

Original Article

A Geographical study of agricultural development Levels in Indapur Tahsil: Pune District

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Manuscript ID:
BN-2026-030114

ISSN: 3065-7865

Volume 3

Issue 1

January 2026

Pp. 76-80

Submitted: 15 Dec 2025

Revised: 25 Dec 2025

Accepted: 10 Jan 2026

Published: 31 Jan 2026

DOI:

[10.5281/zenodo.19274528](https://doi.org/10.5281/zenodo.19274528)

DOI link:

<https://doi.org/10.5281/zenodo.19274528>



Quick Response Code:



Website: <https://bnir.us>



Abstract

Agricultural development indicates the equality of agricultural system of the region. Due to rapid increase in population, the existing traditional methods of agriculture cannot meet the growing demand. As a result, new techniques have to be adopted to develop agro-economy. Indapur Tahsil is selected for the study for the assessment of Agricultural development, Primary data is used for the year 2021 which was collected through questioners. To determine the level of Agricultural development, for calculation of overall levels of Agricultural development and its even distribution, the data of all variables have been transformed using Z-score technique. On the basis of development index, the agricultural circles have been categorized into three classed viz. high, medium and low which clearly shows the spatial variation in level of agricultural development in Indapur tehsil. Tahsil are agriculturally less developed because of low net sown area, less irrigation facility, less agricultural labour, low area under jowar, sugarcane, and wheat crops.

Keywords: Agricultural Development, Agricultural Geography, Development Index, Z-Score Technique, Composite Standard Score (CSS), Spatial Variation, Irrigated Area, Net Sown Area, Crop Productivity Yield Index, Agricultural Labour, Gramin Bank, Jowar Productivity, Sugarcane Productivity, Wheat Productivity, Corn Productivity, Indapur Tahsil, Indapur, Pune.

Introduction

Agriculture provides food grains to human beings and fodder for animals. After independence, Indian government is paying more attention for agricultural development through five-year plans. Agricultural development indicates the equality of agricultural system of the region. It is a multi-dimensional concept which mainly includes real strength development of cropped area, farming system, irrigation, high yielding improved varieties of seeds, chemical fertilizers, insecticides, pesticides, specialization and commercialization of agriculture (Mohammed, 1986). The changing scenario of agro-economy drew attention of researcher on distribution of technological development in agricultural. Majority of the Indian population depends on agricultural produce and for them it is the only source of livelihood. Due to rapid increase in population, the existing traditional methods of agriculture cannot meet the growing demand. As a result, new techniques have to be adopted to develop agro-economy. In the present study, the variation in agricultural development of Indapur Tahsil is determined with the help of six variables viz. Net sown area, Irrigated area, Agricultural labours, Number of Gramin Bank and Productivity of Yield Index of Jowar, Corn, Wheat and Sugarcane. Besides this, the development of Indapur Tahsil is taken in with their respective categories i.e. high, medium, and low on the basis of scores of composite standard scores. The present analysis has been carried out from the data related to four variables using Z-score to get the composite scores. On the basis of this composite score, the Tahsil has been classified into three development categories i.e. high, medium, and low

Study Area

Indapur Tahsil is selected for the study. Indapur tahsil is situated in Pune district. The northern and eastern border is demarcated by Bhima River in Pune and Solapur districts while southern boundary is confined by Nira River in Pune and Satara and Solapur districts.

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How to cite this article:

Mahammad Sheklal, M. (2026). A Geographical study of agricultural development Levels in Indapur Tahsil: Pune District. *Bulletion of Nexus*, 3(1), 76–80. <https://doi.org/10.5281/zenodo.19274528>

The west boundary is confined by Baramati and north boundary is delimited by Daund tahsil of Pune district. The region extends between 17° 53' to 18° 15' north latitudes and 74° 35' to 75° 08' east longitudes. The total geographical area of this tahsil is 1552.93 square kilometres having 383178 populations (2011). This tahsil consists of 143 settlements and three urban settlements. The study area experiences semi-arid climate. April, May and June are the hottest months with mean maximum temperature of 40° centigrade. Temperature gradually reduces in December and January with mean minimum

Temperature 12 ° centigrade. The medium black and deep black soil appears within study area. The soil fertility encourages the growth of various crops like sugarcane, jowar, bajra, onion, vegetables etc. According to 2011 Census the area has 383178 population, out of which 199291 are males and 183887 are females and the density of population is 247 per square kilometre. National highway, State highway, major district and other road are major roots of transport besides broad-gauge railway route in Indapur Tahsil. Indapur is an administrative head quarter of this Tahsil.

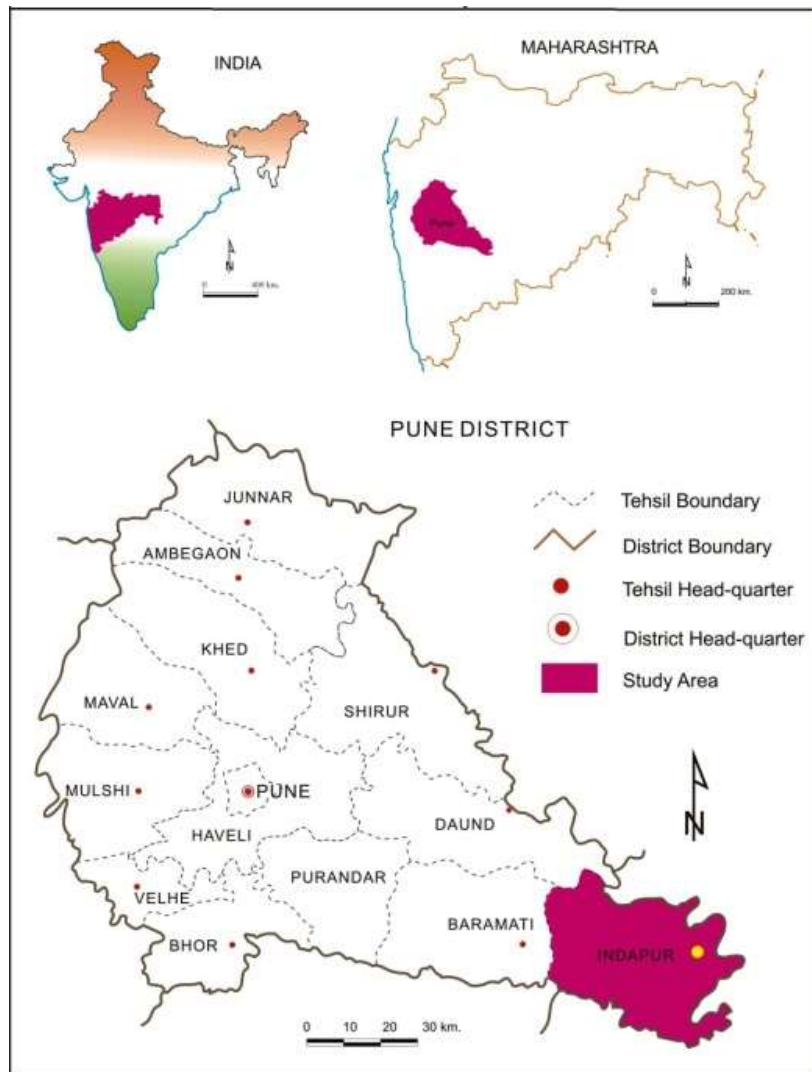


Fig 1.1

Objectives

1. To study the levels of agricultural development in Indapur Tahsil
2. To find the reasons of low agricultural development regions

Data Source and Methodology

For the assessment of Agricultural development, Primary data is used for the period 2021 which was collected through questioners. To

determine the level of Agricultural development, different indicator variables have been used such as Net sown area, Irrigated area, Agriculture labours, Number of Graminbank and Crop Productivity Yield Index of the different crops such as Jowar, Corn, Wheat, and Sugarcane. For calculation of overall levels of Agricultural development and its even distribution, the data of all variables have been

transformed using Z-score technique. The formula is:

$$\text{Formula - } Z_i = \frac{X_i - \bar{X}}{SD}$$

Where

Z_i = standard score for the i^{th} observation,

X_i = original value of the i^{th} observation,

\bar{X} = mean of the value of X variable,

SD = standard deviation of X variable.

The result of the standard score obtained for different indicators were aggregated by Composite Standard Score (CSS), so that the regional inconsistencies in the levels of development of the study area may be evaluated and studied on a common scale.

The Composite Standard Score may be algebraically expressed as:

$$CSS = \frac{\sum Z_{ij}}{N}$$

N

Whereas,

CSS- Composite Standard Score

Z_{ij} – Score of an Indicator J in the Tahsil.

N- Number of Indicators.

In order to classify the circles according to the magnitude of development, the composite score were divided into three classes that are high medium and low.

List of the selected indicators/variables:

X1- Net sown area.

X2- Irrigated area

X3- Agricultural labours

X4- Gamin Banks

X5-.Crop Productivity Yield Index of the crops.

X5a- Jowar

X5b- Sugarcane

X5c- Corn

X5d- Wheat

Agricultural development is a multi-dimensional activity and key to which is crop productivity. It is one of the vital aspects of rural development. The objective of Agricultural development is to increase the growth of Agricultural output so as to provide livelihood to the growing population.

Discussion and Results

To assess the level of agricultural development in Indpur tehsil of District Pune, all the eight variables have been aggregated. The Z-score value of eight variables transformed and combined with the help of Z-score and development index was prepared. The development index ranges from -0.673 (lowest) in Palasdev agricultural circle to 1.116 (highest) in Bawada. Bawada is most developed agricultural in Indapur Taluka and Palasdev is at bottom. On the basis of development index, the agricultural circles have been categorized into three classed viz. high, medium and low (Fig. 1.2) which clearly shows the spatial variation in level of agricultural development in Indapur tehsil.

Table 1.1 Standard Score for Agricultural Development

Agricultural Circle	X1	X2	X3	X4	X5				CSS
					X5a	X5b	X5c	X5d	
Anthurne	- 0.77	- 0.21	0.08	- 0.15	1.81	- 1.40	- 0.26	- 0.43	- 1.33
Bawada	0.89	2.16	2.18	- 0.75	0.42	1.34	0.89	1.80	8.93
Bhigwan	- 0.82	- 0.79	- 0.61	- 0.15	- 0.42	0.43	1.58	- 0.77	- 1.56
Indapur	2.08	0.11	- 0.26	2.25	- 0.70	0.66	- 0.26	- 0.60	3.27
Kati	- 0.05	- 0.36	0.35	- 0.15	0.98	- 1.28	- 1.18	0.94	- 0.75
Loni	0.52	- 0.03	1.05	0.45	- 0.98	0.88	0.43	0.09	- 0.73
Palasdeo	- 0.26	- 1.19	- 0.76	- 0.75	- 0.98	- 0.37	0.20	- 1.29	- 5.38
Sansar	- 0.54	0.31	0.08	- 0.75	- 0.14	- 0.26	- 1.41	0.26	- 2.44

Source: Computed by Researcher.

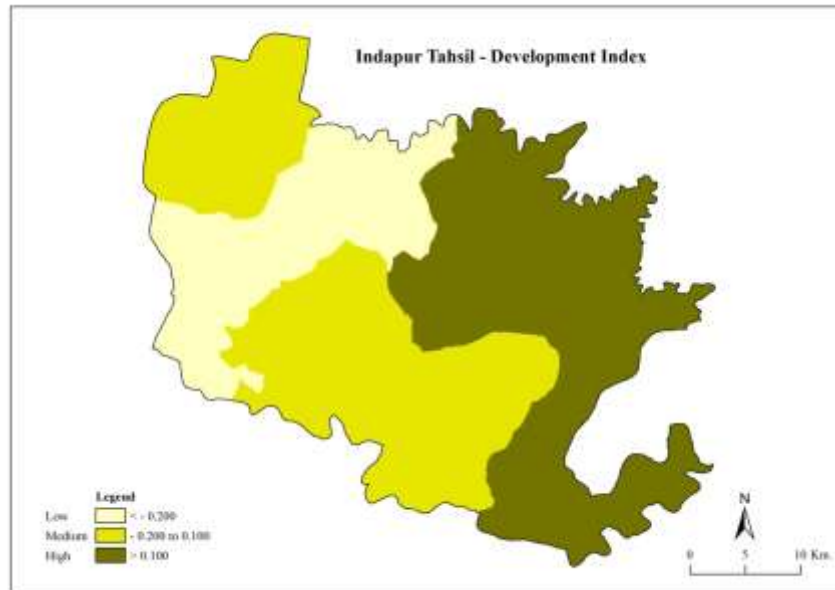


Fig 1.2

On an aggregate three agricultural circles namely, Bawada (1.116), Indapur (0.409) and Loni (0.302) which ranges their development index above 0.100 highly developed circles while majority of the circle fall under medium category having their development index ranging from -0.200 to 0.100. This category cover three agricultural circles namely Bhigwan (-0.195),

Table:6.6Level of Agricultural Development in Indapur Tehsil

Development Index	Level of Agricultural Development	No. of agricultural circles	Name of the Agricultural Circles
0.100<	High	03	Bawada, Indapur, Loni
0.100 to -0.200	Medium	03	Kati, Anthurne, Bhigwan
<-0.200	Low	02	Palasdev, Sansar

Source: Computed by Researcher

Anthurne (-0.166) and Kati (-0.094). Only two agricultural circles having their development index below -0.2 fall under low level of agricultural development and these are Palasdev (-0.673) and Sansar (-0.305) that show low level of agricultural development. This present study reveals that the spatial distribution of variables and agricultural development is not uniform in Indapur Tehsil. It provides in Indapur Tehsil of District Pune. The study highlight that the majority of the tehsil come under the medium and high category of agricultural development, seen in blocks lying in centre, east and north west part of the study region, while the blocks lying on the east and north part of the

Tahsil are agriculturally less developed because of low net sown area, less irrigation facility, less agricultural labour, low area under jowar, sugarcane, and wheat crops. For development, there is a need for restructuring of the agriculture which has to be done within certain limits of

economic, social and political factors, as well as the national goal; and to making the agricultural society more dynamic. The study highlights the impact of location and spatial input on the agricultural development planning in Indapur tehsil.

Acknowledgment

I express my sincere gratitude to all those who supported me in the completion of this research work titled "A Geographical Study of Agricultural Development Levels in Indapur Tehsil: Pune District."

I am especially thankful to the faculty members and colleagues of Arts, Science and Commerce College Indapur for their valuable guidance and academic support throughout this study.

I am grateful to the local farmers, agricultural officers, and respondents from various villages of Indapur Tehsil for providing primary data through questionnaires and sharing essential information necessary for this research

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper

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