

Cotton Crop Concentration in Osmanabad District: A Geographical Analysis

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Article Info	ABSTRACT
Article History: Received: 21st Sep 2025 Accepted: 06th Oct 2025 Published: 20th Oct 2025 Keywords: Cotton Crop Concentration, Geographical Analysis	In India, cotton is a vital Kharif crop. A major global producer, with cultivation in northern, central, and southern zones, primarily in black soils. Major states like Gujarat, Telangana, and Maharashtra lead production, with the crop benefiting from warm temperatures and well-drained soil. Cotton is a perennial crop in the tropics, and without defoliation or freezing, the plant will continue to grow. The cotton growing season, or planting time, varies by region, but typically involves planting as a Kharif (monsoon) crop from June to July in many parts of India. In northern areas, sowing may occur as early as March to May, while in southern regions, planting can be delayed until September or October, sometimes extending into November. Harvesting is completed before the winter frost, from November to February in the north. Maharashtra is an agribusiness leading state. Maharashtra's share of 10 % of the total area of the country is Vide. Out of the total geographical area of Maharashtra state, 308 lakh hectares are agricultural. Total Geographical Area of Maharashtra 2.5 percent area belongs to Osmanabad. It is very challenging to farm business. Therefore, crop concentration and solving the problems arising in it have been studied through the presented research paper.
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Introduction:

Maharashtra is an agribusiness leading state. Maharashtra's share of 10 % of the total area of the country is Vide. Out of the total geographical area of Maharashtra state, 308 lakh hectares are agricultural. Total Geographical Area of Maharashtra 2.5 percent area belongs to Osmanabad. It is very challenging to farm business.

Out of the total cultivable area in Osmanabad district, 78 % of the area is actually agriculture. The remaining 22 % area is fallow. Osmanabad district is known as an agricultural district. However, the climate of this district is mainly dry and the rainy season usually starts from mid-June and ends at the end of September. The weather is humid from late September to mid-November. Then it is winter until the end of January. The weather is dry in February and March. April to June is summer. Horticulture is done on 12.68 % of the area through irrigation with proper and planned use of water. The remaining 87.32 % of the area is under dry land farming, i.e. only 12.68 % of the area is guaranteed income, however, recently increasing crop concentration has started creating many problems in the agricultural sector. Therefore, crop concentration and solving the problems arising in it have been studied through the presented research paper.

Study Region:

Osmanabad district has been selected for the present research paper. Osmanabad district has a latitudinal extension between 17 degrees 35 minutes north latitude to 18 degrees 40 minutes north latitude and a longitudinal extension between 75 degrees 16 minutes east longitude and 76 degrees 40 minutes east longitude. The total geographical area of Osmanabad district is 7512.4 sq. km. And it is 2.46 percent of the total area of Maharashtra state. Osmanabad district is located in the southern part of the state of Maharashtra and in its southwest in Marathwada. Osmanabad district is bordered by Solapur district to the southwest, Ahmednagar district to the northwest, Beed district to the north, Latur district to the east and Bidar and Gulbarga districts of Karnataka to the south. Most of the district is rocky and the rest is flat. Administratively Osmanabad district is divided into eight tehsils. It includes eight tehsils namely Osmanabad, Tuljapur, Umarga, Lohara, Kalamb, Bhum, Vashi and Paranda.

Hypothesis:

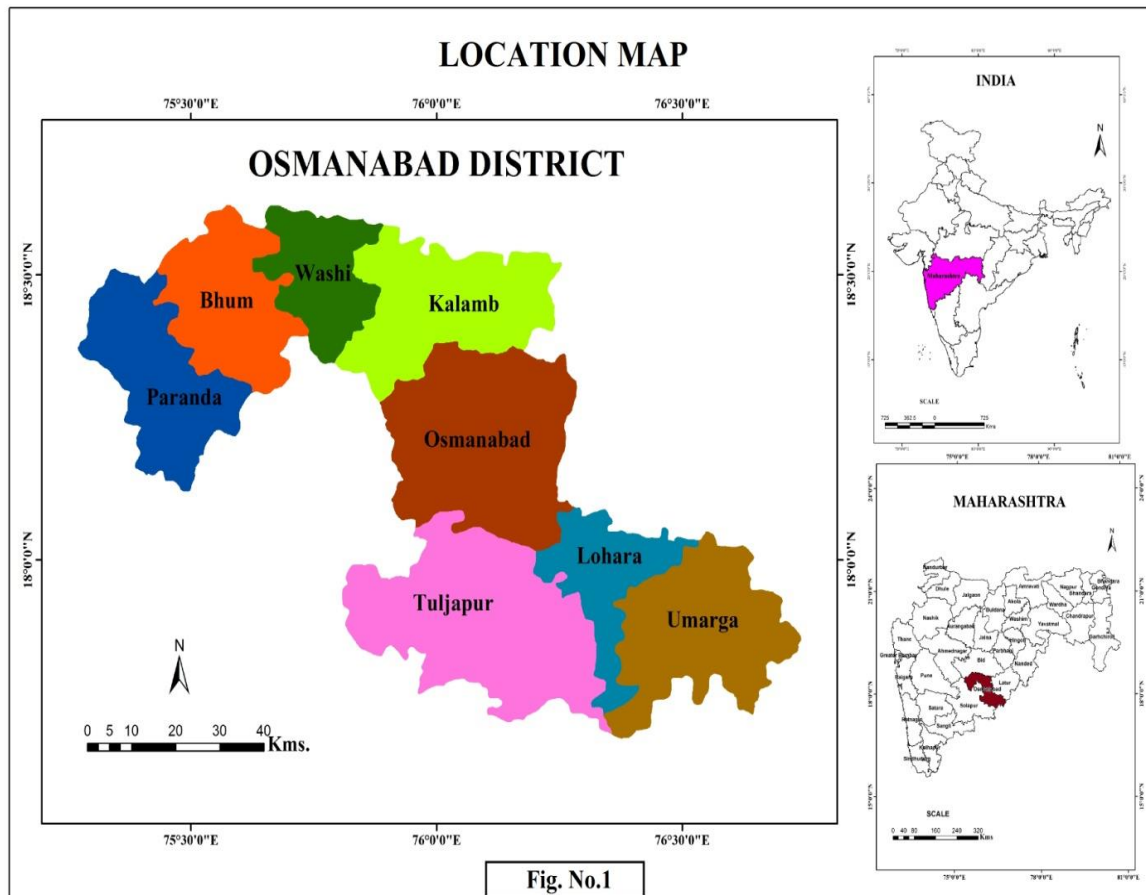
1. Cotton crop concentration is increasing in density.
2. Cotton crop is affecting other crops.

Objectives:

1. To study the concentration of Cotton crop in Osmanabad district.
2. To study the spatial return of crop concentration in Osmanabad district.

Database:

Primary and secondary data have been used for the present research paper. While studying the concentration of Cotton crop in Osmanabad district, considering the period from 1995 to 2015, information has been collected using Osmanabad District Social and Economic Review Booklet, District Agricultural Officer Report, District Statistics Department Report, Interview, Questionnaire Technique for this study.

Osmanabad District Location Map

Source: Indian Survey Department, Toposheet Map, Osmanabad District

Methodology:

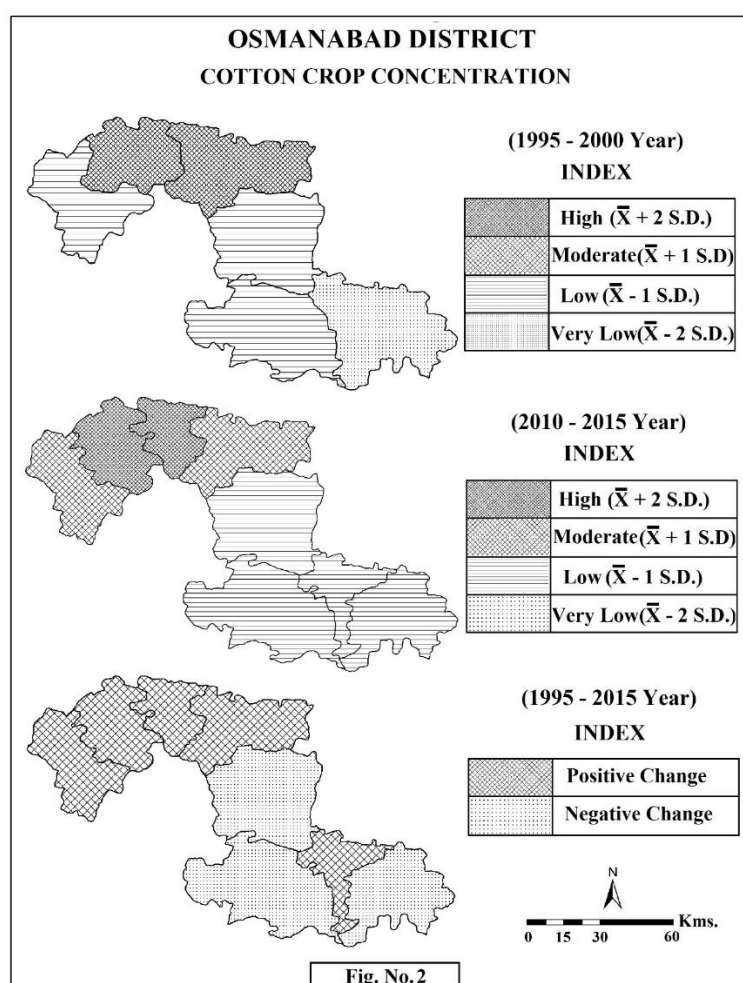
Statistical and map scientific methods have been used for the present study. The 'Location Quotient Method' proposed by Bhatia in 1965 has been used to calculate the Sugarcane crop concentration index in Osmanabad district.

$$\text{Index of determining concentration of crop 'a'} = \frac{\text{Area of crop 'a' in the component areal unit}}{\text{Area of all crop in the component areal unit}} \div \frac{\text{Area of crop 'a' in the entire region}}{\text{Area of all crop in the entire region}}$$

**Table. No. 1 Tehsil wise Cotton crop concentration index
(Years 1995-2000 and 2010-2015) (Area in percentage)**

Taluka	years		
	1995-2000	2010-2015	Change
Osmanabad	0.18	0.09	-0.09
Kalamb	0.40	1.58	+1.18
Umarga	0.03	0.02	-0.01
Tuljapur	0.15	0.03	-0.12
Paranda	0.10	1.37	+1.27
Bhum	0.40	3.42	3.02
Vashi	-	4.20	+4.20
Lohara	-	0.06	+0.06

Source: Based on official information compiled by researchers.



Source: Based on Data Collected by the Researcher

Discussion

Crop concentration -

"Crop concentration means areal density of an individual crop" (Jasbir Singh 1976)

"Crop concentration reveals that variation in the density of any crop in a given region at a point of time." (Bhatia 1965)

Concentration in Osmanabad District -

Cotton Crop Concentration:

During the period 1995-2000, the mean of cotton crop concentration is 2.21 and the standard deviation is 0.14.

Cotton high crop concentration index (X+2 S.D.) group includes Kalamb and Bhum (0.40) tehsils. Not a single tehsil is included in medium crop concentration index (X+1 S.D.) group. The low crop concentration index (X-1 S.D.) group includes three tehsils namely Osmanabad (0.18), Tuljapur (0.15) and Paranda (0.10). It is seen that one tehsil Umarga (0.03) is included in the very low crop concentration index (X-2 S.D.) group.

During the year 2010-15, the mean of the index of cotton crop concentration is 1.34 and the standard deviation is 1.54.

Cotton high crop concentration index (X+2 S.D.) group includes two tehsil namely Washi (1.32) and Bhum (3.42). Medium crop concentration index (X+1 S.D.) group includes two tehsils namely Kalamb (1.58), and Paranda (1.37). Whereas the low crop concentration index (X-1 S.D.) group includes four tehsils namely Osmanabad (0.09), Lohara (0.08), Tuljapur (0.03) and Umarga (0.02). While very low wheat crop concentration index (X-2 S.D.) group included not a single tehsil.

Conclusion:

A study of wheat crop concentration in Osmanabad district (as per Table No. 1 & Fig.No 2) shows that during the five years from 1995-2000 to 2010-15 the highest positive change (growth) was observed in Vashi (4.20) tehsil. The highest negative change (decrease) is observed in Tuljapur tehsil (-0.12).

There has been a positive change in the remaining four tehsils namely Bhum, Paranda, Kalamb and Lohara. A negative change can be seen in two tehsils namely Osmanabad and Umarga.

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