



Original Article

Regional Disparities in the Levels of Agricultural Development In Sangli District (Maharashtra) : A Geographical Analysis

Dr. Dattatray D. Shinde

Professor, Adarsh College, Vita

Email: ddshinde19@gmail.com

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Abstract:

Regional disparities have become one of the most important glaring and growing problems not only in developing countries but also in the most advanced countries of the world (Sharma and Kumar 1993). It is true with the developing country like India, it has grater regional disparities in the sectors of agricultural, economy, industry, education, social etc. The present research work is giving emphasis on to examine the regional disparities in the levels of agricultural development based on fifteen selected variables in Sangli district. The entire work is based on the secondary source of data. The tehsil has been taken as a smallest unit of analysis. The statistical technique of composite index has been used to measure the level of development and to find out the disparities. The eastern parts of the district were found to be most agriculturally backward. Most of the tehsils of the district are found to be high level of agricultural development.

Keywords: Regional Disparities, Composite Index

Introduction

Agricultural development is multidimensional in nature. In fact, agricultural change cannot be understood separately from general process of development. However, agro-technical factors such as irrigation, fertilizers, high yielding varieties of seeds, agricultural mechanization, and others, form an established variety of agricultural landscape and provide a frame of parameters for measuring the level of agricultural development in the area (Rajapati Ram, 1989). There are different technologies used with varies intensities leading to variation in agricultural efficiency per unit of time and space. It is crucial importance in order to delineate agriculturally developed and under developed areas within the region. Agricultural development implies maximum economic utilization of land and this means land has to be provided with adequate water and fertilizer which in conjunction with multi- cropping land to increased yield and income from the land (Shinde S. D., 1980). Therefore, it is essential to the measuring and mapping the regional imbalances and further to identify backward and advanced areas in terms of agricultural development. In the succeeding analysis, an attempt has been made to examine the spatial pattern of the levels of agricultural development in Sangli district.



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Address for correspondence:

Dattatray D. Shinde, Professor, Adarsh College, Vita

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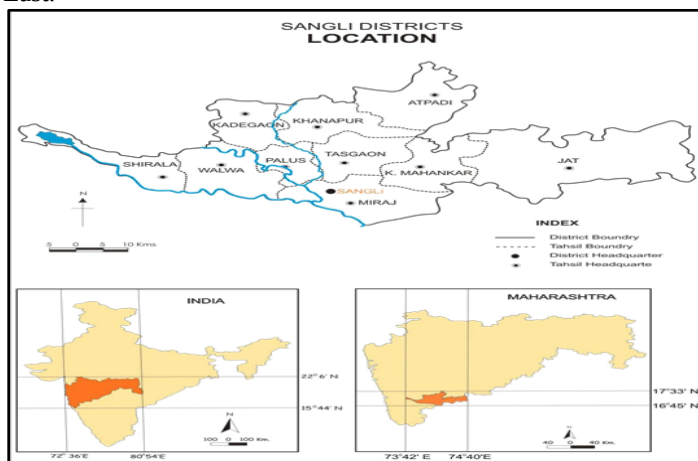
The development pattern of various tehsils of Sangli district is evaluated through derived composite index and these tehsils are categorized as five levels: very high, high, moderate, low and very low development. The spectrum of regional variation in the Sangli district is examined with the help of mean, standard deviation, weight of individual indicator from fifteen indicators, which affecting the agricultural development.

In the overall study, by examining all the agricultural development indicators, the result obtained at the tehsil level ultimately show that the distribution of agricultural facilities is uneven in the tehsils of Sangli district.

Finally, tehsil-wise composite indices have been prepared based on relative indicators. According to this method of analysis, it has been found that tehsils located in the central part of the district are highly developed. On the other hand, the tehsils located in the eastern part of the district are under developed.

Study Area:

Sangli district is the southernmost district in the state of Maharashtra. It is situated between the latitude of 16°43' North and 17°38' North and the longitude of 73°41' East and 75°41' East.



Sangli district is bounded on the north western side by Satara district. It is bounded on the south by the district of Belgaum and Bijapur in the state of Karnataka. Kolhapur and Ratnagiri district lies on the west of Sangli district. Administratively the study region is divided into ten tahsils comprising 8,572 sq. km. area of supporting 28,20,575 population and density of population is 326 person per sq. km. according to 2011 census.

Monsoon climate dominates the region with little difference in heat and cold. The region receives rainfall mainly from south-west monsoon average between 200 cm. in the west to 50 cm. in the eastern part. The study region has a well-developed drainage pattern by Krishna, Warna, Yerala, Agrani, Nanni and Bor.

Objective:

The main objective of the present work is to analyse the regional disparities in the levels of agricultural development in Sangli district.

Data Collection and Methodology:

The entire study is based on the secondary source of data which is derived from the district gazetteers, district statistical department, socio-economic review and

statistical abstract of district, reference books etc. The collected data through different sources were processed and represented by statistical and cartographic techniques.

To determine the level of agricultural development, a set of fifteen variables have been selected. They are -

- X1. Percentage of net sown area to the total geographical area
- X2. Cropping Intensity
- X3. Percentage of net irrigated area to net sown area
- X4. Wheat productivity (in '00' kilogram / hectare)
- X5. Jowar Productivity (in '00' kilogram / hectare)
- X6. Sugarcane Productivity (in thousand ton / hectare)
- X7. Percentage of area under cash crops to gross cropped area (Sugarcane, Total Fruits & Soybean)
- X8. Percentage of agricultural credit societies
- X9. Number of electric pumps per 100 hectare of net sown area
- X10. Number of iron plough per 100 hectare of net sown area
- X11. Number of tractors per 100 hectare of net sown area
- X12. Use of Fertilizers (in metric tons) per 100 ha net sown area
- X13. Percentage of literate population to the total population
- X14. Percentage of area under total food grains to gross cropped area
- X15. Use of Electricity for Agri. (in '000' kw hours) per hectare net sown area

Since all the variables of agricultural development are not equally important, we have assigned different weights to different variables, by the method of 'Proportional Standardized Mean and Composite Index' (Shrivastava, S. L., 1983). The weight assigned to one variable is calculated by the formula -

$$W = \frac{X}{\sigma}$$

OR

$$W = \frac{\text{Mean}}{\text{SD}}$$

Where,

W = Weight of one particular Indicator

X / Mean = Average of the series of one particular Indicator

σ / SD = Standard deviation of the same series

After calculating the weight of any variables or indicators, we have calculated the composite index (C. I.) of development by using following formula -

$$C. I. = \frac{X1W1+X2W2+X3W3+X4W4+.....X15W15}{W1+W2+W3+W4+.....W15}$$

Where,

C.I. = Composite Index

X = Particular Indicator

W = Weight of series of one particular Indicator



Depend upon Composite index, the Indices have been calculated by taking whole region as 100 (for average Composite Index) by using following formula -

$$\text{Indices} = \frac{\text{Composite Index of Any Unit}}{\text{Average of Composite Index}} \times 100$$

Statistic techniques such as mean and standard deviation has been used for the categories of very high, high, moderate, low and very low level of agricultural development region of the district. On the basis of these statistical techniques result and conclusion are drawn.

Analysis:

In the study region, the agricultural development is not homogeneous / uniform in all the ten tahsils but it is related with huge/great variations. Table 01 show, the tehsil wise indicators values of agricultural development in Sangli district. In 2023-24, the total weight of fifteen indicators is 64.76. The individual weights of all the above indicators are 3.14, 5.53, 5.06, 6.8, 5.24, 1.67, 2.56, 3.39, 3.59, 1.99, 1.89, 2.07, 16.09, 2.01 and 3.76. Thus it is observed that the highest weight is shown for the percentage of literate population to the total population (16.09) and the lowest weight is found in percentage of sugarcane productivity (in thousand tonn / hectare).

The levels of agricultural development in the study region have been calculated with the help of composite index. Thus it is calculated for each tehsil has been treated statistically and the categorization of levels of agricultural development is prepared as very high, high, moderate, low and very low level of agricultural development.

Table 02 shows that the composite Index of agricultural development in Sangli district. It is observed that in the Sangli district, the levels of agricultural development are not homogeneous but it is associated with great disparity.

In 2023-24, the average composite indexes of ten tehsils are 50.58 in study region. It is observed that Palus, Miraj and kadegaon tehsils have the highest composite index of agricultural development i.e. 56.68, 53.47 and 53.14 respectively. Whereas the lowest composite index of agricultural development is found in Jath (42.9) and Atpadi (46.84) tehsils respectively.

The indices have calculated by taking into consideration Sangli district as 100 (average composite index 50.58) as given above indices formula. In the study, composite indices of agricultural development is varied from the lowest of 84.80 in Jath tehsil to the highest of 112.04 in Palus tehsil, it means that the Palus tehsil is agricultural well developed tehsil and Jath is agricultural backward tehsil. Obviously, there are five tahsils i. e. Palus, Miraj, Kadegaon, Shirala, Walwa which are higher than the district average and five tahsils having lower index than the district average. They are Khanapur, Tasgaon, Kavathe Mahankal, Atpadi and Jath.



Table 01
Sangli District: Tehsil wise Indicator Value of Agricultural Development (2023 - 24)

Tahsils	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
Shirala	32.01	187.68	49.98	17.09	10.13	10.29	43.51	11.41	1.37	3.88	1.21	102.09	78.9	42.55	23.52
Walwa	82.93	104.02	71.86	19.41	18.36	33.21	68.69	17.69	1.13	2.8	2.03	69.83	85.2	12.05	24.03
Palus	88.71	122.53	74.03	26.15	15.18	15.52	73.78	6.79	2.45	0.98	1.34	150.44	86.1	8.89	31.27
Kadegaon	49.86	164.22	56.17	20.99	18.57	16.81	52.56	8.21	1.86	7.44	1.31	83.69	81	28.73	27.74
Khanapur	39.64	133.14	65.38	19.6	16.36	14.14	50.05	6.92	2.78	6.12	0.72	71.52	82.2	29.19	38.59
Atpadi	37.20	110.74	94.74	24.39	19.57	4.41	28.8	10.13	2.23	8.39	0.66	47.96	72.7	63.71	23.9
Tasgaon	61.56	124.76	51.21	22.27	12.37	8.72	41.78	10.26	2.21	4.01	0.6	46.32	83.3	40.24	39.68
Miraj	60.74	135.52	76.68	19.81	15.31	21.04	47.78	8.85	1.87	4.03	0.86	75.3	84.5	38.52	32.89
Kavathe Mahankal	49.09	132.04	58.85	22.94	16.39	4.18	21.87	9.1	2.33	8.21	0.54	57.83	78.6	65.58	29
Jath	69.84	115.57	60.35	15.58	12	9.38	17.47	10.64	1.14	2.57	0.2	13.59	70.4	65.53	12.53
Total	571.58	1330.22	659.25	208.23	154.24	137.7	446.29	100	19.37	48.43	9.47	718.57	802.9	394.99	283.15
Mean	57.16	133.02	65.92	20.82	15.42	13.77	44.63	10	1.94	4.84	0.95	71.86	80.29	39.5	28.31
S. D.	18.19	24.06	13.02	3.06	2.94	8.24	17.45	2.95	0.54	2.43	0.5	34.73	4.99	19.67	7.58
Weight	3.14	5.53	5.06	6.8	5.24	1.67	2.56	3.39	3.59	1.99	1.89	2.07	16.09	2.01	3.73
Total Weight															64.76

Source: Computed by researcher based on Socio-Economic Review of Sangli District, 2024

Table 02

Sangli District: Composite Index of Agricultural Development (2023 - 24)

Sr. No.	Name of Tehsils	Composite Index	Indices
1	Shirala	52.45	103.68
2	Walwa	51.91	102.62
3	Palus	56.68	112.04
4	Kadegaon	53.14	105.05
5	Khanapur	50.19	99.22
6	Atpadi	46.84	92.59
7	Tasgaon	49.37	97.59
8	Miraj	53.47	105.70
9	Kavatthe Mahankal	48.92	96.70
10	Jath	42.9	84.80
District Average		50.58	100
Standard Deviation		-	7.26

Source: Computed by researcher based on Socio-Economic Review of Sangli District, 2024

Table 03

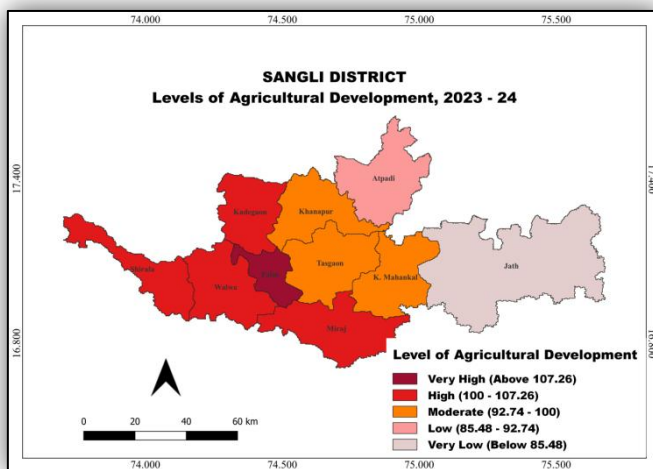
Sangli District: Levels of Agricultural Development (2023 - 24)

Category	Index Value	No. of Tehsils	Name of Tehsils
Very High	Above 107.26	1	Palus
High	100 - 107.26	4	Miraj, Kadegaon, Shirala, Walwa
Moderate	92.74 - 100	3	Khanapur, Tasgaon, Kavatthe Mahankal
Low	85.48 - 92.74	1	Atpadi
Very Low	Below 85.48	1	Jath

Source: Computed by researcher based on Socio-Economic Review of Sangli District, 2024

Spatial analysis of agriculture development in Sangli district (2023-24)

According to the methodology used for measuring the levels of development in various sectors, the composite indices of the variables for ten tehsils have been divided into five categories (Table 03).



i. Very High Level of Agricultural Development (Above 107.26)

In this category, observations were made only in Palus (112.04) tehsil in 2023-24. Compared to other tehsils, agricultural development is more in Palus tehsil which is spread the flood plains of Krishna and Yerala rivers and their tributaries. Because, this region is more fertile, assured irrigation facilities, high percentage of net sown area to the total geographical area, substantial income from cash crops like sugarcane, grapevine and soybean, high wheat productivity, high consumption of fertilizers per hundred hectare net sown area, high percentage of literate population to the total population, conversant nature of farmers and overall awareness among the farmers to adopt new technology, have all made greater favourable impact on very high levels of agricultural development.

ii. High Level of Agricultural Development (100 - 107.26)

In 2023-24, Miraj (105.70), Kadegaon (105.05), Shirala (103.68) and Walwa (102.62) tehsils have included in this category. The Krishna and Yerala rivers flow through this tehsils. It is clear that these tehsils have more advantages in terms of environmental conditions. Kadegaon and Walwa tehsils have adequate irrigation facilities and good transportation facilities to reach a high level of agricultural development. All selected variables are moderate only in Miraj tehsil. Kadegaon tehsil has high cropping intensity, high jowar productivity and high number of iron plough per hundred hectare of net sown area. High cropping intensity and near about nine variables are moderate in Shirala tehsil. Walwa tehsil of the district took part in this category due their high percentage of net sown area to the total geographical area, high sugarcane and jowar productivity, high percentage of area under cash crops to gross cropped area (sugarcane, total fruits & soybean), high percentage of agricultural credit societies and high number of tractors per hundred hectare of net sown area.

iii. Moderate Level of Agricultural Development (92.74 - 100)

This category consists of three tehsils such as Khanapur (99.22), Tasgaon (97.59) and Kavathe Mahankal (96.70) have indices range from 92.74 to 100 in 2023-24. The moderate level of agricultural development in these tehsils is mainly due to the high number of electric pumps and iron plough per hundred hectare of net sown area, high percentage of area under total food grains to gross cropped area and high use of electricity for agriculture (in '000' kw hours) per hectare net sown area.

iv. Low Level of Agricultural Development (85.48 - 92.74)

In this category, only one tehsil i.e. Atpadi (92.59) tehsil has observed during 2023-24. Atpadi tahsil is located in north eastern part of the district which belongs to rain shadow area, scarcity of water supply, uncertain and vagarious monsoon. The low level of agricultural development in this tehsil is mainly due to low percentage of net sown area to the total geographical area, low sugarcane productivity and low percentage of literate population to the total population. Out of selected indicators near about seven variables are moderate in nature.

v. Very Low Level of Agricultural Development (Below 85.48)

This category comprises one tehsil of the district namely Jath, whose value of indices is 84.80 which is less by near about fifteen points below the district average. Jath tehsil have low composite indices as compare to other tehsils of the district. Jath tehsil is located in rain shadow area having high variability and poor reliability of rainfall. The seasonal nature of well irrigation, coarse soils and inadequate water supply has led to low productivity of land. The poor financial condition of subsistence farmers and too much dependence of agriculture on uncertain rainfall have led to low level agriculture development. This tehsil having very poor situation regarding all the variables of agricultural development especially in percentage of area under cash crops to gross

cropped area, productivity of wheat and jowar, consumption of fertilizers, number of tractors and electric pumps per hundred hectare of net sown area, percentage of literate population to the total population and use of electricity for agriculture (in '000' kw hours) per hectare net sown area.

Conclusion:

The analysis shows that there is regional disparity in agricultural development in the district as well as within the tehsil. Study of regional variation categorises very high developed, high developed, moderate developed, low developed and very low developed. It is important to note that regional disparities in agricultural development at the micro and macro levels bear some resemblance to the physiography of the region. Regional disparities in agricultural development have shown its profound impact on the overall development of the region and the socio-economic life of the people.

The level of agricultural development have shown that high agricultural development levels are limited to areas with assured water supply, social awareness among farmers and the co-operative movement has played a significant role in the development of agriculture in the central and western parts of the region.

The eastern part of the region showed a low level of agricultural development due to physiography, climate, farmers mostly depend on monsoon rains, dominance of traditional farming methods, lack of interest and awareness among farmers about new agricultural technologies and lack of multi-cropping.

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