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TO STUDY THE LEVELS OF AGRICULTURAL DEVELOPMENT IN SANGLI DISTRICT: A GEOGRAPHICAL ANALYSIS

Dr. Uday N. Suryawanshi

Department of Geography
Mohnarao Patangrao Patil Mahavidyalaya, Borgaov Tal.Walwa, Dist. Sangli.
Corresponding Author - Dr. Uday N. Suryawanshi
E-mail - udaysuryawanshi1985@gmail.com
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Introduction:

'Agriculture' in Agricultural Geography implies the subject matter, and 'geography' gives the way of viewing or investigating the subject matter. Etymologically, Agricultural geography deals with "The science or art of cultivating soil, growing and harvesting of crops, domestication of animals and raising of livestock is known as Agriculture" (Majid Husain,2008)pp17, Agricultural change cannot be understood separately from the general process of development. However, agro-technical determinants like irrigation, fertilizers, high high-yielding varieties of seeds, agricultural mechanization and others from a developed kind of agricultural landscape provide a frame of parameters to measure the level of agricultural development of a region.

The development of a region can be assessed in many ways. One of the approaches is to assess the annual rate of growth of national income in relation the to growth rates of other economies. The development of various input and output 100technical co-efficient is another approach followed be dealing with the growth pattern of certain physical indicators. In order to find out the levels of development in the study region selected indices were measured for each Revenue circle. The following variables are considered for determining the levels of development.

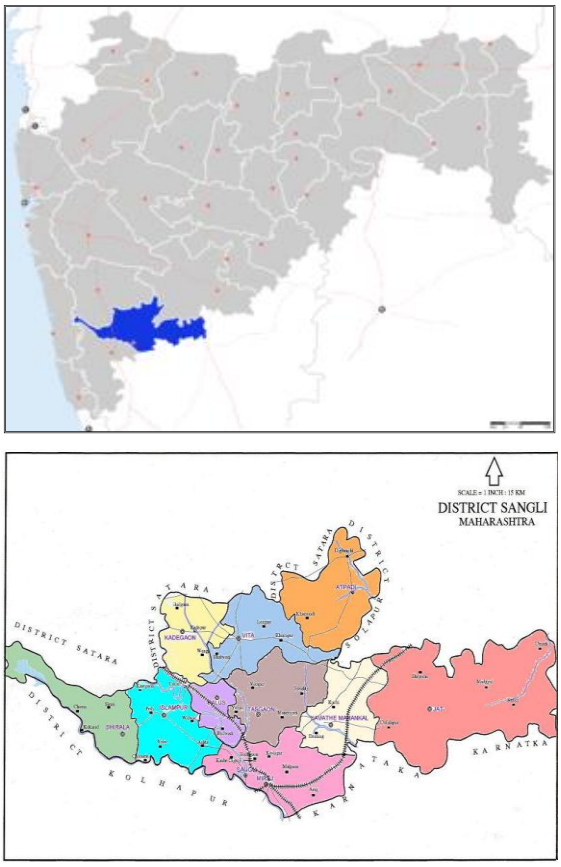
Objective:

1) To study the geographical setting and socio-economic setup of the study area.
2) To assess the levels of Agricultural development in the study area.

Study Area:

The Selected area for the present investigation is the Sangli district of

Maharashtra state containing 10 tahsils in Sangli district such as Miraj, Tasgaon, Kavathe-Mahankal, Jat, Khanapur (Vita), Palus, Atpadi, Walwa, Kadegaon, Shirala. Sangli is one of the southern Districts of Maharashtra lying between 16°43' and 17°38' north latitude and 73°41' and 75°41' east longitude and has an area of 8,572 Sq. Km (2.78% of State) a and population of 28, 22,143, (2.51% of State (2011).



Database and Methodology:

The present study is based on Primary data. Primary data regarding Environment quality, status etc. will be collected by conducting the intensive fieldwork. The Stratify random sampling technique would be used to select the samples. The sample of Bases of Irrigated 10 Tahsils and non-Irrigated 10 Thasil, The 10 tahsils considered on the basis of agricultural development. The secondary data will be counted from related books, published and unpublished reports, journals, newspapers, published government report, District census Handbook, District Statistical Abstract, socio-economic reviews, etc.

Methodology:

The Stratify random sampling technique would be used to select the samples. The sample of Bases of Irrigated Village- from 10 Tahsils-20 Villages Sample selected of the soil and water testing and non-Irrigated Village- 10 Thasil-

Composite Index of Development:

1. Net sown area to Total Geographical area
2. Percentage of Cultivate area to net Sown area
3. Percentage of the net irrigated area to net sown area.
4. The number of tractors available per 100 hectares of cultivated area.
5. The number of electrical pumps available per 100 hectares.
6. Chemical Fertilizer consumption per 100 hectares. Of the net sown area.

7. The number of livestock per 100 hectors. of the net sown area
8. The productivity of 100 hectares. Of the net sown area.
9. Percentage of irrigated Well. Per 100 hectare.
10. Percentage of Literacy to the Total Geographical area.

The method adopted to determine the levels of development involves two stages. First, the determination of a level of each Revenue circle in terms of discrete variable and second the integration of values obtained to give a complete index of development taking all indices into account. The coefficient of development of each Revenue circle in terms of single variables is expressed as follows:

$$CDi = \frac{Pi}{PI}$$

Where,

CDi = the coefficient of development for variable 'i', Pi = percentage of variable 'i', PI = mean percentage of variable 'i' in the whole region

$$CID = \frac{CDi1 + CDi2 + CDi3 + CD\ in}{N}$$

Where,

CID = Composite index of development

N = Number of variables.

i= Variable

Levels of Agricultural Development:

Higher Level of Development:

Above 10 composite indexes of development has occurred only in walwa, Palus, kadegaon and Miraj tahsil; farming is generally carried out with commercial and intensive attitude and by adopting new technology. It helps for the development of agricultural. These Tahsils have more irrigated facilities such as river, canal, well and tube well irrigation; there for large area is under availability of the irrigation sources and high development is due to the high fertile soil, climate condition, water supply and concentration of the agro-based industries in this tahsil.

Moderate Level of Development:

These are fall in this category with Shirala, Tasgaon, Jat and Khanapur composite index of development respectively in Shirala, Tasgaon, Jat and Khanapur has less area in terms of net sown area but rich by underground water and canal irrigation and artificial water supply. In Shirala, Tasgaon is the progress of the development is witnessed and In Jat and Khanapur there are few areas which are irrigated but not for a more large area covered in irrigation and few pockets were the agricultural development took place.

Lower Levels of Development:

In this category two Thasil has been reported nearly Kavathemhankal and Atpadi; it is happened due to rugged topography, fewer irrigation facilities coarse soil and less use of new form technology and use of fertilizers in these tahsils. Also, have poorer irrigation facilities thereby requirements of other inputs in agricultural practices were less in factors within this tahsils may attain faster development when water made available by ongoing irrigation projects in this tahsil so the development growth rate is increasing in this study region.

A calculated composite index of ten tahsil out of which Shirala, Tasgaon, Khanapur, Jat, Atpadi, and Kavathemhankal tahsil has shown progress in agriculture when few effective factors play major role in the development such as deep, black soil, intensive cultivation and assent water supply and sugar, dairy farming and other small-scale and larger-scale factories. Kavathemhankal, Jat, Atpadi, and Khana agricultural development growth due to using agricultural implements are poor in this in this tahsil of the study region.

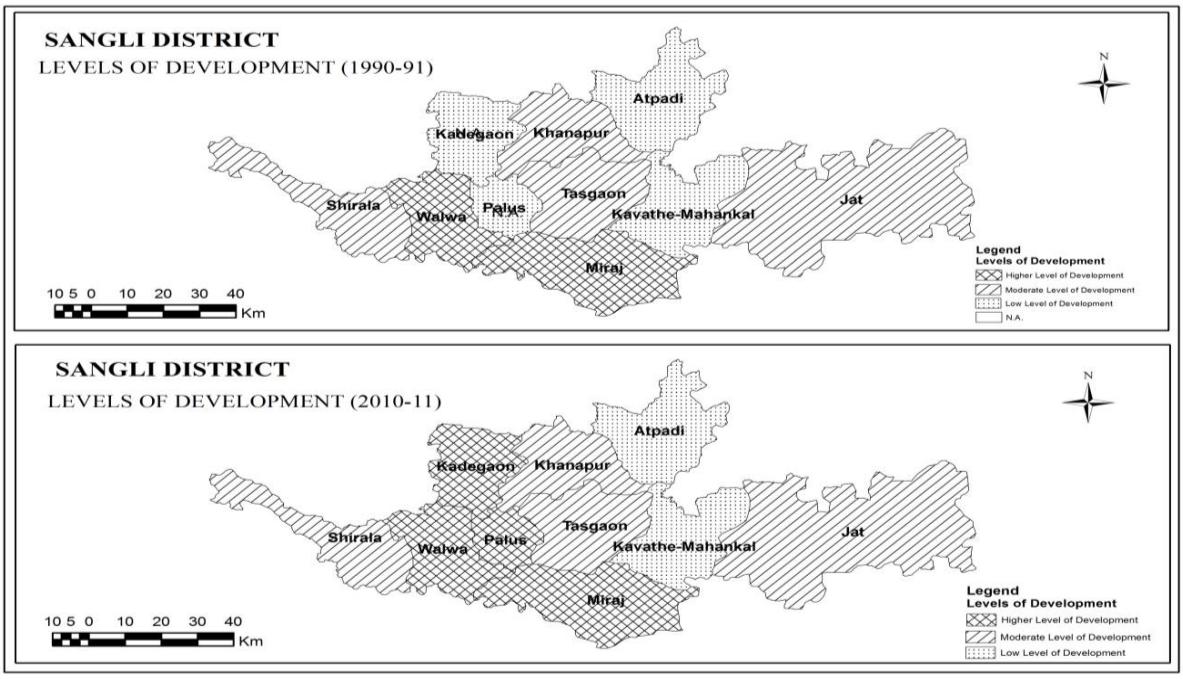
Composite Index of Development and levels of Development

Sr. No.	2001-01			2020-21		
	Tahsil	**CID**	**Level of Development**	**Tahsil**	**CID**	**Level of Development**
1	Walwa	**14.44**	Higher Level of Development	Walwa	**16.94**	Higher Level of Development
2	Miraj	**11.05**	Higher Level of Development	Palus	**12.99**	Higher Level of Development
3	Tasgaon	**9.88**	Moderately High Level of Development	Kadegaon	**11.97**	Higher Level of Development
4	Khanapur	**8.74**	Moderately High Level of Development	Miraj	**10.03**	Higher Level of Development
5	Shirala	**8.17**	Moderately High Level of Development	Jat	**9.34**	Moderately High Level of Development
6	Jat	**8.18**	Moderately High Level of Development	Shirala	**9.24**	Moderately High Level of Development
7	Kavathe Mahankal	**7.43**	Lower Level of Development	Tasgaon	**8.67**	Moderately High Level of Development
8	Atpadi	**7.25**	Lower Level of Development	Khanapur	**8.77**	Moderately High Level of Development
9	Kadegaon	-	-	Kavathe Mahankal	**6.21**	Lower Level of Development
10	Palus	-	-	Atpadi	**6.33**	Lower Level of Development

(Source: - Calculate by Researcher) Below 8 low lower Level, Above 8 Moderately High

- Above 10 Higher Level

Levels of Agricultural Development (2001-01 to 2020-21)



Cluster Analysis of the Year 2001-01:- and 2020-21:

Ten tahsils of the study area Grouped into ten clusters for the hierarchical cluster analysis of the year 2001-01, and ascending order of hierarchy is preferred.

Cluster Analysis on the Basis of Agricultural Development of 2001-01

Ten Parameters for identification of Level											
Sr. No.	**Tahsil**	**% NSA to TGA**	**% of cultivated area to NSA.**	**% of Irrigated Land to NSA**	**No. of Tractors per 100 hectare of NSA**	**Use Of Chemical Fertilizers hectare of NSA**	**No. of Livestock per 100 hectare of NSA**	**% of Productivity to NSA**	**% of Well irrigation**	**% of electrical pumps available**	**% of Literacy**
1	Walwa	85.08	86.39	20.98	35.21	28	210.27	11.96	9.79	19.78	65.2
2	Kadegaon	-	-	-	-	-	0	-	-	-	-
3	Khanapur	36.7	30.62	7.93	14.55	11.48	61	7.94	22.47	9.53	55.2
4	Palus	-	-	-	-	-	0	-	-	-	-
5	Tasgaon	86.48	55.92	9.66	14.45	29.39	90.84	6.75	10.78	15.1	62.3
6	Miraj	87.06	90.21	11.99	11.88	21.14	230.23	7.01	21.77	17.41	64.5
7	Kavathe Mahnkal	32.21	20.5	8.83	4.83	13.49	102.71	5.94	14.37	3.59	60.6
8	Jat	41.87	32.23	3.84	7.84	22.86	366.33	7.78	15.08	5.87	51.4
9	Atpadi	42.18	29.52	2.03	5.17	11.5	147.133	7.96	4.1	7.85	54.7
10	Shirala	74.22	45	2.29	6.06	22.17	83.69	10.98	3.65	3.89	52.9

(Source: - Calculate by Researcher)

Cluster Analysis on the basis of Agricultural Development of 2020-21

Ten Parameters for identification of Level											
Sr. No.	**Tahsil**	**% NSA to TGA**	**% of cultivated area to NSA.**	**% of Irrigated Land to NSA**	**No. of Tractors per 100 hectare of NSA**	**No. of Livestock per 100 hectare of NSA**	**Use Of Chemical Fertilizers hectare of NSA**	**% of Productivity to NSA**	**% of irrigated Well**	**% of electrical pumps available**	**% of Literacy**
1	Walwa	87.67	98.12	36.41	22.78	265.57	51.05	13.61	9.73	19.48	85.2
2	Kadegaon	92.05	32.5	10.9	7.04	80.63	27.23	6.78	2.67	6.65	81
3	Khanapur	91.68	31.36	4.39	9.57	90.15	18.03	9.42	12.53	8.1	82.2
4	Palus	77.3	89.25	1938	8.98	63.5	34.04	6.84	3.91	5.34	86.1
5	Tasgaon	75.9	43.11	18.05	13.26	137.79	34.04	7.69	14.01	12.87	83.3
6	Miraj	94.91	90.49	26.84	15.58	245.36	51.05	7.44	16.34	15.47	84.5
7	Kavathe Mahnkal	63.03	66.7	5.33	5.83	132.14	18.23	8.51	12.85	8.76	78.6
8	Jat	89.8	39.69	3.55	7.8	302.52	23.23	9.59	18.86	16.08	70.4
9	Atpadi	83.46	38.39	1.79	6.22	154.8	21.23	10.96	6.43	7.15	72.7
10	Shirala	86.11	39.11	3.39	6.93	79.14	30.01	12.13	5.17	3.09	78.9

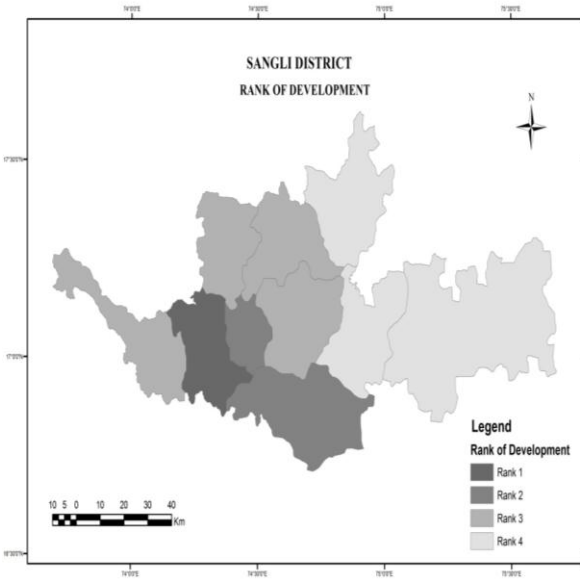
(Source: - Calculate by Researcher)

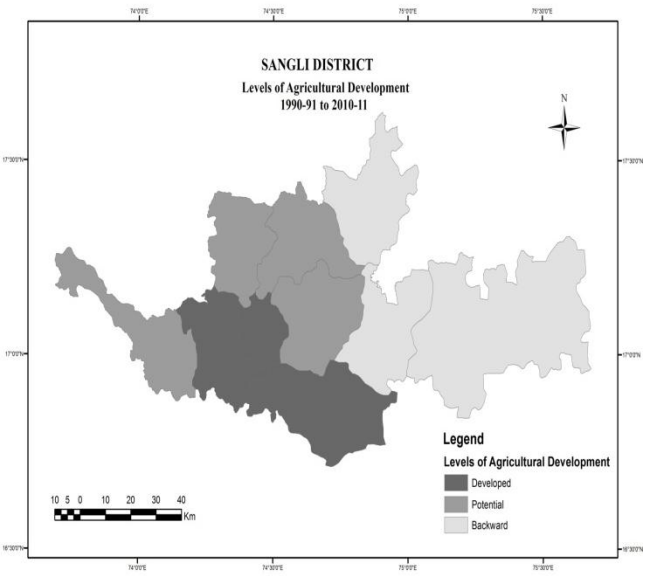
Temporal Variation between the Ten Parameters of Hierarchical Clusters

2001-01 to 2020-21

Rank No	Tahsil	% NSA to TGA	% of the cultivated area to NSA.	% of Irrigated Land to NSA	No. of Tractors per 100 hectares of NSA	No. of Livestock per 100 hectares of NSA	Use Of Chemical Fertilizers hectare of NSA	% of Productivity to NSA	%of irrigated Well	% of electrical pumps available	% of Literacy
1	Walwa	2.59	11.73	15.43	12.43	44.7	23.05	1.35	1.06	3.3	20
2	Miraj	7.85	0.28	14.85	3.7	14.77	29.91	0.43	-5.43	-1.94	20
	Palus	77.3	89.25	12.38	8.98	63.5	34.04	6.84	3.91	5.34	86.1
3	Shirala	11.89	-5.89	1.1	0.87	-4.55	7.84	1.15	1.52	-0.8	26
	Kadegaon	92.05	32.5	10.9	7.04	80.63	27.23	6.78	2.67	6.65	81
	Tasgaon	-10.58	-12.81	8.39	-1.19	46.95	4.65	0.94	3.23	-2.23	21
	Khanapur	54.98	0.74	-3.54	-4.98	29.15	6.55	1.48	-9.94	-1.43	27
4	Jat	47.93	7.46	-0.29	-0.04	-63.81	0.37	1.81	3.78	10.21	19
	Kavathemahankal	30.82	46.2	-3.5	1	29.43	4.74	2.57	-1.52	5.17	18
	Atpadi	41.28	8.87	-0.24	1.05	7.667	9.73	3	2.33	-0.7	18

(Source: - Calculate by Researcher)





CONCLUSION:

The study of the levels of agricultural development reveals that the Most Backward, Backward, Developing, Developed, and More Developed level of agricultural development is confined to the areas having assured supply of water. The dominance of Wheat, Jawar, and sugarcane farming, social awareness among the farmers, the Cooperative movement, role of sugar industries have played a significant role in the development of the agricultural level, which is observed in the Revenue circles of Kavathemhankal, Atpadi, The remaining Revenue circles have recorded low development of agriculture due to frequent drought conditions, meager water supply, dependence on rainfall, etc. The fact is revealed by the spatial analysis of agricultural technology that there is an extensive tract of 'Weaker Zone' of unfavorable environmental conditions in the Eastern part of the area. Deprivations of the advantages of agricultural technology are witnessed in this region the attention has to be paid to overcoming the problems by adopting favorable measures in planning during the years to come especially through the development of irrigation facilities.

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