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**"Agricultural Transformation and Rural Development
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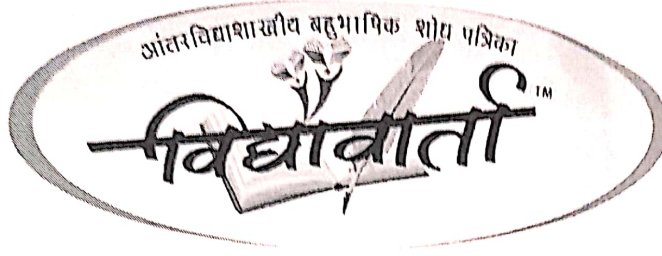
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Agro-Ecological Analysis of Cropping Patterns in the Krishna River Basin, Karad

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Abstract :

Agriculture is base of India's economy. In the Indian economy Sustainable agriculture development to give us the better performance. Now this era agriculture face numerous challenges. Cropping pattern also change the sustainable agricultural practices. Cropping pattern refers to the spatial and temporal arrangement of crops grown in a given area. This paper find out the cropping pattern and land utilization in the Krishna River Basin in Karad region. The Krishna River is a main and important water source for the agricultural lands in the Karad region. The region, plays an important role in the basin's agriculture. The research paper focus on cropping pattern, different type of agricultural practices, crop changes, and socio-economic impact on the agriculture production. Study of the soil, irrigation, and climate to understand their role in the region of Karad cropping patterns. The findings can help in planning of sustainable agricultural practices and water usage for better crop production in the region.

Keyword: - cropping pattern, crop changes, crop production, land utilization, Sustainable agriculture development

Introduction:

The Krishna River Basin expanded the multiple states, including the Maharashtra. The

Karad region, situated in the state of Maharashtra, plays an important role in the basin's agriculture.

The river is a main and important water source for the agricultural lands in the Karad region. The cropping pattern is depend on the availability of water from the Krishna River and its tributaries, soil fertility, and local agricultural practices In Karad. Cropping pattern refers to the spatial and temporal arrangement of crops grown in a given area. It is determined by various factors, such as climate, water resources, soil types, and socio-economic conditions. In the Indian economy Sustainable agriculture development to give us the better performance. Now this era agriculture face numerous challenges. Cropping pattern also change the sustainable agricultural practices. The research paper focus on cropping pattern, different type of agricultural practices, crop changes, and socio-economic impact on the agriculture production. Main objective is to identify major crops and examine the influence of irrigation on cropping pattern. So we chose the particular area and study along with the objective. The Geographical, social and economic factors are affecting to the cropping pattern of Karad region. Karad region is good for the agriculture development and production of various crops for economic growth. The Krishna River and its tributaries Koyna, Uttar mand, Tarali, provide irrigation sources for agriculture. The extent of irrigation facilities in the region plays an important role in cropping choices. It's a good sing for variation of cropping pattern. In the Karad farmers are often practice crop rotation, ensuring soil fertility is maintained. Diversification is increasingly being adopted to mitigate risks from monsoon variability and market fluctuations. Government policy also available to the subsidies for the sugarcane, encourage the farmer to the cultivation of sugarcane. Additionally, support programs for irrigation infrastructure influence cropping

decisions. That is the main purpose of the research paper.

Objective of the Study:

1. To assess the cropping patterns in the Karad region.
2. Identify major crops and study the influence of irrigation on cropping pattern.
3. Evaluate the sustainability of current practices.

Methodology:

1. Data Collection: The present study is based on secondary data collected through District Statistical Office, Department of Agriculture Satara District, Season and Crop Reports published by the department of Agriculture, Statistical Abstract of Maharashtra, Socio - Economic Review and of Satara District- 2017-18 & 2020 - 2024, District census and hand book.

2. Study Area: The paper focuses on the Karad region, located in the Satara district of Maharashtra, within the Krishna River Basin. Geographically karad tahsil is located 17 to 74 32' North latitude and 73 58' to 74 16' East longitude. The total area of karad is 566 m. The study area has a well-developed drainage pattern by Krishna, Koyna, Uttar mand, Tarali and their tributaries. The river is occupied by typical black soil.

Discussion & Result: -

"Land Use is the actual and specific use to which the land source is put in terms of inherent land use characteristics." (R. L. Sing and Tiwari, page no. 76)

"Land Utilization is the process of exploiting the land use that is applied to specific object."

"Cropping Pattern means proportion of area under various crops at particular period of the time." (C. B. Mamoriya)

"Cropping pattern refers to the spatial and temporal arrangement of crops grown in a given area."

Formula: -

$$S.D. = \frac{\sum d^2}{N}$$

D = Difference between actual crops % in a given opprobrious in the article crop.

N = Number of Crops.

(C. B. Mamoria, Agricultural Problems of India Page no.107 & Majid Hussin, Agriculture Geography)

Factors affecting to the Cropping Patterns:

1. Geographical and Climatic Factor.
2. Socio-Economic Factors

Geographical and Climatic Factor.

Climate: - Karad region good for the agriculture development and production of economic growth. The climate of the Karad region is a tropical climate with a specific monsoon season, its effect on the cropping patterns. The average annual rainfall in the region is significant, but its distribution are different, which affects irrigation dependency.

Soil Type: - The soils in Karad are mainly black soils, its ideal soil for crops like cotton, soybeans, and sugarcane, but that type of soil may also support pulses and vegetables in some areas.

Water Availability: The Krishna River and its tributaries, such as the Koyna rivers, provide irrigation sources. The extent of irrigation facilities in the region plays an important role in cropping choices. It's a good sing for variation of cropping pattern.

Socio-Economic Factors Influencing Cropping Patterns:

Socio-economic factors is crucial for developing policies and interventions that promote sustainable and resilient agricultural practices in the Krishna River Basin.

Economic Factors: Farmers are motivated to grow crops that offer higher profitability. For instance, the cultivation of cash crops Market Demand is mostly of sugarcane and soyabean. Farmers tend to shift crops based on current market prices and the demand for products. So mostly sugarcane and soybeans crops are grown because of their market value and potential returns

Government Policies: The affordability

of inputs such as seeds, fertilizers, and pesticides, along with government subsidies, can make certain crops more attractive, thereby influencing cropping patterns. Government available the subsidies for the sugarcane, encourage the farmer to the cultivation of sugarcane. Additionally, support programs for irrigation infrastructure influence cropping decisions.

Socio-Cultural Factors: The region's cultural preferences also shape crop choices. The traditional crops of Karad is pulses and millets have seen a decline in favour of cash crops. Also Labour availability is an essential part of agriculture in the Krishna River Basin. The availability of labor during peak farming seasons influences the choice of crops.

Cropping Patterns in Karad:

Major Crops:

In a Kharif season the major crops are paddy, sugarcane, soybeans, and groundnut and the Rabi Season crops such as wheat, and mustard. Other Crops are various types of vegetables and fruits, including grapes and bananas, are cultivated in some parts of Karad.

Crop Rotation and Diversification:

In the Karad farmers are often practice crop rotation, ensuring soil fertility is maintained. Diversification is increasingly being adopted to mitigate risks from monsoon variability and market fluctuations.

Irrigation Patterns:

The Krishna River Basin provide the irrigation, which supports multiple cropping patterns. Irrigation systems, including canals, wells, and drip irrigation, help in water management. However, over-reliance on irrigation can lead to waterlogging and salinity problems in some areas. The presence of irrigation facilities, such as those provided by the Upper Krishna Project, significantly impacts cropping choices. Farmers in irrigated areas often cultivate water-intensive crops like rice and sugarcane, while those in rained regions may opt for drought-resistant varieties.

Sustainability of the Current Cropping Patterns:

Water Management: The excessive reliance on water-intensive crops, particularly sugarcane, may lead to unsustainable water use in the long term. Efficient irrigation systems, rainwater harvesting, and adopting drought-resistant crops are crucial for sustainability.

Soil Health: Soil fertility and health determine the suitability of certain crops, influencing farmers' choices based on soil conditions. Continuous mono cropping, particularly of high-demand crops, can lead to soil degradation. Sustainable practices like crop rotation, organic farming, and reducing the use of chemical fertilizers can help maintain soil fertility.

Climate Change: Changes in rainfall patterns and temperature rise due to climate change will likely alter the existing cropping patterns. This calls for adaptive strategies like growing heat-tolerant crops and improving water conservation practices.

Educated farmers are more likely to adopt innovative and sustainable agricultural practices, including crop diversification and integrated pest management, leading to more resilient cropping systems. Subsidies, minimum support prices, and crop insurance schemes can incentivize farmers to grow specific crops, thereby influencing cropping patterns.

Current Cropping Patterns:

• **Rice Cultivation:** Rice is a staple crop in the basin, particularly in areas with access to irrigation. However, its high water demand raises concerns about water scarcity and soil health.

• **Sugarcane Production:** The basin is a significant producer of sugarcane, a water-intensive crop. This has led to debates about the sustainability of cultivating such crops in water-scarce regions.

Conclusion:

In conclusion, while the Krishna River Basin's current cropping patterns have supported agriculture, addressing water scarcity, soil health, and climate variability is crucial for their

long-term sustainability. Adopting integrated water management strategies, diversifying crops, and implementing conservation practices are essential steps toward achieving sustainable agriculture in the region. Cropping patterns in the Krishna River Basin are shaped by a complex interplay of socio-economic factors that influence farmers' decisions and agricultural practices. The Krishna River Basin in Karad is characterized by diverse cropping patterns influenced by factors like water availability, soil conditions, and socio-economic pressures. While the region benefits from irrigation and fertile land, challenges such as water scarcity, soil degradation, and climate change threaten the long-term sustainability of the current cropping patterns. Adaptation strategies, including water conservation, crop diversification, and sustainable farming practices, are necessary for ensuring the future of agriculture in Karad. Main Challenges is that there water scarcity during dry seasons, despite irrigation sources. Fluctuations in crop yields due to irregular monsoons and climate change. Dependence on sugarcane and water-intensive crops, leading to water over-exploitation. Access to agricultural extension services provides farmers with information on best practices, pest management, and crop selection, impacting their cropping decisions.

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An Analytical Study of Rural Infrastructure Financing to Sustainable Development

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Abstract -

Agriculture sector is a backbone of our country. So, Indian economy is the agricultural economy and real India is in the villages. Without rural economic development and sustainable development, the objectives of economic planning cannot be reached. So, banks and other financial institutions are considered a vital role in rural economic development and sustainable development in India. NABARD is playing a vital role in the economic development of rural India. A developing country, like India, ought to be an ideal environment for micro-finance programmes seeking to reach the poor and attain financial sustainability. Microfinance is regarded as a central poverty alleviation strategy and a means of deriving economic growth and employment of small, micro & medium enterprises. A complex set of best practice models and a network of active members and support of rural people in an organized form and the active support of banks and NABARD in India have emerged to support a thriving industry. The present research paper focuses on financing rural infrastructure for



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