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The Study of Relationship between Population and Food Production in Solapur District: A Case Study of Sample Villages

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Abstract

The basic and fundamental needs for mankind in day today life are food, clothes and shelter. Without food man cannot sustain for longer period. Among these requirements food is the most important. Malthus theory may be analyzed here which will enable us to understand, the nature of future problem of food demand and supply. In the present research paper is associated with the analysis of availability of food in relation to population in selected villages. The demand and supply of food, the deficit and surplus villages have also been examined in this research paper. The available of food in these villages were calculated further in to the availability and requirement in relation to population. On the basis of demand and supply, the deficit and the surplus villages are demarcated. In the present research paper is an attempt to take in depth case study of population and food production in the sample villages of Solapur district. The surplus and deficit of food production of sample villages is classified into three categories like slightly surplus village, moderately surplus villages and highly surplus villages.

Key words:- *Food, Availability, Surplus, Deficit*

- **Introduction:**

Relationship between population and availability of food has been the subject matter of geographers since ancient time. Thomas Malthus worked the first economist, to raise this issue. He analyzed the relationship between growth of population and food production. Within the state of Maharashtra, the Solapur district occupies a very important position both in terms of area and population. In order to understand the availability of food, requirement, surplus and deficit food in the region under study is found out. The surplus and deficit areas have been found out. In present research paper detailed study of population growth and food production in the study region. Besides this population growth, food grain availability, food productions and its availability, food system and production, food balance sheet and food availability per person per

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day have also studied. In the present research paper is an attempt to take in depth case study of population growth and food production in the sample villages of Solapur district.

- **Study Area:**

The district of Solapur is one of the most important districts of Maharashtra State in terms of both area and population. It lies entirely in the Bhima-Sina-Man basins. The district of Solapur is located between $17^0$10' North and $18^0$32' North latitudes and $74^0$42' East and $76^0$15' East longitudes. The East-West Length of the district is about 200 kilometer and North-South width is about 150 kilometer. The total geographical area of the Solapur district is about 14,878 square kilometer and population of 43, 15,527 according to 2011 census. This stage of sample selection of villages involves selection of total 18 villages from the selected five tahsils like North Solapur, Malshiras, Pandharpur, Sangola and Karmala.

- **Objectives:**

1. To analyze the deficit and surplus region in food production in sample villages.
2. To assess the availability of food production in selected sample villages.
3. To study the relationship between growth of population and food production in the study region.

- **Database and Methodology:**

Data has been collected from socio-economic sources and census handbook. The data has been collected also agricultural department of Solapur district and Krushi Vidyan Kendra, Solapur. The data was processed and tabulated in percentage and proportions. Processed data was represented through various cartographic techniques.

- **Analysis:-**

It is a case study of Solapur district of Maharashtra, which follows two steps. From the general study of growth of population and food production in Maharashtra, it has been observe that Solapur district is one of the most important districts in the state in agriculture. In the second step by observing the farming scenario of the district it was found that out of the total tahsils of Solapur District, 60 per cent tahsils of the district viz. Malshiras, North Solapur, Pandharpur, Sangola and Karmala are selected for micro-level study. These tahsils are leading in Solapur district in respect of population. According to 2011 census, 46 per cent of total population of

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district is concentrated only in these three tahsils viz. North Solapur shares 25 per cent,

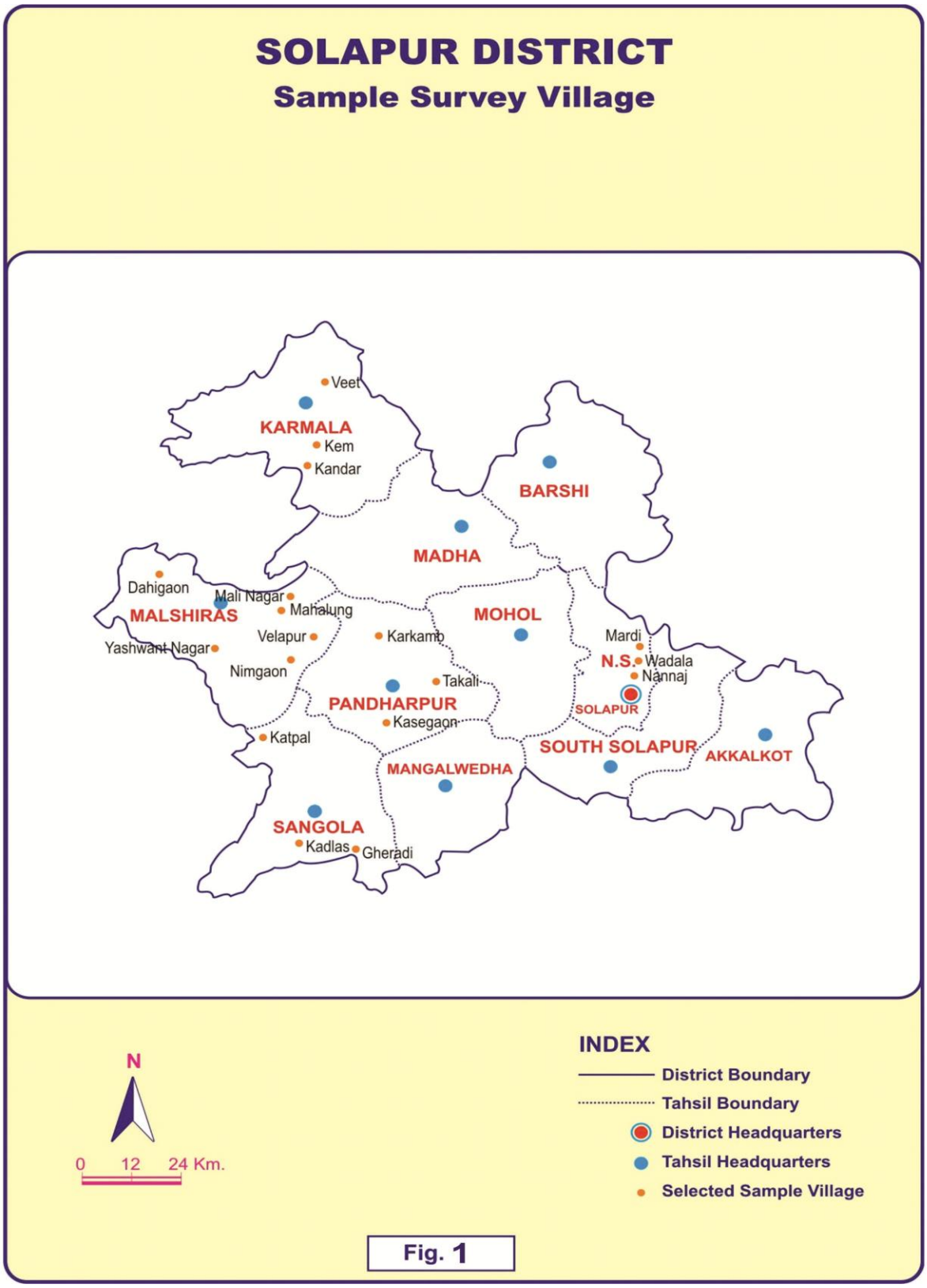

Fig. 1

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Malshiras 11 per cent and Pandharpur 10 per cent population of the Solapur district. As well as Sangola, Karmala and Malshiras tahsils are leading about food production in Solapur district. According to 2013-14 socio-economic abstract of Solapur District, 35 percent of total food production of district is concentrated only these three tahsils viz. Sangola shares 12.60 percent, Karmala 12.28 percent and Malshiras 11.86 percent food production of Solapur district.

- **Selections of Villages-** This stage of sample selection of villages involves selection of total 18 villages from the selected five tahsils like North Solapur, Malshiras, Pandharpur, Sangola and Karmala.

1. **Sample Villages based on Population-** For study of sample villages based on population in the first step 1/3 tahsils are selected from Solapur district viz. North Solapur, Malshiras and Pandharpur. These tahsils are leading in Solapur district in respect of population. Out of the total Population of the district North Solapur, Malshiras and Pandharpur tahsils individually shares 25 per cent, 11 per cent and 10 per cent respectively. In the second step from every selected tahsil 3 villages are selected for micro-level study. These villages are selected on the basis of high ranking population in respective tahsils**.**
2. **Sample Villages based on Food Production-** For study of food production in the first step 1/3 tahsils are selected from Solapur district, such as Sangola, Karmala and Malshiras. These tahsils are leading in Solapur district regarding food production. Out of the total food production of the district Sangola, Karmala and Malshiras occupies 12.60 per cent, 12.28 per cent and 11.86 per cent respectively. In the second step from every selected tahsil 3 villages are selected for micro-level study. These villages are selected on the basis of high ranking of food production in the respective tahsil.

- **Population in selected sample villages (2011):-**

The growth of population in any area is an index of its economic development, social awakening and many other characters. The growth of population is one of the significant factors associated with mans occupancy. In other words, it flows in size from time to time and people migrate temporarily or permanently both within the administrative boundaries and across them. There are many factors which are responsible for increasing, the natural growths of population. The demographic factors, social factors influence the growth rate of population.

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Table :-1 Population in selected sample villages (2011)

Sr No	Village	Male	Female	Total
1	Nannaj	3880 (51.14)	3707 (48.86)	7587
2	Mardi	3259 (52.14)	2992 (47.86)	6251
3	Wadala	2661 (51.73)	2483 (48.27)	5144
4	Mahalung	10643 (51.09)	10190 (48.91)	20833
5	Yasawantnagar	7294 (51.39)	6900 (48.61)	14194
6	Malinagar	5342 (51.39)	5052 (48.61)	10394
7	Karkamb	9073 (51.98)	8383 (48.02)	17456
8	Kasegaon	8428 (52.03)	7769 (47.97)	16197
9	Takali	5244 (51.81)	4878 (48.19)	10122
10	Gheradi	5637 (51.45)	5319 (48.55)	10956
11	Katfal	2043 (52.01)	1885 (47.99)	3928
12	Kadlas	4106 (51.71)	3835 (48.29)	7941
13	Kem	4831 (52.08)	4445 (47.92)	9276
14	Veet	2636 (52.17)	2417 (47.83)	5053
15	Kandar	3320 (53.38)	2900 (46.62)	6220
16	Velapur	8904 (52.12)	8178 (47.88)	17082
17	Nimgaon	4202 (52.03)	3874 (47.97)	8076
18	Dahigaon	4580 (51.23)	4359 (48.77)	8939

Source: Based on Field Survey.

From the table 1 show the population distribution in sample villages. The highest population 20833 is observing in Mahalung village and lowest in 3928 Katfal village. The highest male population is observing in Kandar village i.e. 53.38 per cent and lowest in Mahalung i.e. 51.09 per cent in the study region. It means the highest female population is marked in 48.91 per cent in Mahalung village and lowest in 46.62 per cent Kandar village. Generally, overall the male population is more than the female population in the study area.

- **Agricultural Production of selected sample villages:-**

The census department has grouped entire crops under the two broad categories namely food crops and non food crops. Among the food crops, cereals, pulses condiments and spices,

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sugarcane, fruit and vegetables are included. The measurements of production and inputs required for the yield and output is known as agricultural productivity. The study of the spatial variations in agricultural productivity is useful for identifying, the different areas of agriculture. Agricultural productivity is the interplay of a multitude of many factors, such as environmental, socio-economic and technological factors. The agricultural productivity is closely related to the per hectare yields, where as the agricultural efficiency is much more than agricultural productivity and conveys a more comprehensive meaning. (Mane, 2020). Agricultural productivity is the actual performance of the land in terms of per hectare yield, where as agricultural efficiency is a ratio between the achievement in terms of agricultural production and the actual potential of the land productivity is a physical rather than a value concept and describes the changing relation between output and one of the major inputs like land, labour and capital.

Table:- 2 Agriculture Production in selected sample villages

Sr No	Village	Cereals(Quintal)	Pulses(Quintal)	Total(Quintal)
1	Nannaj	1254.58	224.0	1478.58
2	Mardi	1071.31	203.0	1274.31
3	Wadala	928.5	124.25	1052.75
4	Mahalung	129.0	5.25	134.25
5	Yasawantnagar	177.0	7.0	184.0
6	Malinagar	111.0	10.5	121.5
7	Karkamb	1075.5	215.25	1290.75
8	Kasegaon	1830.0	1697.5	3527.5
9	Takali	154.5	73.5	228.0
10	Gheradi	2295	1093.75	3388.75
11	Katfal	372.0	183.75	555.75
12	Kadlas	1627.5	393.75	2021.25
13	Kem	1747.5	469.0	2216.5
14	Veet	1234.5	358.75	1593.25
15	Kandar	987.0	236.25	1223.25
16	Velapur	235.5	21.0	256.5
17	Nimgaon	255.0	8.75	263.75
18	Dahigaon	232.5	7.0	239.5
Total		15717.89	5325.25	21043.14

Source: Based on field survey.

The table 2 shows the agriculture production in selected sample villages. It is observed that the highest cereals crop production in Kasegaon village (1830 Quintal), Kem (1747.5),

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Kadlas (1627.5) and Veet (1234.5) respectively. Because there are high area cultivation under the cereals crop in these villages. However, there are lowest cereals crop production in Malinagar (111), Mahalung (129), Takali (154) and Yashwantnagar (177) respectively. The pulses crop production is highest in Kasegaon (1697.5), Gheradi (1093.75), Kem (469), Kadlas (393.75) and Veet (358.75) respectively. However, there is lowest pulses crop production in Mahalung (5.25), Dahigaon (7), Yasawantnagar (7), Nimgaon (8.75) Velapur (21) respectively.

It is also observed that the total highest crop production in Kasegaon (3527.5), Gheradi (3388.75), Kem (2216.5) and Kadlas (2021.15) village respectively. There are highest cereals and pulses in the sample villages because these villages are highly cultivated Jawar, Bajara, Maize, Tur and Mug crops etc. the geographical condition is suitable for pulses crops. On the other hand, there are lowest cereals and pulses crop production in Malinagar (121.5), Mahalung (1234.25) and Yasawantnagar (184) village because the sugarcane is the dominant crop cultivated in these villages. As well as sugarcane is an important cash crop in these villages.

- **Food Available Per Capita Per Day of Sample Villages:**

The food grain mobility hardly shows any reliable indication of the surplus deficit situation of the areas because of the fact that it may be operating under compelling circumstances. The measurement of availability, must, therefore be, essentially based on the idea of the determining quantity of food grains available in the consumable form irrespective of the fact that this food grain may be consumed locally or elsewhere of the region. Hence, the proportions of the people, who do not produce their own food, is relatively higher in the region under study. Besides, with increasing degree of industrialization, the per capita income is increasing in the specific segment of the society. In such group of population, the nature of formal diet is also changing, since such group demand for the foodstuffs and vegetables is much higher. In short, it may be stated that the food crop production of any area is not hundred percent available for human consumption, but a sizable portion, as stated earlier, is lost in different manners. According to Food and Agriculture Organisation (FAO) stated that there are minimum dietary requirement of 1760 kcal (492.8 gram) per person per day. Therefore, the researcher has calculated the food availability of selected sample villages in the table

Table:-3 Food availability per capita per day in selected sample villages

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Sr No	Village	Population	Food Availability (Grams)	Food Availability (Kg)
1	Nannaj	7587	3738873.6	3738
2	Mardi	6251	3080492.8	3080
3	Wadala	5144	2534963.2	2534
4	Mahalung	20833	10266502.4	10266
5	Yasawantnagar	14194	6994803.2	6994
6	Malinagar	10394	5122163.2	5122
7	Karkamb	17456	8602316.8	8602
8	Kasegaon	16197	7981881.6	7981
9	Takali	10122	4988121.6	4988
10	Gheradi	10956	5399116.8	5399
11	Katfal	3928	1935718.4	1935
12	Kadlas	7941	3913324.8	3913
13	Kem	9276	4571212.8	4571
14	Veet	5053	2490118.4	2490
15	Kandar	6220	3065216	3065
16	Velapur	17082	8418009.6	8418
17	Nimgaon	8076	3979852.8	3979
18	Dahigaon	8939	4405139.2	4405
Total		185649	91487827.2	91480

Source: Based on field survey.

From table 3 show the food availability per capita per day in selected sample villages. It is observed that the total 91480 kg food available in the study region. The per capita per day of food availability is highest in Mahalung (10266), Karkamb (8602), Velapur (8418), Kasegaon (7981) and Yasawantnagar (6994) villages respectively. As well as the population is high in these villages. Therefore, the food availability per capita per day is high in these villages. On the other hand, the per capita per day of food availability is lowest in Katfal (1935), Veet (2490), Wadala (2534) and Kandar (3065) villages respectively.

- **Deficit and Surplus of Food Production in Sample Villages:**

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Areas of food surplus and deficit have been mapped by making use of data at tahsil level. The recommended requirement of food grain, for Indian person is taken as standard. The areas where availability of food grain is more; that areas are considered as surplus areas and deficit areas are considered with the level availability of food grain than the requirement.

Table:4 Surplus and deficit of food production in selected sample villages

Sr No	Village	Food Availability (Kg)	Actual Food Production (Kg)	Surplus and Deficit
1	Nannaj	3738	147858	+144120
2	Mardi	3080	127431	+124351
3	Wadala	2534	105275	+102741
4	Mahalung	10266	13425	+3159
5	Yasawantnagar	6994	18400	+11406
6	Malinagar	5122	12150	+7028
7	Karkamb	8602	129075	+120473
8	Kasegaon	7981	352750	+344769
9	Takali	4988	22800	+17812
10	Gheradi	5399	338875	+333476
11	Katfal	1935	55575	+53640
12	Kadlas	3913	202125	+198212
13	Kem	4571	221650	+217079
14	Veet	2490	159325	+156835
15	Kandar	3065	122325	+119260
16	Velapur	8418	25650	+17232
17	Nimgaon	3979	26375	+22396
18	Dahigaon	4405	23950	+19545

From table 4 show the surplus and deficit of food production in selected sample villages in the study region. The surplus and deficit of food production of sample villages is classified into three categories like slightly surplus village, moderately surplus villages and highly surplus villages. It is observed that, out of total sample villages Mahalung and Malinagar is the slightly surplus village. While Takali, Katfal, Yashwantnagar, Velapur, Nimgaon and Dahigaon are the

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moderately surplus villages. Whereas Nannaj, Mardi, Wadala, Karkamb, Kasegaon, Gheradi, Kadlas, Kem, Veet and Kandar villages are highly surplus villages in the study region.

- **Conclusion:-**

The areas where availability of food grain is more; that areas are considered as surplus areas and deficit areas are considered with the level availability of food grain than the requirement. In this chapter food surplus and deficit per capita per day is examined to understand the scope of achieving to planning commission. the total highest crop production in Kasegaon, Gheradi, Kem and Kadlas village respectively. There are highest cereals and pulses in the sample villages because these villages are highly cultivated Jawar, Bajara, Maize, Tur and Mug crops etc. the geographical condition is suitable for pulses crops. On the other hand, there are lowest cereals and pulses crop production in Malinagar, Mahalung and Yasawantnagar village because the sugarcane is the dominant crop cultivated in these villages. The surplus and deficit of food production of sample villages is classified into three categories that is observed Mahalung and Malinagar is the slightly surplus village, while Takali, Katfal, Yashwantnagar, Velapur, Nimgaon and Dahigaon are the moderately surplus villages and whereas Nannaj, Mardi, Wadala, Karkamb, Kasegaon, Gheradi, Kadlas, Kem, Veet and Kandar villages are highly surplus villages in Solapur district.

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