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Spatio-Temporal Pattern Of Grape Concentration In Sangli District (Maharashtra)

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ABSTRACT

The present research paper has studied grape crop concentration in Sangli district. Also the area under grape crop has been discussed. Bhatia's (1965) crop concentration method is used. The present research paper is based on secondary data. For this, Socio-Economic Abstract of Sangli District 2011-12 and 2021-22, Crop statistics reports published by Agriculture Department of Sangli district have been considered. The difference in the concentration of grape crop has been seen to be affected by the Physical conditions, availability of water, as well as economic conditions of farmers, use of fertilizers, and pesticides in Sangli district. The maps in this research paper were created using Q-GIS 3.34 software.

Keywords: patio-temporal, Pattern, Crop Concentration, Area, Concentration Index.

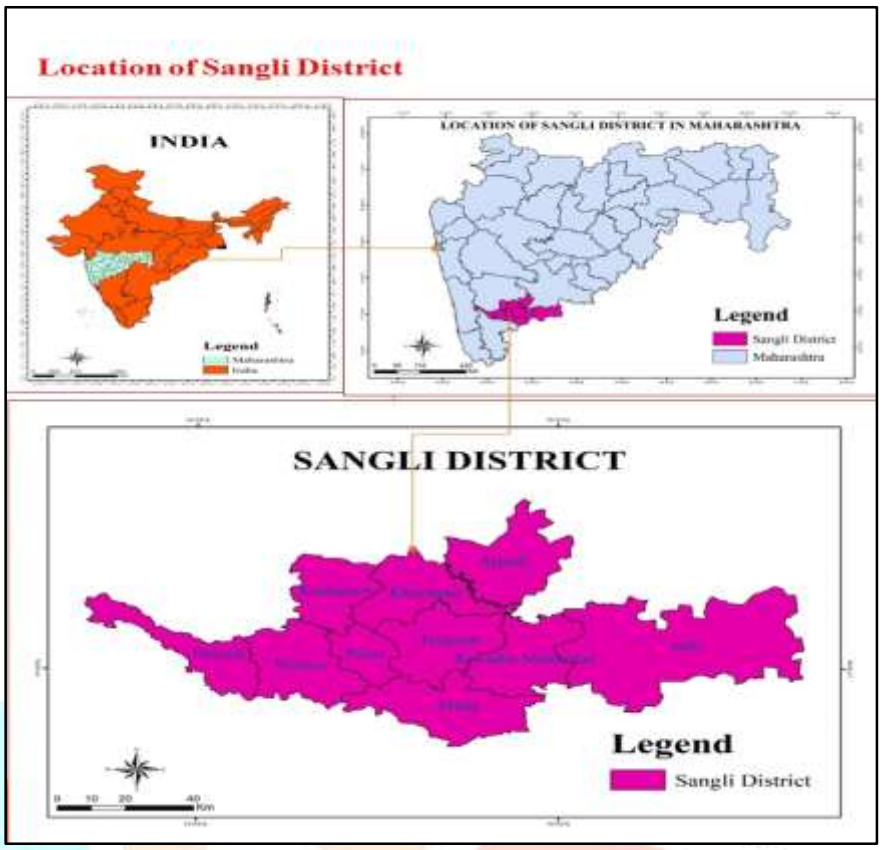
INTRODUCTION

Crop concentration is the area wise density of crop. The study of crop concentration studies the pattern of how crop density varies in a particular region at a particular time. A change in crop density means a change in the area under that crop. Crop concentration is the variation in crop density in an area or region at a given time. Crop concentration is influenced by terrain, temperature, humidity, soil type, economic and social condition. Areas where these factors are favourable tend to have higher crop concentration.The method of crop concentration in an area largely depends on this. Different formulas have been used by Florence (1948), Chisholm (1962), Bhatia (1965) and Jasbir Singh (1976) to break down the agricultural sector on the basis of crop concentration. The formula used by Bhatia's (1965) is adopted in the present research paper.

STUDY REGION

Sangli district is a part of the southern districts of the state of Maharashtra and the Deccan plateau. Geographically, it is located between 16º 43' North and 17º 38' North latitude and the 73º 41' East and 75º 41' East 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 south-west by Kolhapur district and on the west by Ratnagiri district. Sangli district is 205 km long and 96 km wide north-south direction 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 Male and 13, 86,415 female population was observed. The total literacy rate of Sangli district is 82.62 Percent and the population density is 329 per sq. km. Sangli district receives rainfall mainly from south-west monsoon average between 200 cm. in the west to 50 cm. in the eastern part. The study region has a well-developed drainage pattern by Krishna, Warana, Yerala, Agrani, Nanni and Bor.

Administratively Sangli district divided in to three sub-divisions mainly i.e. Walwa, Miraj and Khanapur and the district has ten tahsils such as Walwa, Shirala, Miraj, Jat, Atpadi, Khanapur, Palus, Kavathe-Mahankal, Tasgaon and Kadegaon.



Map. No. 1

OBJECTIVES

The present study was undertaken with the following Objectives:

1. To investigate Spatio-temporal pattern of Grape Concentration in Sangli District.
2. To analysis of areas of tehsil-wise Grape concentration in Sangli District with the help of Bhatia's Concentration Method.

DATABASE AND METHODOLOGY

The present study is mainly based on secondary data which is based on Sangli District Socio-economic Abstract in the period of 2011-12 and 2021-22, Crop Reports published by Department of Agriculture Sangli District, Department of Agriculture. Crop concentration is studied with the help of crop concentration index of Bhatia's (1965) Method. Q-GIS 3.34 is used to represented data using cartographic techniques. Microsoft excel is used to processing and analysis data. The index value of a crop concentration has been categorized in three classes' viz.1) High Grape concentration. 2) Moderate Grape concentration. 3) Low Grape concentration. For analytical study following Bhatia's crop concentration formula has been incorporated.

Index for Crop Concentration of crop A=

$$\frac{\text{Area of crop A in the areal unit}}{\text{Area of all crops in the areal units}} \div \frac{\text{Area of crop A in this district}}{\text{Area of all crops in the district}}$$

RESULT AND DISCUSSION

Crop concentration not only gives an idea of the dominance of certain crops in a region but also acts as a guide for the agricultural economy and proper land planning in the region. Through crop concentration, proper utilization of land in low and fertile regions helps to increase the production of the crop in that region and is also useful in reducing regional production inequality.

SPATIO-TEMPORAL PATTERN OF GRAPE CONCENTRATION

Sangli district is a core district in western Maharashtra for the grape cultivation. In 2011-12 total grape cultivation area is 8264 hectare and total cropped area is 712592 hectare in sangli district and during 2021-22 grape cropped area is increased with 31776 hectare and total cropped area has decreased from 687290.40 hectare.

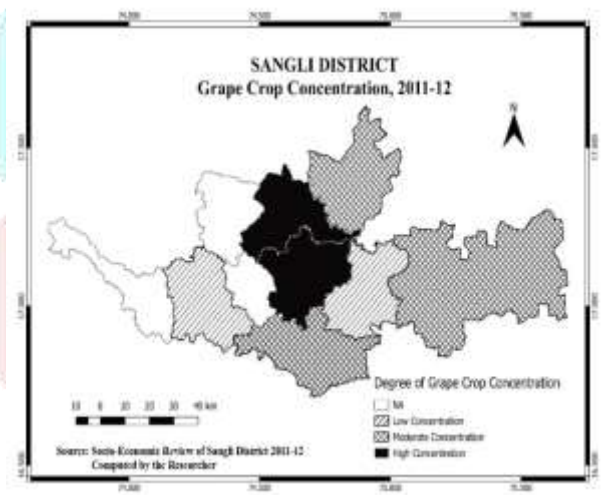
- **HIGH GRAPE CONCENTRATION**

Table No. 1 and Fig. No.1 show that Khanapur and Tasgon tahsils are under the High grape concentration in 2011-12 and Table No. 1 and Map. No. 2 shows that the Miraj and Tasgaon tahsils are covered in these categories. Tasgaon and Khanapur tahsils are the major leading grape production in the Sangli district, (Tasgaon) 35.88 percent and (Khanapur) 33.64 percent hectare area under the grape cultivation 2011-12 in overall grape cultivation of Sangli district. During the 2021-22 High grape concentration is observed in Miraj and Tasgaon tahsils (Table No.1 and Map No. 2).The area under grape of Tasgaon and Miraj tahsils is covered 29.03 Percent and 26.01 Percent in total area of grape cultivation in Sangli district.

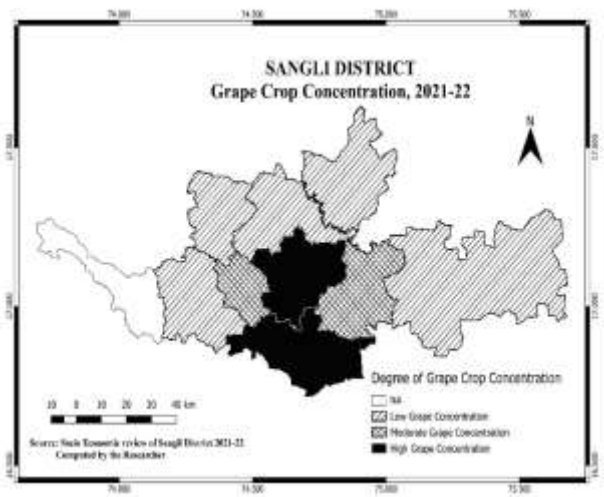
Table No. 1
Sangli District: Tahsil-wise Grape Concentration

Sr. No.	Tahsils	2011-12	Index Value	2021-22	Index Value
1	Shirala	0	0	0	0
2	Walwa	85	0.07	1215	0.31
3	Palus	0	0	1561	1.2
4	Kadegaon	0	0	229	0.08
5	Khanapur	2780	2.07	1125	0.5
6	Atpadi	79	0.72	365	0.17
7	Tasgaon	2965	2.76	9236	3.01
8	Miraj	910	0.72	8268	2.13
9	K-Mahankal	215	0.37	2871	1.04
10	Jath	1230	0.68	6906	0.83

Source: Socio-Economic review of Sangli District 2011-12 and 2021-22, Computed by the Researcher



Map No. 2



Map No. 2

- **MODERATE GRAPE CONCENTRATION**

In the Moderate categories Grape concentration 2011-12 included tahsils are Miraj, Atpadi and Jath. The area under the area under grape in overall Sangli district is 26.84 Percent in three tahsils (Table No. 1 and Map No. 1. In 2021-22 Moderate level Grape concentrations is founded in Palus and Kavate-Mahankal tahsils it is index value 1.2 and 1.04 respectively. In these tahsils the total area under grape in Sangli district is Palus (4.91 Percent) and Kavathe-Mahankal (9.03 Percent).

- **LOW GRAPE CONCENTRATION**

Low grape concentration in 2011-12 is observed in Walwa and Kavathe-Mahankal tahsils with index of 0.07 and 0.37 Kavathe-Mahankal. In 2011-12 these two tahsils accounted for 2.6 Percent (Kavathe-Mahankal) and 1.02 Percent (Walwa) of the total area under grape in Sangli district. However, in 2021-22, five tahsils namely Walwa, Kadegaon, Khanapur, Atpadi and Jath have been included in the category of low grape concentration. Among the total area under grape in these tahsils Walwa 3.82 Percent, Kadegaon 0.72 Percent, Khanapur 3.54 Percent, Atpadi 1.15 Percent and Jath 21.73 Percent area under grape. Although grape area is 21.73 Percent in Jath tahsil, the area is very less compared to different crops.

CONCLUSION

The study of crop concentration in Sangli district is done for the years 2011-12 and 2021-22. This crop concentration is classified into three categories namely Low, Moderate and High. Sangli district is one of the leading districts of western Maharashtra in grape production. Among the total ten tahsils of Sangli district, Khanapur and Tasgaon tahsils have seen high concentration of grape crop in 2011-12, while Miraj, Jat, Atpadi tahsils have medium concentration of grape crop concentration. Walwa and Kavathe-Mahankal are the two tahsils with low grape crop concentrations. During the decade from 2011-12 to 2021-22, there is considerable change in the concentration of grape crop concentration, with Miraj and Tasgaon being the tahsils with the highest concentration. Palus and Kavathe-Mahankal tahsils are among medium grape crop concentrations. Low grape crops concentration include the remaining five tahsils of Sangli district, namely Walwa, Kadegaon, Khanapur, Atpadi and Jat. Most importantly, in the 10 years from 2011-12 to 2021-22, no grape crop has been produced in Shirala tahsils. Because the Physical conditions of the tahsils is an important factor and sugarcane is the major crop in parts.

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