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Nature and Use of Common Property Resources in India

Mr. S. R. Patil, Dr. Y. B. Mane

Department of Economics & Commerce,

Vivekanand College Kolhapur

(Empowered Autonomous)

Abstract:-

Common property resources are community's natural resource where every member has the right of access and usage with specified obligations, without anybody having property rights over them. CPRs provide fodder for the livestock and fuel for the households along with other minor forest products like fruits, nuts, fibre, medicinal plants etc. Common property resources play a very important role in the development of rural area under their jurisdiction. They help in improving standard of living of the people. The dependence on CPRs is the greatest among the poor because they do not possess income generating private property resources or other valuable private assets. The availability of common property land resources per households was 0.31 hectore in India. In India per capita common property land resources was 0.06 hectore. In five years reduction in CPR land was 19 hectore per 1000 hectore. 20% households reporting grazing of livestock on CPR land. 13% households collecting fodder for livestock from CPR land. 2% households cultivating fodder on CPR land. In case of CPR Water resources it was found that in India 23% households use common property water resources for irrigation, 30% households use common property water resources for livestock rearing, 2.8% households use common property water resources for household enterprise. In respect of forest CPR it was observed that 45% households reporting collection of fuelwood from CPR forest resources in India. Share of fuelwood in value of collection from CPRs was 58%. Percentage of households reporting use of fuelwood was 52%. Average quantity of fuelwood collected from CPRs during 365 days was 500 kg.

Key Words: Common Property Resources (CPR), Land, Water, Forest, livestock etc.

1. Introduction:-

CPRs can be defined as a community's natural resource, where every member has the right of access and usage with specified obligations, without anybody having property rights over them. CPRs provide fodder for the livestock and fuel for the households along with other minor forest products like fruits, nuts, fibre, medicinal plants, etc. In rural areas, such land is of particular relevance for the livelihood of the landless and marginal farmers and other weaker sections since many of them depend on income from their livestock due to the fact that they have limited access to land. Common property resources play a very important role in the development of area under their jurisdiction. They help in improving standard of living of the people. More importantly common property resources in the rural areas are a means of rural development. The rural populace of India had unrestricted access to a significant portion of the nation's natural resources prior to British rule. The local communities possessed most of the power over these resources. The community management system gradually deteriorated as state control over these resources increased, leading to a significant decrease in the amount of CPRs accessible to the villages over years. It is widely held that CPRs

still play a significant role in the life and economy of the rural populace. In a populous and predominantly agrarian country like India with declining land-man ratio the people especially the poor are forced to engage themselves in a number of complementary activities like, cultivation, cattle grazing, fetching water, collecting firewood, producing simple marketable products, etc. The dependence on CPRs is the greatest among the poor because they do not possess income generating private property resources or other valuable private assets. Consequently, they depend on access to CPRs for fuel wood, crop wastes, cow dung, weeds, fodder, organic manure (dry leaves and forest litter), building materials, fruits and vegetables, herbs fiber, water for drinking and other domestic uses. Irrigation is collected from community tanks, ponds, lakes and rivers. CPRs also support a variety of income generating activities such as arts and crafts and dairy production.

2. Review of Literature:-

Mandal Ram Krishna (2014)¹“Use of common property resources in rural household of Arunachal Pradesh: A case study” The framework for rural livelihood analysis is gaining ground rapidly as a ‘new’ approach to rural poverty alleviation or reduction in low income economies. In rural areas of Arunachal Pradesh, livelihoods and its diversification has always been seen. Common property resources (CPRs) are regarded as an important resource base for the rural economy in many of the developing and underdeveloped countries till today because of their significant economic contributions to the sustenance of rural livelihood. Arunachal Pradesh is renowned for endemic biodiversity as the 18th Biodiversity hotspot. The communities have direct dependency on the forest resources for their day to day livelihood. It is widely accepted that CPRs still play an important role in the life and economy of the rural population of Arunachal Pradesh. The study reveals that CPRs played a very important role in the economy of the surveyed villages although the consumption value from community forest was higher for the non-poor households in absolute terms yet in relative terms, the poor households’ dependency on community forest was very important and crucial for their survival. Hence, there was urgent need to form sustainable management of CPRs, particularly the forests in order to avoid ‘the tragedy of commons’.

Kumar Naveen K. (2015)² “Governance and Management of Common Property Resources: An Analysis on Community Participation in Sustainable Village Development in India” Millions of people across rural India depend on and share the ‘common’ (community) natural resources like forest, wasteland, grazing land, water resources, etc., for their livelihoods, whereas developing such ‘common resources’ through collective action for the sustainable village development is a challenging task for the rural community. The study analyses the community participation of Hiware Bazar village of Maharashtra in governance and management of common property resources for sustainable village development. This study adopts both descriptive and analytical research methodologies to understand various developmental initiatives and its overall impact of the watershed-plus and other attenuating measures on the social and economic lives of the people in Hiware Bazar. The study uses both qualitative and quantitative data that are collected through primary and secondary sources. The study finds that community-driven common resources management had impacted on rural households through increased employment and income. The social and economic integration of the people in Hiware Bazar led to social, economic and environmental transformations for sustainable development of the village.

Ravi S. Singh and Ankita Singh (2015)³ “Women and Common Property Resources: A Case Study of Rural Awadh Tarai” Rural women and men share different tasks and responsibilities which results in different needs, priorities and concerns. Although these responsibilities vary across regions and cultures, but rural women often follow similar gender division of labour. In most of the cases, rural women have the responsibility for the collection of fuel-wood, food and fodder for animals for which they are heavily dependent on common property resources. Men seldom have responsibility for collecting and using natural resources for household use. Based on primary data generated through fieldwork, the present paper delves into role played by CPRs in the lives of rural tribal women of Awadh Tarai.

Ram Prakash (2019)⁴ “Management of Common Property Resources: A Pragmatic Model for Uttar Pradesh, India” Common Property Resources (CPRs) constitute important component of community assets in India and they benefit the livelihood of the rural population in many ways. At the national level, it is estimated that, since 1960, reductions in the area of CPRLs varying from 30 to 50 percent have been noticed in different states of the country. Over the period of time quantity and quality of CPRs has declined and depleted rapidly in Uttar Pradesh, India. Management of Common Property Resources has many social and economic implications for rural population. It has guaranteed the continuous supplies of natural resources that are essential for subsistence economy of rural people. It has constituted a mechanism of social control to protect common property resources. This research Paper analyses the importance of CPRs, depletion of these resources and more specifically attempt to suggest a pragmatic model of the management of CPRs for the state of U.P. that can be generalized for entire India.

Kannan A. and S. Sakthivel (2018)⁵ “Status and Significance of Common Property Land Resources (CPLRs) in Tamil Nadu: Evidences from Secondary Sources” The Common Property Land Resources (CPLRs) are the most important source of rural poor in the rural pockets of India. The rural population in general and the poor in particular depend largely on common property land resources for their sustenance. In the last few decades, the availability of such immense resources was degraded in both qualitatively and quantitatively across the regions in India. The study results revealed that the availability and accessibility of CPLRs has coming down slowly from year-by-year exception to the category of other than current fallow land in Tamil Nadu during 1998-99 to 2013-14. It is estimated that around 4.3 per cent of CPLRs increase were observed in the state during the study periods. In Tamil Nadu, it is accounted that 4.3 per cent of PPLRs were converted into CPLRs during the periods of 1998-99 to 2013-14. It is further accounted that the per capita availability of forest, CPLRs and private land has also observed that declining trend during the study periods.

3. Objectives of the Study:-

The main objective of study is to study the nature and use of common property resources in India and specific objectives of the present study are as follows-

1. To study the nature and use of common property land resources in India.
2. To study the nature and use of common property water resources in India.
3. To study the nature and use of common property forest resources in India.

4. Result and Discussion:-

4.1 Availability and Reduction in Common Property Land Resources in India:

Table 1
Availability of Common Property land resources in India

Sr. No	Item	Estimate
1.	Percentage of common property resources in total geographical area	15%
2.	Common property land resources per household	0.31 (ha)
3.	Common property land resources per capita	0.06 (ha)
4	Reduction in CPR land during last 5 years (per 1000 ha.)	19 (ha)

(Source: National Sample Survey Organisation)

The above table shows the availability and reduction in common property land resources in India. Percentage of common property land resources in total geographical area was 15% in India. Common property land resources per households was 0.31 hecter in India. In India per capita common property land resources was 0.06 hecter. In five years reduction in CPR land was 19 hecter per 1000 hecter.

4.2 Components of Common Property Land Resources in India:

Table 2
Components of Common Property Land Resources in India

Sr. No	Components of Common Property Land Resources	Percentage
1	Community Pastures and grazing land	23 %
2	Village Forest and woodlots	16 %
3	Other	61 %
4	Total	100%

(Source: National Sample Survey Organisation)

The above table shows the components of common property land resources in India. Out of total common property land resources available in India community pastures and grazing land was 23%, Village forest and woodlots was 16% other land was 61%.

4.3 Collection from Common Property Land Resources in India:

Table 3
Collection from Common Property Land Resources in India

Sr. No	Item	Estimate
1.	Households reporting collection of any materials from CPRs.	48 %
2.	Average Value of annual collections per household	Rs 693
3.	Ratio of average value of collection to average value of consumption expenditure.	3.02 %

(Source: National Sample Survey Organisation)

The above tale shows the collection from common property land resources in India. In India total 48% households reporting collection of any materials from the CPR land. Average value of annual collections was Rs. 963 per households. Ratio of average value of collection to average value of consumption expenditure was 30.02%.

4.4 Nature of use of Common Property Land Resources in India:

Table 4
Nature of use of Common Property Land Resources in India

Sr. No	Nature of Use of CPR Land	Percentage
1.	Households possessing livestock	56 %
2.	Households reporting grazing of livestock on CPR Land	20 %
3.	Households collecting fodder from CPR land	13 %
4.	Households cultivating fodder on CPR land	2 %
5.	Average quantity of fodder collected from CPR land during 365 days.	275 kg

(Source: National Sample Survey Organisation 54th Round Report)

The above table shows the nature of use of common property land resources in India. In India 56% households possessing the livestock. 20% households reporting grazing of livestock on CPR land. 13% households collecting fodder for livestock from CPR land. 2% households cultivating fodder on CPR land. In India average quantity of fodder collected from CPR land during 365 days was 275 kg.

4.5 Nature of use of Common Property Water Resources in India:

Table 5
Nature of use of Common Property Water Resources in India

Sr. No	Nature of Use of CPR Water	Percentage
1.	Households reporting use of common property water resources for-	
	i) Irrigation	23 %
	ii) Livestock Rearing	30 %
	iii) Household Enterprise	2.8 %
2.	Households Reporting Irrigation Using Common Property Water Resources Owned/ Managed by:	
	i) Village Panchayat	1.1 %
	ii) Community	0.8 %
	iii) Government	1.8 %
	iv) River / Govt. Canal etc.	10.3 %

(Source: National Sample Survey Organisation 54th Round Report)

The above table shows the nature and use of common property water resources in India. In India 23% households use common property water resources for irrigation, 30% households use common property water resources for livestock rearing, 2.8% households use common property water resources for household enterprise. The above table also shows the use of common property water resources owned and managed by various authorities. 1.1% households reporting use of common property water resources owned and managed by village panchayat for irrigation, 0.8% households reporting use of common property water resources owned and managed by community for irrigation, 1.8% households reporting use of common property water resources owned and managed by government for irrigation, 10.3% households reporting use of common property water resources owned and managed by river/government canal for irrigation.

4.6 Nature of use of Common Property Forest Resources in India:

Table 6
Nature of use of Common Property Forest Resources in India

Sr. No	Nature of Use of CPR Forest	Percentage
1.	Households reporting collection of fuelwood from CPRs.	45 %
2.	Share of fuelwood in value of collection from CPRs.	58 %
3.	Percentage of households reporting use of fuelwood	52 %
4.	Average quantity of fuelwood collected from CPRs during 365 days.	500 kg

(Source: National Sample Survey Organisation 54th Round Report)

The above table shows the nature of use of common property forest resources in India. 45% households reporting collection of fuelwood from CPR forest resources in India. Share of fuelwood in value of collection from CPRs was 58%. Percentage of households reporting use of fuelwood was 52%. Average quantity of fuelwood collected from CPRs during 365 days was 500 kg.

5. Conclusion:

Common property resources play a very important role in the rural development. It help in improving standard of living of the people. Common property resources in the rural areas are a means of rural development. The dependence on CPRs is the greatest among the poor because they do not possess income generating private property resources or other valuable private assets. CPRs provide fodder for the livestock and fuel for the households along with other minor forest products like fruits, nuts, fibre, medicinal plants, etc. In respect of CPR land resources it was observed that Percentage of common property land resources in total geographical area was 15% in India. Common property land resources per households was 0.31 hector in India. In India per capita common property land resources was 0.06 hector. In five years reduction in CPR land was 19 hector per 1000 hector. The study reveals that out of total common property land resources available in India community pastures and grazing land was 23%, Village forest and woodlots was 16% other land was 61%. In India total 48% households reporting collection of any materials from the CPR land. Average value of annual collections was Rs. 963 per households. Ratio of average value of collection to average value of consumption expenditure was 30.02%. In India 56% households possessing the livestock. 20% households reporting grazing of livestock on CPR land. 13% households collecting fodder for livestock from CPR land. 2% households cultivating fodder on CPR land. In India average quantity of fodder collected from CPR land during 365 days was 275 kg. In case of CPR Water resources it was found that in India 23% households use common property water resources for irrigation, 30% households use common property water resources for livestock rearing, 2.8% households use common property water resources for household enterprise. It was found that 1.1% households reporting use of common property water resources owned and managed by village panchayat for irrigation, 0.8% households reporting use of common property water resources owned and managed by community for irrigation, 1.8% households reporting use of common property water resources owned and managed by government for irrigation, 10.3% households reporting use of common property water resources owned and managed by

river/government canal for irrigation. In respect of forest CPR it was observed that 45% households reporting collection of fuelwood from CPR forest resources in India. Share of fuelwood in value of collection from CPRs was 58%. Percentage of households reporting use of fuelwood was 52%. Average quantity of fuelwood collected from CPRs during 365 days was 500 kg. From the overall analysis it was observed that Common Property Resources (CPRs) play significant role in the rural development so it was suggested to the government to protect and enhance the quality of common property resources in India.

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The Effect of Methanolic extract of Curry Leaves (*Murraya koenigii*) on Angiogenesis in Chick Embryo

T. C. Patil, G. K. Sontakke, S. R. Kumbhar, A. P. Mane

Department of Zoology, Vivekanand College Kolhapur

(Empowered Autonomous)

Abstract:

This Paper is about the effect of Methanolic extract of Curry Leaves on angiogenesis in chick embryos, Angiogenesis is the Process formation of new blood vessels from the earlier small blood vessels, the required numbers of eggs were collected from a backyard poultry farm located at Kerli village. The eggs were placed in an incubator for incubation as per experimental design. Curry leaves were collected from the local market of Kolhapur city. The stock solution was prepared in 1mg/ml concentration. To study the effect eggs were kept in two groups, the first group kept as a control group and the second group as an experimental group. The experimental group was injected with stock solution after 48 h of incubation of eggs. In the experimental group, the eggs were numbered as Group 1, Group 2, Group 3, etc. Egg of Group 1 was incubated up to 72 h. Egg of Group 2 was incubated up to 96 h and Egg group 3 was incubated up to 120 h. After the incubation control and experimental group eggs were observed and compared. It is observed in the experimental group that there was an insignificant reduction in the weight of the chick embryo at 72 h and 96 h after treatment with curry leaves extract as compared to the weight of the chick embryo in the control group. The curry leaves can have ability to reduce the angiogenesis in the chick embryo.

Key Words: Angiogenesis, curry leaves, *Murraya koenigii*, Chick embryo, Blood vessels

Introduction:

The mechanism of angiogenesis involves the splitting of existing blood vessels to form new blood vessels. The vessel wall extends into the lumen causing the single vessel to split into two vessels forming artery and vein bifurcations (Adair and Montani 2011).

Chick embryo chorioallantois membrane is the most popular model to study angiogenesis. Thus, the chorioallantois membrane (CAM) assay is well-established and widely as a model to examine angiogenesis and anti-angiogenesis effects.

Murraya koenigii (Curry leaves):

Murraya koenigii is a small spreading shrub that belongs to the family Rutaceae. It is commonly found in Himachal Pradesh and deciduous forest of the Indian and Malaysian peninsular (Ajay et al, 2011). *Murraya koenigii*, commonly known as curry leaf or kari patta in Indian dialects, belonging to Family Rutaceae which represent more than 150 genera and 1600 species (Satyvati et al, 1987).

Material and Method:

Eggs, Incubator, Curry leaves, Soxhlet Extractor, Beakers, Petri Dish, Watch Glass, Syringe, Methanol, Vaseline, Cotton Medical Tape. Dried curry leaves, Methanol (or other suitable solvent), Heating mantle or hot

plate/stirrer, Weighing scale, Glassware (beakers, flasks, etc.), Rotary evaporator or other concentration equipment, Analytical equipment for compound analysis (optional)

Plant Extraction: -

Collection of plant source (Curry leaves):

Curry leaves were collected from the local market of Kolhapur city. These were washed thoroughly in order to remove the dirt and dust. Then dry in shade so that it is maintaining medicinal qualities. The dried leaves were crushed with the help of mixer grinder. This powder of curry leaves was stored in airtight jar and used for further experiments.

Equipment.

Experimental design and introduction of dose:

The required numbers of eggs were collected from back yard of people located at Kerli Tal-Karveer, Kolhapur. After collection, healthy and almost same sized eggs of *Gallus domesticus* were selected by considering parameters. The colour of egg is light brown, shape is small and oval. The eggs were placed in incubator for incubation as per experimental design. The curry leaves were completely shadow dried and grinded and the powder was used to make extract using Soxhlet apparatus and injected to developing embryo in eggs which were incubated at 37°C for different exposure period.

Eggs were selected to start of experiment. For the present experiment two groups of eggs were prepared first group kept as control group and second group as an experiment group injected with curry leaves solution after 48 hours of incubation of eggs. The eggs were numbered as Group 1, Group 2, Group 3, etc. Egg of Group 1 was incubated up to 72 h. Egg of Group 2 was incubated up to 96 h and Egg group 3 was incubated up to 120 h. All eggs were kept in incubator which was sterilized by using 70% alcohol to maintain the aseptic condition and made it free from germ and microorganisms.

The incubator was pre- incubated to maintain 37°C temperature which is essential for the development of chick embryo. After 48 hour of incubation eggs were again sterilized with 70% alcohol under aseptic condition the eggs were treated with 0.3 ml of curry leaves extract solution. After injection eggs with developing embryo resealed with adhesive sterile tapes.

After observation of chick embryo body weight of embryo was taken, and comparison done between control group and experimental group

Observation of chick embryo:

After the incubation control and experimental group eggs were observed and compared. It is observed in the experimental group that there is an insignificant reduction in the weight of chick embryo at 72 hours, 96 hours and 120 hours after treatment with curry leaves extract as compare to weight of chick embryo in control group. The difference between weight of control egg embryo and experimental egg embryo are given below:

Table 3: Weight of chick embryo:

Sr. No.	Control		Treated	
	Incubation hours	Weight of Embryo	Incubation hours	Weight of Embryo
1	72	0.128 gm	72	0.103 gm
2	96	0.239 gm	96	0.122 gm
3	120	0.285gm	120	0.265gm

Changes in angiogenesis:

After the incubation eggs of control and experimental group eggs were observed and compared. It is observed that in that there is reduction in the weight of treated chick embryo as compare to weight of chick embryo in control group. There is significant reduction in the weight of embryo at 72 hours, 96 hours and 120 hours after treatment with curry leaves extract. It is also observed that the treated embryo show reduced number of blood vessels as compare to the control embryo also reduction in size of blood vessel. Reduced in size of heart and reduced in movement of heart the weight of embryo is also reduced

Conclusion:

In present to study the effect of curry leaves extract against development of chick embryo were observed. During the study the embryo showed some changes. The treated embryo after intoxication with 0.3 ml curry leaves extract showed reduced the number of blood vessels, reduction in the body weight of embryo. As well as the angiogenesis pattern get disturbed by extraction of curry leaves treatment. It can be concluded that curry leaves extract can induce toxic interaction which can highly reduce the viability of the embryo.

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Integrating Research into the Curriculum for a 4-Year UG Program in Chemistry

Dr. S. D. Shirke

Department of Chemistry,
Vivekanand College Kolhapur
(Empowered Autonomous)

Abstract:

The National Education Policy (NEP) 2020 provides an opportunity for undergraduate students to engage in research projects. One of its key features is the introduction of a 4-year UG degree (Honours with Research), which allows students to pursue research in their final year. According to the policy, students who achieve 75% marks or an equivalent grade during the first three years (or six semesters) and wish to explore research can opt for a research stream in their fourth year. Given this, it is essential to incorporate research components into the undergraduate curriculum right from the start. This article aims to outline a year by year approach to curriculum design that will help students transition smoothly into research culture. By using a practical example addressing a real world problem related to safe drinking water we illustrate how students can engage in progressive tasks over the course of their program, culminating in a need-based research project in the fourth year. These guidelines can also serve as a framework for tackling other societal challenges and designing curricula for 4 year UG degree programs (Honours with Research).

1. Introduction

The UGC guidelines support National Education Policy (NEP) 2020's vision by promoting the development of research skills among students through structured academic programs. This aims to transform higher education by emphasizing research and practical problem-solving at the undergraduate level. One of its notable provisions is the introduction of a 4-year undergraduate degree with an option for Honours with Research, which allows students to undertake research projects on real-world problems. This policy is complemented by the guidelines set forth by the University Grants Commission (UGC), which advocate for a research-oriented curriculum and encourage educational institutions to integrate research into undergraduate programs. According to the policy, students who achieve 75% marks or an equivalent grade during the first three years (or six semesters) and wish to explore research can opt for a research stream in their fourth year. While introducing research aspect among the undergraduate students, addressing societal issues in this process should not be ignored. This approach not only enhances students' research capabilities but also prepares them to contribute effectively to societal advancement. Many times students do not appreciate importance of research and most of them fail to link the research with the local issues being faced by society. Consider the most common issue, which has prime importance in the day to day life of our society, which is availability of safe drinking water.

Access to safe drinking water is a critical global challenge, impacting public health and quality of life. Contaminants such as heavy metals, pesticides, and pathogens in water sources pose severe health risks and

contribute to widespread diseases. Despite advancements in technology, many communities continue to face significant barriers to obtaining clean, potable water. Addressing these issues requires innovative solutions and effective strategies.

According to the World Health Organization (WHO), more than 2 billion people globally use drinking water sources contaminated with feces, leading to widespread waterborne diseases such as diarrhea, cholera, and typhoid. In addition to microbial contaminants, chemical pollutants like heavy metals (lead, arsenic, mercury), insecticides, pesticides, nitrates, sulphates, phosphates and fluoride further exacerbate water quality issues, particularly in developing countries and rural areas.

Water contamination originates from both natural and man-made sources. Industrial waste discharge, agricultural runoff, and improper disposal of chemical pollutants are major contributors to unsafe water supplies. Additionally, natural contamination, such as arsenic leaching from soil into groundwater, poses severe risks in regions like South Asia. Prolonged exposure to these contaminants can lead to serious health problems, including cancer, neurological disorders, and developmental issues in children.

Ensuring safe drinking water is not only a public health priority but also crucial for economic and social development. Contaminated water directly impacts human well-being, reduces productivity, and increases healthcare costs. With climate change and rapid urbanization intensifying water scarcity and contamination issues, it is essential to develop effective, affordable, and sustainable water purification methods.

This article explores how to design an undergraduate curriculum that aligns with NEP 2020 and UGC guidelines by focusing on the challenge of safe drinking water. It outlines a year-by-year strategy to build students' research skills progressively, from acquiring foundational knowledge to executing hands-on research projects. By integrating these elements into the curriculum, educational institutions can foster innovation and equip students with the tools to address pressing global issues, ultimately contributing to public health and sustainable development. Under the NEP 2020, students have the opportunity to conduct research projects in their fourth year, focusing on specific challenges like water contamination. This allows students to:

Develop Practical Solutions: By addressing local water quality issues, students can engage in hands-on research that has immediate societal benefits. For example, projects could focus on creating low-cost filtration systems for rural areas, identifying contaminants in local water sources, or developing chemical treatments for safe water.

Apply Interdisciplinary Knowledge: The policy encourages interdisciplinary approaches, allowing students to combine their knowledge of chemistry, biology, environmental science, and engineering to address the complexities of water purification.

Promote Innovation and Critical Thinking: NEP 2020 fosters critical thinking and innovation by emphasizing problem-solving skills. Tackling the issue of safe drinking water will challenge students to innovate, experiment with new materials (like biochar or nanomaterials), and use advanced analytical tools to test water quality and effectiveness of treatments.

Address Real-World Problems: The NEP encourages research that has direct societal relevance. Water contamination is a problem that affects millions, and students working on these projects will have the opportunity to make a tangible difference in public health, environmental sustainability, and economic well-being.

Thus, NEP 2020 not only nurtures academic growth but also encourages students to take part in nation-building by solving critical challenges like ensuring safe drinking water for all. Through a combination of theoretical knowledge and hands-on research, students are empowered to contribute to sustainable development, public health, and social progress.

2. Importance and Literature Review

There are several important aspects, which attract the need of intervention in the field of safe drinking water. Some of them are as below:

Public Health Implications: Contaminated water is a leading cause of morbidity and mortality, particularly in low-income regions. Diarrheal diseases caused by unsafe water and inadequate sanitation kill approximately 485,000 people annually, with children being the most vulnerable. Addressing this issue would prevent millions of deaths and reduce the burden on healthcare systems.

Environmental Sustainability: Water contamination also threatens aquatic ecosystems, impacting biodiversity and causing long-term environmental damage. Sustainable water treatment methods that reduce chemical usage and energy consumption can protect both human health and the environment.

Social and Economic Impact: Access to safe drinking water is crucial for breaking the cycle of poverty. Communities without reliable water supplies spend a disproportionate amount of time and resources on collecting water, which affects education, productivity, and economic growth. Ensuring safe water access fosters economic development and improves the quality of life.

Technological and Scientific Innovation: The challenge of water purification has spurred significant research and technological advancements in chemistry. From the development of new filtration materials to innovative chemical treatments, science plays a pivotal role in creating solutions that are scalable, cost-effective, and accessible to even the most resource-constrained communities.

Given the far-reaching consequences of unsafe drinking water, there is an urgent need for interdisciplinary research focused on sustainable water purification technologies. Chemistry, with its capacity to understand and manipulate molecular structures, holds the key to developing new and improved methods for detecting, analysing, and removing contaminants from water.

The issue of ensuring safe drinking water has been a global concern for decades, with water contamination posing a significant risk to public health. Contaminants such as heavy metals (lead, arsenic, mercury), nitrates, pathogens, and organic pollutants are frequently found in water sources, particularly in developing countries. Several approaches, including chemical treatments, filtration, adsorption, and membrane technologies, have been extensively studied and implemented to mitigate these contaminants. A common method in developing regions is the use of chemical coagulants like alum for sedimentation, though newer studies have explored more sustainable alternatives such as natural adsorbents and nanomaterials. Recent advances in water

purification technologies focus on novel materials like biochar, graphene, and nanoparticles, which provide higher efficiency and lower cost, making them suitable for widespread use. Moreover, electrochemical methods and solar-driven disinfection systems are emerging areas of interest, given their potential for scalability and effectiveness in remote areas.

Studies have demonstrated the importance of chemistry in understanding the behaviour of contaminants in water and in developing effective remediation techniques. The use of advanced analytical chemistry tools such as atomic absorption spectroscopy (AAS) and inductively coupled plasma mass spectrometry (ICP-MS) has revolutionized water quality monitoring by allowing the detection of contaminants at trace levels. At the same time, green chemistry solutions are being sought to reduce the environmental impact of water treatment processes. Research indicates that the application of natural materials and low-energy filtration systems could bridge the gap between technological advancement and accessibility in resource-limited settings.

Ali and Gupta, V. K. (2007) explores adsorption techniques using activated carbon and natural materials for water purification. WHO/UNICEF (2021) provides an overview of global water quality issues and progress toward sustainable development goals. Zhang, X. et al. (2016) reviews modern technologies like nano filtration and electrochemical methods for water purification. Mohan and Pittman (2007) provide a comprehensive review of arsenic removal techniques, focusing on chemical and adsorptive methods. Bhattacharya et al. (2002) discuss arsenic contamination in Bangladesh and chemical methods for its removal. A review of coagulation methods used in water treatment for removing organic contaminants is given by Sillanpaa et al. (2018). Gupta and Babu (2009) investigate low-cost adsorbents like sawdust for removing heavy metals from water. Sharma and Sanghi (2012) discuss water treatment and pollution prevention.

In the following section we provide year wise details taking up a study of safe drinking water problem in the teaching, learning and research process. By considering these details design of curriculum can be undertaken.

3. Year wise activities

First Year: Building Foundational Knowledge in Chemistry and Water Issues

Objective: To introduce basic chemistry concepts and raise awareness about the significance of water quality, focusing on essential laboratory techniques and real-world water problems.

i. Subjects to Cover:

General Chemistry: Students will learn fundamental principles such as the structure of atoms, periodic trends, physical and chemical properties, molecular bonding, chemical reactions, and the laws of thermodynamics. These concepts are essential for understanding the behaviour of different components in water.

Organic and Inorganic Chemistry: Students are introduced to organic compounds, solvents such as alcohols, benzene and acids, bases, phenols and inorganic ions like nitrates, sulphates, phosphates and heavy metals, many of which are common water pollutants.

Introduction to Environmental Chemistry: The chemistry of water and basic concepts like behaviour water as a solvent, its polarity, and its ability to dissolve solids, liquids, gases, salts, and organic compounds are crucial. This also includes an introduction to pH, alkalinity, hardness, conductivity, dissolved oxygen etc.

ii. Practical Exposure:

Lab Techniques: Students will learn basic lab skills such as solution preparation, titration, filtration, and measurements using pH meters. These skills are fundamental for future water quality experiments.

Water Quality Testing: Basic experiments can include testing local water samples for pH, conductivity, and hardness. Students will start to recognize the variability in water quality due to natural and human-made factors.

Fieldwork: Encourage students to collect water samples from different sources-tap water, ponds, lakes, bottled water, bore water and analyse them in the lab to get practical experience.

iii. Introduction to Water-Related Problems:

Class Discussions: Explore simple but important topics such as water pollution, global water scarcity, and waterborne diseases like cholera and dysentery.

Case Studies: Introduce famous water contamination cases, such as the Flint water crisis in the USA or arsenic contamination in Bangladesh. These discussions help connect theoretical learning to real-world challenges.

Second Year: Analytical Techniques and Problem Identification

Objective: To introduce students to analytical chemistry techniques, which they can use to measure and identify contaminants in water samples. This year focuses on identifying water-related problems and beginning to think about how to address them.

i. Subjects to Cover:

a. Analytical Chemistry: This course provides a deeper understanding of the techniques used to detect contaminants in water. Topics covered may include:

i. Spectroscopy: UV-Visible, atomic absorption spectroscopy (AAS), and flame emission spectroscopy to identify and quantify metal ions (e.g., lead, arsenic).

ii. Chromatography: Techniques like ion-exchange chromatography for separating water-soluble ions.

iii. Gravimetric Analysis: To measure the total dissolved solids (TDS) and pollutants in water.

b. Advanced Water Chemistry: Dive deeper into water contaminants (like heavy metals, nitrates, and fluorides) and their sources, chemical behaviour, and interactions with other substances in water.

ii. Practical Exposure:

a. Water Quality Analysis: Students will learn to apply the analytical techniques discussed in class to assess water contamination levels, such as the presence of heavy metals (e.g., lead, arsenic) and organic pollutants.

b. Laboratory Experiments: Examples include:

i. Measuring chlorine levels in drinking water to assess its disinfection status.

ii. Quantifying levels of fluoride and nitrate, phosphates, sulphates and sulphonates, carbonates in water using spectrophotometric methods.

c. Hands-on Workshops: Introduce students to practical issues, such as how rural communities test water quality and what steps are needed for water treatment.

iii. Problem-Based Learning:

a. Case Study Projects: Students can be given specific water-related problems to research and present solutions, such as arsenic poisoning in groundwater or nitrate pollution in agricultural regions.

b. Fieldwork: Students can visit local water treatment facilities to see how analytical chemistry is applied in real-life scenarios. They might even start collecting their own water samples from local sources for analysis.

Third Year: Research Methodology and Project Proposal Development

Objective: To train students in the principles of research methodology, encouraging them to frame their research questions, develop hypotheses, and design a research proposal on safe drinking water.

i. Subjects to Cover:

a. Research Methodology: Teach students the fundamentals of designing a research project, including:

i. How to formulate a hypothesis.

ii. Experimental design (control vs. experimental groups).

iii. Data collection techniques, statistical analysis, and error analysis.

iv. Scientific writing and reporting.

b. Advanced Water Chemistry and Treatment: Topics might include:

i. Kinetics and thermodynamics of chemical reactions in water treatment.

ii. Different water purification techniques: coagulation, sedimentation, filtration, adsorption, and ion exchange.

iii. Emerging technologies such as Nano filtration, reverse osmosis, and biosorption.

ii. Practical Exposure:

a. Water Purification Experiments: Students can conduct experiments to test the effectiveness of different water purification methods. For instance, they can compare activated charcoal with synthetic resins for removing specific contaminants.

b. Design Experiments: Students are given more freedom to design their experiments, such as investigating the effects of various pH levels on metal ion precipitation or testing natural filtration materials like sand or activated carbon.

iii. Project Proposal Development:

a. Research Focus: Students are encouraged to choose a specific water-related problem to investigate. For example, they could explore ways to remove lead contamination from drinking water using inexpensive adsorbents.

b. Proposal Writing: By the end of the year, students should submit a detailed research proposal that includes:

- i. Research objectives.
- ii. Methodology (sampling, testing, purification techniques).
- iii. Anticipated outcomes and their societal impact.

c. Mentorship: Faculty members guide students through the proposal writing process and provide feedback on their proposed research design.

iv. Collaborations:

a. Field Visits: Students can start collaborating with local organizations, research labs, or NGOs working in water quality management.

b. Workshops and Seminars: Organize guest lectures from professionals in environmental science and water treatment, invite engineers or researchers to inspire students and help refine their project ideas.

Fourth Year: Honors with Research – Execution of Research Project

Objective: To guide students in carrying out their independent research project, providing them with an opportunity to apply their theoretical and practical knowledge to solve real-world problems in water quality.

i. Research Project Execution:

a. Project-Based Research: Students will spend the year conducting their research based on the proposal they developed in Year 3. For instance, they could investigate:

- i. Natural Adsorbents: Testing the efficacy of materials like activated carbon, clay, or biochar in removing heavy metals from water.
- ii. New Materials for Filtration: Developing and testing new synthetic materials, such as nanomaterials, for more effective filtration of contaminants.
- iii. Water Purification in Rural Areas: Designing low-cost purification systems for communities lacking access to safe drinking water.

b. Experimental Work: This will include sample collection, lab experiments, data analysis, and troubleshooting, under the guidance of a faculty supervisor.

c. Field Application: In some cases, students could apply their research by conducting pilot tests in collaboration with local water treatment plants or NGOs.

ii. Scientific Writing and Communication:

a. Thesis Writing: Students will compile their research into a detailed thesis or report, including an introduction, literature review, experimental results, and discussion of findings.

b. Publication: Encourage students to submit their work to undergraduate research journals or present it at academic conferences.

iii. Presentation and Defense:

a. Oral Defense: Students will present their research findings to a panel of faculty members, followed by a question-and-answer session.

b. Poster Presentations: Students can also participate in departmental or national research symposiums where they can showcase their work.

iv. Collaboration with Industry and Research Institutions:

a. Students may have opportunities to work with water quality institutions or collaborate with researchers on real-world projects, which could lead to internships, further studies, or job opportunities in environmental chemistry and water management.

By the end of this year, students will:

- Have a deep understanding of water chemistry, its contamination, and purification methods.
- Be capable of designing, executing, and analysing complex experiments related to water treatment.
- Have contributed meaningful research toward solving real-world problems related to safe drinking water.
- Be prepared for future careers or higher education in environmental science, analytical chemistry, or public health.

This progressive, year-wise approach ensures that chemistry students not only acquire academic knowledge but also develop practical skills, scientific thinking, and a passion for research aimed at solving one of the world's most pressing issues: access to clean and safe drinking water.

4. Conclusion:

The National Education Policy (NEP) 2020 represents a significant shift in the Indian higher education system by introducing opportunities for students to enhance their research capabilities. Previously, such provisions were lacking, and integrating research into the curriculum is now essential for effectively implementing this policy. To achieve this, it is crucial to design curricula that incorporate research elements and encourage students to tackle societal issues through scientific investigation.

Undergraduate students majoring in Chemistry, in particular, have the potential to make substantial contributions to public welfare by addressing pressing challenges such as safe drinking water. By organizing brainstorming sessions and fostering an environment where students can identify and explore real-world problems, educators can inspire and guide students in their research endeavours.

This article aims to outline how such a curriculum can be developed, using the issue of safe drinking water as a case study to illustrate the process. However, this approach can be applied to various other societal problems, demonstrating the broad applicability of this strategy. It is imperative that educators across all disciplines focus on providing students with meaningful research opportunities. This not only enhances their research skills but also enables them to address critical societal issues, thereby contributing to the betterment of society as a whole.

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राजर्षी शाहू महाराज व महाराजा सयाजीराव गायकवाड यांच्या नेतृत्वाचा तुलनात्मक अभ्यास

प्रा. दत्ता जाधव

सहाय्यक प्राध्यापक,राज्यशास्त्र विभाग

विवेकानंद कॉलेज ,कोल्हापूर (अधिकारप्रदत्त स्वायत्त)

सारांश

कोल्हापूर संस्थानची राजवट ही सुमारे इसवी सन १७०७ ते इसवी सन १७४९ अशी सुमारे २४२ वर्षांची होती; तर बडोदा संस्थानची राजवट ही सुमारे इसवी सन १७२१ ते इसवी सन १७४९ अशी सुमारे २२८ वर्षांची होती. तत्कालीन ब्रिटिश भारतात या दोन संस्थानांनी राजेशाही शासनपद्धती असताना देखील लोकाभिमुख राज्यकारभार केला; म्हणून ही दोन्ही मराठा संस्थाने भारताच्या इतिहासात अजरामर ठरली.

संज्ञा : सामाजिक न्याय,सामाजिक लोकशाही,मराठा राज्य,सामाजिक सलोखा,लोकाभिमुख राज्यकारभार.

प्रस्तावना

भारतात स्वातंत्र्यपूर्व कालखंडात सुमारे ५६५ संस्थाने होती.बडोदा आणि कोल्हापूर संस्थाने ही यापैकीच दोन संस्थाने होत.कोल्हापूर संस्थान इसवी सन १७०७ ला अस्तित्वात आले. कोल्हापूर संस्थान हे ब्रिटिश भारतातील मुंबई इलाख्यातील डेक्कन स्टेट्स एजन्सीतील एक संस्थान होते. कोल्हापूर संस्थान हे तत्कालीन मराठा संस्थानातील एक प्रमुख संस्थान होते.कोल्हापूर संस्थानाचा पहिला राजा शिवाजी शहाजी (द्वितीय) होय. भारत स्वतंत्र झाल्यानंतर इसवी सन १९४९ ला महाराजा छत्रपती शहाजी (द्वितीय) यांनी हे संस्थान भारतात विलीन केले. कोल्हापूर संस्थान हे मराठा संस्थान होते. येथे भोसले घराण्याची राजवट होती. बडोदा संस्थान हे ब्रिटिश भारतातील मुंबई इलाकेतील एक महत्त्वाचे संस्थान होते.१६ व्या व १७ व्या शतकामध्ये मुघल साम्राज्याच्या अधिपत्याखाली राहिल्यानंतर अखेर इसवी सन १७२१ साली येथून मुघलांना उसकावून लावण्यात मराठ्यांना यश आले. १७२१ साली येथे गायकवाड घराण्याने बडोदा संस्थान स्थापन केले. ब्रिटिश राजवटी दरम्यान देखील बडोदा संस्थानाला स्वायत्त दर्जा होता. बडोदा संस्थानचे संस्थानिक गायकवाड हे मराठा घराणे होते. या संस्थानाचा पहिला राजा पिलाजीराव गायकवाड तर शेवटचा राजा फत्तेसिंहराव गायकवाड हे होते. कोल्हापूर संस्थानची राजवट ही सुमारे इसवी सन १७०७ ते इसवी सन १७४९ अशी सुमारे २४२ वर्षांची होती; तर बडोदा संस्थांची राजवट ही सुमारे इसवी सन १७२१ ते इसवी सन १७४९ अशी सुमारे २२८ वर्षांची होती. तत्कालीन ब्रिटिश भारतात या दोन संस्थानांनी राजेशाही शासनपद्धती असताना देखील लोकाभिमुख राज्यकारभार केला; म्हणून ही दोन्ही मराठा संस्थाने भारताच्या इतिहासात अजरामर ठरली.प्रस्तुत संशोधनात संशोधकांने दोन्ही मराठा संस्थानांचा राज्यकारभार लोकाभिमुख करणारी प्रजाहित दक्ष राजे राजर्षी शाहू महाराज(चौथे) व महाराजा सयाजीराव गायकवाड (तिसरे) यांच्या नेतृत्वाचा तुलनात्मक अभ्यास केला आहे. प्रस्तुत संशोधन केवळ इतिहासाची मांडणी ठरणार नाही, तर वर्तमान राज्यसंस्थेला लोकाभिमुख राज्यकारभार कशा पद्धतीने करावयाचा याचे मार्गदर्शन ठरेल. त्याचबरोबर लोकशाहीत नेतृत्वाची जडणघडण कशा पद्धतीने व्हायला हवी?याचेही मार्गदर्शन आत्ताच्या राज्यकर्त्यांना मिळेल. इतिहास म्हणजे त्या त्या कालखंडातील त्या त्या लोकांच्या आणि नेतृत्वाचा सामाजिक, सांस्कृतिक ,धार्मिक, राजकीय आणि आर्थिक विचारांचे आशा -आकांक्षांचे घडामोडींचे आणि स्थितींचे प्रतिबिंब असतो. त्या घटनांचे - घडामोडींचे आणि विचार प्रवाहांचे ते प्रकारचे अविष्करण असत प्रत्येक करण आणि विवेचन म्हणजे अर्थनिर्पणही असते कोणतेही राष्ट्र आणि समाज आपला इतिहास बाजूला ठेवून उभे राहू शकत नाही इतिहासही मानवी समाजाचे एक अखंड , अभंग आणि अविभाज्य असे छायाचित्र असते. जे छायाचित्र पाहून त्या समाजाला भविष्यकालीन मार्गक्रमण करता येते.

उद्दिष्टे

प्रस्तुत संशोधनाची साठीची संशोधन संशोधना संशोधकांसमोर पुढील उद्दिष्टे आहेत

१. कोल्हापूर आणि बडोदा संस्थानाचा तुलनात्मक अभ्यास करणे.
२. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांच्या नेतृत्वाचा तुलनात्मक अभ्यास करणे.
३. तत्कालीन सामाजिक सुधारणांचा तुलनात्मक अभ्यास करणे पाच मराठा राज्यसंस्था शब्दबद्ध करणे.

राजर्षी शाहू महाराज यांचे कार्य आणि विचार**सामाजिक सुधारणा**

रशियन विचारवंत प्लेकनोव्ह असे म्हणतो, 'महापुरुषांच्या जागी असे काही गुण असतात, की ते आपल्या काळातील मोठ्या सामाजिक गरजा पुरवण्यासाठी समर्थ ठरतात; तसेच ते इतरापेक्षा अधिक पुढचे पाहू शकतात व त्या बाबतीत त्यांची कळकळ इतरापेक्षा अधिक तीव्र असते.' निःसंशयपणे शाहू महाराज आपल्या समकालीनांपेक्षा पुढचे पाहू शकले. पहिली सामाजिक सुधारणा म्हणजे आपल्या संस्थानातील नोकऱ्यांमध्ये मागासलेल्या जातीजमातीच्या लोकांसाठी ५० टक्के जागा राखीव ठेवण्याचा महत्त्वाचा निर्णय २६ जुलै १९०२मध्ये घेऊन तो अंमलात आणण्यास सुरुवात केली. राखीव जागांचे धोरण अंमलात आणणारे शाहू महाराज हे पहिले राज्यकर्ते ठरले. १८९९च्या सुमारास कोरोनाप्रमाणेच प्लेगच्या साथीने कोल्हापूर संस्थानात हाहाकार उडाला होता. मात्र, महाराजांनी अविरोध कष्ट घेऊन उपाययोजना केल्या व परिस्थिती आटोक्यात आणली. वेदोक्त प्रकरणानंतर शाहू महाराजांनी धर्मसुधारणेच्या चळवळीस गती दिली. स्वामी दयानंद, केशवचंद्र आणि गुड जोतीराव फुले यांच्या थोर कार्याची त्यांनी स्तुती केली. ब्राह्मो समाज, आर्य समाज व सत्यशोधक समाज या संस्था समाजाला धार्मिक गुलामगिरीतून मुक्त करित आहेत असे त्यांचे मत होते. सामाजिक सुधारणेचा उद्देश सार्वजनिक नीतिमत्तेत वाढ करणे हा आहे. धर्माच्या नावाने जे पुरोहितशाहीचे बंड माजले होते, विषमता निर्माण झाली होती; भोळेपणा, अनाचार व भ्रष्टाचार वाढला होता, त्यास महाराजांनी विरोध केला. स्वामी दयानंद, केशवचंद्र व जोतीराव फुले यांनी नवीन विचारांच्या प्रचारास सुरुवात केली. महाराजांच्या मते जोतीरावांनी ब्राह्मणांच्या धार्मिक वर्चस्वावर हल्ला केला. त्यांचे धार्मिक स्थान हे त्यांचे मर्मस्थान. जोतीरावांच्या सत्यशोधक समाजाचे मत ईश्वर व भक्त यात दलाल नको हे होते; तर वेदाचा अधिकार सर्व मनुष्यमात्रास आहे, सर्व मानव जात समान आहे; समाजात बनावटी व लोकांना लुटून खाणारा धर्म नको, असे स्वामी दयानंदांनी सांगितले होते. धर्म म्हणजे भटाची दक्षिणा हा अर्थ मतलबी असून अशी दक्षिणा बुडाल्यानेच देशाचे रक्षण होईल, असे महाराजांचे सांगणे होते(चौसाळकर अशोक, २००७:४८७).

शैक्षणिक कार्य

महात्मा फुले यांच्या शिक्षणाचे सूत्र राजर्षी शाहू यांनी पकडले. आपल्या संस्थानातील प्रजेसाठी प्राथमिक शिक्षण मोफत व सक्तीचे असावे, या विषयावर शाहू महाराज १९१३पासून गांधीयाने विचार करत होते. २५ जुलै १९१७ रोजी राजर्षी शाहू महाराज यांनी फोफाट आणि सक्तीच्या प्राथमिक शिक्षणाचा आदेश जारी केला. पुढे त्यांनी २१ सप्टेंबर १९१७ रोजी सक्तीच्या शिक्षणाचा जाहीरनामा प्रसिद्ध केला. ४ मार्च १९१८ रोजी करवीर मधील चिखली या गावात गणेश चतुर्थीच्या मुहूर्तावर फोफाट आणि सक्तीच्या पहिल्या प्राथमिक शाळेचा शुभारंभ केला(भगत रा. तू. २००७: ६०४) केवळ शाळा काढून भागणार नाही, तर पालकांनी मुलांना शाळेत पाठवले पाहिजे, असा त्यांचा आग्रह होता. यासाठी मुलांना न पाठविणाऱ्यांवर दंड आकारला. मुर्लीच्या शिक्षणासाठी शाहू महाराज विशेष आग्रही होते. देशाच्या स्वातंत्र्याचे अमृतमहोत्सवी वर्ष सुरू आहे; तरीही मोफत व सक्तीच्या शिक्षणाचे १०० टक्के यश अजूनही दूर आहे. या पार्श्वभूमीवर महाराजांचे कार्य काळाच्या कितीतरी पुढे होते, असे म्हणावे लागेल.

कृषी कार्य

कोल्हापूर संस्थानातील ९० टक्के जनतेची उपजिवीका शेतीवर अवलंबून होती. औद्योगिक विकासाची गती कृषी क्षेत्राच्या विकासाखेरीज वाढणे अशक्य आहे. त्यामुळे शाहू महाराजांनी शेती विकासाला अग्रक्रम दिला. त्यासाठी त्यांनी १९०२ मध्ये इटली सारख्या कृषीप्रधान देशाला भेट दिली. तेथील कृषी धोरणाचे सुक्ष्म निरीक्षण केले. या निरीक्षणावरून त्यांच्या लक्षात आले की, प्रगत देशाच्या तुलनेत आपल्या देशातील कृषीची उत्पादकता कमी आहे. कृषीची उत्पादकता वाढविण्यासाठी शेतीचे आधुनिकीकरण करणे आणि शिती व्यवसायाला प्रतिष्ठा मिळवून देणे हाच कृषी विकासाचा पाया आहे. अशी शाहू महाराजांची खात्री होती. शाहू महाराजांनी कृषी विकासासाठी कृषी धोरण, कृषी विकासासाठी सिंचन सुविधा, धरणे, सुधारीत बि-बियाणे, अवजारे, प्रदर्शने, आधुनिक पिके, तुकडेबंदी इत्यादी उपाय योजना केल्या. त्यामुळे कृषी विकासाला चालना मिळाली. राजर्षी शाहू महाराजांनी कृषी विकासासाठी केलेले प्रयत्नातून राष्ट्र विकासाला एक नवीन दिशा दिली. ज्या उद्देशाने त्यांनी हा प्रकल्प जिद्दीने सुरू केला, नेटाने पुढे नेला, त्याची फळे कोल्हापूर जिल्ह्याला, त्यातील प्रजेला, वर्षानुवर्षे मिळत आहेत. भोगावती नदीचे पाणी वर्षानुवर्षे राधानगरी धरणातून वाहातच आहे, भोवतालच्या प्रदेशाला संपन्न बनवत आहे. स्वातंत्र्यपूर्व काळात, ऐतिहासिक काळात बांधले गेलेले गड, किल्ले, प्राचीन वास्तू, मोठी धरणे ही जर बोलती झाली तर त्यांची प्रत्येकाची कहाणी अशीच बोधप्रद ठरणार आहे. महाराजांनी अशाच एका प्रकल्पाचा पाया रचला आणि इमारत विस्तारतच गेली. कोल्हापूर जिल्ह्याला हरितक्रांतीचे, सहकाराचे फायदे मिळत गेले, मिळत जातील. राधानगरी धरण प्रकल्प हे एक आदर्श उदाहरण म्हणून अजूनही अनुकरणीय आहे. अशा तऱ्हेच्या प्रकल्पांचे जाळे देशभर विणले गेल्यास आर्थिक विकासाला वेग प्राप्त होण्यास मदत होईल (कुलकर्णी मिना, २००७:७००).

कला क्रीडा सांस्कृतिक कार्य

राजर्षी शाहूंनी कोल्हापूर संस्थानात संगीत, चित्रपट, चित्रकला, लोककला आणि कुस्ती या क्षेत्रांतील कलावंतांना राजाश्रय देऊन त्यांना प्रोत्साहन देण्याचे महत्त्वाचे कार्य केले. स्वातंत्र्योत्तर काळात भालजी पेंढारकर व मा. विनायक यांच्या मागून तात्या अंबपकर, बाळ गजबर, वसंतराव पेंटर (आनंदराव पेंटरचे पुत्र), माधवराव शिंदे, दिनकर द. पाटील, अनंत माने प्रभृतींनी मराठी चित्रपटसृष्टीची परंपरा श्रीमंत केली. अभिनेत्यांमध्ये चंद्रकांत, सूर्यकांत, अरूण सरनाईक, रमेश देव तर अभिनेत्रींमध्ये सुलोचना, लीलाताई पेंढारकर, बेबी नंदा, आशा काळे, पद्मा चव्हाण आदी कोल्हापूरच्या कलावंतांनी मराठी चित्रपटसृष्टीची सेवा बजावली आहे. मा. विठ्ठल, व्ही. शांताराम यासारख्या कलावंतांनी कोल्हापूरचे नाव राष्ट्रीय स्तरावर पोहोचविले आहे. याच कोल्हापुरात प्रसिद्ध नाटककार विष्णुपंत औंधकर यांच्या नाट्यप्रतिभेस, थोर कविवर्य ग. दि. माडगुळकर यांच्या काव्यप्रतिभेस व ख्यातनाम गायक सुधीर फडके यांच्या गानप्रतिभेस पहिले घुमारे फुटले आहेत. एवढेच नव्हे तर आज स्वरसम्राज्ञी म्हणून ज्यांची कीर्ती त्रिखंडांत पसरलेली आहे, त्या लता मंगेशकर यांच्या कलावंत कारकीर्दीचा प्रारंभही याच भूमीतील आहे (पवार जयसिंगराव, २००७:२२६).

महाराजा सयाजीराव गायकवाड यांचे कार्य आणि विचार

समाजिक सुधारणा

सयाजीरावांची राजकीय कारकीर्द सुरू झाली तेव्हाचा भारतीय समाज हा आधुनिक ज्ञान- विज्ञानापासून दूर असल्याने कर्मकांडात आणि अंधश्रद्धामूलक समजुतीमुळे गतिशून्य झालेला होता. जातिप्रथेमुळे दुभंगलेला होता. वर्णजातिलिगभेदात्मक समाजरचनेमुळे निर्माण झालेली विषमता, स्पृश्यास्पृश्यभावामुळे होणारी मानखंडना व निम्नवर्गीयांची मानवी हक्काची पायमल्ली हे सयाजीरावांच्या चिंतेचे विषय होते. आपल्या प्रजेची पारंपरिक रूढी दास्याच्या जोखडातून सुटका करणे आणि तिला आधुनिक ज्ञानविज्ञानाच्या विवेकनिष्ठ जाणिवेची सुज्ञ बनवणे हा राजकर्तव्याचाच भाग आहे, असे ते मानित. समाजातील जातीय-धार्मिक दुही मिटविणे, लोकांना उद्यमशील आणि विवेकनिष्ठ बनविणे ही त्यांच्या राजकीय कारकिर्दीची मुख्य उद्देशपत्रिका होती. "जे राष्ट्र गरीब वर्गाचा तिरस्कार करते, त्यांना सामाजिक दर्जा वाढविण्याची संधी देत नाही, ते राष्ट्र आपले घर वाळूच्या पायावर बांधते अशी

महाराजांची धारणा होती." (कलकता, १९०६) १९०४ साली १८ व्या राष्ट्रीय सामाजिक परिषदेचे उद्घाटन करताना आपल्या भाषणातून महाराजांनी जातिसंस्थेतील घातक प्रथांची चर्चा केली आहे. जातिसंस्थांच्या अर्थशून्य असलेल्या कर्मठ नियमांनी मानवी आयुष्य जखडले गेले आहे. कुटुंबसंस्था, वैवाहिक जीवन, शिक्षण अशा सर्वच क्षेत्रांवर हे जातिसंस्थेचे सावट आहे. जातीनुसार व्यवसाय निश्चित होत असल्याने माणसाच्या कर्तृत्वाचा परीघ संकुचित झाला आहे. व्यवसायबदल करता येत नाही, परदेशगमन करून पाश्चात्यविद्या शिकता येत नाहीत, जातीजातीत सुसंवाद नाही. जात स्थानिक द्वेष वाढविते, देशात दुही माजविते, बुद्धीची वाढ खुंटविते, राष्ट्रीय शक्तीचा न्हास घडवून आणते. या दुःस्थितीवर मात करण्यासाठी सर्व जातीत रोटीबेटीव्यवहार सुरू करावेत व कटू भेदाभेद नष्ट करावेत, असे महाराजांनी आवाहन केले होते. (मुंबई, ३० डिसेंबर १९०४)

शैक्षणिक कार्य

महाराजा सयाजीराव गायकवाड यांचा सर्वांत जिवाळ्याचा विषय शिक्षण हाच होता. भारतातले ख्रिस्तपूर्व सातव्या शतकातले तक्षशिला विद्यापीठ, त्यानंतर चारशे वर्षांनी स्थापन झालेले सम्राट अशोकाच्या कारकिर्दीतील पाटलीपुत्र विद्यापीठ, ख्रिस्तोत्तर सातव्या शतकातले नालंदा विद्यापीठ, यांचा नमुनादर्श त्यांच्यापुढे होता. या विद्यापीठांतून वर्ण, जाती, पंथ याकडे न पाहता सर्व वर्गातील विद्यार्थी एकाच गुरूकडे राहून शिक्षण घेत. मात्र आठव्या शतकानंतर नवद्वीप, काशीपुरी येथे जातिनिष्ठ विद्यापीठे स्थापन झाल्याने ही व्यापक शिक्षणव्यवस्था खंडित झाली. बहुजन समाजाच्या शिक्षणाकडे दुर्लक्ष झाले. विद्येची ही मक्तेदारीच आजच्या अवनत स्थितीला कारणीभूत झाली, हे महाराजांच्या लक्षात आले होते. त्यामुळे पुन्हा एकदा आपल्या राज्यात मुक्तीद्वार शिक्षणपद्धतीचा प्रयोग नेटाने करण्याचा संकल्प केला. (काशी, १९ जानेवारी १९२४) महाराजांनी ऑक्सफर्ड, केंब्रिज, पॅरिस, बर्लिन, व्हिएना येथील प्राचीन विद्यालये स्वतः जाऊन पाहिली. जगभरातल्या उत्तमोत्तम शिक्षणसंस्थांना भेटी दिल्या. देशाचे उज्ज्वल भवितव्य घडविणाऱ्या शिक्षणपद्धती आणि सोयीसुविधा आपल्या राज्यात निर्माण करण्याचा प्रयत्न केला.

कृषी कार्य

'फिजिओर्केट' पंथातील अर्थशास्त्रज्ञांच्या मते शेतीतूनच राष्ट्रीय संपत्ती निर्माण होत असते. 'मर्कान्टालिस्ट' पंथियांच्या मते देशांतर्गत व देशाबाहेरील व्यापारातून संपत्ती निर्माण होत असते. तर 'क्लासिकल' अर्थशास्त्रज्ञांच्या मते श्रमाने मूल्याची निर्मिती होत असते. सयाजीराव गायकवाड यांनी हिंदुस्थानच्या अर्थव्यवस्थेसंबंधी विचार करताना अर्थशास्त्रातील या तिन्ही पंथांच्या समन्वयातून एक सर्वसमावेशक भूमिका घेतली आहे. हिंदुस्थानात ७५% लोक शेतीवर निर्वाह करित असल्यामुळे आपल्याकडे शेती महत्त्वाचीच आहे, याविषयी दुमत असण्याचे कारण नाही. परंतु ही शेती परिस्थितीशरण असून बेभरवशाची आहे. इथली शेती लहान लहान तुकड्यांची, निरनिराळ्या ठिकाणी विभागलेली आहे. इथल्या शेतकऱ्यांकडे शेतीचे साहित्य व जनावरे यांचीही कमतरता आहे. अमेरिका अथवा जर्मनीतील शेतकऱ्यांकडे शेती करण्याचे जे शास्त्रीय ज्ञान आहे, त्याचा अभाव भारतीय शेतकऱ्यांमध्ये आहे. साहजिकच भारतीय शेतकऱ्यांचे उत्पन्न कमी असून ते सतत कर्जबाजारी असतात. हे लक्षात घेऊन महाराजांनी आपल्या राज्यात शेतकऱ्यांना ट्रॅक्टर इत्यादी आधुनिक यंत्रसामग्री उपलब्ध करून देण्यावर भर दिला. शेती सुधारण्याच्या उपक्रमांची व्यवहार्यता वाढविण्यासाठी फिरत्या तपासनिसांची नेमणूक केली. जनावरांचे पशुवैद्यक दवाखाने काढलेत. दूध डेअरी व्यवस्थापनाच्या माहितीचा प्रसार केला. धनंजयराव गाडगीळ यांनीही उत्तरकाळात शेतीच्या अर्थकारणाच्या संदर्भात सयाजीराव गायकवाड यांच्यासारखाच विचार मांडलेला दिसतो." यावरून महाराजांच्या द्रष्ट्या अर्थनीतीचा मुद्दा अधोरेखित होतो(वरखेडे रमेश, २०१७ :४६). पूर्वीच्या काळी शेतकऱ्यांकडून मिळणारा शेतसारा हेच राज्याचे मुख्य उत्पन्न होते. शेतसारा हाच राज्याच्या उत्पन्नाचा मुख्य स्रोत असल्याने वसुलीसाठी अधिकाऱ्यांकडून जबरदस्ती होत असे. वसुलीचे ठरावीक आणि पारदर्शी धोरण नसल्यानेही बऱ्याच वेळा शेतकऱ्यांची फसगत होत असे. सयाजीराव महाराजांनी राज्यकारभार हाती घेतल्याच्या दुसऱ्याच वर्षी शेती सुधारणेसाठी 'सर्व्हे-सेटलमेंट' नावाचे नवीन खाते निर्माण केले. त्यामार्फत त्यांनी शेतीसंबंधित सुधारणांचा धडाका सुरू केला. पूर्वीच्या शेतसारा पद्धतीत आमूलाग्र बदल केले. एका शेतातून मागील वर्षी किती उत्पन्न आले ते प्रथम पाहिले, नंतर मागील अनेक वर्षांत त्या शेतामधून किती उत्पन्न आले हेही ठरवले. तसेच पुढील अनेक

वर्षात किती उत्पन्न येईल हेही अंदाजे ठरवले. जमिनीच्या उत्पन्नात वाढ झाल्याशिवाय कोणत्याही प्रकारचा कर वाढवायचा नाही, हा नियम घालून दिला. महाराजांनी शेतीचे उत्पन्न ठरवताना शेतकऱ्यांची मजुरी, ते पीक काढण्यापर्यंत अवजारांसाठी लागणारा खर्च आणि याची जमवाजमव करताना शेतकऱ्यांनी कर्ज घेतले तर त्याचे व्याजही खर्चात घ्यावे आणि त्यानंतर जे उत्पन्न शिल्लक राहिल त्यापैकी निम्म्यापेक्षा अधिक रक्कम कर रूपात घ्यावयाची नाही, असा नियम केला. याचा अर्थ शेतसारा देताना शेतकऱ्यांचे पीक तयार होईपर्यंतचा खर्च विचारात घेतला. अशा प्रकारे शेतसारा ठरवण्याची सोपी आणि सर्वसमावेशक पद्धत सुरू केली.

कला क्रीडा सांस्कृतिक कार्य

मॅकियावलीच्या 'द ग्रिन्सेस' अर्थात राजधर्म या बीजग्रंथाचा फार मोठा प्रभाव त्यांच्या राजनीतीत दिसून येतो. मॅकियावलीने जी राजकर्तव्ये सांगितली होती त्यात कला-क्रीडांना उत्तेजन देण्याचे महत्त्व आधोरेखित केले होते. " सयाजीरावांनी हा राजधर्म तंतोतंत पाळला. त्यांनी राजा रविवर्मा यांच्या चित्रकलेला प्रोत्साहन दिले. बडोद्यात त्यांना स्टुडिओ काढून दिला, चित्रप्रदर्शनांना प्रोत्साहन दिले. निरनिराळ्या संगीतकारांच्या संगीतसभांचे आयोजन केले. क्रीडा आणि खेळांना उत्तेजन दिले. स्वतंत्र व्यायामशाळा काढल्या. चिंतामणराव वैद्यांसारख्या प्राच्यविद्या संशोधकास वर्षासन, महात्मा फुले यांना ग्रंथप्रकाशनार्थ अनुदान, अशा विविध योजना व उपक्रमांद्वारे नवविचारप्रवर्तन आणि अभिरुचिसंवर्धनास पाठबळ दिले. कला आणि विज्ञानातल्या प्रयोगशील अभिव्यक्ती करणाऱ्यांचे स्वागत करून, तसेच बुद्धिवादी आणि स्वतंत्र विचाराच्या लोकांच्या व संस्थांच्या माध्यमातून शांततामय, आनंदी व सुसंवादी समाजाची निर्मिती करण्यासाठी त्यांनी जाणीवपूर्वक प्रयत्न केले. निरनिराळ्या संस्कृतीत नांदणाऱ्या कला-कल्पना, सामाजिक संस्थात्मक व्यवस्था, प्रशासनिक नमुनादर्श आणि जीवनशैलीचा आदर करून जे जे चांगले, अनुकरणीय ते ते आपल्या राज्यात आणून रुजवण्याचा प्रयत्न केला. या मधुमक्षिका वृत्तीतून त्यांनी सातत्याने नवविचारांचे स्वागत केले आणि कुठल्याही एकच एक संप्रदायाचे वा विचारसरणीचे कर्मठ अनुयायी बनण्यापासून स्वतःला वाचविले(वरखेडे रमेश, २०१७:१०३) .

राजर्षी शाहू महाराज आणि महाराज सयाजीराव गायकवाड यांच्या कार्याची तुलना

राजर्षी शाहू महाराज आणि महाराज सयाजीराव गायकवाड हे दोन्ही प्रजा हित दक्ष राजे मराठा होते. ते समकालीन होते मराठा समाज हा उदारमतवादी समाज आहे हे प्रथमतः छत्रपती शिवरायांनी दाखवून दिले. ही सुधारमतवादी परंपरा कोल्हापूर संस्थांचे राजे राजर्षी शाहू महाराज आणि बडोदा संस्थांचे राजे महाराजा सयाजीराव गायकवाड या दोन्ही मराठा राजांनी अखंड राखली. राजर्षी शाहू महाराज हे कोल्हापूर संस्थांचे अधिपति. राजर्षी शाहूंना केवळ ४८ वर्षांचे जीवन लाभले. वयाच्या दहाव्या वर्षी ते कोल्हापूर संस्थांचे राजे झाले. अवघी ३८ वर्षांची राजकीय कारकीर्द राजर्षी शाहू महाराज यांच्या वाट्याला आली. छोट्या कारकीर्दीमध्ये राजर्षी शाहूंनी हिमालया एवढे उत्तुंग लोककल्याणाचे काम केले. शाहू महाराजांनी बहुजन समाजात शिक्षण प्रसार करण्यावर विशेष भर दिला. त्यांनी कोल्हापूर संस्थानात प्राथमिक शिक्षण सक्तीचे व मोफत केले. स्त्री शिक्षणाचा प्रसार व्हावा म्हणून त्यांनी राजयज्ञ काढली. अस्पृश्यता नष्ट करण्याच्या दृष्टीने त्यांनी इसवी सन १९१९ साली सवर्ण व अस्पृश्यांच्या वेगवेगळ्या शाळा भरविण्याची पद्धत बंद केली. जातिभेद दूर करण्यासाठी त्यांनी आप आपल्या राज्यात आंतरजातीय व्यवहाला मान्यता देणारा कायदा केला इसवी सन १९१७ साली त्यांनी पुनर्विवाहाचा कायदा करून विधवा विवाहाला कायदेशीर मान्यता मिळवून दिली. बहुजन समाजाला राजकीय निर्णय प्रक्रियेत सामावून घेण्यासाठी त्यांनी इसवी सन १९१६ साली निष्पाणी येथे डेक्कन रयत असोसिएशन ही संस्था स्थापन केली. शाहू छत्रपती स्पिनिंग अँड हीलिंग मिल, शाहूपुरी व्यापार पेठ, शेतकऱ्यांच्या सहकारी संस्था शेतकी तंत्रज्ञानाच्या संशोधनासाठी किंग एडवर्ड एग्रीकल्चर इन्स्टिट्यूट इत्यादी संस्था कोल्हापूरचा स्थापन्यात त्यांचा मोठा वाटा होता. राधानगरी धरणाची उभारणी शेतकऱ्यांना कर्ज उपलब्ध करून देणे अशा उपक्रमातून त्यांनी कृषी विकासाचे लक्ष लक्ष पुरविले मागासलेल्या लोकांना प्रगतीच्या प्रवाहात आणावयाचे असेल तर त्यांच्यासाठी राखीव जागांची तरतूद केली स्वातंत्रपूर्वक कैक वर्ष आधी समता बंधुता धर्मनिरपेक्षता स्वातंत्र्य ही लोकशाही मानवी म्हणले राजर्षी शाहूंनी कोल्हापूर संस्थानात अमलात आणली.

बडोद्याचे सयाजीराव गायकवाड हे देखील राजर्षी शाहूंच्या प्रमाणे उदारमतवादी मराठा राजे होते. महाराजा सयाजीराव गायकवाड यांना ७६

वर्षाच्या आयुष्यमान लाभले. राजर्षी शाहूंच्या पेक्षा त्यांना सुमारे २८ वर्षे अधिकचे जीवनमान लाभले; ते जीवन त्यांनी सार्थकी लावले. महाराजा सयाजीराव गायकवाड हे देखील राजर्षी शाहूंच्या प्रमाणे सुधारकी पुरोगामी विचारांचे मराठा राजे होते. २८ सप्टेंबर १८८१ रोजी गादीवर आल्याबरोबर त्यांनी राज्याची आर्थिक स्थिती सुधारण्यासाठी उपाययोजना केल्या. प्रशासकीय जबाबदारीची विभागणी केली हे तत्त्व राज्यकारभारात लागू करून राज्य यंत्रणेत त्यांनी सुरळीतपणा निर्माण केला. कल्याणकारी योजना अमलात आणल्या(१८८३). न्यायव्यवस्थेत सुधारणा केल्या, ग्रामपंचायतीचे पुनर्जीवन केले (१९०४), सक्तीच्या प्राथमिक शिक्षणाची योजना सुरू करून (१८९३) अल्पावधीतच ती लागू करणारे बडोदा हे देशातील पहिले संस्थान ठरले. गरीब गरजू विद्यार्थ्यांना शिष्यवृत्ती देऊन उच्च शिक्षणाची सोय केली. औद्योगिक कलाशिक्षणाकरिता कलाभवन ही संस्था स्थापन केली. त्यांनी प्राची विद्यामंदिर या संस्थेच्या वतीने प्राचीन संस्कृत ग्रंथांचे संशोधन व प्रकाशन करण्यास उत्तेजन दिले. त्यांनी गावोगावी फिरत्या वाचनालयांची सुरुवात केली. पडदा पद्धती बदली. बालविवाह बंदी कन्या विक्री रुंदी मिश्र विवाहाचा पुरस्कार स्त्रियांना वारसा हक्क मिळवून देणे अस्पृश्य अस्पृश्यता निवारण विरभाव इत्यादी सुधारणा प्रत्यक्षात अमलात आणल्या घटस्फोटासंबंधीचा कायदा हा सर्व भारतात पहिल्यांदाच त्यांनी जारी केला महाराजा सयाजीराव गायकवाड यांच्याकडे दृष्टिपणे होते. प्रस्तुत संशोधनात या दोन महान, उदारमतवादी मराठा राज्यांच्या नेतृत्वाचा तुलनात्मक अभ्यास केलेला आहे A Leder who knows the plus of society. ज्या नेत्याला समाजाची नस कळते तो खरा नेता. ही नेतृत्वाची व्याख्या या दोन्ही दृष्ट्या राज्यांना चक्कल पणे लागू पडते. अलीकडच्या काळात भारताच्या स्वातंत्र्याला ७५ वर्षे उलटून उलटूनही देशाला समस्यांना सामोरे जावे लागत आहे प्राथमिक शिक्षणाचा प्रश्न, जातीय दंगली, सन्मानार्थ हत्या, कृषी औद्योगिक समस्या आधी समस्यांच्यावर मात करावयाची असेल तर राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांचे कार्य आणि नेतृत्वच आपल्याला व सरकारला सामाजिक, शैक्षणिक, आर्थिक आणि सांस्कृतिक योजना आखण्यात सहाय्यभूत ठरेल.

निष्कर्ष

१. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांनी राजेशाहीत सामाजिक लोकशाहीचा प्रयोग केला. कोल्हापूर संस्थान आणि बडोदा संस्थान त्या सामाजिक लोकशाहीच्या प्रयोगाच्या प्रयोगशाळा होत्या.
२. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांनी 'मराठा राज्य' विकसित केले.
३. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांचे मराठा राज्य 'स्वायत्त' आणि 'प्रवाही' होते.
४. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांच्या राजेशाहीला शहाणपण आणि माया होती.
५. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांनी राजेशाहीत जबाबदार शासन पद्धतीला सुरुवात केली हा लोकशाही राज्यसंस्थेविषयी लोकशाही आयाम विकसित केला.
६. राजर्षी शाहू महाराज आणि महाराजा सयाजीराव गायकवाड यांची सामाजिक न्यायाची दृष्टी जॉन रॉल्स या विचारवंताच्या न्याय कल्पनेशी सुसंगत आहे.

संदर्भ:

१. वरखेडे रमेश(२०१७)महाराजा सयाजीराव गायकवाड भाषणसंग्रह भाग १, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई.
२. वरखेडे रमेश(२०१७)महाराजा सयाजीराव गायकवाड भाषणसंग्रह भाग २, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई.
३. वरखेडे रमेश(२०१७)महाराजा सयाजीराव गायकवाड भाषणसंग्रह भाग ३, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई.
४. वरखेडे रमेश(२०१७)महाराजा सयाजीराव गायकवाड भाषणसंग्रह भाग ४, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई.
५. वरखेडे रमेश(२०१७)महाराजा सयाजीराव गायकवाड भाषणसंग्रह भाग ५, महाराष्ट्र राज्य साहित्य आणि संस्कृती मंडळ, मुंबई.
६. जाधव रमेश(२०२३)शाहू छत्रपती आणि लोकमान्य टिळक : एक शोध, अक्षर दालन प्रकाशन, कोल्हापूर.
७. जाधव रमेश(२०१६)राजर्षी शाहू गौरव ग्रंथ, मराठी भाषा संचालनालय, मराठी विभाग, महाराष्ट्र शासन.

Tribes Education: Parity, Disparity and Trend

Dr. Kailas Sunil Patil

Asst. Professor, Dept. of Economics

Vivekanand College Kolhapur

(Empowered Autonomous)

Abstract: Sustainable and inclusive growth are the key aspects of welfare policies. Social inclusion is comparatively depends on level of education and results may possible if employment opportunities which again directly related to education. This paper presents macro view of education level, gross enrollment in different level of education and gender parity index of Indian scheduled tribes. Gender parity index indicates potential of human capital base of a community. The analysis is made on aggregate educational status of scheduled tribes with focus on gap and trend

Key words: Gross enrollment, GPI, socio-economic development, inclusive growth

1. Introduction:

In India, tribal communities are varied in their socio economic development. There are many policies are made and implemented for this community but only small portion or say number of tribal people have been benefited by the policies and programmes meant for specially this community. This shows an imbalanced progress and uneven process of change and development in their occupational structure and their standard of livings. Scheduled tribes are locally known as 'Adivasi'. The term ST- scheduled Tribes is first appeared in the Constitution of India. The definition of scheduled tribes is given in article 366(25) as "Such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under article 342 to be scheduled tribes for the purpose of this constitution." Article 342 prescribes procedure to be followed in the matter of specification of scheduled tribes. Success of socially inclusive growth of any region or nation is depends on development of marginalized section.

The term workforce is also called as labour force which indicates total supply of labour or worker in the economy at a particular period of time either they are employed or unemployed. The socioeconomic development of any community is depends on favourable change in structure of occupation or workforce engaged in more productive sector. This situation is related with level of education. There is close and direct relationship between education, workforce engagement and socioeconomic development. Well designed and successfully implemented education policy, skilled human capital and required adequate training facility develops workforce so that they obtain job on one side and creates favourable environment for sustainable economic progress ultimately.

Gender Parity Index:

GPI that is Gender parity index is an indicator which indicates relative access to education of male and females. This index is released by United Nations Educational, Scientific and Cultural Organization i.e. UNESCO. It is measured by using quotient of the number of females by the number of males enrolled in given stage of education. The stages of education are primary education, secondary education, higher

secondary education and higher education. GPI value equal to one indicates that there is equality between male and female. If the numeric value of GPI is less than one then it indicates that females are away from educational opportunities and if the GPI is more than one then it indicates that it is in favors in female than the male.

2. Objectives:

1. To know education status of ST in India
2. To understand educational index of ST in India.

3. Research Methodology:

The approach of the paper is descriptive and exploratory. The information and data is collected from secondary sources.

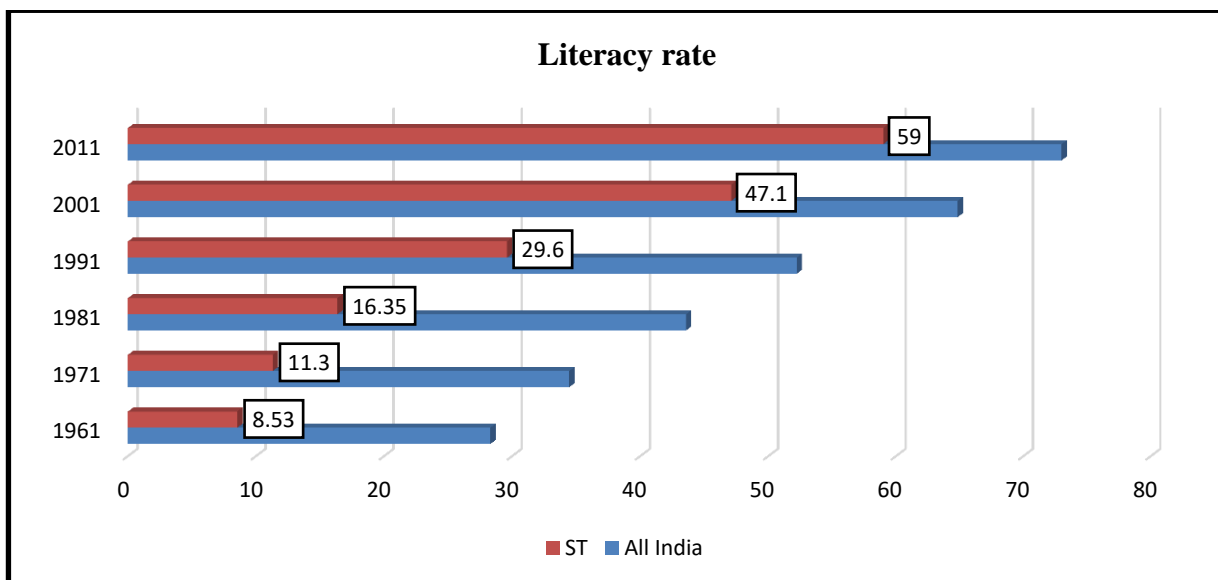
4. Scheduled Tribes in India

The Tribal communities have social and cultural importance in India. There are near about 550 communities comes under tribes. A tribe is a social division in a traditional society consisting of families linked by social, economical and religious ties, with a common culture. These communities possesses certain qualities and characteristics that make it a unique cultural with social and political entity.

In 1951, the number of scheduled tribes in India was 5.6 percent of total population. As per 2001 Census, it was 8.2% of the total population of India. Census data 2011 shows that the number of scheduled tribes in India is 10,42,81,034. It is 8.6 percent of the total population of India. Since last sixty years, overall literacy rate of India has increased. In case of scheduled tribes the literacy rate was just 8.53 percent in 1961 and in the year 2011 it seems 59 percent of total ST population but it is less than general literacy rate.

Year		1961	1971	1981	1991	2001	2011	2021
Total	All India	28.3	34.45	43.57	52.21	64.84	73	NA
	ST	8.53	11.3	16.35	29.6	47.1	59	
Male	All India	40.4	45.96	56.38	64.13	75.26	80.9	
	ST	13.83	17.63	24.52	40.65	59.17	68.5	
Female	All India	15.35	21.97	29.76	39.29	53.67	64.6	
	ST	3.16	4.85	8.04	18.19	34.76	49.4	
<i>Source : Office of the Registrar General, India</i>								

The male literacy rate of scheduled tribes is also increased from 13.83 percent in 1961 to 68.5 percent in 2011 and it is also comparatively low. In side of tribal women literacy the condition was poor in 1961 and rate was just only 3.16 percent and it takes favourable change and the ratio is 49.4 percent.



Gender Parity Index (GPI):

The Gender Parity Score indicates women's enrolment or success to acquire education at different level of education. The key advantage of the Gender Parity Index is that it enables comparisons to be made over time and among region or communities on the basis of gender.

Table 2 : Gender Parity Index (GPI) for Scheduled Tribe

Year	Secondary (IX-X)	Senior Secondary (XI-XII)	Higher Education
2013-14	1.00	0.93	0.81
2014-15	1.01	0.95	0.81
2015-16	1.02	0.97	0.83
2016-17	NA	NA	0.85

NA: Not available

Data Source: For School Education: U-DISE), NUEPA For Higher Education: AISHE Reports, MHRD

On the basis of information collected by Unified- District Information System for Education (U-DISE), NUEPA for school level education and the data available with All India Survey on Higher Education (AISHE), MHRD related to higher education gender parity index is calculated. The table no. 2 shows that since 2013-14 Gender Parity Index of Scheduled tribes in India at school level is more than 01 it indicates that the enrolment of female is more than male at this level. In case of senior secondary level of education the score is always more than 0.90 and it is also somehow favour in female. Index related to higher education indicates that there is need to made efforts for providing opportunities to tribal women's for higher education. The data series indicates inconsistency of women education in tribes. In the year 2013-14 STs GPI at secondary level of education is 1.00 and in the next phase of same enrolled candidates GPI is 0.95 and 0.97 for the year 2015-16 and 2016-17 respectively. This gap indicates female dropout at the

level and the dropout rate is increased at higher level of education because it is comes to score 0.85 on the year 2016-17.

Basically tribes are located in hilly area and most of the communities are changing their locations as per their occupation it impacts on the education status of this community in general and on female's education in particular. The factors which reduce school enrolment and drop out in ST community and the GPI less than 1 are illiterate parents, lack of awareness, Poor physical facilities, expensive schooling, lack of teaching staff and punitive practices etc.

To increase enrolment of tribes on all levels of education as well as to sustain GPI up to higher level there is need to provide physical and academic facilities to tribe located educational institutes on one side and on another side efforts to be made on government level as well as with the help of NGOs for to create awareness and provide scholarship like financial facilities. Now it is phase that higher education should provide placements related facilities and active in placement drive so that these newly higher educated employed tribes will be an ideals for their community and they can understand the importance of education with gender neutrality.

5. Conclusion:

Economic Status and education level are closely related. The central and state policies are in support of providing equal and more possibilities for educational improvements in tribes but still there is need of more efforts. GPI of scheduled tribes indicates that there is need of more effective plan for creating equality in education so that it helps to create favorable environment for socioeconomic upliftment of tribes in India

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गतकाळ ते वर्तमानकाळ असा ग्रामसंस्कृतीचा पट मांडणारी कलाकृती (पुस्तक समीक्षा)

प्रा. डॉ. एकनाथ आळवेकर

प्राध्यापक, मराठी विभाग

विवेकानंद कॉलेज, कोल्हापूर (अधिकारप्रदत्त स्वायत्त)

मराठी साहित्यातील प्रसिद्ध साहित्यिक आणि कथाकथनकार आप्पासाहेब खोत यांचा 'चांदवाडी रुपया' हा संस्कृती प्रकाशन,पुणे यांनी प्रकाशित केलेला ललित लेखसंग्रह असून त्यामध्ये एकूण बारा लेख आहेत. आप्पासाहेब खोत यांनी आपल्या लेखन साहित्यातून ग्रामीण जीवनातील शेती,समाज,निसर्ग,स्त्री,सण,संस्कृती यावर भाष्य केले आहे.शेती, जमीन झाड यांच्या पार्श्वभूमीवर व्यक्ती, कुटुंब, नाती, स्त्रीविश्व याविषयीची मांडणी करताना संस्कृती, परंपरा सांभाळत आप्पासाहेब खोत यांनी कृतार्थता भाव जपला आहे.ललितगद्य या साहित्यप्रकारातून सुद्धा आप्पासाहेब खोत यांच्या कथात्म शैलीचा विशेष प्रभाव जाणवतो.

या लेखसंग्रहातील बारा लेखांच्या माध्यमातून आप्पासाहेब खोत यांनी कृषी परंपरा, शेती, झाड, जनावर याबद्दलचा जिवाळा कृतज्ञता आणि कृतार्थतेची भावना नात्यातील भावनिक बंध, श्रद्धाळू मन अशा आशयसूत्रांना समोर ठेवून लेखन केले आहे.

'चांदवडी रुपया' या शीर्षक लेखातून खेड्यापाड्यातील शेतकरी बांधव सावकारी कर्जांमध्ये अडकल्याने त्यांची कोंडी कशी होते याबद्दल सांगताना ग्राम संस्कृतीमध्ये माणुसकी कशी जिवंत आहे याबद्दलही सांगितले आहे. सावकाराला महाभयंकर सैतान असे लेखकाने विशेषण वापरले आहे. रोगराई, दुष्काळ अशा संकटांमध्ये शेतकरी कुटुंबाला कर्ज घेण्यावाचून पर्याय नसतो. निवेदकाला खाडे या सावकाराकडून कर्ज घ्यावे लागते. शेतकऱ्याच्या आगतिकतेतून सावकाराकडून मुदत वाढवून घ्यावी लागली. कष्ट, काटकसर, बचत करून सावकाराचे कर्ज भागवताना एक चांदवडी रुपया कमी पडला. त्यावेळी गावातील शेतकऱ्याचा मित्र लखुपंत यांनी आपल्या जवळचा चांदवडी रुपया दिला. सावकाराचे कर्ज फिटले पण सावकाराने जमिनीची कागदपत्रे परत दिली नाहीत. पुढची मुदत देत राहिला पण शेतकऱ्याने ही साम- दाम -दंड ह्या मार्गाने सावकाराकडून कागदपत्रे परत घेतली. ज्या लखुपंत कुलकर्णी यांनी चांदवडी रुपया देऊन त्या शेतकऱ्यावर उपकार केले त्याला त्यांनी गांधी हत्येनंतरच्या दंगलीपासून वाचवले. कर्ज फेडण्यासाठी लखुपंत कुलकर्णी उपयोगी पडले पण त्याच्या उपकाराची परतफेड त्या शेतकऱ्याने त्यांच्या जीवित व वित्तहानी होण्यातून वाचवले. थोडक्यात, 'चांदवडी रुपया' या लेखातून खेड्यातील कर्जबाजारीपणा, शेतकऱ्याची निकड, सावकाराकडून होणारी फसवणूक, दहशत, उपकाराची परतफेड उपकारणे करणे, काट्याने काटा काढण्याची वृत्ती इत्यादी बाबी या लेखातून मांडल्या आहेत.

'ओंजळीतील दान' या लेखातून लेखकाने आई-वडील, चुलताचुलती, आजी या नात्यातील माणसानी मुलाबाळांचे आयुष्य सुखी व्हावे म्हणून आयुष्यभर पुरून उरेल एवढे स्वतःकडील ओंजळीतील दान दिलेले असते याविषयी सांगितले आहे. ते दान जमीन, जुमला, संपत्ती, सोने नाणे या स्वरूपाचे असत. तसेच ते आशीर्वादरूपी दानही असते. तेवढ्या दानात त्या मुलाबाळांचे आयुष्य सुखी समाधानी करण्याचे सामर्थ्य असते.या लेखातून लेखक परंपरावादी असल्याचे जाणवते. निवेदकाच्या आईला सासूकडून प्रेम मिळत असते. सासूसुनेच नातं प्रेमळ, समंजस असते. थोरल्या जावेबरोबरच्या संघर्षामुळे स्त्रियांच्या कोडमाऱ्याचेही वर्णन यात येते. अशा स्त्रियांची वेदना, त्यांचे दुःख याची जाणीव करून देणारा हा लेख आहे. लहानपणापासून आईचे कष्ट पाहणाऱ्या या निवेदकाने नोकरी लागल्यानंतर आईला दागिने करून घातले. ही कृतार्थतेची भावना ध्यानात घेता येईल.

'सासू सुनेचं नातं' या लेखातून सासू सुनेच्या नात्याच्या निमित्ताने बदलत्या खेड्याचे वास्तव स्त्रीचं जगणं मांडले आहे.खेड्यातील संस्कृती,तिथलं जगणं,स्त्रीचे सुखदुःख या सर्व गोष्टी खेड्यातील स्त्रियांच्या निवांतपणाच्या गप्पा,शेतात काम करत असतानाच्या गप्पा यातून ध्यानात येतात. स्त्रियांच्या गप्पातून घर, प्रपंच, पैपावण, सासुरवास, रूढी, परंपरा, म्हातारपणाची ससेहोलपट या गोष्टी ललित लेखातून समोर येतात.

सासूसुनेच नातं एकमेकांना समजून घेण्यातून, मदत करण्यातून, चुका माफ करण्यातून, कौतुक करण्यातून समजून येते. स्त्रीच्या जबाबदारी घेण्यातून त्या

घराचे घरपण टिकते. सून घराला जीव लावणारी हवी. घराचं भवितव्य आरोग्यपूर्ण स्त्रीवर अवलंबून असते. म्हणून निवेदकाची आई आपल्या सुनेला म्हणते, 'तू सांभाळून - हा मजी झालं.' (पृष्ठ ४७) आधुनिक काळातील सूनूबद्दलची मते लेखकाने मांडली आहेत. आताच्या परिस्थितीत सून म्हणून परक्या घरात येणाऱ्या मुलींच्याकडे शिक्षण आहे पण संस्कार नाहीत असे लेखकाने सूचित केले आहे. थोडक्यात, सासू सुनेच्या नात्याच्या निमित्ताने आप्पासाहेब खोत यांनी बदलत्या खेड्याचही चित्रण केले

आहे. हा लेख वैचारिक पातळीकडे झुकणारा आहे.

'बारा बलुतेदार' या लेखातून खेड्याची सांस्कृतिक ओळख असणारी गोष्ट असून बलुतेदारी यावर भाष्य करताना कुणबी आणि बलुतेदार यांच्यातील पारंपरिक संबंधाबद्दल सांगितले आहे. हा लेख बलुतेदारी संपुष्टात येत असल्याच्या काळातील असून या निमित्ताने बलुतेदारीची आठवण सांगितली आहे. कुणब्याकडून धान्य स्वरूपात मिळणाऱ्या बैत्यामुळे बलुतेदाराचा चरितार्थ चालायचा. अगदी कुणब्याच्या जीवावर बलुतेदारांची घरे धन धान्याने भरली जायची. बलुतेदाराना कुणब्याकडून मान, हक्क दिला जायचा. आधुनिक काळात बलुतेदारांचे वंशपरंपरेने चालत आलेले पारंपरिक व्यवसाय बंद पडले. बलुतेदारांच्या पुढच्या पिढ्यांना शिक्षण, नोकरी मिळाली. त्यामुळे बलुतेदारीकडे पाठ फिरवल्याचे दिसते. बलुतेदारी संपल्याने ग्राम संस्कृतीच्या खुणा संपुष्टात आल्या असे वाटते. त्यामुळे लेखक विषण्ण होतो.

'वाटणीची घुसमत' या लेखातून मानवा मानवातील संघर्ष मांडताना हा संघर्ष सत्ता आणि संपत्तीसाठी कसा असतो हे सांगितले आहे. मानव जातीतील वाटणीसाठीचा संघर्ष पुराणापासून चालत आलेला आहे. आधुनिक काळात तर तो अनेकवेळा टोकाचा संघर्ष झालेला पाहायला मिळतो. पण वाटणीत जर संयम, तडजोड, समंजसपणा, निस्वार्थी वृत्ती, समाधानी वृत्ती दाखवली तर माणसाचे आयुष्य सुखी होऊ शकते. हा विचार या लेखातून मांडला आहे. रामायण, महाभारत सुद्धा वाटणीसाठी घडले असा संदर्भ लेखकाने दिलेला आहे.

वाटणीसाठी कोर्ट केस चाललेली असते. कोणत्याही वाटणीत आपल्यावर अन्याय झाला हेच बोलले जाते. वाटणीमध्ये स्वार्थ, अहंभाव, खोटी प्रतिष्ठा, सत्ता, लालसा, हव्यास आणि पराकोटीची ईर्ष्या या गोष्टी दडलेल्या असतात. आप्पासाहेब खोत यांनी 'वाटणी' या शब्दाची फोड करून वेगवेगळे शब्द तयार करून व त्याचे अर्थ मांडले आहेत.

'गोफणीचे वतन' या ललितलेखातून शेतकरी पिकांच्या संरक्षण करण्यासाठी ज्या साधनाचा वापर करित असतो. ते गोफण हे साधन मध्यवर्ती ठेवून त्याभोवतीची कथा गुंफली आहे. गोफण हे युद्धातील एक हत्यार सुद्धा आहे. त्या गोफणीच्या बळावर वर्चस्व गाजवून बक्षीस म्हणून गोफण बहादुर जमिनीचा अर्धा हिस्सा मिळवतो. दगड अचूक मारणे ही एक कला आहे. त्या कलेच्या जोरावर गोफण बहादुर दुसऱ्याची जमीन हडपणाच्या व्यक्तीवर दगडांचा मारा करतो. त्याला पळवून लावतो. त्या बदल्यात गोफण बहादुरला वतन मिळते. हा गोफण बहादुर लेखकाच्या घरातीलच सदस्य असतो. गोफणीमुळे मिळालेले वतन म्हणून त्याला 'गोफणीचे वतन' हा एक वेगळा शब्दप्रयोग लेखकाने तयार केला.

'पत्रास कारण की' या लेखातून पत्र लिहिण्याची जुनी परंपरा आणि आधुनिक पत्रव्यवहारची पद्धत यावर भाष्य केले आहे. एकमेकांना पोस्टकार्ड, आंतरदेशीय पत्रातून ख्यालीखुशाली कळविण्याचा जुना काळ जिवंत केला आहे. माणसांबरोबर गुरे-ढोरे, पिके, पाऊसपाणी यासंबंधीच्या वार्ता पत्रातून समजत होत्या. त्या काळात पत्र लिहिण्याचा आणि पत्र वाचण्याचा तो सोहळा असायचा. एकूणच पत्रव्यवहाराचा बदलता काळ, पत्र, मनीऑर्डरसाठी पोस्टमनची वाट पाहणे, कुरिअरची सेवा, ई-मेल यासंबंधीची मांडणी केली असून हा असा संमिश्र कालखंड या लेखातून लेखकाने मांडला आहे. पूर्वीच्या पत्र लेखनातील भाषा, त्यातला जिव्हाळा, पालहाळिकपणा यावर भाष्य करताना लेखक म्हणतो, 'अशी मायेन, प्रेमान, जिव्हाळ्यांन ओथंबलेली पत्र आता कोणीच कोणाला पाठवत नाहीत'. पत्रलेखन थांबल्याने लेखन थांबलं आणि स्वच्छ अक्षरातील शुद्धलेखन थांबलं असे म्हणता येईल.

'वाटेवरचा प्रवास' या लेखातून वाटा किंवा रस्ते यांची ग्रामीण परिसरातील ओळख करून देताना वाटा या प्रगतीच्या खुणा कशा असतात हे सांगितले आहे. माहेराची वाट, सासरची वाट, पंढरीची वाट, मळ्याची वाट अशी संबोधने वापरून माणसाने वाटेला नात्यात गुंतवलेले आहे. वाटेवरून वाक्यप्रचार आणि म्हणींचाही वापर होत असतो. वाट चुकणं हे धोक्यात लक्षण आहे मग ती माणसाची वाट असेल किंवा पशुपक्षांची वाट असेल. शेतवडीतील

वाटांवर अतिक्रमण होऊन पाऊलवाटा, मळवाटा, पाणंदवाटा नामशेष होऊ लागल्या आहेत. गावाचं गावपण कशात आहे हे सांगताना आप्पासाहेब खोत म्हणतात, 'गावाला पाणवठा आणि शेताला रानवाटा असाव्यात. आप्पासाहेब खोत यांनी या लेखाच्या माध्यमातून पारंपरिक बाबी सांभाळण्यासंबंधी काही विचार तत्त्वज्ञान मांडले आहे.

'जांभळाचे दिवस' या लेखातून जांभळाच्या हंगामात जांभळाच्या झाडावर चढून जांभळं काढणं, जांभळ खाणं इथपासून ते जांभळाचे गुणधर्म अशी वैविध्यपूर्ण माहिती लेखकाने स्वतःच्या शैलीत मांडली आहे. जांभळ खाण्याचे बालपणातले आणि तरुणपणातले दिवस पासून ते आज वृद्धत्वाकडे झुकताना केवळ औषध म्हणून जांभळाकडे पाहण्याची मानसिकता इथपर्यंतच्या बाबी या निमित्ताने मांडल्या आहेत. या लेखातही जुना काळ आणि आधुनिक आधुनिक काळ यांचा समन्वय साधलेला आढळतो.

'मळ्यातील घर' या लेखात घर ही गोष्ट कुटुंबाला बांधून टाकणारी वास्तु असते असे सांगताना बदलत्या काळात घर या संस्कृतीवर सुद्धा आघात होऊन त्यातील जिव्हाळा, ओलावा कमी झालेला आढळतो. तरीही मूळ घराशी बांधिलकी जपणारी लेखकाची पिढी आढळते. या लेखातून मळ्यातील घराच्या आठवणी सांगितल्या आहेत. घरासाठी जोतिबाच्या डोंगरावरील वापरलेली दगड, मळ्यातील घरात गेलेले बालपण यासंबंधीच्या गोष्टी आल्या आहेत. घराच्या निमित्ताने मळ्यामधील अनेक आठवणी या लेखातून सांगितल्या आहेत. बदलत्या काळात मळ्याच्या घराची पडझड झाली. घराची वाटणी झाली पण आप्पासाहेब खोत यांनी मात्र वाटणीला आलेल्या मळ्यातील घराच्या भिंतींच्या आधारे खोल्या बांधल्या आणि मळ्याच्या घराच्या आठवणी पुन्हा जाग्या केल्या. जुन्या परंपरागत गोष्टींवर विश्वास ठेवणारे जुन्या घराबद्दलची, मळ्याबद्दलची कृतार्थता त्यांच्या या कृतीतून जाणवते.

'देवआंबा' या लेखातून लेखकाच्या मळ्यातील देवआंबा नावाच्या झाडाच्या आठवणी जागा केल्या आहेत. देव आंब्याबद्दलची कृतज्ञता यातून व्यक्त केली आहे. लेखकाच्या आईने त्या आंब्याला देव आंबा हे नाव ठेवले. मूल झाले तर त्या आंब्याचा पहिला मोहर आणि पहिलं फळ देवाला वाहीन असा नवस तिने केला होता. मूल झाल्यावर आजही ती प्रथा सुरू आहे असे लेखक सांगतो. त्या देव आंब्यासंबंधीच्या अनेक आठवणी लेखकाने सांगितल्या आहेत. केवळ त्या शेतकऱ्यालाच त्या कुटुंबापुरता नाही तर पशुपक्षी (पोपट, वानर) यांना आधार देणारा तो देवआंबा असतो. कालांतराने तो देवआंबा तोडला जातो. देव आंब्याबद्दलही कृतार्थता लेखकाने व्यक्त केली आहे. देव आंब्याचे ते झाड जगण्याचे बळ देणारे कसं होतं हे सांगताना देव आंब्याच्या साक्षीनं घडलेल्या अनेक घटना कृतज्ञतापूर्वक सांगितल्या आहेत.

थोडक्यात, 'चांदवाडी रुपाया' याललित लेखसंग्रहातून आप्पासाहेब खोत यांनी ग्रामीण जीवनाचा पट मांडताना शेती, शेतकरी, सावकार, सावकारी या बाबी संबंधी लिहिले आहे. पारंपरिक गोष्टीबद्दलची कृतार्थता आणि कृतज्ञता, स्त्रियांची वेदना, कौटुंबिक नातेसंबंध, ग्रामीण जीवनाचा कणा असणारी बलुतेदारी, सत्ता आणि वाटणीसाठी निर्माण होणारा संघर्ष या गोष्टीनाही प्राधान्य दिले आहे. जुना काळ आणि आधुनिक काळ यांचा समन्वय साधत ग्रामीण जीवनाचे विश्लेषण लेखकाने केले आहे. या सर्वच लेखातून लेखकांची वैचारिक भूमिका आणि चिंतनशीलता प्रकर्षाने जाणवते.

चांदवाडी रुपाया (ललित लेखसंग्रह)

- आप्पासाहेब खोत

संस्कृती प्रकाशन, पुणे 2024