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In favor of

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ANWESHA

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MESSAGE

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It is a matter of great pleasure that, the Women Cell, Bijni College, Bijni is going to publish the third volume of its mouthpiece ANWESHA very shortly. It is quite heartening that the volume is consisting of a good number of articles from various aspects of life around that will enrich the mind of the readers in a better appreciation of our enquiries, ethics and values.

I wish my warm greetings and felicitation to all the paper writers and congratulate the members of both Women Cell and Publication Cell of our college for making this endeavour a success.

Dr. Birhash Giri Basumatary
Principal,

Bijni College, Bijni

Principal
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EDITORIAL

Present time has brought a massive change in every aspect of life with an unprecedented emphasis on upgrading our living experiences. The outlook of society has been changing the scenario in advancement of education and research in different fields across the globe. The thrust of academic career in particular has been privileged in documentation of its noteworthy progress as a mark of recognition for successful scientific research contribution and academic excellence. The dissemination of knowledge beyond boundaries has enlightened people in the society in a universal manner. Education has emerged as the instrument of development and to enhance the capability of the people to be aware of various issues with skillful projection. The contents of "Anwasha" presents these diverse issues derived from different disciplines and languages. The articles reflect the ideology of certain socio-economic dimension and facts of popular science for human welfare. The authors of research articles hold immense potential to excel in every field and cover the subjects of humanities, social science, literature and science & technology in addition to women-empowerment. The women-empowerment is the slogan for holistic progress of any nation just like "Atma Nirbhar Bharat" in India. Therefore, active participation and involvement of women in community life must be appreciated to overcome social ailments. The emergence of such comprehensive study on the quality of life of women would be able to uplift socioeconomic status at the grassroots

level. Traditional culture and harmony may help in creating their own identity with a sense of responsibility that has been focused through the articles. The articles of literatures and social science would be able to create logical judgements. The articles on environment and human health issues would be expected as innovative scientific research. The environmental awareness against pesticides exposure and its extremity will be able to draw attention through the article here. The articles on medicinal plants and vegetables would be considered as model biological research. The article on cancer is aimed to focus on global prevalence and also Indian perspective. Moreover, the articles encompass all direction systematically and it certainly boosts the morale of our readers for their future endeavors.

We are certainly delighted for the overwhelming response from the authors, researchers and academicians to support with their creative research articles in this edition of "Anwasha" Vol. III. We hereby urge upon all the contributors of this publication to continue their support with social responsibilities. We are very grateful to our advisors and members of editorial board for supporting and encouraging the publication of our mouthpiece "Anwasha" successfully in a sustainable manner.

Editors

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Cancer in women with special reference to breast cancer in India.

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Abstract

The genetic alterations that cause most cancers arise within the DNA of a cell during the lifetime of an affected individual. The commonest kind of cancer is that the carcinoma which has 90 percent of all cancer types including breast cancer. Present study has been done to find out the carcinoma in female with respect to breast cancer India and North-eastern states. In women, breast cancer was the leading (14.5%) cancer in the northeast India. Women with over the age of fifty or who are gone through menopause are more vulnerable to the disease. Poor lifestyle factors such as, longer working hours, stress full lives, smoking, alcohol consumption, and use of oral contraception are some of the factors contributing to breast cancer cases in women in India. Among the lifestyle factors, obesity increases the threat of breast cancer because it is thought that obesity after the menopause increased oestrogen production, which in turn induced neoplastic cell growth. Some lesser known risk factor and lifestyle factors especially consumption of home-made liquor is one among the reason for the disease within the rural areas of Northeastern states. Regular health checkup and mammogram for early detection of the disease can save

life of the patient. Taboo and ignorance are the prime cause of death in breast cancer, so people especially women should break these two to live a healthy life. Awareness in individual level for the early detection is the only key to fight successfully against the disease.

Key words: Cancer, breast, women, lifestyle, India.

Introduction:

Cancer could be a hereditary condition because it will be traced to alterations within specific gene. The genetic alterations that cause most cancers arise within the DNA of a cell during the lifetime of an affected individual. Due to these genetic changes, cancer cells proliferate uncontrollably, producing malignant tumour that invade surrounding healthy tissues (Karp, 2010). The term cancer was derived from the Latin word "crab" was coined by Hippocrates within the 5th Century B.C. to explain diseases within which tissues grow and spread unrestrained throughout the body ultimately the person dies. Cancer causes abnormally fast cells' growth in any a part of the body, and may spread within the other a part of the body and therefore the process is understood as metastasis. Metastases are the first reason behind death from cancer. Many of the genes that contribute to cancer development are two broad categories- tumour suppressor genes and DNA repair genes. Tumour suppressor genes are normally protective genes, normally limits cell growth. When mutated, cell growth becomes uncontrolled and tumour develops. Examples of tumour suppressor genes are BRCA1, BRCA2 and p53. Germ line mutation of BRCA1 or BRCA2 genes increases a women's risk of developing hereditary breast or ovarian cancer. They also increase the danger of carcinoma and melanoma in women and men (cancer.net). Quite 50% of cancers involve a missing or damaged p53 gene. Mutations in DNA repair genes could also be inherited or acquired. Cancer is also of the many types like, carcinoma, sarcoma, lymphoma, leukemia etc. The commonest kind of cancer is that the carcinoma

which has 90 percent of all cancer types including cervical, breast, skin, brain, lung, colon, kidney, prostate, and bladder cancer. In the World Health Organization (WHO) report, the highest cases of cancer in 2020 were of breast cancer (2.26 million cases) followed by Lung cancer (2.21 million cases); colon and rectum cancer (1.93 million cases); prostate cancer (1.41 million cases); skin cancer (non-melanoma) (1.20 million cases); and stomach cancer (1.09 million cases). About 10 million deaths were recorded within the world in 2020 due to cancer (Ferlay et al., 2020). As per National Cancer Registry Programme Report 2020, cancer incidence in women is 712,758 in 2020. Indian Council of Medical Research (ICMR) and National Center for Disease Informatics and Research (NCDIR), Bengaluru confirmed the sharp increase in India's cancer cases, estimating that it could further increase by 12% within the next five years. Advancing age is that the most vital risk factor for all kinds of cancer. In line with the foremost recent statistical data from NCI's Surveillance, Epidemiology, and End Results (SEER) programme the median age of a cancer diagnosis is 66 years. An analogous pattern is seen for several common cancer types (Nagaitha et al., 2019). Cancer incidence rate in North East India (150-200 cases/ Lakhs) is double than the national average (80- 110 cases/ Lakhs), hence North Eastern region is termed as India's "cancer capital". Moreover, among north-eastern states, Mizoram, Arunachal Pradesh and Nagaland have the very high cancer incidences (onco.com, 2018). In women, breast cancer is that the leading common site (14.5%) of cancer in the northeast India (Times of India, Feb.4, 2021). Environmental factors in the form of radiations, persistent pollutants etc. like DDT, can enhance the cases in thickly populated urban areas

Objective of the current study is to search out the health condition of women with special relevancy of breast cancer in India. Research questions set for the study are:

- i. What are the causes of accelerating cases of breast cancer in women?

- ii. Which age-group suffered most from the disease in India?
- iii. Does food and feeding habit is to blame for the disease?
- iv. Is there any environmental impact on spreading breast cancer?
- v. What are the preventive measures to be taken to stay safe from the disease?

This study is fully supported the secondary data analysis, collected from already published works in e-journals through internet search.

Result:

The causes of breast cancer are not fully known till now but age, case history, dense breast tissues, hormones and hormone medicines, hormone replacement therapy, oral contraceptive, lifestyle factors like alcohol consumption, exposure on radiation are a number of the prime risk factors associated to the breast cancer. As per National Health Services (UK), women with over the age of fifty, who are gone through menopause are more vulnerable and about 8 out of 10 cases of breast cancer happens over the age of fifty. It's established that breast cancer don't run through families, but genes referred to as BRCA1 and BRCA2 can increase risk of developing carcinoma which will be inherited from a parent to child. TP53 & CHEK2 genes are related to increased risk of the disease. Women with dense breast tissues may have higher risk of developing cancerous growth, and it's also difficult to read a mammogram of dense breast for any lump or abnormal tissue growth. The feminine hormone oestrogen can

sometimes induce neoplastic cell growth in breast. Furthermore, not having children or having children later in life also increase the chance of carcinoma. Hormone Replacement Therapy (HRT) is related to increased risk of carcinoma, if it continued for quite one year and also the risk lasts for quite 10 years after taking HRT as compared to at least one who have not used HRT. Research shows that use of contraceptive increases the danger of carcinoma, however risk decreases with the stop of using. Among the lifestyle factors, obesity

increases the threat of breast cancer because it is also thought that obesity after the menopause increased oestrogen production. Alcohol consumption even in small dose in regular basis increases the danger of the disease. Radiations within the kind of X-rays, CT scans on chest also may slightly increase the chance of breast cancer (www.nhs.uk). Dr. Mehul Bhansali, Director Surgical Oncology, Jaslok Hospital and Research Center also highlighted that, poor lifestyle, longer working hours, stress full lives, smoking, alcohol consumption, and use of contraception are all contributing to breast cancer cases in women in India (Times of India, 2020, Sharma, 2020). Though different studies support statistically the actual fact that a woman with over 50 years is at high risk, but there's a big distinction between urban and rural cases of breast cancer incidence in India. In urban areas like Mumbai, it is more common in younger group and 52% of all women tormented by breast cancer are between 40- 49 years old (Khokhar, 2012). In north-eastern region incidence is comparatively lower compared to other varieties of cancer. It's customary to understand that the high incidence of breast cancer in North-east is in rural sector, which could be a mystery (Shanker et al., 2021). Some lesser known risk factor and lifestyle factors especially consumption of home-made liquor is one among the reason for the disease within the rural areas of Northeastern states. A study in Assam has shown that 32% of breast cancer cases are of triple negative subtype, related to high-grade large tumours and high node positivity (Sharma et al., 2014; Shanker et al., 2021). No single food item can cause or prevent carcinoma, but a person's dietary choice can induce risk of the disease. Alcohol, spicy and crunchy food, undercooked food can intensify the chance of carcinoma. From studies, it will be shown that carcinoma risk will be reduced by opting plant based food habits (Link et al., 2013). Several environmental factors like radiations (both ionizing and non-ionizing), toxic industrial and vehicular emissions, different organic chemicals and hormones and endocrine disrupting compounds

(EDCs) are proved because the increased risk factors of breast cancer (Gray et al., 2009). EDCs are substances that are found in our everyday lives including pesticides, plasticizers, pharmaceutical agents, attention products, food packaging materials etc. Epidemiological data strongly supports the link between increased risks of developing carcinoma with exposure to different environmental persistent pollutants like DDT(dichlorodiphenyltrichloroethane), DDE (dichlorodiphenyldichloroethylene), PCBs (Polychlorinated biphenyls), phytoestrogens in early period of life likewise as adult exposure to oral contraceptive pills etc. (Murphy et al., 2021). It's to be noted that, Polychlorinated biphenyls (PCBs) are a halogenated aromatic group of ubiquitous, persistent environmental pollutants, and that they are often present in high concentrations in fatty foods like meat, fish and dairy products (Guo et al.2019). Healthy lifestyle habits like avoiding alcohol and by remaining physically active, one can lower the increased risk of disease. Physical activity like household works can lessen a minimum of 20% of the danger of the disease. Regular exercise of 300 minutes per week is suggested for the reduction of weight. Alcohol consumption and smoking should be avoided and fruits and vegetables should be added in meals by avoiding fatty foods. Conner Middelmann-Whitney, nutritionist, advised to not use canned foods and drinks and not to keep microwave food in plastic containers. High temperature barbecuing, grilling or frying meat can trigger the assembly of acrylamide that also increase cancer risk, so one should attempt to cook meat gently and make an endeavor to avoid preserved meats yet. Clinical breast examination could be a technique for identifying breast tumour for the first detection of the disease. Regular health checkup and mammogram for early detection of the disease can save life of the patient. Women with 40 to 44 years should start yearly screenings mammograms as recommended by the American Cancer Society. The report also added that women of ages 45 to 54 or more should have a mammogram annually. If anybody with case

history of carcinoma, experts recommended regular mammogram screening after menopause or at the age of fifty. Hormone replacement therapy should be avoided to scale back the increased risk of carcinoma (www.webmd.com).

Conclusion:

Every female's breast is different in shape, size and consistency. Self examination should start 17-18 years of age and regular self examination is necessary to find out any deformities in shape or change in colour or lumps etc. in it. Taboo and ignorance are the prime cause of death in breast cancer, rightfully said by Lopamudra Das Roy, Founder and President of Breast Cancer Hub, USA. So people especially women should break these two to live a healthy life. Awareness in individual level for the early detection is the only key to fight successfully against the disease.

Reference:

- Bloggs. J. (2018, June 6). North-East India is now India's 'Cancer Capital' – Here is everything you need to know! Retrieved from <https://onco.com/blog/north-east-india-cancer-capital/> doi: 10.4103/ijmr.IJMR_347_20
- Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, et al.(2020). Global Cancer Observatory: Cancer Today. Lyon: International Agency for Research on Cancer; 2020 <https://gco.iarc.fr/today> (accessed on February 2021).
- Gray, J, Evans, N., Taylor, B., Rizzo, J., & Walker, M. (2009). State of the evidence: the connection between breast cancer and the environment. *International journal of occupational and environmental health*, 15(1), 43–78. <https://doi.org/10.1179/107735209799449761>
- Guo, W., B. Pan, S. Sakkiah, G. Yavas, W. Ge, W. Zou, W. Tong, and H. Hong. 2019. Persistent organic pollutants in food:

Contamination sources, health effects and detection methods. *International Journal of Environmental Research and Public Health* 16 (22):4361. doi: 10.3390/ijerph16224361.

http://ncdirindia.org/NCRP/Annual_Reports.aspx

<https://en.wikipedia.org/wiki/Cancer>

<https://www.cancer.net/navigating-cancer-care/cancer-basics/genetics/genetics-cancer>

<https://www.cancer.net/navigating-cancer-care/cancer-basics/what-cancer>

<https://www.nhs.uk/conditions/breast-cancer/causes/> (2019); retrieved on 12.12.2021)

<https://www.webmd.com/breast-cancer/guide/understanding-breast-cancer-prevention>

<https://www.who.int/news-room/fact-sheets/detail/cancer>

Kalita, K. (2021, February 4). Cancer cases in NE to rise by 13.5% by 2025: NCDIR- ICMR study. http://timesofindia.indiatimes.com/articleshow/80693138.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Karp, G. (2010). Cell Biology, John Wiley & Sons, Inc., N. J.

Khokhar, A. (2012). Breast cancer in India: where do we stand and where do we go?. *Asian Pacific Journal of Cancer Prevention*, 13(10), 4861-4866. <https://doi.org/10.7314/apjcp.2012.13.10.4861>

Link, L. B., Canchola, A. J., Bernstein, L., Clarke, C. A., Stram, D. O., Ursin, G., & Horn-Ross, P. L. (2013). Dietary patterns and breast cancer risk in the California Teachers Study cohort. *The American journal of clinical nutrition*, 98(6), 1524-1532. <https://doi.org/10.3945/ajcn.113.061184>

Murphy Lam Yim Wan, Vanessa Anna Co & Hani El-Nezami (2021): Endocrinedisrupting chemicals and breast cancer: a systematic review of epidemiological studies, CriticalReviews in Food

Science and Nutrition, DOI: 10.1080/10408398.2021.

Ngaihte, P., Zomawia, E., & Kaushik, I. (2019). Cancer in the NorthEast India: Where we are and what needs to be done?. *Indian journal of public health*, 63(3), 251-253. https://doi.org/10.4103/ijph.JIPH_323_18

Rangarajan, B., Shet, T., Wadasadawala, T., Nair, N. S., Sairam, R. M., Hingmire, S. S., & Bajpai, J. (2016). Breast cancer: An overview of published Indian data. *Souib Asian journal of cancer*, 5(03), 086-092.

Shanker, Neha; Mathur, Prashant; Das, Priyanka; Sathishkumar, K.; Shalini, A.J. Martina; Chaturvedi, Meesha Cancer scenario in North-East India & need for an appropriate research agenda, Indian Journal of Medical Research: July 2021 - Volume 154 - Issue 1 - p 27-35.

Sharma, K (2020, August 19). Why are cancer cases on rise in India? Here are the reasons. Times of India.com Retrieved from <https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/>

and were relegated to the background. Many evil customs and traditions are evolved in the society which enslaved the women and tied them to the boundaries of the house (Goel, 2004). The growing trend of violence against women in India in general and Assam in particular has been a matter of serious concern for the centre as well as the state of Assam. This violence may vary from very mild banter to rape, murder and abduction and so on. It can take place anywhere- at home, in the streets, at work places, jails. Of all the cases of violence against women, only few are reported. Of those few reported cases, only a meagre number of cases are prosecuted and criminals are punished. This further complicates the issue of violence against women. A majority of crime against women are left unreported because of reluctance to report, incapacity to fight against criminals or because of ignorance about their rights. In fact, Crime against women is grossly under reported, both in India (Jain et al., 2008) and elsewhere (Boyer & Dalton, 1997, Green, 2004). Reluctance on the part of women to approach the police is due to the fact that the police and rape victims remain seemingly 'worlds apart' in their perspectives and needs (Jordan, 2001). Common forms of violence against women in India include acts such as domestic abuse, sexual assault, and murder. Psychological abuse can be just as injurious as physical violence, if not more so (Adams et al., 2008). Incidents like unconsented sexual behaviour may have a deep impact on the life and psyche of women.

Kaur (2011) has observed that 'Violence against women and girls is one of the most widespread violations of human rights. It can include physical, sexual, psychological and economic abuse, and it cuts across boundaries of age, race, culture, wealth and geography'. It takes place everywhere- at the home, on the streets, in schools, the workplaces, in farm fields, refugee camps, and in some places such as red light areas and prisons (Golden, 2004). In this backdrop, this paper makes an attempt to understand the violence against women in Assam in the light of the latest reports of National Crime Records Bureau of

Violence against Women in Assam

Dr. Kalidash Brahma

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The growing trend of violence against women in India in general and Assam in particular has been a matter of serious concern for the centre as well as the state of Assam. Common forms of violence against women in India include acts such as domestic abuse, sexual assault, and murder. According to the National Crime Records Bureau of India, reported incidents of crime against women in India were 405, 861 in 2019. Of these, 7115 were dowry related death, 150 were acid attack, 72780 were kidnapping & Abduction of Women, 32033 were rape. Other cases of violence against women include force prostitution, domestic violence, violence under Dowry Prohibition Act 1961, Immoral trafficking and so on. This paper makes studies the violence against women in Assam in the light of the latest reports of National Crime Records Bureau of India. It also makes a humble attempt to suggest remedies to the crisis.

Key Words: Violence, Women, NCRB, Trafficking, Crime.

Introduction:

Women held a high place of respect in the ancient Indian society as mentioned in Rigveda and other scriptures. But with changes in the socio-political and economic life of the society, women lost their status

India. It also makes a humble attempt to suggest remedies to the crisis.

Crime against Women in Assam:

The Semantic meaning of 'crime against women' is direct or indirect physical or mental cruelty to women. Crimes which are directed specifically against women and in which only women are victims are characterized as 'crime against women' (Singh & Choudhury, 2012). According to the National Crime Records Bureau of India entitled 'Crime in India 2019', reported incidents of crime against women in India were 405,861 in 2019. Of these, 7115 were dowry related death, 150 were acid attack, 72780 were kidnapping & Abduction of Women, 32033 were rape (see Table-1). Other cases of violence against women include force prostitution, domestic violence, violence under Dowry Prohibition Act 1961 and so on.

The case of Assam is alarming. Report reveals that the state witnessed 26 incidents of murder with rape/ gang rape, 156 cases of dowry death, 53 incident abetment of women to suicide, 23 incidents of miscarriage, 6 cases of acid attacks. It also reveals 11943 incidents of cruelty of husband or his relatives on women, 6989 incidents of kidnapping and abduction of women, 1773 rapes, 4619 incidents of assault on women with intent to outrage her modesty and 329 cases of cyber crime against women in the state. As regard to Sexual offence against girl child, state witnessed 1776 incidents. Rate of Sexual offence against girl child in Assam is 10.5 which is higher than the national average i.e. 7.1. Rate of cruelty of husband or his relatives on women in Assam (70.7) is more than triple of the national average (19.3). State ranks 5th in term of the number of incidents of crime against women (30025) just behind Uttar Pradesh (56011), Rajasthan (41550), Maharashtra (37144) and west Bengal (30394). The rate of crime against women in Assam (177.8) is at the top among the states and higher than the national average (62.4). The incidents of crime against women

are not decreasing. Instead, it is increasing day by day. This is not a good sign of an egalitarian society nor can it be a signal of bright future. Rather, it indicates the weakness of the society for it can hinder development and prosperity of women as well as society. It can create disharmony in the society and above all hinder socio-economic and cultural development of the country (see Table No. 2).

Table 1: Different types of Crime against Women (As per NCRB Report 2019)

Sl. No.	Type of Crime	India		Assam	
		I	V	I	V
1.	Incident of murder with rape/ gang rape	283	286	26	27
2.	Dowry death	7115	7162	156	164
3.	Abetment to suicide of women	5009	5088	53	53
4.	Miscarriage (Sec 313 & 314 IPC)	221	222	23	23
5.	Acid attack	150	156	6	6
6.	Cruelty of husband or his relatives ¹	125298	126575	11943	11946
7.	Kidnapping and abduction of women	72780	73844	6989	7220
8.	Human trafficking	966	1991	153	173
9.	Rape	32033	32260	1773	1791
10.	Assault on women with an intent to outrage her modesty	88367	89292	4619	4645
11.	Cyber crime against women	1621	1645	329	331
12.	Sexual offence against girl child ²	46005	46682	1776	1817

I= No. of Incidences/Cases, V= No. of Female Victims

Number issues may be attributed to crime against women. Issues like poverty, illiteracy, caste and cultural factors may be broadly considered as causes of violence and crime against women. Whatever,

may be reason behind, issues of violence against women needs proper attention and requires eradication. Without the safety and security of women, their development is unimaginable. Without their development, a dream of well equipped society is meaningless. Success of a state and country can be realized only in an equitable society where the safety and security of both men and women are secured.

Table 2: Growing Trend of Crime against Women in India and Assam since 2017 to 2019 (As per NCRB Report 2019)

	Crime against Women			
	India	Assam		
2017	2018	2017	2018	2019
359849	378236	405861	23082	27687
				30025

Possible Solutions to the issues of violence against women:

Bringing solution to an old age problem is not going to be an easy task. It may require a number of remedies which may directly or indirectly help in elimination of violence against women. It may require both short term and long term solutions. As short term measures, a strict legislation on the issue, strict and quick action against the criminals may go a long way. Awareness campaigns and government project may help them in some ways. But, it cannot be a true remedy. The real criminal lies in the minds of the people. It has to be eliminated. Such an approach demands total transformation in the education and social system. Scriptures and writings which describe women as inferior, dependent and object of enjoyment needs to be eliminated from the curriculum. The entire course structure must convey the message that both men and women are equally capable of doing things. Both men and women contribute equally in the socio-economic life of family and the society. Hence, all have equal rights. Apart from these, society must be transformed. A state cannot protect the rights of women if the society is not ready for it. The true guardian of the rights is the

society. Therefore, it must be long term project of the government to transform the orientation of the society toward women. It may require numbers of interrelated programmes. Improvement in the economic condition of the women may also reduced issues of violence against women. The issues of violence against women may be tackled with a careful and sincere attempt on the part of the government as well as the society. The non-governmental organization may also work in this field. Combined effort of all these forces may be of great help.

References:

1. Adams, A. E., Sullivan, C. M., Bybee, D., & Greeson, M. R. (2008). Development of the scale of economic abuse. *Violence against Women*, 15, 563-588. <http://dx.doi.org/10.1177/1077801208315529>
2. Boyer, L. & Dalton M.E. (1997). Female victims of rape and their genital injuries. *BJOG*, 104(5), 617-20.
3. Goel, A. (2004) *Violence and Protective Measures for Women Development and Empowerment*, Deep & Deep Publications, New Delhi.
4. Golden, D.M. (2004). It's not all in my head. The harm of rape and Prison Litigation Reforms Act. *Cardozo Women's Law Journal*, 11(37), 37-60.
5. Green, J. L. (2004). Uncovering collective rape: a comparative study of political sexual violence. *International Journal of Sociology*, 34(1), 97-116.
6. Jain, R., Mathur P.N., Kothari, N.S., & Mathur, P. (2008). Medicolegal evaluation of sex assault cases admitted at Sardar Patel Medical College & P.B.M. Hospital, Bikaner. *India Medico Legal Update*, 8(1), 1-6.
7. Jordan, J. (2001). Worlds apart? Women, rape and the police reporting process. *Br J Criminol*, 41(4), 679-706.
8. Kaur, P. (2011). Crime, Gender and Society in India. *Higher Education of Social Science*, 1(1), 24-32.

9. Singh, A.K., & Choudhury, J. (2012). *Violence against Women and Children-Issues and Concerns*, Serials Publications, New Delhi.

(Footnotes)

- ¹ Rate of Cruelty of husband or his relatives in India is 19.3 against each one Lakh Population which is 70.7 in case of Assam.
- ² Rate of Sexual offence against girl child in India is 7.1 which is 10.5 in Assam.

A versatile Himalayan plant: *Podophyllum hexandrum*

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Keywords: podophyllotoxin, teniposide, etoposide, etopos, Abstract

Secondary metabolites of *Podophyllum hexandrum* (perennial herb) are known to treat various diseases in ancient and modern medicinal system and known with common name Himalayan Mayapple and found at 2600-3600m height in Himalayan region as J&K, Himachal Pradesh and western parts of China where as in ancient times it is a divine drug known as Aindri. *Podophyllum hexandrum* contains phyto constituent which are used in cure of cancer. Extract of *Podophyllum hexandrum* has shown anti-inflammatory and antioxidant properties, which indicate the presence of several molecules in the extract like quercetin and flavanoids, which are known for reduction of oxidative stress and inflammatory action. The antiviral activity of an extract of *Podophyllum* was found to be the most active component in stopping the replication of virus. Antitumor activity is another outstanding property of podophyllo toxin. It is effective in the treatment of different types of genital tumours (carcinoma verrucosus, for example) and in non-Hodgkin and other lymphomas and lung cancer. It has also proved effective in the treatment of rheumatoid arthritis and various

immuno-stimulatory properties of podophyllo toxin have been described Podophyllo toxin and some of its isomers have been verified for other activities such as insecticidal, phyto growth inhibitory, ichthy toxic and antiparasitic activities. This review article is about study of medicinal, phytochemical properties

1. Introduction

Medicinal plants are the God's greatest gift to the mankind which are used to treat many diseases from the prehistoric time. These plants are also called as medicinal herbs which synthesize many bioactive compounds whose functions are defensives in nature against fungus, microbes, insects, mammals and also possessed a large number of traditional uses. The elaborate description about these medicinal plants are often found in ancient medicinal text such as Ayurveda, Unnani, Siddhi medicinal text, Chinese and Nepalese medicinal text etc. The Indian Himalayan region is the home of more than 8000 species of valuable plants out of which 1748 species are identified as high valued medicinal herbs. (himalayan medicinal plants-rk Joshi 2016). Globally, these medicinal plants are most popular among thereseachers because these are used as a raw product for the manufacturing of pharmaceuticals and also used in the traditional healthcare system. The wide geographical distribution, favourable climatic conditions, and various other environmental factors facilitates the development and growth of medicinal plants in Himalayan region which equally help to balance natural environment as well as livelihood of mankind. Due to this reason, from the ancient times, our ancestors are used these herbs in the form of folk medicines and food supplement to cure many ailments as these plants are rich in valuable bioactive compounds as well as nutrients.[1] In past, these folk medicines were used in the treatment of basic to advance health related problems and such treatments are still utilized in different parts of the world.[2] Different types of plants having high medicinal value possesses various phyto-constituents like phenol, flavonoid salkaloids, carbohydrate, steroids and tannis which shows a great biological action on the human body.[3,4] At present, researchers are more focused on the study about these high valued medicinal plants as more than 25% of the world's

total existing drugs are natural product origin. Moreover, research is also progressing in the upgradation of phytochemical extraction method, so that higher yield can be obtained at minimum cost and in study their various pharmacological activities, so that these phytochemicals can be processed to form possible drugs as it is a suitable technique fortreatment of various diseases because of their higher conjugation with the biological systems and lesser toxicity. [5] Further, these biologically active compounds can also be used as a starting material which may lead to the formation of a novel drug like compounds with potent pharmacological activities. Thus this lead to the increase in demand of these plants which are rich in bio sources and can be used as medicinal agent.

Out of the various medicinally important families, Berberidaceae family is the most famous among the researchers as this family contains 18 genera and 700 highly known medicinally proved species. This family is commonly known as barberry family and most of the species are trees, perennials and shrubs in nature. The species belong to this family is widely distributed from East Asia to Western North America. In India, species belong to this family are widely found in Eastern Himalayan area.

Out of the 700 known species, *Podophyllum peltatum* and *Podophyllum hexandrum* are the most studied one which are commonly known as American and Indian Podophyllum respectively. In India, *Podophyllum hexandrum* is highly distributed in Himalayan region and in America the species is abundant in North America region. The root of Podophyllum contain a valuable organic compound named as podophyllo toxin, which is utilized for theformation of various semi synthetic derivatives that bears a large pharmacological activitie ssuch as anti-neoplastic, anti-bacterial, anti-pyretic, anti-viral, insecticidal, anti-HIV etc. and also effective against several types of warts.[6]

Podophyllum hexandrum is an essential plant with high medicinal value, therefore the podophyllo toxin turn out to be a valuable constituent and also use to form semi synthetic derivatives known under the common name teniposide, etoposide and etophos. Advances in the field of medicine have drawn attention to the synthesis of anti-cancer

drugs such as temiposide, etoposide from natural sources which shows better biogenic action in humanbody.[7]

The word Podophyllum is originated from ancient Greek vocabulary in which word 'podo' means 'a foot' and 'phyllos' means 'a leaf'. The name shows the similarity of leaves to the foot of duck. Common name of this plant is Himalyan Mayapple because fruit is ripened in the spring season. The Podophyllumgenus contain two type of species *Podophyllumpeltatum* which is known as American Mayapple and similarly *Podophyllum hexandrum*, also known as Indian Mayapple. Many researchers studied on these two plants as they bear a vital bioactive compound named podophyllo toxin from which one can prepare numerous derivatives by modifying the rings of the podophyllo toxin. These derivatives shows in hibitory activity against tumour, cancer, abnormal growth of skin and carry out peculiar properties like cathartic, archaic, cholagogue and emetic.[8] A biological peculiar metabolites are found in *Podophyllum hexandrum* which shows different properties like anti-oxidantant fungal, anti-inflammatory, radio protection and cytotoxic.[3]

In the Indian conventional system *Podophyllum hexandrum* has been known as divine herb as this plant has various applications not only in Ayurveda but also in Chinese, Unani and Siddha medicinal system for the treatment of various diseases.[9]

Indian Podophyllum contains 7-16% of resin and its American Podophyllum contains 4-5% of resin. The deviation in ratio of resin is associated due to seasonal variation, difference in location of growth and age of the plant.[10] In some specific are, the quantity of resin is increases up to 20%. The peak of percentage in resin is observed in the flowering season (May-June). Therefore Indian Podophyllum possessed 2.5 times more resin when collected in flowering season as compared to American Podophyllum. *P. hexandrum* commonly contain 6-12% resin which possess the concentration of podophyllo toxins about 40%. [11]

The extraction of podophyllo toxin from *P. hexandrum* has some limitation because of lesser availability of the source, and due to lack of proper cultivation procedure, this plant is considered as endangered

plant by IUCN (International union of conservation of nature). Theyield obtained from the plant is very low and the market value of podophyllo toxin has been risen as the demand of raw podophyllo toxin increases for derivatives preparation and clinical studies. Hence the yield only depends upon the availability of raw material. To solve the scarcity problem, researchers have used an effective and alternative way, which includes production of podophyllo toxin by tissue culture and plant cell culture method.

P. hexandrum is an useful herb from ancient times because of its large medicinal properties but in present time, this herb is at risk of extinction due to its over exploitation, less plantation and more demand in all over the world. So, a protective measure both judiciously and agriculturally has to be taken to resist the extinction of this valuable species.

Present review article highlights the necessary cultivation procedures, its phytochemistry, medicinal properties and pharmacological activities of plant. It also provides an insight towards the preservation status which will further lead the researchers to realize the importance of plant.

2. *Podophyllum hexandrum*

2.1 Morphology

P. hexandrum is a plant which can grow up to 12 to 18 inches in and having lobed leaves ordivision extending less than halfway to the base and thick stem. Further these tiny leaves aredivided in 3 lobes which didn't get unfold until the plant has grown completely and these appear to be as dark green with brown spots. Flowering season in spring brings out the whiteor light pink coloured 6-petaled flower at the end of stem and also produces red colouredberries.

In spring season flower contains 6-petal and 6-stemens, this give the insight to name of thespecies as hexandrum meaning six stamens. The length of leaves is about 10-25cm which aredivided into three irregular sizedlobes. Fruit is small, glowing red coloured berry withirregular size of about 2.5-5cm enclosed with seedsin pulp. Plant can be proliferated either by dividing the rhizome or with the help of seed germination.[12,13]

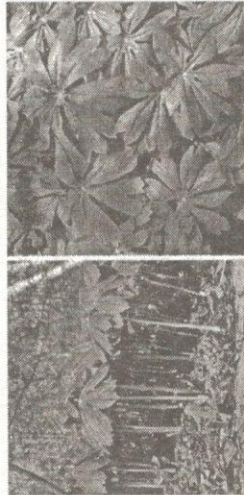
2.2 Soil requirements

It grows on humid region of mountain where soil is full of humus or near the river bank along with other plants. In recent times, researchers have found variation in morphology of plant like uneven sets of leaves, weight and size of fruit, and colour and size of seed. This leads to the variation in germination of seed in plant with different number of leaves. [14]

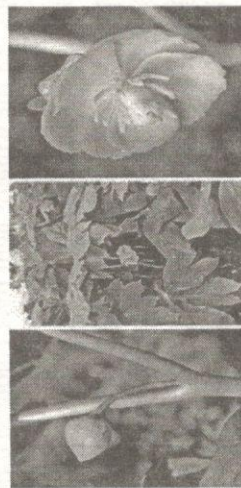
2.3 Botanical classification and Indian vernacular names

Table no. 1: classification of *Podophyllum hexandrum*

Kingdom	Plantae
Phylum	Angiospermae
Sub phylum	Dicotyledonae
Division	Archichlamydeae
Order	Ranunculales
Family	Berberidaceae
Genus	Podophyllum
Species	Hexandrum



Pic': Podophyllum hexandrum's stem is topped like umbrella with palmate leaf with 5-9lobes. [15]



Pic': Podophyllum Hexandrum's Flower bud in the axil of the two leaves but flowers are often hidden by the leaves. [16]

2.4 Geographical distribution

P. hexandrum is a naturally found in lower elevation of Himalayan region at 2300-3600m. This plant is scattered from Indian Himalayan region to Nepal, china, Pakistan and some part of Afghanistan. Some of species are found in Himalayan region of North America which is supplied in wholesale to other part of world. [17] This plant is located in various part5 of Himachal Pradesh at different heights, like ways in Chamba it is found in chulkot forest, kilar pass at an height of 3000m and in the other states like Zanskar valley in Ladkah, Kullu, shimla, Lahual, Kangra varying height from 2400-3600. Although Podophyllum hexandrum is a plant found in Himalayan region so it6 can be traced from different part of India like Jammu & Kashmir, Uttarakhand and Sikkim varying in height from 2700 to 4300m. [18]

3. Traditional Uses

The roots of *P. hexandrum* are used widely to treat skin related problems and it is widely practiced by the local healers in Amchis medicinal system. The local tribe belong to the Himalayan region uses the root and rhizome of *P. hexandrum* from ancient times to treat various ailments such as hepatic disorders, gangrene, gastriculcer, fever, syphilis, constipation and opthalmia (Bhattacharjee, 2001; Sharmaetal., 2010). An elaborative description about the uses of *P. Hexandrum* is also found in Ayurveda where the traditional healers are using the root and rhizome of this plant to treat various of ailments such as condylomaacuminata, taeniacapitis, Hodgkin's disease, leukemia, monocytoid, non-Hodgkin's lymphoma, and used against several type of warts, cancers and tumours. (Giri and Narasu, 2000; Qazi et al., 2011; Shaista et al., 2014). Ol-mo-se is the common name of rhizome of *P. Hexandrum* and it is extensively used to treat gynecological disorders in Ladakh. (Chaurasiaetal., 2007; Chaurasiaetal., 2012).

Active constituents:

The roots and rhizomes of Podophyllum hexandrum contain a plenty of constituents apart from a major metabolite podophyllo toxin having various pharmacological properties. In the 1880's the major constituent podophyllo toxin was first procured by Podwysstzki in pure state. The content of podophyllo toxin in the root of

various research attempts were made to observe various modification in the structure of podophyllo toxin for the removal of its side effects which leads to application of etoposide and teniposide to the medical field because these are antimetabolic glucoside (cytostatic). Both of these are the derivative of epipodophyllo toxin which is a dimeric form of podophyllo toxin. [24,25] Etoposide phosphate is also known as etoposide which is designed to reduce the limitation related with the low solubility of etoposide. It can be observed with in a vein at a high dosage which is converted by phosphatase in plasmatoetoposide, therefore this leads to the advance mentin treatment. [26] Etoposide is also the starting material for new derivative under the name CPH 82 which constitute a mixture of benzylidinated podophylloxyglycoside which are being used for the treatment of rheumatoid arthritis in different part of Europe and other derivative have application in the treatment of malaria and skin diseases. [27]

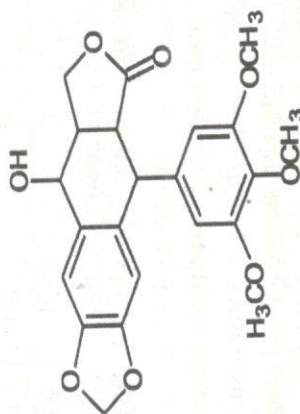


Fig: Structure of podophyllotoxin [28]

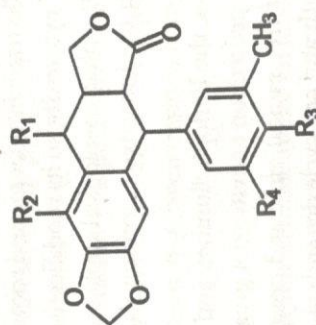


Fig: General structure for the derivative of podophyllotoxin [29]

Podophyllum hex and rum has been recorded as 56% but its correct structure was recorded in the early 1990's. The root and rhizome of Podophyllum hexandrum contain various constituents which act as dimer in the final product of phenyl propanoid pathway intermediate attached to the central carbon in the side chain. [19, 20]

Podophyllum hexandrum also contain numerous constituents with specific pharmacological application. For example podophyllo toxin, aryltetrahydronaphthalene, epipodophyllo toxin lignans, quercetin, quercetin-3-glycoside, kaempferol and kaempferol-3-glucoside. Other than these metabolites Podophyllum hexandrum also contain 4'-demethylpodophyllo toxin and podophyllo toxin 4-O-glucoside which act as antitumor lignans. The synthesis of anti-cancer drugs is also possible, which are known with common names etoposide, teniposide and etopos. [21]

Podophyllo toxin and its derivative :

Podophyllo toxin is a naturally found lign in which is a dimerized product of two components of phenyl propanoid. It is a rare component found in few plant species which is used as pharmacological agent against cancer. It is also used as the starting material for the synthesis of anti-cancer drugs like teniposide, etoposide and etopos. The occurrence of this component is decreasing day by day because of limited natural source and also the synthetic ways for its production are still not suitable. A resin podophyllin is a mixture of various constituents in which podophyllotoxin is the main compound and other related lignan are. Podophyllin is a resin which contains some lignan having anti-tumor application. [22,20]

As we know podophyllo toxin is very toxic towards the treatment of abnormal growth of cell (tumor) in human beings so it is used as the starting material for synthesis of semisynthetic anti-tumor and anti-cancer drugs like etoposide, teniposide and etopos. [23]

During research the scientists have formed the orics without any firm evidence that podophyllo toxin's low remedial index is because of its insolubility and unstable systemic behaviour. Due to these application scientists have shown great interest to observe the propability of podophyllo toxin lignans may be found in nature as glycosides.

Names	R ₁	R ₂	R ₃	R ₄
5-methoxypodophyllotoxin (5-MPT)	-OH	-OCH ₃	-OCH ₃	-OCH ₃
5-demethoxy-5-MPT	-OH	-OCH ₃	-OCH ₃	H
Etoposide		H	-OH	-OCH ₃
Teniposide		H	-OH	-OCH ₃
Etopophos		H	-OPO(OH) ₂	-OCH ₃
â-Platatin	H	-OH	-OH	OCH ₃
â-Platatin	H	-OH	-OCH ₃	OCH ₃

Table: Derivatives of podophyllo toxin [29] Pharmacological application:

The roots of podophyllum hexandrum contain a secondary metabolite as podophyllo toxin which have large number of biological application and its derivative also have medicinal properties like anti-cancer, anti-inflammatory, anti-neoplastic.[28,30] Indian Podophyllum suitable choice then American Podophyl lumonthe basis of content of podophyllo toxin in rhizome and roots. it is naturally gifted with a certain level of cytotoxicity, so its modification leads to the better results. [31] Some of the pharmacological application of Podophyllum hexandrum, based on the bioactive compound dsilisted down.

Radio protection

In there cent years, the Podophyllumhex and rum has been used to examine the radio protection activity to a great extent which also include scavenging of free radical, time and dosage based inhibition of programmed cell death and cell cycle dependent activities in the vivo and vitro models. [32, 33]

Extracts of Podophyllum hexandrum in methanol, chloroform and aq alcohol have shown approx. 70-95% radio protection activity in mice when observed 1-2 hours before 10 GY lethal body radition. [34,35,36] Also the various reports have shown presence of bioactive constituents other than the flavonoid and lignans. Most of flavonoid and lignan have been already reported for their application as anti oxidant and anti-cancer and this leads to their contribution in radio protection [37, 38, 39]

Anti fungal properties

Podophyllum hexandrum was examined for its antifungal application using the pure culture of medically isolated *Aspergillus Niger* and *Candida Albicans* using Disc Diffusion method. As a result of this method there were evidence found on the Minimum Inhibitory Concentration (MIC). For the *Aspergillus Niger* the MIC was found out to be 16.6mg/ml and for *Candida Albicans* it was found out to be 25 mg/ml.[40]

Insecticidal activity

dichloromethane extract of Podophyllum hexandrum had reflected the insecticidal activity against the larvae of *Drosophila Melanogaster*. Therefore Podophyllo toxin was reported to show the I.C₅₀ value for larvae *Drosophila Melanogaster* as 0.24µmol/ml and for the adults LD₅₀ value was found out to be as 22µg/adult. However another derivative of podophyllo toxin so show a minimum insecticidal activity which indicate the presence of 4-hydroxyl group as an important aspect for increase in insecticidal activity of acetyl podophyllo toxin (Derivative). [41]

Anti-inflammatory Activity

In the Ayurveda's literature, this plant has been documented for the cure of basic health and problem. So aqueous extract of podophyllum hexandrum has been reported to show the anti-inflammatory property. [42]

Anti-cancer Activity

Rhizome of Podophyllumhex and rum contains podophyllo toxin which is used for treatment of different form of cancer. The natural sources of podophyllo toxin are very low so the biosynthesis of

podophyllo toxin is an essential method to increase availability. [43] Podophyllin is a constituent of this plant which has anti-mitotic application, since which has been used for treatment of cancer from a very long time but it has special use in curing ovarian cancer. [44,45] Root and Rhizome of Podophyllumhex and rum contain a number of constituents like podophyllo toxin, podophyllin and berberine which also shows anti-tumour application like treatment of lung cancer using inhibition of microtubule assembly, testicular cancer, neurobla stoma, hepatoma and some other tumors. [46, 47]

Cytotoxicity

Podophyllo toxin being a bioactive compound possess cytotoxic activities and derivative of podophyllo toxin have shown cytotoxic level in μM . [48, 49] 7-O-glucopyrano side (4DPG) and 4-dimethyl picropodophyllo toxin strongly inhibits the propagation of cancer cells and stop the cell growth in mitotic phase. The prohibition of the microtubule assembly of cancer cells at low concentration leadstothe toxicity of 4 DPG and also includes apoptosis. These properties describe the potential of 4DP Gastheanti-tumour drugs. [50, 51]

Traditional uses

The fruits of Podophyllumhex and rumare fully ripen in the springs eason, thus they can used against fever in ancient medicinal systemin India. Therhizome of Podophyllumhex and rum can be used in treatment of gynaecological dysfunction in Tibetan system of medicine. [52] The *P.hexandrum* fruits are used in Kashmir traditional medicine as a treatment for high altitude sickness. The size of the fruit resembles to the size of the small brinjal and it is red in color. In Kashmir the fruit is commonly known as Banwangun and the ripe fruit is popularly used to treat cough. (Chatterjee, 1952; Chaurasiaetal, 2007; Chaurasiaetal., 2012).

Podophyllum hexandrum is described as a divine drug in our Ayurveda and Indian traditional system of medicine. For a long time Ayurveda is being used in Chinese traditional system of medicine to cure health problems. [53] This plant have successful results in treatment of various disorder like bacterial and viral infection, Hodgkin's disease, lymphoma, monocytoid leukemia, venereal warts, pyogenic infection

of skin tissue and different type of cancer in lung, brain and bladder in the modern allopathic system of medicine. [54, 55, 56]

Other traditional implementation of Podophyllumhex and rum in treatment of common disorders like constipation, cold, fever, septic wounds, burning sensation, snake bite, insect bite, mental disorder and in some allergic and inflammatory condition of skin. [57]

Common Names

In Ayurveda's literature the common names of Podophyllum hexandrum is Bantapushi or Giriparpat. It also have different local names in various languages or in different part of world. In Law at district Muzaffarabad, Pakistan it is named as Kakhri. In the Niti valley of central indian Himalaya, this plant is known by name Bankakri. In the Nepal Podophyllumhex and rumis known by the name Laghu Patra. [58,59, 60]

Conservation & Conclusion

National Medicinal Plant Board, India has brought some actions towards conservation of Podophyllum species which is an endangered medicinal plant through out the world after itscreation in the 24th November 2000. Podophyllum Hexandrum could be processed using seeds when sown as become fully ripe during spring season but sometimes activity of seeds islost which creates difficulty in regeneration. Podophyllum Hexandrum is an endangered species which require attention and study for its propagation and activity. [61]

Export and Import Policy (1997-2002) the schedule II and appendix II compares of the export of Podophyllum species and its parts, extracts and derivatives collected from nature is restricted. Podophyllum species obtained from nature are restricted for transport from India under the agreement Conventionon International Trade in Endangered Species of wild flora and fauna (CITES). Own cultivated Podophyllum or artificially processed plant species have permit for export under agreement of CITES and Legal Procurement Certificate (LPC) or certificate of propagation from the selected organisations. Moreover, the biological production of Podophyllo toxin by means of plant cell culture originated from Podophyllum hexandrum may be an tempting option for scientist. Podophyllotoxin content are

expected to change due to environmental factors like different location, height and time for cutting. [62,63]

Reference

1. Kelly M.G; Hartwell J.L.: The biological and the chemical composition of podophyllin-are view, J Nat Cancer Institute, 14 (1953-54) 967-1010
2. Rahman A.; Ashraf M.; Choudhury M.I.; Rehman H. & Kazmi M.H.: Antifungal tetralin lignans from leaves of Podophyllum hexandrum, Photochemistry, 40(2)(1995) 427-431.
3. Prakash H.; Ali A. and Bala, M.: Anti-inflammatory effects of Podophyllum hex and rum (RP-1) against lipopolysaccharides induced in inflammation in mice. Journals of Pharmacology and Pharmaceutical Science 8, 2007, 107-114.
4. Gordaliza M.; Garcý'a P.A.; Miguel J.M.; Del-Corral M.A.: Podophyllo toxin: distribution, sources, applications and new cytotoxic derivatives. Toxicon 44: 441-459.
5. Airi S, Rawal RS, Dhar U. 1997. Population studies on Podophyllum hexandrum Royle: a dwindling medicinal plant of the Himalaya. Plant Genetic resources News 110, 20-34
6. Edoga, H.O., Okwu, D.E., Mbaebie, B.O. 2005. Phytochemicals constituents of some Nigerian medicinal plants. Afr. J. Biotechnol., 4(7): 685-688
7. Molly Meri Robinson Classifications, Terminology and Standards, WHO, Geneva: Xiaorui Zhang Traditional Medicines, WHO. 2011. Traditional medicines: global situation, issues and challenges. 3rd Edition
8. Chaurasia OP, Ballabh B, Tayade A, Kumar R, Kumar GP, Singh SB. 2012. Podophyllum L.: An endangered and anti cancerous medicinal plant—An overview. Indian Journal of Traditional Knowledge 11, 234-241.
9. Wong SK, Tsui SK, Kwan SY, Su XL, Lin RC. 2000. Identification and characterization of Pemediby API-LC/MS/MS. J. Mass

Spectrum 35, 1246-1251

10. Purohit MC, Bahuguna R, Maithani UC, Purohit AN and Rawat MSM (1999) Variation in podophyllores in and podophyllo toxin contents in different populations of Podophyllum hexandrum. Current Science 77:1078-1080.
11. Fay DA and Ziegler HW(1985) Botanical sources differentiation of Podophyllumres in by high performance liquid chromatography. J Liq Chromatogr 8:1501-1506.
12. Qazi PH, Rashid A, Shawi SA. 2011. "Podophyllum hexandrum"—A versatile medicinal plant. International Journal of Pharmacy and Pharmaceutical Sciences 3, 261-268.
13. Li W, Li M, Yang D, Xu R, Zhang Y. 2009. Production podophyllo toxin by root culture of Podophyllum hexandrum Royle. Electronic Journal of Biology 5, 34-39.
14. Bhadula S. K., Singh A., Lata H., Kuniyal C. P and Purohit A. N. (1996) Genetic sources of Podophyllum hexandrum Royle, an endangered medicinal species from Garhwal, Himalaya, India Plant Genetic Resources Newsletter, 106, 26-29
15. <https://wimastergardener.org/files/2015/12/Mayapple-leaves.jpg>
16. <https://wimastergardener.org/files/2015/12/Mayapple-flower.jpg>
17. Claus EP, Tyler VE, Brady LR. 1974. Pharmacognosy. 6th ed. Henry Kimpton publishers, London. 203-204 p.
18. Shah N.C. (2006) Podophyllum hex and rumanidits conservation status in India, Medicinal Plant conservation, 12, 42-44.
19. Kamil MW, Dewick PM. 1986. Biosyn thesis of lignansalfa and beta-peltet in. Phyto chemistry 25, 2089-2092
20. Jackson DE, Dewick PM. 1984. Aryltetralinlignans from Podophyllum hexandrum and Podophyllum peltatum. Phyto chemistry 23, 1147-1152.
21. Imbert TF. 1998. Discovery of podophyllo toxins. Biochim 80,

- 207-222.
22. Gordaliza M, Garcia PA, Miguel JM, Corral MA. 2004. Podophyllo toxin: distribution, sources, applications and new cytotoxic derivatives. *Toxicol* 44, 441-459
23. Holthuis JJM (1988) Etoposide and teniposide: Bioanalysis, metabolism and clinical pharmacokinetics. *Pharm Weekbl* 10:101-116
24. Stahelin HF, Wartburg A Avon (1991) The chemical and biological route from podophylloxyglucoside to etoposide. *Cancer Research* 51:5-15
25. Uden W van, Pras N, Homan B, Malingre TM (1991) Improvement of the production of 5-methoxypodophyllo toxin using a new selected root culture of *Linum flavum* L. *Plant Cell Tissue Organ Cult* 27:115-121
26. Schacter L (1996) Etoposide phosphate: what, why, where and how? *Semin Oncol* 23:1-7
27. Leander K, Rosen B (1988) Medicinal used for podophyllo toxin. *US patent* 4, 788, 216
28. Archana GM, Lakshmi N. 2000. Production of podophyllo toxin from Podophyllum hexandrum: a potential natural product for clinically useful anti cancer drugs. *Cyto technology* 34, 17-26
29. Farlya S, Bisaria VS, Srivastava AK. 2004. Biotechnological aspects of the production of the anticancer drug podophyllo toxin. *Applied Microbiology and Biotechnology* 65, 504-519
30. Airi S, Rawal RS, Dhar U. 1997. Population studies on Podophyllum hexandrum Royle: a dwindling medicinal plant of the Himalaya. *Plant Genetic Resources News* 110, 20-34.
31. Canel C, Moraes RM, Dayan F, Ferreria D. 2000. Podophyllo toxin. *Phyto chemistry* 54, 115-120.
32. Arora R, Chawla R, Singh S, Kumar R, Sharma AK, Puri SC, Sinha AK, Tripathi RP, Sharma RK. 2006. Radio protection by himalayan high-altitude region plants. In: *herbal drugs: a twenty-first century perspective*. Jaypee Brothers Medical Publishing Limited, New Delhi. 301-325 p.

33. Arora R, Chawla R, Singh S, Sagar RK, Kumar R, Sharma A, Prasad J, Singh S, Gurudutta GU, Sharma RK. 2006. Bioprospection for radio protective molecules from indigenous plants. In: *recent progress in medicinal plants*. Phytomedicine 16, 179-219
34. Goel HC, Prakash H, Ali A, Bala M. 2007. Podophyllum hexandrum modulates gamma radiation-induced immunosuppression in Balb/c mice: Implications in radio protection. *Molecular and Cellular Biochemistry* 295, 93-
35. Goel HC, Arora R, Prasad J. 2000. A process for preparation of a radio protective herbal extract- I and II. Indian Patent filed, Patent Office, New Delhi, India.
36. Goel HC, Arora R, Prasad J. 2001. A process for preparation of a radio protective herbal formulation. Indian patent filed, Patent Office, New Delhi, India
37. Chawla R, Arora R, Kumar R, Sharma AK, Prasad J, Singh S, Sagar RK, Chaudhary P, Shukla S, Kaur G, Sharma RK, Puri SC, Dhar KL, Handa G, Gupta VK, Qazi GN. 2005. Antioxidant activity of reaction at edextractofrhizomes of high-altitude Podophyllum hexandrum: role in radiation protection. *Molecular and Cellular Biochemistry* 273, 193-208
38. Chawla R, Arora R, Sagar RK, Singh S, Puri SC, Kumar R, Singh S, Sharma AK. 2005. 3-O-beta-D-Galactopyranoside of quercetin as an active principle from high altitude Podophyllum hexandrum and evaluation of its radio protective properties
39. Chawla R, Arora R, Singh S, Sagar RK, Sharma RK, Kumar R. 2006. Podophyllum hexandrum offers radio protection by modulating free radical flux: role of aryl-tetrahydroxyflavonols. *Evidence Based Complementary and Alternative Medicine* 3, 503-511
40. Wani SA, Shah KW, Ahmad MA. 2013. Anti fungal activities of methanolic extracts of Podophyllum hexandrum and Rheum emodi against human pathogenic fungal strains. *International Journal of Pharmaceutical Sciences Review and Research* 19, 56-59
41. Miyazawa M, Fukuyama M, Yoshio K, Kato T, Ishikawa Y. 1999. Biologically active components against *Drosophila melanogaster*

- from Podophyllum hexandrum. Journal of Agriculture and Food Chemistry 47, 5108-5110.
42. Prakash H, Ali A, Balam, Goel HC. 2005. Anti-inflammatory effects of Podophyllum hexandrum (RP-1) against lipopolysaccharides indu. Journal of Pharmaceutical Sciences 8, 107-114.
43. Ahmad R, Sharma VK, Rai AK, Shivananda BG. 2007. Production of lignans in callus culture of Podophyllum hexandrum. Tropical Journal of Pharmaceutical Research 6, 803-808.
44. Board N. 2003. Herbs cultivation and their Utilization. Asia Pacific Business Press KamalNagar, Delhi, India. 329- 333.
45. Howes FN. 2001. Vegetable Gums and Resins. Reprint. Jodhpur, Scientific, 190.
46. Chattopadhyay S, Srivastava AK, Bhojwani SS, Bisaria VS. 2002. Production of podophyllo toxin by plant cell cultures of Podophyllum hexandrum in Bioreactor. Journal of Bioscience and Bio engineering 93, 215-220.
47. Giri A, Narasu ML. 2000. Production of podophyllo toxin from Podophyllum hexandrum: a potential natural product for clinically use fulanti cancer drug. Cyto technology 34, 17-26
48. Chattopadhyay S, Srivastava AK, Bhojwani SS, Bisaria VS. 2001. Development of suspension culture of Podophyllum hex and rum for the production of podophyllo toxin. Biotechnology Letters 23, 2063-2066.
49. Petersen M, Alfermann AW. 2001. The production of cytotoxic lignans by plant cell cultures. Applied Microbiology and Biotechnology 55, 135-142
50. Gordaniza M, Garcia PA, Miguel JM, Corral MA. 2004. Podophyllo toxin: distribution, sources, applications and new cytotoxic derivatives. Toxicon 44, 441-459.
51. Qi Y, Liao F, Chang Z, Yong L, Ming Z. 2005. Cytotoxicity, apoptosis induction, and mitotic arrest by a novel podophyllo toxin glucoside, 4DPG, in tumor cells. Acta Pharmacologica Sinica 26, 1000-1008

52. Ballabh, B. and O. B. Chaurasia. (2007). Traditional Medicinal plants of cold desert Ladakh- used in Treatment of cold, cough and fever, J. Ethnopharmacol., 112 : 341-349.
53. Wong, S. K., S. K. Tsui, S. Y. Kwan, X. L. Su and R. C. Lin, (2000). Identification and characterization of Podophyllum emodi by API-LC/MS/MS. J. Mass Spectrom, 35:1246-1251.
54. Gowdey, G., R. K. Lee and W. M. Carpenter, (1995). Tractise of HIV- related hairy Leuoplakia with Podophyllumres in 25% solution. Oral Pathol. Oral Radiol. Endocrinol., 79:64.
55. Beutner, K. R., & Von Krogh, G. (1990, June). Current status of podophyllo toxin for the treatment of genitalwarts. In Seminars in dermatology (Vol.9, No.2, p. 148).
56. Blasko, G. and G.A. Cordell, (1998). Recent Developments in Chemistry of Plant Derived Anticancer Agents. In: Wagner, H., H. Hiroshi and N.R. Fransworth (Eds.), Economics and Medicinal Plant Research. Academic Press, London.
57. Ganie S. A., B. A. Zargar, A. Masood and M. A. Zargar. (2012). Effect of long dose exposure of Podophyllum hex and rumme than olex tractonantioxidant defense system and body and organ weight changes of albino rats. Asian Pacific Journal of Tropical Biomedicine. 1600-S1605
58. Dar ME. 2003. Ethnobotanical uses of plants of Lawat district Muzaffarabad, Azad Jammu and Kashmir. Asian Journal of Plant Sciences 2, 680-682
59. Rawal D, Sijapati SJ, Rana N, Rana P, Giri A, Shrestha S. 2009. Some High Value Medicinal Plants of Khumbu Region Nepal. Nepal Journal of Science and Technology 10, 73-82.
60. Phondani PC, Maikhuri RK, Rawat LS, Farooque NA, Kala CP, Vishvakarma SCR, Rao KS, Saxena KG. 2010. Ethno botanical uses of plants among the Bhotiya tribal communities of Niti valley in Central Himalaya, India. Ethno botany Research & Applications 8, 233-244.
61. Nautiyal MC, Nautiyal BP. 2004. Agro techniques for High Altitude

Medicinal and Aromatic Plants, (Bishen Singh, Mahendra Pal Singh, Dehradun).

62. Nadeem M, Palmi LMS, Purohit AN, Pandey H, Nandi SK. 2000. Propagation and conservation of *Podophyllumhex* and *rum Roylei*: an important medicinal herb. *Biology Conservation* 92, 121-129.
63. Rajesh M, Jeyaraj M, Sivanandhan G, Subramanyam K, Dev GK Ganapathi A. 2012. Adventitious root culture in *Podophyllum hexandrum Royle* (syn. *P. emodi Wall. ex Hook.f. & Thomas*): An important medicinal plant. *Journal of Biotechnology and Biomaterials* 2, 6.

Study of Non-Conventional Leafy Vegetables and Scarcity of Food Plants of North-Salmara of Assam

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Abstract

The district of Bongaigaon is located in Assam's west-southwest corner. Bongaigaon is considered to be one of Assam's more developed districts. Bongaigaon has a total area of 2,800 square kilometres. The district's and North Salmara's tribes are the majority of the population. In some severe circumstances, such as rising vegetable prices or flooding, sub-divisions rely on non-traditional vegetables. Non-conventional food plants, on the other hand, are popular among all peoples, both rural and urban, and are the preferred diet of the less developed sections of the human population, such as tribes and Adivasis in India.

In almost all countries of the world which are rich in floral biodiversity and have abundance of vegetations, there are established practices of using non-conventional food plants. But only about 0.187% plants with food value are scientifically studied. Especially the food plants belong to different species of banana, *Colocasia*, fern (mostly taken as food) etc.

Most of the tribes and Adivasi people depend upon non-conventional leafy vegetables mainly found in the hilly area. Most of

the people age between 60 – 80 having a good knowledge about the non-conventional vegetables and their delicious cooking process. The local name of the species is differed one tribe to other tribes and Adivasis.

1. Introduction

Non-conventional food plants have always played a pivotal role as supplement to major food plants in the food security system since time immemorial. In almost all countries of the world which are rich in floral biodiversity and have abundance of vegetation, there are established practices of using non-conventional food plants as stand-by source of food at times of famine, natural calamity and at times when major crops fail due to local climatic aberrations etc. For example, in Assam (India) where flood is common during the rainy season, since time immemorial people have been using tender shoot of banana, corms of Colocasia, tender fronds of Fern as staple and scarcity food to survive during unfavorable time. Many non-conventional food plants, particularly wild and semi-domesticated leafy vegetables are however routinely used as supplement to major foods. Non-conventional food plants are therefore substitute to major food plants at times of scarcity and supplement to major food crops at normal times and thus they have become part of ethnic culture. Since the dawn of civilization man has identified nearly 80,000 plants to be edible out of which only about 130 are put to major use (Bhag Mal, 1990). Rural areas and tribal societies are the bastions of non-conventional food plants. Growing urbanization, influence and invasion of urban culture in rural areas and also tribal societies are causing fast erosion of ethnic culture and along with it knowledge and germplasm of non-conventional food plants. However, mere enumeration of such plants is not enough. A thorough assessment of their nutritive values is of paramount importance to find out how to make best use of them.

2. Objectives

The proposed study is that, non-conventional food plants like

wild, semi-domesticated leafy vegetables, little known cereal and legumes either in semi-domesticated condition or under limited cultivation are either at par with or superior to their conventional counterparts. Since non-conventional leafy vegetable are either wild or semi-domesticated, they are abundantly available wherever they occur. Moreover, they involve no cost or nominal cost. Some non-conventional leafy vegetables are available in local market and their price is invariably much lower than those of cultivated vegetables. This practice of consumption of non-conventional leafy vegetables as well as such other food plants is more prevalent in rural areas than in urban areas. This is mainly due to lack of scientific information and awareness about the nutritive values of such non-conventional food plants. The rural people are consuming the non-conventional food plants as part of old tradition being maintained since time immemorial.

The foremost target of the present study is to substantiated the age-old belief that many non-conventional food plants have excellent nutritive value. In a country like India where nearly 40 cores of people out of an estimated 102 cores population, live below poverty line this information have special significance. Non-conventional food plants can be used as promising and effective tools to combat malnutrition, hunger etc. Even in advanced western countries there is a growing awareness and popularity for leafy vegetables and vegetarianism is gaining momentum. A major follow up action needed in this regard is massive public awareness campaign which will help to popularize the non-conventional food plants among all people – rural or urban. This will help the general public to be aware of the vase biodiversity that natures offer and to sustain it.

3. Methodology

Non-conventional food plants were identified based on traditional knowledge, consultation with village elders and others with sound knowledge on the subject during the course of field survey. The plants were collected from their natural habitat and herbarium prepared. Most wild leafy vegetables grow luxuriantly during summer and so

The plants which have been identified as non-conventional food plants as well as leafy vegetables from the study area the Sub-division North Salmara under the District Bongaigaon of Assam are listed as below:

Description of some Leafy Vegetables abundant in North Salmara under the District of Bongaigaon of Assam

Scientific Name	Local Name	Family	Habit
<i>Ipomoea aquatica</i>	Kalmou sak	Convolvulaceae	Aquatic herb
<i>Elythra fluctuans</i>	Helachi	Asteraceae	Aquatic herb
<i>Leucas plukentii</i>	Doron	Lamiaceae	Herb
<i>Pouteria foetida</i>	Bhedailata	Rubiaceae	Climber
<i>Flourya interrupta</i>	sarat	Utricaceae	Herb
<i>Melastoma malababhricum</i>	Sitkiban	Melastomaceae	Herb
<i>Oldenlandia corymbosa</i>	Banjuluk	Rubiaceae	Herb
<i>Amaranthus spinosus</i>	Bakhutura	Amaranthaceae	Herb
<i>Amaranthus viridis</i>	Khutura	Amaranthaceae	Herb
<i>Portulaca oleracea</i>	Hathengia	Portulacaceae	Herb
<i>Spilanthes paniculata</i>	Acmeila	Nyctaginaceae	Herb
<i>Crotus speciosus</i>	Zam lakhuti	Zigiberaceae	Herb
<i>Bauhinia recemosa</i>	Kanchan	Caesapiaceae	Shrubs
<i>Achyranthus aspera</i>	Chirchita	Amaranthaceae	Herb
<i>Perperomia Pellucida</i>	Thunthuni	Piperaceae	Herb
<i>Polygonum hydropiper</i>		Polygonaceae	Prostrate herb
<i>Colocasia esculenta</i>	Kalaqkachu	Araceae	Herb
<i>Dioscorea bulbifera</i>	Banaria kathalu	Dioscoreaceae	Climbers
<i>Dioscorea pentaphylla</i>	Paaspatia alu	Dioscoreaceae	Climbers
<i>Solanum torrum</i>		Solanaceae	Herb
<i>Solanum nigrum</i>	Teeta vekuri	Solanaceae	Herb
<i>Diplazium Estulantum</i>	Dhekia	Polypodiaceae	Herb

they were preferentially collected during that period. Relevant information like nature of plant, habitat, growth habit, traditional method of consumption, traditional belief associated with the plants were recorded. The plants will be identified by comparing with standard herbarium, taxonomic manual and consultation with Taxonomists.

The families are arranged according to Bentham & Hooker's system of classification.

4. The study area: a climatic profile

The Study Area the Sub-division North Salmara under the District Bongaigaon of Assam, was established in the year 1983 with its headquarters at Abhayapuri. Its population according to 2001 census is 3, 50,059 where SC and ST population are 41,146 and 51,684 respectively. The Sub-division has an area of 55536 sq. km. The Sub-division has a demographic pattern of a mix community and the prominent are Koch-Rajbongshi, Bodo, Santhal, Brahmon, Garo, Jogi, Rava and Muslims. The mighty Brahmaputra River is flowing along the border line of the Sub-division. The Tamranga, Konora, Doloni, Dipor Pitony, Koya-Kujia, Chal-Chali are the major bees (Marshy area) that plays an important role in its biodiversity.

5. Results and discussion

Leafy vegetables are the best-known sources of vegetables protein, mineral and therefore any non-conventional or under-utilized leafy vegetables must have nutritional composition comparable or at par with conventional vegetables. Many non-conventional food plants, particularly wild and semi-domesticated leafy vegetables are however routinely used as supplement to major foods. Non-conventional food plants are therefore substitute to major food plants at time of scarcity and supplement to major food crops at normal times and thus they have become part of ethnic culture. Several studies show that non-conventional leafy vegetables are excellent sources of protein, crude fiber and mineral (Handique, A. K., 2003).

6. Conclusion

The study showed that there is good number of plant species used as no conventional leafy vegetables in the study area. Most of the plant species grow luxuriantly having summer rainy season. During this season there are scarcity of conventional food plants used as vegetables. So, these plants play an important role among the rural people as much as urban people.

Consent for publication

Not applicable.

Conflict of interest

The author declares no conflict of interest, financial or otherwise.

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Declared none.

References

1. Barrau, J. (1959): The Sago plants and other food plants of March Dwellers in the South Pacific. *Econ. Bot.* 13: 151-162.
2. Bhag Mal (1990): Under-utilized plants: A treasure house unexplored. *Indian Farming* 40: 19-24.
3. Bhag Mal (1990): Under-utilized plants: A treasure house unexplored. *Indian farming* 40: 19-24.
4. Bhandari, M. M. (1979): Famine foods of Rajasthan deserts. *Eco. Bot.* 28:73-81.
5. Bhattacharjee, J and Mukherjee, A. K., (1995): Divalent calcium in heat and cold stress induced accumulation of praline in *Amaranthus lividus* Linn. *Geobios*, 22: 203-207.
6. Brown, W. H. (1951): Useful plants of the Philippines. 3 vols. Manila.
7. Burkill, I. H. (1935): A Dictionary of the Economic Products

of Malay Peninsula. Vol. II (J-Z): 1703-1711. Crown Agents for Colonies, London.

8. Burkill, I.H. (1935): Dictionary of Economic Products of Malaya Peninsula, Vols 2, London.
9. Cameron, L.C.R. (1917): The Wild Foods of Great Britain, London.

and third centuries BC, mentioned the production of a kind of golden silk in ancient Assam in his writings. It is thought that the cultivation of different types of silk moths introduced by Tibeto Bermeese migrants before he wrote about it. It is during the reign of Ahom dynasty, which ruled Assam for a long period of 600 years from 1228 A.D. the muga silk really took off as a luxury commodity.

During the Ahom rule, muga silk was reserved for royalty, high ranking government officers and aristocrats. Visiting dignitaries were often gifted clothing made from muga silk.



Morphology of the muga silk moth:

The muga silk moth shows sexual dimorphism. The colour of the male moth is copper brown to dark brown, while those of female is yellowish to brown. There are four black marks one on each wing. The food plants of muga silk moth is som and soalu.

Life cycle:

The life cycle consists of four stages-moth, egg, larvae and pupa. After copulation with the male, the female moth lays eggs on the som and soalu leaves. The eggs are hatched into larvae of about 2 mm long and they start to eat voraciously and undergo four moultings and become mature after 4 to 5 weeks. At the end they search suitable place for cocooning and the larva undergo pupation inside the cocoon.

Rearing of Muga moth:

Muga silkworm is semidomesticated¹ and multivoltine² in nature having 5 to 6 generations in a year. Silkworm is reared in outdoor on tree. One tree can be utilized for two rearing in a year alternately

Fact behind Muga Silk:

The Golden treasure of Assam

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অভিতৈকে চেনেহৰ মুগাৰে মৰুৱা

তাতেতৈকে চেনেহৰ মাকো।

তাতেতৈকে চেনেহৰ বহাগৰ বিথটি

নেপাতি, নেপাতি মই কেনেকৈ থাকো।

The culture of Assam, i.e., the Assamese culture would really be incomplete without the presence of Bihu and Muga attires in every nook and corner of Assam.

Introduction:

Muga silk is a golden yellow silk. The silk is obtained from semi domesticated silk moth, *Antheraea assama*. The silk is most gorgeous, soft golden colour, and it seems to be more durable than other silks. It is produced in the Brahmaputra Valley in Assam, Garo hills of Meghalaya, Mokokchung, Tuensung, Kohima and Wokha districts of Nagaland, Lohit and Dibung Valleys, Chanlang and Papumpare districts of Arunachal Pradesh, Tamenglon district of Manipur and Coochbehar district of West Bengal (Singh and Mishra, 2003). Muga culture is the cultural heritage of Assam. There is no record regarding the beginning of muga silk production in India. Kautilya, a philosopher, economist, teacher and royal advisor, who lived between the fourth

during spring and autumn. Thus one full grown tree can yield 1000 cocoons in a year and five trees are required to produce 5000 cocoons which yield one kg. of muga silk.



The seed cocoons are collected from commercial rearers or from Government grainages. These are then laid in a single layer in trays to facilitate the emergence of moths. The emerging adults are allowed to mate and in the coupled state, the pair is tied with a cotton thread in kharika³. After mating the female moth starts egg laying. The female moth lays about 150-250 eggs on kharika. During summer, the worms hatch out in the morning in about 8 days. The kharikas with the hatched worms are hanged on the host plants. The larvae feed voraciously, pass through 4 moults and reach the mature stage. Fully mature larvae are collected by rearer and put in a basket containing mango twigs and leaves, which are set as cocoonage called jali⁴ for the spinning of cocoons.

The jalis are then hung and left undisturbed in separate rooms or at some shady place till cocoons are formed. Spinning takes place about 2-3 days in summer and 7 days in winter. The silk is secreted by a pair of modified salivary gland called labial gland.

- 1 Living in a state of partial domestication.
- 2 Having several generations in a year.
- 3 Bundle of lean thatch or straw on which moths lay eggs.
- 4 Small basket made with dry mango leaf or jackfruit leaves used to collect the ripen worms in rearing.
- 5 The silky covering spun by the silkworm larvae.
- 6 It is an important device that supports the silk worm 's larvae for comfortable spinning of their cocoon.
- 7 It is a primitive machine used for muga silk reeling

The muga cocoon⁵ is compact and leathery in structure. Immediately after removal from the mountages⁶, cocoons are spread on bamboo mats in the sun that partially kills the pupainside the cocoon. These are then subjected to heating in oven that kill the pupa completely and thus the cocoons are stifled and the pupa are removed from the cocoon by a whole made in one side of the cocoon.

Reeling: Muga cocoons are boiled in an alkaline solution for about one hour and then filaments are loosened. Almost entire reeling of muga is done with a machine called Bhir⁷ or bhawri, operated by two persons.

Production volume of muga silk in India from financial year 2008 to 2021

Financial year	Volume in metric tons
2021	239
2020	241
2019	233
2018	192
2017	170
2016	166
2015	158
2014	148
2013	119
2012	126
2011	124
2010	105
2009	119
2008	117

Discussion:

Rearing muga silkworm is fraught with problems like weather, temperature predators such as birds, lizards and disaster like forest fires and cyclones. The rearers have their hands full all the time. According to the Assam sericulture Department, the muga production

in Assam has been declining. Increasing temperature in last few years has been affecting the production. The declining of som and soalu plantation areas in Government sericulture farms is one of the reasons pushing muga silk in the verge of extinction. There are 106 government muga farms in Assam and most of them have been encroached and this led to decreasing food availability of muga silk worm. and in the past few years the state has been producing far behind the expected target of 150 metric tonnes a year.

Muga silk has the geographical indication status, which help in ensuring authentic and controlling quality in the market. In the current financial year alone, India produced 239 metric tonnes of muga silk, out of which 136 tonnes were produced in Assam. In Assam 80% commercial muga crops are sold to the commercial reeler of Soalkuchi village of Kamrup. Every household are directly or indirectly involved in reeling or weaving. It is the primary occupation of the villagers. Due to the high demand of muga silk in the World market Soalkuchi is regarded as the Manchester of North East India. Muga silk remains a classic item that every person desires to own. However, its traditional outlook, and non-versatility makes the demand a little niche. Nevertheless, the fabric does have a global connect especially in Japan where designers are using it to make kimonos and other traditional Japanese dresses.

It has great cultural value in Assam and is highly esteemed all over India. Sarees, mekhela chadars made of muga silk are quite costly and are highly attractive. Most of the muga weaving takes place in Soalkuchi village of Kamrup district of Assam. Mekhela chadars and scarves are worn by women and kurta made of muga fabric is worn by man on special occasions, and many of these are beautifully embroidered or brocaded in traditional colours with traditional motifs. From damaged cocoons or broken of threads during processing twisted together to make spun silk. The spun silk is used for dress material, mekhela chadar, saree for pile fabrics, dress material and linings etc. It is less costly than the reeled silk.

According to the Assam sericulture department, there has been a decline in muga production over the years, and in the past few years the state has been producing far behind the expected target of 150 metric tonnes a year. It is thought that the increasing temperature in the last few years has been affecting the production

Conclusion

Each and every assamese girls well as woman deserves at least a pair of muga mekhela chadar. It is their love and dream to imagine themselves in such attires which brings a gorgeous look to everyone. Nowadays the demand of muga silk clothes, especially muga mekhela chadar is unbelievably increasing in other states of India also besides Assam. So, now it needs the proper initiation of the Government for the production of muga silk in broad scale to meet the increasing demand of the golden silk.

References:

- Banerjee, Tarit, Kumar) Applied Zoology, 2016 Edition, New Central Book Agency(P)Ltd, Kolkata, P-145-147
- Sarkar, S., Kundu, G., Chaki, K., Introduction to animal Zoology, 2014 Edition, New central Book agency, Kolkata, p 87.
- Chakravarty, R. Dutta, P. and Ghose, J. (2010). Sericulture and traditional craft of silk weaving in Assam, Indian journal of traditional knowledge, 9(2), 116-118
- <http://sericulture.assam.gov.in>>kn
- [http://en.m. wikipedia.org](http://en.m.wikipedia.org)>wiki
- <http://www.downtoearth.org.in>>th

different field by human beings is from old ages. Spices are used in varied purposes in our daily life.

There are more than 40 Indian spices. Many are obscure and used only in certain regions. With different climates in different parts of the country India produces a variety of spices many of which are native to the subcontinent, others were imported from similar climates and have since been cultivated locally for centuries.

Spices are used in different forms whole, chopped, ground roasted, sautéed fried and as a topping. They blend food to extract the nutrients and bind them in palatable form. Most spices are consumed in quantities, their nutritional contribution is usually minor, but their physiological effects may be pronounced. The ability of spices to impart a distinct flavor to otherwise bland and less exciting meals distinguishes them from food crops. The term 'flavor' or sensory properties pertain to an overall integrated perception of all contributing senses (smell, taste, sight, feeling and sound) at the time of food consumption. They were also used as a way to mask unpleasant taste and odors of food, and later to keep food fresh. Ancient civilizations did not distinguish between those spices and herbs used for flavoring from those used for medicinal purposes when leaves, seeds, roots or gums had a pleasant taste or agreeable odor, they become in demand and gradually become a norm for that culture as a flavor enhancer.

Objectives of the study

The study has been undertaken with the following objectives-

- ◆ To study the presence of different spices in the locality
- ◆ To know some extent about importance and utilization of spices in various fields.
- ◆ To make aware to the farmer to cultivate spices and to learn its benefits.
- ◆ To suggest people in general to use in different field.

Methodology of the study

The methodology applied for the study was interviews and observations. The secondary sources used are from journals, books,

Study of Spices found in Gossaigaon Tehsil

Area : Uses, Values and Importances

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Introduction

India has been world famous for its spices since ancient days. There was a great demand for these spices in Middle East and European countries. India share has been 15 percent in the world market. In our locality too we found to see many types of spices and their uses in different field by local people. Some of them are grown in agricultural fields and used to sold in local market. Example like- Ginger, Turmeric, Black pepper, Garlic etc. are most common spices in our local markets.

In 1960-61 India exported 47.2 thousand tones of spices valued at Rs. 17 crores which increased to 103.3 thousand tones and Rs. 239 crores in 1990-91. 244.9 thousand tones worth of Rs. 1619 crores in 2000-01. Bulk of this export goes to the countries of Europe and Middle East. India is the largest producer of spices with annual output of 4.4 million tones (2005-06). But due to large scale internal consumption it only export 1.3 lakh tones of spices annually.

India is the largest producer and consumer of spices in the world. India is called the land of spices. The study of spices and its uses in

articles, magazines and govt. and non-govt. publications.

Discussion

The most popular explanation for the love of spices in the Middle Ages is that they were used to preserve meat from spoiling or to cover up the taste of meat that have already gone off. It is obtained claimed that spices were used either as food preservatives or to mask the taste of spoiled meat, especially in the middle ages. This in fact, spices are rather ineffective as preservatives as compared to salting, smoking, pickling or drying and are ineffective in covering the taste of spoiled food.

Spices are primarily used as food flavoring. They are also used to perfume cosmetics and incense. At various periods many spices have been believed to have medicinal value. Finally they are expensive, rare and exotic-commodities. Their conspicuous consumption has been a symbol of wealth and social class.

Though some spices have antimicrobial properties *in vitro*, pepper by far the most common spice - relatively an-effective and in any case.

India is the only country in the world that produces almost all kinds of spices and she exports about 52 tones of them annually, particularly pepper, ginger, cardamom and turmeric.

A spice may be available in several forms fresh, whole dried or pre-ground dried. Generally spices are dried. Spices may be ground into a powder for convenience. A whole dried spice has the longest shelf life, so it can be purchased and stored in larger amounts, making cheaper or a per-serving basis. A fresh spice such as ginger is usually more flavorful than its dried form but fresh spices are more expensive and have a much shorter shelf life. Some spices are not always available either fresh or whole for example turmeric and often must be purchased in ground form. Small seeds such as fennel and mustard seeds are often used both whole and in powder form.

From very ancient time, spices king *Pepper nigrum* or Black pepper

and *Zingiberofficinale* has been extensively used in Aurveda, Siddha Unani medicine to cure cold, cough, asthma, nausea, indigestion. Similarly *Andrographis paniculata* as *Ayurvedic medicine*, *M. mimuta*, *O. corniculata* and *T. cordifolia* has wide utility as vermifugal analgesic, antibacterial, heart diseases, leprosy, arthritis, antiviral, hepatoprotective, diabetes and hepatitis.

Spices are plant substances primarily used for flavoring, coloring or preserving food. Many spices have antimicrobial properties that is why spices are more prominent in cuisines originating in warmer climates, where food spoilage is more likely and why the use of spices is more common with meat which is particularly susceptible to spoiling. Spices are sometimes used in medicines religious rituals, cosmetics or perfume production.

Indian food and its taste is famous all over the world; the delicious aroma great taste, unique color and finger licking flavor. All these together make a perfect blend and are found in Indian foods only. The secret of the delicious flavor of Indian food is its rich spices that are used for thousands of years and spreading all over the world. Indian and Egyptian spices are known as world's best spices in taste, and their appealing aroma adds tang to foodstuff. The real amalgamation of spices was done in beginning of 14th century by Mughals, they make delicious foods with perfect blend in different spices.

Spices in India were not only used in food they were used to cure ailments too. They flatter sense; smell with delicious fragrance, tongue with unique taste and eyes with vibrant colors. At present time India is one of the largest exporters of spices all over the globe. The environment of India is perfect, heavy humidity, high rainfall, dry and hot weather favors the conditions for growth of different spices.

Spices, spice oils and spice oleoresins are important products of the flavor and fragrance industry. They are indispensable in food and beverage manufacturing industry, the perfumery and cosmetic industry

and the pharmaceutical industry.

Dried spices are basically dried ground up and therefore concentrated sources of antioxidants, vitamins and so many other nutrients.

Spices are first and foremost indispensable in culinary art. They give taste, smell and sometimes color of our dishes through their addition to the foods, and beverages before during or after their preparation. It is the spices that make food dishes into original creations.

Curry powder has many recipes. It usually contains capsicum, pepper, coriander, cumin, pepper and turmeric, but other components may be black cumin, cardamom, caraway, cinnamon, fenugreek, ginger, mace, mustard, nutmeg and poppy. Five spice powder contains Chinese cassia, clove fennel, pepper, and star anise, it combines well with pork, chicken and duck.

The perfumery and cosmetics industries use oils of many spices in the blending with chemical substances for perfumes and cosmetics including personal care products such as soaps and toothpastes.

In traditional medicines, aromatic plants (spices) are important in driving out diseases. Spices impart a pleasant taste to disagreeable medicines and may aid the effect of the chief ingredient. The principal use for spices in medicine lie in their adjuvant and all eviative qualities e.g. analgesic, antihelminthic.

List of some local spices available in the area.

1. Cinnamon
2. Ginger
3. Paprika
4. Cloves
5. Nutmeg
6. Pepper
7. Turmeric
8. Mace
9. Saffron

10. Vanilla
11. Cumin
12. Dill seed
13. Tejpatta (Bay leaf)
14. Kali Mirch (Black pepper)
15. Hing (Asafoetida)
16. Elaichi (Cardamon)
17. Dalchini (Cinnamon)
18. Garlic

Conclusion

India is one of the largest suppliers of spices and condiments. India alone contributes 25-30 percent of the total world trade. Most of the important spices are grown in India. The important spices and condiments under commercial or large -scale cultivation are cardamom, pepper, chilies, turmeric and ginger.

Spices contribute rich flavor to food without adding any calories, fat, sugar or salt in addition, research is showing that spices contribute to health just as much as fruits and vegetables providing anti-oxidant, anti-inflammatory and anti-bacterial and anti-viral properties.

Essential oils and oleoresins from some spices can make excellent potent antioxidants which a number hold promise as natural biocides. The latter use is particularly significant in view of the ongoing global concern over the hazardous effects of synthetic pesticides on human and the environment.

At present juncture this community crops has serious consideration in field of research in view of growing importance of spices in the modern world.

References

- Indian Spices, SalimPushpanath and A.G. Mathew.
Spices and Aromatics Seeds by Jill Norman.
Annual Reports ICAR New Delhi.

- Spices Cultivation in India Bulletin, New Delhi.
- Major Spices in India cropmanagement ICAR, New Delhi.
- Spices their Morphology, Histology and Chemistry, Chemical Publishing co-Inc. NewYork, USA.
- Hand book of AgricultureICAR New Delhi.
- Economic Botany A Text Book of useful plants and plant product (2ndedn.) Mc Grow Hill Book Co- Inc- New York, USA.
- Medicinal Plants of India ICMR Vol. 1.
- Common medicinal plants of Darjeeling and the Sikkim.
- Himalayan plants (2ndEdn).
- National Book Trust of India.

Environmental Impacts of Pesticides

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Abstract:

Pesticides are substances that are used for controlling, repelling, mitigating or, killing pests that are harmful to man. Different kinds of pesticides have been used for crop protection for centuries. Pesticides can be grouped according to the types of pests which they kill. Another way of thinking about pesticides is considering the chemical pesticides extracted from a common source or some production method. The benefits of pesticides include increased food production, increased profits for farmers and the prevention of diseases; however they also impose a serious negative impact on the environment. Excessive use of pesticides may lead to the destruction of biodiversity. Many birds, aquatic organisms and animals are under the threat of harmful pesticides for their survival.

Keywords: Pesticides, pests, harmful, benefit, environment, biodiversity.

Introduction:

Pesticides are substances that are meant to control pests, including weeds. In general, a Pesticide is a chemical or, biological agent (such as a virus, bacterium or, fungus) that deters, incapacitates, kills or,

discourages pests. Ideally a pesticide must be lethal to the targeted pests, but not to non-target species, including man.

The Food and Agriculture Organization (FAO) has defined pesticide as:

“Any substance or, mixture of substances intended for preventing, destroying or, controlling any pest, including vectors of human or, animal disease, unwanted species of plants and animals causing harm during or, otherwise interfering with the production, processing, storage, transport or, marketing of food, agricultural commodities, wood and wood products or, animal feedstuffs or, substances that may be administered to animals for the control of insects, arachnids or, other pests in or, on their bodies.”

There is now overwhelming evidence that some of these chemicals do pose a potential risk to humans and other life forms and unwanted side effects to the environment (Forget, 1993; Igbedioh, 1991; Jeyaratnam, 1981). The worldwide deaths and chronic diseases due to pesticide poisoning number about 1 million per year (Environews Forum, 1999). The US National Academy of Sciences stated that the DDT metabolite DDE causes egg shell thinning and that the bald eagle population in the United States declined primarily because of exposure to DDT and its metabolites (Liroff, 2000).

Pesticides can be grouped according to the types of pests which they kill:

- (i) Insecticides - kill insects and other arthropods
- (ii) Herbicides - kill weeds and other plants that grow where they are not wanted
- (iii) Rodenticides - control rodents (rats and mice)
- (iv) Fungicides - kill fungi
- (v) Larvicides - kill Larvae
- (vi) Bactericides - kill bacteria

Objectives:

- (i) To study about the effects of pesticides on the environment and human health.

- (ii) To study about the benefits of pesticides use.

Methodology:

The paper is based on secondary data which is collected from various journals, magazines, websites etc.

Classification of pesticides by use and chemical structure: (Different chemicals used for different purposes)

Insecticides:

- *Pyrethroids
- *Organophosphorus
- *Carbamates
- *Organochlorine
- *Manganese compounds

Fungicides:

- *Thiocarbamates
- *Dithiocarbamates
- *Cupric Salts

*Triabenzazoles

*Triazoles

*Dicarboximides

*Dinitrophenols

*Organotin compounds

Insect Repellents:

*Diethyltoluamide

Herbicides:

- *Bipyridyls
- *Chlorophenoxy
- *Glyphosate
- *Acetanilides
- *Triazines

Rodenticides:

- *Warfarines
- *Indanodiones

Fumigants:

- *Aluminium and Zinc phosphide
- *Methyl bromide
- *Ethylene dibromide

Impact of pesticides:

The impact of pesticides consists of the effects of pesticides on non-target species, because they are sprayed or, spread across entire agricultural fields, runoff can carry pesticides into aquatic environment while wind can carry them to other fields, grazing areas, human settlements and undeveloped areas, potentially affecting other species.

Effect of pesticides on air:

Pesticides can contribute to air pollution. Pesticides that are applied to crops can volatilize and may be blown by winds into nearby areas, potentially posing a threat to wildlife. Weather condition at the time of application as well as temperature and relative humidity change the spread of the pesticides in the air. Low relative humidity and high temperature result in more spray evaporating.

The amount of inhalable pesticides in the outdoor environment is therefore often dependent on the season. Ground spraying of pesticides produces less spread than aerial spraying.

Pesticides that are sprayed onto fields and used to fumigate soil can give off chemicals called volatile organic compounds, which can react with other chemicals and form a pollutant called tropospheric ozone. Pesticides use accounts for about 6% of total tropospheric ozone level.

Effects of pesticides on soil:

Overuse of pesticides in the soil can cause populations of beneficial soil micro-organisms to decline. Some pesticides are more toxic to soil organisms than others. Some pesticides may break down quickly when applied to soils, while others may persist for longer period. According to Soil Scientist Dr. Elaine Ingham, "If we lose both bacteria and fungi, then the soil degrades. Overuse of chemical fertilizers and pesticides have effects on the soil organisms that are similar to human overuse of antibiotics. Indiscriminate use of chemicals might work for a few years, but after a while, there are not enough beneficial soil organisms to hold onto the nutrients" (Savonen, 1997).

Effects of pesticides on water:

Pesticides seep into the soil and find their way into groundwater. Additionally they may be washed into nearby streams and rivers. In fact research has found that every stream and around 90% of all well waters are polluted with pesticides in the US. Rain and ground water sources have also been found to be contaminated. Several countries

around the world, including the US and the UK, have passed drinking water safety laws in an attempt to regulate and reduce the amount of pesticides found in public water systems. The U.S. Geological Survey (USGS) found that concentration of insecticides in urban streams commonly exceeded guidelines for protection of aquatic life (U.S. Geological Survey, 1999). According to USGS, more pesticides were detected in urban streams than in agricultural streams (US Department of the Interior, 1995).

Groundwater pollution due to pesticides is a worldwide problem. According to the USGS, at least 143 different pesticides and 21 transformation products have been found in groundwater, including pesticides from every major chemical class. During one survey in India, 58% of drinking water samples drawn from various hand pumps and wells around Bhopal were contaminated with organochlorine pesticides above the EPA Standards (Kole and Bagchi, 1995). Once groundwater is polluted with toxic chemicals, it may take many years for the contamination to dissipate or, be cleaned up. Clean up may also be very costly and complex, if not impossible (Waskom 1994; O'Neil, 1998; USEPA, 2001).

Effects of pesticides on plants:

Nitrogen fixation is required for the growth of higher plants, but it is hindered by pesticides in soil. The insecticides DDT, methyl parathion and specially pentachlorophenol have been shown to interfere with legume- rhizobium chemical signaling. Reduction of this symbiotic chemical signaling results in reduced nitrogen fixation and thus reduced crop yields.

On the other side, pesticides have some direct harmful effect on plant including poor root hair development, shoot yellowing and reduced plant growth.

Effects of pesticides on animals:

Many kinds of animals are harmed by pesticides. Animals including

humans may be poisoned by pesticide residues that remain on food, for example, when wild animals enter sprayed fields or, nearby areas shortly after spraying. Pesticides can eliminate some animal's essential food sources, causing the animals to relocate, change their diet or, starve. Residues can travel up the food chain, for example, birds can be harmed when they eat insects and worms that have consumed pesticides.

Fish and other aquatic biota may be harmed by pesticide contaminated water. Pesticide surface runoff into rivers and streams can be highly lethal to aquatic life, sometimes killing all the fish in a particular stream.

Application of herbicides to bodies of water can kill fish when the dead plants decay and consume the oxygen of water, suffocating the fish. Herbicides such as copper sulphite that are applied to water to kill plants are toxic to fish and other aquatic animals at concentrations similar to those used to kill the plants.

Application of herbicides to water bodies can kill plants on which fish depend for their habitat.

Pesticides can accumulate in water bodies to levels that kill off zooplankton, the main source of food for young fish.

Effect of pesticides on human health:

Pesticides are poisons and unfortunately they can harm more than just the "pests" at which they are targeted. Exposure to pesticides can not only cause a number of health effects, but is linked to a range of serious illnesses and diseases in humans, from respiratory problems to cancer. Some pesticides may even kill humans.

Acute effects of pesticides:

Acute health problems may occur in workers that handle pesticides, such as abdominal pain, dizziness, headaches, nausea, vomiting, as well as skin and eye problems. In China, an estimated half million people are poisoned by pesticides each year, 500 of whom die. Pyrethrins, insecticides commonly used in common bug killer, can cause a potentially deadly condition if breathed in.

Chronic effects of pesticides:

Pesticides can cause harmful effects over an extended period, usually following repeated or, continuous exposure at low level. Low doses don't always cause immediate effects, but overtime, they can cause very serious illness.

Long term pesticide exposure has been linked to the development of Parkinson's disease, asthma, depression and anxiety, cancer, including leukemia and non - Hodgkin lymphoma and attention deficit and hyperactivity disorder.

Specific pesticide effects:

Chemical types of pesticides Effects on environment

- (i) Organochlorine (DDT/DDE)
 - * Egg shell thinning in raptorial birds
 - * Endocrine disruptor
 - * Thyroid disruption properties in rodents, birds, amphibians and fish.
- (ii) DDT
 - * Carcinogen
- (iii) Organophosphate
 - * Thyroid disruption properties in rodents, birds, amphibians and fish.
- (iv) Carbamate
 - * Thyroid disruption properties in rodents, birds, amphibians and fish.
 - * Interact with vertebrate
- (v) Nicotinoid
 - * Respiratory, Cardiovascular, neurological and immunological toxicity in rats and humans
- (vi) Anticholinesterase
 - * Bird poisoning

Benefits of pesticides use:

The benefits of pesticides include increased food production, increased profits for farmers and the prevention of diseases. Pesticides

also increase farm profits by helping the farmer save money on labor costs. Using pesticides reduces the amount of time required to manually remove weeds and pests from fields. Warren (1998) also draw attention to the spectacular increases in crop yields in the United States in the twentieth century.

In addition to saving crops and livestock, pesticides also have direct benefits to human health. It is estimated that since 1945, the use of pesticides has prevented the deaths of around seven million people by killing pests that carry or, transmit diseases. Malaria, which is transmitted by infected mosquitoes, is one of the most commonly known and deadly diseases that has decreased in prevalence due to the use of pesticides. Other diseases that were minimized due to the use of pesticides include the bubonic plague, which is carried by rat fleas and typhus, which is transmitted by both fleas and body lice. Pesticides may be used for preventing other vector borne diseases such as dengue, Japanese encephalitis etc.

Conclusion:

All pesticides have the potential to be harmful to human, animals, other living organisms and the environment if used incorrectly. Reducing and stopping our exposure to pesticides is our key aim. There is certainly no need to be using pesticides in the schools, playgrounds, streets and the open places where we work and play.

The urgent need for the government to take action by implementing existing laws and to consider banning more of the most toxic pesticides.

Poverty and illiteracy are greatly responsible for improper handling of pesticides. So the most urgent need is to educate our farmers about the dangers of pesticides. Understanding the risks is the first step towards reducing the risks.

The best way to reduce pesticide contamination (and the harm it causes) in our environment is for all of us to do our part to use safer, non-chemical pest control (including weed control) methods.

References:

1. Environews Forum. Killer environment. Environ Health Perspect. 1999; 107: A62. [PMC free article] [Pub Med] [Google Scholar]
2. Forget G. Balancing the need for pesticides with the risk to human health. In: Forget G, Goodman T, de Villiers A, editors. Impact of Pesticide Use on Health in Developing Countries. 1993. IDRC, Ottawa: 2. [Google Scholar]
3. Igbedioh SO. Effects of agricultural pesticides on humans, animals and higher plants in developing countries. Arch Environ Health. 1991; 46:218. [PubMed] [Google Scholar]
4. Jeyaratnam J. Health problems of pesticides usage in the third world. B M J. 1981; 42:505. [PMC free article] [Pub Med] [Google Scholar]
5. Kole RK, Bagchi MM. Pesticide residues in the aquatic environment and their possible ecological hazards. J Inland Fish Soc India. 1995; 27(2): 79-89 [Google Scholar]
6. Liroff RA. Balancing risks of DDT and malaria in the global POPs treaty. Pestic Safety News. 2000; 4:3. [Google Scholar]
7. O' Neil W, Raucher R. Wayzata, MN: Groundwater Policy Education Project; 1998. Aug. Groundwater public policy leaflet series #4: The cost of groundwater contamination. <http://www.dnr.state.wi.us/org/water/dwg/gw/costofgw.htm>. [Google Scholar]
8. Savonen C. Soil microorganisms object of new OSU service. Good Fruit Grower. 1997. <http://www.goodfruit.com/archive/1995/6other.html>.
9. US Department of the Interior. Pesticides in ground water: current understanding of distribution and major influences. 1995 U.S. Geological Survey. National Water Quality Assessment. Factsheet number FS-244-95.
10. U.S. Geological Survey. Circular 1225. Reston, VA: USGS; 1999. The quality of our nation's waters-nutrients and pesticides. <http://water.usgs.gov/pubs/circ/circ1225/> [Google Scholar]

11. Warren GF. Spectacular Increases in Crop Yields in the United States in the Twentieth Century. *Weed Tech.* 1998; 12:752. [Google Scholar]
12. Waskom R. Best management practices for private well protection. 1994. Colorado State Univ. Cooperative Extension (August). <https://hermes.ecn.purdue.edu:8001/cgi/convertwq?7488>.
13. Water Protection practices bulletin. Washington, DC: Office of Water; 2001. Jul, Managing Small Scale application of pesticides to prevent contamination of drinking water. EPA 816-F-01-031. [Google Scholar]

Deforestation: A case study in Kokrajhar District of BTAD, India

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Abstract:

Deforestation is the clearing, destroying of trees through deliberate natural or accidental means. Deforestation not only affects the climate by increasing the atmospheric level of carbon dioxide but also after the environment by inhibiting water recycling, triggering severe hooding, aquifer depletion, soil degradation and the extraction of plant and animal species. An analysis on forest cover and population of Kokrajhar District of Assam over the period of 1977-2007 revealed a strong inverse relationship both the two. In Kokrajhar District, population growth rate was decreasing but deforestation rate was found to be high. It is estimated that the world is currently losing over 9 million hectares per year which is an area the size of Portugal. During 1977-2007, the kokrajhar district lost 38% of its forest cover. The results of the analysis is based on FAO theories of deforestation.

Introduction:

Forests are one of the most important natural resources on this earth. Covering the earth like a green blanket, these forests not only produce innumerable material goods but also provide several environmental services which are essential for life. But it is a matter

of concern that almost everywhere the forest cover has declined to a great extent. Deforestation is going on in full swing due to population increase, shifting cultivation, fuel requirements, raw materials for industries, developmental projects, growing food needs, overgrazing etc., which has far reaching consequences such as global warming and climate change, loss of soil fertility, loss of biodiversity etc. In short, deforestation is the clearing of virgin forest or intentional destruction or removal of trees and other vegetation for agricultural, commercial, housing or firewood use without replanting (reforesting) and without allowing time for the forest to regenerate itself.

According to one survey, the total forest area of the world in 1900 was estimated to be 7,000 million hectares which was reduced to 2890 million hectares in 1975 and fell down to just 2,300 million hectares by 2000. Deforestation rate is relatively less in temperate countries, but it is very alarming in tropical countries where it is as high as 40-50 percent and at the present rate it is estimated that in the next 60 years we would lose more than 90 percent of our tropical forests. Afghanistan has lost over 70% of its forests throughout the country.

The forested area in India seems to have stabilized since 1982 with about 0.04% decline annually between 1982-90. According to FAO (1983) it is estimated that about 1.44 m hectares of land was brought under afforestation during this period leading to stabilization. As per FAO estimates, the deforestation rate per unit population in India is the lowest amongst the major tropical countries, despite the fact that we have a huge population size and very low per capita forest area (0.075ha per capita). However, we are still far behind the target of achieving 33% forest area. As per our National Forest Policy, we are still having only 19.27% of our land area (63.38 m hectares) covered by forests based on satellite data (MoEF, 1998).

Study Area Location :

Kokrajhar district is located on the northern bank of the

Brahmaputra river. It forms the gateway to the seven sister state. Kokrajhar shares its boundary with Bongaigaon (now known as Chirang), Dhubri, West Bengal, Barpeta and Bhutan. The district occupies an area of 3169 sq km and it is bounded by 89° 46 to 90° 38 East longitudes and 26° 19 to 26° 54 North Latitudes. The main localities in this Area are Bodo, Advasi.

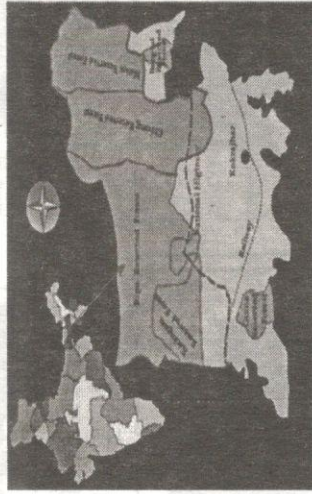


Figure-1: Reserve Forest of Kokrajhar

Aims and Objectives :

1. To study the causes and effects of deforestation.
2. The study intends to observe the present condition of forest and deforestation of Kokrajhar district over the last three decades from 1977 to 2007.
3. To suggest some remedial measures to overcome the problems.

Material and Methods :

The proposed study is based on secondary data. Secondary data has been gathered from concerned sources as per need of the research. The relevant books, documents, articles, paper and web-sites are used in the study. The data analysis was carried out using Landsat Multispectral Scanner (MSS), Landsat Thematic Mapper™ for the year 1997 and 2007. The orthorectified Landsat data was downloaded from Global Land cover Facilities websites (<http://gicf.umiassumid.edu/>).



Landsat MSS Satellite Imagery
of December 8, 1977



Landsat TM Satellite Imagery
of December 14, 1987



Landsat MSS Satellite Imagery
of December 14, 1997



IRS P6 LISS III Imagery
of November 14, 2007

Reason behind Deforestation:

1. Shifting cultivation: Agricultural activities are one of the major factors affecting deforestation. Due to over growing demand for food products huge amount of trees are fall down to grow crops and for cattle grazing. In India shifting cultivation practice in North- East and to some extent in Andhra Pradesh, Bihar and M.P which contribute to nearly half of the forest clearing annually. There are an estimated 300 million people living as shifting cultivators who practice slash and burn agriculture and are supposed to clear more than 5 lakh ha of forests for shifting cultivation annually.
2. Forest Fires: Fires, whether caused by man or nature results in huge loss of forest cover. Hundreds of trees is lost each year due to forest fires in various portions of the world. This happens due

to extreme warm summers and milder winter.

3. Logging: Wood based industries like making boxes, match boxes, match sticks, pulp for paper industries, furniture, railway-sleepers, and plywood etc., also need a substantial amount of wood supply. Plywood is in great demand for packing tea for tea industries of Assam while fire tree wood is exploited greatly for packing purpose.
4. Fuel requirements: Wood is used as fuel both directly and indirectly, therefore trees are chopped for supplies. Firewood and charcoal are examples of wood being used as fuel. Increasing demands for fuel wood by the growing population in India alone has shot upto 300-500 million tons in 2001 as compared to just 65 million tons during independence, thereby increases the pressure on forests. The WWF reports that half of the treesillegally removed forest are used as fuel.
5. Growing food needs: To meet the demands of rapidly growing population, agricultural lands and settlements are created permanently by clearing forest.
6. Urbanization: Further in order to gain access to these forests, the construction of roads are undertaken; here again trees are chopped to create roads. Moreover, the over population too directly affect forest covers as with the expansion of cities more land is needed to establish housing and settlement. For instance, for construction of houses, woods are widely used for making window, door, rope construction etc. Therefore, forest land is reclaimed.
7. Developmental projects: For various development projects like mining, big dams, hydroelectric projects, road construction leads to massive destruction of forest. Oil and coal mining require considerable amount of forestland. Apart from this road and highways have to be built to make way for trucks and other equipment. The waste that comes out from mining pollutes the environment and affects the nearby species.
8. Desertification of land: Some of the other factors that lead to

deforestation are also part natural and part anthropogenic like desertification of land. It occurs due to land abuse making it unfit for growth of trees. Many industries in petrochemicals release their waste into rivers which results in soil erosion and make it unfit to grow plants and trees.

9. **Overgrazing:** The poor in the tropics mainly rely on wood as a source of fuel leading to loss of tree cover and the cleared lands are turned into the grazing lands. Overgrazing by the cattle leads to further degradation of these lands.
10. **Natural calamities:** Sometimes certain natural calamities like severed roughs, lumbering, flood, lighting fires, volcanic eruption set care responsible for deforestation.

RESULT AND DISCUSSION

Deforestation of the district-

After study the last three decades over 1977 to 2007, there was a reduction of 692.76 sq km of forest cover of the district, which was about 38% of the total forest area available in 1977. From 1977-1987, deforestation was the highest so as to lose a large forest cover of 353.41 sq km. However, from 1987-1997, there was a sudden decline in deforestation, losing an area of 111.5 sq km of forest. From 1997-2007, the deforestation rose up again and deforestation of 228.16 sq km occurred. Figure shows the satellite images of forest covers of the district in 1977, 1987, 1997 and 2007.

Relation between population and forest cover-

Table : Forest covers and populations of Kokrajhar district and its forest area

Year	Forest cover	Population (District)	Population (Forest Area)
1977	1822.57	562907	112659
1987	1469.45	738495	174870
1997	1357.95	866950	206823
2007	1129.81	976489	243142

This table shows an inverse relationship between population and forest cover of the kokrajhar district.

TREND OF DEFORESTATION

According to FAO theories, deforestation increase relatively slow at initial stages much faster at intermediate stages and slow down at final stage. From Fig we see deforestation started in Kokrajhar district during second quarter of the twentieth century. Upto 1972, deforestation of the district was not a major issue but afterwards deforestation occurred at a fast rate [32]. Deforestation of the decade 1997-2007 was considerably lower as comparison of the decade 1977 to 1987.

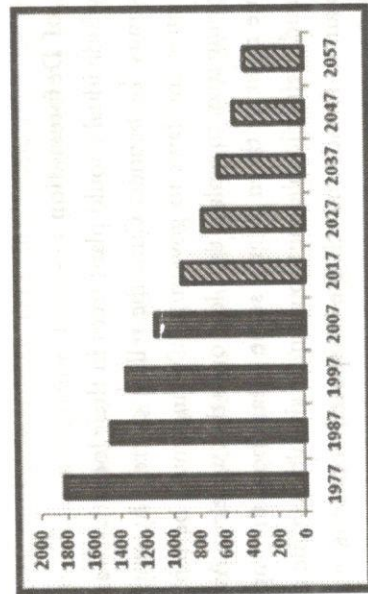


Figure- Estimated and projected forest covers of the district since 1977 to 2057

Conclusion :

There was a time when everything around us was pure and safe. The air, water and soil were in balanced condition. Nature itself was enjoyable. In primitive days the limited needs of man did not disturb the harmony with nature because population was less. But in subsequent years of population has increased many fold.

Advancement in science and technology accelerated and thus environmental degradation started. In attempt to make life more comfortable, man destroys forests thoughtlessly, pollutes air and water recklessly, spoils nature ruthlessly. Today the air we breathe and the water we drink are not pure and safe at all. Therefore, to get healthy

environment for future and save our world, we must be concern about deforestation.

The different data indicated that after three decades from the base year 2007, in 2037, the forest cover of the district would reduce to 638.38 which amounts a loss of 43.5% of forest cover that was available in 2007. The deforestation was found gradually slowing down through time while population was steadily increasing. If the population density is expected to go up 491 persq.km, in 2090 the non-forested area would be 92.85% of the total geographical area of the district.

Solution of Deforestation :

Every individual should plant trees in their locality. Clear cutting of forests must be banned. Curb the felling of trees by employing a series of rules and laws to govern it. Cutting must be replaced by planting young trees to replace the older ones that were cut. Awareness programme must be taken to give some ideas about the importance of forest and their valuable contribution. It should become a culture to gift a plant to friends and relative on special occasions.

Acknowledgement :

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References :

1. Abram's, M, 2000 the advanced space bond thermal emission and reflection radiometer (ASTER) data produced for the high spatial resolution imager on NASA's, TERRA platform Int. J. remote sensing 21:847-859.
2. State of Forest Reports 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007. Forest Survey of India, Ministry of Environment & Forests, Dehradun.

3. Kaushik, Anubha and Kaushik, C.P. 2004. Perspectives in Environmental Studies, New Age International (P) Limited, Publishers.
4. Mather A. S. and Needle C. L., 2000. The relationships of population and forest trends, The Geographical Journal, Vo 1. 166, No. 1, March 2000, pp-2-13.
5. Sarma, Hari Prasad. Environmental Education
6. Sarma, Indu. Environmental Science
7. Raj, Manideep. Wildlife, Ecology and Management. Assam Book Depot. Publishers.
8. Nath.D.C. and Mwchahary. D.D. 2012 population increase and deforestation, international journal of scientific and resource publication. Volume-2
9. FAO 1991, hose hold food security and forest tea, an analysis of socio economic issue (ROME).
10. Bradford, Alina. Retrieved from: <https://www.livescience.com/27692-deforestation.html>
11. USGS, 2003, United State's Geological survey. <http://www.academicinfo.net/rocksugs.html>
12. Retrieved from: <https://www.Live Science.com.Planeteearth>.
13. Cropper, M., & Griffiths, C. 1994. The interaction of population growth and environmental quality. American Economic Review, 84(2), 250-254.
14. Geist, H. J., & Lambin, E. F., 2002. Proximate causes and underlying driving forces of tropical deforestation. Bio-Science, 52(2), 143-150.
15. J Jacob, M.C., 1939. A Working Plan for the Forest Reserves of the Kachugaon Division, 1939 to 1948, Part I, Assam Government Press, Shillong
16. Chiring, Geeta. Our Environment.
17. Dilip C. Nath, Dimacha Dwibrang Mwchahary (2012): Deforestation and Transition of Tribal Population: A Study in

Kokrajhar district of Assam, India International Journal of Asian Social Science, Vol.2, No.6, pp.790-802.

18. LIU Zhao-gang, LI Feng-ri, 2003. The generalized Chapman-Richards function and applications to tree and stand growth, Journal of Forestry Research, 14(1):19-26.
19. Nathan Keyfitz, Hal Caswell, 2005. Applied Mathematical Demography, 3rd edition, Springer.
20. Lohmann, L., 1993. Land, power and forest colonization in Thailand. Global Ecology and Biogeography Letters 3:180-91.
21. Agrawal, A., 1995. Population pressure = forest degradation: an over simplistic equation? *Unasylva* 46(181):50-8.
22. Barraclough, S.L. and Ghimire, K. B., 1996. Deforestation in Tanzania: beyond simplistic generalisations. *Ecologist* 26:104-9.
23. Kummer, D.M. and Turner II, B.L., 1994. The human causes of deforestation in Southeast Asia. *Bioscience* 44:323-8.
24. Alain Marcoux, 2000. Population and the environment: a review and concepts for population programmes. Part III: Population and deforestation, FAO, June 2000.
25. Heilig, G.K. 1994 Neglected dimensions of global land-use change: reflections and data. *Popul. Dev. Rev.* 20: 831-59. [18a] Thomas, M., N. Roller, J. Colwell, and C. Kottak. 1993. Integrating regional studies of deforestation into a global change context. In Proceedings of the 25th International Symposium on Remote Sensing and Global Environmental Change, 559-70. Vol. 1. Ann Arbor, MI: Environmental Research Institute of Michigan
26. Locatelli, B., Boissau, S., Webber, J., 2004. Does population growth affect wooded-cover dynamics? In: Beyond Tropical Deforestation: From Tropical Deforestation To Forest Cover Dynamics And Forest Development, Edn., Babin D., CIRAD.
27. Fearnside, P.M., 1993. Deforestation in the Brazilian Amazon: the effect of population and land tenure. *Ambio* 8,537-545.

Dark Energy and the concept of Multiverse

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Abstract:

Universe, it is a great mystery. There are many galaxies, stars, planets, seen, unseen matters—energy etc. within it. We are also a part of this mysterious universe. In 1929 Hubble said that the universe is expanding from the observation of redshift of distance stars and the cause behind it is thought to be the unseen dark energy. Dark energy is strongly repulsive, so formation of stars, planets, asteroids etc. is not possible in presence of large amount of it. Scientists think that there are small amount of dark energy in our universe and so, there are galaxies, stars etc. here. In outer space this amount is very large and so, there may be other universe also which are at large distance and without stars, planets etc. as large amount of dark energy prevent to form these astronomical bodies. Multiverse is a hypothetical idea.

Objectives:

1. To study the theory of the universe.
2. To justify the theory of multiverse

Methodology:

Empirical methodology has been used. The study is based on secondary sources. Data are collected from different papers, publication, journals etc.

Key words: Dark energy, big bang, and multiverse.

Introduction:

The universe is expanding, it is ground breaking true. So, there must be an energy and matter behind that. According to the current popular concordance model of the universe, 68% of the universe is dark energy, 27% dark matter and only 5% normal visible matter. Dark energy is repulsive. The expansion of the universe is infinite.

The scientists of U.K. and Australia trying to explain the multiverse theory.

According to cosmologist's theory, small amount of dark energy life is possible in our universe. Large amount of it would cause such a rapid expansion that all the matters dilute before it form stars, planets. But Luke Barnes at western Sydney University said there could be a multiverse in which life is extremely limited. In our universe dark energy is small and for which there are beautiful stars, galaxies that we observe.

Discussion:

There are many theories of the formation of the universe, but BIG BANG THEORY is most widely accepted theory. Georges Lemaitre, a Belgian cosmologist, first gave this idea in 1931. According to this theory all the matters were compacted in a single point with infinite density and potentiality and suddenly this single point may be called singularity began to expand and all the seen unseen matters, energies began. According to this theory space and time emerged together 13.799 billions years ago.

Another theory of the formation of the universe is the steady state hypothesis. According to this theory the universe expands, and new matters are continuously created in space. This theory is with the conclusion that the universe has been always expanding with no beginning and end and it will continue with a constant density. Multiverse is hypothetical idea and it is a group of multiple universes. The idea of multiverse came in 1980. As dark energy is seemed strongly repulsive, so formation of stars, planets, asteroids etc. are not possible

In presence of large amount of it. Scientists think that there are small amount of dark energy in our universe and so, there are galaxies, stars etc. here. In outer space this amount is very large and so, there may be other universe also which are at large distance and without stars, planets etc. as large amount of dark energy prevent to form these astronomical bodies.

Multiverse theory suggests that our universe with its galaxies, stars, and planets is one of the multiverses. There may be number of multiverse with their own physical laws. There may be their own civilization.

The most prominent theory of the multiverse is the Inflation Theory. According to this theory universe expanded in an incredibly brief amount of time and inflation thought to be ended about 13.8 billion years ago for our universe, said Heling Deng, a cosmologist at Arizona State University and an expert of multiverse Theory. This theory suggests that inflation may not occur at the same rate everywhere. Individual universe may pinch off other expanding universe, creating an infinite sea of inflating universe. But the inflation does not ended at the same time everywhere. It may be possible that when ended in one region may be continuing at other regions and it may be continuing till now. When it ended in one region then a universe form. Who knows may be a new universe is forming this time also.

Stephen Hawking supported the multiverse concept, idea. There are many universes with different amount of dark energy. We in this universe with less amount of it and so there are many beautiful stars, planets are here.

Mostly all scientists believe on Big Bang Theory. According to this all things we know from the infinitesimal singularity. It burst and inflating faster than the speed of light and when this inflation slowed, the cloud of matter and radiation appeared and from these atoms, molecules, stars, planets etc. formed. According to Physicist Alexander Vilenkin of Tufts University in Massachusetts, this inflation did not

slowed or end at all point at the same time. When this inflation slowed then universe formed due to accretion, so, depending on the end time of inflation, another universe forms and so the theory of multiple universe is possible. (Scientific American 2021). These universes can not contact to each other as that are expanding continuously. Some researcher working on quantum mechanics for the explanation of multiverse.

Conclusion:

Researcher using computer simulation of cosmos, added more dark energy, found that there is a modest impact of dark energy on the formation of stars, planets etc. if this is true then the possibility of multiverse with life can not be ignored and it will be new laws of nature. Jaime Salcido from Durham University in UK said that life is possible in other universe. There are more things in the universe then we see. Dark energy is the today's unsolved mysteries of cosmology. It cannot be seen. It acts as Einstein anti-gravity force, but its origin is unknown.

Now due to dark energy the expansion is going on and it will continue. So, what happens in future. There will be a time when the expansion will cross the limit i.e. it will overcome the force that holds the universe together and all the matters will tear apart and it will be the ultimate fate of the universe (Big Rip). There are several current and future space mission to understand the nature and origin of dark energy including NASA's orbiting WFIRST telescope.

1. <https://www.earthsky.org/space/dark-energy>.
2. <http://.en.m.wikipedia.org>
3. www.sciencedirect.com
4. www.phys.org
5. www.scientificamerican.com
6. www.britannica.com/science/Type
7. www.spaceplace.nasa.gov/big-bang.
8. <https://www.earthsky.org/space/dark-energy>.
9. www.infoplease.com/encyclopedia

History of Cosmology

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Abstract

Cosmology is the study of the Universe and its behavior. The basic aim of the Cosmology is to investigate the large-scale structures, origin, evolution, development and ultimate fate of the Universe. Cosmology has a very lengthy history and there are many statements and theories proposed during this long era. From the last few years, Cosmology has made lots of advancement. This paper attempt to highlight the history of the Cosmology.

Keywords: Cosmology, Universe, Relativity, Big Bang, Dark Energy, Dark Matter, Normal Matter.

Introduction

Cosmology is a Greek word and its meaning is the beauty of the sky. The stars, star clusters, galaxies, nebulae, pulsars, quasars, cosmic rays and background radiation are the main elements of the Universe. Cosmology is the study of the Universe. Earlier, people believed that God made the heavens and the earth, the earth was null and void, only darkness over the empty space and a mighty wind were blown over the surface of the earth, then God said, let there be light and He said that the 'light' is 'day' and the 'darkness' is 'night'. Moreover,

several people believed that, the sky and the earth were the only two components of the Universe. Accordingly, the sky was populated by more and larger entities, and the earth was like a little speck in the measureless Universe. Thus various opinions have been developed by the cosmologists about the origin and evolution of the Universe.

Objectives of the study

- To discuss the history of the Cosmology.
- To investigate the Cosmologist's view on Universe.

Methodology

Cosmology has a very lengthy history with many statements and theories proposed by Cosmologists. In this study, I have used the descriptive and analytical methods to know the history of the Cosmology.

History of Cosmology

Greek Philosophers Aristotle (384 BC-322 BC) promulgated that the Universe had no beginning, but is and always was. In 1654, Irish Bishop James Ussher (1581-1656), after studying biblical chronology had announced that the Universe was created at 9 A.M on 23rd October, 4004 B.C. as per the proleptic Julian calendar. Probably based on this date, the Big-Bang theory state that the Universe is at least 10-15 billions year old. But in the 19th century, Cosmologists confirmed that Bishop Ussher's creation date was wrong. No one can give a specific date and time about the creation of the Universe till now. The Cosmologists believed that the Universe was created only after a sudden explosion. English Astronomer Sir Isaac Newton (1642-1727), changed the previous thinking of the Cosmology. He spent much more of his time on alchemy and biblical dating and he did not agree with the James Ussher's creation date of the Universe. He imagined that the Universe was finite in space. He also realized that gravity is the most important force to understand the large-scale structure of the Universe. He assumed that at the beginning, the Universe was sufficiently cold so that only gravitational attraction played a role; at that time there was also no pressure. Greek Mathematician, Astronomer, Geographer

and Astrologer Claudius Ptolemy (100 AD-170 AD) proposed that the Universe is geocentric, that is, the earth lies at the centre of the Universe.

Aristotle projected that the spherical earth is enclosed by concentric celestial spheres containing the stars and therefore the Universe is static, has finite extent and exists throughout eternity. The Aristotelian model was acknowledged in Western world for regarding 2 millennia. Supported the Aristotelian model, Ptolemy projected that the Universe revolves around the stationary earth and therefore the planets move on circular orbits whose centre's once more move in a very larger circular orbit with a centre close to the earth. The Ptolemaic geocentric theory was the accepted theory till sixteenth century. Numerous philosophers and astronomers particularly Italian Astronomer and man of science Galileo Galilei (1564 - 1642) opposed this theory controversy that if the Universe were geocentric, then the sun and therefore the different heavenly bodies would have to be compelled to orbit the planet on massive ways with tremendous speed that wasn't attainable. Probably, the Greek Mathematician and Astronomer Aristarchus of Samos (310 BC-230 BC) was the primary to propose a heliocentric model of the Universe inserting the sun at the centre and therefore the earth orbiting it on a circular path whereas it's rotating on its axis. He additionally projected that the stars are fixed and therefore the centre of the sphere containing all the stars is at the sun. Throughout the Middle Ages, the Indian Astronomer Aryabhata (476 CE-550 CE) additionally projected a model of the Universe. However he wasn't certain whether or not it had been geocentric or heliocentric. Within the middle of sixteenth century, Polish Astronomer Nicolaus Copernicus (1473 - 1543) revived Aristarchus's theory of heliocentric Universe and argued that astronomical information might be explained higher if the earth revolved on its axis and the earth with the other planets rotated around the sun and therefore the sun were placed at the centre of the Universe. The idea of the earth's rotation on its axis is very older. Greek Philosopher and Scientist Philolaus (470 BC-385

BC), Greek Astronomer Hiraclides Ponticus (387 BC-312 BC), Greek pre-Socratic Philosopher and Mathematician Pythagoras (ca. 570 BCE – ca. 496 BCE), German Astronomer Nicholas of Cusa (1401–1464) and Iranian Astronomer Al-Sijzi (945 – 1020) also proposed several models based on rotation. Experimental data was provided by Persian Philosopher Nasir al-Din Tusi (1201 - 1274) and Uzbekistan Astronomer and Mathematician Ali Qushi (1403 - 1474). German Astronomer Johannes Kepler (1571 - 1630) also introduced heliocentric Universe. Johannes Kepler established the famous laws known as Kepler's laws of planetary motions between 1609 and 1619. In 1687, Sir Issac Newton highlighted in the Principia Mathematica how the heavens move. Using Kepler's laws of planetary motions, Newton proposed his famous law of gravitation and this law was considered as a suitable explanation of the gravitational force between masses for more than two hundred years.

The Theory of Relativity is the foundation of the modern Cosmology. The Theory of Relativity is basically two types namely the Special Theory of Relativity and General Theory of Relativity. Both the Relativity belonged to Albert Einstein (1879 - 1955).

In 1905, Einstein introduced the Special Theory of Relativity in his noted research paper "*On the Electrodynamics of Moving Bodies*".

In 1915, Einstein published the General Theory of relativity in his remarkable research paper "cosmological consideration on the General Theory of Relativity". Einstein's General Theory of Relativity is based on three principles namely

- a) Principle of Covariance
- b) Principle of Equivalence
- c) Mach's Principle

Today, Einstein's General Theory of Relativity is the most important tool for the Cosmologists to describe the nature of the Universe in different ways. Based on these principles Einstein wrote his field equations for the gravity, which become the core of the General Theory of Relativity. German Cosmologist Karl Schwarzschild (1873-

1916) solved the first non trivial exact solution of the Einstein's field equations in 1915 and published it in the month of January 1916. Prior to 1920, it was believed that our galaxy, the Milky Way, made up the whole Universe. American Astronomer Harlow Shapley (1885-1972) also supported this concept. During 1922 - 1923, American Astronomer Edwin Powell Hubble (1889 - 1953) measured the distances of spiral nebulae by Hooker Telescope and found that Andromeda and Triangulum galaxies and many other galaxies are well outside the boundary of our galaxy and concluded that there are a great number of galaxies in the Universe with vast tracks of empty space between them. In 1912, after measuring the first Doppler shift of spiral nebula, American Astronomer Vesto Melvin Slipher (1875 - 1969) discovered that almost all such nebulae were moving away from the earth (Slipher, 1913). Later on, in 1924, using Slipher's data, American Astronomer Milton La Salle Humason (1891 - 1972) obtained velocities and Edwin Hubble measured distances of spiral nebulae and found that the farthest nebulae are receding faster than the nearest nebulae from the earth. In 1917, using the Einstein General Theory of Relativity, Dutch Mathematician, William de Sitter formulated a model of an expanding Universe. In 1922, Russian Cosmologist and Mathematician, Alexander Friedmann (1888-1925) obtained an exact solution of Einstein's field equations which predicts that the red-shift of a galaxy should be directly proportional to its distance from us.

In 1927, Belgian Cosmologist Georges Edouard Lemaitre (1894-1966) derived Friedmann's equations severally and ended that the recession of the nebulae was because of the growth of the Universe. However the works of Friedmann and Edouard Lemaitre wasn't responded at that point as a result of everyone believed that the Universe was static, even Einstein was additionally positive regarding it. In 1935, their works became known once similar models were derived severally by American Mathematician and Scientist H. P. Robertson (1903 - 1961) and British Scientist A.G. Walker (1909-2001) in response to Hubble's discovery of the uniform growth of the

Universe. The image of increasing Universe dates back to solely 1929 once Edwin Hubble supported the observations of Cepheid variable stars in distant galaxies, detected that the galaxies are receding quicker than the nearer ones with velocities proportional to their distances from us. As the growth causes matter and energy to cool down and unfolded with time, it reveals that our Universe should have begun from some extent mass abundant hotter and denser than it's these days. The scientific model of the evolution of the Universe, that explains however the current day Universe developed from an especially hot and dense starting, is thought as the Big Bang theory. The Big Bang theory was projected by Georges Edouard Lemaitre in 1927 and was developed by Soviet-American Astronomer George Gamow (1904-1968), American Astronomer Ralph Asher Alpher (1921 - 2007) and United States Scientist Robert Herman (1914-1997) in 1948. According to this theory, the Universe originated from a really hot, high density and high pressure state called Big Bang state. After the Big Bang, the Universe had undergone a short period of terribly fast expansion referred to as inflation and because the Universe cooled down, it's been increasing since then. During the primary three hundred thousand years it had been thus hot that matter might exist solely in an exceedingly dense state of plasma. Galaxies began to make by the time the Universe was a couple of billion year old. Stars have shaped in those galaxies, producing significant components that were recycled into later generations of stars. This theory was supported by Hubble's discovery of galactic red shift in 1929 and also the discovery of Cosmic Microwave Background (CMBR) by American Scientist Arno Allan Penzias and American Astronomer Robert Woodrow Wilson in 1964. The Big Bang theory is currently the foremost accepted theory for the origin and evolution of the Universe. But, still, the Scientists aren't certain whether or not the Universe started after an explosion from some extent singularity with high density and high pressure or it simply started increasing from a state having some volume, density and pressure. There's another theory, referred to as Steady State theory,

regarding the origin, evolution and ultimate fate of the Universe. In 1948, the Steady State theory was projected by English Astronomer Fred Hoyle (1915-2001). Consistent with this theory, the Universe is static, has steady state, had no starting in time and remains constant for all time to come back. This theory was additionally advocated by Aristotle. Even Einstein thought that the Universe was static and to possess static Universe he introduced a constant, referred to as cosmological constant, in his field equations that was later abandoned by him.

In 1920s and 1930s, most of the Cosmologists favored Steady State Universe. In 1981, another vital development happened in Cosmology, when A.H. Guth and E. J Weinberg (Guth & Weinberg, 1983) projected inflationary model of the early Universe. Guth inferred that if the growth of the very early Universe is accelerated in such some way that the scale factor of the Universe grows by an element throughout a brief period just when the Big Bang, then, the 'flatness' and 'horizon' issues of the Big Bang theory might be avoided. Till the late 1990s, the Astronomers thought that the expansion of the Universe was decelerated because of the attraction of the masses in it. But, in 1998, two independent groups of Astronomers, one guided by A. G. Riess and B. P. Schmidt (Riess et al., 1998) and also the other by S. Perlmutter (Perlmutter et al., 1998) proved that the growth of the Universe wasn't decelerating, rather it had been accelerating and therefore the expansion history of our Universe over the past 5-6 billion years. Later on, it was established by a good number of cosmological observations such as Wilkinson Microwave Anisotropy Probe (WMAP), Large Scale Structure (LSS), Baryon Acoustic Oscillations (BAO), Cosmic Microwave Background (CMB) and their cross-relations. But, the cosmologists are unable to discover the actual cause of this acceleration. Most of the Cosmologists suggest that an energy with negative pressure known as Dark Energy is the actual cause of this acceleration. But the nature of the Dark Energy is still unknown. There are many candidates for the Dark Energy proposed

by the researchers. The cosmological constant is the simplest candidate for the Dark Energy which is introduced by Albert Einstein in his field equations.

Some researchers recommend that the acceleration of the Universe is because of the repulsive gravitational interaction of antimatter (Benoit-Lévy & Chardin 2012, Hajdukovic, 2012) or deviation of attraction laws from General Theory of Relativity. In 1933, the existence of Dark Matter was first acknowledged by Swiss American Astronomer Fritz Zwicky (Zwicky, 1933). Consistent with information offered from the observations by Planck team (Ade et al., 2014a & 2014b), the Universe is concerning 13.799 billion years old. The age of the Universe was firm by mapping fluctuations in temperature within the Cosmic Microwave Background Radiation (CMBR). The Universe contains mainly Dark Energy, Dark Matter and Normal Matter. From the study of the Planck mission team and the standard model of cosmology, it is believed that the total mass-energy of the Universe contains 4.9% Normal Matter, 26.8% Dark Matter and 68.3% Dark Energy.

Conclusion

Starting with Greek Philosophers Aristotle, there are many statement and theories have been proposed by the Cosmologists about the origin and evolution of the Universe. Some of them are rejected and some are accepted in future investigation. Recently, Cosmologists suggests that the present Universe is expanding with acceleration.

References

- Ade, P.A.R. et al. (2014a). Planck 2013 Results—I. Cosmological Parameters. *Astronomy & Astrophysics*, 571, A1. <https://doi.org/10.1051/0004-6361/201321529>
- Ade, P.A.R. et al. (2014b). Planck 2013 Results—XVI. Cosmological Parameters. *Astronomy & Astrophysics*, 571, A16. <https://doi.org/10.1051/0004-6361/201321591>

- Benoit-Lévy, A. & Chardin, G. (2012). Introducing the Dirac-Milne universe. *Astronomy & Astrophysics*, 537, A78. <http://dx.doi.org/10.1051/0004-6361/201016103>
- Das, P. (2021). *Polytropic Gas Dark Energy Models in Cosmology* [Doctoral Thesis, Bodoland University]
- Guth, A. H. & Weinberg, E. J. (1983). Could the universe have recovered from a slow first-order phase transition? *Nuclear Physics B*, 212(2), 321-364. [https://doi.org/10.1016/0550-3213\(83\)90307-3](https://doi.org/10.1016/0550-3213(83)90307-3)
- Hajdukovic, D.S. (2012). Quantum vacuum and dark matter. *Astrophysics and Space Science*, 337(1), 9-14. <https://doi.org/10.1007/s10509-011-0938-9>
- Perlmutter, S. et al., (1998). Discovery of a supernova explosion at half the age of the Universe. *Nature (London)*, 391, 51-54. <https://doi.org/10.1038/34124>
- Riess, A.G., (1998). Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant. *The Astronomical Journal*, 116(3), 1009-1038. <https://arxiv.org/abs/astro-ph/9805201>
- Slipher, V.M. (1913). The radial velocity of the Andromeda Nebula. *Lowell Observatory Bulletin*, 1, 56-57. <https://ui.adsabs.harvard.edu/abs/1913LowOB...2...56S>
- Zwicky, F. (1933). Die Rotverschiebung von extragalaktischen Nebeln. *Helvetica Physica Acta*, 6, 110-127. <http://dx.doi.org/10.5169/seals-110267>

always changes its direction time to time. But in some river there is flow of water round the year. Most of those rivers passes through the village area, where there is no electricity, no good communication. Energy from the flow of water, from the top of the river to the bottom can be used to generate Electrical energy.

Aim and Objectives

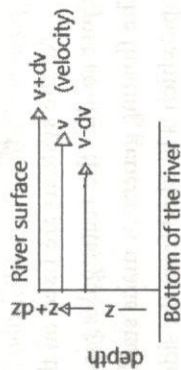
It is found that, river current at the surface of the river is maximum then the bottom of the river. To produce mechanical energy from moving water, we have to develop a floating turbine. The change of the height of the water will not effect the turbine. The floating turbine with generator are made fixed from the bottom or sidewise of the river by hooking with rope. floating turbines are placed at the different position of the river according to the flow of river current.

No one can think about development without energy. The electrical energy produced by the floating generator can be supplied to rural villages. In summer the river current increase which increases energy generation.

Mathematical Formulation

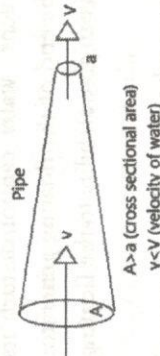
Due to viscosity property of liquid, the velocity of the river surface water is maximum then the bottom of the river. River in hill area are more preferable because river valleys are U shaped.

From the figure it is clear that surface velocity of the river increase with the height of river surface from the bottom of the river. The decrease of velocity is due to viscosity force between the layers.



Again the equation of continuity gives the velocity of flow of water increase with the decrease of area of cross section of a pipe.

$$\text{Equation of continuity } V \times A = A \times v$$



Energy from river surface

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Abstract

Several rivers are found in Northeast India, In some of those rivers there is flow of water round the year. In winter although the river are become narrower but still there is river current.

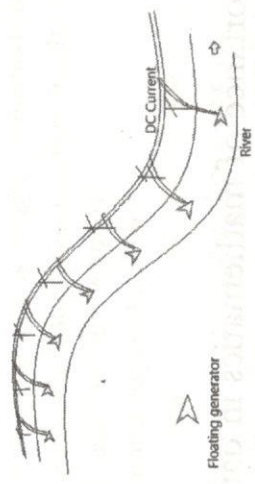
If we can develop a floating device which can generate electric current from the river surface water, we can use this round the year. We can change the position of the devices according to the flow of river current. We can use complete the river to generate electricity placing number of devices at different position of the river and interconnecting them.

As due to viscosity the flow of water on the river surface is maximum, then near the bottom of the river hence floating device will be more effective and the device will not effected by the height of the river water. The device will develop on the basis fluid dynamics to increase water current to generate maximum energy.

Introduction

People have long history of using moving water to produce mechanical energy. It is seen that in traditional Dam there are huge effect in the downstream, it is very risky and expensive. Traditional Dam always destroy the ecological balance of nature. Again river

the small wheel fitted with the armature of the generator. Because more rotational speed gives more induced EMF.



AC from floating generators are converted to DC after rectification and then connected together by a transmission line near the side of the river. The DC voltage can be store or can be converted in to AC as required. The stored electrical energy is supplied to nearby villages.

Conclusion

River should be chosen so that there is flow of water round the year. All the electrical components should be waterproof.

Electricity can be supplied in the remote places. When river change its direction, the position of the generator can be arranged accordingly.

As the energy of the river current is used to convert electrical energy so it will decrease erosion produce by the river.

Continuous cloudy weather and rain fall will not effect the energy generation.

Continuous monitoring stop unwanted fishing on the river in the winter season .

Reference

An Introduction to Fluid Dynamics by G.K. Batchelor.

Hydrodynamics by Sir Horace Lamb.

<https://www.sciencedirect.com>

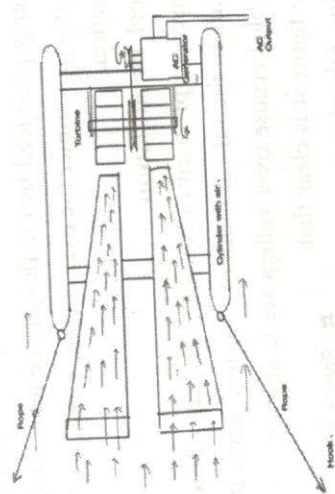
<http://www.princeton.edu>

Physics by C.L. Arora

Construction

Floating generator can float by two air filled cylinder. Two rectangular pipe of which one end is of large in size and other end is comparatively small in size is taken. The turbine which can rotated about horizontal axis is attached with a generator armature. The rectangular pipe are adjusted so that it just immersed into water of the river surface. River water entered through the wide end of the pipe and come out through narrow end with high speed. If we take the front end of the rectangular pipe is ten time then the back end, we will get ten time more speed of the water. More speed means more momentum that is more energy. High speed water rotate the turbine which rotated the generator armature to produce Alternating Current.

The top view of the floating generator is as shown in diagram.



All the systems are fixed on the floating arrangement and can be adjust so that the rectangular pipe are just immersed into the water. The floating generator made stable on the surface of the water by the rope which is hooked from the side of the river. The floating generator should be at the position of maximum water current. The turbine wheel should be so fitted that turbulent water cannot disturb its rotation. A plate should be fitted at the end of the floating generator which can rotated in a vertical axis and can give stability to the floating generator, like a boat.

To increase rotation per minutes, large wheel is used which rotated

As for mathematical inventions, they are numerous throughout the ages. Some of them were tangible, such as counting and measuring devices. Some of them are not as tangible as methods of thinking and solving. The symbols that express numbers are also one of the most important mathematical inventions.

Mathematics in our Every day Life

Mathematics is the pillar of organized life for the present day. Without numbers and mathematical evidence, we cannot resolve any issues in our daily lives. There are times, measurements, rates, wages, tenders, discounts, claims, money exchange, consumption, etc., and in the absence of these sports data, we have to face confusion and chaos.

Thus, mathematics has become the companion of man and his helper since the beginning of human existence on earth. When man first wanted to answer questions such as "How many?" he invented math. Then algebra was invented to facilitate calculations, measurements, analysis, and engineering.

The science of trigonometry emerged when humans wanted to locate high mountains and stars.

Therefore, the knowledge of this article arose and developed when humans felt the need and mathematics are necessary for the long planning of any individual.

Although the importance of mathematics can never be denied, a general fear of dealing with math exists in students across the world.

Mathematics is necessary to understand the other branches of knowledge. All depend on mathematics in one way or another. There is no science, art, or specially except mathematics was the key to it. The discipline and mastery of any other science or art are very much related to the size of mathematics.

The Most Important Uses of Mathematics:

I think it is impossible to limit the uses of mathematics in everyday life so we will suffice with some of them. Can you use any entertainment game without using numbers? Can you practise any sport without using numbers to learn if you are a winner or loser?

Importance of mathematics in daily life.

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Mathematics is a powerful tool for global understanding and communication that organizes our lives and prevents chaos. Mathematics helps us understand the world and provides an effective way of building mental discipline. Math encourages logical reasoning, critical thinking, creative thinking, abstract or spatial thinking, and even effective communication skills.

Mathematics: Introduction

Mathematics is a study of measurements, numbers, and space, which is one of the first sciences that humans work to develop because of its great importance and benefit. The origin of the word "mathematics" is in Greek, which means tendencies to learn, and there are many branches of mathematics in science, that are related to numbers, including geometric forms, algebra, and others.

Mathematics plays a vital role in all aspects of life, whether in everyday matters such as time tracking, driving, cooking, or jobs such as accounting, finance, banking, engineering, and software.

These functions require a strong mathematical background, and scientific experiments by scientists need mathematical techniques. They are a language to describe scientists work and achievements.

The importance of mathematics in cultural development:

Like other sciences, mathematics influences civilizations development. Cultural development depends on the achievements of scientists and innovators, especially athletes. No one neglects the role of Arab and Muslim scientists in the development of civilizations.

A great mathematician, Muhammad ibn Musa al-Khwarizmi who created the theory of algebra and laws of arithmetic that helped develop modern science and technology.

Reference:

www.scientificworldinfo.com

www.mathunion.org

Can you do your work without using numbers? If you are teacher, collect your students marks or a doctor, estimate the amount of medicine for the patient or an engineer, estimate the amount of raw material to be added to complete the work.

The importance of mathematics is that it is a method based on research and analysis, to reach the desired results, and is used for calculation and presentation of data; not only the use of this science in a particular field but the use of all areas of life and different sciences.

The Importance of Mathematics to Individuals:

Mathematics is one of the most important sciences that cannot be dispensed with, and the individuals need for mathematics is no less than the need of society. When studying an individual or a person of mathematics, this will develop his thinking and scientific tendencies. Mathematics also works to express the most accurate and objective things, and it helps us to manage time and plan things, economics and others.

The Importance of Mathematics to Society:

Mathematics is an innate approach to research and analysis to reach a solution to mathematical problems. Mathematics is a basic subject taught at all stages. It cannot be dispensed with. Some of the important roles of mathematics in society are:

The importance of mathematics in scientific studies:

The conduct of studies and scientific research requires many skills in sports, which help in the development of studies and progress, for example, the study of physics or chemistry depends heavily on mathematics, including mathematical skills and mathematical matters, and lies the role of mathematics in the accuracy of conducting social research through the statistics branch.

The importance of mathematics in the development of social values:

It helps mathematics in the development and refinement of personality, through organization and accuracy, and helps to detect.

and analytical methods have been used for analyzing and interpretation of data.

Introduction :

The earliest literature of ancient India refers to the great Bodo race. Various places mentioned in the epics, like Mahabharata are now identified with sites of Assam. The Bodos are one of the earliest inhabitants of Assam. According to the historians, the Bodo are a race of the Mongolian people who are described to be the inhabitants of a country north of the Himalayas and west of China. After, they migrated to the Bullungbuthur valley (Brahmaputra valley) and lived there till 3rd Century. At that time they were known as Dimasas, meaning Great River.

According to tradition, the earliest king of Pragiyotisa or Kamrup was Mahiranga Danava (son of Brahma). He was the son of Sambarasur, whose capital was at Rangamati. According to Narjinari, Mairong was the earliest king of the Meches, who flourished in north-eastern India long before the great battle of Kurukshetra. Mahiranga Danava succeeded in turn, in the direct line by Hatakasur, Sambarsur, and Ratmasur. After them there was a chief named Ghatakasur, the ruler of the Kiratas. Narakasur was killed by Lord Krishn. of Dwaraka.

Bhagadatta was the son of Narak, this name was also derived from the Bodo name of Bhugdat meaning brave. The word "Bhagadatta" is an Aryanised name of Bhugdath in Bodo it means brave. Bhagadatta is the most conspicuous figure in the Mahabharata was the king of Kamrup in 355 A.D. He ruled nearly 25 years. After his death his son Samudra Barman became the king of Kamrup. He ruled from (380-405). After his death Bal Barman (405-420), Kaylan Barman (420-440), Ganapati Barman (440-450), Mahendra Barman (450-485) and Bhuti Barman rule.

After, the death of Bhuti Barman, Susita Barman was the king of Kamrup. After the roll of 8 years his elder son Supratistita Barman was crowned as the king of Kamrup. He died in 594 A.D. After his

A Glimpse of Ancient Rulers in Assam

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Abstract

The history of the world divided into two great periods. The first period was before the coming of Jesus Christ and the second after his ascension. We got the history of human civilization before the birth of Jesus Christ which was called "Before Christ" abbreviated B.C. and the history after the birth of Jesus Christ which was called Anno Domini abbreviated A.D. Many civilizations, many kingdom, had been gone but human history still continue. In the Indian history where includes history books of Mughals, the Afghans, the Sikhs, the British and history of India. The ancient history was full of some ruling kings.

Keyword : King, History, Ruler, Bodo.

Objectives :

The objectives of the study are:

- 1) To study the ancient history of Assam.
- 2) To study the Bodo kings in ancient Assam.

Methodology :

The study has been conducted based on secondary sources of data. Secondary sources of data have been collected from published books, journals, articles, magazines, newspapers etc. The descriptive

death Vaskar Barman became the king of Kamrup. He was the greatest ruler of Berman dynasty. He had an intimate friendship with Harshavardhan, the king of Thaneswar-Kanauj.

There are contradictory views on the racial affinity of Bhaskarvarman. It was Hiuen Tsang in the 7th Century A.D. who classed him as Brahman Caste. He says, "The present king belongs to the old line of Narayan-deva. He is of the Brahmin Caste. His name is Bhaskarvarman, his title Kumara". After the death of Vaskar Barman, Abanti Barman was the king of Kamrup. He ruled about 25 years to 675 A.D. After that Madhab organized a new kingdom. It had 21 kings. They ruled from 7th Century to 10th Century about 300 years. After the death of Abanti Barman, Bijay, Pallak, Kumar, and Bazradev ruled the Kamrup. After Harsadev, Zasho Barman, ruled in Kamrup. After the death of Harsha Dev, Brashma pal was the king of Kamrup.

Bishwa Singha (1515-1540) laid the foundation of the Koch dominion over Kamata Kingdom in the early part of the 16th Century. He was succeeded by his son Malladeva who took the name Naranarayana. His brother Sukladvaj became his commandant-in-chief.

Narayana died in 1584 after a reign of nearly fifty years (1540-1584). During his rule, the power of the Koch kings reached its Zenith. After the death of Naranarayan, the Koch Kingdom was not able to retain its glory. Consequently, the Afghans and the Mughals took advantage and in 1615, the Koch kingdom was annexed to the Mughal Empire. Naranarayans rule is remarkable, for it was during his reign that the Assamese literature and culture flourished, which was inaugurated by Srimanta Sankardeva. The early part of 13th Century saw the rise of Kachari Kingdom. The powerful kings of the Kachari kingdom were Jashanarayan, Pratapnarayan, Jamradwaj and Govindchandra. The Kacharis claim descent from Ghatokacha, the son of Bhima. Towards the end of the 15th Century, the Kacharis had

to surrender their capital Hidimbapur (now Dimapur) and the areas adjoining it to the Ahom. The third and the final invasion of the Kachari kingdom took place in 1803, when their king Krishna Chandra refused to send back the Moamaris to the Ahom king. The last king of the Kachari Kingdom was Gobinda Chandra (1813-1830)

There are some lists of Cachari kings. These are as follows, 1. Ghatotkach 2. Megh Barma 3. Meghbal 4. Uttam - dhwaj 5. Kela - dhwaj 6. Biswa - Kirtti - Dhvaj 7. Biswaban - dhwaj 8. Betul - dhwaj 9. Biswisan - dhwaj 10. Unmatta - Dhvaj 11. Kulis - dhwaj 12. Rudro - Dhvaj 13. Kamata - dhvaj 14. Satrujit- dhvaj. 15. Pari Rudra - dhvaj 16. Baskar - dhvaj 17. Bishan - dhvaj 18. Hiranya- dhvaj 19. Bhadrasan - dhvaj, 20. Sukla - dhwaj, 21. Ishala - dhvaj 22. Guna Kirtti - dhvaj 23. Pitla - dhvaj 24. Upendra - dhvaj 25. Nila - dhvaj 26. Padmanabh - dhvaj 27. Pika - dhvaj 28. Brisha - dhvaj 29. Guna- dhvaj 30. Sur Sen Dhvaj 31. Bipudarpu - dhvaj, 32. Balabhadra - dhvaj 33. Chandra Sekhar- dhvaj 34. Munukabhanjan - dhvaj 35. Skandha Sen- dhvaj 36. Djis - dhvaj 37. Gatra - dhvaj 38. Maheswar - dhvaj 39. Kulabhadra - dhvaj 40. Bhanu - dhvaj 41. Kamala - dhvaj 42. Gandiva - dhvaj 43. Bhupendra - dhvaj 44. Bhanujit - dhvaj 45. Nirbhaya Ndryan 46. Udaya Bhim 47. Modan- dhvaj 48. Chitra - dhvaj 49. Binada - dhvaj 50. Kuta - dhvaj 51. Sankha - dhvaj 52. Binu - dhvaj 53. Sindhu - dhvaj 54. Lalitdhvaj 55. Sinha - dhvaj 56. Hema - dhvaj 57. Sikhanda Chandra 58. Kumuda Chandra 59. Prachatya Chandra 60. Uditro Chandra 61. Prabhikara Chandra 62. Karpura Chandra 63. Giri Chandra 64. Dhira Chandra 65. Surajit Chandra 66. Surajit Chandra 67. Balapratap Chandra 68. Prakasha- dhvaj 69. Bikram Chandra 70. Aditya Chandra 71. Bira Chandra 72. Pundari Kaksha 73. Bhupal- dhvaj 74. Prabala Chandra 75. Purandar Chandra 76. Trilocham Chandra 77. Dibidha Chandra 78. Kartik Chandra 79. Nila - dhvaj 80. Makara - dhvaj 81. Janakula Chandra 82. Naba Chandra 83. Kisori Chandra 84. Mana Chandra, 85. Biradurpa Chandra 86. Nirbhai Chandra 87. Meghbal

Chandra, 88. Bahubal Chandra, 89. Indrabal Chandra 90. Sikki - dhvaj 91. Udaya Aditya Chandra 92. Magura - dhvaj Chandra, 93. Garura - dhvaj Chandra 94. Makara- dhvaj, 95. Tamara - dhvaj, 96. Suradarpa Chandra, 97. Dharm - dhvaj Chandra, 98. Kartik Chandra, 99. Ram Chandra, 100. Hari Chandra 101. Lakshmi Chandra 102. Krishna Chandra and 103. Gobinda Chandra.

The Epics the Ramayana and the Mahabharata are supposed to be written from 2500 to 3000 BC. This proved that the Boro people had powerful kings and kingdoms even before 3000 BC in the Eastern part of powerful India at the time while the Aryans were confined to the Indus valley. The extension of Aryan culture and their settlement in this region began only in the last part of the first century of Christian era. This itself amply speaks about the historic of the Boro begin the origins of this part of present India.

From the historical period hundreds of Boro kings ruled under different dynasties. The Asura Dynasty, the Kirata Dynasty, the Mlecha Dynasty, the Varman Dynasty, the Sala Stambha Dynasty, the Pralambha sDynasty, the Pala Dynasty, the Khena Dynasty, the Koch Dynasty, the Khena Dynasty, the Koch Dynasty, the Kachari Dynasty and the Borok or Tripuri Dynasty ruled before British came.

According to history the Bodos are the aboriginals of Assam, part of Bengal, Bihar, Nepal and the North-Eastern region of India. They once ruled the entire region. The Ahom's arrived in Assam in 1228 A.D. and after that conflict between the Boro Kacharies and the Ahoms started. Ahoms who brought the high caste Assamese, Brahmins in the state. From that time the Boro Kacharies were gradually engulfed by them. From then, the Boro Kacharies ruled Assam till 1854 AD. Kaspur was the last kingdom of Kacharies and Tularam was the chieftain of the Kingdom. The ruins and relics of the last kingdom of the Boro Kacharies are lying in Dimapur city.

In Coochbehar the Kachari brothers Narayan and Chilarai established a Kingdom the palace. But in the course of time the Boro

Kacharies lost their land, kingdom, palace and everything. Today they have not their own State or a place under their political exercise. So this community with glorious past must have lost their own land to be ruled their own people. The Bodos and other plains tribal's of Assam must have a Separate State, liberate Bodo language and culture from the suppression and to be free from political exploitation and to develop at par with other communities of India and to give economic opportunity and political power to serve their own interest and this has been the demand of the All Bodo Student's Union. Those villages which have more than 50% of Bodo population they are involved.

Conclusion :

From the above analysis it is clear that the study is only a glimpse of glorious history of the rule of the different Bodo dynasties. This is a vigorous search for the reconstruction of the Bodo history demands attention of each and every Bodo student of history. Scholars and historians, to rose up and march forward to rediscover the hidden story of the great Bodo race.

It is evident from the study of history that the Bodos had a glorious kingdom in ancient past. They were the supreme ruler of their kingdom to the North of Brahmaputra valley. After the annexure by the British during undivided Assam the Bodos had virtually lost their homeland. They were struggled to recovering their lost of homeland.

BIBLIOGRAPHY

Secondary Sources :

1. ABSU (1987), *Why Separate State of Bodoland: Demand and Justifications*, N.L. Publications, Kokrajhar, Assam.
2. Banarjee, A.C. et.al. (2010), *Problems and Prospects of Bodoland*, Mittal Publications, New Delhi.
3. Baishya, P. (2014), *Asamar Sangadiya Rajmitir Itibash* (Assamese), Rekha Prakashan

4. Basumatary, B.C. (2014), *A Concise History of the Bodos, Words and words*, Kokrajhar.
5. Bora, B. (2011), *Pritihak Rajyar Dabi: Asomar Jangjati* (Assamese), Sneha Publications, Guwahati.

NEWS PAPERS :

(i) Assamese :

1. Barman, Hemanta (ed.), *The Danik Janambhumi*, Janambhumi Press Pvt. Ltd. Guwahati (Assamese daily)
2. Deka, Kanak Sen (ed.) *The Danik Agradoot*, Agradoot Publishers Pvt. Ltd. Guwahati.

(ii) English :

1. Sarkar, Arup (ed.) *The Telegraph*, Media group Anand Publishers, Calcutta.
2. Baruah, Prafulla Govinda (ed.), *The Assam Tribune*, Assam Tribune Private Limited, Guwahati.

An Analysis of Jaina's Ethical Discipline and Environmental ethics

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Introduction:

Jaina is one of the non-vadic systems of Indian philosophy. In Jaina philosophy one important part is its ethical discussion. The metaphysical and epistemological discussion of Jain philosophy helps one to lead right conduct. The meaning of right conduct is liberation which means negatively elimination of bondage and positively means attainment of perfection. The causes of bondage are anger, pride, infatuation and greed. So, the influx of karma-matter into the soul is bondage and as soul is association with matter is bondage. So, liberation means the complete dissociation of the soul from matter. Right knowledge is necessary for removal karma matter. Right faith, right knowledge and right conduct are known as Jaina ethics. These Jaina ethical disciplines are related with environmental ethics. Both Jainism and environmental ethics discusses about the right and duties towards living being. 'The environment means the total situations that surround men, animals, plants etc. in a particular place or time.'¹ In wide sense it means the situation created independently or dependently by the nature, biological and social elements related to the mankind.

Objective:

- * The main objective of this paper is to focus on an analysis of Jainas ethical discipline on the basis of environmental ethics.
- * To find out the duties and responsibilities of man towards plants and animals.

Methodology:

The paper is based on secondary data which are collected from books, journal, internet etc. The paper is an analytical discussion.

An analysis of Jainas ethical discussion on the basis of environmental ethics:

Jaina ethics as the three gems or *triratna* has shined a good life. Jainism is one of the systems consisting in the ethical part which lays stress on both faith and praise.² This philosophy like other Indian philosophy, beliefs on the bondage of souls due to lack of right knowledge. In Indian philosophy, bondage means liability of the individual to birth and all types of sufferings. The Jaina philosophy emphasized on right knowledge, the knowledge of reality by following which man can control him. The right faith is based on general preliminary acquaintance called *samyag darsana* paves the way for right knowledge. So, right faith is essential. But, without practice, right knowledge is meaningless. As a result, right conduct is essential. According to Jaina, these three ethical stages of human life for attainment salvation are known as three *Jwels* (*tri-ratna*). The path of liberation lies through right faith, knowledge and conduct.³ *Umasvami* defines right faith as the attitude of respect towards truth. This faith may be inborn and spontaneous in some, by others it may be acquired by learning or culture.⁴ Jainism does not advice to follow the teaching of the Tirthankaras. In this regard, *Manibhadra* pointed out the Jaina dictum "I have no bias for Mahavira, and none against Kapila and others. Reasonable words alone are acceptable to me, whose-ever they might be".⁵ Perfect faith can result only from perfect knowledge.

Right knowledge is the real nature of the ego and non-ego, and

this knowledge is free from doubt, error and uncertainty. The karmas should be removed in perfect knowledge. Again right conduct means doing what is beneficial and forbidding what is harmful. The influx of new karma must be stop for liberation. In this point, Jainas wanted the necessity of *panca-mahavrata* or five great vows.

In ancient time, the *Upanisads* recognized the value of five great vows. The Buddhist philosophy also indicates the necessity of these five vows for the escape from suffering. Jainas philosophy gives importance of the five great vows for the society. In another word, these five great vows have an important role for balancing ecological system and in this point there is a relation between Jaina philosophy and environmental ethics. Environmental ethics considers the ethical basis of environmental protection. It tries to make a radical change of the attitude of people towards nature. Every people as right to use natural resources as well as every people has duty to preserve nature, so that future generation has not face any difficulty. Environmental ethics helps people for taking decision regarding ethical questions. Is it right for human beings to be the cause of the extinction of a species for the perceived or real convince of humanity? Is it right for human to kill animals for food or experimentation?⁶

In Indian philosophical trend and tradition Jainism is one of the system consisting in the ethical part which lays stress on both faith and praise.⁷ One of the important vow of Jainism is *Ahimsa* which means abstinence from all injury to life. Usually violence means causing harm to others. But Jaina refers primarily to injuring ones own self-behaviour which inhibits the souls own ability to attain *moksha*. Jaina *Ahimsa* is different from other philosopher of Indian philosophy. Jainism was stricter to practice *Ahimsa*. According to them, life exist both the moving beings and non-moving beings. So, they used *Ahimsa* to all animals, plants, insects and all beings having life or life potential. Because all life has right to live and all life are sacred. The ideal of the Jaina is to avoid molesting life not only of the moving creatures but also of

the non-moving ones.⁸ Jain saints tied over their noses a piece of cloth so that any one life of organism will not destroy. According to Jainism, protection of life, also known as *abhayadanam*, is the supreme charity that a person can make. 8 Ahimsa does not merely indicate absence of physical violence but also indicates absence of desire to indulge in any sort of violence. The practice of this vow refers ecological balance in earth. If everyone practices this vow, then the situation of earth will be properly maintained. Environmental ethics also gives important on respect towards living and non-living beings. Environmental ethics also stress on the principle Ahimsa. The non-violence or Ahimsa in Jainism are useful in meeting the present ecological needs. As a highly rational being, man has a great ethical responsibility in their mutual relationship with the rest of the universe.

Another important vow of Jainism is Satya or Truthfulness. There is a close relation between non-violence and speaking truth. The brave, religious, pious and spiritual person speaks truth. The mind of such person's is free from anger, greed, infatuations and passions. But the person who's mind is full of passions, jealous, fear and infatuation, speak untruth. As a result, in society people feel pain, sorrow and discomfort. This is the cause of spiritual degradation. The speaking untruth also pain in others mind. So, the atmosphere becomes damage. But speaking truth fresh the mind and such person stand against injustice. So speaking truth make benefit to the society and all living beings. When a society is spiritual and psychologically strong, such society becomes awake for the good environment. So, the vow of speaking truth is related with environmental ethics.

Asteyam means abstinence from stealing which consists in not taking what is not given. This vow is logically inseparable from non-violence. Here the concept of greediness towards any and everything is related. Greedy is the cause of all kinds of sins and it generates violence. So, one ought to avoid oneself from greed, infatuation etc. But in modern time infatuation and greed are associated with every step of live. As

a result, man commits sin. A businessman, wealthy man wanted more wealth which is a kind of asteyam. Such person is not popular by the customers. So their mind would be polluted and psychologically get hurt. But if people is free from asteyam, their mind will be fresh and clean. In such situation, killing, deceiving, suicide, pain etc would be removing in society. As a result social pollution will be control.

The fourth vow is Brahmacharyam which means abstinence from self-indulgence. In Jainia it is interpreted as the vow to give up self-indulgence (kama) of every form. This vow is related with environmental protection in certain way. In modern time, AIDS, sexual related disease, rape, over population are some of the problems which are generated by abramha. There are many problems created due to non-celibacy. It will pollute the doers mind and such activities gradually reflected in society. So, society will be polluted. But when a man controls his emotion, then his mind will be purified and psychologically he will be strong. As a result, social and psychological pollution will be less and spiritual progress and ethical activities will be generated. So, in this way Brahmacharyam is related with environmental ethics.

The last vow is Aparigraha which means abstinence from all attachment. This vow indicate all types of attachment such as pleasant sound, touch, colour, taste and smell. All types of attachment are the cause of bondage to the world and as a result liberation is impossible. So, withdrawal of all types of attachment is essential for free which will make man salvation and pleasure. As attachment indirectly causes greedy and ambitious which will polluted society and environment. So, for the protection of environment all types of attachment will be controlled. In this way environmental ethics is related with Aparigraha.

In Jainia ethics there is no conflict between mans duty to himself and to society. So, the highest good to society is the highest good of individual. There are six essential duties, viz. Devapuja, gurupasti, svadhyaya, sayam, tapa and dana which are performed by man.

Duties and Responsibility of man towards plant and animals:

As a responsible citizen, every man is essential to value nature. Humanity is an important concept and it is related to do something better for the welfare of others. Every people ought to enjoy their life without affecting nature. In this point, everyone must try to do better for the nature by protecting plants, animals, birds and other natural resources. Population growth with modern culture of consumerism has caused damage to environment. In a civic society development is mostly essential because it will standard of living. All people know that forests clean up air. All the things which we used are found from nature directly or indirectly. Some natural resources are used directly and some others are used as raw-materials. Some raw materials used for industrial products which are found from forest. The solution of environmental problem is to go back to nature, traditional ideals and values. So, it is the responsibility of every citizen to value nature. People appreciate the values of many natural things from ancient time, such as mountains, rivers, trees and animals. Nature was respected and protected by man in past. Forests were associated with the name of god and goddesses. Some trees like Banyan, Peepal, Tulsi were worshiped by ancient people. Again, some trees are valued for their fruits and flowers. For example, Mango tree is protected for its fruit, Mohua tree is also protected for its flowers. When a person performs sinful activities related to plant and also destroy plant, such person is not free from sins. The plants are themselves living being like human beings. So, if we destroy the plant, plants is also destroy one's own life. As a result, ecology of the world will be destroying.

Like plant, some animals are also respected as sacred. For example, elephant is associated with Ganesha, Vishnu is associated with the eagle, Ramchandra is linked to Monkeys, Lion is linked to Durga, Cow is associated with Krishna Owl is associated with Lakshmi and Swaraswati is associated with Swan. Thus from ancient time plants and animals are venerated, so that all live peacefully. In order to keep

environmental balance and to save the ecology one must protect the air-bodied beings.

The beauty of nature attracts every aspect of living and non-living part of earth. People appreciate the magnificence of a mountain, the power of the sea, the beauty of a forest and vast expanse of the desert. We take the opportunity to spend time in the silence of the forest. We also enjoy listening the songs of birds and the sound of the wind which comes through the leaves. Again, we observe a tree through a change of seasons as it gets new leaves, flowers, fruits and seeds etc. The beauty of nature inspired artists to develop their arts and poets to create their works. So, it is duty to everyone to protect nature and stock natural resources for future generation, so that they will live happily and found everything from nature. 'Environment is the source of life on earth and it not only directs but also determines the existence, growth and development of mankind and all its activities'.⁹ All these duties and responsibilities of man are related with Jain ethics.

Conclusion:

From the above discussion it is clear that Jain ethics— Knowledge, faith and conduct inseparably related and the liberation is possible through these paths. Perfection of conduct goes with the perfection of knowledge and faith. So, when a person strictly follows the disciplines of Jain philosophy, he performs the duties towards environmental ethics. At present the Jain's ethical disciplines are more essential for eco-logical balance in the world.

References:

1. Sarma, Mukunda, Environmental and Population Education, DVS Publishers, Panbazar, Gauhati, 2013
2. Radhakrishnan, S, Indian Philosophy, Oxford University Press, 1923
3. Chatterjee. Satischandra, & Datta. Dharendra Mohan, An Introduction to Indian Philosophy, Calcutta University Press, 1984

4. Ibid, P. 105
5. Ibid, P. 105
6. Goswami, Sauravpran (ed.)of knowledge, Freedomand Reason, Reflection Cell, Dept. of Philosophy, GU. 2010
7. Radhakrishnan, S, Indian Philosophy, Oxford University Press, 1923
8. [https:// en.m.wikipedia.org](https://en.m.wikipedia.org) on 22th December, 2021
9. Saxcna, H. M., Environmental Geography, Rawat Publications, Jaipur and New Delhi, 1999

A study of ethics in Buddhism

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Introduction :

Buddhism is a practical religion. Buddha is not only the profounder of Buddhism, he is also an ethical teacher and great reformer of religions. He was born in this pious land of India. Among the all great religion, Buddhism is that religion which has focused that elements of religion, which is called spirituality. No religion has set a higher value on the states of spiritual insight and liberation. Buddhism has been regarded as a peaceful religion carrying the Buddha message of love and wisdom for all living beings. There are several ethical teachings that govern how Buddhist behave. The main standpoint of his enlightenment indicates to man is the way of life that leads beyond suffering. This paper is an attempt to focus the different ethical concept of Buddhism.

Discussion :

The reality of the teaching of Buddha is Four Noble Truths. They are regarded as the foundation of Buddhist practice. His whole philosophy is based on his Four Noble Truths. This Four Noble Truths include his Noble Eight-fold Paths. From the philosophical and moral point of view, Buddha has taken a middle path. There are two aspirants should never approach. On the one hand, pleasures of sensual objects,

interest in passions, a low, uncultured, deplorable and undirected pleasure seeking meant only for low people and on the other hand the habit of suppressing the self, which is painful, worth discarding and useless. Buddha has discovered a middle path which open eyes, and which guides towards peace and insight, supreme wisdom and nirvana. It is only the noble eightfold path.

The first noble truth of the Buddha is that there is suffering in our life. Our life begins with misery and ends with misery. It means our whole life is full of suffering. Therefore, Buddha through this first noble truth teaches the ignorant people to wake up and understand the temporality of the world. The second noble truth is that there is the cause of suffering. Every effect has a cause, similarly every cause has an effect. Hence cause and effect are interrelated. This is called the Law of Nature or the Dharma. Lust (*trina*) is the root cause of all kinds of sufferings. The Buddha points out that finite thing gives us sufferings. Therefore, we have to give up the lust of finite things to avoid suffering. The third noble truth is that there is the need of the cessation of suffering. The Buddha stood against the helplessness of the miserable people; he renounced the unreality of life and set out in search of reality. When Buddha has attained the Enlightenment, then the Buddha noticed everything clearly and found these four noble truths.

The Noble Eight-fold path :

The whole of Buddhist ethics is based in the noble eight fold path and its prerequisites. The fourth noble truth is regarded as Noble Eight-fold path or the Middle way to remove the suffering. In this connection Buddha provided eight rules to be followed to remove sufferings and obtain Nirvana. These eightfold path is the best psycho-physical formula for the human perfection. He rejects both self-indulgence and self-mortification, and enjoins the ethics of moderation. He preaches the doctrine of the ethical mean. He lays down the eightfold path.

Right views (*Samyak-dṛṣṭi*)—The first means in Buddha's eightfold path is right vision. It consists in right knowledge of the four noble truths, which leads to nirvana.

Right thought (*Samyak-sankalpa*) — The second means is right thought. It consists in the determination to uproot attachment to sensual pleasure, ill-will towards others, and desire to do harm to them. Mere right knowledge of right and wrong does not help the aspirant reach his goal. Right resolve is aspiration towards renunciation, benevolence, and compassion.

Right speech (*Samyak-vāk*) — The third means is right speech. It is an outward expression of right resolve. It consists in abstention from lying, slander, abuse and harsh words. One should speak what is right, not what is unrighteous. One should speak what is true, not what is false. One should speak what does not pain oneself nor hurt others. Truth should be in harmony with right and good.

Right action (*Samyak-karmānta*) consists in abstention from destruction of life, theft, sex-indulgence, lying, drinking intoxicating liquor, eating etc.

Right livelihood (*Samyak-jīva*) consists in earning living by honest means. Earning livelihood by under-weights, fraudulence, bribery, ingratitude, persecution, confinement, robbery, and plunder is forbidden.

Right effort (*Samyak-vyāyāma*) consists in constant vigilance, effort, and activity which are necessary for self-control, sense-restraint, arrest of evil thoughts, stimulation of good thoughts, and concentration of the mind on universal good will. Right effort consists in suppressing evil states and stimulating good states.

Right mindfulness (*Samyak-smṛti*) consists in recollection of the impurity of the body, the nature of feeling, pleasure and pain. Right mindfulness is an indispensable pre-requisite of right concentration.

Right meditation (*Samyak-samādhi*) consists of four meditations. The first Jhana is a state of joy born of seclusion, accompanied by

reflection and investigation, in which sensuality destroyed. The second jhana is a state of joy born of deep tranquility, without reflections or investigation, which are suppressed; in it thought is tranquilized, and intuition predominates. The third jhana is a state neutral consciousness in which all passions are destroyed. The fourth jhana is a state of complete tranquility and self-possession in which joy and sorrow are destroyed.

These eightfold paths are the important rules of the Buddha regarding the attainment of the highest good, liberation or Nirvana. Through this eightfold path Buddha teaches basically three things. They are: *Sila* or outward conduct, *prajna* or intuitive insight and *Samâdhi* or final detachment. The first two steps relate to wisdom (right views, right thought), the next three steps belong to ethical conduct (right speech, right action and right livelihood), and the last three steps belong to mental discipline (right effort, right mindfulness and right meditation). The combination of these ways is known as the Middle Path.

The Eightfold Paths are the way of living in accordance with the Buddha's teachings on the basis of wisdom and compassion. These Eight-fold Paths lead to Nirvana. It is the goal of all Buddhist practices. The Eightfold Paths are constituted of eight elements of proper Buddhist practice, which is both mental and physical. The eight fold path are segments of the individual's path toward perfection.

Five moral precepts :

Buddhism advised Buddhist to adopt five precepts in order to live ethically and morally good lives. These five precepts help the Buddhist to make a spiritual journey towards liberation. A Buddhist want to behave in a morally good way in order to gain enlightenment.

The five moral precepts are :

1. To refrain from taking life
2. To refrain from taking what is not freely given.
3. To refrain from misuse of the senses or sexual misconduct.

4. To refrain from wrong speech.
5. To refrain from intoxicants that cloud the mind.

The theory of Karma:

According to this principle karma is regarded as the concept of cause and effect. Moreover, actions bring to results. It indicates the law of causation, for whom everything is happened for something of this universe. This law of Karma denotes that good actions yield good results and bad deeds inevitably yield bad results. It can be said that Buddhist philosophy is an ethical system, which is concerned with the way of life that provides to a very specific goal. This supreme goal is called 'Nirvana' which is an experience beyond all concepts and languages. The law of karma governs all physical and mental phenomena. It is the supreme, impersonal law of moral causation to which physical causation is subservient. The Buddha believes in the law of karma, future life, and transmigration. He believes in the extinction of suffering and achievement of perfect peace here on earth. Buddhism emphasizes on the freedom of the will, moral effort, energy, and activity. Man makes themselves pure by their own free good volitions and actions. Man makes themselves impure by their own free bad volitions and actions. Man is the architect of his own destiny. He can work out his own salvation by free moral actions. Man is the builder of his own character and destiny.

Conclusion :

Buddhism stresses purity of the inner life. Only pure external conduct does not suffice. The mind must be purged of all impurities. The Buddhist morality is altruistic. Though Nirvana is the highest good of an individual, it is realized through universal good-will and love. One can pervade the whole world with love, pity, sympathy, and equanimity. The ethics of non-injury is the ideal of Buddhism. Hatred can be conquered by love, harm can be conquered by good. Hatred generates hatred. Non-injury (ahimsa), in thought, word, and deed, love, goodwill, patience, endurance, and self-purification constitute the Buddhist

morality. Buddhist ethics finds its foundation not on the changing social customs but rather on the unchanging laws of nature.

References

- Chatterjee, Satischandra, and Dhirendramohan Datta. *An Introduction to Indian Philosophy*. New Delhi: Rupa Publications India Pvt. Ltd., 2007. Print.
- Chand, Ishwar. *Buddhist Metaphysics and Ethics*. Ranchi: S. K. Publishing Company, 2011. Print.
- Coomaraswamy, Ananda K. *Buddha and the Gospel of Buddhism*. Delhi: MunshiramManoharlal Publishers Pvt. Ltd. 1974. Print.
- Glaserapp, Helmuth Von. *Buddhism: A Non-Theistic Religion*. London: George Allen And Unwin Ltd., 1970. Print.
- Holm, Jean L. *Teaching religion in school: A practical approach*. London: Oxford University press, 1975, print.
- Joshi L. M., et al. *Buddhism*. Patiala: Punjabi University, 1969. Print.
- Ling, Trevor. *The Buddha*. London: Maurice Temple Smith Ltd, 1973, Print.
- Shastri, Manmatha N. *Buddha: His Life, His Teachings, His Order*. Varanasi: Indological Book House, 1978. Print.
- Thompson, Jhon M. *Buddhism*. Vol. 3. Westport: Greenwood press, 2006. Print.
- Varma, Prasad Vishwanath. *Early Buddhism and its Origins*. Delhi: MunshiramManoharlal Publishers Pvt. Ltd., 1973, print.
- Warder, A. K. *A Course in Indian Philosophy*. Delhi: Motilal Banarsidass Publishers Pvt. Ltd., 2009. Print.

Satyagraha of Mahatma Gandhi and its present Relevance

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Introduction :

A great person in the history of India and the main leader of the freedom struggle of India and the other most within the Indian Philosophical and social, culture, Mohandas Karamchand Gandhi. Gandhi is our source of thinking. It is the solution to the problem of our civilization culture. Within the deep achievements of Gandhi's, our entire philosophy is the solution of literature. He is not a systematic philosopher, ancient Indian religion, Philosophy, his philosophical doctrine is established on the basis of cultural unity and tradition. Like of Mahatma Gandhi is his philosophy. According to Mahatma Gandhi philosophy does not mean mere knowledge of reality. It only explains how to use this knowledge in all areas of life.

Gandhi is known as one of the best thinker of the present world. His worry stream was so broad and powerful that he was able to send the world's blindness.

According to Gandhi the ultimate goal of human life is established the truth. There is only one weapon to achieve this goal is non-violence and universal love. People who are able to purify their mind by not feeling jealous of other people can find non-violence. The God, Truth,

The great thing about Gandhiji is that he not only told the rule but also followed it in his life. In the present life also person is seen following, Dharna and strike etc kinds of Satyagraha. Satyagraha is the weapon to established social unity and world peace. Due to the success of Gandhiji's Satyagraha movement, he is still worthy of praise. Many people have earned success by following Gandhiji's non-violence and Satyagraha method.

Methodology :

The study depend upon the various method mainly based on the critical analytic, conceptual and qualitative method, is taken into account. Again in this study in some places the descriptive and evaluative methods are used whatever it is necessary and primary and secondary sources including books, periodical journal, articles, internet newspaper, essay etc.

Objective of the Study :

The objectives of the study are –

1. Does Gandhiji's Satyagraha concept have Relevance in the present time or not?
2. Is the main policy of Satyagraha still used practically and is it importance or not?

Significance of the Study :

The great man Mahatma Gandhi had succeeded in his life by using the method, in the same way he advised to others. Gandhi was honest in worry, talk and action according to Gandhi one must first purify himself, then only the other can be made holy. According to some critics, a Satyagrahi causes mental damage to the opposing side so it is not a non-violence method. Satyagraha has been criticized but Gandhiji freed India from the British by this method. Gandhiji told all the critics it is easy to criticize other people, but it is difficult to amend oneself. Gandhi was later known as super human.

Gandhi's Satyagraha was an act of moral creativity. For Gandhi, Satyagraha was not only a political weapon but a weapon of creativity.

Non-violence, Satyagraha etc concept established Gandhi as a social philosopher. Gandhiji's concept of 'Satyagrah' is another concept in the development of human civilization. Non-violence and Satyagraha are mutually related concepts of Gandhiji's philosophy. There is both Theoretical and practical aspects with the notion of non-violence.

Truth according to Gandhiji, is God, and Satyagraha is 'agraha' of 'satya' and thus, it means holding fast to truth. It, therefore, demands a deep sincerity and a vigorous love for truth.

Gandhi describes Satyagraha as a force against violence, tyranny and injustice. All these evils arise on account of a neglect of the 'truth' that is all pervasive and all comprehending.

Although Gandhiji believes that Satyagraha is one simple technique which can be used differently in different situations, in actual practice it has assumed different forms. Some of the prominent kinds of Satyagraha that have been used not only by Gandhiji or his followers but also by believers in other kinds of theory are- Fasting, strike, Dharna, picketing etc.

Violence is the negation of this great spiritual force which can only be wielded or cultivated by those who will entirely eschew violence. It is a force that may be used by individuals as well as by communities. It may be used as well in political as in domestic affairs. Its universal applicability is a demonstration of its permanence and invincibility. It can be used alike by men, woman and children. It is totally untrue to say that it is a force to be used only by the weak, so long as they are not capable of meeting violence by violence.

Some critics has criticize the theory of Satyagraha but we cannot deny the importance of Satyagraha. In the present life also person is seen following some kinds of Satyagraha.

Gandhi has liberated India from the British side only by using the Satyagraha method. Gandhiji had done a lot of success earned in South Africa. The contribution of Mahatma Gandhi is not limited to within India only. He also has a lot of contribution in world politics.

Satyagraha is a means of establishing faith in human being as also in God. The philosophy of Satyagraha holds that every human being is capable of doing well and thinking good.

Satyagraha is an alternative remedy to terrorism. According to Gandhi, there is a peaceful and permanent solution to the problem through Satyagraha. Satyagraha is the best medium for the justice, prestige of the present society and for social change. Gandhiji was able to change the world perspective with this power. Apart from India, Gandhiji has a lot of contribution in world politics too.

United states president Bill Clinton said that following some ideal of Gandhiji's life would undoubtedly changes in the whole world. So, the ideas of Gandhiji is very important. Clinton's statement has proved that Gandhiji's ideal as very valuable.

Gandhi Satyagraha and its Present Relevance :

Mahatma Gandhi is a great person who has contributes in all aspects of India's politics, economics, philosophy, literature, civilization, culture etc. Inherent between thinking, writing and philosophy of Gandhi in his greatness. If he is Mahatma or great soul, he is also a man of the people amongst the people. Gandhi lived, suffered and died for his people.

The meditation of freedom fighter Gandhiji's life was to research the truth. "The story of my experiment with truth" was Gandhi's philosophy of life. "My life is my messages" This is the best message for free awake human society. Mahatma Gandhi was the embodiment of truth, non-violence and human love. Truth seeker, human lover, world lover and freedom fighter know Mahatma Gandhi among public as Bapuji. For the greatness of Mahatma Gandhi who one of the most memorable person of the earth, who history of earth and always bright in the present times. Mahatma Gandhi's ideals and memory will always be a source of inspiration for the Indian people. Gandhi had freed Indian from the British by doing a hard struggle

for independence.

The concept of Satyagraha is a most important concept within the concept Gandhi's 'truth', 'God', and 'non-violence'. Gandhi is aware that a theoretical emphasis on the value and importance of truth and non-violence would lead us nowhere unless a way is shown for the practice of Ahimsa. That takes him to develop a technique of Ahimsa, to which he gives the name of satyagraha. Gandhiji was able to make India's independence possible through the freedom struggle done by truth and non-violence policy.

Originally satyagraha is a technique of Gandhi and Gandhi describes satyagraha as a force against violence, tyranny and injustice. Gandhi had taken the help of a very powerful weapon satyagraha during the freedom struggle of India and through this Gandhi fought against the injustice of the British.

Gandhi's concept of satyagraha is the most important concept. Its importance is revealed only by analyzing the satyagraha concept of Mahatma Gandhi.

Just like Gandhi had succeeded in his life by using the method, in the same way he advised to others. Removing the British from India with love without a weapon is an important concept of Mahatma Gandhi and his life. Satyagraha means holding fast to truth. It therefore, demands a deep sincerity and a vigorous love for truth. Gandhi mentioned a number of qualities and characters which a satyagraha must possess. Some are fearless, sacrifice etc.

Acharya Vinoba Bhave was an Indian advocate of non-violence and human rights. He is consider as a National teacher of India and the spiritual successor of Mahatma Gandhi. He was the follower of Gandhi who used the satyagraha method of Mahatma Gandhi. Gandhi was greatly influenced by Leo Tolstoy. Tolstoy's ideal of "simplicity of life and purity of purpose" influenced Gandhi deeply. Tolstoy and Mahatma Gandhi were the priests of love.

If the question is asked, what is the present relevance of Mahatma

Gandhi's satyagraha concept? In answer to this, it can be said that a person who is curious about non-violence because truth and non-violence are two sides of the same coin. According to Mahatma Gandhi one who can put truthfulness and non-violence in front of his life, he can find God. Present time's relevance of Mahatma Gandhi's the concept of satyagraha is not over.

Buddhadev gave a message in the dhammapada that by calmness one can conquer anger, by honesty one can conquer dishonesty, by charity one can conquer miserliness and by truth one can conquer falsehood. The invaluable message was in front of message was in front of Jesus and Gandhi boths life. Gandhi had tried to win the heart of the opponent party by following the satyagraha with non-violence, love and kindness and in this Gandhi had achieved a lot of success.

The question of satyagraha of Mahatma Gandhi and its present relevance is very disagreement. At the time when Gandhi tried to free India from British from the truth and non-violence of the dependent India, Aruna Asaf Ali and Subhas Chandra Bose wanted to make India independent from the British by violence. But Mahatma Gandhi was able to free India from the satyagraha method by becoming non-violence without the help of any weapon. So there is a question about what is it Mahatma Gandhi's the concept of satyagraha and its present relevance, but the present relevance of Mahatma Gandhi's satyagraha concept is very much, which cannot be denied. Tolstoy has made a question that what is inside man? Mahatma Gandhi had said in the answer that there is love in man. Both Gandhi and Tolstoy adopted the idea of love to solve problems of life. That's why Gandhi had won the heart of the British in his life with love and non-violence. Lastly the British had declared the independence of India.

Satyagraha is the spiritual power by which all kinds of Inauspicious can be removed. The present ill policed country and society can be defeated by love and non-violence which people of all ages can get

success by using it well. In the present times, satyagraha is seen in a lot of relevance as an anti-violence struggle. Because in the present society, violence is increasing very strongly in contrast to the love, truth attitude of the person. So it has become very important to follow a non-violence method to end violence.

In satyagraha, by following the path of love and non-violence and win the heart of the opponent party and opponent party is brought in the honest path. For the present chaotic society to be operated orderly, It is most important for every person of the society and the country to come in honest path. So it is very important to bring the criminal and the person operated in dishonest path to honest path through satyagraha method without giving any insult and any trauma physically and mentally.

In satyagraha, satyagrahi thinks that God is inherently in the heart of all beings and things in the world, as a result of this comes the attitude of love towards all things in the world. If such a method is used even in the present time, then violence, hate, interpersonal conflict, communal conflict etc will end inside the person and everyone will be able to live a beautiful life with love. So even in the present time, the satyagraha method has more relevance.

Satyagraha is an alternative remedy to terrorism. According to Gandhi, there is a peaceful and permanent solution to the problem through satyagraha. Satyagraha is the best medium for the justice, prestige of the present society and for social change. Gandhiji was able to change the world perspective with his power. In the present time, the problem of terrorism is a terrible problem of the world. But in reality there are many other democratic solutions to make social and practical changes by removing the problem of terrorism. The all measures which was used by Gandhi as a method. At present the world human has dreamed of a world free from violence and to make this dream a reality, satyagraha is a great techniques by which the problem can be solved in a very time. So ideal is important to cure

terrorism. So, satyagraha is the best technique to established justice and for social change.

No human own torture for an indefinite period of time violence brings man to the lowest level. If people accept Gandhi's non-violence policy, then it will be possible to end the violence war. In the present day mankind is standing before the end. In such a time, Gandhi's non-violence method satyagraha cannot be called irrelevant to remove the violence attitude of the people.

Many people were influenced by Gandhi's satyagraha method. Inside all those people – Nelson Mandela, Martin Luther King, Khan Abdul Ghaffar Khan Lech Walesa, Vaclav Havel, Benigno Aquino. They were achieved success in all these aspects of religious, economics, by doing satyagraha against injustice. Martin Luther king done the satyagraha movement was against the segregation of America through non-co-operation and civil disobedience method. He was believed in this policy only by demonstrating the real results of satyagraha.

The weapon of satyagraha has been successfully implemented not only Indian freedom struggle but in other countries also. Even in contemporary times like chipko movement, Narmada Bachao Andolan and Aung san sui kysi in Myanmar. According to Bipin Chandra Satyagraha was very important aspect of Gandhian strategy.

Lastly, US President Bill Clinton made a statement about Gandhi. That is following some ideal of Gandhiji's life would undoubtedly changes in the whole world. So, the ideal of Gandhiji is very important. Clinton's statement has proved that Gandhi's ideal is very valuable.

Conclusion :

Gandhi is a great person who has contributed in all aspects of India's politics, economics, philosophy, literature, civilization culture etc. Gandhis contribution is not limited in India only, Gandhi has a lot of contribution in world politics too. Like Gandhi his followers also achieved success in all these aspects of religious, economics by doing

satyagraha against injustice.

In the last in can be said that by collectively analyzing satyagraha concept of Gandhi, we can understand about the elements in its. So by studying the concept of satyagraha, it is seen that its have a lot of importance in all aspects of particularly political, economic, religious, education, social, cultural and ethical etc. Gandhis concept of satyagraha cannot be called theoretical concept because we see satyagraha being used practically. Gandhi treated the satyagraha method as a way and remedy against violence. Gandhi had achieved success in the society by following the satyagraha method through non-violence and love. Looking at the spiritual aspect, we see that satyagraha is a spiritual movement. Satyagraha is a spiritual power by which all kinds of inauspicious can be removed. Looking at the moral aspect, we see that even in satyagraha, individual used moral aspect in their work. The effect of satyagraha is seen to be reflection even among the individual. Individuals operate their life pure and truthful by following Gandhis satyagraha method. Looking at the educational aspect, we see that many people in the society have achieved a lot of progress and success by taking satyagraha method as an ideal. The individual has taken Gandhis Satyagraha method as ideal to operated his life from truth, beauty and God. Even in economic aspects, a person follows the satyagraha method for achieving his goals and for justice. The effect of satyagraha is seen by every reflective in again cultural aspects. Everyone has taken satyagraha as ideal and followed Gandhis satyagraha as highest good. Again human beings of every religion follow satyagraha because in the path of satyagraha will of God, policy and instruction are inherent Satyagraha is a godly path which is followed by the individuals of the society. Truth is God and we see satyagraha in the form of truth being followed by individuals. So, satyagraha also has deep relevance in the religious aspect.

So, it can be said that no question of rejecting the concept of satyagraha collectively in all aspects- economic, political, cultural,

religious, moral and educational aspects does not arise. Satyagraha is a method which a person has used to achieved the goal. Along with India, the effect of satyagraha is seen in many other countries. So we can accept the concept of satyagraha as a universal concept.

By criticizing Gandhiji, no one can eliminate the importance of Gandhiji. Gandhi will always remain in the human mind as a 'Mahatma'. The great thing about Gandhi is that he not only told the rule but also followed in his life and it was only through all this that Gandhi could achieve his goal. Gandhi's satyagraha is a very important. In the present life also person is seen following, Dharna and strike etc kinds of satyagraha. Satyagraha is the weapon to establish social unity and world peace. Gandhi was able to make India's independence possible through the freedom struggle done by truth and non-violence. That is way even today there is a lot of importance and relevance of satyagraha. We can never denied the real value of satyagraha.

From what has been discussed in the above details, we can say that satyagraha is a powerful method inside the non-violence policy that Gandhiji used to make India independences. Non-violence love and kindness are the key to defeating violence. There is nothing as power as kindness and love. Gandhis satyagraha movement was not a passive resistance but a powerful active resistance. Therefore Gandhi had given importance to winning the heart of man and conscience with love. One thing is clear from Gandhi's satyagraha conceot that where there is love there is a God and humans like by love Gandhiji had made it clear that a state is as easy as it is but it is very difficult to win conscience. Gandhiji had won the conscience of the British with love, Kindness and as a result the hearted. British went back to their country by declaring Indians independence. Therefore it is seen that Gandhiji's satyagraha movement has a deep and invisible power. This power is more that a power of gun.

Bibliography and Reference :

1. Gandhi, M.K- An Autobiography or the story of my Experiment with truth. Navajivan publishing house, Ahmedabad, 1948
2. Gandhi, M.K- Satyagraha, Non-violence resistance Navajivan publishing house, Ahmedabad, 1951
3. Lal, Basant, kumar-contemporary Indian philosophy, Motilal Banarsidass publishing, delhi, 2017
4. Verma, Ravindra- The spiritual basis of satyagraha, Navajivan trust publishing, 2012
5. Gandhi, M.K- selected letters of Mahatma Gandhi, 1968
6. Gandhi, M.K- Selection from Gandhi, Ed. N.K. Bose, Navajivan publishing house, Ahmedabad, 1948
7. <https://en.m.wikipedia.org>
8. <http://www.britannica.com>
9. <https://www.mkgandhi.org/articles/10><https://www.jrc.sophia.ac.jp>
11. <https://mcollegeonline.co.in> 12. And several youtube link

are mainly concentrated on the northern bank of Brahmaputra. This northern track of Assam covers the following areas north and eastern part of Dhubri district, the whole of Kokrajhar district and northern most part of Goalpara and Bongaigaon district, northern part of Barpeta, Nalbari and Kamrup district, northern part of Darrang, Lakhimpur and Dhemajee district. (Choudhury 1993:1) Some Bodo population are also present in the southern bank of river Brahmaputra and also in the neighbouring states of Assam i.e. Tirikilla area of Garo hills, in the state of Meghalaya, Northern part of Jalpaiguri in West Bengal. S.K Chatterjee identified the Bodos as the kiratas or Indo Mongoloid.

"The Bodo speaking areas of Assam at present are stretching from Dhubri in the west to Sadia in the east. In the neighbouring states like Tripura and Nagaland there are two speaking groups. There are at least four clear cut dialects areas with a sufficient number of dialect variations of Bodo language in Assam. These may be called North-Eastern, South-Western, North and Southern dialect areas with phonological, morphological and glossarical differences" Brahma (1998:3). However the Bodo language has no any preservation of written records of its glorious past.

The Bodos are the follower of patriarchial society. Father is the head of the family. Though they follow patriarchy women owns high position in the family as well as in the society. Women owned the property rights if there is no male heir in the family. widow marriage also prevalent in the Bodo society from the initial days. The Bodos have their own culture, tradition, rites and rituals.

The origin and composer of the Bodo folk song is not known. It is transmitted verbally from generation to generation. It is believed as spiritual. The socio-culture and economic condition of Bodos are reflected in the folk songs. It is believed that from the initial days it is sung by the people during their work hours to get rid of tiredness or boredom and make their work enjoyable. They tease each other by singing. It is also sung in different possible occasions to make it colorful.

A Study on the different types of Bodo Folk Songs

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Abstract :

The word folk is the nation or country's tradition of art and culture. It is the mirror of a particular community or nation where the image of the community or nation reflects in it. It is the inner language of the common people which they express it in a form of song. The origin of folk song is not known. It can be assumed that the folk song originated when people began to live a settled life and learnt to talk in their regional languages and express their feelings among themselves. Song is mostly sung to express happiness so they sing it in different possible occasions. Likewise the Bodo folk songs are also the expression of feelings of people during different occasions and works which they utter and present it in a form of song. It might be the expression of both joy and sorrow. The Bodo folk songs are included in the oral tradition of the Bodos. The socio-economic conditions of the Bodos can be studied from the Bodo folk songs.

Key words- Bodos, folk, song

Introduction :

The Bodos are considered as one of the earliest settlers of Assam. They are residing through-out the north-eastern region of India. They

Folk songs are also composed in short choruses.

In present day many folk songs are composed, sung and also recorded. With the changing time the live style, habits, social and economic condition are also changing and upgrading positively. As the folk songs are the expression of feelings and the livelihood of present Bodo folk has changed the Bodo folk songs has also differed from the initial folk songs. Their way of expressing their feelings has also differed.

Objective :

To study the different types of Bodo folk song.

Methodology :

The study is based on the secondary sources. It will be on the analytical study of the different types of Bodo folk songs. The data are collected from different sources like books, journals, research articles and different websites.

Analysis :

Folk song has been traced by different authors in different books. As folk song is transmitted orally we cannot give the definite name of the composer. There are different types of folk song sang in one festival. There is no any particular song for one festival. We cannot agree with the statement that only one song was sung for one occasion or to express feelings. For instance a women folk of Udalguri district might sing different song in Bwisagw in comparison to women folk of Chirang district.

i) Binoy Kumar Brahma in his book "*Boro Ni Subung Harimi*" N.L Publications Kokrajhar, BTC (Assam) did not mention any song related to poking of bride and groom in the marriage but he wrote about the teasing of Bwirathi by the men folk. The hymns are also different in different books.

ii) Dr. Anil Boro uttered in his book "*Folk Literature Of Bodos*" N.L Publications, Panbazar, Guwahati-1 wrote about the marriage song in the form of prayer on the preceding marriage. He mentions about the women folk singing to treat them well to groom's side. The

author also mentions about the joking songs which are sung by the women folk to make the marriage ceremony delightful.

iii) In the book of Dr. Mangalsing Hazowary "*Bwrai Bathou Ni Gumur Arw Bathou Ni Gmbu*", Mainao publication Kokrajhar, he suggested the Bodo folks not to leave the Bathou religion through his hymn.

iv) In the book of Anil Boro, "*Folk Literature Of Bodos*, Guwahati: N.L Publication, 2021" he praised God n seek blessings from the almighty.

Interpretation :

Bodo folk songs are classified into various heads.

1. Festival songs (fwrw methai): The Bodo people are very jolly. They love to celebrate every festivals very colorfully and also by singing song. In some of the precious festivals like Bwisagw (new year), Domasi, Kattugasa, Kherai, Garja etc they sing song. On the eve of Bwisagw that is called mwswni bwisagw. The cattles are decorated and taken to the river for bath. Then the cowherds sings song like-

Lao ja phanthao ja

Bwsvr busvr er hanja hanja

Bima ni khither, bipha ni khither

Nwngsvr jagwn halua geder (Brahma :1)

[Eat gourd, eat brinjal, Grow up year to year

To spite your mother and your father You will be large bullocks.]

On the second day of Bwisagw i.e the new year all the family members takes bath and offer prayer to Bwrai Bathou and offer food items to deceased family member. After that everyone enjoys the festival by wearing new clothes. There are many songs related to Bwisagw. One of the songs which is transmitted orally from generation to generation is

Bwisagw ayoi Bwisagw

Bwisagw-bwisagw

Bwthvr gwjam a thangkaibai

Bwithur gudan a phwilaihai..... (Boro : 69)

[bwisagw its bwisagw, the old year has left and new year has arrived.....]

In Bwisagw the young boys expresses their feelings to their love ones by singing. They invite the maiden to dance.

Oh Bibari Monbari, my dear sister-in-law

Come let us dance in a raw,

If you don't come

If nothing I get from you..... (Boro: 71)

In Mago- Domashi (Magh Bihu): Mago -Domashi don't provide any occasion for singing and dancing. But during feasting and merrymaking some sort of songs are sung by the young ones and cowherds to congregate around the Belagurs to perform the fire rite in the early morning of Mago- Bwisagw. The song goes in this way-

Dhum belagur

Mocha bigur... (Boro:81)

Mo-ho-ho : This festival is celebrated to drive away mosquitoes but another interpretation says about the driving away of tiger in this festival. The young boys and cowherds chase away the hostile animals or mosquitoes by holding rod stick in their hands from door to door in the month of Aghon. They sing the Mo-ho-ho song at the top of their voice.

Ho ho ho mo ho ho

Moco ho no thangni the

Oua bilai ritha rithi jwngnw nangw

Adli viki (Boro : 83) [ho ho ho mo ho ho, lets go to chase away the tiger. The leaves of the bamboo dazzles bright , give us coins in halves and quarters]

2. Songs of religious and ritualistic significance (Aroj methai) : From initial days the Bodo people believe in God and Goddesses. They follow Saivism originally from the initial days. It is their supreme God. Shiva is called Bwrai Bathou or Bura Bathou. Kherai and Garja

is their religious festival. Bathou is worshipped by the Bodos in Kherai puja, Garja puja. Kham, Jotha, Serja, Siphung the traditional musical instruments of Bodos are played during the worship.

Song of Kherai worship: Deuri , Dwdini and Oja plays an important role. They chants mantras in the Kherai puja.

Oi bipha guru,

Anan gosai, binan gosai nwnng

Ondw ondw nwnngni ogian Boro..... (Boro : 44)

[Oh God our father

Protect your ignorant Boro children....]

Song of Garja worship: Folk song associated with Garja worship goes in this way-

Ohom de aphaphwr

Nwnghang mwvha swr swr jakhw

Budaru garza, acu maynao calimainao... (Boro:59)

[Oh you fathers and mothers,

Who are you all? Budargarzah, acu mainao lakshmi mainao]

Baidaci methai (songs associated with philosophical thoughts): other than Kherai and Garja songs there are also song associated with philosophical surged. These songs are known as Baidaci songs.

Habab swr nwnglai

gwsww singao thado thado

cerza damnai a go lin go

habab swr nwnglai?(Boro:62) [oh, who are you, you rise

notes,off and on of the cerja]

3. Love song (Gwswwthwnai methai) : The people express their feelings of love, desire , excitement, fulfillment, separation and depression through song. The Bodo people have a store house of love song called *Gwswwthwnai methai* .

Bibar bibar geolang

Harsing oi barnanwi harsingwi

Rohaylang bai

Jungni bwiw a bw rago langbai (Boro :121)

4. Marriage Song (Haba methai) : Marriage is a social norms of all community. Marriage songs are also orally and socially transmitted. The Bodo marriage song is a fun-poke song. The women folk tease the groom and the man folk tease the bride. They also tease the maidens. Very popular marriage songs are hwa gwdan nainai, goi khaonai, biban bannai etc. Hathasuni khurnai is the proper form of Bodo marriage ceremony. The *Deuri* chants the mantras by giving blessings and women folks sing in the marriage for fun and merry making.

Nolo barini daobo golonda

Junggha jiwai a udwi gwbanda (Boro:93) [here the women folk are teasing the groom by singing that his belly looks like a pot]

5. Games/ sports song (Gelenai methai) : The Bodos have a tradition of singing while playing. Different songs are sung while playing different games. A very popular song which is sung by children while playing in the river goes as

Amol damol karimol

Dawa khathi maha doi

Kukur khathi dil dim (Narzary: 29)

[Here the children are singing " come, let us play, we shall offer chicken to Mahadeo and shall cut a dog and give the heart of it"]

6. Lullaby (Gotho burkhainai methai) : To mesmerize the child from crying the mother, grandmother or the sister sings lullaby. Mostly lullaby songs are sung by grandmother, sister, or maid in absent of mother. The song goes in this way

Bagalarit geb geb

An ni abou a gabla jayw

Khuga gageb khuga gageb

Khuga gageb khuga gageb (Boro:103)

[The bird *Bogolori* cries in an odd manner sounding geb

geb so when my grandson 's face get ugly n flat when he cries]

7. Work song (Khamani methai) : From the time immemorial

when the Bodo people started to live a settled life since then they lived their life by working in the field. They embrace nature. Mostly they like to live in isolated place far away from other community. The work cultures of the Bodo people are understandable by the folk songs which were sung by them in work. The work songs are still in prevalent and preserved. By these we come to know that they were mostly dependent on agricultures.

Aka naisi naisi

Phereng gablanw agwi

Hwlanghargwn anglai hal eonw

Nwbnw gaidw/bwi agwi

Anglw gaignw lwi

Ultanglai paltanglai

Jwsa maibra

[At the breaking of dawn when the king crow sings I shall proceed to plough, you also plant dear I shall also plant. Forward and backward scented rice and sticky rice]

The Bodos lead their life by cutting trees and preparing various household items and also for firewood. The wood cutters were called *Badari*. There are many songs related to *Badari*.

Wi gumwi wi gumwi

Porbot jora ao dongphang dannw tangbwa

Sal gandwi maku

Labw labw gumwi labw (Boro:117) [Hey brother-in-law hey brother-in-law when you go to Parbot jora to cut trees bring sal gandwi maku gandwi, bring brother-in-law bring]

The Bodo women work shoulder to shoulder with man in the field. Along with that they also weave different kinds of garment like Dokhona, Phasra, Sadwr, Gamsa. They color their clothes by themselves and make beautiful design related to nature in clothes. They learn the art of weaving from their elderly ones. They are also expert in fishing and collecting green leaves from the forest. While weaving

they sing like De hai lvgw bima burvini

Danai lunai khw swlwgndini

Sikhiri bidwi svbmai hai lvgw

Okbrang ao dao birnai

Agor arwi arwi boinilw singangao

Khintani lvgw khintani (Boro:112) [come dear friends ,let us learn the art of weaving from our old mother.. let us design the clothes like butterfly necturing the flowers and birds flying in the sky]

The song which they sing while fishing is like

Phwi hai lvgw phwr

thu hai lvgwphwr

dubuli kbona ao

jgurub jugurub na gurni

sukbu dukbu ni baibra kbw phurmai laini.....(Boro:114)

[Let's go friends for fishing in the corner of the peddy field for fishing and share our happiness and sadness there]

The song which they sing in collecting vegetables and green leaves in village are like

Phwi hai lvgwphwr

Thu hai lvgwphwr

Aai apha a bw hora haba

Bida phongbai jwngbw railai thaoa

Bwthbra thangdwng kbwndw kbwndw

Jungni bwisu a bw arwinn bargolangnai [come dear friends, let's go dear friends parents don't marry us off, cannot talk to our friends, season goes on and on we are also getting older and older]

Findings :

1. The Bodo people are one of the earliest settlers of Assam.
2. The Bodo speaking areas of Assam stretch from Dhubri (west) to Sadia(east)
3. Bodo people are the follower of Saivism
4. Singing take place in every possible occasion.
5. The Bodo community love to express their feelings of joy and

sorrow through song

6. The daily activities of the Bodo peoples are known from the folk song

7. Agricultural was the main occupation of the Bodo community.

8. Women works shoulder to shoulder in the field.

9. The Bodo women are expert in weaving, coloring, designing the garments related with nature. They are also expert in fishing and collecting green leaves for meal

10. Bodo people love to live in the lap of mother nature.

Conclusion :

Folk song is a mirror of Bodo community as it reflects the image of the Bodo community. Like the Bodo literature helps us in studying the Bodo community, Bodo folk song also helps us in studying the Bodo community. It can be considered as one of the source to study the Bodos. The living standard of Bodos, their socio- economic condition is highlighted in the Bodo folk song

Bibliography :

Barua, B.K. A cultural History of Assam, Early Period. Vol. I. 1969.

Basumatary, Birendragiri. Boro Harimu Mohor Musri. Panbazar Guwahati: N.L.Publication, 2009.

Basumatary, Munindra. Kerai Ni Gumur. Bijni, 2012.

Basumatary, Rakao. Thunlai Bijirnai. 2nd Edition. Kokrajhar: Onsumwi Library, 2006.

Bhattacharya, P.C. A Descriptive Study of the Bodos Language. Gauhati University, 1977.

Borgoyary, Kanteswar. Bathou Thandwi. 1st Edition. All Bathou Religion, 1999.

Boro, Anil. Folk Literature of Bodo. 2nd Edition. Guwahati: N.L. Publication, 2010.

Boro, Madhuram. Jarimin Ni Nwjr Ao Boro Thunlai. Panbazar, Guwahati: L.N. Publication Board, 1988.

- Boro, Shri Thanesar. Boroni Mvsanai. Baksa: Publication Board, Boro Thunlai Afad, 2006.
- Brahma, Anil Kumar. Boro Rao Thunlai Jarimin. Kokrajhar: N.L. Publication, 2017.
- Brahma, Binay Kumar. Boroni Subung Harimu. 3rd Edition. Kokrajhar: N.L. Publication, 2017.
- Brahma, K. Aspects of Social Custom of the Bodos. Panbazar Bina Library, 2008.
- Brahma, Kameswar. A study in Cultural Heritage of Bodos. Guwahati: Assam Institute of Research for Tribals and Scheduled Caste, 1998.
- Brahma, Longkhesor. Bwisagw arw Harimu. 4th Edition. Kajalgaon: Chirang Publication Board, 2010.
- Brahma, Mihir Kumar. Bijirnai Thunlai Kwndw-1. Kokrajhar: Onsumai Library, 2005.
- Brahma, Mohan Mohini. Folk Songs of the Bodos. Gauhati University, 1960.
- Brahma, Raju Kumar. Boro Thunlai Arw Thunlai Bijirnai Jarimin. 2nd Edition. Kokrajhar: Onsumai Library, 2007.
- Brahma, Rohini Kumar. Serja Siphung Solo. Guwahati, 1964.
- Brahma, Sekhar. Religion of the Bodos and their Socio-Cultural transition, Ahistorical Perspective. Guwahati: D.V.S Publishers, 2006.
- Choudhury, B.L. Brahma. Bodoat a Glance. Publication Board Tribal Cultural Institute Assam, 1993.
- Goyary, Rampha. "Folk Song of the Bodos: A Brief Discussion." Review of Research 8 (2019).
- Lahary, Monoranjan. Boro Thunlai Ni Jarimin. Kokrajhar: RNB Road, 1991.
- Narzary, Bhaben. Boro Kachari Ni Somaj Arw Harimu. 1971.
- Narzary, Indramalati. Mainao Borainai. Publication Board Mahamaya Graphics, 2006.

A Preliminary study on Ichthyofauna of Buhur Stream of Anthaibari, Assam India

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Abstract :

Fish is an important resource found abundantly in nature. There are different fish species found in different regions some of which are identified and some are still yet to be identified. In this work, some of the species found in the local area of a small river named as Buhur river at Anthaibari village, Chirang is being studied. The study showed that many species were common and also were identified before. Some of the species were unidentified. Both the identified and unidentified species are shown in figures. This study of fishes in a local area helps us to know more about the fishes and well as helps us to discover many new species living in a certain habitat. Some unknown species like a species from the genus Channa are shown. Some recently identified species are also found

Introduction :

North-east region of India rich in aquatic bio-resources is dominated by the fish species. According to Sarkar and Ponniah (2006), the North Eastern Hill States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim have vast untapped potential for fisheries in terms of many rivers, streams,

flood-plain wetlands, lakes, ponds and large areas under fish culture system. A number of endemic fish species have been recorded from this region, therefore, recognized as the 'Hot Spot' of freshwater fish biodiversity in the world (Kottelat and Whitten, 1996). Out of 422 fish species recorded from North-east India Goswami *et al.* (2012), 196 fish species occurring in North-east have potential ornamental value (Dey *et al.* 2002). Ornamental fishes usually mean attractive colorful fishes of various characteristics, which are kept as pets in confined space of an aquarium or a garden pool for fun and fancy. These living jewels need not always have bright colors, as sometimes their peculiar characteristics such as body color, morphology, mode of taking food etc. may also add to their attractiveness. Assam is the second largest state of north eastern region of India. The state divided into three geographical zones, viz, the Brahmaputra valley, the hill zone of the Barak valley. The habitats that contributes to rich fisheries resources are in the form of rivers, floodplain wetland, swamp, and low-lying paddy fields. They are unique habitats that sustain substantial fish biodiversity.

The Brahmaputra river system and its associated floodplain wetlands (*beels*) in Assam are endowed with a good number of indigenous ornamental fishes about 150 species have been reported to be of ornamental value (Bhattachariya *et al.* 2003). 62 ornamental fish species have been recorded from floodplain wetland of upper Brahmaputra basin by Das and Biswas (2009) and Kalita and Deka (2013) recorded 62 ornamental fish species from floodplain lakes of lower Brahmaputra basin of lower Assam. According to Nelson (2006) the current fish diversity in the world is 32,500. India has a total 2500 species of which 930 species lives in fresh water and 1570 species are marine Kar. (2003a). Kar. (2003a) reported the occurrence of 133 species of fishes through a pilot survey conducted in 19 rivers spread in Barak drainage. Goswami *et al.* (2012) listed 422 fish species from north east India. Belonging to 133 genera and 38 families out of 217 fish species belonging to 104 genera 37 families and 10 orders

have been recorded from the water bodies of Assam including wetland (Bhattachariya *et al.* 2003).

Objectives :

- ◆ To prepare a Checklist of fishes found in Buhur river of Chirang District.

- ◆ To make a list of indigenous ornamental fish found in Buhur river of Chirang District.

International

Various workers have been working on Ichthyofaunal diversity of the world. Jayaram (1999) listed 852 freshwater species of fishes under 272 genera, 71 families and 16 orders, including both primary and secondary freshwater fishes from India, Bangladesh, Myanmar, Nepal, Pakistan and Sri Lanka.

Bambaradeniya *et al.* (2002) recorded 40 species from Muthurajawela Sanctuary, Sri Lanka.

Madura de Silva *et al.* (2009) recorded a total of 57 species freshwater fishes belonging to 24 families from the aquatic habitats of the Mataara district, Sri Lanka.

Ali *et al.* (2010) reported 15 species belonging to 5 families under 13 genera from the fresh water bodies of Suleman mountain range, Dera Ghazi Khan region, Pakistan.

Mwangi *et al.* (2012) reported 11 species from small riverine ecosystem in the Lake Victoria Basin, Kenya.

Ipinmoroti and Mabel Omowumi (2013) reported 27 species belonging to 13 families from Lake Asejire, Nigeria.

Galib *et al.* (2013) reported a total of 63 species of fish belonging to 41 genera, 23 families and 9 orders from the river Choto Jamuna, Bangladesh.

Superales *et al.* (2013) recorded 11 freshwater fishes from the Lake Wood, Lake Zamboanga del Sur, Philippines.

Gurung *et al.* (2013) reported a total of 66 species of fishes from regions of Bhutan.

Kulabong *et al.* (2013) recorded 20 species of freshwater fishes belonging to 5 orders, 8 families from upper Moei River, Salween Basin, frontier of Thailand and Myanmar.

Saeed *et al.* (2013) recorded 11 species from the river Barandu district Buner Khyber Pakhtunkhwa Province, Pakistan.

Phinrub *et al.* (2014) recorded 62 species from seagrass beds at Ban Pak Klong, Trang Province, Thailand.

Chandana *et al.* (2014) recorded a total of 32 species of fishes in the major Lagoons of Bundala National Park in Sri Lanka.

Olalekan *et al.* (2015) recorded 121 species from Lake Volta, Ghana.

M.L. Yang *et al.* (2016) recorded 85 species in three tributaries of the Irrawaddy River in China.

Shah Pinkey (2016) reported 59 species from Koshi River of Nepal.

Gautam *et al.* (2016) recorded 23 different species of fish from Tectonic Lake Rupa in the mid-hill of central Nepal of which 19 species are indigenous whereas 4 of them are exotic.

Swapna *et al.* (2016) recorded a total of 136 fish species from Carbyn's Cove Mangrove habitat along the South Andaman Coast.

E.K. Simasiku and S.K. Mafwila (2017) reported 24 species belonging to 8 families from the littoral zone of the Kavango floodplain river, Namibia.

National

The review of literature indicates that a comprehensive account of Indian fishes was worked out by Francis Day in 1889 for the first time.

Day, (1875) described 1418 species of fish under 342 genera and a century later, Jayaram, (1981) listed 742 freshwater species under 233 genera, 64 families and 16 orders from the Indian region.

Menon, (1999) listed 446 primary freshwater species under 33

families and 11 order from the Indian region.

Rao, (2001) accounted 83 fish species in the upper Ganga. Anuradha Bhat (2003), studied the diversity and composition of freshwater fishes in river system of Central Western Ghats where they recorded 92 species belonging to 25 families under 48 genera.

Sreekantha and Ramachandra (2005), documented fish diversity in Linganamakki reservoir Sharavathi river where they recorded 43 species.

Payne *et al.* (2004) described 30 species in Allahabad stretches of river Ganga.

Garg *et al.* (2007), surveyed the fishes of Ramsagar reservoir in Datia district where they recorded a total of 42 species.

Sarkar *et al.* (2007) studied the fish fauna of Samaspur Bird Sanctuary, Uttar Pradesh and recorded a total of 46 species.

Bhakta and Bandyopadhyay (2008) worked on fish diversity in freshwater Perennial water bodies in east Midnapore district of West Bengal where they found 34 fish species.

Vijay Kumar *et al.* (2008) recorded 13 species of fish in Kagina river in Gulbarga district of Karnataka.

Srikanth *et al.* (2009) studied the fish diversity of Rammappa Lake in Warangal district and recorded 33 species.

Johnson and Arunachalam (2009) studied the diversity of fish in streams of southern Western Ghats and recorded 60 fish species belonging to 4 orders, 13 families and 27 genera.

Prasad *et al.* (2009) recorded 45 fish species belonging to 15 families and 31 genera.

Heda, (2009) described 150 species in the Central Indian river system.

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Bagra *et al.* (2009) surveyed the fish fauna of Arunachal Pradesh and recorded 213 species.

Vijaylaxmi *et al.* (2010) recorded 14 fish species from Mullameri river.

Lakra *et al.* (2010) recorded 63 species from tropical river in Ganga Basin.

Sarkar reported 87 species in Katerniaghat Wildlife Sanctuary located in river Gerua.

Regional

Sarkar and Ponniah (2000) evaluated 186 fish species belonging to 27 families under 84 genera from the north east of India.

Sen (2000) also recorded 267 fish species.

Vishwanath (2002) reported 239 species belonging to 104 genera, 34 families and 12 orders.

Nibedita Sen (2003) worked out and reported 291 species from north east India.

Mahapatra *et al.* (2004) reported 274 species.

Devashish *et al.* (2006) studied the fish diversity and recorded 69 species of fishes belonging to 49 genera, 24 families and 11 orders.

Karmakar and Das (2006) published a list of 108 fish species of Nagaland.

Bendangkokba and Ahamed (2007) have also described 65 species including 3 new species from Mokokchung district from Nagaland.

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In 2005, Wakid and Biswas recorded and reported 76 fish species in Dibru-Saikhowa National Park of Assam.

Biswas and Sugunan (2008) recorded 151 species in the Brahmaputra river system of Assam.

Das and Biswas (2009) recorded 62 ornamental fish species in the floodplain wetlands of upper Brahmaputra Basin, Assam.

Sarma *et al.* (2012) reported 97 species from lower reaches of the Brahmaputra river, Assam.

Islam *et al.* (2013) recorded 57 fish from Kulsi river of Assam.

Baro *et al.* (2014) recorded 49 ornamental fish species from Sonkosh river, Assam.

Kalita and Sarma (2015) recorded 114 species from Beki river, Barpeta, Assam.

Sen had reported 285 fish species on river based ichthyofaunal diversity of Barpeta district.

Methods and Materials:

Study Area :

Buhur river is a small river covering a length of 2.8 km occurring in Anthaiabari village. The river is situated about 2.5 km from Bengtol town. The river is surrounding by indigenous communities i.e. Boro, Muslim and Santali. The river also supports people by supplying fish for food and money by fish sale. It also supports different kinds of birds, mammals, reptiles and insects.

Buhur river have lots of varieties of fishes and water in the river remains for whole season. A picture of both location and its site is given below:

Map of the Study Area

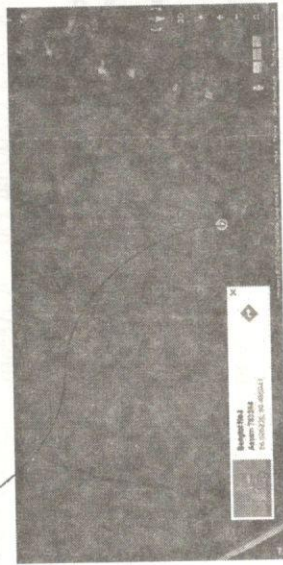
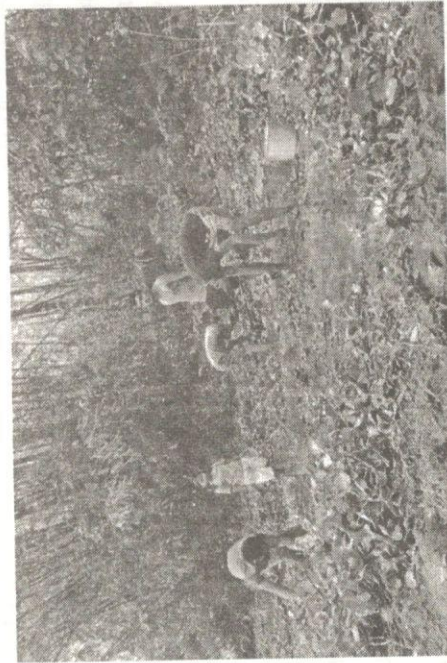


Photo of Study Area in Buhur Stream, Anthaibari



Methodology:

1. The fish is collected from 21st September to 29th September, 2021 by fishing and netting in the stream.
2. The fish were collected in live condition and photographs were taken.
3. The fish is then preserved in 4% formalin solution in a container.

NAMES OF FISHES FOUND IN THE STREAM

- 1 *Channa gachua*
- 2 *Channa punctata*
- 3 *Baetis badis*
- 4 Pipe fish
- 5 *Amblyceps improcerum* (recently identified)
- 6 *Amphiprionus cubia*
- 7 *Nemacheilus masyae*
- 8 *Danio dangila*
- 9 *Mystus vittatus*
- 10 *Esomus danrica*
- 11 *Lepidocephalichthys hasselti*
- 12 *Xenentodon cancila*
- 13 *Olyra-longicaudata*
- 14 *Fenneropenaeus indicus*
- 15 *Puntius siphore*
- 16 *Danionin*
- 17 *Canthophrys gongota*

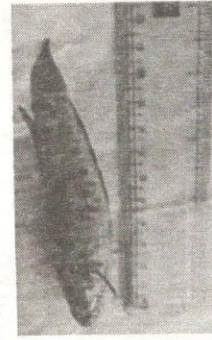
The fishes were identified by the help of following:

- 1 www.fishbase.org
- 2 Kalita, G.J. (2006)
- 3 Internet sources

Pictures of the Fishes



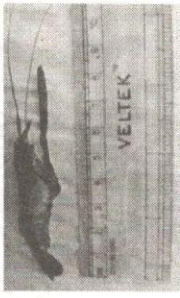
Channa gachua



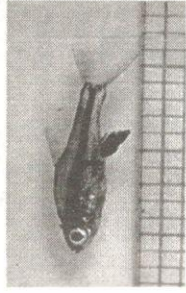
Channa punctatus



Olyra longicaudata



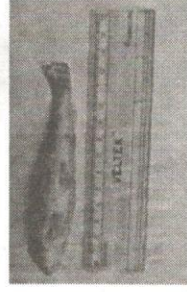
Fenneropenaeus indicus



Danionin

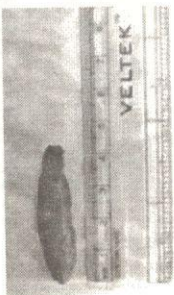


Puntius sophore

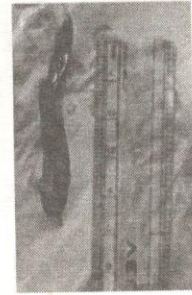


Canthophrys gongota

UNKNOWN SPECIES



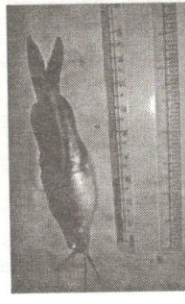
Badis badis



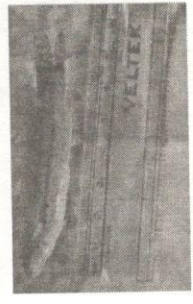
Amblyceps improcerum



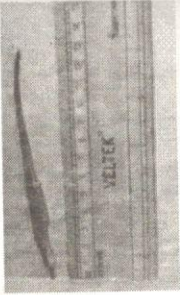
Nemacheilus masyae



Mystus vittatus



Lepidocephalichthys hasselti



Syngnathinae (pipe fish)



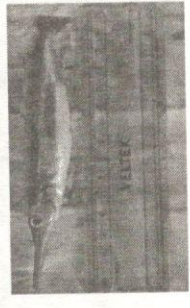
Amphipnous cuchia



Danio dangila



Esomus danrica

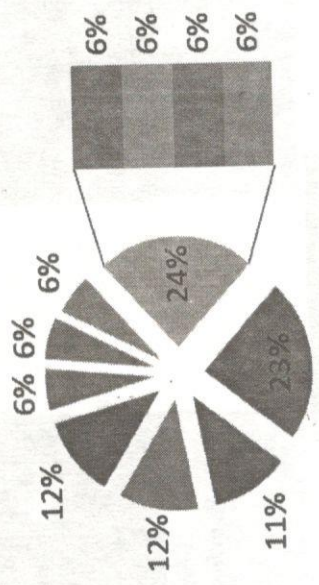


Xenentodon cancila

PIE DIAGRAM DISTRIBUTION OF FISH SPECIES ACCORDING TO FAMILY

Sales

- Cyprinidae
- Cobatidae
- Teleostei
- Synbranchidae
- Bagridae
- Badidae
- Nemacheilidae
- Sygnathidae
- Channidae
- Penaeidae
- Belonidae



Discussion :

Rivers and streams are important source of food and livelihood in Assam. The aquatic habitat of Buhur stream supports a variety of fish species. They create an environment for aquatic food web which is generally consumed by fish and other animals. Buhur stream possesses good aquatic flora such as water hyacinth and hydrophytes which provides habitat for aquatic fauna. Srivastava said that streams and rivers are one of the main fishery resources in Assam which are highly productive in presence of rich nutrients available from natural sources. Buhur river recorded a total of 19 fish species.

12 fish species were recorded as ornamental fish in Buhur stream. Srivastava (2001) reported 115 ornamental fishes from Assam. There are vast unexplored potential for indigenous ornamental fishes in Assam (Goswami and Zade, 2015). The diversity of ornamental ichthyofauna

in Buhur stream provides crucial information about the status of ornamental fish diversity.

Findings :

- 19 species were recorded.
- 17 species were identified.
- 2 species were unidentified

Conclusion :

Buhur stream is a small and beautiful natural river which harbour variety of fish species. The stream mainly originates from a paddy field and underground water. The stream is situated in Anthaibari village, Bengtol. The stream also supports the fisherman to earn money for their daily life. The stream consists of both ornamental fishes and indigenous fishes, and have vast diversity. There occur many new and unidentified fish species in the stream and is thus required to be studied and work upon in order to know, learn as well as conserve those species.

Reference :

Bhat, A. (2003): Diversity and composition of freshwater fishes systems of Central Western Ghats, India. *Environmental Biology of Fishes*, vol. 68, pp. 25-38.

Jayaram, K.C. (1999): *The freshwater fishes of Indian Region*. Narendra Publishing house, Delhi, pp 551.

Jayaram, K.C. (1999): *The freshwater fishes of Indian Region*. Narendra Publishing house, Delhi, pp 561.

Jayaram K.C. (1981) : *The freshwater fishes of India, Pakistan, Burma, and Sri Lanka*. A handbook Zoological survey of India, Calcutta. Pp 475.

Heda, N.K. (2009): *Freshwater fishes of central India: A Field Guide*. (2009).

Mahapatra, B.K., Vinod, K., Mandal, B.K. (2004): Ornamental Fish of

- North Eastern India- Its Distribution and Conservation Status. *Environmental Ecology*, Vol.22, pp 674-683.
- Nath, P. & S.C. Dey (1997): *Fish and Fisheries of North-East India*, Vol. I. Arunachal Pradesh, pp 140.
- Rao, R.J. (2001) : Biological resources of the Ganga River. *Hydrobiologia*, Vol. 458, pp 159-168.
- Shah Pinkey (2016): Study of the freshwater fish diversity of Koshi river of Nepal. *International Journal of Fauna and Biological Studies* Vol. 3(4), pp. 78-81.
- Srivastava, S.M., Singh, S.P., Mahanta,P.C.(2001): Ornamental fish biodiversity of Assam and their conservation status. *Integration of Fish Biodiversity, Conservation and Development of Fisheries in North Eastern Region through Community Participation*, Shillong
- Talwar, P.K. and Jhingran, A. (1991): *Inland Fishes of India and Adjacent countries*, Oxford and IBH publishing Co. Pvt. Ltd., New Delhi, 2 Vol. 19, pp 158.
- Vishwanath, W., Lakra, W.S. and Sarkar, U.K. (2007): *Fishes of North East India*, National Bureau of Fish Genetic Resources, Lucknow, U.P- 226 002, India. Pp 1-264.
- Yang, M.L., Jiang, W.S, Wang, W.Y, pan, X.F., Kong, D.P, Han, F.H., Chen, X.Y and Yang, J.X.(2016): Fish assemblages and diversity in three tributaries of the Irrawaddy river in China: changes, threats and conservation perspectives. *Knowledge and Management of Aquatic Ecosystems*, Vol. 417 (9).
- Vijaykumar, K., Vijaylaxmi, C. and Parveen, Z. (2008): Ichthyofaunal diversity of Kagina river in Gulbarga district of Karnataka. *The Ecoscan*, Vol.2(2), pp 158.
- Simasiku, E.K and Mafwila, S.K (2017): Fish species composition in the littoral zone of the Kavango floodplain river, Namibia. *International Journal of fisheries and Aquatic Studies*, Vol. 5(2),pp. 434-440.

- Sreekantha and Ramachandra, T.V. (2005): Fish diversity in Linganamakki reservoir Sharavathi River. *Ecology, Environment and Conservation*, pp.337-348.
- Radhakrishnan, K.V. and Kurup, B.M. (2010): Ichthyodiversity of Periyar Tiger Reserve, Kerala, India. *Journal of Threatened Taxa*, vol.4(4) pp 43-51.

a good initial teacher education at university level to prepare them for their work as teachers. All teacher education must contain four components; methodology, pedagogy, practice and curriculum areas.

The concern for the professional quality of teachers, their status and social credibility is very aptly summarized in the UNESCO Report-Learning the Treasure Within which has presented a global view of thinking on the education scene that would be gradually unfolding in the 21st century. Popularly known as 'Delors Report' it summarises the essential ingredients for quality in teacher education:

"Improving the quality of education depends on first improving the recruitment, training, social status and conditions of work, of teachers. They need the appropriate knowledge and skills, personal characteristics, professional prospects and motivation if they are to meet the expectations placed upon them."

"Good education requires good teachers" means that it becomes essential that the most capable and appropriate people be recruited into the teaching profession, provided with a high quality pre-service programme of teacher education, and then offered opportunities to upgrade their knowledge and skills over the full length of their professional career. It is, therefore, essential that there is a major reorientation of teacher education to ensure that teachers are furnished with the necessary knowledge and skills to cope with the new demands placed on them. Teacher education needs to be adequately strengthened and upgraded to accommodate the changing role of the teacher, and so that teachers can effectively address contemporary issues regarding education.¹

Recommendation of different Commission and Committees regarding objectives of teacher education

Kothari Commission(1964-66) devoted one complete chapter on teacher education detailing various recommendations for the improvement of its quality. According to the Commission the

Teacher Education and Professional Development

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Introduction

The purpose of education is to make human beings capable, competent and wise to meet the challenges of life. Quality education is the education that best fits the present and future needs of the particular learners in question and the community, given the particular circumstances and prospects. The quality concept also has to embrace the development of the potential of every member of each new generation. The concern for quality in education is common not only to developing nations but has become a matter of enhanced concern for the developed countries also. With rapid changes in the world economy and resulting pressures on the nations to adjust to a more competitive global economic environment, the quality and level of human capital becomes a strategic resource. Focus on the quality invariably leads to increased emphasis on studies, research, surveys, the establishment of data banks and dynamic systems of monitoring and evaluation. The professional development of teachers is a key guarantee of quality education and must be linked to all phases of teacher education and educational research. In order to improve the education of teachers worldwide, education authorities, governments and intergovernmental organizations must ensure that teachers receive

following should be the objectives of Teacher Education;

1. To develop Gandhian values of education such as non-violence, truthfulness, self-discipline, self-reliance and dignity of labour.
2. To perceive his role as an agent of social change in the community.
3. To perceive his role not only as a leader of the children but also that of a guide to the community.
4. To act as a liaison between the school and the community and employ suitable ways and means for integrating community life and resources with school work.
5. To help in the conservation of environmental resources and preservation of historical monuments and other cultural heritage.
6. To possess warm and positive attitude towards children and their academic, socio-emotional and personal problems, and skills to guide and counsel them.

Committee on Plan Projects (1963) recommended that beside the knowledge of content of the subject, teacher education should attempt to inculcate following objectives:

1. Skills and Techniques—To enable the trainees to acquire the skills and techniques needed to teach young children, within the help of modern knowledge of child psychology and methods of teaching.
2. Ideals and Behaviour Patterns—To inculcate in the educands the ideals and accepted behaviour patterns of the society in which we live and whose purposes we serve.
3. Attitudes, Values and Interest—To develop in the teacher trainees certain attitudes, values and interests in conformity within the ideals of democracy and our developing economy.

N.C.E.R.T after in-depth deliberations, seminars, meeting and workshops the Teacher Education Department of National Council of Educational Research and Training(NCERT), Government of India have evolved following objectives of teacher education.

1. Competence- To help future teachers develop competence to teach subjects of their specialization on the basis of an adequate theory of learning and knowledge of the subject by striving to

keep in touch with the latest developments in the field of education.

2. Understanding, Interest, Attitudes and Skills- To develop understanding, interest, attitudes and skills which enable them to foster an all round growth and development of children under their care and to provide guidance to individual pupils.
3. Indian Background- To develop an understanding of the aims and objectives of education in the India background, to promote an awareness of the role of the school and the teacher in inculcating a spirit of nationalism in achieving ideals of creating a democratic and egalitarian society.
4. Society and School- To develop an understanding of the close relationship between society and the school, between life and school work.
5. Professional Consciousness- To build up a professional consciousness.

Aims of Teacher Education Programmes

1. Enabling the teacher trainee to acquire the capacity to manage a class and with pupils of varying abilities.
2. Enabling the teacher trainee to communicate areas logically and with clarity.
3. Enabling the teacher trainee to use the technology available to make teaching effective.
4. Enabling the teacher trainee to organize educative experiences outside of classroom.
5. Enabling the teacher trainee to learn to work with the community and help the student do so.
6. Enabling the teacher trainee to learn to communicate to his pupils the importance and the feeling of national integrity and unity.
7. Enabling the teacher trainee to develop among the pupils a scientific attitude, a commitment to excellence in standards of work and action.
8. Enabling the teacher trainee to have an understanding and

appreciation of the human predicament: population explosion, environmental pollution, the threat of a nuclear holocaust and the quest for world peace.

9. Enabling the teacher trainee to imbibe the right attitudes and values, besides being proficient in the skills relating to teaching.²

Professional Development and Quality Education:

Professionalization of teacher education implies that the teachers must take a legitimate pride in their profession. They must have all possible efforts to uphold the dignity of their profession. They must keep themselves abreast of the latest developments in their profession. The Education Commission (1964-66) said, "A sound programme of professional education of teachers is essential for the qualitative improvement of education. Investment in teacher education can yield very rich dividends because the financial resources required is small when measures against the resulting improvements in the education of millions."

The highest quality teachers, those most capable of helping their students learn, have deep mastery of both their subject matter and pedagogy (Darling-Hammond, 1997). The Case studies from Bangladesh, Botswana, Guatemala, Namibia and Pakistan have provided evidence that ongoing professional development, especially in the early years after initial preparation and then continuing throughout a career, contribute significantly to student learning and retention (Craig, Kraft & du Plessis, 1998). Effective professional development may take many forms; it should not be limited to formal off-site kinds of programmes. Dialogue and reflections with colleagues, peer and supervisor observations and keeping journals are all effective ways for teachers to advance their knowledge (UNICEF, 2000). Professional Development through different aspect of Teacher Education

- i) In-service education
- ii) Pre-service education

2. Aggarwal, J.C. (1998), pp-32

iii) Professional Ethics

In-service education

Rabindranath Tagore has very aptly stated "The teacher can never truly teach, unless he is still learning himself. A lamp can never light another lamp unless it continues to burn its own flame."

The idea of In-service education has emerged to take care of the need of some sort of provision which make the teachers up-to-date with respect to the knowledge of his subject of teaching, methods and techniques, innovative ideas in each sphere of his academic education. In-service education is continuing education of teachers and other educators which leads to the improvement of professional competence of educators throughout the careers. It is designed to promote the continuous professional development by providing planned and systematic instruction within an educational setting. It denotes planned efforts to promote the professional growth and development of teachers. It includes all the programmes, educational, social or others, in which the teacher takes a vital part, all the extra education which he receives at different institutions by way of refresher and other professional courses, and all the travel and visits which he undertakes.

Pre-service

Pre-service education of teacher means, education of teachers before they enter into service as teacher. During this period of teacher education programmes, teaching practice goes side by side, while they are getting knowledge about theory papers. A good deal of improvement in the teacher education programme is needed. Pre-service education is carried on for preparing different types of teachers. Pre-service teacher preparation is a collection of unrelated courses and field experience. Research based curriculum development of pre-service teacher education is yet to take roots. These programmes are intended to support and enhance teacher learning, instill in them a greater degree of self confidence. The beginning teachers in this case learn from their practice and from the culture and norms of the

unique school settings where in they have been placed and interact with these cultures.

It is important for teacher educators to learn the methodology of how to get in touch with the core qualities of a good teacher and how they can stimulate these qualities in student teachers. This will lead to a deeper involvement in the learning process of teacher educators as well as student teachers. The inclusion of appropriate content knowledge about essential qualities of a good teacher in relevant theory papers and practice of effective domain related traits in school situation for a longer duration could help promote these traits in student teachers. The teacher education programme needs to allow the space where in a teacher's personality could be developed as someone who is reflective, introspective and capable of analyzing his or her own life and the process of education at school so that after becoming a teacher, he becomes an agent of change.³

Professional Ethics

Another important issue is the professional ethics of teachers. Teaching is becoming a more and more complex task. Teachers meet a large number of children and young persons from different backgrounds. In many education systems teachers have also been given more and more responsibilities. All these developments underline the questions related to the responsibilities and duties of teachers. This has also been reflected in a growing discussion on professional ethics among teachers.

Laurie described the concept of Professional Ethics as "If a teacher has not an ideal aim he had better to take to shopkeeping at once, he will there doubtless find an ideal within his capacity."

The Secondary Education Commission (1952-53) has stated in this connection as, "They (teacher) will not look upon their work as

an unpalatable means of carrying a scanty living but as an avenue through which they are rendering significant social services as well as finding some measures of self-fulfilment and self-expression."

In this context it is of special importance to relate the professional ethics of teachers to the Convention of the Right of the Child. Several articles in the Convention have direct implications for the professional ethics of teachers. It is important that the teaching profession through its organizations discuss and clarify how the provisions of the Convention should be incorporated into the ethics and professional standards of the teaching profession. For example what does it mean to take full account of the child's best interest in all actions concerning the child, to protect the child from interference with privacy, to protect the child from maltreatment, to protect the child from drug abuse or to protect the child from sexual exploitation. Teachers deal with professional ethical questions in different ways in various countries. In some countries the rights and obligations of teachers are expressed in official documents issued by the government, in others there are agreements between governments and teacher organisations on such matters and in some certain professional standards are set by the teachers themselves. One way for teachers to set standards themselves is to agree within the profession on a code of ethics. Such a document is usually a set of basic rules for teachers to follow in order to guarantee certain standards of the profession. Regardless of how these things are dealt with in a country it is critical that the provisions in the Convention on the Right of the Child are reflected in the professional ethics of teachers.

Conclusion:

"In the words of Prof. Humayun Kabir, "Teachers are literally the arbiters of a nation's destiny. It may sound a truism, but it still needs to be stressed that the teacher is the key to any educational, reconstruction." Teacher's influence is everlasting. He shapes the destiny of future citizens. The Secondary Education Commission(1952) rightly points out "we are convinced that the most important factor in the

3. <https://educational-system.blogspot.com/2012/07/pre-service-and-in-service-training-for.html>

contemplated educational reconstruction, is the teacher- his personal qualities, his educational qualifications, his professional training and the place that he occupies in the school as well in the community."

Thus teacher education is needed for kindling the initiative of the teacher, for keeping it alive, for removing the evils of 'hit and miss' process, for according a professional status to the teaching profession and above all for making the optimum use of time and energy of the teacher and the taught. Proper training and education enables the teacher to have a knowledge of how children grow, develop and learn, how they can be taught best and how their innate capacities can be brought out and developed. It has aptly been remarked, "If you educate a boy, you educate one individual. If you educate a girl you educate the whole family and if you educate a teacher, you educate the whole community."

References:

- Aggarwal, J.C. (2001). *Development and Planning of Modern Education*, New Delhi: Vikash Publishing House Pvt Ltd.
- Aggarwal, J.C. (1998). *Teacher Education Theory And Practice*, Delhi: Doaba House.
- Mahanta, N.N. (2005). *Philosophical and Sociological Dimensions of Education*, Guwahati: Mani Manik Prakash.
- Rajput, J.S. & Walia, K. (2002). *Teacher Education in India*, New Delhi: Sterling Publishers Private Limited.
- Reddy, R.S. (1998). *Teacher Education: Principles and Practices*, New Delhi: Rajat Publications.
- Swain, Sanjay.K. (2008). *Trends and Issues in Indian Education*, New Delhi: Kalyani Publishers.

A case study on first Dragon fruit farm of Chirang District

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1. Introduction:

Dragon fruit is the cactus species (*Hylocereus undatus*) which is native species of Central America, south America and Mexico. It is also known as Pitaya or Pitahaya, strawberry pear and Honolulu Queen. There are different varieties of this fruit, eg:Hylocereus undatus, Hylocereus megalanthus, Hylocereus costaricensis. In colour wise White dragon fruit, Red Dragon fruit, Pink dragon fruit, yellow dragon fruit and sour dragon fruit. Dragon fruit is not only famous for its unique feature but it also has health benefits. It consists nutrients, minerals, vitamins, fiber and calories. It helps to boost immune system to fight with different diseases.

In one cup serving (227 grams) of dragon fruit :

Nutrients	
Calories	136
Protein	3
fat	0
Carbohydrates	29
Fiber	7
Iron	8% of RDI

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Vitamin C

Vitamin E

Source- www.healthline.com

18% of RDI

9% of RDI

4% of RDI

1.1 How to cultivate:

It is a subtropical cactus which need mild and humid environment. It has to stay between 32 and 90 degrees Fahrenheit. The plant take almost one to two years to bear fruit form seed and it can live productive for seven years.

a) At first proper soil and place is needed. It need a place where light is reachable for at least six hours. There should be proper drainage system to drain away the water. Add some Organic fertiliser for growth.

b) Take out the black seeds from the fruit and moist the seeds in towel for twelve hours.

c) Cover the seeds in a thin layer of soil. Keep the soil moist.

d) Once the plant is grown 12 inches it need supports to climb continue to grow up.

1.2 Dragon fruit cultivation in India:

Like other countries dragon fruit cultivation has also entered India. It's Indian name is 'Kamalam'. It has emerged in early 1990s India. So many big states like Maharashtra, Gujrat, Karnataka, Kerala, Tamil Nadu and west Bengal have cultivated it in a large scale. Maharashtra, Gujrat and West Bengal farmers are able to export the production to Dubai and London, it has attracted the Indian farmers for their high demand value and popularity. There are three main types of dragon fruit are cultivated Pink dragon fruit, Red dragon fruit and Yellow dragon fruit. It is being expected that the dragon fruit is going to be a big part of Indian Horticulture. In India, Dragon fruit has also entered in online market. It is popularly sold in popular shopping websites like bigbasket, Amazon and Flipkart etc.

Objectives:

To find out the income and profit of the firm.

To know how it sustained and revived from the lockdown or Pandemic

Research Methodology:

This research is conducted to know about the mostly used in research and its benefits. It is descriptive and analytical. This paper is based on secondary data which are collected from books, journals, internet etc.

Area of Study:

Chirang district is one of the four district of Bodoland Territorial region belongs to state Assam. Its total area is 1,169.9 km². It was declared as new district in 2004 with headquarter in Kajalgaon. The farm is situated in Daokha nagar part one of Chirang district. It is 2km far from Bijni area.

Analysis:

Assam farmers are also showing active participation in dragon fruit farming. Different varieties of this fruit are cultivated in different districts and places in Assam. Chirang district is also not exceptional. Parbin Nursery is the 1st nursery of dragon fruit in Chirang District established in 2016. This is situated in Daokha Nwgrv part one. The owner of the farm Safur Rahman started his business in less than 1 bigha land. He bought 1000 plants from Gujarat, where the cost of each plant is Rs 170. Therefore his total expense in the plants is 1,70,000. Including all expenditures like transport, soil management, fertilizer and labour the total cost is around 3 lacks. In this farm only one variety of the fruit is found that is c variety, in colour wise it is called pink dragon fruit. It is small in feature, has black seeds, and texture is like kiwi fruits. It tastes sweet than other varieties. One plant can produce fruits for 7 month. After plucking, these fruits can be stored for one week without refrigerator. In 1 bigha land almost 800kg fruits can be produced within 1 month. There for around 5000 kg can be produced

within 6 month. Recently in his farm he has cultivated 2800 plants in 2 bigha land, 4 plants are cultivated together in concrete pillar and one tire is attached in the top of the pillar for the support of the plants. In one branch only three fruits are allowed to bloom for their better shape and texture and if there more than three fruits, them other fruits are removed from the tree. The owner started the plantation in 2016 and it took two years to produce fruits. Recently he has also started selling the plants. In December after giving fruits they cut the points of the branch. He also brought some plants 'puli' from Gujarat this year for sell. He spent almost Rs. 20,000 for plants. He sell this plants according to their size, 6inch tall plants are for Rs. 60, 10 inch tall plants are for Rs. 100.

Land	2 Bigha
Total plants	2800
Pillars	700
Yearly Expenditure	Rs. 50,000
Mohtly Income	Rs. 2,00,000
Whole sell Price	Rs. 400

Source: Primary data

5.1 Struggle in initial years:

The owner of the farm had to struggle to start the business since this fruit is neither a native fruit of Assam nor other place of India. Again the land of the farm was not appropriate for the fruit. Though the dragon fruit is a cactus species and can be grown in any land, still it need an adequate amount of water, fertilizer and moist soil. But the firm is situated near the Aie river and its soil is unfertile sandy soil. There for he had to work lot in that soil to make it proper for the dragon fruit cultivation. He had to bring the seeds and plants from the other state (Gujarat). The trees took almost two years to bear fruits. Some of the trees died for not getting proper care, and over sunlight. It also need little amount of moist in the soil for better result. Another problem he faced is to get the market for dragon fruit in that

area. In early 2018 he had to ask people to taste the fruit as advertisement of his farm and as introduction of the new fruits to local people, because most the local people were not aware of this fruit and about its health benefits. Local People also hesitated to purchase that fruit for its high price which was Rs. 500 for per Kg. It took some times to attract the people toward his farm. In his initial days he also did free home delivery. Again the transportation facility from the farm to the market is not good and it is far from the main market. It is already mentioned that the farm is near the Aie river, the roads are broken in some areas and big four wheeler car and trucks cannot pass through it. There was no labour employed, he himself, family members work and manage the farm.

5.2 How it sustained in Pandemic:

In COVID-19 Pandemic, almost each and every small or big farm as well as industries was affected by it. Because the market was band and there was no source to sell the products. Again, after the lockdown the market environment suddenly changed and there was mess up in supply and demand for the products. But according to data agricultural sector and rural sector were relatively less affected than other sectors. This farm also did not affect that much, it is relatively low. Though the market was band, he got several consumers who asked for the fruits. He even provided delivery around 20 km at that time. Some consumers has become his regular customer and regularly started to purchase from him. Again he was the sole seller of the product at that area at that time. Most of the consumer purchased 3kg to 5kg at once. Therefore, his farm sustained in that kind of hard situation because of his regular customer and delivery system.

5.3 Other problem faced by the farm:

Though he survived from the lockdown situation. He had to face the problem of flood in last year 2020. Due to flood the roots were stayed under water for three days continuously and more than seven pillars were destroyed. The owner of the farm had to spend more than 15,000 to manage and recover from the flood.

6. Conclusion:

Dragon farm is a very profitable business if one can manage it properly. The knowledge of cultivation and maintenance is necessary for any kind of business. This farm helped in encouraging other new farms in that region. The demand for the Dragon fruit is also increasing day by day. Within these five years this farm enlarging its production and expecting more production in next year. This farm recently earning 2laks in every month, and spending 50,000 yearly as management cost. In this firm, there is only one variety of dragon fruit that is c variety. This fruit is sold in Rs 500 in market and Rs 400 in whole sell.

Bibliography:

1. "Dragon fruit: Nutrition, Benefits, and How to it." www.healthline.com
2. "Exotic Dragon fruits from Gujarat, West Bengal find market in the UK, Bahrain", www.livemint.com
3. "How to grow Dragon fruit from seeds and cutting, by masterclass staff"- Nov 8, 2020, www.masterclass.com
4. "How to grow Dragon fruit from seed by- Margeaux emery"- Aug 12, 2019, www.margeauxemery.com
5. "Dragon fruit cultivated by Maharashtra farmers exported to Dubai" by Poulomi Ghosh, www.hindustantimes.com

Academic Library as a Learning Resource Centre

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The flow of knowledge is the driving force of human civilization and the development of human civilization also depends on the knowledge conservation, observation and dissemination. In current scenario the role played by library is not limited to storage and retrieval of information. But, dissemination of information at right time to the right hand. In the history of civilization, access to knowledge is ensured by pictures, scripts, paintings, monuments, varied heritage, and print-non-print media. After certain period of time, storage house and library came into exist and then knowledge is circulating generation to generation. The library as a learning resource centre has a vital role to be played for survival and inclusive development of entire human being in the world.

The word 'library' is rich in tradition, meaning, and usage. Throughout the world, the academic library is considered as part and parcel of its academic set-up. It is created and maintained to serve and support the educational activities of the academic institution. The academic library provides information, foster ideas, and develops knowledge that is so essential to function successfully in today's information and knowledge based society. It is fundamental to a school library to equip students with lifelong learning skills, and develop in

them creative thinking and imagination, and thereby enabling them to live as ideal and responsible citizens. Hence, the academic library must be made the hub of all the activities planned and executed in the academic institution.

The academic library can be used by students to prepare for their examination, general education, information, competitions, recreation and inspiration. To cater the wide range of demands of students and teachers, the library staff has to judiciously select and procure the prescribed or recommended text-books, reference books and other reading material from different sources, technically process them by making use of a standard scheme of classification, catalogue them to provide various access points, organise the collection on scientific lines, circulate the documents and disseminate the information in the manner most liked by the students and teachers. In addition, the academic library has to serve as a resource centre as well.

In the academic library, the printed and other audio-visual resources are essential and needed in abundance. These resources are the basic tools, which are required for effective teaching and learning. Our educational planners and administrators have rightly stressed the point of view of quality education. It is through the library that the materials needed by teachers and students can be supplied efficiently and economically, with their adequacy and quality assured. Merely stocking reading material in library is not enough. Care must be taken to get these materials properly organised and make the same easily available to students and teachers. All schools, irrespective of the number of students registered, should be provided with a library organised, on modern lines and supervised by a qualified, trained librarian. The provision of adequate supporting staff is very essential in achieving excellence in library and information services.

Print documents changed the world and conceptually library transformed itself a knowledge preservation centre to knowledge conservation centre. Library became 'Gateway' of "Knowledge Access". Post renaissance Europe was foster land of the academic

and public libraries and 19th century 'Nation-based' National library also. This paradigm shift of library was actually journey towards democratization of knowledge. Due to historical causes, this new concept of library was proliferated from Europe to other parts of the world though in United States library system has been developed very successfully as part of free-democratic society.

In the later part of 20th century, Asian countries like India accepted the western model of library system though the new westernized system was need to be localized to adjust with the traditional knowledge transfer system of the society where oral tradition was the most used and popular one. In this era the paradigm shift of library was in conceptual level. The library system became service oriented and access was changed with Information Communication Technology (ICT) revolution and ICT becomes the back bone of modern library system. Libraries are able to overcome geographical barrier. 24*7 access with option of unlimited copies of same document has changed the entire knowledge storing and service pattern of libraries. In new system, 'library' becomes virtual with its three components - documents, users and staffs. The library trinity has been re-established in an interactive platform of Web 2.0 where readers or users are also able to participate as knowledge generators. Different web-based analytics tools help librarians to make usage and user analysis and generate reports and customize services with help of technologies like SMS, email alert, webometrics, Mobile Apps, social networking, digital marketing of library resources and services. Now National Digital Library of India is accessible through mobile apps.

In this new paradigm, the knowledge storage mediums and access modes are diversified and especially academic libraries are renamed as Learning Resource Centres. Libraries become a gateway of knowledge with various learning resources in different mediums with different access patterns. As a learning resource centre librarians have to design different information services and provide supports e-

learning environment also. The major structural change is previously library provided support service to the learning system but as a Learning Resource Centre (LRC) library becomes the backbone of learning system. Different Learning Management System (LMS), Content Management System (CMS), Digital Rights Management (DRM), Online Courses, Media Libraries and Digital Repositories - all are the part of Learning Resource Centre activities. The coverage of Learning Resource Centre (LRC) is hybrid and the main objective of LRC is to promote self-learning and virtual learning environment as modern education system supports Learner-Centred education system rather than Curriculum centred education system. LRC helps students alternative learning, skill development and engagement in meaningful discoveries. The another objective of LRC is to support educators for researching, creating and developing and curating study materials for classroom teaching also.

In academic institutions libraries and faculty must come together to create awareness amongst the learners as regards to knowledge economy which is the core value of inclusive growth and sustainable development of individuals and it has positive impact on human life. Therefore, disseminated knowledge by libraries should be acquired by students for nation building.

Reference:

- Ash, Moumita. "Library to Learning Resource Centre". Akshar. September, 2017. pp 61-64
- Navghare, Ramakant Amar. "Role and Responsibilities of Library as a Learning Resource Centre in Higher Educational Institutions". The Criterion: An International Journal in English. June, 2018. pp 88-98
- Kawday, Devendra. "Issues with Higher Education System and Suggestions for National Education Policy". University News. January 15-21, 2018. pp.9-11.

Nighat, Basu. "Indian Universities of Tomorrow: Challenges and Opportunities". University News. December 4-10, 2017. pp.56-61.

Sharma, P.B. "Higher Education in Central Zone: Reviving the Ancient Glory and Building Global Eminence". University News. December 11-17, 2017, vol.55, no.50, pp.10-14.

has launched many schemes to encourage women through the concept Atma-Nirbhar Bharat and stated the role of women in the sustainable growth of the country by creating an environment that would motivate women in reshaping the Indian economy (IISF, 2020). Historically women had glorified in different sectors by dint of own enhancement. Presently, the women have started rising up in generating livelihood for their survival amidst of socio economic intervention in the society rather than vinded upon household boundary. It is possible for women to involves more in science & technology, innovation, entrepreneurial activities to accelerate gender equality issues. It is important to assess the role of women in grassroot level empowerment and scope in generation livelihood for sustainable development. Keeping this view, a comparative study of women's livelihood in the rural and semi-urban areas of Bijnai Subdivision in the Chirang District has been made to find out a conclusion in this regard. The population of Bijnai Subdivision is belonging to ST, SC, OBC and General category with 64% from Bodo community and rest following Bengalis, Assamese, Koch-Rajbanshi, Adibasi-Santhal, Rabha, Hajong, Nepalese, Beharis, and Marwaris.

Objective

The main objective of the study is to find out the present scenario of women's livelihood in and around Bijnai Subdivision. The other objectives are to find out the socioeconomic status of women in rural and semi-urban areas of Bijnai at grassroot level and the future scope of livelihood in global prospect.

Methodology

The survey has been done in rural areas and in semi-urban areas of Bijnai Subdivision in the Chirang District. The study has been followed by field survey randomly and market visit to collect information on presetting questionnaire from the different parts of this region. It is a preliminary survey of research work to understand the work attitude of women in earning their livelihood. As per work plan the priority has been given to interact working women during

A Comparative study of Women's livelihood in the rural and semi-urban areas of Bijnai Sub division in the Chirang District of Assam

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Introduction

Women's livelihood is the important issue of sustainable growth of the country. Women's contributions to global economy are occupying the significant role in reshaping the economic growth & development of a country in the new millennium. The journey had begun from the early centuries contemporarily till modernization where women portrayed only symbolically as a part of economy rather than recognized. The higher rate of increasing population and economic expansion has compelled to overcome the narrow concepts in changing the scenario of livelihood across the globe. It was a hog where social transformation happened with a few fatal policies around women during past decade. The slogan of education beyond boundaries has opened up the new dimension in boosting educational growth by ignoring the gender bias globally. It is the high time to constitute women's contributions to society in generation of livelihood which could develop the nation's economy. India presently, the Government

field survey and gather information on livelihood and resources utilization. This method could be considered as an excellent tool of data collection which help researchers immensely. The data has been collected from the different sources like market places, farms, fishing area, paddy field, vegetable garden etc. in the study area during survey. The data analysis has been followed by preparing a comparative account with the list of involvement of women in business and simple statistics to assumed hypothetically. Both merit and demerit have been counted in the study. The recorded data on resources utilization for livelihood along with the activities of women has been visualized by photographs.

Result & Discussion

The involvement of women has been listed according to their business profession. The women of government employee have been exempted in this study. The study has been reported that mostly the tribal community women do participate in marketing different items for livelihood in comparatively than other category of women in this region. The comparative study has been revealed that the women from all category are still struggling in livelihood. It has been justified that the women livelihood in this region are quite unsatisfied. A large section of working women have been kept in custody of supervisor or boss under man made social norms which ultimately deprive the women workforce in livelihood. The involvement of women in small business-like parlor, tailor, shopkeeper independently have been found under developing state for which depriving from economic benefits. Some ill factors have been reported in the study area at grassroot level between women and their business like unscientific and unhygienic environment which misguiding them from actual vision. In some rural areas like Kabuli bagan and Tati para especially Bengali community women has been found involve in tobacco making business to earn their livelihood. They might be forced by family members or habituated to opt her occupation as livelihood which totally fatal to health. Such women need to replace by alternate business to reduce health issues. Though women have been emerged out towards livelihood still

dominating by superstitions, political intervention and other obstacles. The mass awareness, policy and planning would be applicable to uplift their livelihoods in this regard.

The list of involvement of women livelihood has shown in (Table 1).

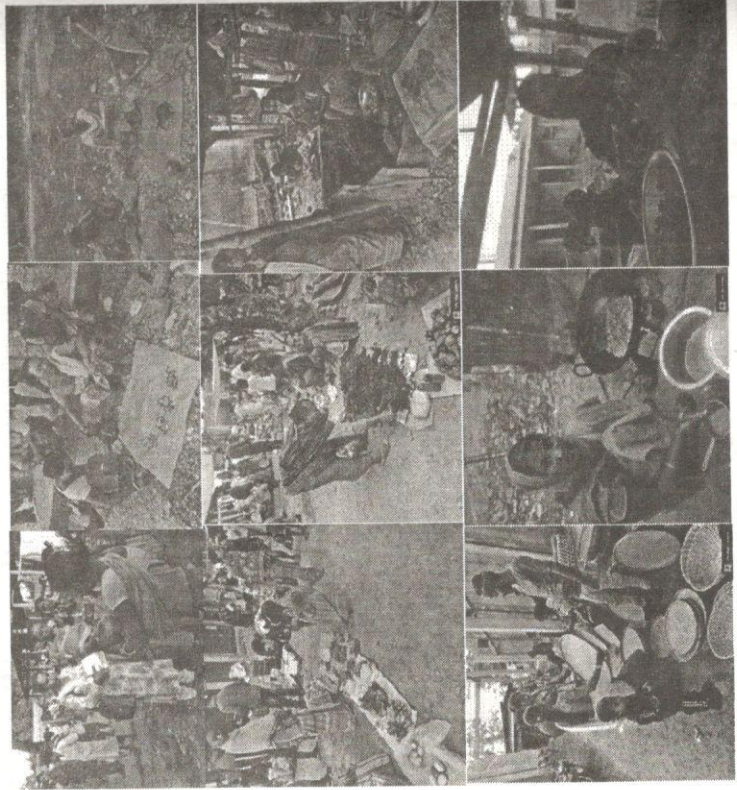
Table 1: Involvement of women livelihood coverage and annual income in Bijni, Chirang

Involvement of Women	Mode of Involvement	% of coverage	Income/yr.
Marketing vegetables & Wild items, Rice, Spices	Own production, Supply, Wild Collection	25	1.5-2.5 Lakh
Agricultural Production, Beverage, Dairy product, Piggery, Poultry, Fishery	Own Farming products, Collection from others, Contract, Supply	35	1.5-2.5 Lakh
Shopkeeper, Handloom, Eri Culture, Tailoring, Weaving, Parlor, Pickles, Jam-Jelly	Independent business, Under Manager & Boss, Supervisor	15	1.5-2.0 Lakh
Labor in construction & factory, Canteen, Cafeteria, Teastall, Household work	Under Manager & Boss, Supervisor, Contractor, House owner, Malik	25	1.0-1.5Lakh

From the data analysis it has been observed that tribal community women are found keep busy themselves in marketing various items and agricultural products throughout the year. They have been found quite efficient in dealings with aquatic fauna and flora like fishing, hunting wild vegetables, seasonal vegetables, alcoholic beverage making, silk rearing, home gardening and farming. They might be driven by their lifestyle and food habit to move nature to earn their livelihood in a sustainable manner. The community women have been often trying to set-up their family through utilization of resources for their survival. They have been found skilled enough but lack of scientific knowledge and proper education misguiding themselves for which they are depriving from actual beneficiaries. In this regard such women must be needed skill enhancement training, business opportunities,

marketing policy for better livelihood to uplift socio economic status in the society. The empowering of women at grassroot level are very important to uplift livelihood who are the chief mechanism of family in the society. The annual income of women has been found below the average in all categories by their profession and comparatively less income against their efforts and time consume. Hence, the women have been reporting here poor livelihood at grassroot level. This study represents the women of entire society and its impact reflects the socio economic status of any region.

Photographs of women's livelihood in rural and semi-urban areas in the Bijni Subdivision, Chirang District, Assam



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Moreover, this study could be able to create attention with social responsibilities by observing the real picture of women's status in this region. A large section of women has found involve with their limited resources around them rather than achieving the opportunity in global prospects. In the patriarchy society, a few sections of women often indulge with superstitions and abusing as commodity. Women must be self-reliant for own identity in the society by strengthening economically. The common understanding and equal opportunity in work platform must help to achieve the goal of development in any country. However, the gender gap is the main concern of any developing countries. Women from rural are as are often found as unpaid workforces except a few paid workforces. Women's livelihood towards nation building at grassroots level is the ultimate solution for a large section of women by increasing more women workforce.

Conclusion

Women may be considered as the warriors of sustainable livelihood for survival. The major drawbacks are education, freedom of choice, leadership roles, self-reliant, career opportunities, family or community support, different approaches for urban and rural sectors. Proper attention, training and guidance may be needed to uplift their livelihood. The young women must be motivated through discussions, debates, role models, short films and documentary and must come forward to achieve the opportunity of livelihood.

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Reference

- "C-16 Population by Mother Tongue - Assam". censusindia.gov.in. Retrieved 12 April 2020.
<https://chirang.gov.in> Chirang District, Designed & Developed by National Informatics Centre.
<https://www.macfound.org>.> Gender, Poverty and Conservation of Biodiversity
www.scienceindiafest.org> Science for Self - Reliant India and Global Welfare, India International Science festival 2020 "Role of women in Atma Nirbhar Bharat"
<https://doi.org/10.20546/ijcmas.2019.804.008>
 Ishan Saini, Prashant Kaushik and Babu Lal Saini. 2019, Role of Indian women in Conservation of Biodiversity, *Int.J.Curr. Microbiol. App. Sci*(2019)8(4):63-68.

himself was a victim of the evils of bureaucracy and his works are often all egotical, metaphorical or sometime seven exaggerated portrayal of what he went through or anecho of what heal ways wanted to tell the world but couldn't.

Kafka was born in Prague 1883 to a middle class Jewish family and grew up in the domineering shadow of his father Hermann Kafka. His father was as o-called self-made man who rose from the working class to build a successful business by dint of hard work. Her mann took excessive pride in his achievements and wanted to have as on that would follow his footsteps and become what he would call 'anidealman'.

But Kafka turned out to be a big disappointment to his father. As a child he was physically small, anxious and sickly who defied his father's concep to fmasculinity and became a sort of psychological punching bag for him. This aroused a sense of anxiety, guilt and self-hatred in Kafka and head opted the means of writing to deal with it. His father didn't support him being a writer and forced him to study law and enrolled him in Charles Ferdinand University. After graduating Kafka first work edina law office and then in an insurance company. There he became a victim of bureaucracy in the form of long hours of unpaid overtime, massive paperwork and corruption. Kafka continued to write around his work schedule but never published anything after the failure of his first three collections of works. On his death bed he requested his trusted friend Max Brod to burn all his work. Thankfully Brod didn't grant his friend's wish and took the labour of organizing and publishing Kafka's works post-humously. Unfortunately, one of the greatest writers and thinkers of the twentieth century died believing that his works weren't any good. He couldn't perceive that the works left buried in some drawer of his room have the potential to stirup the world and being relevant even after hundred years of their birth.

'KAFKAESQUE' AND THE TWENTY FIRST CENTURY:

"Sometimes fate is like a smalls and storm that keeps changing

'KAFKAESQUE' In the Twenty First Century

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Abstract :

Although Franz Kafka lived and died virtually unknown, his works are now known for their uniquely dark, perplexing and incongruous style. Due to their peculiarity anything that has some similarity with them has come to be known and referred to as 'kafkaesque'.

Over the years 'kafkaesque' has often been regarded as a new genre of study for the students of literature. This genreencompasses works that describes the horror imbibed in the perpetualla by rinth of bureaucracy, capitalism, judiciary and a total itarian government. However, they are not just mere documentation of the system but also adepiction of the individual's reaction to it.

Kafka's depiction of the essential human mindis what makes his works relevant even today. This article is an attempt to show how the term 'kafkaesque' can be used to define the world of twenty-first century where people are de humanised by a harsh bureaucratic system, capitalistic in stinct, atotalitarian government and above all by the super high standards people set for themselves.

Keywords : kafkaesque, bureaucracy, totalitarianism, dehumanisation.

A Brief Introduction to the Life of Kafka :

Knowing about Kafka's life is very crucial for a better understanding of his works and its 'kafkaesque' quality. As Kafka

You change direction, but the sand storm chases you. You turn again, but the storm adjusts. Over and over you play this out, like some ominous dance, with death just before dawn.

Why? Because this storm isn't something that blew in from faraway, something that has nothing to do with you. This storm is you. Something inside you." (Murakami, 4)

This excerpt from the first chapter of Haruki Murakami's novel 'Kafka on the Shore' can be considered as a typical representation of the world that Franz Kafka depicts in his stories or what has come to be known as 'kafkaesque'. In this novel, the protagonist who is a teenage boy named himself Kafka. He runs away from home in order to escape from his tyrannical father but he remains psychologically tied to his fate as he is eternally haunted by memories of a missing mother and dreams. The world of Murakami's novel, like that of Kafka's is filled with mind bending imagery, whimsical character and eerie coincidences. The strangency that Murakami's teenage protagonist around can be considered some what similar to the world we often find Franz Kafka's characters caught up in.

It is evident from the very title of the novel that Murakami was inspired by Kafka to write this novel. The fact that Kafka has such influence on a writer writing almost a century later points out to the timelessness of Kafka. We can even say that 'kafkaesque' has become even more relevant today because over the years bureaucracy has extended its branches long enough to create a web surrounding us that we can never escape. The more we try to escape the more caught up we become. The world has become even more abrupt today with rapid growth in science and technology. There is a sense of all pervasive unfamiliarity hovering over us as the world keeps changing every moment. The things that are in vogue today can become outdated tomorrow. In the craze of trendy and limited edition we have forgotten to introspect what we really like or what we really need. We are unable to predict or foresee shadow anything today. In this era of global warming one may wake up to a bright sunny morning and

get caught up in storm on his way to work, we may experience scorching hot summer like weather in the month of October. Our plan for next vacation may get cancelled due to sudden burst of pandemic. In other word, our life has become unpredictable, bleak and non sensical like the plot of a novel by Kafka.

Misery comes to Kafka's protagonist like a sudden blow without any prior notice. Josef Kof 'The Trial' being suddenly arrested at his home one morning, Gregor Samsa of 'Metamorphosis' awaking to find himself turned into a giantbug- are some abrupt situations that Kafka's protagonists face with no clear explanation. Because of the abruptness and ludicrousness of the situations they face, these characters often find it difficult to deal with it and lose their way while trying to find a solution.

Kafka didn't mould his heroes as some perfect and proficient man but as common men which can be any of us. This is the reason why readers can easily identify themselves with these characters. Both Josef K and Gregor Samsa are out matched by the arbitrary senseless obstacles they face in part because they can't understand or control any of what is happening. Despite knowing the impossibility of finding an answer and an escape, they strive very hard to conquer over the existential problems and are reluctant to give up atleast initially. However, their determination stumble eventually. Perhaps through this Kafka is suggesting that the struggle to find solace and understanding is both in escapable and impossible.

Everything in Kafka's world are so vague and in explicable that it can have as many interpretations as readers. Kafka himself was probably notable to decipher the world around him so he portrayed some surreal scenario which can be elucidated in anyway one may wish. Many of Kafka's protagonists are office worker fashioned after himself.

They are compelled to struggle through a web of obstacles in order to achieve their goals only to find out eventually that all their strenuous efforts have been fruitless.

Kafka's first hand experience with bureaucracy helped him to make these characters more life-like. In his short story 'Poseidon', Kafka depicted this ancient Greek god as an office workers oswampedin enormous paper works that he never had time to explore his under water domain. This is Kafka's satire on modern work place which is so demanding that even agod cannot copeup with it. However, it is not only the workplace that is to be held accountable for his sufferings. His work load has increased because he is unwilling to let others do the work because he doesn't consider them worthy to do the work or trusts them enough. This shows that bureaucracy is something that has become internalised in modern man. That's why Josef K's court hearings were scheduled on Sunday so that it wouldn't hamper his professional life, the first thing that comes to Gregor Samsa's mind after his metamorphosis that he wouldn't be able to go to work which would in furiate his boss and the financial problems that will becaused by it. Samsa knew that when he is no longer able to provide for his family he will be considered an uisance. Josef K prioritised his office work over court hearing which is depicted when Kafka wrote that "...are quest for leave just now would be a risky business—it was after all a matter of a whole legal case whose duration could not be foreseen. What an obstacle had suddenly been thrown into the path of K's professional carrer." (Kafka, 106). This is still the case with people today. Our worth is measured by our professional success, competence at work and financial stability. So, we set very high standard for ourselves and work exhaustingly to prove our capabilities, resulting in weary competition in the workplace. Kafka wrote about his protagonist Josef K that "...he did not wish to be pushed out of the sphere of work even for one day, for his fear that he would not be allowed back was too great." (Kafka,159). The same thing happen with us today, we are reluctant to take leave from our work not because we like working but because of the fear that we may get replaced. This in security makes us mourn every moment we spend without being 'productive'. We are so accustomed to being busy that when

the first lockdown was announced in March 2020, every one seemed at loss. We are not used to such long period of leisure and so had no idea what to do with all the time we have. We don't know how to spend time with our family because all our life we have spend our time proving ourselves to the world outside. So, when we got such a long period of leisure instead of enjoying our time with family, many complained of being 'bored' at home, some even suffered from depression.

We have become so engrossed with ourselves and our 'progress' that we have forgotten to look around us or feel any emotion. We wake up everyday and begin to complete our tasks as if we are somekind of mechanical device. This dehumanisation is another 'kafkaesque' character. Kafka often use crude animal imagery to show how humanity is stolen from or lost by his characters. Gregor Samsa turning into agiantbug is an indication of his humanity being stolen by all the pressure he received from bureaucracy. In 'The Trial', Kafka wrote that "...the client is no longer a client, he was the advocate's dog" (Kafka,155), because he was ready to do everything his advocate tells him so that he can get 'justice'.

Few days back while scrolling through my social media account, I came across a contemporary illustration of Kafka's 'Metamorphosis', that giantbug is shown metamorphosedonbed with a mobile phone on his hand. This is an allusion to today's youth who are enslaved by their mobile phone addiction. While this is merely a meme without any literary depthor value we can't deny that this makes us think about universality of Kafka. These netizens who came up with this meme may not have any interest in literature or may not know a word about the 'kafkaesque' philosophy but even they found something in Kafka that they can relate to themselves. This canal so be considered as a form of dehumanisation where our minds are completely under control of a small device. Even though we are conscious of our duties we are unable to overcome our obsession with phone and the world of internet.

Kafka also often talks about corruption prevalent in judicial and administrative system in his stories. "A man tries to make money as best as he can; it can't be done just by working, even at the most strenuous job" (Kafka, 67). This line appears in 'The Trial' as a 'justification' for the corruption of the two warders. This applies to the officials of our society today as well. To win the competition of living a materialistically better life than other, to be able to afford every luxury in the world people try every means to earn more money including corruption. This is the reason why most jobs can be bought today instead of securing through a required procedure.

Conclusion :

It is undeniable that Kafka's works have a great impact on literature, philosophy and humanity even today. Reading his works can give the readers a consolation that they're not alone in the irexperience of 'kafkaesque', there're many people around the world who are stuck in the bureaucratic of a business organization or government. We all have experienced the 'kafkaesque' atleast once in our life. There are certain moments in life when we feel a sense of guilt or anxiety of existence for no clear reason. The greatness of Kafka doesn't lie in the uniqueness of subject matter but in his ability to describe mundanely common matters in a profound way. He talked about things everyone has experienced but no one is able to put into words. Kafka's works remind us that despite all the absurdities and problems we wish to continue our struggle and don't give up easily because that's what life is.

Bibliography :

- Philip Murakami, Haruki. 2005. Kafka on the Shore. translated by Philip Gabriel. London: Vintage Books.
- h Kafka, Franz. 1994. The Trial. translated and introduction by Idris Parry. UK: Penguin Random House
- h Kafka, Franz. 2017. The Complete Short Stories. India: Projapoti.

হোমেন বৰগোহাঞিৰ সুবালো : এক আলোচনা

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সহকাৰী অধ্যাপিকা, অসমীয়া বিভাগ,

বিজনী মহাবিদ্যালয়

আৰম্ভণি : ৰামধেনু আলোচনীৰ জৰিয়তে গল্পকাৰ হিচাপে প্ৰতিষ্ঠা লাভ কৰা হোমেন বৰগোহাঞি বৰ্তমান সময়ৰ এগৰাকী অতি শক্তিশালী গল্প লেখক। একমাত্ৰ কাব্যগ্ৰন্থ 'হেমন্তী'ৰ লগতে বৰগোহাঞিৰ বৰ্তমানলৈকে প্ৰকাশিত গ্ৰন্থৰ সংখ্যা একোন্নখন। হোমেন বৰগোহাঞি এগৰাকী সফল ঔপন্যাসিক। বৰ্তমানলৈকে প্ৰকাশিত বৰগোহাঞিৰ এঘাৰখন ঔপন্যাস হৈছে - সুবালো, তান্ত্ৰিক, কুশীলৰ, হালধীয়া চৰায়ে বাওধান খায়, পুৰাৰ পুৰী আৰু সন্ধ্যাৰ বিভাস, পিতা-পুত্ৰ, তিমিৰ তীৰ্থ, অস্তৰাগ, সাউদৰ পুতেকে নাও মেলি যায়, মৎস্যগন্ধা আৰু নিঃসঙ্গতা। এক সুকীয়া বৈশিষ্ট্যৰে ঔপন্যাস ৰচনা কৰি সাহিত্য ক্ষেত্ৰত প্ৰভাৱশালী হৈ উঠা হোমেন বৰগোহাঞিৰ ঔপন্যাসৰ বিষয়বস্তু বৈচিত্ৰ্য পূৰ্ণ। ঔপন্যাস সমূহৰ পটভূমি হৈছে অসমৰ গ্ৰাম্য সমাজ জীৱন। বৰগোহাঞিয়ে ঔপন্যাসসমূহত এফালে মানুহৰ আৰ্থিক অভাৱ আৰু আনফালে নিৰ্দীপিত আৰু শোষিত লোকৰ প্ৰতি আন্তৰিক সহানুভূতি প্ৰকাশ কৰিছে। দৰিদ্ৰৰ অতি নগ্ন আৰু ভয়াৱহ ৰূপ তেওঁ অতি নিতীকভাৱে ঔপন্যাসত উপস্থাপন কৰিছে। বৰগোহাঞিৰ ঔপন্যাসত নাৰীৰ স্থানো গুৰুত্বপূৰ্ণ। পৰম্পৰাবাদী সমাজ ব্যৱস্থাৰ অনুকূলে নাৰী চৰিত্ৰ সমূহৰ বেছিভাগেই ৰক্ষণশীল যদিও কিছু সংখ্যক নাৰী যুক্তি পৰায়ন। দুৰ্দশাগ্ৰস্ত নাৰী চৰিত্ৰৰ উপস্থিতি লক্ষণীয়। সমাজৰ শোষণ-পীড়ন, আৰ্থিক দুৰাৱস্থা শিক্ষাৰ অভাৱত নাৰী চৰিত্ৰ সমূহে দুৰ্ভোগ ভুগিবলগীয়া হৈছে।

ভাৰতীয় সমাজ ব্যৱস্থা হৈছে পুৰুষতান্ত্ৰিক সমাজ ব্যৱস্থা। নাৰীবিহীন এখন সমাজ অসম্পূৰ্ণ। তথাপিতো আমাৰ সমাজত পদে পদে অপদস্থ হ'বলগীয়া হৈছে নাৰী। বৰগোহাঞিয়ে যুগে যুগে সমাজে নাৰীক কৰি অহা ৰঞ্জন, অন্যান্য অত্যাচাৰৰ উপৰিও

সিদিনাখন ৰাতি মাকে দৰিদ্ৰতাৰ পৰা পৰিত্ৰাণ পাবলৈ সিহঁত আটাইকেইটাকে মাৰি নিবলৈ ভগৱানক প্ৰাৰ্থনা জনাইছিল। পিছদিনা মাকে কাম বিচাৰি ওলাই গৈছিল, সুবালোও স্কুললৈ গৈছিল। বেঙা ভায়েকটোৱে ভোকৰ জ্বালাত খঙতে ঘৰত জুই লগাই দিছিল। কিন্তু নিয়তিৰ পৰিহাস, সেই জুইয়ে বেঙাকে পুৰি পেলাইছিল। বেঙাৰ এনে অভাৱনীয় মৃত্যু তথা জুইয়ে পোৰা বীভৎস মৰা দেহাটো দেখি মাকে বহুদিনলৈ অস্বাভাৱিক আচৰণ কৰিছিল। লাহে লাহে মাকৰ চকু মুখত কঠিন হিংস্ৰতা ফুটি উঠিছিল। মাক নিষ্ঠুৰ আক নিৰ্মম হৈ উঠিছিল। মাত্ৰ এহেজাৰ টকাৰ বিনিময়ত মাকে বিবাহ উপযুক্ত দেখিবলৈ সুন্দৰ ডাঙৰ ছোৱালীজনীক অৰ্জুন সিং নামৰ পাঞ্জাৰী এজনৰ তাত বিক্ৰী কৰি দিলে। এই ঘটনাৰ কিছুদিন পিছতে সুবালোই গাঁৱৰ গুণ্ডা, লম্পট নৰেনৰ মুখামুখি হয়। নতুনকৈ উঠন যুৱতী সুবালোৰ প্ৰতি নৰেনৰ দৃষ্টি কামনাৰে পৰিপূৰ্ণ আছিল। তাৰ পিছত নৰেনে সুবালোলৈ এটা ব্ৰাউজ লৈ সুবালোহঁতৰ ঘৰলৈ আহে। সুবালোই তীব্ৰ বিৰোধিতা কৰিও এক ফল নাপালে। ইফালে মাকৰ সদিচ্ছা দেখি নৰেনে পুনৰ পাটৰ মেখেলা এখন লৈ সুবালোহঁতৰ ঘৰলৈ আহিল। সেই ৰাতি সুবালোই নৰেনে অনা মেখেলাখন টোকাৰ জুইত পুৰি পেলালে আৰু নিশ্চুপ হৈ বাৰাণ্ডাত অকলে বহি থাকিল। নৰেনে সুবালোই কৰা অপমান সহ্য কৰিব নোৱাৰি সুবালোক বাৰাণ্ডাৰ পৰা দাঙি লৈ পথাৰৰ পিনে দৌৰি দিলে। আপ্ৰাণ চেপ্টাৰে সুবালোই যেতিয়া নিজকে নৰেনৰ কবলৰ পৰা মুক্ত কৰিলে তেতিয়া সুবালোৰ দেহত এখনো কাপোৰ নাছিল। এগৰাকী নাৰীয়ে এনে উলংগ বীভৎস ৰূপৰ সন্মুখীন হোৱাটো চৰম দুৰ্ভাগজনক। সেই মুহূৰ্তত সুবালোই বাচি ললে এটাই পথ। সেই পথ মৃত্যুৰ। সুবালোই ৰূপহী নৈত জাপ দিবলৈ দৌৰিলে যদিও সেই সময়ত ৰূপহী নৈত পানী নাছিল। সুবালোই উলংগ দেহেৰে পুনৰ ঘৰলৈকে উভতি আহিল। ঘৰলৈ আহি কথা এখনেৰে মুখলৈকে ঢাকি বিচনাতে বাগৰ দিলে।

“বেলি কিমানপৰ হ'ল, সংসাৰৰ জীৱন প্ৰবাহ চলিয়েই আছেনে চিৰকাললৈ ৰুদ্ৰ হৈ গৈছে, এতিয়া দিন নে নিশা মোৰ সেইবোৰ একো খৰৰ নাছিল। গায়ে-মুখে ঢাকি লোৱা মোৰ কঁথাৰ তলত আছিল কেৱল নীৰৱ নিশ্চিন্দ অন্ধকাৰ, মোৰ জীৱনৰ একমাত্ৰ সত্য। (হোমেন বৰগোহাঞিঃ সুবালো, পৃ. ২৭)

পিছদিনাখন মাক নথকা সময়ত সুবালোৰ ঘৰলৈ এগৰাকী তিবোতাৰ আগমন ঘটে। তিবোতাগৰাকীৰ কথাৰ পৰা সুবালোই জানিব পাৰিলে গুৱাহাটীত অন্যথ আৰু সমাজ নোহোৱা বিধৱা তিবোতাক লিখা-পঢ়া আৰু বোৰা-কটা শিকাই স্বাৱলম্বী কৰিবৰ কাৰণে এখন আশ্ৰম আছে। ঘৰখনত নিজকে অসুৰক্ষিত অনুভৱ কৰা সুবালোই তিবোতাগৰাকীৰ কথাত পতিয়ন গৈ তিবোতাগৰাকীৰ লগত নিজৰ ঘৰ, গাঁও এৰি গুৱাহাটীলৈ যোৱাটো ঠিক কৰিলে।

নাৰীৰ সহনশীলতা, ত্যাগ আৰু দুৰ্বলতাৰ চিত্ৰখন উপন্যাসৰ মাজেৰে সাৰ্থকভাৱে অংকন কৰিছে।

হোমেন বৰগোহাঞি মূলত সমাজ সচেতন উপন্যাসিক। বৰগোহাঞিৰ নাৰী চৰিত্ৰ সমূহে মানৱীয় প্ৰমূল্যবোধক জগাই তুলিছে। চৰিত্ৰ সমূহৰ মাজত প্ৰতিফলিত হৈছে সংসাৰ ধৰ্মত নিয়োজিত নাৰী, বঞ্চিত অৱহেলিত শোষিত নাৰী, দৰিদ্ৰতাই কোঙা কৰা বিধৱা নাৰীৰ মৰ্মবেদনা, পঞ্চদশ হৈ গণিকা বৃত্তি লোৱা নাৰী, মানৱিক মৰ্যাদা লুপ্তিত নাৰী, সামাজিক পৰম্পৰাৰ অনুশাসন ভংগ কৰা আদি ভিন্ন নাৰী সত্তা।

হোমেন বৰগোহাঞিৰ 'সুবালো' উপন্যাসত চিত্ৰিত নাৰীৰ মৰ্মবেদনা:

হোমেন বৰগোহাঞি আধুনিক, মননশীল, বাস্তৱবাদী উপন্যাস ৰচনাত সিদ্ধহস্ত উপন্যাসিক। বিষয়বস্তুৰ বিচিত্ৰতা আৰু ব্যাপকতা তেওঁৰ উপন্যাসৰ অন্যতম বৈশিষ্ট্য। সমাজত দৃষ্টিগোচৰ হোৱা বিবিধ সমস্যা তেওঁ উপন্যাসসমূহত তুলি ধৰিছে। বৰগোহাঞিৰ সকলো উপন্যাসৰ ভাষা সাধাৰণতে বৰ্ণনামূলক। হোমেন বৰগোহাঞিৰ সুবালো এখন কলাত্মক সৃষ্টিকৰ্ম। উপন্যাসখনৰ ভাববস্তু নিৰ্বাচনত উপন্যাসিকে সামাজিক দায়বদ্ধতা আৰু সাহসৰ পৰিচয় দিছে। নাৰীৰ প্ৰতি মানৱিক মৰ্যাদা জন্মাবলৈ আৰু দৰিদ্ৰাৰ দৰে ভয়াবহ ব্যাধিয়ে মানুহক কিদৰে পথভ্ৰষ্ট কৰি তোলে তাক প্ৰকাশ কৰিবলৈ বৰগোহাঞিয়ে সুবালো ৰচনা কৰিছিল। উপন্যাসখনত ষড়যন্ত্ৰৰ কবলত পৰি গণিকা বৃত্তি গ্ৰহণ কৰিবলৈ বাধ্য হোৱা এগৰাকী দুৰ্ভাগীয়া ছোৱালীৰ ৰুক্ষ আত্মকাহিনী বৰ্ণিত হৈছে। উপন্যাসখনৰ চাৰিটা পৰ্বত নায়িকা সুবালোৰ সংঘাতময় জীৱনৰ ৰুক্ষ কাহিনী ৰূপায়িত হৈছে। মাক, এগৰাকী বায়েক আৰু এটা বেঙা ভায়েকৰ সৈতে সুবালোহঁতৰ চাৰিটা প্ৰাণীৰ ভাতমুঠি যোগাৰ কৰিব নোৱাৰা, দৰিদ্ৰাৰ এক ভয়লগা ছবি বৰগোহাঞিয়ে উপন্যাসখনত জীবন্ত ৰূপত দাঙি ধৰিছে। সুবালোৰ বাপেক নাছিল। বেঙা ভায়েকটোৰ জন্মৰ আগতেই বাপেকৰ মৃত্যু হৈছিল। বিধৱা মাকে লোকৰ ঘৰত ধান চাউল জাৰি কাপোৰ ৰে, জল গুটি বিক্ৰী কৰি সিহঁতক পোহপাল দিছিল। কিন্তু মাকে সদায় কাম নাপাইছিল। বৰগোহাঞিয়ে এটা দুখীয়া পৰিয়ালৰ ক্ষুধা জৰ্জৰিত ছবিখন অতি মৰ্মস্পৰ্শী ৰূপত অংকন কৰিছে। ভাত নাথাকিলে ৰূপহী নৈত জাঁকে বাই পোৱা মাছেৰেও সুবালোহঁতে পেট পূৰাইছিল। বাধ্যত পৰি গিৰীয়েকৰ দিনৰ মাটিখিনিও সুবালোৰ মাকে বিক্ৰী কৰি পেলাইছিল। দৰিদ্ৰাৰ বাবেই সুবালোৰ সতী সাধৱী মাকে মহাজন স্বৰূপ নৰেনৰ বাপেকৰ হাতত সতীত্ব বিসৰ্জন দিছিল। তথাপি মাকে ল'ৰা-ছোৱালী তিনিটাৰ বাবে জীয়াই আছিল। অভাৱী পৰিয়ালটোক অভাৱে চাৰিওফালে মেৰিয়াই ধৰিছিল। এদিন ৰাতি বেঙা ভায়েকটোৱে খাবলৈ নাপাই মাকক বৰ আমনি কৰিছিল। মাকে তাক খুৰ কোবাইছিল।

“আইৰ ওচৰৰ পৰা পলাই গৈ মই বাহিৰৰ জগতত কি পাম নাজানো, জীৱনটোক লৈ মই কি কৰিব খুজিছে সেই বিষয়ে মোৰ তিলমাত্রাও ধাৰণা নাই কিন্তু ঠিক এই মুহূৰ্তত মাত্ৰ এটা কথাই মই ভালকৈ জানো, সেইটো হৈছে মই বেশ্যা হ'ব নোখোজোঁ, মই বেশ্যা হ'ব নোখোজোঁ। (সুবাল, পৃঃ ৩১)

কিন্তু গুৱাহাটীলৈ আহি সুবালাই বুজি পালে যে নৰেনেৰ ষড়যন্ত্ৰত তিৰোতাগৰাকীয়ে চলনা কৰি সুবালাক বেশ্যাবৃত্তিত নিয়োজিত কৰিবলৈ গুৱাহাটীলৈ আনিছে। সুবালৰ সমস্ত মৰ্যাদা নাশ কৰি নৰেনে সুবালাক বলাৎকাৰ কৰে। নৰেনে সুবালৰ সতীত্ব নষ্ট কৰাৰ পিছত সুবালাই বেশ্যাবৃত্তিৰ সৈতে নিজকে খাপ খুৱাবলৈ বাধ্য হয়। সুবালাই বুজি পালে এতিয়াৰ পৰা তাই দেহ বিক্রী কৰি পোৱা পইচাৰে চলিব লাগিব।

“মই বেশ্যা হ'ব খোজা নাছিলোঁ, বেশ্যা নহ'ব কাৰণে মোৰ শেষ বিন্দু শক্তি প্ৰয়োগ কৰি মই যুঁজ কৰিলোঁ। তথাপি আজি মই বেশ্যা।” (সুবাল, পৃ. ৫৭)

কাহিনীৰ শেষৰ পিনে বেশ্যাৰ দালাল কান্তিয়ে সুবালাক বিয়াৰ প্ৰস্তাৱ দিয়ে, সুবালৰ ভিতৰৰ নাৰীগৰাকীক মুহূৰ্তৰ বাবে কান্তিয়ে জগাই দিয়ে। কান্তিৰ সৈতে পৰিপূৰ্ণ সংসাৰৰ সপোন দেখি তাই চিৰদিনৰ বাবে বেশ্যালয় ত্যাগ কৰি গুচি যোৱাৰ আশা কৰে। কিন্তু সুবালৰ সেই স্বপ্ন নিৰ্বাপিত হ'বলৈ বেছি সময় নালাগিল। কান্তিয়ে যেতিয়া টকা লৈ সুবালৰ ওচৰলৈ মানুহ পঠিয়ালে তেতিয়া সুবালাই সহ্য কৰিব নোৱাৰি কান্তিৰ লগত কাজিয়া কৰিলে। সুবালৰ শেষ আশাৰূপ মোহাৰি কান্তিয়ে চিঞৰি উঠিল- “চলা ৰাণী” ... বেশ্যাক বেশ্যাৰ দৰে ব্যৱহাৰ নকৰি পূজা কৰিব লাগে নেকি ?” (সুবাল, পৃ ১০১)

সুবাল অসহায় হৈ পৰিছিল আৰু বুঢ়ী তিৰোতাগৰাকীয়ে কোৱা কথাৰ সত্যতা উপলব্ধি কৰিছিল।

“এবাৰ যি বেশ্যা হৈছে, তাই চিৰকাল বেশ্যাই হৈ থাকিব।” (সুবাল, পৃ. ১০১)

সুবাল উভতি আহিছে পুনৰ আঠগাঁৱৰ পুৰণি বেশ্যালয়লৈ। বেশ্যাৰ দেহৰ জীৱিকা যৌৱন থকালৈহে বৰ্তি থাকে। কান্তিৰ জীৱনৰ পৰা গুচি অহাৰ পিছত সুবালাই লাইনত আৰু বেছিদিন টিকি নাথাকিল। এদিনাখন গধূলিপৰত ভালকৈ সাজি কাচি যৰৰ দুৰাৰমুখত গ্ৰাহকৰ অপেক্ষাত সুবাল বৈ আছে। ইতিমধ্যে অহা গ্ৰাহকবোৰ বেলেগ বেলেগ ঘৰত সোমাল। তেনেতে দুজন মানুহে সকলো ঘৰৰ দুৱাৰ বন্ধ দেখি সুবালৰ ফালে আগবাঢ়ি আহিল। সুবালৰ ওচৰ পায়োঁ এজন মানুহে নৈৰাশ্য আৰু বিৰক্তিৰ ভংগীত মাত লগাই উঠিল -

“থেং এইজনী একদম বুঢ়ী। ব'ল ঘূৰি ব'ল। আজি কপালেই মৰ্ম।” (সুবাল, পৃ. ১০২)

এক নিৰ্মম, ট্ৰেজিক উপলব্ধিত শেষ হৈছে সুবালাই নিজে কোৱা তাইৰ জীৱন

কাহিনী, “মই বুজিলোঁ, মোৰ দোকান বন্ধ কৰিবৰ সময় আহিল। ঘৰৰ ভিতৰ সোমাই মই দুবাৰখন বন্ধ কৰি দিলোঁ। (সুবাল, পৃ. ১০২)

লগে লগে যেন চিৰকাললৈ বন্ধ হৈ গ'ল সুবালৰ উদ্ধাৰৰ, মুক্তিৰ পথ। এই কৰণ পৰিণতিৰেই উপন্যাসখনৰ কাহিনীৰ পৰিসমাপ্তি ঘটিছে।

উপন্যাসখনৰ জৰিয়তে হোমেনে বৰগোহাট্ৰিৰ তীৰ সমাজ চেতনা প্ৰকাশ পাইছে। এগৰাকী সংবেদনশীল, মানৱীয় মৰ্যাদা অক্ষুন্ন কৰি ৰাখিব বিচাৰা সং নাৰী হিচাপে বৰগোহাট্ৰিয়ে সুবালাক প্ৰতিষ্ঠা কৰিছে। স্বাভাৱিকভাৱে জীৱন যাপন কৰিব খোজা, অধ্যয়নপ্ৰিয় এগৰাকী কিশোৰীয়ে দৰিদ্ৰতাৰ বাবে চক্ৰান্তৰ বলি হৈ বেশ্যা হোৱাৰ কৰণ কাহিনী সুবালত বিবৃত হৈছে। ভাৰতীয় তথা অসমীয়া নাৰীৰ মূল সৌন্দৰ্য্য সতীত্ব বন্ধৰ মাজতে বৰ্তি থাকে। সুবালাই সতীত্ব বন্ধ কৰিবলৈ প্ৰাণপনে চেষ্টা কৰিছিল। কিন্তু সুবাল বাধ্য হৈছে। সুবালৰ স্বপ্ন ভংগ হৈছে। সুবালৰ নাৰী জীৱনৰ স্বপ্নভংগৰ দুখভাৱ কাহিনীয়ে সুবালক বিশেষ মৰ্যাদা প্ৰদান কৰিছে।

“সুবাল চৰিত্ৰটিৰ সৌন্দৰ্য্য বৃদ্ধি কৰিছে চৰিত্ৰটিৰ মাজত প্ৰদৰ্শন কৰা জীৱন স্বপ্ন আৰু স্বপ্নভংগৰ বেদনাৰ মাজেদি।” (ভয়ন্ত কুমাৰ বৰা - সুবালৰ পৰা মহৎগন্ধালৈ, পৃ. ৯৯)

সুবালই দুবাৰকৈ আত্মহতাৰ চেষ্টা চলাইছে। সুবালৰ আত্মহতাৰ প্ৰচেষ্টাই সুবালক আত্মমৰ্যাদা সম্পন্ন নাৰীৰ শৰীত স্থান দিছে। সতীত্ব বন্ধৰ চেষ্টা কৰা আৰু বেশ্যালয়ৰ নৰক যন্ত্ৰনাৰ পৰা মুক্তি বিচাৰি সুবালাই আত্মহতা

কৰিব বিচাৰিছিল। একমাত্ৰ দৰিদ্ৰতাৰ বাবে সুবালই আদৰ্শবাদী চৰিত্ৰ হোৱাৰ পৰা বঞ্চিত হৈছে। তথাপিও সুবাল নাৰী জীৱনৰ মহত্বৰে উজ্জ্বলি উঠিছে। কান্তিৰ প্ৰস্তাৱত সন্মতি জনাই সুবালই পতিতালয় এৰি যায়। কান্তিয়ে যিটো সন্ধিয়াত তাইক নিবলৈ আহিছিল সিদিনা সতী সাধবী তিৰোতাৰ দৰে সেন্দূৰৰ ফোঁট পিন্ধি সুবালই কান্তিলৈ অপেক্ষা কৰিছিল। বৈবাহিক জীৱনৰ হেঁপাহে সুবালক নতুন স্বপ্ন দেখুৱাইছে। কান্তি আহি পোৱাৰ লগে লগে সুবালই ওৰণি টানি ভক্তি আৰু শ্ৰদ্ধাৰে কান্তিক স্বামী হিচাপে সেৱা কৰিছে।

সুবালই আত্মিকভাৱে কোনোদিনে বেশ্যাবৃত্তি গ্ৰহণ নকৰিলে। জীৱনৰ দুৰ্ভাগ্য তথা দৰিদ্ৰতাৰ চিকাৰ হৈ সুবালই বেশ্যা হ'বলগীয়া হৈছে। উপন্যাসিকে সুবালৰ জৰিয়তে বেশ্যাবৃত্তিৰ দৰে ভয়ংকৰ সামাজিক ব্যাধি পোহৰলৈ আনিছে। দাৰিদ্ৰ্য এক সামাজিক ব্যাধি। এই দিশটোৰ প্ৰতি পাঠক সমাজক দৃষ্টি গোচৰ কৰিবলৈ উপন্যাসিকে দৰিদ্ৰৰ অতি নগ্ন আৰু ভয়াৱহ ৰূপ বৰ্ণনা কৰিছে। সুবাল চক্ৰান্তকৰ পৰিস্থিতিয়ে গঢ়ি তোলা এগৰাকী বেশ্যা। সুবালই স্পষ্টভাৱে নিতীকভাৱে নিজৰ কাহিনী কে গৈছে। সুবালই

কৰ্মপূৰ্ণ সন্তোষৰ বাসনাক স্পষ্টভাৱে বৰ্ণনা কৰি বৈশ্যবৃত্তিৰ দৰে সামাজিক সমস্যাৰ বিৰুদ্ধে প্ৰতিবাদ কৰিছে। সুবালাই জাক জাক কামাতুৰ পুৰুষৰ পৰা নিজক বাচালৈ যি আপ্ৰাণ চেষ্টা কৰিছে সুবালার নৰী সত্তা তাতেই মহীয়ান হৈছে। বৈশ্যবৃত্তিৰ মাজতো সুবালাই মানৱীয় আশা-আকাংক্ষাৰে এগৰাকী সং নাৰী হিচাপে জীয়াই থাকিবলৈ যি সংগ্ৰাম কৰিছে সেই সংগ্ৰাম সুবালার চৰিত্ৰৰ অন্যতম বিশেষত্ব।

সামৰণি:

হোমেন বৰগোহাঞিৰ সুবালী বাস্তৱবাদী ভাৱাধাৰাৰে নিৰ্মিত এখন গুৰুত্বপূৰ্ণ উপন্যাস। এগৰাকী সহজ-সৰল নাৰী যত্নস্বৰ বলি হৈ দেহোপজীৱিনীৰ বৃত্তি গ্ৰহণ কৰিব লগা হোৱা কাহিনীয়েই সুবালার কাহিনী। উপন্যাসিকে বাস্তৱ আধাৰিত সামাজিক সমস্যা উপন্যাসখনত দাঙি ধৰিবলৈ যত্ন কৰিছে। কেৱল দৰিদ্ৰতা আৰু জটিল পৰিস্থিতিত পৰি সুবালাই বিপথগামী পথলৈ গতি কৰিছে। বাৰে বাৰে সুবালাই আত্মমুক্তিৰ চেষ্টা কৰিও ব্যৰ্থ হৈছে। গোটেই কাহিনীটোত সুবালার মাকৰ কথা, বুঢ়ী মাইৰ কথা, সুবালাই বৈশ্য বৃত্তি গ্ৰহণ কৰিবলগীয়া হোৱা পৰিস্থিতি, সুবালাই দেহৰ জীৱিকা বন্ধ কৰিবলগীয়া পৰিস্থিতি সমূহৰ বৰ্ণনাই কৰুণ সুৰ এটি অনবৰতে বোৱাই ৰাখিছে। সুবালার জৰিয়তে উপন্যাসিকে কাহিনী আৰম্ভ কৰি সুবালার মুখেৰে কাহিনীটো যি ধৰণে শেষ কৰিছে সেই কৌশল ৰক্ষা কৰাত উপন্যাসিক সফল হৈছে। কাহিনীটোৰ জৰিয়তে সুবালাই পাঠকৰ সহানুভূতি লাভ কৰিবলৈ সমৰ্থ হৈছে। এগৰাকী দেহোপজীৱিনীৰ কাহিনী সাহসিকতাৰে উপস্থাপন কৰি উপন্যাসিকে বিষয়বস্তু প্ৰকাশত নতুনত্ব আনিছে। মুঠৰ ওপৰত প্ৰথম পুৰুষত আত্মজীৱনীৰ ৰূপত বৰ্ণিত সুবালী উপন্যাসখনৰ জৰিয়তে হোমেন বৰগোহাঞিয়ে উপন্যাস জগতত এক অভিনৱত্ব আনিবলৈ সমৰ্থ হৈছে।

গ্ৰন্থপঞ্জী:

1. ঠাকুৰ। নগেন (সম্পাদ) : এশবছৰৰ অসমীয়া উপন্যাস। জ্যোতি প্ৰকাশ। গুৱাহাটী। ২০০০
2. বৰগোহাঞি। হোমেন : সুবালী। ষ্টুডেণ্টচ ষ্টেৰচ। গুৱাহাটী। ১৯৭৬
3. : চৰিটা দশকৰ ফলস্বৰূপ: উপন্যাস সমগ্ৰ। ষ্টুডেণ্টচ ষ্টেৰচ। গুৱাহাটী। ২০০৮
4. শৰ্মা। সত্যেন্দ্ৰ নাথ : অসমীয়া উপন্যাসৰ গতিধাৰা। সৌমাৰ প্ৰকাশ। গুৱাহাটী। ২০০৭
5. শৰ্মা। গোবিন্দ প্ৰসাদ : উপন্যাস আৰু অসমীয়া উপন্যাস। ষ্টুডেণ্টচ ষ্টেৰচ। গুৱাহাটী। ২০০৯

জেতুকা

ড° জৰিন চন্দ্ৰ ৰায়

সহকাৰী অধ্যাপক, উদ্ভিদ বিজ্ঞান বিভাগ,

বিজনী মহাবিদ্যালয়, বিজনী

ভাৰতীয় বিভিন্ন ভাষাত জেতুকাৰ বিভিন্ন নামেৰে জনা যায়। অসমীয়াত জেতুকা, সংস্কৃতত মদায়নটিক, হিন্দীত মেহদি, মাৰাঠিত মেহাদি আৰু ইংৰাজীত ইয়াক হেনা (Henna) নামে জনা যায়। ইয়াৰ বৈজ্ঞানিক নাম লাউচনিয়া ইনাৰমিচ (Lawsonia inermis)। উদ্ভিদ বিজ্ঞানৰ শ্ৰেণী বৰ্গীকৰণ মতে, জেতুকা লাথ্ৰাইয়েচি (Lythraceae) গোত্ৰৰ অন্তৰ্গত।

জেতুকা আমাৰ সকলোৰে পৰিচিত ঠাল-ঠেঙুলি যুক্ত চিৰ সেউজীয়া জেপোহা জাতীয় গছ। ফুল খোপা বান্ধি ফুলে। ফুলৰ ৰং বগা। গুটী আকাৰত সৰু। পাত যৌগিক। পাত গাঢ় সেউজীয়া। জেতুকাৰ পাত দেখাত প্ৰায় নৰসিংহৰ পাতৰ দৰে। ওখই প্ৰায় ১৮ ফুটমান হয়। ভাৰতবৰ্ষৰ প্ৰায়বিলাক ৰাজ্যতে জেতুকা হয়।

ঐতিহাসিক কালৰে পৰাই ভাৰতীয় অংগৰাগত জেতুকাই প্ৰাধান্য বিস্তাৰ কৰি আহিছে। অংগৰাগৰ অন্যতম জনপ্ৰিয় জেতুকা নামৰ সৰু সৰু সেউজীয়া পাতৰ এই গছ জোপাক আৰিষ্কাৰ কোনে কেতিয়া ক'ত কৰিছিল সেই কথা জনা নাযায় যদিও খ্ৰীষ্টপূৰ্ব ২০০০ বছৰৰ আগতে সুদূৰ মিছৰত জেতুকাৰ প্ৰচলন আছিল। জেতুকা এনে এবিধ গছ য'ৰ পাত পাতটো বটি ছালত বান্ধি থলে ৰঙা বৰণ ধৰে।

জেতুকাৰ ইতিহাস খুঁচাবলৈ হ'লে প্ৰায় ১৩ শতিকা মানৰ পৰাই মোগল আৰু ৰাজপুতসকলৰ মাজত জেতুকাৰ প্ৰচলন আছিল। আকৌ আৰব দেশতো অতি প্ৰাচীনকালৰে পৰা জেতুকাৰ প্ৰচলন হৈ আহিছে বুলিও জনা যায়। অকল যে ভাৰতবৰ্ষতেই ইয়াৰ প্ৰচলন আছে তেনে নহয়। ভাৰতীয় বসবিদ্যাত ৱ শতিকাৰ পৰা জেতুকাৰ নাম উল্লেখ থকাটো প্ৰমাণিত হৈছে। বুৰঞ্জীবিদ ইলিয়ট স্মিথে বুৰঞ্জীত উল্লেখ কৰা মতে

ইজিগুৰ বা মিছৰীয়া মামীৰ চুলি আৰু ভৰিৰ নখ জেতুকাৰ বোলোৰে বঙীন কৰা হৈছিল। কাপোৰত বং দিবলৈ হেনো প্ৰাচীন মিছৰবাসীয়ে জেতুকাৰ খেতি কৰিছিল। ইফালে যদিও পাৰস্যৰ দেশত জেতুকা গছ আৱিষ্কাৰ হৈছিল, ভাৰতীয় আয়ুৰ্বেদ শাস্ত্ৰ 'সুশ্ৰুত সংহিতা'ত কিন্তু জেতুকাৰ বনৌষধি হিচাবেহে ব্যৱহাৰ কৰিছে।

জেতুকাৰ ঔষধি গুণ:

জেতুকা বটি নখত লগালে নখৰ যিকোনো ৰোগ ভাল হয়। বিশেষকৈ নখচুকীয়াৰ বাবে ই উত্তম মহৌষধ।

যুগী ৰোগত ভোগা ৰোগীক গাখীৰ লগত জেতুকাৰ বস খুৱালে যথেষ্ট উপকাৰ হয়।

চুলি সৰা বন্ধ কৰিবলৈ জেতুকাৰ বস লগত শিলিখাৰ বস মিহলাই সানিলে চুলি সৰা বন্ধ হয়।

কপালত জেতুকাৰ বস বাঁহিলে মুৰৰ কামোৰণি নহয়।

চুলিৰ বং জেতুকা পাতৰ বসে সজীৱ কৰে আৰু মস্তিষ্ক ঠাণ্ডা কৰে।

জেতুকাৰ পা সিজাই সেই পানীৰে কুলকুলি কৰিলে মুখ ব ডিঙিৰ ঘা ভাল হয়।

অসমীয়া আধুনিক গীতত জেতুকাৰ স্থান:

অসমীয়া আধুনিক সংগীতত জেতুকা গছ ইয়াৰ পাত আৰু ইয়াৰ ৰঙা বং সম্পৰ্কে উল্লেখ থকা আমি দেখিবলৈ পাব। বহু পুৰণি চিৰসেউজীয়া অসমীয়া গীত, জেতুকাৰ লৈ সৃষ্টি হৈছে।

জেতুকা জেতুকা

দুহাতত জেতুকা দুহাতত জেতুকা

কৰুৱা তোলৰ বেন

হিয়াৰে দলিচাত মৰমৰ গামোচা

মৰমৰ গামোচা

দুগালত নধৰে বং

কৰ্ণশিল্পী - সাধনা সৰগম

বিখ্যাত গায়িকা সাধনা সৰগমৰ মধুৰ কণ্ঠত এই চিৰযুগমীয়া বিহু সুৰীয়া অসমীয়া আধুনিক গীতটি জেতুকাৰ পাতল বং লৈ সৃষ্টি হৈছিল। যিক তেনেদৰে জুবিন গাৰ্গ আৰু শান্তা উজীৰ কণ্ঠত আন এটি আধুনিক গীতত জেতুকা পাতৰ উল্লেখ থকা দেখা যায়।

পুৰাৰ হাঁহিত

চেঁচা বতাহজাকে

দৰদী দৰদী

হাদয়ৰ খবৰ আনে

তোমাৰ ওঁঠত

মনৰ বাতৰিয়ে

বৰণী বৰণী

এহেজাৰ টো তোলে

জেতুকা পাতৰ দৰে

মোক বোলাই দিয়েনে.....

কণ্ঠ : জুবিন গাৰ্গ আৰু শান্তা উজীৰ
লোক সংস্কৃতিত জেতুকাৰ ব্যৱহাৰ :

জেতুকা বা মেহেন্দি প্ৰেম আৰু অনুৰাগৰ প্ৰতীক। অসমত, বিশেষকৈ ব'হাগৰ প্ৰথম দিনটোতে অৰ্থাৎ গৰু বিহুৰ দিনাখনেই জেতুকাৰ বোলোৰে দুহাত ৰাঙালী কৰাৰ এক পৰম্পৰা চলি আহিছে। ঠিক সেইদৰে অসমীয়াৰ মাঙ্গলিক অনুষ্ঠান বিবাহতো জেতুকাই স্থান লাভ কৰিছে। ইফালে বিশ্বলিয়া ডেকা-গাভৰুৰ জেতুকাবিহীন উকা দুহাত যেন কল্পনাই কৰিব নোৱাৰি, জেতুকাৰ বক্তিম কমনীয়াতাই গোটেই বছৰটো অনাগত দিনবোৰ বঙীন কৰাৰ আশা কৰা হয়।

সঁচাকৈ জেতুকাৰ বক্তিম বোলে আমাক ৰজিয়াল কৰাৰ লগতে মনত সিঁচি দিয়ে এক অফুৰন্ত হেঁপাহ আৰু অনাবিল আনন্দৰ পুলক।

উৎস :

- ড° গুণাবাম খনিকৰ (২০০৬) : 'ৰোগ নিৰাময় আৰু সৌন্দৰ্য চৰ্চাত বন দৰবৰ গুণাগুণ', প্ৰকাশক, বিদ্য ভৱন, মহাত্মা গান্ধী পথ, যোৰহাট-ৰ।
- আস্থা ভৰদ্বাজ (২০১১) : 'অংগৰাগত জেতুকা' প্ৰকাশক প্ৰিয়সখী-একাশ বহুৰ, চতুৰ্থ সংখ্যা।
- বাতৰি কাকত আৰু আলোচনী।

সামনে, একবার পিছনে ঠেলে দেওয়া হয়েছে। মাতৃতান্ত্রিক যুগের গার্গী, লোপামুদ্রা, মৈত্রয়ীদেবের সামাজিক ও আত্মমর্যাদা বোধের পরিচয় যেমন পেয়েছি, তেমনি পরবর্তী কালে মেয়েদের পর্দা প্রথা, সতীদাহ প্রথা, বাল্য বিবাহের মতো ঘৃণ্য প্রথার শীকার হওয়ার স্বাক্ষরও রয়েছে।

ভারতীয় সংবিধানের প্রস্তাবনাতে লিঙ্গ সমতার কথা উল্লেখ আছে। মৌলিক অধিকার, মৌলিক কর্তব্য, এমনকি নির্দেশনাথক নীতির মধ্যেও উল্লিখিত আছে নারী-পুরুষের লিঙ্গ সমতার কথা। ১৯৯০ সালে সংসদীয় আইনের মাধ্যমে তৈরী করা হয়েছে জাতীয় মহিলা কমিশন (National Commission of Women's Act. 1990)। যার উদ্দেশ্যই ছিল নারীর অধিকার ও নারী সুরক্ষা সুনিশ্চিত করা। দেশের মধ্যে ১৯৯২ সালে পশ্চিমবঙ্গ প্রথম মহিলা কমিশন গঠন করে। ঠিকানা : পশ্চিমবঙ্গ রাজ্য মহিলা কমিশন, ১০, রেইনি পার্ক, কলকাতা - ১৯। যার মূল লক্ষ্যই ছিল রাজ্যের মহিলাদের স্বার্থ সুরক্ষিত করা। এছাড়া জাতীয় মহিলা কমিশনে মহিলারা তাঁদের যাবতীয় সমস্যার স্বার্থ সুরক্ষিত করে। এছাড়া জাতীয় মহিলা কমিশনে মহিলারা তাঁদের যাবতীয় সমস্যার ব্যাপারে কমিশনের ওয়েব সাইটে (<http://new.nic.in/newcomplaint/home.asp>) বিস্তারিত ভাবে দেওয়া আছে। সব রাজ্যেই মহিলা পুলিশের হেল্পলাইন চালু করা হয়েছে ইতিমধ্যেই। এছাড়াও নারী সুরক্ষায় শহরের রাস্তায় রাস্তায় মহিলা পুলিশের বড় বাহিনী নিজ দায়িত্ব পালন করে চলেছে।

নারী আজ কলকারখানার দিনমজুর হিসেবে, বেসরকারি বা সরকারি সংস্থায়, বিচার ব্যবস্থা, চিকিৎসা, শিক্ষা, লোবাহিনী ইত্যাদি সব ক্ষেত্রেই দায়িত্ব সামলাচ্ছেন। প্রবাসে থেকেও দশভূজার মতো মাতৃস্থ, পরিবারের নিরাপত্তা, নিজ নিরাপত্তা, নিজস্বতা, সিদ্ধান্ত গ্রহণ ইত্যাদি সব দিকই একলা হাতে সামলে নেন। অর্থনৈতিক নিরাপত্তা তাঁকে সেই মনোবল জোগায়। যার জোড়ে সমস্ত শারীরিক ও সামাজিক প্রতিকূলতাকে জয় করা সম্ভব হয়। কিন্তু কর্মসূত্রে প্রবাসে গিয়ে থাকতে থাকতে অপ্রত্যাশিত ভাবেই তাঁরা নিজ জন্মস্থানের শিকড়ের থেকে একটু একটু করে বিচ্ছিন্ন হতে শুরু করেন। আবার চরপাশের মানুষগুলোকেও যথাযথ শুভাকঙ্ক্ষী বলেও ভাবতে পারেনা। সেখানে অনেক মানুষের ভীড়েও নারী অন্তরে কেবল একা, সঙ্গীহীন হয়ে পড়েন। একাকী নিঃসঙ্গতার তীক্ষ্ণ যন্ত্রণা বুকে চেপে রেখে সে আপন স্বপ্নের স্বাতন্ত্র্যের কঠিন বর্ম পরিধান করে আত্মপ্রত্যয়ের ক্ষেত্র প্রস্তুত করেন। 'কবুলিওয়ালার' বিশ্বজাগতিক পিতৃস্নেহ, পোষ্ট মাস্টারের নিঃসঙ্গতার অনুভব আমাদের বিষম চেতনায় যেমন বারো বারে উঁকি দিয়ে যায়, প্রবাসী বাঙালী নারীর নিঃসঙ্গ নারী সত্ত্বার চোখের জল তেমনি সকলের হৃদয়কে সিক্ত করে তোলে। নারী শিক্ষিত হোক বা অশিক্ষিত, বেদনার কঁটার খোঁচায় রক্তাক্ত হওয়ার যন্ত্রণা উভয়ের ক্ষেত্রেই এক। আবার পরিবারের আপন জনের মুখে হাসি ফোঁটাতে প্রবাসী নারী তাঁর

ব্যথার অর্শ নিজেই পান করতে বাধ্য হন; পাছে তাঁর আপন জনেরা দুঃখ পান। সম্ভ্য সমাজের কোনো যুক্তিবাদী মন যুক্তির শত সহস্র প্রশ্নেও প্রবাসী নারী হৃদয়ের বাজব সত্ত্বের পাঠশালাকে উন্মোচন করতে পারবেননা।

বর্তমানে দেশের পরিবর্তিত আর্থ-সামাজিক অবস্থায় বেসরকারিকরণ, অর্থনৈতিক মন্দা, চাষবাসে ভুক্তি তুলে দেওয়া ইত্যাদি সবই বিশ্বায়নের দরজা খুলে দিয়েছে। যার ফলে উদারীকরণ (Liberalisation, Sex tourism) বেড়েই চলেছে। শিক্ষিত মহিলাদের ব্যতিরেকে দরিদ্র পরিবারের মেয়েরা পরিবারকে স্বচ্ছলতা দেওয়ার জন্য চাকরি দেবার প্রলোভনে ফাঁদে পা দিয়ে পাচার ও বিক্রি হয়ে যাচ্ছে উন্নত দেশগুলিতে। সেখানে গিয়ে যৌনকর্মী হিসেবে কাজ করতে বাধ্য হচ্ছে। আমাদের সমাজ ব্যবস্থা ও ঘন ধরা মানসিকতার জন্য এই সব মহিলারা আর স্বাভাবিক জীবনে ফিরে আসার গ্রহণযোগ্যতা হারিয়ে ফেলেন। কিন্তু মনে রাখতে হবে যে পুলিশ বা মহিলা কমিশন নারীকে শারীরিক হেনস্তা, অধিকার হরণ, বা জালিয়াতি জাতীয় ঘটনা থেকে রক্ষা করতে পারে। কিন্তু নারীকে মানসিক দিক থেকে নিরাপত্তা দিতে পারেনা। নিঃসঙ্গতা থেকে নারীকে মুক্তির পথ দেখাতে পারে একমাত্র তাঁর সমাজ ও পরিবার। অনেক সময় এমনও হয় যে ঘরে ফিরে গেলে পরিবারের চাহিদা পূরণ হবেনা বলে অনেক বাবা, মা, ভাই, বোন বা অন্য কাছের মানুষেরা চাননা তাদের মেয়েরা ঘরে ফিরুক। তাই আত্মীয়স্বজনের ভূমিকাও এক্ষেত্রে উল্লেখযোগ্য। তাঁদের উচিত Counseling এর মাধ্যমে প্রিয় মানুষ গুলোর মানসিক নিঃসঙ্গতাকে দূর করতে অগ্রণী ভূমিকা নেওয়া। তেমনি সমাজের প্রতিটি মানুষেরই উচিত প্রবাসী মহিলাদের সম্পর্কে পোষিত ঘৃণ্য মানসিকতা ত্যাগ করে তাঁদের যথাযথ মর্যাদা প্রদান করা। তবেই প্রবাসী নারীর মানসিক স্বাস্থ্য সুরক্ষিত হয়ে নিঃসঙ্গতা, নিরাপত্তা, আত্মতাগ, অবসাদ ইত্যাদি অব্যক্ত মর্মবেদনার থেকে উত্তরণের পথ খুঁজে পাবে।

তথ্য সূত্র :

- ১) নারীচেতনা মননে ও সাহিত্যে, নারীবীক্ষা : নারী পাঠ কৃতি, তপোধীর ভট্টাচার্য, পুস্তক বিপনি, কলকাতা, জানুয়ারি। ২০০৭, পৃঃ ২১।
- ২) তদেব, পৃঃ ২১।

গ্রন্থপঞ্জী :

নারীচেতনা মননে ও সাহিত্যে, তপোধীর ভট্টাচার্য, পুস্তক বিপনি, কলকাতা, জানুয়ারি। ২০০৭।

উল্লেখ্য - 'প্রথম কথা হচ্ছে বউটা নিশ্চয়ই খারাপ। খারাপ না হলে দুটো দেওরকে মজালো কেন?' এভাবে পুরুষকেন্দ্রিক সমাজে নারীকে দোষারূপ করা যেন রেওয়াজ যদিও কালোর কথায় তা স্পষ্টতই পায়। তবে লোটন বউ সব কিছু সহজে মানে না। লোটন বউকে কেন্দ্র করে নারীর প্রেম মনস্তত্ত্ব ব্যক্ত - 'নিরন্তর প্রেমহীন জীবন, তাইতো সবচেয়ে বড় অভিশাপ।' বস্তিময় জীবনের খাদ্যাভ্যাসের বর্ণনাও পাওয়া যায়। রান্নার কাজে গৌবিন্দর বস্তিজীবনের যে ছবি তার চোখে দেখা যায় তা অসঙ্গতিপূর্ণ। এমনকি সাধারণভাবে যা মানা সত্যিই অসম্ভব।

আসলে স্বাধীনতার পরবর্তী উপন্যাসসমূহে যে বস্তিস্বাতন্ত্র্যবোধের পরিচয় পাওয়া যায়, তাতে ব্যক্ত হয়েছে একদিকে প্রাচীনপন্থী ধারণা, অন্যদিকে আধুনিক মানসিকতা। সেক্ষেত্রে উল্লেখনীয় বিশ শতকের পঞ্চাশ দশকের 'বি.টি. রোডের ধারে' উপন্যাসটি। মানসিক হতাশাগ্রস্ত শ্রমিক মানুষের বিবরণ বস্তিকেন্দ্রিক জীবনধারা বর্ণনার মাধ্যমে ব্যক্ত হয়েছে। স্বাধীনতা পরবর্তী উপন্যাস সম্পর্কে অরুণ কুমার মুখোপাধ্যায়ের মন্তব্য — "আমরা জানি, পরস্পরবিরোধী মনোভাবের সংমিশ্রণে ব্যক্তি - মানুষের বিধা-সংশয়-অভীক্ষা শিল্পরূপ পায়। অভিজ্ঞতার প্রতিটি ক্ষেত্রে যে সমন্বয় ও সমাবেশ, তার বৈচিত্র্য কখনো বিষয়বকর, কখনো বিভ্রান্তিকর হয়ে দেখা দেয়। স্বাধীনতা পরবর্তী বাংলা উপন্যাসে পরস্পরবিরোধী ধারা প্রবাহমান। একদিকে যেমন মানুষের সামাজিক ও আর্থিক অস্তিত্বের বিচার করা হয়, অপরদিকে তেমন সমকালের নির্বোধ ছবি আঁকা হয়।"^{১২}

আসলে, নারী পুরুষ উভয়েই অর্থনৈতিক দিক থেকে সমানভাবে স্বাবলম্বী হতে চায় তা জানতে পারি - যারা পরিবার নিয়ে থাকে তারা সাধারণত নিজেরাই রান্না করে খায়।... যারা স্বামী-স্ত্রী দুজনে কারখানার কাজ করে তারাও কারো হাঁড়িতে নাম লেখায়।

উপন্যাসিক আলোচ্য উপন্যাসে মেয়েদের পূর্বে 'বেকার' শব্দটি উল্লেখ করেছেন। সুতরাং স্পষ্ট যে পুরুষদের যেমন কাজ করা স্বাভাবিক তেমনি যে মেয়েদের কাজ জোগাড় হয়নি তারা বস্তিতে কিভাবে বেকার জীবন কাটায় তা আলোচ্য উপন্যাসে উল্লেখনীয় - 'বেকার মেয়েরা ও ছোট বাচ্চারা থাকে ঘাটে ঘাটে রেললাইনে গোবর পোড়া কয়লা কাঠের সন্ধানে।' আসলে তারা কোন না কোন ভাবে বস্তিময় জীবনের ছন্দে নিজেকে লিপ্ত করে, ঘরবন্দী করে রাখে না। এখানেও নারী সচেতনতার পরিচয় যেন বহন করে।

সদী বুড়ি আলোচ্য উপন্যাসে অপর উল্লেখনীয় চরিত্র। গ্রামে যেমন মোড়ল থাকে তেমনি বস্তিরও যেন সদী বুড়ি। পুরোগো বহু দিনের খবর জানা যায় আলোচ্য উপন্যাসে উক্ত চরিত্রটির মাধ্যমে - 'আচমকা কাছই কোথেকে সদীর গলা শোনা গেল, সে কথা

নারী মনস্তত্ত্ব : বি.টি. রোডের ধারে

ড° উর্মিলা পোদ্দার

সহযোগী অধ্যাপিকা, বাংলা বিভাগ

বিজনী মহাবিদ্যালয়, বিজনী

বিশ শতকের মধ্যভাগে সমগ্র দেশ বসু রচিত 'বি.টি. রোডের ধারে' (১৯৫২) উপন্যাসটি উল্লেখনীয়। আলোচ্য উপন্যাসটির শুরুতেই বি.টি. রোডের রাস্তার বর্ণনা পুঙ্খানুপুঙ্খভাবে তুলে ধরেছেন। আর উপন্যাসটি জুড়ে বস্তিজীবনের বর্ণনা ফুটে উঠেছে। বস্তির ঠিকানা দিয়েছেন এভাবে - 'কেবল নিউ কর্ড রোড ও নয়া সড়কের সঙ্গমে, এক ধারে এক লম্বা বস্তি।' - সেই বস্তির জীবনযাত্রা প্রণালীর বর্ণনা যেন গৌবিন্দের দেখা দৃষ্টিতে পাঠকের অন্তরে ছবির মতো ভেসে উঠেছে। বস্তিজীবনের নর-নারীর চিত্রভাবনা, আচার আচরণ, শিক্ষা-সংস্কৃতির যে পরিচয় পাওয়া যায় তাতে নারী ভাবনা বিশেষ করে বস্তিকেন্দ্রিক নারীর জীবন স্পষ্ট হয়। সমগ্র উপন্যাসটি জুড়ে বস্তিময় জীবনের সঙ্গে জড়িত নারীর প্রতিবাদ, নারীর স্বাধীনচেতনা মনোভাব তথাপি হতাশময়তা যেন লক্ষণীয়। সমসাময়িক সময়ের পরিপ্রেক্ষিতে নারী মনস্তত্ত্ব বর্ণিত হয়েছে আলোচ্য উপন্যাসে।

উপন্যাসটি প্রকৃতির প্রতিকূলতা দিয়ে শুরু। সমগ্র উপন্যাসটিতে কোথাও কোথাও অসঙ্গতিময় জীবনভাবনা ফুটে উঠেছে তবে তার মধ্যেও বাস্তবতার পরিচয় পাওয়া যায়। প্রসঙ্গত কুন্তল চট্টোপাধ্যায়ের মন্তব্য —

"জীবনবাস্তবের নিখুঁত সাদৃশ্য উপন্যাসের গুণ কিংবা ক্রটি যে - কেনিটিই হওয়া সম্ভব। লেখকের অভিজ্ঞতার শক্তির আসলে এক গভীর ও দুর্বীর অনুভবশক্তি, থ্যাকারে যাকে গুপ্তশক্তি বা 'occult power' বলে চিহ্নিত করেছেন।"^{১৩}

শুরুতে নারী চরিত্র হিসেবে লোটন বউ চরিত্রটি উল্লেখনীয়। বস্তিকেন্দ্রিক জীবনে যেন ব্যতিক্রমী চরিত্র হয়ে উঠেছে লোটন বউ। তার চলাক্রমের মধ্যে অসঙ্গতি দেখতে পাওয়া যায় সর্বদা। তবে তারজন্য দায়ী করা হয় লোটন বউকেই। আলোচ্য উপন্যাসে

বস্তুকে নারীর জীবনে ব্যতিক্রমী মনে হয়। কিন্তু পরবর্তীতে দুলালীর উপর সেই গণেশের কি নির্বাচন তার মর্মান্তিক বর্ণনা প্রকটিত — ‘.... গণেশ চৈচায়, কারো ভাবতে হবে না। ফের বললে, মারব রদা - মার না, মার, দুলালী পেছায় না।’

আসলে নারীর অন্তর্মুখীনতা ও বিপর্যয় যেন স্পষ্ট হয় উপন্যাসে। যা বাস্তু, শুধু বাস্তু বললেও ভুল হবে তবে নারী তা মানতে বাধ্য। সমসাময়িক সমাজ ভাবনা রূপের বর্হিপ্রকাশ বলা যায় দুলালীর চরিত্রটি। কী অতুত জীবন - সত্যি তা মানতে হয়। প্রসঙ্গত বিশিষ্ট সমালোচক সরোজ বন্দ্যোপাধ্যায়ের মন্তব্য —

“এই বিষয়বস্তু পরিবর্তন সাধনের আর এক মুখ অজ্ঞাতপূর্ব আঞ্চলিক জীবন সম্বন্ধে সচেতন হওয়ার ভেতরে। নিঃসংশয়েই তৎকালীন মধ্যবিত্ত জীবনের হতাশ্বাস ক্রান্তি থেকেই এই প্রয়াসের জন্ম।... লেখকেরা যা চেয়েছিলেন তার সবটাই অকৃত্রিম, একথা ঠিক নয়। বিমুক্ত বলিষ্ঠ জীবনশ্রোত, উন্মুক্ত প্রকৃতি এবং জীবন-মৃত্যুর সুস্থ স্বাভাবিকতায় অথচ নিষ্ঠুরতায় একটা আলাদা স্বাদ আছে।”

আলোচ্য উপন্যাসে লোটন বউ থেকে শুরু করে দুলালীর বউ পর্যন্ত সব নারী চরিত্রেই অসহায়ত্ব যেন পরিণামে লক্ষ করা যায়। দেখা যায় লোটন বউ একদিন স্বীকার করল নন্দ-হরিশের কথা। নন্দ-হরিশ কিভাবে তার জীবনের সঙ্গে একাকার হয়েছে - ‘লোটন বউ পোয়াতী হয়েছে।’ এভাবে অবৈধ সন্তান সন্তবা লোটন বউকে সামাজিকভাবে মানতে নারাজ। তবে মেনে নিল যখন ভোজের আয়োজন করেছে। বলা যায়, নারীর ইচ্ছা অনিচ্ছার দোলাচলে বিপর্যস্ত নারীর জীবন এবং কিভাবে নিজেকে অসামাজিক কর্মে লিপ্ত হতে হল তা আলোচ্য উপন্যাসে তা বর্ণিত হয়েছে। এভাবে নন্দ-হরিশের কবলে পড়ে বিপর্যস্ত হতে হল লোটন বউকে। শুধু তাই নয়, পরবর্তীতে লোটন বউ বস্তু ছাড়তে বাধ্য হল - পরাজয় মেনে নিতে বাধ্য হল নারী তথা লোটন বউ। সুতরাং বলা যায় বস্তুকে নারী চরিত্রগুলি পাওয়া যায় তারা অন্যের ইচ্ছাকে প্রাধান্য দেওয়ার নামে সর্বদা জীবনে নিজের অস্তিত্ব হারিয়ে ফেলে। যার পরিণতিতে নেন্দে আসে বিষাদ তথা হতাশময়তা। প্রসঙ্গত অশ্রুকুমার সিকদারের মন্তব্য উল্লেখ্য—

“আসলে ব্যক্তির মধ্য দিয়ে ফুটে উঠেছে চূড়ান্ত সামাজিক সংকট; এবং হয়তো, সামাজিক সংকটের বৃত্তকে ছাড়িয়ে মানবিক সত্তার অস্তিত্বেরই সংকট।”

সুতরাং বিশ শতকের মধ্যভাগে রচিত উপন্যাসটিতে নারীর অসহায়ত্ব বিভিন্নভাবে অঙ্কিত হয়েছে। যদিও শুরুতে নারীর মধ্যে পুরুষের সমানার্থিকারের সুর পাই বিভিন্ন ঘটনার বর্ণনার মাধ্যমে, তবে পরিণামে যেকোনোভাবেই হোক না কেন বর্ণনার স্বীকার, যৌন নিগ্রহ ও পারিবারিক নিগ্রহের স্বীকার হতে হয়েছে উপন্যাসের বহু নারীকে তা অস্বীকার করার কোন উপায় নেই। এভাবে বস্তুতে দুঃখ কষ্টে জীবনের বহু মূল্যবান

তো বিশ বছর ধরে শুনে আসছি, হয় না তো।’

উপন্যাসিক সমরেশ বসু বি.টি.রোডের ধারে উপন্যাসটিতে বেশ কিছু নারী চরিত্রের প্রাত্যহিক জীবন ভাবনা স্পষ্ট করে তুলে ধরেছেন এবং তাতে স্পষ্ট দেখিয়েছেন যে, নারীরা বস্তুতে ঘরবন্দী অবস্থায় নেই। আলোচ্য উপন্যাসে অপর এক উল্লেখনীয় নারী চরিত্র ফুলকি। কালো বলছে - ‘ফুলকি, ওঠ ওঠ জলদি।..... কলে যাবিনি? কলে বাঁশ বেজে গেল যে।’ আর্থিকভাবে খুব উন্নত এমনটি নয় তবে নারী পুরুষ উভয়েই কল-কারখানার কাজে ব্যস্ত। তাতে অবশ্যই বিশ শতকের সমাজ ভাবনা তথা নারীর যে বস্তুময় জীবন বর্ণনা পাওয়া যায় তা নারীর স্বাধীনভাবে দক্ষতামূলক কাজে নিজেকে নিয়োজিত করার প্রবণতা বলা যায়। আলোচ্য উপন্যাসে সমগ্র বস্তুজীবনের জীবনযাত্রা প্রণালীর মধ্যে যদিও অসঙ্গতিময়তা লক্ষ্যণীয়।

আলোচ্য উপন্যাসে গোবিন্দের বর্ণনাময় বস্তুময়জীবনের যে চিত্র পাওয়া যায় তাতে ফুটে উঠেছে বেশ কিছু নারীর করুণময় জীবন কাহিনি। সেক্ষেত্রে উল্লেখের দাবি রাখে ছুতোর বউ, দুলালীর বউর কথা। আলোচ্য উপন্যাসে নারী মনস্তত্ত্ব স্পষ্ট হয় দুলালীর চরিত্র বর্ণনার মাধ্যমে। দুলালী বউর সঙ্গে গণেশের কি সম্পর্ক বিশ্লেষণ প্রসঙ্গে দুলালীর প্রেমচেতনা বর্ণিত হয়েছে। গোবিন্দের উক্তি - ‘এ কী সর্বনেশে, কর্মনাশা সব — ভঙুল-করা ভালোবাসা। বুঝি তার প্রাণটা মস্ত বড় বলেই।’ তার মধ্যে নারীর অন্তর্জ্বালা, ছুঁফটানি ফুটে উঠেছে - ‘এমনি করে মরবে ছুতোরের বউয়ের মতো বউয়েরা।’ উদ্ধৃত অংশটির মধ্যে দিয়ে ছুতোরের বউয়ের মতো বউয়েরা যে কিভাবে জীবনে নিম্ন যন্ত্রণায় কবলিত হয় তা স্পষ্ট হয়। কী মর্মান্তিক জীবন বর্ণিত দুলালীর তা গোবিন্দ যেন সহ্য করতে পারছেন না — ‘সে দৃশ্য দাঁড়িয়ে দেখতে দেখতে এক সময় অসহ্য যন্ত্রণায় ছুটফট করে উঠল গোবিন্দ।’

দুলালী ও গণেশের যেভাবে জীবন শৈলী চিত্র অঙ্কিত হয়েছে আলোচ্য উপন্যাসে তাতে দেখা যায় গণেশ দুলালীর জন্য কাজকর্ম ত্যাগ করেছে। শুধু তাই নয়, তার প্রাণজুড়ে শুধুই দুলালী তথাপি দুলালীকে শেষ পর্যন্ত গৃহবন্দী অসহায় করণ অবস্থা থেকে উদ্ধার করতে পারছেন না গণেশ — ‘হ্যাঁ, এই আকাশের তলায় এই রোদে হাওয়ায়, দরকার হলে মাঠের ধারে বেখে আসব ওকে সারাদিন। দৃঢ় গভীর গভীর গলায়, শান্ত অথচ, আবেগের সুরে বলল গোবিন্দ, রোগ তো ওই নোরাং বিছনায়।’

গৃহবন্দী দশা থেকে মুক্তি পেল যেন গণেশের বউ। দুলালীর অপলক দৃষ্টিতে সংশয় ও বিশ্ময় ফুটে উঠেছে। এই যন্ত্রণাময় জীবন কতটা দুর্বিসহ তা তার চোখের কোনে জমে থাকা জলে যেন প্রতিবিম্বিত। এভাবে আলোচ্য উপন্যাসে দুলালীর জীবনে একদিকে মৃত্যুর মুখোমুখি অন্য দিকে অগাধ ভালোবাসা দিয়ে চলেছে গণেশ। যা

সময় কাটানোর পরেও নারীরা এক এক করে বস্তু ছেড়ে দিতে বাধ্য হচ্ছে - এ নারীর অসহায়ত্ব ছাড়া আর কিছুই নয়। সুতরাং উপন্যাসটি বিশ শতকের পাঁচ দশকের নারী বঞ্চনার কিভাবে সম্মুখীন হতো তার জ্বলন্ত উদাহরণ বলা যেতে পারে। তাই প্রয়োজন নারীর আত্মবিশ্বাস, তবেই কিনা সম্ভব সমাজের অগ্রগতি। আসলে জীবনের সংশয়, শূন্যতা, জীবনের মূল্যবোধ হারানোর বেদনা তাদের পিছনে নিয়ে যায়। তারা বেঁচে থাকার অধেষণে ঘুরে বেড়ায়। তাদের হতাশা বিক্ষোভ মূল্যবোধের অবসান অস্থির করে তুলেছে তারই বিবরণ এই নারী চরিত্রসমূহের মাধ্যমে ঔপন্যাসিক ফুটিয়ে তুলেছেন।

তথ্যসূত্র :

১. চট্টোপাধ্যায় কুন্তল - 'সাহিত্যের রূপ-রীতি ও অন্যান্য প্রসঙ্গ' - পৃ. ২১১
২. মুখোপাধ্যায় অরুণ কুমার - 'কালের প্রতিমা বাংলা উপন্যাসে পাঁচাত্তর বছর : ১৯২৩-১৯৯১' - পৃ. ২৫৩
৩. বন্দ্যোপাধ্যায় সরোজ - 'বাংলা উপন্যাসের কালাত্তর' - পৃ. ৩০৫-৩০৬
৪. সিকদার অশ্রুকুমার - 'আধুনিকতা ও বাংলা উপন্যাস' - পৃ. ২৮৭

গ্রন্থপঞ্জি :

১. বসু সমরেশ - 'বি.টি.রোডের ধারে' (প্রথম সংস্করণ-এপ্রিল ১৯৭৩ বৈশাখ ১৩৮০ দে'জ পাবলিশিং, কলকাতা ৭০০০৭৩)
২. চট্টোপাধ্যায় কুন্তল - 'সাহিত্যের রূপ-রীতি ও অন্যান্য প্রসঙ্গ' (প্রথম প্রকাশ - শ্রাবণ ১৪০২/আগষ্ট ১৯৯৫) - রত্নাবলী, কলকাতা ৭০০০০৯
৩. ভট্টাচার্য তপোধীর - 'উপন্যাসের সময়' (প্রথম প্রকাশ, মাঘ ১৪০৫, জানুয়ারী ১৯৯৯) - পুস্তক বিপণি, কলকাতা ৭০০০০৯
৪. বন্দ্যোপাধ্যায় সরোজ - 'বাংলা উপন্যাসের কালাত্তর' (প্রথম প্রকাশ ১৯৬১) - দে'জ পাবলিশিং, কলকাতা ৭০০০৭৩
৫. মুখোপাধ্যায় অরুণ কুমার - 'কালের প্রতিমা বাংলা উপন্যাসের পাঁচাত্তর বছর : ১৯২৩-১৯৯১' (প্রথম প্রকাশ এপ্রিল, ১৯৭৪, বৈশাখ ১৩৮১) - দে'জ পাবলিশিং, কলকাতা ৭০০০৭৩
৬. সিকদার অশ্রুকুমার - 'আধুনিকতা ও বাংলা উপন্যাস' (প্রথম প্রকাশ শ্রাবণ ১৩৯৫ জুলাই, ১৯৮৮) - অরণ্য প্রকাশনী, কলকাতা ৭০০০০৬
৭. রায় সত্যেন্দ্রনাথ - 'বাংলা উপন্যাস ও তার আধুনিকতা' (প্রথম প্রকাশ-জানুয়ারী ২০০০, মাঘ ১৪০৬) - দে'জ পাবলিশিং, কলকাতা ৭০০০৭৩

সাজানো বাগান - কালে কালাত্তরে

অপু গুহ ঠাকুরতা

সহকারী অধ্যাপক, বাংলা বিভাগ, বিজনী মহাবিদ্যালয়

মনোজ মিত্রের সাজানো বাগান বাংলা নাট্যসাহিত্যে একটি উল্লেখযোগ্য নাটক। প্রথম অভিনয় থেকে আজ ৪৫ বছর পেরিয়েও নাটকটির আবেদন অক্ষুণ্ণ আছে। অর্থাৎ প্রায় অর্ধশতক জুড়ে এর অটুট জনপ্রিয়তার জন্য সাজানো বাগান প্রকৃত অর্থেই কালোত্তীর্ণ শিল্পের মর্যাদা পেয়েছে। এহেন মঞ্চসফল ও শিল্পোত্তীর্ণ নাটক নিয়ে স্বাভাবিক ভাবেই বহু আলোচনা হয়েছে এবং হয়ে চলেছে। বহু প্রাজ্ঞ সমালোচক ও নাট্যকার সাহিত্যগুণ ও অভিনয়যোগ্যতা দুটি দৃষ্টিকোণ থেকেই সাজানো বাগানের আলোচনা করেছেন, যে আলোচনায় যোগ দিয়েছিলেন মনোজ মিত্র স্বয়ং। এমতাবস্থায় নতুন কথা বলার অবকাশ বেশ কম থাকলেও যে কোনো যুগোত্তীর্ণ শিল্প যেহেতু নিজেই নিজের ভেতর বহুস্থরিকতার (Polyphonic) সম্ভাবনা প্রচ্ছন্ন রাখে এবং তা পাঠক বা দর্শকের স্থান-কালের অবস্থান ভেদে ভিন্ন প্রতীতি নিয়ে আসে, তাই সাজানো বাগান নিয়েও কথা ফুরোয় না। প্রকৃতপক্ষে পাঠক বা দর্শকের প্রত্যাশার দিগন্তের (Horizon of Expectation) সঙ্কোচন বা প্রসারণের ফলে কাল থেকে কালাত্তরে নব নব তাৎপর্ষে উদ্ভাসিত হয়ে ওঠে একটি সার্থক শিল্প, সাজানো বাগান এহেন শিল্পের সার্থক দৃষ্টান্ত। আমরা সাজানো বাগান নাটকটির এই বহুস্থরিকতার দিকটি নিয়ে আলোচনা করব।

ভারতীয় অলঙ্কারশাস্ত্রে নাটককে বলা হয়েছে 'দৃশ্যকাব্য'। তার মানে, নাটককে যেমন দৃশ্যায়িত হওয়ার উপযোগী হতে হবে, তেমনি এর পাঠগুণও প্রত্যাশিত। সাজানো বাগান এই দুটি প্রত্যাশাই পূরণ করেছে। তবে এক্ষেত্রে যে কথাটা বিশেষ গুরুত্বপূর্ণ তা হল, একই নাটক দর্শক ও পাঠকের কাছে সমান তাৎপর্ষ নিয়ে আসে না। পাঠক ভেদে একই নাটকের পাঠ ভিন্ন ভিন্ন হতে পারে, বা একই পাঠকের কাছে ভিন্ন ভিন্ন তাৎপর্ষ নিয়ে আসতে পারে। অপরদিকে সেই নাটকটিই যখন মঞ্চে অভিনীত হয়, তখন তা আমরা

দেখি নির্দেশকের চোখ দিয়ে, নির্দেশকের ইন্টারপ্ৰিটেশন অনুযায়ী। অর্থাৎ পাঠকের তুলনায় দর্শকের তাৎপর্য নিষ্কাশনের স্বাধীনতা অনেকটাই সংকুচিত। এই নিবন্ধে আমরা পাঠকের চোখ দিয়ে সাজানো বাগান দেখার চেষ্টা করব।

সাজানো বাগান আদ্যন্ত কোঁতুক রসে মোড়া। এই কোঁতুকরসে মজে পাঠক/দর্শক শ্রেণীসংগ্রামের প্রতিফলন দেখেন, দেখেন মানুষের অসীম জীবনতৃষ্ণা, যেমন গৌরিকিশোর ঘোষ নাটকটিকে ‘একটা বুড়ো আর তার টিকে থাকার প্রাণপণ লাড়াই’এর গল্প বলে মনে করেছেন। অর্থাৎ সংলাপ ও সিকোয়েন্সের অভিনব বিন্যাসের ফলে পাঠক/দর্শক হাসতে হাসতে বাস্তবের প্রান্ত ছুঁয়ে থেকেও পৌঁছে যান অন্য এক দর্শনের জগতে। এক্ষেত্রে নাট্যকার সফল। কেননা মনোজ মিত্র সচেতন ভাবেই চেয়েছিলেন সাজানো বাগান বহুস্তরিক পাঠকৃতি হয়ে উঠুক। শ্রেণীদ্বন্দ্ব বা এধরণের যে কোনো একটি তাৎপর্যের মধ্যেই যেন নাটকটি সীমায়িত না থাকে। এক্ষেত্রে মনোজ মিত্র যে অত্যন্ত সতর্ক ও সচেতন ছিলেন, তার প্রমাণ পাওয়া যায় নাটকটি দু’বার লেখার ঘটনায়।

আমরা জানি সাজানো বাগানের প্রথম অভিনয় হয়েছিল অবনমহলে ৫ এপ্রিল, ১৯৭৭ সনে। নাটকটির সেনিই প্রথম ও শেষ অভিনয়। এরপর মনোজ মিত্র নাটকটিকে আবার নতুন ভাবে লেখেন। সেবছরই মুক্তঅঙ্গনে ৭ নভেম্বর তারিখে নতুন কলেবরে সাজানো বাগান মঞ্চস্থ হয়। অর্থাৎ মনোজ মিত্র প্রথম লেখা ও অভিনীত সাজানো বাগান পরিমার্জন করে কয়েকমাস পর নতুন করে মঞ্চস্থ করেন। এই পরিবর্তিত রূপটিই অদ্যাবধি অভিনীত হয়ে চলেছে। নাটকটির প্রথম অভিনয় দর্শকদের আকর্ষণ করতে পারে নি এমন নয়, বরং দর্শকদের বেশ বাহবা পেয়েছিল। তবুও নাট্যকার কেন নাটকটি নতুন করে লিখলেন। এর কারণ শোনা যাক স্বয়ং নাট্যকারের কাছ থেকে—

“তা বলে অবন মহলের প্রযোজনা যে দর্শকের বাহবা পায় নি এমন নয়। দলের ছেলেরা নতুন প্রযোজনার সাফল্যে বেশ উদ্বীগুণও ছিল। কিন্তু সেদিন মঞ্চে দাঁড়িয়ে আমি বুঝে গিয়েছিলাম, নাটকটা কিছুমাত্র উত্তরোয়ানি। গরিব আর বড়লোক—শোষক আর শোষিতের দ্বন্দ্বটাই প্রকট হয়ে ধরা পড়েছে যে হারিয়ে গেছে কাহিনীর ভেতরকার রসকৌতুক। হারিয়ে গেছে আমার শৈশবে দেখা সেই আপাত টেনশনহীন বিশেষ ধরণের জীবনযাত্রা। এ আমি বারবার দেখেছি বক্তব্য যাই হোক না কেন, কোনো নির্দিষ্ট জীবনযাত্রা মূর্ত না হলে, নাটকের চল গড়ে ওঠে না। তখন তাকে দূর্বহ চেকে।”

(মিত্র, মনোজ : ২০০০, পৃ. ১৫)

তার মানে নাট্যকারের আশঙ্কা ছিল সাজানো বাগান শোষক-শোষিতের দ্বন্দ্বনির্ভর শ্লোগানসর্বস্ব নাটক যেন না হয়। বরং এর ভেতরকার রসকৌতুক থেকে যাতে বিশেষ ধরনের জীবনযাত্রা মূর্ত হয়ে উঠতে পারে। আমাদের বক্তব্য, নাট্যকার এক্ষেত্রে সম্পূর্ণ

সফল হয়েছেন। নাটকটির পরতে পরতে ধরা পরেছে বিশেষ সময় ও সমাজধৃত মানুষের জীবনযাত্রা। বরং আমাদের পাঠে নাটকটি হয়ে উঠেছে বাস্তবে বিপর্যস্ত মানুষের স্বপ্নপুরণের মিথ। কিন্তু কিভাবে, সেটা দেখা যাক।

দুই অঙ্কে যথাক্রমে চারটি ও পাঁচটি দৃশ্যে বিনাস্ত সাজানো বাগান নাটকটির অভিকেন্দ্র ১২ বিঘা ১৩ ছটাক আয়তনের একটি বাগান। যে বাগানের মালিক ৯৫ বছরের অশক্ত বৃদ্ধ বাঞ্ছারাম কাপালি। জমিদার হুকড়ি দত্ত অনেক চেষ্টা করেও বাগান হাতে পাবে নি, মৃত্যুর পর তার অতৃপ্ত আত্মা ভূত হয়ে ঘটি গাড়ে বাঞ্ছারামের বাগানে। বাবার অসম্পূর্ণ কাজ সম্পূর্ণ করার দায়িত্ব এসে বর্তায় হুকড়ির পুত্র জ্যোতদার নকড়ি দত্তের উপর। নকড়ি চায় যেন তেন প্রকারে বাঞ্ছার বাগানের মালিকানা পেতে। এদিকে বাঞ্ছার নাতি গুপিও বাগান বিক্রি করে শেলুন কিংবা ভাটিখানার বিজনেস করতে চায়। অথচ বাঞ্ছা কোনোভাবেই তার প্রাণের থেকেও প্রিয় বাগান হাতছাড়া করতে চায় না। বয়সের ভারে নৃজ্ব অশক্ত মুমূর্ষু বাঞ্ছার পক্ষে বড্ডো কঠিন হয়ে ওঠে এই লড়াই। এমতাবস্থায় নকড়ি এক অভিনব চুক্তি করে ফেলে বাঞ্ছার সাথে। চুক্তি অনুযায়ী বাঞ্ছা যতদিন জীবিত থাকবে, ততদিন প্রতি মাসে বাঞ্ছাকে ২০০ টাকা করে মাসোহারা দেবে নকড়ি দত্ত, বিনিময়ে বাঞ্ছার মৃত্যুর পর বাগানের স্বত্ব পাবে নকড়ি দত্ত। বাঞ্ছার জীবকালে তার বাগানের দিকে নকড়ি ফিরেও তাকাবে না। নাটকের প্রথম অঙ্কের প্রথম দৃশ্যে এই ঘটনাগুলি ঘটে যায়। এর পর থেকে নাট্যঘটনা অন্যদিকে মোড় নেয়। গুপি তার নববিবাহিত বউ পদ্মকে নিয়ে বাঞ্ছার ঘরে উঠলে জনতে পারে নকড়ির সাথে এই অদ্ভুতচুক্তির কথা এবং উপলব্ধি করে তাদের আশ্রয়ের নিশ্চিন্তির জন্য বাঞ্ছাকে বাঁচিয়ে রাখা কতটা জরুরি। গুপি ও পদ্মর সাথে যোগ দেয় একটি চোর, যে বাঞ্ছার বাগানের মাল নিশ্চিন্তে চুরি করে সংসার চালাতো। নকড়ি স্বাভাবিক ভাবেই ভেবেছিল, অশীতিপর মুমূর্ষু বাঞ্ছা দু-তিন মাসের বেশি বাঁচবে না, কিন্তু সবাইকে অবাক করে দিয়ে নকড়ির ২০০ টাকা মাসোহারা আর পদ্মর সেবা যত্নে মাটির সাথে ঘসটে ঘসটে চলা অশক্ত বাঞ্ছা উঠে দাঁড়ায়। বাঞ্ছা এতটাই সুস্থ হয়ে ওঠে যে, গাছ বোনা, কোদাল চালানোর মতো কাজ করতেও সে সক্ষম হয়ে ওঠে। এমনকি নকড়ির টাকায় সিন্ধের চাদর পরে বাঞ্ছা তার বাড়িতেই প্রয়াত হুকড়ি দত্তের রূপার গড়গড়া কিনতে যায়। বাঞ্ছার মৃত্যুর কোনো সম্ভাবনা না দেখে নকড়ি তন্ত্র-মন্ত্র, গণহংকার, যজ্ঞ, কোনো চেপ্টাই বা কি রাখে না, তবুও বাঞ্ছা মরে না। দিনে দিনে বাঞ্ছা যত সুস্থ হয়, সেই দুশ্চিন্তায় নকড়ির শারীরিক অবস্থার ততো অবনতি হয়, এমনকি একটা মাইন্ড স্ট্রোকও হয়ে যায় নকড়ির। এহেন পরিস্থিতিতে নকড়ি বাঞ্ছার হাতে ফলিডলের শিশি তুলে দিয়ে তাকে আত্মহত্যা করতে প্ররোচিত করে, বাঞ্ছাও রাজি হয়, কেননা নকড়ির টাকায় এতোদিন বেঁচে থাকার জন্য একটা

অপরাধবোধেও সে নাকি ক্ষত বিক্ষত হিচ্ছিল। তবে কিছু শর্তের বিনিময়ে। পরদিন ভোর না হতেই নকড়ির লোকজন শবহনের সরঞ্জাম নিয়ে বাঞ্জুর দাওয়ায় উপস্থিত হলে জীবিত বাঞ্জা জানায় তার নতির সন্তান হয়েছে, সে নিজে নাড়ি কেটে তাকে ধরায় এনেছে, সেই সদ্যোজাতকে ফেলে তার পক্ষে মরা সম্ভব নয়। বাঞ্জুর এই কথায় শক পেয়ে নকড়ির হৃদস্পন্দন শুক্ন হয়, যে খাঁট বাঞ্জুর মৃতদেহ বহনের জন্য আনা হয়েছিল, তা বহন করে নকড়ির মৃতদেহ, আর এখানেই তৈরি হয় নাট্য ঘটনার প্যারাদম্ব।

এই প্রায় অসম্ভব ঘটনাগুলি নাট্যকার এতোটাই সরস ভাবে উপস্থাপন করেছেন যে পাঠক দর্শকের মনে এর বিশ্বাসযোগ্যতা নিয়ে বিন্দুমাত্র সন্দেহ জাগে না। আমরা জানি ১৯৫২ সনের পর ভারতে সরকারী ভাবে জমিদারী ব্যবস্থার বিলোপ এবং ১৯৬৮ সনে জমিদারদের পেনশন বন্ধ হলেও গ্রামীণ জীবনে এই শোষণ বন্ধ হয় নি। জমিদার রূপান্তরিত হয়ে হয় জোতদার। সাজানো বাগান নাটকেও ছকড়ি দণ্ডকে জমিদার রূপে দেখানো হলেও নকড়িকে জোতদার হিসাবেই উপস্থাপন করা হয়েছে। নকড়ি নিজেই বলেছে—

“আমার বাবা তো ছিল জমিদার! আর জমিদার মানেই তো বুন্দো ওলা!” (প্রথম অঙ্ক, প্রথম দৃশ্য)

নকড়ির ছেলে হৌৎকার সংলাপে জমিদারী থেকে জোতদারীর পরিবর্তনের দিকটি আরও স্পষ্ট হয়ে উঠেছে—

“সারাক্ষণ এর জমি, ওর পুকুর, তার ভেড়ি...তোমার ও লোকটা (নকড়ি) একটা ভাস্পায়ার!” কিংবা “জানি জানি। ছাকড়া দণ্ড লাঠি ঘোরাতে... আর নকড়ো দণ্ড পাঁচ ঘোরাচ্ছে! ... আজকাল সব জোতদারের ছেলেরাই ফিলিমে টাকা চলছে!” (প্রথম অঙ্ক, পঞ্চম দৃশ্য)

মৃত ছকড়ির অতৃপ্ত প্রেতাত্মা ভূত হয়ে যুরে বেড়ায় বাঞ্জুর বাগানে, চোখে তার অসীম লালসা— “ওইতো ওইতো... পেকেছে! পেকেছে! ... কী পেকেছে! (কলার খোসা কুড়িয়ে নিয়ে) ও বাঁবা ও বাঁবা - কী চমৎকার- কী চমৎকার মন্ডোমান কঁলা! বাঁই... বাঁই... দৌঁধিগে... আরও কী পাঁকলো শুঁকিগে...” (প্রথম অঙ্ক, প্রথম দৃশ্য)

পরের কষ্টার্জিত ফলের প্রতি এই লালসা সঞ্চারিত হয় নকড়ির মধ্যেও। শোষক শ্রেণীর এই কদম্ব লোভ প্রবহমান। ছকড়ির প্রেতাত্মার প্রতি বাঞ্জুর উক্তি এদিক থেকে অত্যন্ত তাৎপর্যময় হয়ে ওঠে— “ওই বাগানটা করার পর থেকেই এটো ভূত আমার পেছনে লেগেছে! এটো কালো অপছায়া আমার লতাপাতা আমার ফুলফুলুরি ঘিরে ধরেছে! হই শালা কতো তাড়াই—ছায়াটা সরে না! যুগ যুগ চলে যাবে... ওই অপদেবতা পিথিথিরি যেখানে যতো ফসল... সব গেরাস করবে বলে বসে থাকবে!... কিছুরে ওরে কাটানো

যাবে নারে!” (দ্বিতীয় অঙ্ক, দ্বিতীয় দৃশ্য)

নাটকটি লেখা হয়েছিল ১৯৭৭ সনে, গ্রন্থাকারে প্রকাশ ১৩৮৫ বঙ্গাব্দ (১৯৭৮ খ্রিঃ), গ্রাম দিয়ে শহর ঘেরার স্বপ্নে গড়া নকশাল আন্দোলন সদ্য অতীত। এরকম একটি সময়ে একটি অর্শীত্বপূর্ণ লোলচর্ম বৃদ্ধ কতো অনায়াসেই হারিয়ে দিল জোতদারকে, অথচ একটুও অবিশ্বাস্য ঠেকল না আমাদের কাছে। বড্ডো বিশ্বাসযোগ্য হয়ে উঠল এরিস্টটলের কথা— “*Art is more phylosophical than history*” (Web.20.10.2021) শ্রেণী সংগ্রামের এই দিকটি নাটকে প্রকাশ পেলেও নাটকটি শ্লোগান বা পোস্টার নাটক হয় নি, হলে সাজানো বাগানের আবেদন এমন সর্বজনীন হতো না। নকড়ির বাড়িতে সশরীরে মাসোহারা চাইতে গিয়ে বাঞ্জুরাম যখন বলে— “চেরটাকাল আপুনাই লোকের দরজায় তাগাদায় গেছেন... নোকে দিয়েছে... আপুনারা নিয়েছেন। আজ আপুনারা দেখে... আমরা লেবো!” এখানে ‘আমরা’ এবং ‘আপুনারা’ শব্দের সচেতন ব্যবহারে নাট্যকারের শ্রেণীচেতনা স্পষ্ট রূপ পেলেও সংলাপটি এখানেই শেষ হলে তা শ্লোগানসর্বশ্ব হয়ে উঠত, বাঞ্জুর হয়ে ওঠার সাথে মানানসই হতো না, এরপরেই তাই বাঞ্জা যখন বলে— “ভাববেন না বাবু, ধরণী এ অন্যায় বৈশিদিনি সুইবে না! মরণের ঘন্টা শুনতে পাছি! আর এটো মাস... এটো মাস দ্যান কত্তা!”। তখন এই শ্লোগানের পাশাপাশি ভিন্ন মাত্রা একটা যোগ হয়। আর এভাবেই নাটকটি সর্বাঙ্গসুন্দর হয়ে ওঠে। প্রায় আড়াই হাজার বছর আগে অনুকরণ বৃত্তিকে শিল্পের প্রেরণা বলে মত প্রকাশ করেছেন এরিস্টটল। পরবর্তীকালে প্রাচ্য আলঙ্কারিকেরাও অনুরূপ মত প্রকাশ করেন। যদিও এরা কেউই অনুকরণ শব্দটিকে সংকীর্ণ অর্থে ব্যবহার করেন নি। মনোজ মিত্র ও অমর মিত্রের লেখা থেকে জানা যায়, তাদের শৈশব কাটে পূর্ববাংলার খুলনা জেলার সাতক্ষীরা মহকুমার ধুলিহর গ্রামে। যেখানে নাটকের বাঞ্জুরামের মতই একজন অর্শীত্বপূর্ণ বৃদ্ধ কৃষক ছিলেন, যার ছিল একটি বাগান। এমনকি সেই বৃদ্ধের নামও ছিল বাঞ্জুরাম। এই বাঞ্জুরামের পাশাপাশি ছোটবেলায় অর্জিত গ্রামবাংলায় ভূত ও চোরের অভিজ্ঞতাও সাজানো বাগান নির্মাণে রসদ যুগিয়েছে। মনোজ মিত্র লিখেছেন—

“গাঁয়ের একটা বড় বাগান ঘিরে ভূতপ্রেতের গঞ্জোগাছা বলাবলি হতো। শৈশবে ঠাকুরমার মুখে সে সব গল্প শুনতাম। দিনের বেলা সে বাগানে আমার ঢুকতামও না। একজন বুড়ো মানুষ, সাদা ফকফক, সে বাগানে চালা বেঁধে থাকত। হাঁটতে পারত না। মাটিতে বসে বসে চলত। তার নাম ছিল বাঞ্জুরাম। গাছপালাকে সে বড় আদর যত্ন করত।” (মিত্র, মনোজ : ০০০০, পৃ. ২৪)

নাট্যকারের স্মৃতিচারণে উঠে এসেছে শৈশবে দেখা চোরের কথা, যে চোরের আগমন টের পেয়ে গেরস্থ বাঁখালো গলায় “কোন মুখপোড়া গেরস্থর সর্বনাশ করতে

চুকলি রে!” বলে চিৎকার করে পরদিন পের্টপুরে খাওয়ানোর নেমস্তম্ব করে বাকি রাত নিশ্চিন্তে নাক ডাকায় এবং চোরও ভদ্রলোকের মতো চোরাই মাল ফেলেরেখে পরদিন নেমস্তম্ব রক্ষা করতে আসে আবলীলায়। এমনকি পূর্বরাতের নেমস্তম্বের কথা গেরস্থ ভুলে গেলেও চোর রীতিমতো গর্জে ওঠে “তা বললে চলবে কেন চাচি? কাল রাতে তুমি আমায় নিজমুখে নেমস্তম্ব করেছে। নাতির ছুর শুনে হাতের মাল ফেলে রেখে গেছি এখন শুনব কেন?” অতঃপর

“সেই আমার প্রথম চোর দেখা। চোর পেটপুরে খেল, ধামায় ধানচাল বেঁধেছেঁদে নিল, এবং বাড়িসুদ্ধ সবাইকে আল্লাদিত করে জারির গান গাইতে গাইতে বিদায় নিল। চোর আর গৃহস্থ — নদীনালা জলজঙ্গলে ঘেরা সেই গাঁ-খানিতে যে যার মতো ছিল, ছোটবেলায় দেখেছি কারও জন্যে কারও কোনো টেনশন ছিল না। ...সাজানো বাগানের ভূত চোর আর বাঞ্ছুরাম — তিনজনকেই সংগ্রহ করেছেছি ওপারে ছেড়ে আসা আমাদের সেই গ্রাম থেকে।” (মিত্র, মনোজ : ০০০০, পৃ. ২৫)

সাজানো বাগানের চোর নকড়ির সাথে চুক্তি করার জন্য বাঞ্ছুর প্রতি ক্ষোভ প্রকাশ করে এবং বেশ জোরের সাথেই বাগানের ওপর তার স্বহৃদ দাবি করে, কেননা জন্মাবধি সে ঐ বাগানে চুরি করে আসছে — “নকড়োর হাতে চলে গেলে, কাঁটাতারের বেড়া খাটাবে... মালি বসাবে। চৌকিদার বসাবে! বড়োলোকের মাল গেঁড়ানো আমার মতো গেঁড়ে চোরের কন্ঠো? (বাঞ্ছাকে) কেন লিখে দিলে? দিলে যদি আমার সাথে কনসাল করলে না কেন? ... ও বাগানে আমারও ‘নাইট’ রয়েছে না? (পদ্মকে) আচ্ছা আপুনি বলো বৌমা— যে বাড়িতে ভাড়াটে বাস করে, সে বাড়ি কি বোচা যায়?” (প্রথম অঙ্ক, চতুর্থ দৃশ্য)

অমর মিত্র লিখেছেন—

“তখন গাঁ-গঞ্জে ভূতদের বসবাস ছিল নিরুপদ্রব। ঠাকুরমার সঙ্গে ভূতদের কথা হত, বাগড়াবাঁটিও হত।” (মিত্র, অমর : ০০০০, পৃ. ২৯)

বাঞ্ছাও ভূতকে রীতিমতো শাসায়— “ওঝা ডেকে তোমারে সোজা করে দেবো। বাঞ্ছাৎ! আমার নেবুগাছে চড়ে পৌঁদপাকামি হচ্ছে!” (প্রথম অঙ্ক, প্রথম দৃশ্য)

সাজানো বাগানের ভূত বিদুমাত্র ভীতির উদ্বেক করে না, বরং এই ভূতকে দেখে আমাদের কিছুটা করুণাই হয়। জমিদার ছকড়ির প্রেতাত্মা নাটকে সূত্রধরের ভূমিকা পালন করেছে। বাঞ্ছুরামের বাগান নিয়ে টানাপোড়েনের পূর্বইতিহাস ছকড়ির সংলাপ থেকেই জানা যায়। নাটকের শুরুতেই নেপথ্যে ছকড়ির অশরীরী আত্মা আমড়াগাছের ডাল ভেঙে পড়ে যায়, যার ফলে তার কোমর ভাঙে। ভূতের কোমরভাঙার মতো অদ্ভুত সংবাদ পরিবেশন করে নাটকের দুটো উদ্দেশ্য সাধন করেছেন — এক, হাস্যরসের সৃষ্টি

এবং দুই, ভূত যে এই নাটকে খুব ভয়ঙ্কর কোনো উপাদান নয়, বরং মানুষের মতোই অসহায়, তার ইঙ্গিতও দিতে পেরেছেন।

সাহিত্য সমাজের দর্পণ, এই আগুবালা আমাদের করুণ। সাজানো বাগানের চরিত্রগুলিও নাট্যকারের শৈশব স্মৃতি থেকে উঠে আসা। মনোজ মিত্রের বাস্তবে দেখা বাঞ্ছুরাম কল্পনার মিশেলে হয়ে পড়েছে এক আশ্চর্য চরিত্র। সাধারণ নিয়মে জীবনের বাস্তবতা পরিবর্তিত হয় সাহিত্যের বাস্তবতায়। কিন্তু বাঞ্ছুরামের ক্ষেত্রে ঘটেছে উল্টোটা, নাটক ও চিত্রপরিচালক তপন সিংহের বাঞ্ছুরামের বাগান’ চলচ্চিত্রের হাত ধরে বিপুল জনপ্রিয় বাঞ্ছুরাম হয়ে পড়েছে কিংবদন্তী চরিত্র। শিল্প কেবল সমাজের দর্পণই নয়, শিল্পীর ইচ্ছাপূরণেরও হাতিয়ার। সমাজে যৌতা হয় না অথচ হওয়া উচিত ছিল, শিল্পী তার শিল্পের মাধ্যমে সেটা ঘটিয়ে দিতে পারেন, মনোজ মিত্রের বাঞ্ছুরাম কি তেমনই একটি চরিত্র নয়!

সাজানো বাগান নাটকটির প্রেক্ষাপট সামন্ততন্ত্র থেকে ধনতন্ত্রে প্রবেশের সন্ধিক্ষণের একটি গ্রাম। এর প্রমাণ পাওয়া যায় গুপি, হেঁৎকা, হেঁৎকার পেশা নির্বাচনে এবং অসংখ্য ইংরাজি শব্দের অশুদ্ধ উচ্চারণের মধ্য দিয়ে। গুপি চায় বাগান বেচে সেতুন, দর্জির দোকান কিংবা ভাটিখানার ‘বিজনেস’ করতে। হেঁৎকা সিনেমার প্রোডিউসার হতে চায়। অথচ এদের কারোরই এই পেশা নির্বাচনের পেছনে কোনো পূর্বঅভিজ্ঞতা নেই। সামন্ততন্ত্র থেকে ধনতন্ত্রে পুঁজির বিনিয়োগের সন্ধিক্ষণে অনেকসময় বিকৃতির সৃষ্টি হয়, গুপি ও হেঁৎকার পেশা নির্বাচন যেন তারই ইঙ্গিত। কেঁৎকা চায় যুবপাটি খুলে রাজনৈতিক ক্ষমতা হাতে। সন্তরের দশকে এই ধরনের যুবপাটি বেশ কিছু কলংকিত অধ্যায় তৈরি করেছিল। এই পাশাপাশি অসংখ্য ইংরাজি শব্দের অশুদ্ধ ব্যবহার একদিকে ক্যারিকেচারের মধ্যদিয়ে হাস্যরসের সৃষ্টি করেছে, আবার গ্রামীণ সামন্তসমাজও কিভাবে ধীরে ধীরে পরিবর্তিত হয়ে যাচ্ছে তারও পরিচয় দিয়েছে।

সাজানো বাগান নাটকের চরিত্রগুলির মনস্তত্ত্ব ও সামাজিক অবস্থান অত্যন্ত স্পষ্ট। আদ্যন্ত কেঁতুকে মোড়া নাটকটির প্রতিটি চরিত্রই তাদের শ্রেণীচারিত্রের প্রতিনিধিত্ব করেছে। জমিদার ছকড়ি ভূত হয়েও পরের ধনের প্রতি লোভ ছাড়তে পারে নি। জোতদার নকড়ির মধ্যেও এই লোভ প্রবাহমান থেকেছে। স্বপ্ন পরিসরে পুরোহিতও তার শ্রেণী চরিত্র অনুযায়ী উপস্থিত হয়েছে। যে অনায়াসে বলতে পারে “বড্ড মিনিমাম আরোজন।” গণহৎকারও তার শ্রেণীচারিত্র থেকেই বলে— “কী আশ্চর্য! যে বাড়িতে যাই... আয় বেশি বললে সবাই খুশি হয়— আমি তো তাই বানিয়ে বানিয়ে বলি।” আর বাঞ্ছুরাম, যে মরেও মরে না, তার সংলাপ, কখনো আপাত অলীল শব্দ প্রয়োগ, জীবনের প্রতি গভীর অনুরাগ - জীবনরস রসিক কৃবিজীবী বঙালির যথার্থ প্রতিনিধিত্ব করেছে। যে

বাঙালি ভূতকেও গালি দিতে ছাড়ে না আবার চোর তাকে খাওয়ার জন্য মুর্গির ডিম দিলে বলে—“এক মুরগির ডিম চুরি করে আরেক মুরগিরে খাওয়াচ্ছে!” বাঙালিকে গুপি পদ্ম ও চোর তিনমাস বেঁচে থাকার জন্য অনুরোধ করলে বাঙালা জানায়—
 “বাঙালা : একটু নাভের আশায় নোকটা মাসকিঞ্জির ফিকির করেছে। এরপর আমি যদি ছ-মাস একবছর বেঁচে যাই তো তার নোকসান হবে না? না, না, আমার পক্ষে বাঁচাটা, তার পক্ষে ঘোরতর অলেখ্য হবে।...”

চোর : তিনটে তো মাজর মাস! ওরাও এটু গুছিয়ে নিতে পারে, আমিও এটু গোঁড়িয়ে নিতে পারি!

বাঙালা : দূর শালা! তুমি আমার মাল গেঁড়বা বলে আমারেই বাঁচিয়ে রাখবা! যা শালা, আজই মরব! ওই দ্যাখ্ আমি শেষ গুজিয়া খাচ্ছিলাম! ওই দ্যাখ্ গাছে দড়ি খাটানো রয়েছে! গলায় দেবো কি শালা মরবো! এই চললাম মরতে!” (প্রথম অঙ্ক, চতুর্থ দৃশ্য)

নকড়ির সঙ্গে বাঙালির আত্মহত্যার চুক্তি অংশটিতে এই রসবোধ চূড়ান্ত রূপ পেয়েছে। ‘ছুইছাইড’ নিয়েও যে চুক্তি করা যায়, কিছু শূরের বিনিময়ে যে আত্মহত্যার মতো চরম সিদ্ধান্ত নেওয়া যায়, সাজানো বাগানে তা বিন্দুমাত্র অবিশ্বাস্য ঠেকে না, বরং সবকিছু ছাপিয়ে বড়ো হয়ে ওঠে জীবনের চরমতম ও নিষ্ঠুরতম মুহূর্তেও বাঙালির জীবন-বস গ্রহণের ক্ষমতা।

নাটকের প্রথম দৃশ্যে নকড়ির সাথে মাসোহারার চুক্তি হবার পর দৃশ্যের শেষে বাঙালির সংলাপ — “বাঁচবো... আমি বাঁচবো...” এবং এর সাথে নকড়ি-মোক্তার ও প্রেতাত্মার সন্মিলিত শ্লোথাক হাঙ্গামা একটি অদ্ভুত আয়রনির সৃষ্টি করেছে। এই চুক্তির পর অভাবনীয়ভাবে বাঙালির শরীরিক অবস্থার ক্রমোন্নতি হয়েছে। নাটকের শুরুতে যে অশক্ত বাঙালা মাটির সাথে ঘষটে ঘষটে চলতো, নাটকের শেষ দৃশ্যে সেই বাঙালাই সোজা হয়ে দাঁড়িয়েছে। বাঙালির এই যে উন্নতি, এটা কি কেবল মাসে মাসে নকড়ির দেওয়া ২০০ টাকায় পুষ্টির খাদ্য গ্রহণের জন্য সম্ভব হয়েছে! আমাদের বোধে তা নয়। পুষ্টির খাদ্য, পদ্মর যত্ন এবং তার থেকেও বড়ো ব্যাপার, একা বাঙালা এখন আর একা নেই। পদ্ম, পাল্টে যাওয়া গুপি, চোর—এদের সকলের সাথেই বাঙালা আত্মীয়তা অনুভব করেছে। মানুষের সাথে মিলন, মানুষের ভালোবাসা মানুষকে বেঁচে থাকার জন্য যে জীবনরস যোগায়; বাঙালির ক্ষেত্রেও এমনটাই ঘটেছে। এই একই প্রক্রিয়ায় নাটকের অন্তিম দৃশ্যে বাঙালা অকস্মেট জানাতে পেরেছে সে মরতে পারবে না, কেননা সদ্যোজাত যে শিশুকে নাড়ি কেটে ধরায় এনেছে সে, তার সাথে আসলে নাড়ির বন্ধনে জড়িয়ে পড়েছে বাঙালির। বাঙালির শেষ সংলাপে তাই অনন্ত অসীম জীবনের ব্যঞ্জনা ফুটে ওঠে—

“এটা কথা বলি কত্তা, আমি মরতি পারব না। বাচ্চাটার পরে বড্ড মায়া পড়ে গেছে। আমি ওরে নাড়ি কেটে ধরায় এনেছি, ওরে আমি ভাসিয়ে যাব কী করে? কত্তা, আমি আর মরতি পারব না। কত্তা, আপনার জ্বালা আমি বুঝি! কিন্তু আমি কী করব বলেন দিকি? কত্তাবার তো মরতি যাই! ওরা যে কিছুতে ছাড়ে না। আমার গাছপালা... নাতিপুত্রি পুঁইপোনা... সব মাথা ঝাঁকায়... বলে বুড়ো, তোমা হতে আমরা সব হয়েছি... তুমি আমাদের নক্ষে করছো... তুমি চলে গেলে কার কাছে থাকব?” (দ্বিতীয় অঙ্ক, চতুর্থ দৃশ্য)

শরীরিক উন্নতির সাথে সাথে বাঙালির পার্থিব ভোগাকাঙ্ক্ষা বাড়ছিল বলেই সে মৃত জমিদার হকড়ির রূপার গড়গড়া কিনতে চেয়েছিল। প্রথম দিকে মাত্র একটা শাল গায়ে দেওয়ার লোভ থাকলেও এই বাঙালি শেষে ‘গড়গড়া ফাটায়ে ফুটতে’ চেয়েছে। একদিকে ক্রমবর্ধমান জীবনাসক্তি, অন্যদিকে বেঁচে থেকে নকড়ির টাকা খাওয়ার চক্ষুলাজা— বাঙালির মধ্যে একটা প্রচ্ছন্ন দ্বন্দ্বের সৃষ্টি করেছিল। ‘ছুইছাইড’ এর অদ্ভুত চুক্তি এই দ্বন্দ্ব নিরসনের একটা প্রয়াস ছিল বলে মনে হয়। কিন্তু মৃত্যু নয়, সব দ্বন্দ্ব সংশয়ের উর্ধ্বে উঠে শেষপর্যন্ত বাঙালা জীবনকেই বেছে নিয়েছে। আর তা সম্ভব হয়েছে নাটক-এর সদ্যোজাত সন্তানের জন্ম। যে বাগান বাঙালির থেকে হকড়ি-নকড়ি-গুপি কেউ কেঁড়ে নিতে পারে নি, সেই সাজানো বাগানই কতো অন্যায়সে বাঙালা তুলে দিতে পেরেছে নবজাতকের হাতে—

“কাঁদেনা কাঁদেনা... কতো পাখি আছে আমার বাগানে হাঁ হাঁ... ডালে ডালে কলকল করে ঘুরে বেড়ায়... হাঁ, হাঁ, কাল সকালে দেখো... কতো আমার বোল ধরেছে... মুক্তার দানার মতো মাটিতে চাদের বিছিয়ে থাকে... গুনগুন গুনগুন... কতো মৌমাছি ঝাঁকে ঝাঁকে গুনগুন করে... হাঁ হাঁ নাত পোহালে... দেখো, টাপুস টাপুস করে নাতের শিশির বারে পড়েছে... জলপাই-এর পাতা বেয়ে শিশির বারে বারে পড়েছে... হাঁ হাঁ... সব তোমারে দিয়ে যাবো... তোমার জনেই তো সাজিয়ে রেখেছি গো...!”

কবিতার মতো জীবন ঘনিষ্ঠ এই সংলাপে যে বাঙালির আমাদের সামনে উপস্থিত হয়, সে কেবল শ্রেণীদ্বন্দ্বের প্রতিনিধি নয়, হকড়ি-নকড়িকে হারিয়ে “এ বিশ্বকে এ শিশুর বাসযোগ্য করে যাবো আমি / নবজাতকের কাছে এ আমার দৃঢ় অঙ্গীকার” বলে ফুরিয়ে যাওয়া একটা চরিত্র নয়; জীবনদর্শনের অন্য প্রান্তে নিয়ে যায় আমাদের। নাটকটির শেষ দৃশ্য বিভিন্ন দিক দিয়ে তাৎপর্যময় হয়ে ওঠে। দৃশ্যটি মৃত্যুর পটভূমিকা দিয়ে শুরু হলেও শেষ হয় জন্মের মধ্যদিয়ে। ভোরের আলো গাছপালার ফাঁক দিয়ে বাঙালির মুখে এসে পড়ে, উদ্ভাসিত হয় লোলচর্ম বৃদ্ধের মুখ। এই মুখ শোষককে হারিয়ে দেওয়া মুখ, আবহমান কৃষিজীবী বাঙালির প্রকৃতিমুগ্ধতার মুখ, বাৎসল্যরসে মুগ্ধ মানবসভার

মুখ। এই সবকিছুকেই নাট্যকার মনোজ মিত্র এতোটাই নিপুণভাবে সাজিয়েছেন তাঁর ‘সাজানো বাগান’ এ যে এই নাটকের তাৎপর্য অনায়াসে প্রসারিত হয়ে যায় কাল থেকে কালান্তরে।

গ্রন্থপঞ্জি

আকর গ্রন্থ :

মিত্র, মনোজ : সাজানো বাগান, কলাভূৎ পাবলিশার্স, তৃতীয় কলাভূৎ সংস্করণ, কলকাতা, ২০১৫।

সহায়ক গ্রন্থ :

মিত্র, অমর : “বাঞ্ছারামের শিকড়বাকড়”। সাজানো বাগান এক সর্বজনীন বিশ্বজনীন

নাটক : সম্পাদনা : নৃপেন্দ্র সাহা, কোডেক্স, কলকাতা, ০০০০

মিত্র, মনোজ : “বাঞ্ছাকল্পতরু”। সাজানো বাগান এক সর্বজনীন বিশ্বজনীন নাটক :

তদেব।

মিত্র, মনোজ : বাঞ্ছারাম : থিয়েটারে সিনেমায়, মিত্র ও ঘোষ, কলকাতা, ২০০০।

মিত্র, মনোজ ও অমর মিত্র : ভাসিয়ে দিয়েছি কপোতাক্ষ জলে, দে'জ, কলকাতা,

২০১১।

web.20 Octobe 2021, Aristotle <<http://haaconline.org.in>

রক্তকরবীর নন্দিনী

সুদীপ বসাক

সহকারী অধ্যাপক, বাংলা বিভাগ,

বিজনী মহাবিদ্যালয়, বিজনী

আধুনিক বাংলা সাহিত্যে বিংশ শতাব্দীর একজন অন্যতম প্রতিভার অধিকারী রবীন্দ্রনাথ ঠাকুর। বাংলা সাহিত্যের এক উজ্জ্বল নক্ষত্র। ছোট গল্পের উপক্রমণিকা তাঁরই হাত ধরে। এর পাশাপাশি একধারে কবি, ঔপন্যাসিক, নাট্যকার, প্রাবন্ধিক, দার্শনিক এবং একজন চিত্র শিল্পীও বটে। এককথায় বলতে গেলে বহুমুখী প্রতিভার অধিকারী ছিলেন রবীন্দ্রনাথ ঠাকুর। তাঁর সাহিত্যে জয়গা জুড়ে রয়েছে বিশ্বপ্রেম, মানবপ্রেমের পাশাপাশি প্রকৃতিপ্রেম, রোমান্টিকতা, ও সৌন্দর্যচেতনা, রবীন্দ্রনাথ ঠাকুরের এই বিপুল সাহিত্য সজ্ঞার মধ্যে একটি অন্যতম শাখা হচ্ছে নাটক। তাঁর শিল্প প্রতিভার স্বাক্ষর বহন করে এই রূপক সাংকেতিক নাটকগুলিও। এই পর্যায়ের একটি অন্যতম এবং বহু আলোচিত নাটক ‘রক্তকরবী’। নাটকের একটি অন্যতম প্রধান চরিত্র নন্দিনী। রক্তকরবীর আড়ালে রবীন্দ্রনাথ নারী চরিত্রের যে এক বিশেষ রূপকে প্রতিভাত করেছেন তা আমরা দেখার চেষ্টা করব।

সাংকেতিকতা রবীন্দ্রনাথ ঠাকুরের শিল্পী জীবনের এক প্রধান বৈশিষ্ট্য। তিনি ‘রক্তকরবী’ নাটকটিতে যে সমস্যাকে নাট্য দ্বন্দ্ব রূপে প্রতিষ্ঠিত করেছেন তা অতি বাস্তব। রবীন্দ্রনাথ ঠাকুর ১৩৩০ সালে গ্রীষ্মকালে শিলঙে বসবাস কালে ‘রক্তকরবী’ নাটকের পরিকল্পনা করেন, নাটকটি ‘ফক্ষপূরী’ নামে প্রথম প্রকাশ করেন। পাণ্ডুলিপি আকারেই পরে ‘ফক্ষপূরী’ বদলে ‘নন্দিনী’ নাম রাখেন। পরবর্তীতে ১৩৩১ সালের আশ্বিনের ‘প্রবাসী’তে ‘রক্তকরবী’ নামে প্রকাশিত হয়। ইরাজিতেও নাটকটির অনুবাদ করা হয়েছে ‘Red Oleanders’ নামে। নাটকের সূচনায় ‘ফক্ষপূরী’ ও ‘নন্দিনী’ নামকরণের কী উদ্দেশ্য ছিল সেই পরিস্থিতি সম্পর্কে জানিয়েছেন—

“এই নাট্যব্যাপার যেনগরকে আশ্রয় করিয়া আছে তাহার নাম যক্ষপুরী। এখানকার শমিকদল মাটির তলা হইতে সোনা তুলিবার কাজে নিযুক্ত। তখনকার রাজা অত্যন্ত জটিল আবারনের আড়ালে বাস করে।”

রবীন্দ্রনাথের ‘রক্তকরবী’ নাটকে দেখা যায় যক্ষপুরীর অমিকেরা ভূমিগর্ভ থেকে উঠিয়ে আনছে তাল তাল সোনা। শুধু কঠোর ও নিষ্ঠুর শ্রম দিয়ে প্রত্যেকের কেবল স্বর্ণ লাভের চেষ্টা। যেখানে নেই কোন প্রানের স্পন্দন। যেখান থেকে প্রেম হয়েছে নিবাসিত। যক্ষপুরীর মানুষেরা ভুলে গেছে যে সোনার চেয়ে প্রেম, আনন্দের দাম বেশি। প্রেমের মাধেই যে সকল জয়, সকল পূর্ণতা তা ভুলে গিয়ে শিকল বদ্ধ হয়েছে যক্ষপুরীর প্রতি প্রত্যেকে। কিন্তু এক সময় নন্দিনী এসে দোলায়িত করে যক্ষপুরীর নিষ্প্রাণ প্রাণীদের। প্রাণের বেগ এসে পড়ল যক্ষের উপর। মাটির তলা থেকে যে সম্পদ খুঁড়ে আনতে হয় নন্দিনী সে সম্পদ নয়। নন্দিনী আসলে প্রানের মূর্ত প্রতীক। তাই সে প্রেমের দ্বারা প্রতাপকে জয় করেছে।

নাটকে যক্ষপুরীর শমিকদল মাটির তলা থেকে সোনা তোলার কাজে নিযুক্ত। সেই অন্ধকারে শমিকদল অমানুষিক পরিশ্রম করে তাল তাল সোনা তোলে। কিন্তু নেই তারের জীবনে আনন্দ, নেই মুক্ত আকাশ, সবুজপৃথিবী। জলের আড়ালে আছে স্বয়ং যক্ষপুরীর মকররাজ। প্রবল ক্ষমতালালী, বিপুল ঐশ্বর্যের মালিক। নিজের চারপাশে যেন নিজেই জাল তৈরি করেছে। এত যক্ষের অধিপতি কিন্তু সেও বন্দী হয়ে পরেছেন যক্ষের হাতে। তাই প্রতিবাদ উঠলেই তাকে শেষ হতে হয়েছে অচিরেই রাজার হাতে। তাই নন্দিনীর মধ্যে আনন্দের উচ্ছলতা দেখে, যৌবনের প্রতিভূরঞ্জনের প্রতি নন্দিনীর গভীর বিশ্বাসী ও অনুরাগের কথা শুনে মকররাজ জলের আড়ালে ছুটফট করেন। শক্তির ভার নিজের অগোচরে কেমন করে নিজেকেই পিষে ফেলে তা রাজা বুঝতে পারছেন। তাই রাজা গভীর ভাবে ক্লান্ত হয়ে বলেছেন—

“আমি প্রকাণ্ড মরুভূমি - তোমার মতো একটি ছোট্ট ঘাসের দিকে হাত বাড়িয়ে বলছি-আমি তপ্ত, আমি রিজ, আমি ক্লান্ত।”

যন্ত্রশোষিত নীরঞ্জ জীবনে নন্দিনী নামে রক্তকরবীর আগমনে যন্ত্রে যান্ত্রিক হয়ে যাওয়া মানুষগুলি মুক্তির সন্ধান পেয়েছে। স্বয়ং রাজা শেষ পর্যন্ত বেরিয়ে আসতে চেয়েছেন। নাটকে কিশোর চরিত্রের মধ্যে রবীন্দ্রনাথ দেখিয়েছেন যে যক্ষপুরীর সে একজন শমিক হলেও পুরোপুরি শমিক হয়ে ওঠেনি। এখনো পর্যন্ত সে প্রেম-রীতি সৌন্দর্য লাভ্যক ভুলতে পারেনি। তাই সে ভালোবাসা পেতে চায়। আনন্দময়ী নন্দিনীকে রক্তকরবী ফুল দিতে চায়। নন্দিনীকে রাজ রক্তকরবী ফুল দেয়। অন্যদিকে কিন্তু যে গান গেয়ে নন্দিনীর অন্তরকে স্পর্শ করেছে। বিশ্বর জীবনে যা কিছু দুঃখ কষ্ট ছিল

নন্দিনীর আগমনে তা চীর সবুজ হয়ে উঠেছে। জীবন দুঃখ পেলেও রাজার প্রচণ্ড আকর্ষনে প্রলোভন কিন্তু সুন্দরকে পরিহার করে রাজার জালে বাঁধা পড়েনি। তাই কিন্তু নন্দিনীকে বলেছে ‘দুঃখ জাগনিয়া’, এই নন্দিনীই বিশ্বর ‘দুঃখ জাগনিয়া’ নন্দিনীর আগমনে কিন্তু গায় বাঁচার নতুন মন্ত্র। যক্ষপুরীর বিরুদ্ধে মাথা তুলে দাঁড়ায় তাই গান গেয়ে বলে উঠে—

“তোমায় গান শোনাব তাই তো আমায় জাগিয়ে রাখ

ওগো ঘুম-ভাগনিয়া!

বুকে চমক দিয়ে তাই তো ডাক,

ওগো দুখ-জাগনিয়া!”

রবীন্দ্রনাথের এই নাটকটিতে এভাবেই রক্তকরবীর রক্তিমার সাহায্যে প্রেম ও প্রাণের জয় ঘোষিত হয়েছে। প্রসঙ্গত অসিত কুমার বন্দ্যোপাধ্যায়ের মন্তব্য—

“রবীন্দ্রনাথের ‘রক্তকরবী’ এক অসাধারণ প্রতীক-নাটক, বিশ্বের যে কোনো একখানি শ্রেষ্ঠ প্রতীক-নাটকের সমকক্ষ। এতে তিনি আধুনিক সমস্যার আর একটি উৎকর্ষিত দিককে একটি অপরূপ প্রতীকতার মধ্যে দিয়ে ব্যক্ত করেছেন। এতে বর্তমান কারখানাঘরের মধ্যে রুদ্ধ্যাস মানবজীবন এবং লোভের ফলে মানুষের মরণকর্তাদের নিদারুণ স্বরূপ অদ্ভুদ প্রতীক ও রহস্যময় ব্যঞ্জনার দ্বারা আভাসে ব্যক্ত হয়েছে।”

আসলে রবীন্দ্রনাথের কাছে ফুল শুধু ফুল হয়েই থাকেনি। ফুল হয়ে উঠেছে বিশ্বদ্বন্দ্ব সৌন্দর্যের প্রতীক। রক্তকরবী প্রেমের এক ঘনীভূত রূপ। অনেক যন্ত্রণা পেরণ ও অবরোধ করেই ফুলের জন্ম। ঠিক যেভাবে নাটকে নন্দিনীর আবির্ভাব। চারিদিকের পীড়নের অন্তিমলগ্নে একাকার হয়ে গিয়েছে। সমস্ত জাল ছিন্ন করে সে প্রকৃতির আনন্দ যক্ষপুরীতে জাগিয়ে তুলতে সক্ষম হয়েছে। তাই সে বলে—

“আমাদের ওই সুড়ঙ্গের অন্ধকার ডালাটা খুলে ফেলে তার মধ্যে আলো ঢেলে দিতে ইচ্ছে করে।”

এভাবেই নন্দিনী যক্ষপুরীর প্রাণের রস শুকিয়ে যাওয়া মানুষগুলির মধ্যে প্রানের সঞ্চার করে এবং সকলেই প্রকৃতির খোলা মাঠে মেলে দিয়েছে নতুন প্রাণের আনন্দ নিয়ে। সমস্ত নাটক জুড়েই রয়েছে নন্দিনী চরিত্রটি।

নাটকে রবীন্দ্রনাথ ঠাকুর রাস্ত্রব্যবস্থার একটি বিশেষ দিকের প্রতিও ইঙ্গিত করেছেন। যন্ত্রশক্তি এবং ধনতন্ত্র মানুষ এবং মাটি উভয়কেই যে পায়ান করে তুলছে। ফলত রাস্ত্রের সাথে রাস্ত্রের যে এক ভয়ঙ্কর সর্বনাশের বার্তা ঘনিয়ে আসছে পৃথিবীর বুকে সেদিকের প্রতি আলোকপাত করেছেন রবীন্দ্রনাথ ঠাকুর। মানুষ যে কতটা হিংস্র পশু হয়ে উঠতে পারে তার প্রতি বার্তা তিনি এখানে প্রেরণ করেছেন। প্রসঙ্গত ড. অজিত কুমার ঘোষের

মন্তব্য—“রবীন্দ্রনাথ অর্থবাদের বিরুদ্ধে বিরুদ্ধে বিদ্রোহ জানাইয়াছেন বাটে, কিন্তু তাই বলিয়া তিনি অর্থাৎ কেবল অনর্থ বলিয়াও ভাবেন নাই।”^{২২}

একথা স্বয়ং রবীন্দ্রনাথ ঠাকুরও জানিয়েছেন যে মানুষের প্রয়োজনে অর্থ, অর্থের প্রয়োজনে মানুষ নয়। শেষ পর্যন্ত নন্দিনী সকলের প্রাণের জাগরণ ঘটাতে সক্ষম হয়েছে। রঞ্জনের পিষে মারতে গিয়ে ভেঙে পড়ল শক্তিমান রাজাও। রঞ্জনের হাতের রক্তকরবী বিশ্বর মারফতে পৌঁছাল নন্দিনীর হাতে। সেই রক্তকরবী হাতে নিয়েই নন্দিনীর শেষ জয়যাত্রা। সকলেই বলে উঠেছে— ‘জয় নন্দিনীর জয়!’ এখানেই প্রাণের, আনন্দের, সকল বন্ধন ছিন্ন করে মুক্তির জয়গান ঘোষিত হয়েছে।

সুতরাং পরিশেষে বলা যায় যে নাটকের সমাপ্তিতে যক্ষপুরীর অচলায়তন ভাঙার অভিযানে নন্দিনী সর্বঙ্গে ভূমিকা নেয়। অহংকারের বন্দি জীবন থেকে মুক্তির স্বাদ দেখাতে সক্ষম হয়েছে নন্দিনী। যদিও নাটকের পরিণতিতে নন্দিনীর মৃত্যুর আতাস রয়েছে কিন্তু আসলে তার মৃত্যু নেই ভিন্ন ব্যঞ্জনায় সেই কথা ব্যক্ত হয়েছে। প্রলয়ের ভেতর দিয়েই যে চিরন্তন সত্য প্রতিষ্ঠা লাভ করে তা নাটকটিতে সুন্দরভাবে ব্যক্ত হয়েছে। এখানেই নাটকটির সাধকতা।

পাদটীকা :

১. বন্দ্যোপাধ্যায় অসিতকুমার : ‘বাংলা সাহিত্যের সম্পূর্ণ ইতিবৃত্ত’, পৃ-৪৩৮
২. ঘোষ ড. অজিত কুমার : ‘বাংলা নাটকের ইতিহাস’, পৃ-৩১০-১১

উল্লেখপঞ্জী :

১. ঠাকুর রবীন্দ্রনাথ-রক্তকরবী-(প্রবাসী পত্রে আশ্বিন ১৩৩১-গ্রন্থ প্রকাশ ১৩৩৩)
বিশ্বভারতী গ্রন্থন বিভাগ, কলকাতা ১৭
২. ঘোষ শঙ্খ-‘কালের মাত্রা ও রবীন্দ্র নাটক’ (প্রথম প্রকাশ ১৯৬৯)-দে’জ পাবলিশিং,
কলকাতা ৭০০০৭৩
৩. ঘোষ ড. অজিত কুমার : ‘বাংলা নাটকের ইতিহাস’, (প্রথম দে’জ সংস্করণ :
কলকাতা পুস্তক মেলা, জানুয়ারি ২০০৫, মাঘ ১৪১১) কলকাতা ৭০০০৭৩
৪. মুখোপাধ্যায় অরুণকুমার : ‘রবীন্দ্র-বিবেচনা’ (প্রথম প্রকাশ জুলাই ২০০৫, আশ্বিন
১৪১২) দে’জ পাবলিশিং, কলকাতা ৭০০০৭৩
৫. বন্দ্যোপাধ্যায় অসিতকুমার : ‘বাংলা সাহিত্যের সম্পূর্ণ ইতিবৃত্ত’, (প্রথম প্রকাশ
১৯৬৬) মতর্গ বুক এজেন্সী প্রাইভেট লিমিটেড, কলকাতা ৭০০০৭৩