

# A Study of Agricultural Productivity in Latur District, Maharashtra

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## Abstract

This paper examines the pattern of agricultural productivity by combining geographical understanding with economic analysis. The study relies on secondary data and applies the composite crop yield index method to assess variations across different talukas. The result show regional differences mainly influenced by rainfall distribution, soil characteristics, and the availability of irrigation. Based on the analysis, the district is grouped into high, moderate and low productivity zones. The study highlights the need for targeted planning to reduce these disparities and improve agricultural performance in less developed areas.

## Keywords

Agricultural productivity, crop yield, composite index, regional disparity.

## 1. INTRODUCTION

Agriculture is still a vital part of India's economy, particularly in rural areas where there is a huge population that relies on agriculture. It plays a vital role in ensuring food security, generating employment, and supporting the overall economic structure of the country. Despite rapid industrialization and growth in other sectors,

agriculture remains a key source of livelihood for millions of people.

Agricultural productivity is influenced by a wide range of factors. Natural elements such as soil fertility, rainfall patterns, and climatic conditions form the base, while human interventions such as Irrigation facilities, use of fertilizers, improved seed varieties, and mechanization significantly enhance output. Therefore, productivity is influenced not just by the level of production but also by the efficiency of the use of resources.

In recent years regional disparities in agricultural productivity have become more visible. Some areas have experienced steady growth due to better infrastructure and

technological adoption, while others continue to struggle due to limited resources and environmental constraints. Identifying such disparities is essential for planning balanced development.

The present study focuses on Latur district, where agricultural performance varies across different talukas. These variations are largely influenced by differences in rainfall, soil conditions, Irrigation availability, and access to modern agricultural practices. The study aims to provide a clear understanding of these patterns and suggest measures for improvement.

## II. LITERATURE REVIEW

Various researchers have investigated agricultural productivity through various methods.

Bhatia discussed the significance of assessing agricultural efficiency in terms of crop efficiency per hectare and land use.

introduced the methods of the composite crop air index for comparing regions.

explained how irrigation models and technology can enhance agricultural productivity.

Significance of using appropriate research methods and statistics in regional research.

Illustrated how productivity indices can help detect regional differences and support agricultural planning.

From the literature, it is clear that agricultural productivity is determined by natural and human factors. For this reason, specific research is vital to determine regional differences, which is the objective of this study.

## III. STUDY AREA

Latur is located in the southeastern Part of Maharashtra. It lies between 17°52' And 18°50' North latitudes and 76°12' East Longitudes. The district is bordered by Beed and Parbhani in the North, Nanded in the Northeast, Karnataka in the south, Osmanabad in the west.

The district is divided into 10 talukas: Latur, Ausa, Renapur, Ahmedpur, Chakur, Nilanga, Deoni, Jalkot, Shirur-Anantpal and Udgir the total geographical areas is approximately 7,157sq. km.

## IV. OBJECTIVES

- To examine agricultural productivity levels in Latur district.
- To analyze regional variations from geographical and economic perspectives.

## V. DATABASE AND METHODOLOGY

The research uses secondary data which was collected for agricultural from official agricultural records and government publications.

The study is based on secondary data collected from official sources such as the Socio-Economic Review of Latur district.

The study uses the yield method index. This method compares crop yields in a specific area with the regional averages. The composite yield index is calculated using major crops such as jowar, wheat, tur, gram, soyabean, and sugarcane. This method helps classify regions into different productivity categories and understand spatial variations.

Agricultural productivity is measured using the composite crop yield index method. The formula used to calculate the index is as follows:

$$I_j = \frac{1}{n} \sum_{i=1}^n \left( \frac{Y_{ij}}{Y_i} \times 100 \right)$$

$I_j$  = Composite productivity index of the  $j$ -th taluka

$Y_{ij}$  = Yield of the  $i$ -th crop in the  $j$ -th taluka

$Y_i$  = Average yield of the  $i$ -th crop in the district

$n$  = Number of crops considered

The index is calculated by comparing the yield of each crop in a taluka with the district average and converting it into percentage values. The average

of these values gives the overall productivity index.

## VI. RESULT AND DISCUSSION

Agriculture in Latur district is predominantly characterized by jowar and soybean crops. Wheat is commonly grown in dry regions, while sugarcane is cultivated in irrigated areas.

In certain talukas, farmers who used improved seed varieties and irrigation got higher crop yields than farmers without such improvements.

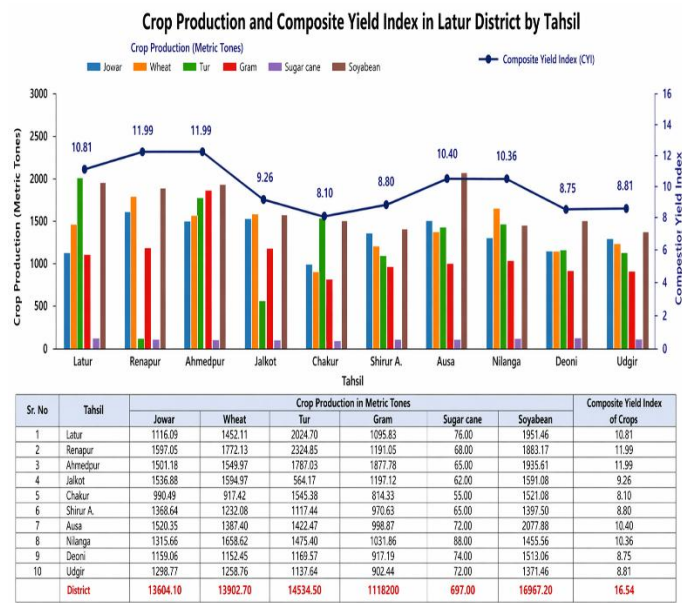


Figure 1 Crop Production in Metric tonnes

Sr. No	Tahsil	Crop Production in Metric tonnes						Composite Yield Index
		Jowar	Wheat	Tur	Gram	Sugarcane	Soybean	
1	Latur	1116.09	1452.11	2024.70	1095.83	76.00	1951.46	10.81
2	Renapur	1597.05	1772.13	2324.85	1191.05	68.00	1883.17	11.99
3	Ahmedpur	1501.18	1549.97	1787.03	1877.78	65.00	1935.61	11.99
4	Jalkot	1536.88	1594.97	564.17	1197.12	62.00	1591.08	9.26
5	Chakur	990.49	917.42	1545.38	814.33	55.00	1521.08	8.10
6	Shirur A.	1368.64	1232.08	1117.44	970.63	65.00	1397.50	8.80
7	Ausa	1520.35	1387.40	1422.47	998.87	72.00	2077.88	10.40
8	Nilanga	1315.66	1658.62	1475.40	1031.86	88.00	1455.56	10.36
9	Deoni	1159.06	1152.45	1169.57	917.19	74.00	1513.06	8.75
10	Udgir	1298.77	1258.76	1137.64	902.44	72.00	1371.46	8.81
	<b>District</b>	<b>13604.10</b>	<b>13902.70</b>	<b>14534.50</b>	<b>10996.10</b>	<b>697.00</b>	<b>16967.20</b>	<b>16.54</b>

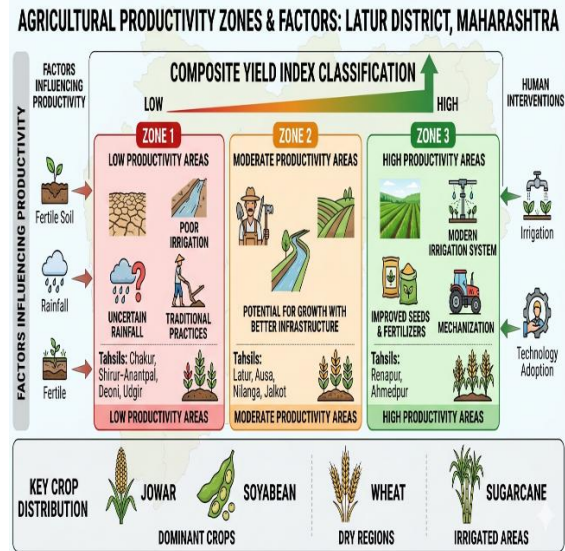


Figure 1 Agricultural Productivity

Based on the composite yield index, the district is classified into three categories:

### A. High Productivity Areas

Renapur, and Ahmedpur fall under this category due to fertile soils and better irrigation facilities.

Figure 3 High Productivity

### B. Moderate Productivity Areas

Latur, Ausa, Nilanga, and Jalkot show moderate productivity and the potential to improve with better infrastructure.

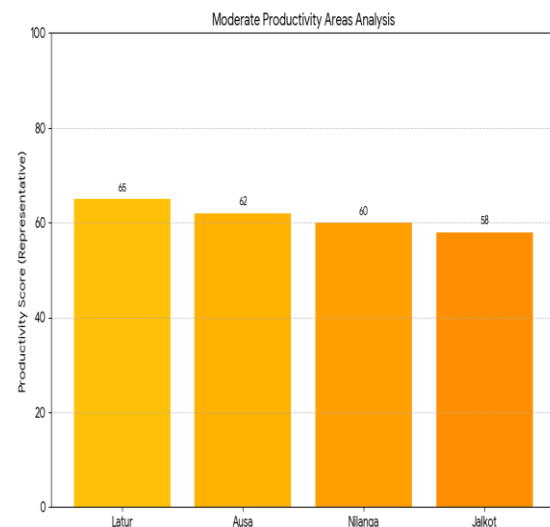


Figure 4 Moderate Productivity

### C. Low Productivity Areas

Agricultural productivity is low in Chakur, Shirur-Anantpal, Deoni, and Udgir because of inadequate irrigation, unreliable rainfall, and Agriculture productivity low in Chakur, Shirur-Anantpal, Deoni, and Udgir owing to insufficient irrigation facilities, unpredictable rainfalls, and conventional farming methods.

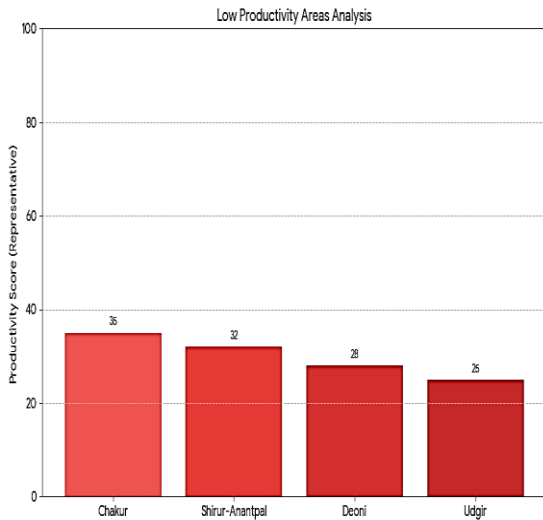


Figure 5 Low Productivity

## VII. LIMITATIONS AND FUTURE WORK

### A. Limitations

This study is based entirely on secondary data collected from published government sources. While these sources are reliable, they may not fully capture recent changes in agricultural practices at the local level.

The analysis uses the composite crop yield index method, which provides a comparative understanding of productivity but does not account for all influencing factors such as market access, farmer income, or policy interventions in detail.

Another limitation is that the study focuses primarily on selected major crops. Minor crops and crop diversification patterns have not been

included, which may affect the overall assessment of agricultural performance.

In addition, the study is conducted at the taluka level, which may overlook variations within smaller units such as villages or individual farms. Seasonal fluctuations and year-to-year climatic variability are also not deeply analyzed in this research.

### B. Future Work

Future studies can expand on these findings study by incorporating primary data collected directly from farmers to gain deeper insights into ground-level challenges and practices.

Further studies may use more advanced analytical methods such as geographic information systems and remote sensing to provide more detailed spatial analysis of agricultural productivity.

Broadening the study by including such as irrigation intensity, input costs, market accessibility, and government policies would provide a more comprehensive understanding of productivity.

Finally, similar studies can be conducted in other districts to compare regional patterns and support broader agricultural planning at the state or national level.

## VIII. CONCLUSION

The study shows that there are regional disparities in agricultural productivity across Latur district. Both natural and human factors significantly influence productivity levels.

To improve agricultural performance, the following measures are recommended:

- Expansion of irrigation facilities
- Use of high-yield seed varieties

- Adoption of modern agricultural techniques
- Increased access to fertilizers and equipment.

Balanced development strategies can help reduce disparities and improve overall agricultural output.

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