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Dynamics of Agricultural in Hyderabad State: Soil, Irrigation, Crops and Socio-Economic Practices in Karnatik Regions.

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The agricultural landscape of Hyderabad State is a complex interplay of soil types, climatic conditions, irrigation methods, and crop preferences, which very significantly across its regions. The state's agricultural practices are deeply influenced by its geography, with the Karnatik region which includes Aurangabad Subha and Hyderabad Karnataka regions which has black soil and the Telangana region by sandy soil. These differences in soil composition have led to distinct irrigation needs and farming techniques. The black soil of the Karnatik region has a high moisture retention capacity, reducing the necessity for extensive irrigation. During the cold season, dew deposits further supplement the moisture levels, making it suitable for crops like rice, sugarcane, and garden produce. In contrast, the sandy soils of Telingana require efficient water storage systems, leading to the construction of dams, tanks and anicuts (small dams) to collect and distribute rainwater for irrigation.

The essence of this article is to enhance the knowledge of the agricultural practices, irrigation methods, crop cultivation, and socio-economic aspects of farming in Hyderabad State, especially Karnatik region. Through this article an attempt has been made to look in the aspects on soil types, irrigation techniques, Crops & new innovations related to agricultural practices and crop varieties.

Soil and Irrigation Systems

The Karnatik region is characterized by its black soil, which has a high moisture retention capacity. This natural advantage reduces the need for extensive irrigation systems. The soil's ability to retain moisture is further supplemented by the cold season's heavy dew

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deposits, which provide sufficient moisture for crop growth and maturity. This natural irrigation system supports the cultivation of crops like rice, sugarcane, and garden produce. However, where irrigation is necessary, wells are the primary source of water. In contrast, Telingana's sandy soil lacks the moisture retention capacity of black soil, making water storage and irrigation crucial for agriculture. The region's undulating terrain has been ingeniously utilized to construct dams across valleys and gorges.

The irrigation infrastructure in Hyderabad State is a testament to the ingenuity of its people and the legacy of its former rulers. The state relies on a combination of traditional and modern irrigation methods, including wells, tanks, canals, and anicuts. The black soil of the Maratha region minimizes the need for extensive irrigation, as it retains moisture effectively.

Tanks (large reservoirs) and kuntas (ponds) are significant sources of irrigation in the region. The water from Government tanks is utilized for irrigating the wet lands; by paying a water tax. The state maintains 370 large tanks and 11,015 juntas, along with 1,347 channels. Large tanks are managed by the Public Works Department, while smaller tanks and kuntas are overseen by Revenue officers. The dastband system has encouraged local zamindars and officials to take up the maintenance of breached tanks, receiving a percentage of the revenue post-reconstruction.

Wells are one of the primary sources of irrigation; fields were irrigated by the primitive method of lifting water using bullock-drawn buckets. The state has 123,175 wells. Supply channels from a river or a perennial stream are constructed to carry water to tanks, farmers sometimes use hand buckets (bhurki or guda) to draw water, ensuring a steady flow. Masonry wells cost Rs. 400–600, while stone-lined wells without mortar cost Rs. 200–300. Each well typically has two bullock runs and two buckets, irrigating 4–5 acres of rice or sugarcane and up to 10 acres of garden land. This traditional method remains vital for agriculture in the region.

Anicuts (dams) have been constructed across rivers like the Tungabhadra to divert water into side channels for irrigation. Across Tungabhadra, in Lingsugur District, a series of anicuts have been constructed to hold up the water, which is directed into side channels and is used for supplying tanks and fields along the banks of the river. There are several anicuts in a length of 30 miles on the Tungabhadra, the principal one being at Kuragal, which extends completely across the river. A new project is underway to divert water from the Manjra River in Medak District for irrigation and tank supply.

Crop & Irrigation Practices

Rice Cultivation

Rice occupies 6th place among crops in Hyderabad State, with 3.8% of the total cultivated area. It ranks 11th among Indian provinces in terms of rice acreage and 6th in irrigated rice cultivation. 76% of rice cultivation in Hyderabad is irrigated, emphasizing the crop's reliance on water availability. Rice requires consistent water supply (43 inches over 90 days) and a warm climate (mean temperature above 75°F). The yield is 1,000 lbs of grain and 1,600 lbs of straw per acre, with a grain-to-straw ratio of 1:1.6. Labor-intensive practices like reaping, threshing, and winnowing are highlighted, with costs amounting to 10% of the grain's value.

The high dependency on irrigation makes rice cultivation vulnerable to water scarcity. The labor-intensive nature and low profitability (compared to jawar and bajra) raise questions about its economic viability for small farmers. Additionally, the inferior quality of rice straw as fodder impacts livestock health in rice growing regions.

Wheat Cultivation

Wheat Cultivation ranks 4th among crops in Hyderabad with only 11 lakh acres (4.5% of net cropped area). It ranks 9th among Indian provinces. Wheat thrives in fertile silts, silt loams, and clay loams. Hard ‘Red wheat’ varieties are prominent in Marathwara region. The crops percentage of area sown is less than 1% in Hyderabad Karnataka Region that to Gulbarga has the highest sown area with 0.35% of total land share. These crops are typically sown near wells and are watered once a week. The proximity to wells ensures that these crops receive adequate moisture without the need for extensive irrigation infrastructure. The focus on hard red wheat varieties indicates a preference for drought-resistant crops suited to the region's climate. Hyderabad ranks low in irrigated wheat cultivation, indicating a reliance on rain-fed farming.

Jawar (Sorghum) Cultivation

Jawar is the most widely grown crop in Hyderabad, covering 75 lakh acres (31% of net cropped area). (4 p65) It is valued as both a food and fodder crop. Jawar is highly adaptable to dry conditions and produces large quantities of palatable fodder quickly. Rabi jawar (sown in September/October and harvested in February/March) is prominent in Marathwara and Karnatic Region.

Jawar's dominance underscores its suitability to Hyderabad's semi-arid climate. Its dual role as a food and fodder crop makes it a cornerstone of the region's agriculture.

However, the focus on jawar may limit crop diversification and increase vulnerability to pests or diseases.

Bajra Cultivation

Bajra Cultivation ranks 3rd, covering 16 lakh acres (7.2% of net cropped area). Bajra is nutritionally rich (10% protein, 70% starch) but its straw is inferior to jawar as fodder. Bajra is often grown with pulses, reflecting traditional intercropping practices. The crops percentage of area sown is less than 1.92% in Hyderabad Karnataka Region that to Gulbarga has the highest sown area with 0.68%. This crop is very popular in this region because of it drought resistant nature and suitable for this kind of regions.

Bajra's nutritional profile makes it a valuable food crop, but its poor fodder quality limits its overall utility. Mixed cropping with pulses enhances soil fertility and provides dietary diversity.

Sugarcane Cultivation

Sugarcane production ranks 14th, with 0.4 lakh acres. It is a high-value crop due to its capital-intensive nature and profitability. Sugarcane requires significant water (50-65 inches annually), making it suitable for irrigated areas. This crop is also a labour intensive and expensive to handle the financial matters and land holding of farmers is another issue for large scale productions and there is no scope for more experiments also. The chief marketing centres are Nizamabad, Medak, Bidar and osmanabad districts**.** Despite its high profitability, sugarcane's limited acreage suggests constraints such as water availability and high cultivation costs. Its susceptibility to pests and diseases further complicates large-scale adoption.

Cotton Cultivation

Cotton ranks 2nd, covering 37 lakh acres (13% of net cropped area). Hyderabad contributes 10.2% of India's cotton output. Cotton is primarily rain-fed and rotated with jawar or bajra depending on soil type. Cotton's prominence highlights its economic importance, but its reliance on rainfall makes it vulnerable to monsoon variability. The rotation practices indicate sustainable farming methods to maintain soil health.

Tobacco Cultivation

Tobacco ranks 5th, with 0.8 lakh acres (0.2% of net cropped area). 90% of tobacco is rain-fed, while irrigated tobacco is primarily exported. Tobacco's limited acreage and export focus suggest it is a niche crop. Its labour-intensive harvesting and curing processes require skilled labour, which may limit its scalability.

Ryotwari System

The ryotwari system was the prevailing land revenue system in Hyderabad. Under this system, cultivators pay land revenue directly to the state. The revenue is calculated based on the land's productivity and the crops grown.

In deserted villages leased by the state, the leaseholder can charge tenants any rent, provided it does not exceed the previous state rates. Pattadars (landholders) may sublet their lands or enter into partnerships with shikmidars (co-cultivators). The produce and expenses are divided based on the cattle employed by each party. Sub-tenants often pay higher rents, either in cash or kind, to the pattadars.

Inamdars and Money-Lenders

Inamdars (landlords) and non-cultivating classes typically lease their lands. Money-lenders, who often purchase occupancy rights, charge higher rents or shares from sub-tenants. They may also provide funds for cattle and implements, charging interest or higher rents. This practice is more common in Karnatik where land values have risen significantly since the settlement.

Agricultural labourers and domestic servants represent unskilled labour, while carpenters, blacksmiths, and masons are considered skilled labour. Unskilled labourers earn between Rs. 30 and Rs. 36 per annum, along with daily meals and annual provisions like blankets and sandals. Labourers may borrow wages in advance for expenses like marriages, agreeing to work at reduced rates to cover the interest.

Wages are often paid in the form of cash or kind. Daily labourers typically receive grain, while cotton-pickers get a share of the cotton they harvest. Village artisans are usually paid in kind, though some receive partial cash payments. During periods of high grain prices, employers may switch to cash wages.

The introduction of favourable land assessment rates has spurred agricultural activity, increasing the demand for labour and pushing wages up. For instance, labourers who previously earned Rs.30 per annum now demand Rs.36. This wage increase is consistent across all labour categories, including artisans and domestic servants. Higher food grain prices have also contributed to rising wage rates.

Many of the large tanks and irrigation channels were constructed by former rulers or ministers of the state. These include notable tanks like the Husain Sagar, Ibrahimpatan, Mir Alam, Afzal Sagar, and Jalpalli. Minor tanks, on the other hand, were built by zamindars. While no complete records of the capital outlay are available, recent constructions are

documented in Public Works records.The dastband system has empowered local officials and zamindars to take up the maintenance of breached tanks. They receive a percentage of the revenue after reconstruction, incentivizing the upkeep of these vital irrigation structures.

Economic and Social Implications

The efficient use of natural and artificial irrigation systems has significantly boosted agricultural productivity in both the Maratha and Telingana regions. The ability to grow water-intensive crops like rice and sugarcane is a testament to the effectiveness of these systems. The rise in land values, particularly in the Karnatik Districts, has led to increased revenue for the state and higher rents for sub-tenants. This has also created a class of non-cultivating landowners, primarily money-lenders, who profit from the high demand for land.

Conclusion

The Research provides a detailed account of the agricultural and socio-economic conditions in the Hyderabad State, highlighting the interplay between natural resources, human ingenuity. The Karnatik region's black soil and natural irrigation contrast with Telingana's reliance on artificial irrigation systems, reflecting the diverse agricultural practices within the state. The ryotwari system and the role of money-lenders and zamindars illustrate the complex land revenue and tenancy arrangements. Meanwhile, the labour market dynamics reveal the impact of economic changes on wages and employment. Overall, the study underscores the importance of irrigation, land management, and labour in shaping the agricultural landscape of Hyderabad Karnataka Region.

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