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A Geographical Study of Crop Concentration in Satara District of Maharashtra

*** Mrs. Manisha Shewale**
**** Dr. Sudhakar Koli**
***** Dr. Vinod Veer**
*Research Student, Department of Geography, Karmaveer Bhaurao Patil University, Satara
** Assistant Professor, Department of Geography, Karmaveer Bhaurao Patil University, Satara
*** Professor, Department of Geography, Kisan Veer Mahavidyalaya, Wai

Abstract:

Agriculture is the backbone of Indian economy. It is the oldest and most important activity in human history which provided the foundation for the development of civilizations around the world. Crop selection in any region largely depends on factors like climate, soil type and market demand etc. This study aims to analyze crop concentration in the agriculture of Satara district of Maharashtra. It provides in-detailed assessment of the crop concentration within the study region. Crop concentration is important agricultural policies that can greatly influence farm productivity, resilience and sustainability.

The study focuses on the crop concentration patterns in Satara district for the year 2015-2016, a typical agricultural year for the region. The district is administratively divided into 11 tahsils, with agriculture being heavily shaped by physiography, temperature, rainfall, soil types, and drainage systems. For the present research work secondary data was collected from various published reports. The study reveals that the cropping pattern in Satara district is dominated by Jowar. Jowar cultivation is prevalent across all tahsils of the district. While several other crops such as Rice, Wheat, Bajra, Corn, Gram, Sugarcane, Groundnut, and Soybean are also grown. The degree of crop concentration varies spatially across the region.

Keywords: Crop concentration

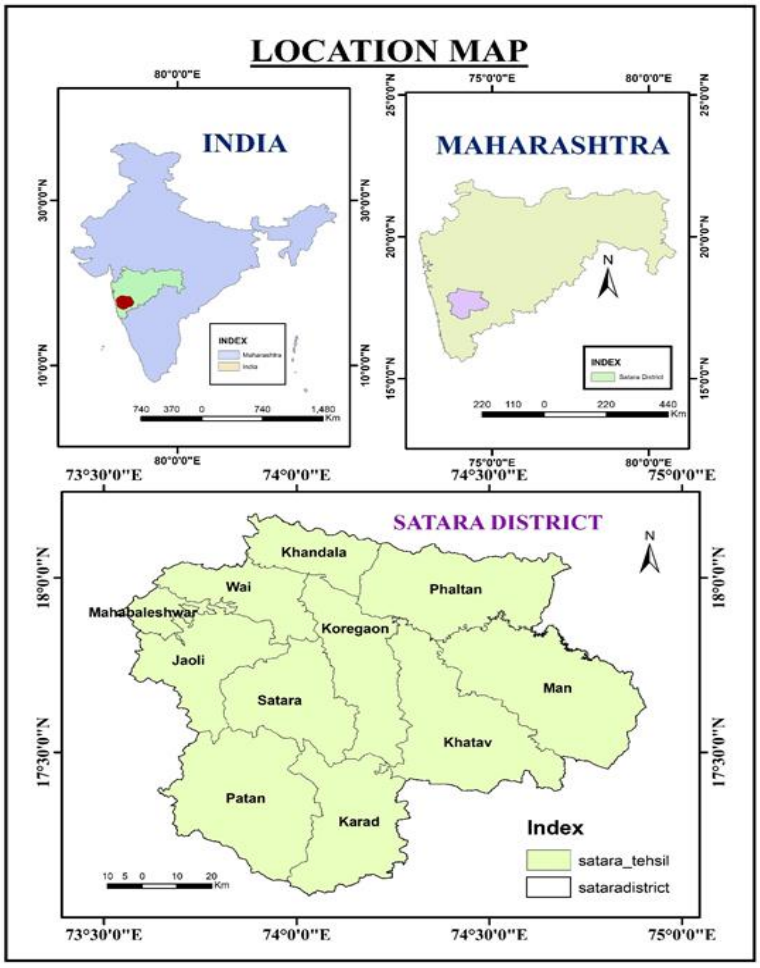
Introduction:

Agriculture is the backbone of Indian economy. Agriculture plays an important role in economic development of any region. Agriculture is the practice of cultivating soil, growing crops and other products used to sustain and enhance human life. It is one of the oldest and most important activity in human history, providing the foundation for the development of civilizations around the world. Crop selection depends on many factors like climate, soil type, physiography, availability of water, technological development, finance, customs and traditions, transportation facilities, market demand etc. Crop concentration refers to the degree to which a particular crop is cultivated in a specific region compared to other crops. It measures the dominance of one crop in an area and indicates the extent of specialization in its cultivation.

Study Area:

Satara district is located on the western part of Maharashtra. The district lies in the west of the Deccan Plateau. Satara district has an area of 10480 sq. km. which is about 3.4% of the total area of the state. It is situated between 17°5' to 18°11' north latitude and 73°33' to 74°54' east longitude. The district is surrounded by Pune district in North, Solapur district in the east, Sangli district to the south, Raigad district to the northwest and Ratnagiri district to the west. A part of the district falls in the Bhima river basin and a large part falls in the Krishna river basin. Soil texture varies according to the thickness of sediment layers. Satara district consists of 11 tahsils. The climate of Satara district is diverse. The variability of monsoons affects the crops in

each tahsil. The physical features of Satara district display a great variety of landscapes, shaped by its landforms, climate, and plants. The soils in the area are varied, ranging from lateritic patches in the west to deep, medium-black alluvial soils in the central region, and poor gray soils in the east. The climate is dominated by the monsoon, with significant fluctuations in temperature. Rainfall, primarily from the southwest monsoon, ranges from 200 mm to 500 mm annually. The eastern part of the region, which lies within the rain shadow zone, often faces recurring drought conditions.



Map-1: Location Map of Study Area

Objectives:

The prime of objective of the research paper is to study of crop concentration in Satara district.

Database and Methodology:

Present study depend on the secondary data collected through Agriculture Department, District statistical Department, and Socio-Economic Abstract of Satara District. For the present study, District is selected as in general and tahsils in particular. The crop concentration has been calculated by using Bhatia's method. To assess the crop concentration, the following formula has been used.

$$\text{Crop Concentration Index} = \frac{\text{Area under a specific crop in a region}}{\text{Total cropped area in the unit area}} \div \frac{\text{Area of specific crop in the region}}{\text{Total cropped area in the region}}$$

Crop Concentration:

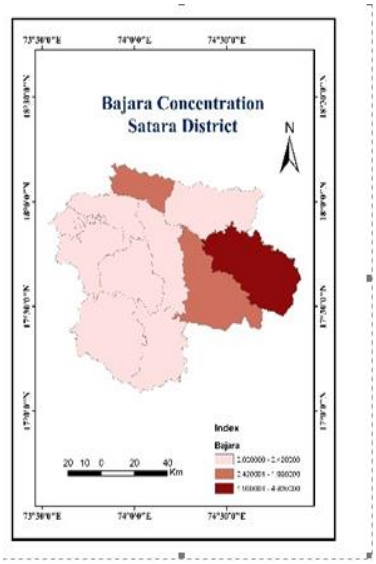
Crop Concentration refers to the degree to which a particular crop is cultivated in a specific region compared to the other crops. It measures the dominance of one crop in an area and indicates the extent of specialization in its cultivation. The pioneering work of geographers like Weaver, Jefferson, Trewartha, Bhatia, and Jasbir Singh has shaped the understanding of crop concentration. Their contributions have provided the conceptual and methodological tools to study agricultural patterns and their implications for regional development. These studies are crucial for policymakers and planners to balance agricultural productivity with sustainability.

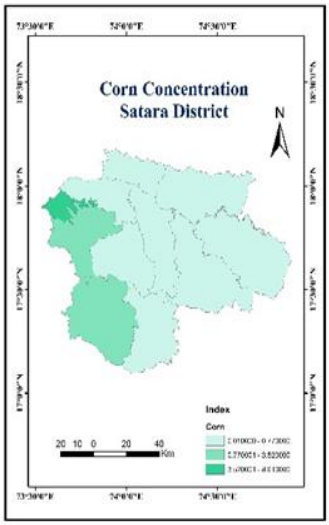
Bhatia is widely recognized for his work on crop concentration and crop diversification. He introduced the Crop Concentration Index (CCI), which measures the degree of dominance of a crop in a particular region. Crops can be classified based on the concentration of their distribution, which may either be characterized by a single or multiple nuclei of concentration, or by a more dispersed, low-density distribution (Singh & Dhillon, 2004). Therefore, identifying regions of crop concentration is crucial for determining areas where specific crops flourish with marginal inputs, playing a key role in agricultural development and planning. The following formula has been used to delineate crop concentration areas of the study area.

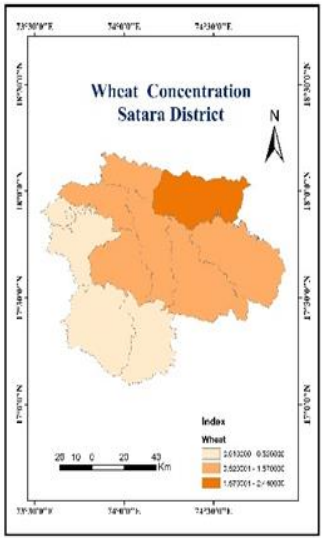
$$\text{Crop Concentration Index} = \frac{\text{Area under a specific crop in a region}}{\text{Total cropped area in the unit area}} \div \frac{\text{Area of specific crop in the region}}{\text{Total cropped area in the region}}$$

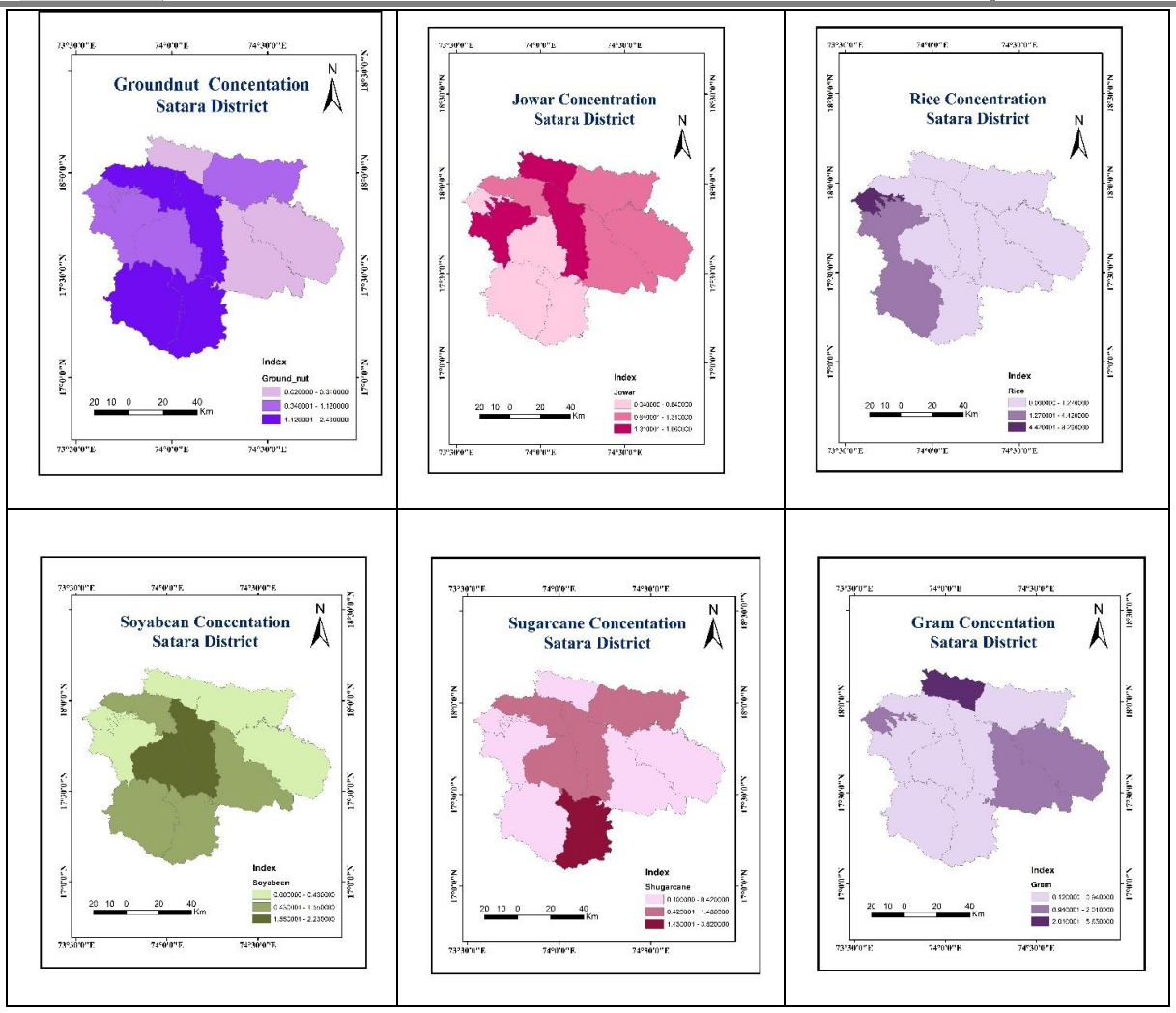
The Crop Concentration Index (CCI) is used to measure the spatial concentration of specific crops within a given area. A higher CCI value indicates that a particular crop is concentrated in a specific region, while a lower CCI value signifies a more dispersed or diverse cropping pattern.

For the major crops such as Rice, Wheat, Jowar, Bajara, Corn, Gram, Sugarcane, Groundnut, and Soyabean, the crop concentration indices have been computed for each tahsil using the above-mentioned methodology. These indices provide valuable insights into the cropping patterns across different areas and helps to understand which crops are more dominantly grown in certain tahsils.









Map-2: Crop Concentration in Satara District: 2015-16

Tahsils	Rice	Wheat	Jowar	Bajara	Corn	Gram	Sugarcane	Groundnut	Soyabean
Mahabaleshwar	8.29	0.01	0.04	0.42	8.01	2.01	0.10	0.55	0.07
Wai	0.77	1.29	1.06	0.00	0.77	0.12	1.19	1.52	1.55
Khandala	0.01	1.13	1.66	1.49	0.01	5.65	0.27	0.34	0.00
Phaltan	0.25	2.44	1.31	0.35	0.38	0.94	0.78	0.68	0.10
Man	0.19	1.57	1.09	4.83	0.41	1.75	0.13	0.13	0.03
Khatav	0.22	0.77	1.19	1.99	0.41	1.46	0.15	0.02	1.23
Koregaon	0.00	0.88	1.46	0.35	0.13	0.22	0.94	2.43	2.23
Satara	1.27	0.92	0.64	0.01	0.65	0.37	1.43	0.91	2.14
Jaoli	4.42	0.42	1.56	0.02	2.19	0.48	0.42	1.12	0.43
Patan	2.64	0.40	0.63	0.01	3.52	0.45	0.11	1.55	0.73
Karad	0.52	0.52	0.44	0.00	0.55	0.13	3.52	1.59	1.11

Table 1: Crop Concentration in Satara District: 2015-16 (Computed by Researcher)

From Table1 it can be observed that the Jowar is the leading crop of the district and Jowar is cultivated in all the tahsils of the district. Concentration of Jowar is found maximum in

Khandala tahsil followed by Jaoli, Koregaon, Phaltan, Khatav, Man, Wai, Satara, Patan, Karad and Mahabaleshwar. Bajara is the second important crop of the district although if compared with Jowar its concentration is too low. Highest concentration of Bajara cultivation is found in Man tahsil followed by Khandala, Khatav, Phaltan, and Koregaon has moderate concentration of Bajara. Comparatively lower concentration of Bajara is found in Wai and Karad. Soyabean is another important crop of the district, and its concentration is mainly confined into Koregaon, Satara, Wai, Khatav, and Karad tehsil. In Khandala, Man, Mahabaleshwar, Jaoli and Patan tahsils concentration of Soyabean is less than 1. Sugarcane is the most dominating cash crop in study region. It is highly concentrated in Karad, Satara, Koregaon and Wai tahsils. The low concentration of sugarcane cultivation is recorded in Mahabaleshwar, Khandala, Man and Khatav tahsils. Ground nut is highly concentrated in Khatav, Karad, Patan, Wai and Jaoli tahsils. The low concentrate of Ground nut is recorded in Man, Mahabaleshwar and Phaltan tahsils. Highest concentration of Wheat cultivation is found in Phaltan, Wai and Khandala tahsils. Comparatively lower concentration is found in Mahabaleshwar, Patan and Jaoli tahsils. Rice is highly concentrated in Mahabaleshwar tahsil then Jaoli and Patan tahsil. Then similarly remaining all tahsil is low concentrate of Rice. Corn is the highly concentrate Only in Mahabaleshwar tahsil and low concentrate in with respectively Khandala and Koregaon tahsil.

Conclusion:

The cropping pattern in Satara district is dominated by Jowar, which serves as the main staple food. Jowar cultivation is prevalent across all tahsils of the district. While several other crops such as Rice, Wheat, Bajra, Corn, Gram, Sugarcane, Groundnut, and Soyabean are also grown, Jowar remains the traditional crop, cultivated throughout the year. However, the degree of crop concentration varies spatially across the region, influenced by factors such as physiography, hydrology, soil types, and socio-economic conditions.

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