

# Spatio Distribution of Agricultural Fertilizer Consumption in Sangli District (Maharashtra)

Dr. A. V. More

Department of Geography, Shrimant Babasaheb Deshmukh Mahavidyalaya, Atpadi, Dist - Sangli, Maharashtra 415301, India

Email: amolm444[at]gmail.com

**Abstract:** *Fertilizers have played a revolutionary role in transforming agriculture. The adoption of enhanced seeds, fertilizers, and irrigation systems has significantly increased food production in Indian agriculture. Both chemical and organic fertilizers have been shown to boost agricultural output. The use of fertilizers and crop productivity in agriculture is influenced by irrigation practices, soil properties, and cropping characteristics. A recent study investigated the geographical distribution of agricultural fertilizer consumption in Sangli district, Maharashtra. This research revealed substantial regional disparities in fertilizer consumption using data from the socio - economic review of Sangli district 2021 - 22 and Q - GIS for mapping. The study found that western tehsils, particularly those along the Krishna River, exhibit high fertilizer consumption due to advanced irrigation facilities and crop varieties, while the eastern tehsils display lower consumption due to limited irrigation and unfavourable soil conditions.*

**Keywords:** Fertilizer Consumption, Agricultural Productivity, Spatial Analysis, Sangli District, Maharashtra

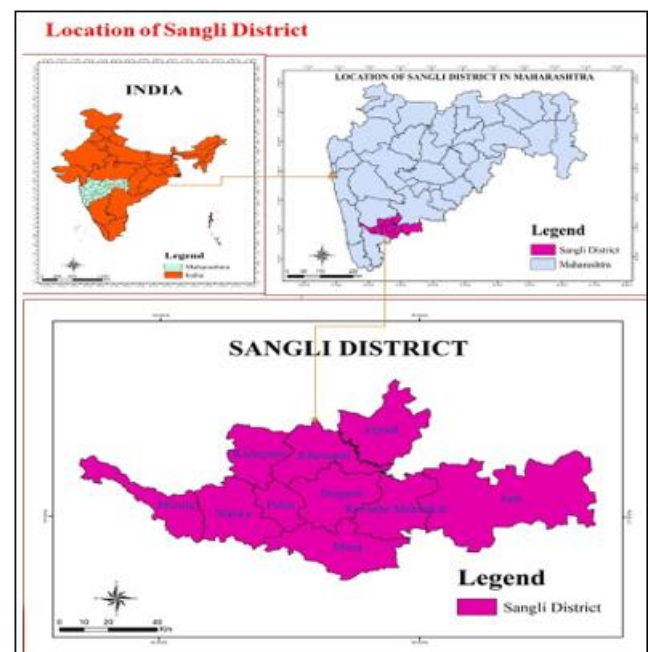
## 1. Introduction

A mineral element is considered essential to crop growth and development, if this element is involved in crop metabolic functions and the crop cannot complete its life cycle without this element (Havlin, Beaton, Tisdale, Nelson 2010). Fertilizer is important to all crops for growth and development as well as growth of production. Fertilizer is important inputs for the expansion of agricultural production, if there is high fertilizer use in agriculture the result also affects agricultural production and soil condition. However, the study region has observed high levels of fertilizer consumption. Therefore, to analyse the fertilizer consumption of crops, the required data is collected through the schedule and depiction of fertilizer consumption in the region for the soil degradation area. In the Sangli district, there is significant regional variation in fertilizer consumption. The spatial analysis of fertilizer consumption has been in the tehsils - wise for the year 2021 - 22. The purpose of this study is to analyse the spatial distribution of fertilizer consumption across different tehsils of the Sangli District of Maharashtra and to understand the factors influencing these patterns.

## 2. Study Area

Sangli district is a part of the southern districts of the state of Maharashtra and the Deccan plateau. Geographically, it is located between 16° 45' and 17° 33' N latitude and 73° 42' and 75° 40' E longitude. The average elevation of the district is 553 m above sea level. It is bounded on the north by Satara and Solapur districts, on the east and south by the state of Karnataka, on the southwest by Kolhapur district and on the west by Ratnagiri district. Sangli district extends 205 km from north to south and 96 km from east to west. The geographical area of Sangli district is 8572 sq. km. and its total population is 28, 22, 143 according to the 2011 census, where 14, 35, 728 Males and 13, 86, 415 females population were observed. The total literacy rate of Sangli district is 82.62 percent and the population density is 329 per sq. km. Administratively Sangli district is divided into three

sub - divisions mainly i. e. Walwa, Miraj and Khanapur and the district has ten tehsils such as Walwa, Shirala, Miraj, Jat, Atpadi, Khanapur, Palus, Kavathe - Mahankal, Tasgaon and Kadegaon.



Map No.1

## Objectives:

In the present study, an attempt has been made to examine the spatial pattern of fertilizer Consumption on Agricultural land in the study region.

## 3. Database and Methodology

The present research paper depends on secondary data. The fertilizer consumption data were collected for the analysis from the Socio - economic review of Sangli district 2021 - 22. The analysis of the data has been done with the help of the following formula, which was created by M. G. Jadhav and S. D. Shinde (1979) to enumerate concentration index

values for fertilizer consumption per unit area. The formula is slightly modified here as,

$$I_{fe} = \frac{T_F}{D_F} \times 100$$

Where,

$I_{fe}$  = Index of fertilizer consumption.

$T_F$  = per hect/ Kg fertilizer consumption in the tehsil.

$D_F$  = per hect/Kg. fertilizer consumption in the district.

## 4. Result and Discussion

Tehsil - wise consumption of fertilizer in Sangli district is shown. A total of 268.82 kg/hectare of fertilizer was used in Sangli district in 2021 - 22. Sangli district has been divided into three total regions, High Fertilizer consumption use,

Moderate Fertilizer consumption use and Low fertilizer consumption use to show fertilizer use.

### Spatial Pattern of Fertilizer Consumption:

#### a) High Fertilizer Consumption (Above 200 kg/ha):

These categories included one tehsil located along the Krishna River viz, Palus tehsil. The highest Fertilizer consumption has been observed in Palus tehsil which is 296.44 kg/hectore. In the Palus tehsil dominance of cash crops like Sugarcane, oilseeds and Fruit and Vegetables. In Palus tehsil Sugar factories are located and irrigation facilities are well developed. Besides the cultivators are socially and economically capable of adopting new agricultural technologies. As a result, Palus tehsil possesses a high level of fertilizer consumption in the overall Sangli district.

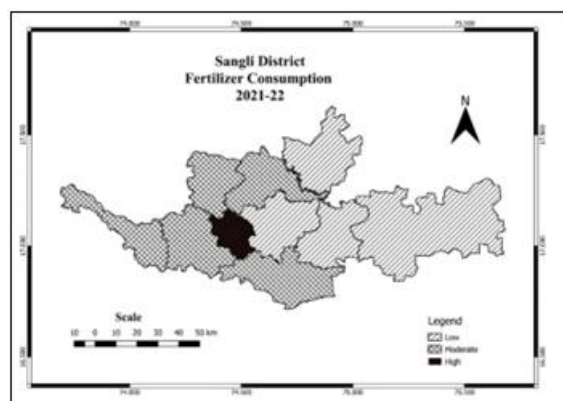
**Table 1:** Sangli District: Fertilizer Consumption Index Value 2021 - 22

Sr. No.	Regions	Fertilizer Index Value (kg/hectore)	Tehsils
1	High Fertilizer Consumption	Above 200	Palus
2	Moderate Fertilizer Consumption	100 - 200	Walwa, Shirala, Miraj, Kadegaon, Khanapur
3	Low Fertilizer Consumption	Below 100	Kavathe - Mahankal, Tasgaon, Atpadi, Jath

Source: Calculation Based on Socio - Economic Review of Sangli District 2021 - 22

#### b) Moderate Fertilizer Consumption (100 kg/ha to 200 kg/ha):

In the Moderate Fertilizer consumption, Walwa, Shirala, Miraj, Kadegaon and Khanapur tehsils are represented in these category index values is 150.78, 134.61, 128.18, 109.32 and 108.66 kg/hectore respectively. These tehsils are very developed in all irrigation sources (Lift irrigation, Canal Irrigation, Well Irrigation). The adequate condition of soil quality of these tehsils has restricted the use of fertilizers. In addition, these tehsil co - operative sectors have played a vital role in promoting fertilizer. That's why the cultivators are aware of the fertilizer use in agricultural land.



**Map No.2**

#### c) Low Fertilizer Consumption (Below 100 kg/ha)

The low fertilizer consumption included Kavathe - Mahankal, Tasgaon, Atpadi and Jath tehsils. These tehsils are part of the eastern Sangli district, a drought - prone area, lack irrigation facilities and the financial conditions of the cultivator are very low. The lowest fertilizer consumption is found in Jath tehsil which is 30.55 kg/hectores and the rest of tehsils fertilizer consumption is 89.9, 87.51 and 86.46 kg/hectores.

## 5. Conclusion

Fertilizer is an important tool for increasing production from agriculture. The use of different types of fertilizers has increased in Sangli district in the last few decades. In Sangli district, lift irrigation, well irrigation, tube wells and canal irrigation have seen substantial development. The Study reveals significant spatial variation in fertilizer consumption across the Sangli district, with the highest usage in tehsils near the Krishna River due to favourable irrigation and soil conditions. In contrast, eastern tehsils exhibit lower consumption due to poor irrigation infrastructure and challenging soil conditions. These findings underscore the need for targeted agricultural policies to address regional disparities and optimize fertilizer use for improved productivity.

## References

- [1] Jadhav, M. G. (1979). Spatio - Temporal Developments in Fertilizer Consumption of Sangli District, Journal of Shivaji University, Kolhapur, 45 - 48.
- [2] Tandon, H. L. (1995). Fertilizer and Integrated Nutrient Recommendations for Balance and Efficiency, Fertilizer Development and Consultation Organization. New Delhi.
- [3] Socio - Economic Survey of Sangli District, (2021 - 22). Directorate of Economics and Statistics, Government of Maharashtra Mumbai.
- [4] SeetaPrabhu, K. (1987). Pesticides Use in Indian Agriculture. Bombay: Himalaya Publishing House.
- [5] Jalan, M. L. (1987). Marketing of Agricultural Inputs. Bombay: Himalaya Publishing House.
- [6] Patil, P. V. Geographical Analysis of Agricultural Technology in Sangli District.2002. Kolhapur.: unpublished Ph. D. Thesis of Shivaji University.

- [7] Winfried, V., Erbard, K. (1976). The Development and Fertilizer Production and Use in India,. Applied Sciences and Development.