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Research Paper - Geography

Regional Disparities In The Levels Of Agricultural Development In Kolhapur District Of South Maharashtra

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1. Introduction

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 & 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. Kolhapur district in South Maharashtra has essentially an agrarian economy. About sixty-three percent of district's total population depends on agriculture. Though the district has been remained as one of the agriculturally developed districts of Maharashtra, surprisingly it carries greater regional disparities in the overall development in general and the agricultural development in particular.

The position of agricultural development in the district conceals remarkable tahsil-wise variations. The present study aims at analyzing the patterns of agricultural development in the district. The study also attempts a village-wise micro level analysis in one tahsil of Kolhapur district.

2. Study Area

The region under study extends between $15^0$43' to $17^0$10' north latitude and $73^0$40' to $74^0$42' east longitude (fig-1). Kolhapur district is enclosed by Sangli district in the north. Belgaum district of Karnataka state in the south and east and in the west it is bounded by Ratnagiri and Sindhudurg district. The district occupies total area of 7685 sq.kms. sharing 2.62% area of the Maharashtra state. The district consists of twelve tahsils comprising 1203 villages. According to 2001 census, the total population of the district is 35,15,413.
(Census 2001)

Physiographically it is complex part characterized by alternate arrangement of ridges and valleys from south to north .The region consist of 14 small river basins. The altitude of the region ranges between 500 to 1000 mts. The average maximum temperature in the region is 30^0c and minimum 14^0 c. The rainfall ranges from 6000mm to west and 600mm to the east. The Western Ghat region to the west has evergreen and semi-evergreen forests and deciduous forest to the east of the study region. The western part of the district is occupied by a laterite soil and alluvial soil is found in the river valleys.

3. Objective:

The main Objective of the present work is to analyse the regional disparities in the levels of agricultural development in Kolhapur district and the disparities in Bhudargad Tahsil at micro level.

4. Database & Methodology:

The present work is mainly based on secondary sources of data .The relevant data is

collected from the villages revenue worker, tahsildar offices, the District Statistical Abstract & some unpublished records for the year 2003-04. At macro level we have taken a tahasil as unit under study and at micro level a village is a unit .Analysis has been carried out at both the levels & presented separately.

To determine the level of agricultural development in Kolhapur district we have selected 14 indicators which are given below.

1. Percentage of net sown area to total Geographical Area. (x_1).
2. Percentage of literate persons to total population. (x_2).
3. Per capita cultivated land holding. (x_3).
4. Number of agricultural workers per 100 hector cropped land. (x_4)
5. Workers in agriculture as percentage to total work force. (x_5)
6. Intensity of rainfall. (x_6)
7. Number of National & Co-operative Banks. (x_7)
8. Net area irrigated to net area sown. (x_8)
9. Consumption of fertilizer in kg. per hector.(x_9)
10. Proportion of agricultural credit-societies with rural population. (x_{10})
11. Number of electric & oil operated irrigation pumps to 100 hector of irrigated land. (x_{11})
12. Number of tractors per 100 hectare of net sown area. (x_{12})
13. Percentage of cash crops with net sown area. (x_{13})
14. Number of regulated markets. (x_{14})

As all the indicators of agricultural development are not equally important, we have assigned different weights to different indicators by the method of Proportional Standardized Mean, that is to say, the weight assigned to one indicator is measured by calculating $\frac{\bar{x}}{}$ for any indictor. Where,

x = is the average of the series of one particular indicator

= is the standard deviation of same series.

This $\frac{\bar{x}}{}$ is the weight of any indicator. Thus we have calculated the composite index by the following formula.

$$\text{C.I.} \quad \frac{x_1 \frac{\bar{x}_1}{_1} \quad x_2 \frac{\bar{x}_2}{_2} \quad x_3 \frac{\bar{x}_3}{_3} \ldots\ldots\ldots\ldots \quad x_{14} \frac{\bar{x}_{14}}{_{14}}}{\frac{\bar{x}_1}{_1} \quad \frac{\bar{x}_2}{_2} \quad \frac{\bar{x}_3}{_3} \ldots\ldots\ldots\ldots \quad \frac{\bar{x}_{14}}{_{14}}}$$

OR

$$\text{C.I.} \quad \frac{x_1 w_1 \quad x_2 w_2 \quad \ldots\ldots\ldots\ldots \quad x_{14} w_{14}}{w_1 \quad w_2 \quad \ldots\ldots\ldots\ldots \quad w_{14}}$$

5. Analysis:

In the study region, the agricultural development is not uniform in all the twelve tahsils but it is associated with great variations. The respective weights of all the above indicators are: 3.18, 10.72, 2.00, 3.72, 4.78, 1.30, 1.63, 2.17, 2.56, 2.61, 0.96, 1.21, 4.24 and 1.07. Thus it is observed that the highest weight is shown for the Percentage of literate persons to total population (10.72), followed by Net area irrigated to net area sown (4.78). The lowest weight (0.96) is observed for Number of electric & oil operated irrigation pumps to 100 hector of irrigated land. (Appendix-1)

The values of composite indices of all the tashils have been given in table- 1. The indices have also been calculated by taking Kolhapur

district as 100(for average composite index 177.35) as given below:

$$\text{Indices} = \frac{\text{Composite Index of any unit}}{\text{Average Composite Index}} \times 100$$

Tahsilwise Composite Index of agricultural development in Kolhapur district (2003-04)

Sr.No.	Tahsil	composite index	indices
1	Hatkanagle	271	153
2	Shirol	248	140
3	Gadhinglaj	196	110
4	Karveer	190	107
5	Kagal	185	104
6	Shauwadi	171	96.5
7	Panalha	171	96.3
8	Chandgad	158	89.2
9	Radhanagari	150	84.6
10	Ajara	144	81
11	Bhudargad	142	79.8
12	Gaganbavada	103	58
	Average	**177**	**100**

The range of composite indices varied from the minimum of 58.04 in Gaganbawada tahshil to the maximum of 152.85 in Hatkanakgale tahsil.In otherwords, Hatkanakgale is agriculturally the advanced tahsil and Gaganbawada and Bhudargad tahsil are the backward tahsils. Shirol is the next advanced tahasil whose index is much higher (20% or more) than the district average (100.00). Obliviously, therefore, there are three tahsils i.e kagal,karvir & Ghadhingalaj which are 4 to 10% higher than the district average. Remaining seven tahsils would be taken as backward as their index is below the district average.

There are five tahsils having lower index (between 80.00 to 100.00) than the district average. They are Ajara, Radhanagri, Chandgad, Panhala and Shahuwadi. There are two tahsils namely Gaganbawada & Bhudargad whose index is below 80% which represent the agriculturally most backward tahsils of the district.

The composite indices of agricultural development of different tahsils in the district are grouped into four categories which are shown in table no.2

Table No.2

Ranking of tahsils in respect of agricultural development

dex alue	Above 120	100 to 120	80 to100	Below 80	
egory	Developed tahsils	Fairly developed tahsils	Poorly developed tahsils	Very poorly developed tahsils	Total
ne of asils	Hatkanakgale, Shirol	Gadhinglaj, Karveer, Kagal	Shauwadi, Panhala, Chandgad, Radhanagari, Ajara	Bhudargad, Gaganbawada	12
o of asils	02	03	05	02	12
entage rea to tricts otal	15.61	23.62	49.30	11.47	100

i. ***Developed Zone:*** This zone consists of two tahsils namely; Hatkanagale & Shirol whose composite index is 20 point above the district average (fig.2). This group of agricultural development covers 15.61 percent area of the district. It is due to highly irrigated (around 45 percent), high percentage of net sown area, high consumption of fertilizers, availability of credit societies, banking and regulated market facilities.

ii. ***Fairly Developed Zone:*** This zone consists of three tahsils namely, Gadhinglaj, Karveer & Kagal covering 23.62 percent area of the district. This zone possesses the composite index higher than the district average but less than 20 points. It is mainly because of the development of irrigation facilities, availability of credit societies and

banking, regulated markets and high literacy rate (average 79 percent).

iii. ***Poorly Developed Zone:*** This zone covers almost half of the districts total area (49.30 percent). It covers five tahsils having index value ranges between 80 and 100. The low level of agricultural development in this zone is mainly due to low net swon area, low irrigation development and inadequate banking and market facilities.

iv. ***Very Poorly Developed Zone:*** It comprises two tahsils covering 11.47 percent area of the district, whose index is less by more than 20 points below the district average. These tahsils have very poor situation regarding all the indicators of agricultural development.

The first two zones have shown high agricultural development which is located to

the eastern part of the district and spread over the flood plains of Panchganga and

Warana rivers and their tributaries. It covers 39.23 percent area of the districts total

area.

The third and fourth zone which is agriculturally poorly developed comprises high

proportion (60.77 percent) of the total area of the district. These zones cover the

Western part of the district which is hilly, forested, infertile, sloppy, undulating with

narrow basins.

6. Villagewise analysis of levels of agricultural development in Bhudargad Tahsil :

The above tahsilwise analysis of agricultural development in Kolhapur district is a generalized study. The developed tahsils in the district may not have uniform agricultural development. It is true that within the tahsil there may be disparity in the agricultural development at village level. Therefore we have made an attempt to measure the agricultural development of Bhudargad tahsil at micro level, taking village as a unit.

The Bhudargad tahsil consists of 117 villages with 619 sq.km. area. To measure the agricultural development of this tahsil we have selected following nine indicators,

1. Percentage of net sown area to total Geographical Area. (x_1).
2. Percentage of literate persons to total population. (x_2).
3. Per capita cultivated land holding. (x_3).
4. Number of agricultural workers per 10 hector cropped land (x_4)
5. Net area irrigated to net area sown. (x_5)
6. Number of agricultural credit societies. (x_6)
7. Number of electric & oil operated irrigation pumps to 10 hector irrigated land. (x_7)
8. Number of tractors per 10 hector of net area sown. (x_8)
9. Percentage of cash crops with net area sown. (x_9)

The Bhudargad tahsil falls in the 'Very Poorly' agricultural development zone. But all the villages in this tahsil are not poorly developed. There are greater variations in the agricultural

development at village level. The values of composite indices for all the villages in the tahsil have been computed (Appendix-2).

The values of composite indices vary from village to village .The minimum value of indices is 31.71 in Chikkewadi village and maximum value is 147.84 in Waghapur village .There are 23 villages in Bhudargad tahsil which are agriculturally most advanced villages whose index is much higher(20% or more)than the tahsil average (100.00). There are 35 villages which have 20% higher index than the tahsil average. Therefore above 58 villages which can be considered as advanced as their index is higher than the tahsil average and remaining 59 villages could be taken as poorly developed as their index is below the tahsil average.Out of these 59 villages, 41villages have a lower index (below 20%than tahsil average) and 18 villages have lower index more than 20% of tahsil average.The villages given in the composite index (appendix-2) has been divided in to four categories (table-3)

Table no. 3

Distribution of villages of different levels of agricultural development, 2003-04

x e	Above 120	100 to 120	80 to100	Below 80	Total
ory	Developed Villages	Fairly developed Villages	Poorly developed Villages	Very poorly developed Villages	
f es	23	35	41	18	117
t to es	19.66	29.91	35.05	15.38	100

The Table-3 shows the village - wise distribution of different categories.

1. The 'highly developed' villages whose C.I is 20 point above the tahsil average;
2. The 'fairly developed' villages ,whose index is higher than the tahsil average but less than 20 points;
3. The 'poorly developed' villages, whose index is 20 points below the tahsil average.
4. The 'very poorly developed' villages, whose index is less by more than 20 points below the tahsil average.

The above table shows that the highest number of villages (35.05%) in Bhudargad tahsil fall in the poorly developed category, followed by developed (29.91%), highly developed (19.66%) & very poorly developed (15.38%) villages. In other words nearly 50% villages are agriculturally developed.

The figure3 shows a varied picture of agricultural development within the tahsil. The highly developed villages are located to the eastern and central part of the Vedganga valley. The Chikotra valley in the eastern part represents as developed agricultural zone. The mid western part of tahsil is poorly developed and the western and hilly forested eastern & southern parts are very poorly developed regions in the tahsil.

7. Conclusion

The analysis reveals that there are great regional disparities in the agricultural development in the district as well as within the tahsil. The study of areal variation categorises the developed, fairly developed, poorly developed and very poorly developed regions covering the area of 15.61, 23.62, 49.30 and 11.47 respectively. It is significant to note that the regional disparity in the agricultural development at the macro and micro level bears some resemblance to the physiography of the region. The regional disparities in the agricultural development have shown its profound impact on the overall development of the region and the socio-economic life of the people.

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APPENDIX - I

Values of Indicators of Agricultural Development in Kolhapur District 2003-04

Sr. No.	Tahasil	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
1	Shauwadi	45.47	66.93	0.27	136.87	70.82	4.62	0.74	26.40	143.38	1883.00	15.25	0.70	33.64	8.00
2	Panalha	47.28	74.16	0.11	309.78	65.39	4.29	1.04	17.83	676.00	1093.00	62.86	3.15	20.35	14.00
3	Hatkanagle	79.80	80.25	0.07	233.47	40.37	2.60	0.44	39.53	698.00	2728.00	13.25	1.00	46.97	47.00
4	Shirol	82.09	80.15	0.12	261.30	62.15	1.42	0.86	41.01	880.00	2106.00	9.23	1.37	37.69	39.00
5	Karveer	70.42	83.16	0.05	277.63	36.12	2.59	0.48	39.68	581.00	1498.00	16.86	3.41	43.14	22.00
6	Gaganbavada	45.98	60.74	0.40	113.44	81.50	16.23	0.24	63.69	350.00	591.00	6.32	0.40	28.75	5.00
7	Radhanagari	35.84	71.33	0.17	250.78	75.85	10.07	0.12	31.94	498.00	1006.00	3.25	0.17	37.31	8.00
8	Kagal	85.57	83.58	0.19	197.29	68.96	2.21	0.10	30.21	633.00	1398.00	21.86	1.90	43.62	14.00
9	Bhudargad	41.85	72.92	0.19	232.93	78.42	4.11	0.11	31.34	422.00	960.00	25.69	0.56	29.54	5.00
10	Ajara	42.15	69.37	0.19	204.14	76.75	5.33	0.90	20.77	393.00	1088.00	28.19	0.36	29.44	3.00
11	Gadhinglaj	87.71	71.81	0.20	196.67	72.11	2.59	0.92	17.13	484.00	1784.00	106.89	0.91	22.04	5.00
12	Chandgad	53.89	66.67	0.28	143.70	78.16	7.63	0.99	7.40	266.00	1494.00	111.39	0.91	35.89	7.00
	total	718.05	881.07	2.24	2558.00	806.60	63.69	6.94	366.93	6024.38	17629.00	421.04	14.84	408.38	177.00
	Mean	59.84	73.42	0.19	213.17	67.22	5.31	0.58	30.58	502.03	1469.08	35.09	1.24	34.03	14.75
	Sd	18.82	6.85	0.09	57.17	14.06	4.05	0.35	14.04	196.00	562.65	36.25	1.02	8.01	13.71
	Weight	3.18	10.72	2.00	3.73	4.78	1.31	1.63	2.18	2.56	2.61	0.97	1.21	4.25	1.08
	total weight=	42.21													

Appendix-2

Villagewise composite Index of Agricultural Development in Bhudargad Tahsil (2003-04)

Sr.No.	Village	C.I.	Indices	Sr.No.	Village	C.I.	Indices
1	Waghapur	49.90	147.84	46	Begvade	36.23	107.32
2	Gargoti	48.58	143.93	47	Hanbarwadi	35.30	104.57
3	Kalnakwadi	46.34	137.28	48	Ambavane	35.10	104.00
4	Khanapur	45.90	135.98	49	Murukute	35.05	103.85
5	Vanguti	45.21	133.94	50	Kudtarwadi	34.46	102.09
6	Pangire	44.85	132.87	51	Sheloli	34.39	101.89
7	Nilpan	44.75	132.57	52	Dindewadi	34.29	101.58
8	Karadwadi	44.37	131.43	53	Pandivare	34.28	101.56
9	Madilge B.K.	44.02	130.42	54	Kolavan	34.27	101.54
10	Mudal	43.57	129.07	55	Vengrul	34.22	101.39
11	Madilge Kh.	43.39	128.55	56	Deulwadi	34.12	101.10
12	Nadhvde	43.36	128.46	57	Khedge	34.04	100.84
13	Admapur	43.28	128.23	58	Salpewadi	33.98	100.67
14	Konvade	43.27	128.19	59	Lotewadi	33.38	98.90
15	Pinpalgaon	42.82	126.85	60	Hedvade	33.36	98.82
16	Pushpnagar	42.36	125.49	61	Barave	33.35	98.81
17	Mhasave	42.27	125.22	62	Palshivane	33.28	98.59
18	Bhativade	42.10	124.71	63	Mharwadi	33.26	98.53
19	Tiravade	42.08	124.67	64	Bidri	33.19	98.34
20	Morewadi	41.88	124.07	65	Anap Kh.	33.10	98.07
21	Minache Kh	41.84	123.95	66	Devarde	33.08	98.01
22	Akurde	41.79	123.80	67	Patgaon	33.06	97.95
23	Koor	41.49	122.92	68	Darwad	33.00	97.78
24	Khaparewadi	40.14	118.91	69	Nondoli	32.77	97.08
25	Donvade	39.96	118.40	70	Vesarde	32.48	96.22
26	Kumbharwadi	39.91	118.24	71	Bhendvade	32.20	95.39
27	Madur	39.54	117.13	72	Nagargaon	31.50	93.33
28	Bamne	39.20	116.14	73	Nhavyachiwadi	31.40	93.01
29	Ranewadi	38.87	115.16	74	Varpewadi	31.13	92.23
30	Basarewadi	38.56	114.22	75	Navaraswadi	31.06	92.03
31	Nitvade	38.45	113.91	76	Mhasrang	31.03	91.93
32	Gangapur	38.18	113.12	77	Shidav Bk	30.69	90.92
33	Phanswadi	37.99	112.54	78	Ukirbatale	30.57	90.55
34	Palewadi	37.80	111.99	79	Dasewadi	30.55	90.52
35	Mamdapur	37.49	111.05	80	Antivade	30.50	90.36
36	Sonarwadi	37.48	111.05	81	Girgaon	30.40	90.05
37	Kadgaon	37.46	110.99	82	Karivade	30.07	89.08
38	Pacharde	37.24	110.34	83	Navale	30.07	89.08
39	Helewadi	37.15	110.06	84	Bhalakerwadi	29.90	88.57
40	Shengaon	37.05	109.77	85	Sonurli	29.86	88.47
41	Anup B.k.	36.66	108.61	86	Karambali	29.77	88.20
42	Pachawade	36.40	107.84	87	Dele	29.55	87.54
43	Nagnwadi	36.33	107.62	88	Shindewadi	29.29	86.77
44	Pal	36.27	107.45	89	Thadyachiwadi	28.57	84.63
45	Tikkewadi	36.25	107.39	90	Anturli	28.49	84.39

Sr.No.	Village	C.I.	Indices	Sr.No.	Village	C.I.	Indices
91	Pardewadi	28.26	83.73	105	Mathagaon	25.65	75.99
92	Chandanwadi	28.25	83.71	106	Nishnap	25.55	75.71
93	Yerandpe	27.98	82.89	107	Minache B.K.	25.27	74.88
94	Megholi	27.78	82.30	108	Kondoshi	23.87	70.72
95	Kelewadi	27.27	80.80	109	Mani	23.58	69.86
96	Vasnoli	27.23	80.67	110	Shivdav Kh	23.15	68.58
97	Manavle	27.03	80.08	111	Chivale	22.94	67.98
98	Jakinpeth	27.03	80.07	112	Phaye	22.05	65.32
99	Tambale	27.02	80.05	113	Bediv	21.16	62.70
100	Aralgundi	26.62	78.85	114	Vinjole	21.16	51.42
101	Padkhambe	26.49	78.48	115	Hanamante	21.16	50.31
102	Devkewadi	25.83	76.53	116	Monpe	21.16	45.03
103	Palyachahuda	25.69	76.11	117	Chikkewadi	21.16	31.71
104	Tambyachiwadi	25.67	76.04		**Average**	**33.75**	**100**