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## Agricultural Density In Sangli District : A Spatial Interpretation



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**Abstract:** The simple man-land ratio (arithmetic density) only expresses the pressure of population on the unit of the total land. It is not a satisfactory way of depicting the real density or the pressure of population on the resource base and is thus unrealistic and even misleading. For this, agricultural density and physiological density are to be taken into account. Agricultural density provides comparison between agricultural population and cultivated area. It is a better approach for the analysis of land-use in agricultural countries like India, where heavy reliance is placed on farming. Therefore, agricultural density (total agricultural population / total cultivated area) cannot be used reliably for scientific planning of land use. The cultivated area takes no notice of the area sown more than once, but it does include fallow land. It does not consider the potential agricultural productivity of the soils.

The present paper tries to analyse the agricultural density of Sangli district by using tahsilwise and village wise data of 1991 and 2001. As compared to Maharashtra state, Sangli district noted high agricultural density of population. It is due to its rich agricultural base and high proportion of rural and agricultural population (more than 70 %). Agriculture is the backbone of economy in the study area. It has the capacity to accommodate huge population and provides living facilities.

**Keywords:** Spatial variation, Agricultural density, arithmetic density, physiological density, Agricultural productivity, Agricultural efficiency.

### INTRODUCTION:

Population Geography is more concerned with 'Spatial Variation' in the nature of places and this is where it distinguishes itself from Demography - The Science of Population - viewed as a single topic. Distribution and density of population are analytically very important for population geography. The concept of density of population is the most rarely and is useful tool in the analysis of the diversity of man's distribution in space (Clarke)<sup>1</sup>. The distribution of Population is more locational, while the density is more proportional (Chandna)<sup>2</sup>. The geographer's task is to explain this diversity in terms of physical, social, demographic, economic, political and historical factors as an inter-related influence (Clarke)<sup>3</sup>. What is most important in understanding this phenomena i.e. is the dynamism of the processes of a population distribution is as ever changing fact and the cause and effect too vary in spatio-temporal matrix.

*"The field of Population distribution may be defined as the study of nation's or community's population in terms of area, sub-divisions; such as regions, states, socio-economic areas, urban and rural residence and census tracts. This includes the study of population residing in the smaller areas, units, as well as the study of total number of inhabitants" (Bogue)<sup>4</sup>.*

As population geographer's main task is to explain spatial variations in population distribution. In terms of all

such influences or factors that provide this spatial pattern in temporal dimensions, the author has assembled the requisite population data both tahsil wise and village wise from the 'Censuses' of Sangli district, 1991 and 2001 (A Census has been defined as "the total process of collecting, compiling and publishing of demographic data pertaining at a particular time, to all persons in a defined territory" (Shrivastava)<sup>5</sup>).

### AGRICULTURAL DENSITY OF POPULATION

The simple man-land ratio (arithmetic density) only expresses the pressure of population on the unit of the total land. It is not a satisfactory way of depicting the real density or the pressure of population on the resource base and is thus unrealistic and even misleading. For this, agricultural density and physiological density are to be taken into account.

*Agricultural density provides comparison between agricultural population and cultivated area (Ferenzi<sup>6</sup> and Trewartha<sup>7</sup>). It is a better approach for the analysis of land-use in agricultural countries like India, where heavy reliance is placed on farming. Therefore, agricultural density (total agricultural population / total cultivated area) cannot be used reliably for scientific planning of land use (Singh and Dhillon)<sup>8</sup>. The cultivated area takes no notice of the area sown more than once, but it does include fallow land. It does*

not consider the potential agricultural productivity of the soils.

As compared to Maharashtra state, Sangli district noted high agricultural density of population. It is due to its rich agricultural base and high proportion of rural and agricultural population (more than 70 %). Agriculture is the backbone of economy in the study area. It has the capacity to accommodate huge population and provides living facilities.

### THE STUDY AREA

The study area is a district, i.e. "Sangli District" in Maharashtra state of India. Its selection identifies and recognizes District as basis of the administrative system in India. A district is defined as territory marked off for a special administrative purpose (Oxford)<sup>9</sup> and District Administration defined by Khera (1972)<sup>10</sup>, is the management of public affairs within a territory marked off such purpose. It is the most important of all the units in area administration.

The district of Sangli like Satara and Kolhapur is a Southern district of Maharashtra state. It lies between 16o40' and 17o33' North Latitude and 73o42' and 75o40' East longitude (Rammurthy)<sup>11</sup>, and has an area of 8572 sq. km. and Population of 25, 83,524 spread over in 9 tahsils, 721 inhabited villages, 3 uninhabited villages and 8 urban centers (Census, 2001)<sup>10</sup>. Of the 35 districts in Maharashtra state, Sangli district occupies 21st rank in area and 15th rank in population. Hence, it is smaller in area and medium sized in population.

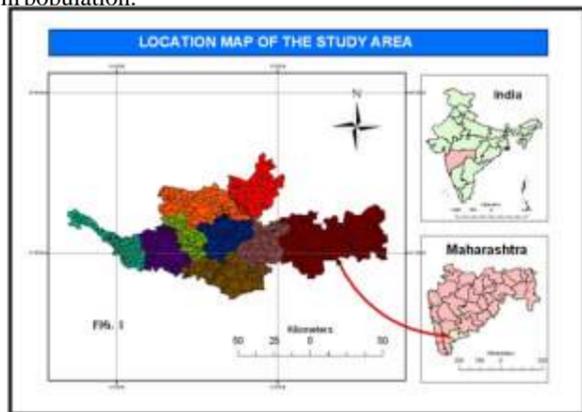


Fig. 1

### OBJECTIVES:

1. To analyse tahsilwise Agricultural density in Sangli district for 1991 and 2001.
2. To analyse villagewise Agricultural density in Sangli district for 2001.

### DATABASE AND METHODOLOGY:

The present paper is entirely based on secondary data. The secondary data on Population and agricultural area have been gathered from Directorate of Census Operations,

Maharashtra, Mumbai and Socio-Economic Abstracts of Sangli District (1901 & 2001). The Agricultural density of specific decade is obtained by using the following formula:

$$\text{Agricultural density} = \frac{\text{Total Agricultural Population}}{\text{Total Cultivated Area}}$$

### TAHSILWISE AGRICULTURAL DENSITY

Table 1 Sangli District : Tahsilwise Agricultural Density of Population (1991-2001)

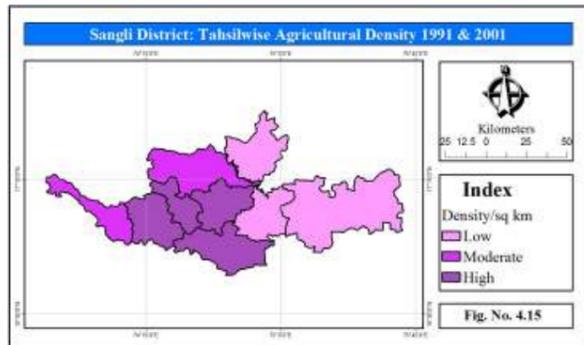
Sr. No.	Tahsil	Agricultural Density ( in sq. km )		Decadal Variation ( in% )
		1991	2001	
1	Shirala	91	143	57.78
2	Walwa	165	237	43.64
3	Palus	-	191	-
4	Khanapur	92	140	52.17
5	Atpadi	76	97	27.63
6	Tasgaon	115	214	86.09
7	Miraj	113	179	58.41
8	Kawathe Mahankal	81	134	65.43
9	Jat	70	92	31.43
Sangli District		131	179	36.64
Maharashtra State		101	131	29.70

Source : Computed by author

As per 1991 census the study area, Sangli district, has an average agricultural density of population was 131 persons per sq. km. The addition of 48 persons per sq. km in a decade it rose to 179 in 2001. It is evident from Table 4.14 that there is no uniformity among tahsils as far as agricultural density is concerned, which ranges from 70 to 165 ( in 1991) and 92 to 237 ( in 2001) persons per sq. km.

**i) High Agricultural Density :** Table 1 and Fig. 4.15 reveal that the highest agricultural density was found in Walwa tahsil (165 & 237) during both the decades and is followed by Tasgaon (115 & 214), Palus (191) and Miraj (113 & 179) tahsils respectively. As stated earlier all these tahsils situated in central plain zone, are largely advanced in agricultural and economic development, resulting a very high concentration of agricultural population.

**ii) Moderate Agricultural Density :** Shirala, Tasgaon and Khanapur tahsils exhibit moderate agricultural densities.



**iii) Low Agricultural Density :** Agro-economically underdeveloped tahsils, like, Kavathe Mahankal , Atpadi and Jat depict low agricultural densities.

As far as decadal growth in agricultural density of population is concerned Tasgaon tahsil ranks first with 86.09 % , followed by Kawathe Mahankal tahsil with 65.43 % . It is so because the improvement in irrigation facilities induced to increase the area of grape cultivation and currant (Bedana / Manuka ) production. These are the pull factors of rural in-migration in agricultural activity. As against tahsils like Jat and Atpadi remain so behind due to drought condition. Remaining tahsils show moderate growth rate which is above the district average of 36.64 %.

**VILLAGE WISE AGRICULTURAL DENSITY ( 2001 )**

For the better analysis agricultural density of all the villages in each tahsil of the study area have been calculated and grouped into 5 categories as shown in table 2 and depicted the same is Fig.4.16. The emerging scenario is as under :

**i) Very High Agricultural Density Villages (above 251 persons /km<sup>2</sup>):**

There are 123 (17.06%) villages in Sangli district having very high agricultural density of population. Most of the villages in this category are confined to agriculturally developed tahsils, like Walwa [37( 38.5%)], Shirala [24(25.5%)] and Palus [22(42.3%)]. The reclamation of fallow land, adequate irrigation facilities, commercial agricultural practices, emergence of agro-based industries resulted in the growing pressure of population in agricultural sector. Remaining all tahsils are having less than 10 villages each under this category. The highest agricultural density of population in the district is recorded in village Vadgaon (3715) in Tasgaon tahsil, as it is a leading village in grape and currant (Bedana / Manuka) production.

**ii) High Agricultural Density Villages (201 to 250 persons /km<sup>2</sup>):**

Only 10 percent (76) villages in the study area exhibit high agricultural density of population in 2001. A couple of villages from Walwa [19 (19.8%)], Shirala [11 (11.7%)], Khanapur [13 (12.2%)] and Palus [11( 21.2%)] tahsils are confined to this category. Majority of these villages are situated along the river banks. Fertile soils and irrigation facilities induced the high agricultural efficiencies

in these villages. No single village from Atpadi tahsil records high agricultural density of population as it is a drought prone tahsil.

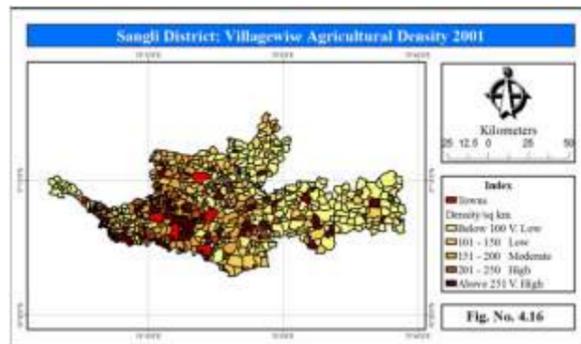
**iii) Moderate Agricultural Density Villages (151 to 200 persons /km<sup>2</sup>):**

About one fifth (134) villages in the study area are confined to moderate agricultural density of population. The villages from Palus [15 (28.9%)], Walwa [26 ( 27.1%)], Miraj [16 ( 25.4%)] and Tasgaon [16 ( 25%)] tahsils dominate in this category, while Jat, Atpadi and Kawathe Mahankal tahsils are lagging behind .

**Table 2 Sangli District: Villagewise Agricultural Density of Population (2001)**

Sr. No.	Tahsil	Agricultural Density of Population Per Sq. Km.									
		<100 Very Low		101-150 Low		151-200 Moderate		201-250 High		>251 Very High	
		Villages		Villages		Villages		Villages		Villages	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Shirala	18	19.2	30	31.9	11	11.7	11	11.7	24	25.5
2	Walwa	2	2.08	12	12.5	26	27.1	19	19.8	37	38.5
3	Palus	0	0	4	7.69	15	28.9	11	21.2	22	42.3
4	Khanapur	17	15.9	41	38.3	26	24.3	13	12.2	10	9.35
5	Atpadi	44	73.3	8	13.3	6	10	0	0	2	3.33
6	Tasgaon	18	28.1	18	28.1	16	25	6	9.37	6	9.37
7	Miraj	16	25.4	18	28.6	16	25.4	7	11.1	6	9.52
8	Kavathe Mahankal	22	36.7	14	23.3	12	20	6	10	6	10
9	Jat	91	72.8	15	12	6	4.8	3	2.4	10	8
	Sangli District	228	31.6	160	22.2	134	18.6	76	10.5	123	17.1

Source : Computed by Author.



**iv) Low Agricultural Density Villages (101 to 150 persons /km<sup>2</sup>):**

As many as 160 (22.19%) villages in the district are marked with low agricultural density of population. Highest number [41(38.3%)] of villages are from Khanapur tahsil are confined to this category and it is followed by Shirala tahsil with 30 (31.9%) villages. More than one fourth villages from Tasgaon and Miraj tahsils (18 each) have confined to this category. Palus (4) and Atpadi (8) tahsils have very few villages with low agricultural density of population.

**v) Very Low Agricultural Density villages (Below 100 persons/km<sup>2</sup>):**

About one third (228 / maximum) villages in the study area depict very low agricultural density of population. Villages in drought affected tahsils like Jat [91(72.8%)], Atpadi [44(73.3%)] and Kavathe Mahankal [22(36.7%)] dominate this category. No single village from Palus tahsil record very low agricultural density of population, as it is agriculturally most developed tahsil in the district, which is followed by Walwa tahsil with only two villages. The lowest agricultural density of population (12 persons/km<sup>2</sup>) is found in village Lavanga of Jat tahsil, which is surrounded by hills.

**SUMMARY**

Population Geography is more concerned with spatial variations in the distribution of population in terms of all such influences that provide the spatial pattern and temporal dimensions. Population distribution over a region is intimately related to its physical, economic and social environment. The geographer's task is to explain the diversity of this distribution in terms of all those influences in population distribution that has been ever changing and its cause and effect which vary with time and space.

The present study has aimed to explain the distribution patterns of population in Sangli district of Maharashtra state. This has been analyzed with the help of some physical and economic factors.

Agricultural densities vary from tahsil to tahsil in the study area and fluctuate during the study period. Agricultural density is noted higher in the study area than the state average. It is found that tahsils of central plain zone of the study area comprise of higher densities, whereas, tahsils in the extreme east and extreme west noted lower densities. It has been, therefore, obvious that soil quality, soil pattern, irrigation and technological inputs, cropping intensity are some of the determining factors for higher densities. This leads to higher agricultural index in the study area. The spatial variability in the process of economic development, scarcity of water, lack of industrialization, transport and communication are some of the problems in the study area.

This requires implementation of proper planning programmes.

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