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# A Geographical Analysis of Agricultural Productivity in Sangli District: Maharashtra State

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**Abstract:**

*In the present study, crop productivity is calculated for Sangli district. Sangli district has diversity in local relief, climate, soil and irrigation facilities. The region exhibits both hill ranges towards west and the plateau towards eastern side with local undulating sloping. It has affected the distribution of rainfall and temperature. Among several methods of calculating agricultural productivity Jasbir Sing method with some modifications was chosen to compute crop productivity of Sangli district. The most popular indicator of land productivity is crop yield. The spatial distribution of productivity for selected crop was measured, interpreted for Sangli district. The high productivity of Jowar was recorded in Palus, Aatpadi, Jat and Tasgaon tahsil because black regur soil high yielding variety seeds. The high productivity of Wheat is recorded in Palus and Kadegaon tahsil because Availibility of surface irrigation facility. The high productivity of Maize is recorded in Kdegaon, Tasgaon, Miraj and KavatheMahankal tahsil because high yield variety seeds and availability of irrigation facility. The high productivity of Sugarcane is recorded in Walwa, Palus, Khanapur, Kadegaon, Tasgaon, and Miraj tahsil because fertile black regur soil and development of surface irrigation facility.The high productivity of Tur is recorded in Khanapur, Aatpadi and Miraj tahsil. The high productivity of Gram is recorded in Khanpur and KavatheMahankal tahsil because fertile black regur soil, high yielding variety and availability of surface irrigation. The high productivity of Groundnut is recorded in Khanpur, Tasgaon, Miraj and KavatheMahankal tahsil because, high yielding variety and availability of surface irrigation.*

***Kaywords:*** *Agriculture, Crop, Agriculture Productivity etc.*

## Introduction:

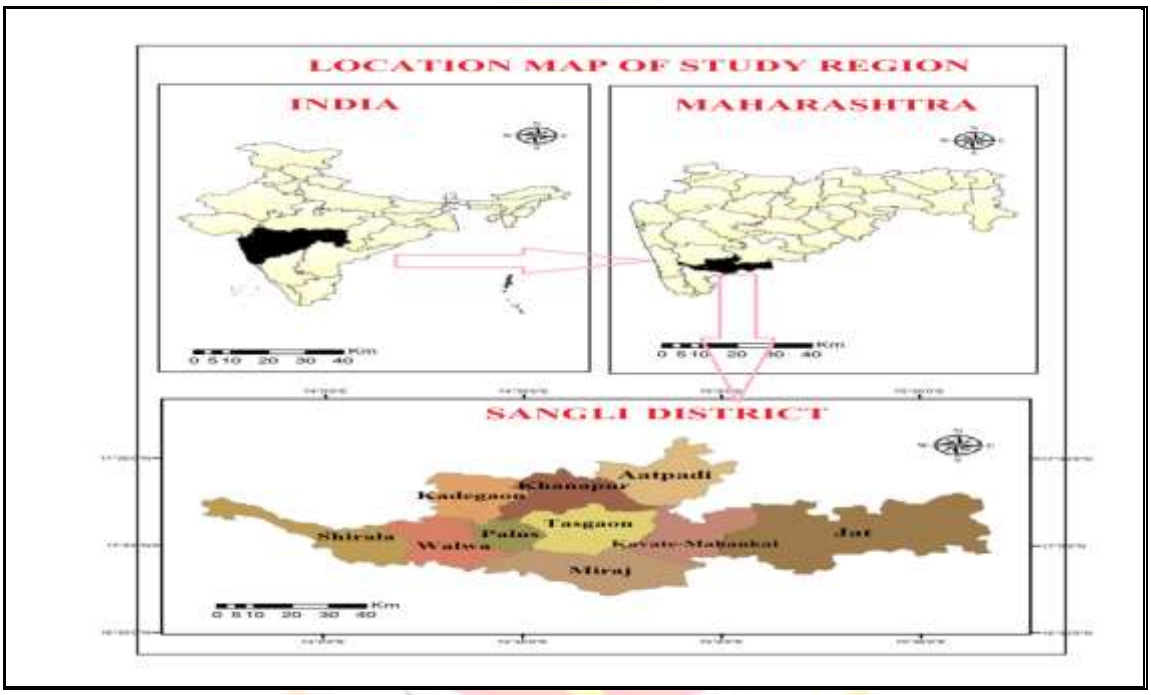
Today's explosively increasing population is one of the biggest challenges facing the world in general and developing and developed countries in particular. Due to this cause, having food shortage is worldwide. The low production of food grain is one of the main reasons behind food scarcity. Thus, there is need to increase the agricultural production, especially food grains. There are many ways to increase the production such as advanced technologies, high yielding varieties of crops, multi crop farming, etc. But these techniques further have restriction of physical and climatic conditions, socio-economic constraint, traditional methods of farming etc. due to these restriction regional imbalances in food crop production are seen all over the world. Therefore, it is necessary to develop a better development plan in the agricultural practices; this will help to increase crop productivity in real production.

Agricultural productivity is becoming increasingly important issue as the world population continues to grow. India, one of the world's most populous countries, has taken steps in the past decades to increase its land productivity. Agriculture still forms the backbone of Indian economy, in spite concerned efforts towards industrialization in last three decades. Agriculture contributes a high share of net domestic product by sectors in India. (Sule B.M.and Barakade A.J 2014).Dewett (1966) explains it as, “Productivity expresses the varying relationship between agricultural output and one of the major inputs, like land or labour or capital, Other complimentary factors remaining the same” It may be born in mind that productivity is physical rather than a value concept.Agricultural productivity may be defined as the “ratio of index of local agricultural output to the index of total input used in farm production” (Shafi,

1984).Dewett and Singh (1966) defined "agricultural efficiency as productivity expressing the varying relationship between agricultural produce and one of the major inputs, like land, labor or capital, while other complementary factors remaining the same". This expression reveals that the productivity is a physical component rather than a broad concept.

**Study Region**:

Sangli district is located on the south and southeast of Maharashtra state.Sangli district, one of the South most districts of Maharashtra it is situated on the Deccan plateau and its areal extension between North latitudes 16,043'N to 17,038'N and longitude extension between 73,041' E to 75,041' E. having an area of 8601.5 sq km. Sangli district includes 10 Tehsil such Shirala, Walwa, Palus, Khanapur, Aatpadi, Jat, Kadegaon, Tasgaon, Miraj and KavatheMahankal. There are boundary of Sanglidistricts isSatara in the north and north east, Solapur in the north and northeast, Bijapur (Karnataka) in the east, Belgaum in the south, Kolhapur in the south, and Ratnagiri in the west. Shiralataluka on the west comes in the main line of Sahyadri. The western part of the district is mountainous.




**Objective:** -The main objective of present study is to study the agriculture productivity in study region

**Data Collection and Methodology:**

The present study is based on secondary data source. To fulfill the objective data regarding irrigatedarea collected from Socio Economic review and District Statistical Abstract of Sangli districts. Agricultural epitomes published by state Government for the period of 2010-11 to 2014-15.

After data collection, the data is processed. To avoid fluctuation and to get reliable result the five years average is taken into consideration. Tahsil is taken as the basic unit of investigation. To determine agricultural productivity is the technique introduced by Jasbir Singh (1976),

On the basic of Jasbirsingh's this will give an idea of the level of agricultural productivity the lower the ranking coefficient, the higher the level of agricultural productivity and vice versa. This technique helps to identify the crop of good level of productivity in the study region.

**Measurement of Productivity by Jasbir Singh's Method:**

An attempt is made here to major agricultural productivity by Jasbir Singh (1976) in order to assess the regional differences in the level of food production and to delimit the weaker areas from the

point of view of agricultural productivity the relative crop yield and concentration indices in ranking order and computed into average ranking coefficient. It may be called the crop yield and concentration indices ranking coefficient.

The procedure explained as follows.

$$Yi = \frac{Yae}{Yar} X\ 100$$

Where,

Yi = is the crop yield index.

Yae = is the average yield per hectare of crop 'a' in the component enumeration unit.

Yar = is the average yield of the crop 'a' in the entire region.

$$Ci = \frac{Pae}{Par} X\ 100$$

Where,

Ci= is the crop concentration index.

Pae = is the percentage strength of crop 'a' in the total copped area in the component enumeration unit.

Par = is the percentage strength of crop 'a' in the total cropped area in the entire region.

The derived crop yields and concentration indices for crops are ranked separately, yield and concentration ranks for individual crops are added and there after divided by two thus giving the crop yield and concentration indices ranking coefficient.

The equation is as follows.

$$\text{Crop Yield and Concentration Indices Ranking Coefficient For Crop-A} = \frac{\text{Crop Yield Index Ranking Crop 'A'} + \text{Crop Concentration Index Ranking Crop 'A'}}{2}$$

This will give an idea of the level of agricultural productivity the lower the ranking coefficient, the higher the level of agricultural productivity and vice versa. This technique helps to identify the crop of good level of productivity in the region. The ranking coefficients for individual crops thus derived are arranged in order and coefficients are grouped in to three efficiency grade viz. high grade, moderate grade and low grade for discussing the spatial variations in the region. In similar way, adding the value of all the crops selected for each tahsil and divided by 'n' has divided overall ranking coefficient. Where 'n' refers to selected crops having percentage strength above 5 years average cultivated area, in order to get accurate and average result of productivity level, yield statistics of five years have been arranged to avoid the annual fluctuation in the level of productivity.

**1. Jowar**

Jowar is first dominant food crop in study region. The table shows high productivity of Jowar was recorded in Palus, Aatpadi, Jat and Tasgaon tahsil because black regur soil high yielding variety seeds. The moderate productivity is recorded in Shrala, Walwa and Kadegaon tahsil. It was low in Khanapur, Miraj and KavatheMahankaltahsil due to low and uncertain rainfall.

**2. Wheat**

Wheat is second dominant food crop in study region. The table shows that the high productivity of Wheat is recorded in Palus and Kadegaontahsil because Availibility of surface irrigation facility. The moderate productivity is recorded only inShirala tahsil. It is low in Walwa, Khanapur, Aatpadi, Jat, Tasgaon, Miraj and KavatheMahankal tahsil due to low and uncertain rainfall.

**3. Bajara:**

Bajara is third food crop in study region. The table shows that the high productivity of Bajara is recorded in Palus, Khanpur, Aatpadi, Jat and Tasgaontahsil because high yield variety seeds. The moderate productivity of Bajara is recorded in Walwa, Kadegaon, Miraj and KavatheMahankal tahsil. It is low only in Shralatahsil due farmers are prefer to Sugarcane cash crop.

**4. Maize**

Maize is fodder crop of milch animal in study region. The table shows that the high productivity of Maize is recorded in Kdegaon, Tasgaon, Miraj and KavatheMahankal tahsil because high yield variety seeds and availability of irrigation facility. The moderate productivity is recorded in Shirala and Palus tahsil. It is low in Walwa, Khanapur, Aatpadi and Jat tahsil due to low and uncertain rainfall.

**Agricultural Productivity by Jasbir Singh's Method**

**[Crop Yield &Concentration Indices Ranking Coefficient of Selected Crops**

| Tahsils | Crops | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Jowar | Wheat | Bajara | Maize | Sugarcane | Tur | Gram | Groundnut |
| **Shirala** | 2.5 | 2.5 | 8 | 4 | 6.5 | 7 | 9 | 6 |
| **Walwa** | 3 | 4 | 4 | 5.5 | 2 | 5 | 5.5 | 7 |
| **Palus** | 2 | 2 | 1.5 | 4 | 1.5 | 5.5 | 6 | 9 |
| **Khanapur** | 4 | 4 | 2 | 5.5 | .2.5 | 1 | 1.5 | 1.5 |
| **Aatpadi** | 1 | 4 | 1.5 | 7 | 5 | 2 | 7 | 6 |
| **Jat** | 1 | 4.5 | 2.5 | 5.5 | 5 | 8 | 6 | 5 |
| **Kadegaon** | 2.5 | 1.5 | 5.5 | 2.5 | 2.5 | 6 | 8 | 7 |
| **Tasgaon** | 2 | 4 | 1.5 | 2 | 1.5 | 4.5 | 5.5 | 2 |
| **Miraj** | 4 | 4.5 | 5 | 2.5 | 2.5 | 3 | 4 | 1.5 |
| **KavatheMahankal** | 5 | 4.5 | 5.5 | 2 | 4 | 5.5 | 3 | 2 |

*Source: Compiled by researcher, on the basis of Socio economic Review and district Statistical Abstract of Sangali district 2010-11 to 2014-15.*

**5. Sugarcane:**

Sugarcane is a most important cash crop in study region. The table shows that the high productivity of Sugarcane is recorded in Walwa, Palus, Khanapur, Kadegaon, Tasgaon, and Miraj tahsil because fertile black regur soil and development of surface irrigation facility. The moderate productivity is recorded only in KavatheMahankal tahsil. It is low in Shirala, Aatpadi and Jat tahsil because lower development of surface irrigation facility.

**6. Tur:**

Tur is most important pulses crop in study region. The table shows that the high productivity of Tur is recorded in Khanapur, Aatpadi and Miraj tahsil. The moderate productivity is recorded in Walwa, PalusTasgaonandKavatheMahankal tahsil. It is low in Shirala, Jat and Kadegaon tahsil because farmer prefers to Sugarcane cash cropand other crops.

**7. Gram:**

Gram is second most important pulses crop in study region. The table shows that the high productivity of Gram is recorded in Khanpur and KavatheMahankal tahsil because fertile black regur soil, high yielding variety and availability of surface irrigation. The moderate productivity is recorded in Walwa, Palus, Jat, Tasgaon and Mirajtahsil. It is low in Shirala, Aatpadi and Kadegaon tahsil.

**8. Groumdnut:**

Groundnut is important oil seed crop in study region. The table shows that the high productivity of Groundnut is recorded in Khanpur, Tasgaon, Miraj and KavatheMahankal tahsil because, high yielding variety and availability of surface irrigation. The moderate productivity is recorded only in Jattahsil. It is low in Shirala, Walwa, Palus, Aatpadi, and Kadegaon tahsil.

**Conclusions:**

The forgoing section of this article has analyzed the spatial difference of all the administrative tahsils in Sangli for the period of 2010-11 to 2014-15.The high productivity of Jowar was recorded in Palus, Aatpadi, Jat and Tasgaon tahsil because black regur soil high yielding variety seeds. The high productivity of Wheat is recorded in Palus and Kadegaon tahsil because Availibility of surface irrigation facility. It is low in Walwa, Khanapur, Aatpadi, Jat, Tasgaon, Miraj and KavatheMahankal tahsil due to low and uncertain rainfall.The moderate productivity of Bajara is recorded in Walwa, Kadegaon, Miraj and KavatheMahankal tahsil. It is low only in Shralatahsil due farmers are prefer to Sugarcane cash crop. The high productivity of Maize is recorded in Kdegaon, Tasgaon, Miraj and KavatheMahankal tahsil because high yield variety seeds and availability of irrigation facility. Sugarcane is a most important cash crop in study region, the high productivity of Sugarcane is recorded in Walwa, Palus, Khanapur, Kadegaon, Tasgaon, and Miraj tahsil because fertile black regur soil and development of surface irrigation facility. The moderate productivity is recorded only in KavatheMahankal tahsil. It is low in Shirala, Aatpadi and Jat tahsil because lower development of surface irrigation facility.Tur is most important pulses crop in study region, the high productivity of Tur is recorded in Khanapur, Aatpadi and Miraj tahsil. The moderate productivity is recorded in Walwa, PalusTasgaon and KavatheMahankal tahsil. It is low in Shirala, Jat and Kadegaon tahsil because farmer prefers to Sugarcane cash cropand other crops. The high productivity of Gram is recorded in Khanpur and KavatheMahankal tahsil because fertile black regur soil, high yielding variety and availability of surface irrigation. the high productivity of Groundnut is recorded in Khanpur, Tasgaon, Miraj and KavatheMahankal tahsil because, high yielding variety and availability of surface irrigation.

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