirathi and Jalangi rivers and their tributaries. Bhagirathi is a branch of the Ganges, and flows southwards from Farakka barrage where it originates from the Ganges. It flows southwards through the district and divides it into more or less equal halves.



In Figure 1 the district map of West Bengal is given. The district Malda is marked as 6 and Murshidabad is marked as 8.

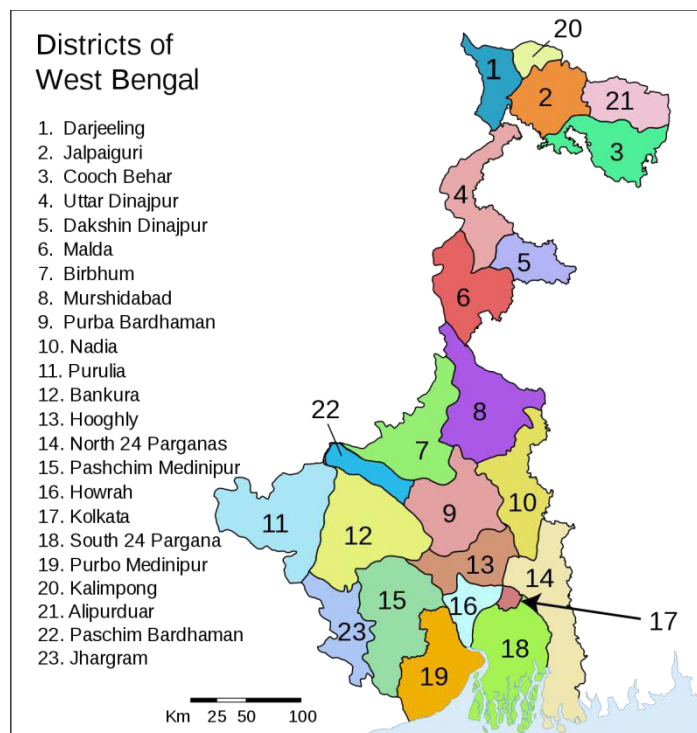


Fig.1. District Map of West Bengal

**Materials:**

For this study 5 (five) indigenous Mango varieties were collected from Malda and Murshidabad district in 2018. Table I shows the names of the mango varieties used in this investigation.

**Table I. List of mango varieties used in the study:**

Sl. No.	Indigenous Mango Variety	District from where variety was collected
1	Anaras	Murshidabad
2	Champa	Murshidabad
3	Dilpasand	Malda
4	Kalabati	Murshidabad
5	Kohinoor	Murshidabad





### **Fruit pulp collection:**

During the mango ripening season of 2018 indigenous mango variety fruits were collected from orchards of Malda and Murshidabad district. Fruit pulp from the mango variety Dilpasand were collected from Malda district. The indigenous mango varieties Anaras, Champa, Kalabati and Kohinoor were collected from Murshidabad district. The mango fruit pulp was stored in the refrigerator for further use. Methanolic extract were prepared for the analysis.

### **GC-MS:**

For GC-MS Thermofisher GC was used. The column (HP5) was fused silica 50 m × 0.25 mm I.D. Analysis conditions were 20 minutes at 100°C, 3 minutes at 235°C for column temperature, 240°C for injector temperature, helium was the carrier gas and split ratio was 5:4. The sample (1 µl) was evaporated in a split less injector at 300°C. Run time was 22 minutes. The components were identified by GC coupled with MS. The experiment was carried out in the Central Instrumentation Facility, Bose Institute, Kolkata, India.

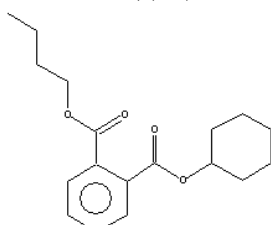
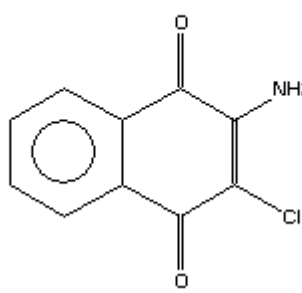
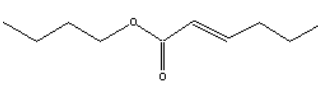
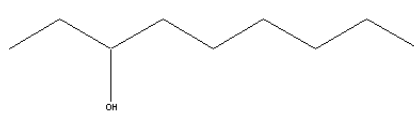
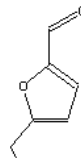
### **Identification of components:**

Interpretation of the mass spectrum, GC-MS was conducted using the database of National Institute Standard and Technology (NIST) having more than 62,000 patterns. The spectrum of the unknown components was compared with the spectrum of the known components stored in the NIST library. The name, molecular weight and structure of the components of the test materials were ascertained.

### **Results:**

Some of the compounds which were identified are given in Table II. The identification of phytochemical compounds was based on the peak area, retention time and molecular formula (Fig 2 & 3).

**Table II. Different chemicals identified from the indigenous mango varieties:**

Sl. No	Mango Variety	Chemical Name	Chemical structure
1	Anaras	Benzenedicarboxylic acid	<p>1,2-Benzenedicarboxylic acid, butyl cyclohexyl ester Formula C18H24O4, Mw 304, CAS# 84-64-0, Entry# 138481 Phthalic acid, butyl cyclohexyl ester</p> 
2	Champa	Phthalic acid	<p>1,4-Naphthalenedione, 2-amino-3-chloro- Formula C10H6ClNO2, Mw 207, CAS# 2797-51-5, Entry# 160964 Quinoclamine</p> 
3	Dilpasand	2 Hexenoic acid	<p>2-Hexenoic acid, butyl ester, (E)- Formula C10H18O2, Mw 170, CAS# 54411-16-4, Entry# 33331 Butyl (2E)-2-hexenoate</p> 
4	Kalabati	3-nonanol	<p>3-Nonanol Formula C9H20O, Mw 144, CAS# 624-51-1, Entry# 7338 Nonyl(3)carbitol</p> 
5	Kohinoor	Hydroxymethylfurfural	<p>5-Hydroxymethylfurfural Formula C6H8O3, Mw 126, CAS# 67-47-0, Entry# 2-Furancarboxaldehyde, 5-(hydroxymethyl)-</p> 



Some of these compounds are reported to be associated with distinct aroma in many fruits. For example 2 Hexenoic acid which has been found in the traditional mango variety Dilpasand is said to be responsible for the sharp backnotes present in a varied array of fruits viz. raspberry, strawberry, pineapple, apple, It is also said to impart a cheesy favour. The literal translation of the word Dilpasand means close to the heart or very fond of. It is likely that the unique aroma and flavour endears this variety to the consumers.

The fruit pulp of Kalabati mango variety revealed 3-nonanol which is reported to impart pungent, leafy, herbaceous, and fruity odor. Benzenedicarboxylic acid was found in the famous traditional mango variety Anaras found only in Murshidabad district. The same compound, Benzenedicarboxylic acid has been reported in the mango variety Banganpalli from Andhra Pradesh which is known for the unique sweet and rich taste (Preethiet *al*, 2014).

Hydroxymethylfurfural (HMF) is an organic compound formed by the dehydration of reducing sugars. HMF is classified as a food improvement agent and is primarily being used in the food industry in form of a food additive as a biomarker as well as a flavoring agent for food products. This compound has been found in the traditional mango variety Kohinoor.

Juglone, also called 5-hydroxy-1,4-naphthalenedione (IUPAC) is an organic compound with Juglone occurs naturally in the leaves, roots, husks, fruit (the epicarp), and bark of plants in the Juglandaceae family, particularly the black walnut. This compound has been found in the traditional mango variety Champa. It may be noted that Eugenol (4-allyl-2-methoxyphenol) which is usually found in clove has been found in Champa (De *et al*, 2021).

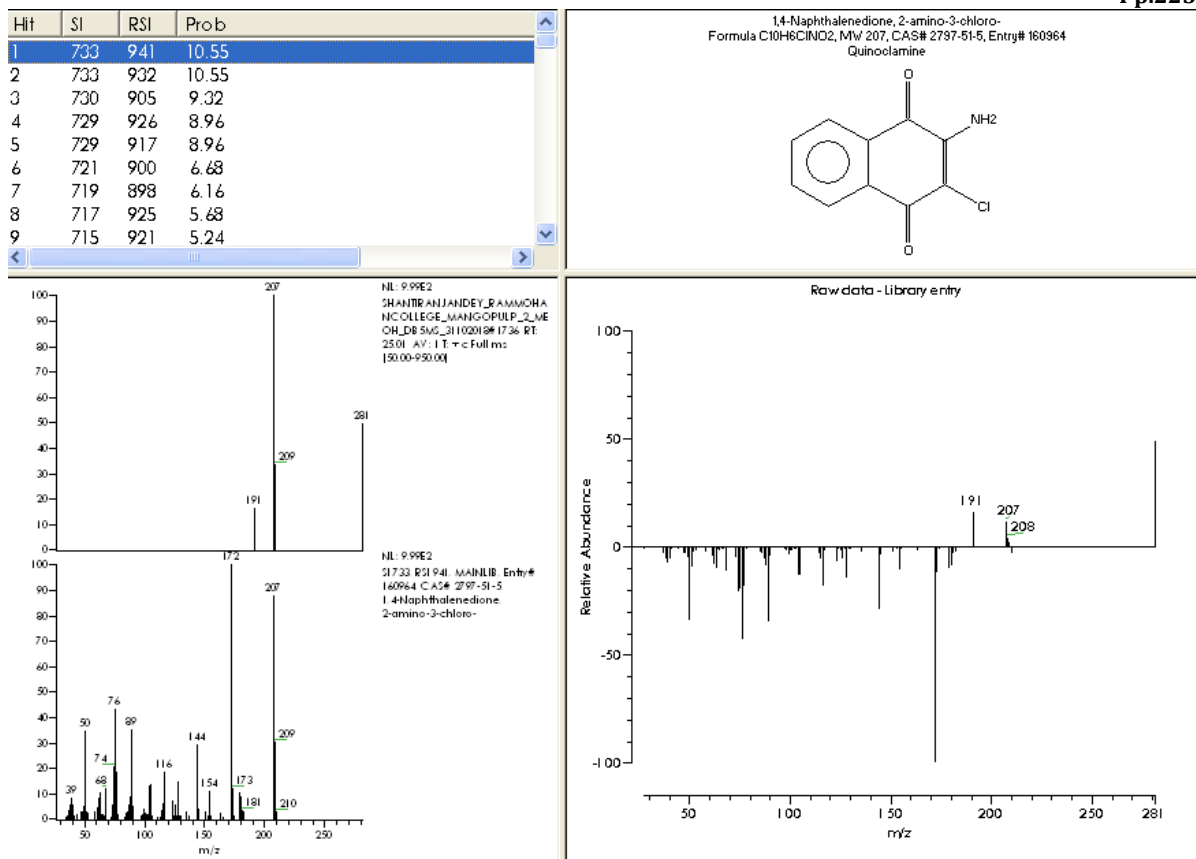
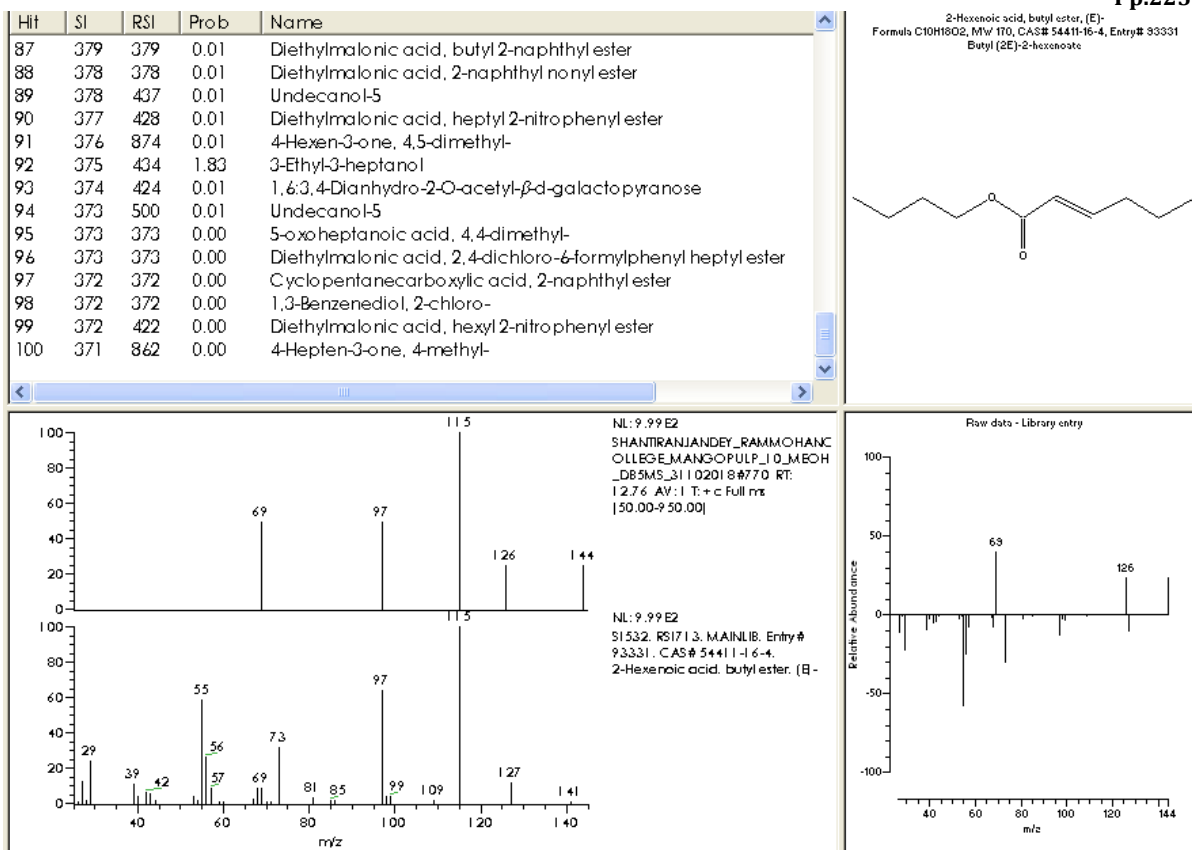


Figure 2. GC MS spectra and NIST result for identification of compound, 5-hydroxy-1,4-naphthalenedione from Champa mango variety.



**Figure 3. GC MS spectra and NIST result for identification of compound, 2 Hexenoic acid from Dilpasand mango variety.**

### Discussion:

The scientific information relating to aromatic constituents as well as sensory characteristics of indigenous mango cultivars of West Bengal is limited. There are several unique varieties of mango, which need to be identified and if possible given a geographical identity. The indigenous mango varieties of Malda and Murshidabad which have a distinct and unique aroma could be maybe a treasure trove of volatile compounds. These mango varieties need to be conserved for posterity.

Aroma chemistry is very complex. Certain chemicals are being discovered that mimic the complex flavour of different fruits. In 2020, Ralf G. Berger, of Leibniz University Hannover, Germany with Miriam Grosse and colleagues, discovered (5E/Z,7E,9)-decatrien-2-one in the volatiles given off by the edible birch polypore fungus (*Fomitopsis betulina*). This



fungus that bursts from the bark of birch trees produces a single molecule with the sweet smell of pineapple, an aroma usually formed by a mixture of many compounds (Miriam Grosse *et al*, 2020). Eugenol (4-allyl-2-methoxyphenol) is a phenolic compound from the class of phenylpropanoids and the main component of clove. This compound has been found in Champa mango variety and could be the chemical precursor of chemical compounds that impart the unique flavour in Champa mango variety.

Brand development of mango is needed in such a way that it would lead to integrated growth of that crop (Banerjee, 2011). Identifying indigenous mango varieties with unique features and marketing them could lead to higher profit among the mango orchard owners. This could be a deciding factor for conserving an indigenous mango variety and its legacy for posterity.

### **Conclusion:**

The volatile compounds which are present in a fruit are important criteria to govern their freshness attributes. All over the world consumption of fresh fruits is given high preference and is recommended as a part of human diet and aroma plays an important role in consumer acceptability. Some of the indigenous mango varieties of Malda and Murshidabad districts have distinct aroma and flavour. These traditional varieties with distinct flavour need to be identified and marketed. More multi disciplinary research is needed to unravel the chemical mysteries of the distinctly flavoured indigenous mango varieties. The research finding may aid in conservation of the indigenous plant resources and may also help in getting these traditional mango varieties registered under Geographical Indication of Goods (Registration and Protection) Act 1999 on account of their unique aroma and flavour.

These traditional varieties need to be introduced to a large section of consumers, beyond the district borders. Once there is a demand for a particular flavoured traditional variety chances are that orchard owners will plant those very varieties. This will lead to the conservation of the indigenous mango varieties with distinct flavour.

### **Conflict of Interest:**

The authors declare that there are no conflicts of interest regarding the publication of this work.



### Acknowledgment:

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## Floristic diversity of Chupi beel in Purba Bardhaman in West Bengal

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### Abstract

*Wetlands support a rich floral and faunal diversity. The present article provides a checklist of 304 floristic species (angiosperm 244 & algae 60) found in and around of Chupi beel, Purba Bardhaman, West Bengal, India, extensively documented for the first time. A total 244 angiospermic species are distributed in 191 genera and 68 families. Out of this, 55 families, 145 genera and 185 species belong to dicotyledons and 13 families, 46 genera and 59 species belong to monocotyledons. As for habit is concerned, it was found that herbs, shrubs, trees and climbers occupies 77%, 9%, 7% and 7% of the total angiospermic species respectively. The total 60 algal species are distributed among 40 families in which 24 species belong to Cyanophyceae, 14 species belong to Chlorophyceae, 16 species belong to Bacillariophyceae and 6 species belong to Euglenophyceae.*

**Keywords:** *West Bengal, Angiosperms, Algae, Diversity, Chupi beel, Purba Bardhaman.*

(Paper published on 1<sup>st</sup> June, 2021.)

### Introduction:

Wetlands are the areas with nutrient rich soils and sufficient waters that support a rich floral and faunal diversity (Chowdhury et al., 2016). Wetlands may support both aquatic and terrestrial species (Chowdhury & Das, 2013) that are generally herbaceous or very occasionally shrubby in nature, they grow very fast and interfere to the human activities in many ways (Raja et al., 2015). Significant contribution on aquatic macrophytes in West Bengal were carried out by Majumder (1965), Mukhopadhyay (1987), Naskar & Biswas (1988), Naskar (1990), Ghosh et al. (1993), Ghosh (1994). Mandal & Mukherjee (2007, 2010, 2014), Choudhury & Das (2009, 2010, 2013), Biswas et al. (2012), Choudhury et al. (2014), Choudhury & Das (2014), Chowdhury et al. (2015), Chowdhury et al. (2016), Karthigeyan et al. (2020), Singh et al. (2020).

Planktonic Cyanoprokaryota & Bacillariophyta and freshwater Euglenophytes from East Kolkata Wetlands were reported by Roy & Pal (2015b) and Roy & Pal (2016) respectively. Recently, Basu et al. (2020) reported 130 freshwater algal taxa including 34 taxa of Cyanophyceae (21 genera, 11 families), 46 taxa of Chlorophyceae (25 genera, 13 families), 1 taxon of Xanthophyceae, 30 taxa of Euglenophyceae (10 genera, 3 families) and 19 taxa of Bacillariophyceae (11 genera, 10 families), from East Kolkata Wetlands (EKW).

Chupi beel, also known as Chupi chaur or Purbasthali lake, is globally important for various migratory birds, and an important source of income and nutrition for the surrounding areas (Chowdhury, 2017). Chowdhury (2017) analyzed the water quality of Chupi beel and reported 35 phytoplankton species. Recently Mandal et al. (2018) reported different threats and opportunities of ecosystem services of this lake. Mandal & Siddique (2018) reported 74



species of waterbirds from this area. No angiospermic plant diversity account is reported from this area. The present study was undertaken to survey the floristic diversity in and around of Chupi beel.

### Materials and methods:

- a) **Study area:** The studied area is Chupi beel (23°27'5"N, 88°20'35"E), located at the boundary between Nadia and Purba Bardhaman district of West Bengal, India (Figure: 1). It is located at Chupi village of Purbasthali, about 8 km from Nabadwip City, Nadia. The lake was formed by the meandering of Ganges river. It is an oxbow lake that sprawls over an area of 3.50 km<sup>2</sup>.
- b) **Methods:** Angiosperms and algal samples were collected for three years from January 2017 to December 2020. Freshly collected angiosperms specimens were worked out and identified with the help of standard keys from relevant floras, monographs and were reconfirmed by matching them with the authentic herbarium specimens present in Central National Herbarium (CAL). The specimens were processed following standard herbarium techniques (Bridson & Forman 1998). Algal samples were preserved with 4% formaldehyde solution. Voucher specimens are deposited in Central National Herbarium (CAL).

### Results:

Angiospermic and algal diversity in and around of Chupi beel (West Bengal) is documented for the first time with a record of 304 species. Angiosperms and algae occupies 80% and 20% of the total studied species respectively (Figure: 2). Total 244 angiospermic species are distributed in 191 genera and 68 families. Out of this, 55 families, 145 genera and 185 species belong to dicotyledons and 13 families, 46 genera and 59 species belong to monocotyledons. Dicotyledons and monocotyledons occupies 76% and 24% of the total angiospermic species respectively. As for habit is concerned, it was found that herbs, shrubs, trees and climbers occupies 77%, 9%, 7% and 7% of the total angiospermic species respectively. Floristic study reveals that Poaceae is the most dominant angiosperm family and is represented by 23 genera and 30 species followed by Asteraceae (16 genera and 16 species) and Euphorbiaceae (8 genera and 11 species). The three dominant families of Chupi beel comprise 57 species. Out of 68 families, 25 families are represented by a single genus with a single species. Some of the photographs of studied angiosperm species are given in Figure: 3-4.

Total 60 algal species are distributed in 40 genera, 39 families and 4 orders. Among them Bascillariophyceae includes 12 families, 12 genera & 16 species, Euglenophyceae includes 2 families, 2 genera & 6 species, Chlorophyceae includes 10 families, 10 genera & 14 species and Cyanophyceae includes 15 families, 16 genera and 24 species. Some of the photographs of studied algal species are given in Figure: 5-6.

### Discussion:

The present study has established its richness in vegetation along with angiospermic and algal wealth of the lake of which angiosperms are the key elements of the flora. In the



present study 304 taxa have been documented which confirms its richness in biodiversity. The documentation of the flora is of immense help to researchers/students in general and foresters in particular in correct identification of plants available in the lake. Further, this will play a vital role in the management of the lake, implementation of various conservation strategies.

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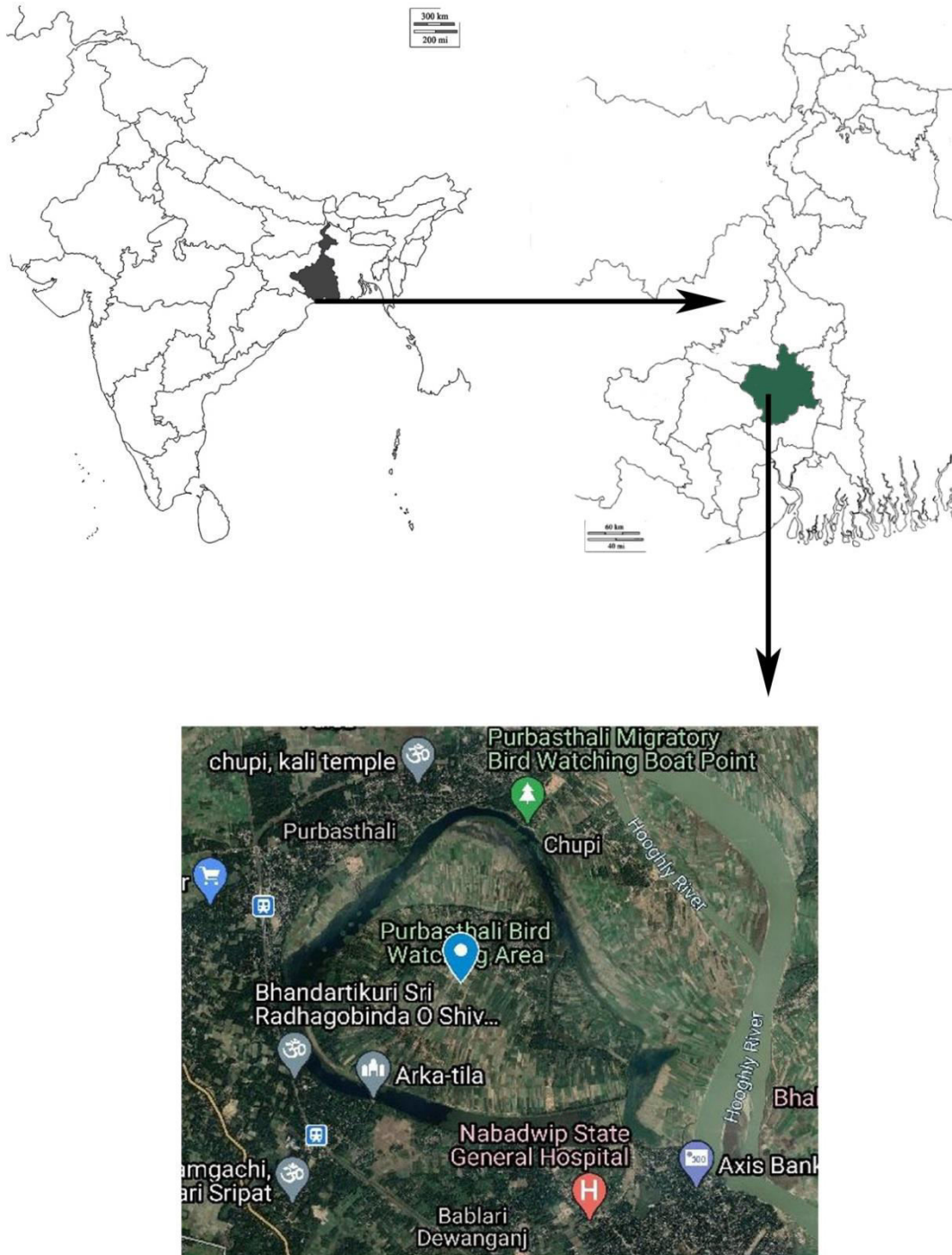
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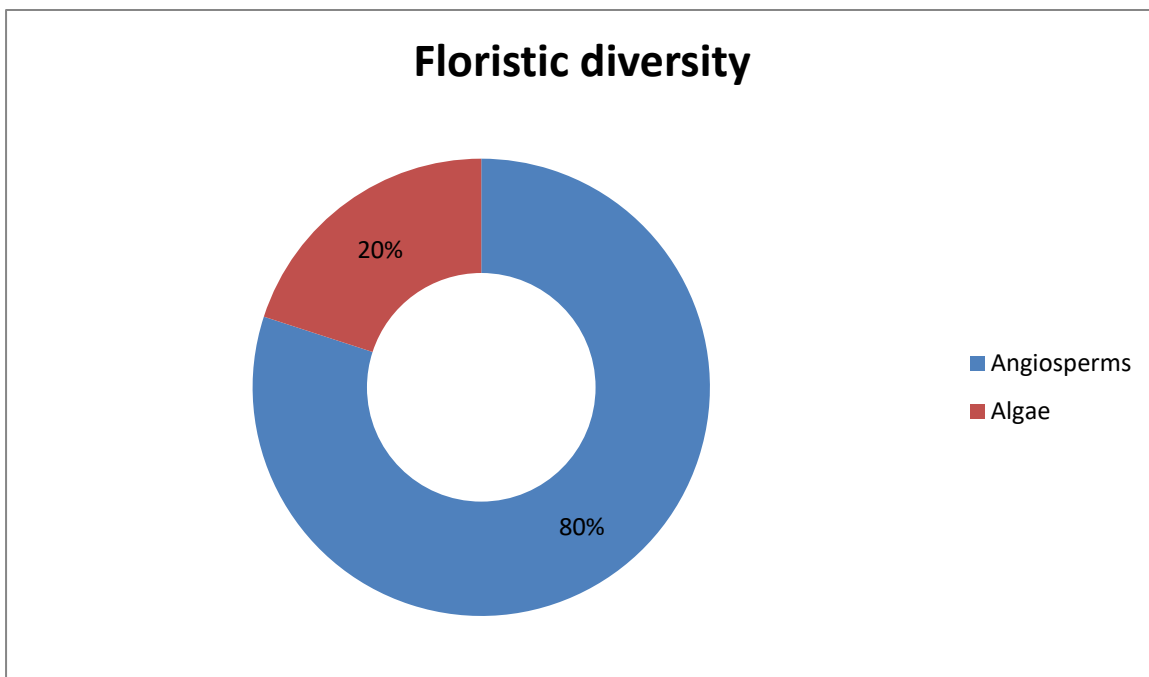


**Figure-1**





**Figure-2**

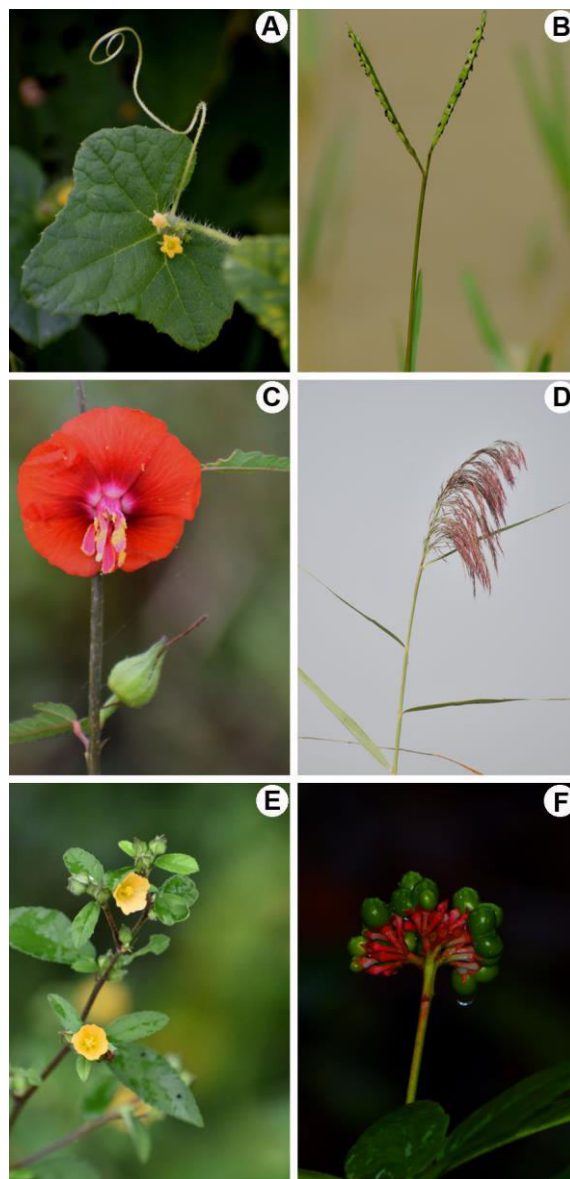




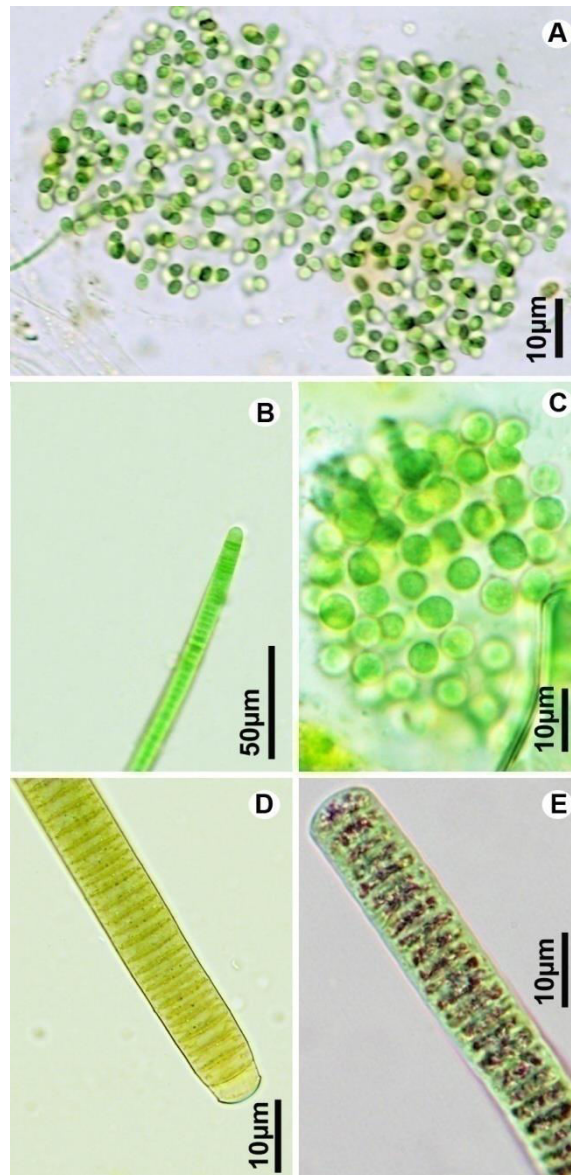
**Figure-3**



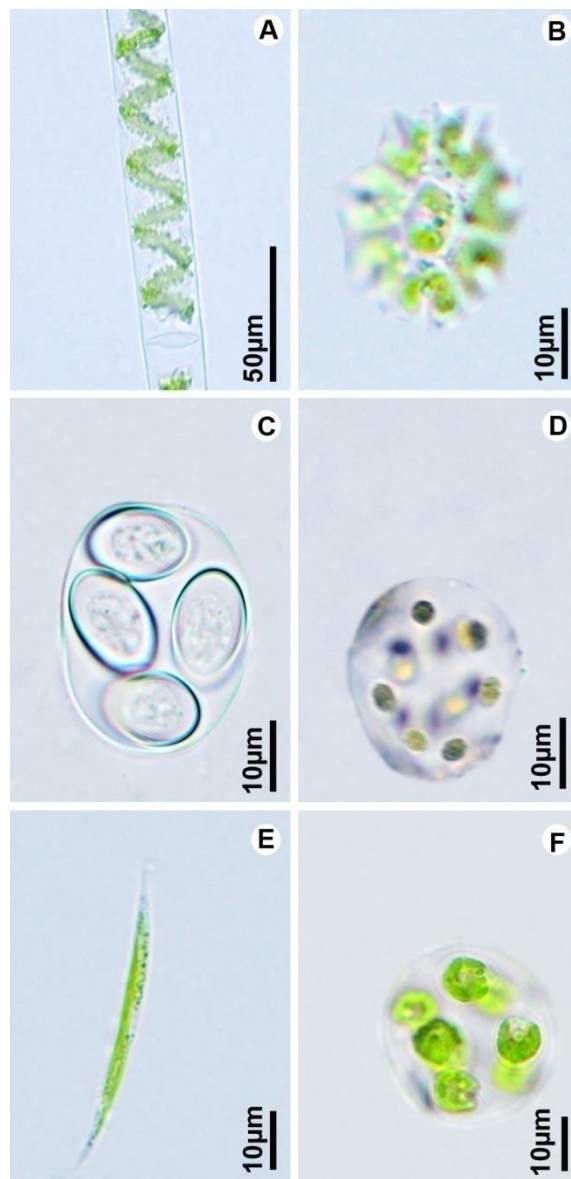
**Figure-4**



**Figure-5**



**Figure-6**





**Figure 1:** Location map of the Chupi beel, Purba Bardhaman, West Bengal, India

**Figure 2:** Angiosperms and algal diversity

**Figure 3:** **A)** *Eichhornia crassipes* (Mart.) Solms **B)** *Grangea maderaspatana* (L.) Poir. **C)** *Heliotropium indicum* L. **D)** *Ipomoea aquatica* Forssk. **E)** *Melochia corchorifolia* L. **F)** *Monochoria hastata* (L.) Solms

**Figure 4:** **A)** *Mukia maderaspatana* (L.) M.Roem. **B)** *Paspalum distichum* L. **C)** *Pentapetes phoenicea* L. **D)** *Phragmites karka* (Retz.) Trin. ex Steud **E)** *Sida rhombifolia* L. **F)** *Rauvolfia serpentina* (L.) Benth. ex Kurz

**Figure 5:** **A)** *Aphanocapsa muscicola* (Meneghini) Wille **B)** *Phormidium kolkwitzii* Komárek in Anagnostidis **C)** *Synechocystis aquatilis* Sauvageau **D)** *Oscillatoria limosa* C.Agardh ex Gomont **E)** *Oscillatoria curviceps* C.Agardh ex Gomont

**Figure 6:** **A)** *Spirogyra longata* (Vaucher) Kütz. **B)** *Pediastrum tetras* (Ehrenberg) Ralfs **C)** *Oocystis naegelii* A.Braun **D)** *Eudorina elegans* Ehrenberg **E)** *Closterium acutum* Brébisson **F)** *Kirchneriella irregularis* (G.M.Smith) Korshikov