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IRRIGATION INTENSITY IN AKKALKUWA TAHSIL: A GEOGRAPHICAL ANALYSIS (2023-24)

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Abstract

This research paper explores the irrigation intensity in Akkalkuwa Tahsil, Nandurbar District, Maharashtra, for the agricultural year 2023-24. It examines the spatial distribution, sources of irrigation, and factors influencing irrigation patterns. The study also evaluates the impact of irrigation on agricultural productivity and sustainability in the region. The findings provide insights into improving water resource management and ensuring sustainable agricultural practices in the tahsil.

Keywords: Irrigation Intensity, Akkalkuwa Tahsil, Agriculture, Water Resources, Sustainable Development

Introduction

Akkalkuwa Tahsil, located in Nandurbar District of Maharashtra, is predominantly a tribal and rural region where agriculture serves as the primary livelihood. Given its geographical and climatic conditions, irrigation plays a crucial role in determining agricultural output. This study aims to analyze the irrigation intensity, availability of water sources, and their impact on farming activities in the tahsil during the year 2023-24.

Objectives of the Study

1. To assess the spatial distribution of irrigation in Akkalkuwa Tahsil.
2. To identify major sources of irrigation and their efficiency.
3. To analyze the trends in irrigation intensity from previous years.
4. To evaluate the impact of irrigation intensity on crop production.
5. To suggest measures for improving irrigation practices.

Study Area

Akkalkuwa Tahsil is situated in the northernmost part of Maharashtra, sharing a border with Gujarat and Madhya Pradesh. The tahsil is characterized by hilly terrain, dense

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forests, and seasonal rivers. The main river systems, including the Narmada and its tributaries, contribute to the irrigation network. The region receives moderate rainfall but faces challenges such as erratic monsoons and water scarcity during dry months.

Data and Methodology

The study utilizes primary and secondary data sources:

- **Primary Data:** Field surveys, interviews with farmers, GPS mapping of irrigation infrastructure.
- **Secondary Data:** Government reports, agricultural department statistics, satellite imagery, and past research papers.

The methodology involves

1. Collection of data from government and agricultural agencies.
2. GIS-based spatial analysis of irrigation sources.
3. Comparative analysis of irrigation trends over the past decade.
4. Correlation between irrigation intensity and crop yield statistics.

Results and Discussion

Irrigation Sources in Akkalkuwa

The tahsil relies on the following irrigation sources:

- **Wells and Borewells:** Common in flatlands, though declining due to groundwater depletion.
- **River Lift Irrigation:** Used along the banks of the Narmada and other small rivers.
- **Check Dams and Farm Ponds:** Increasingly adopted as part of water conservation initiatives.

Trends in Irrigation Intensity

The irrigation intensity (ratio of irrigated land to net sown area) in Akkalkuwa Tahsil has witnessed fluctuations over the years. In 2023-24, preliminary estimates suggest an irrigation intensity of approximately **42-48%**, an improvement from previous years due to increased government interventions.

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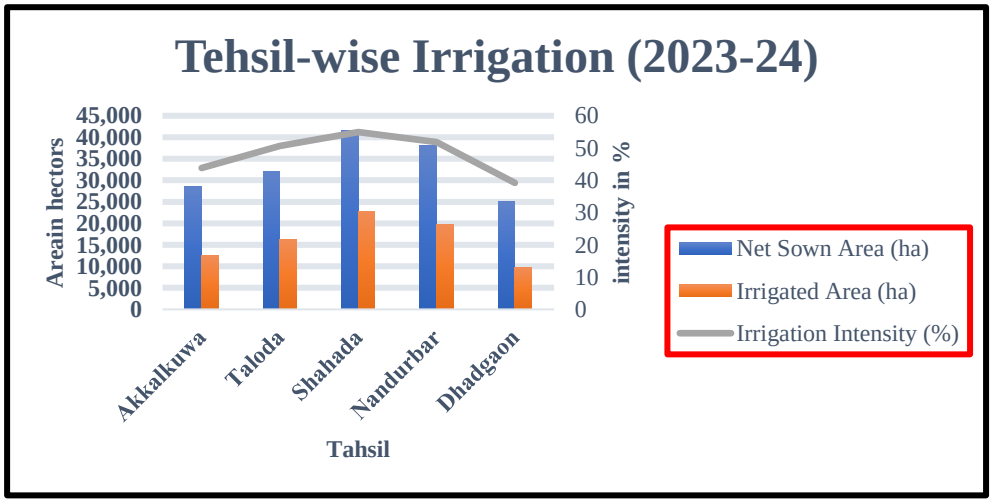
Tehsil-wise Irrigation Data (2023-24)

Tehsil	Net Sown Area (ha)	Irrigated Area (ha)	Irrigation Intensity (%)
Akkalkuwa	28,500	12,500	43.86
Taloda	32,000	16,200	50.63
Shahada	41,500	22,800	54.94
Nandurbar	38,000	19,700	51.84
Dhadgaon	25,000	9,800	39.20



Challenges in Irrigation Development

Despite improvements, several challenges persist:

- **Water Scarcity:** Limited storage capacity and over-reliance on rainfall.
- **Inefficient Water Use:** Traditional irrigation methods lead to water wastage.
- **Land Topography:** Hilly terrain restricts large-scale canal irrigation.
- **Financial Constraints:** Small and marginal farmers struggle to afford modern irrigation systems.

Impact of Irrigation on Agriculture

- **Increase in Crop Yield:** Regions with better irrigation facilities report higher productivity.

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- **Shift in Cropping Pattern:** Farmers are moving from rain-fed crops to irrigated cash crops.
- **Economic Growth:** Enhanced irrigation leads to better income and rural development.

Recommendations for Sustainable Irrigation

1. **Expansion of Micro-Irrigation:** Adoption of drip and sprinkler irrigation.
2. **Strengthening Water Harvesting Structures:** More check dams and farm ponds.
3. **Government Support Programs:** Increased financial assistance for irrigation projects.
4. **Community-Based Water Management:** Encouraging farmers' participation in managing local water resources.
5. **Use of Remote Sensing and GIS:** For better monitoring and planning of irrigation networks.

Conclusion

Irrigation intensity in Akkalkuwa Tahsil has shown gradual improvement, yet challenges remain in achieving sustainable water resource management. Strategic planning, technological advancements, and government interventions are essential for optimizing irrigation potential and ensuring agricultural sustainability in the region.

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