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HORTICULTURAL CROP COMBINATION REGIONS IN OSMANABAD DISTRICT

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Abstract:

Horticulture is defined as an expensive art or science of cultivating fruits, vegetables, flowers, or ornamental plants. Horticulture can provide large year-round employment as compared to various other seasonal crops. Region is 'an area that is different from other areas, according to the specified criteria'. Among the different types of region, agricultural region is very important to agricultural geographer. Agricultural regionalization is an aggregation of areal unites in the form of contiguous in geographic and taxonomic spaces with similar features of agriculture The study of crop combination regions constitutes an important aspect of agricultural geography as it provides a good basis for agricultural regionalization. The crop combinations gives an idea about the agricultural typology and agricultural income of a region. Therefore attempt is made here to find out crop combination region in Osmanbad District. The paper is based on secondary data. To find crop combination region in Osmanabad district Doi's method and Rafiullah's maximum positive deviation method is used. reveals that there is great influence of geographical factors on cropping pattern and crop combination in Osmanabad district.

Key Words: *Horticulture, crop combination, Region.*

Introduction:

In the last several decades, the geography of horticulture has emerged, creating its own niche as a sub-discipline within agricultural geography. Horticulture is the applied science. The word comes from Latin 'Hortus' means Garden and 'Cultura' means Cultivation. Horticulture means the cultivation of flowers, fruit, or vegetables in small plots using intensive methods of farming. The most intensive form of horticulture is probably the cultivation of crops (Smith, 1984). Horticulture is defined as an expensive art or science of cultivating fruits, vegetables, flowers, or ornamental plants. The horticulture sector encompasses a wide range of crops namely fruit crops, vegetable crops, potato and tuber crops, medicinal and aromatic crops, spices and plantation crops (Planning Commission, GOI, June 2001). Maharashtra state has several advantages in terms of marketing of products both domestically and internationally, for development of horticulture The majority of farmers cultivate cereals, pulses, fiber and oil seeds according to tradition and if rainfall is scarce it results into crop failure. Price of food grains decreases considerably during harvesting season. This situation is the cause of poor economic condition of farmers. So, there is dire need to improve economic condition of farmers to overcome this problem (Nanaware, 2005). The development of horticulture is one of the ways for solving the problem of poverty and economic condition of the vast peasants of India and the growing unemployment among both educated and uneducated masses of this vast region since crop husbandry has proved uneconomical in most of the areas (Negi;1998). Horticulture can provide large year-round employment as compared to various other seasonal crops.

Region is one of the basic concepts of geography. Region means any tract of the earth's surface with either natural or man made characteristics which mark it of as being different from the areas around it (Susain Mayhew, 2004). A widely accepted definition of region is 'an area that is different from other areas, according to the specified criteria'. Agricultural regionalization is an aggregation of areal unites in the form of contiguous in geographic and taxonomic spaces with similar features of agriculture (Pragati & Ramanaiah, 1999). Agricultural regionalization is not simply an operation of dividing the country into a number of agricultural regions, but it is also a method of

understanding the agricultural pattern and agro- geographical relationship. It conveys that it is a contiguous area having some kind of agricultural homogeneity. Any segment or portion of the Earth's surface possessing a distinctive form of agriculture is an agricultural region (Jasbir Singh, 1984). The term agricultural region has been used in it's traditional sense but still it does not lose any significance; rather it's used much wider. Among the different types of region, agricultural region is very important at to the point of agricultural geographer. The agricultural region is a device for selection and investigating regional grouping of the complex agricultural phenomena.

The study of crop combination regions constitutes an important aspect of agricultural geography as it provides a good basis for agricultural regionalization. The crops are generally grown in combinations and it is rarely that a particular crops occupies a position of total isolation other crops in a given areal unit at a given point of time(Husain,2002). It is fruitful in many ways such as to understand the cropping pattern, crop concentration in a given area. The crop combinations give an idea about the agricultural typology and agricultural income of a region. Such regions provides areal significance and strength of individual crops, to advocate suitable device for planning improvements in the under developed regions. Besides this, they are helpful in the introduction of innovations in agriculture. In simple manner crop combination analysis is really core of agricultural geographic investigation. Therefore attempt is made here to find out crop combination region in Osmanbad District.

LOCATION MAP OF OSMANABAD

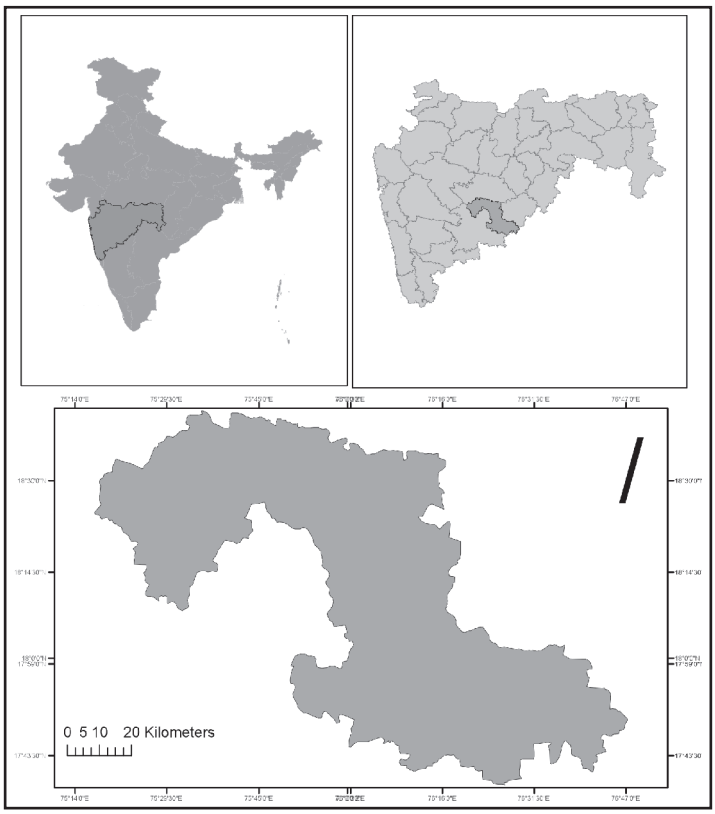

Figure No. 1

The Study Region:

The Osmanabad district is located in Southern part of Maharashtra. The absolute location of district is 17º 35' to 18º 40' North Latitudes and 75º 16' to 76º 40' East Longitudes. The district has an area of 7569 Sq KM. East-West extent is 280 KM. and South-North extents only 240 KM. As for as area is concerned, the district ranks 24th in the state of Maharashtra. It is bounded on the South-West by Solapur district, on the North-West Ahmednagar district and South by Bidar and Gulbarga district of Karnataka State. The district consists of eight tahasils namely Osmanabad, Tuljapur, Lohara, Omerga, Kalamb, Bhoom, Paranda and Washi.

It lies on the Deccan plateau with an average height of 600 metre above from sea level. most of the area of district is covered by Balaghat Ranges with patches of low level plain. Climate of the district is hot and dry, as daily mean maximum temperature ranging in between 30ºC to 39ºC and minimum temperature ranging in between 18ºC to 21ºC. Osmanabad District comes under the low rainfall region, with about 623.16 mm average annual rainfall. The soil of the district is essentially derived from the Deccan Trap, can broadly classified into four groups- shallow soil, medium soil, medium deep, and deep soil. The district consists of 8 urban centers and 735 villages. District is inhabited by 16,60,311 population (as per 2011 census) and density of population is 219 per sq. km.

Objectives:

The main objective of preset study is to analyze horticulture crop combination regions in Osmanabad district.

Data collection and Methodology:

The present paper is based on secondary sources of data comprising of the district census handbook, gazetteers, statistical abstract, seasonal crop reports, socio economic review of districts of Marathawada.

Collected data are processed. To avoid fluctuation in area under crops and to get reliable result quinquennial average is taken into consideration. Percentage of area under each crop to total cropped area is calculated. A large number of experts have suggested a number of statistical methods to deal with crop combination regions i.e. Weaver's, Ruffiullah's, Athawale's Ayyar and Doi. To find crop combination region in Osmanabad district Doi's method and Rafiullah's maximum positive deviation method is used. The Doi`s formula may be expressed as (Ed2). The combination having the lowest (Ed2) will be the crop combination. In Doi`s technique it is not required to calculated (Ed2) for each. Combination is actually established by on sheet table.

Rafiullah's maximum positive deviation method gives such combinations that are representative of the primary crops further crop combinations are conformity with the soil and rainfall distribution. Therefore maximum positive deviation method has an advantage over Weaver's method (Hussain Majid, 1972). The Rafiullah's formula is expressed as fallow.

$$D = \frac{D2p - D2n}{N2}$$

Where,

D = Deviation

Dp= Positive difference from the median value of theoretical curve value of Combination.

Dn= Negative difference from the median value of theoretical curve value of combination.

N= Number of crops in the combination.

The crop combination patterns are worked out considering Tehsil as a study unit. After the calculation crop combination table is prepared and on the basis of these table analysis and conclusions are drown.

Result and Discussion:

A) Crop Combination Method of Doi's:

As per Doi,s technique Monoculture, two crops combination and three crop combinations are absent in Osmanabad district during 2009-2014.

Four Crop Combinations:

The table no. 1A indicates that during 2009-14, as per Doi's method (1959) four horticultural crop combination is practiced only in Washi tehsils of the study region. In Washi tehsil Onion, Mango, other fruits and other spices constitute the combination due to the favorable soil condition and seasonal irrigation facilities.

Five Crop Combinations:

The five horticultural crop combination is observed in two tehsils of the study region i.e. Kalam and Omerga tehsils. In Kalam tehsil, the Onion is the dominant crop; the largest coverage of Onion stands as first rank, followed by other fruits, other vegetables, Mango and other spices. In Omerga tehsil, the Grape is the dominant crop followed by Banana, Brinjal, Mango and other fruits. The favorable environmental condition has been found to be suitable for this pre-dominant crop. The medium deep to very deep type of soil is also favorable for these combinations.

Six Crop Combinations:

During 2009-14, six horticultural crop combinations is observed only in Bhum tehsil. Other fruits, Onion, Mango, other spices, other vegetables and Grapes constitute the combination because tehsil lie in high rainfall variability region.

Seven Crop Combinations:

During 2009-14, seven crops combination is recorded in four tehsils of the study region i.e. Paranda, Osmanabad, Tuljapur and Lohara tehsils. In Paranda tehsil Onion, Grapes, Mango, other fruits, other spices, Chilli and other vegetables entered in the combination. In Osmanabad tehsil Grapes, Brinjal, other fruits, Garlic, Onion, Lime fruits and other spices entered in the combination. In Tuljapur tehsil Grapes, Garlic, other fruits, Onion, Brinjal, Mango and other spices entered in the combination due to the market facilities, whereas in Lohara tehsil Grapes, Other spices, Brinjal, Mango, other fruits, Garlic and Tomato entered in the crop combination.

The comparison between table 1 A and 1 B reveals that the change in crop combination region based on Doi's method. Seven tehsils show the change in crop combination. Six crops to four crops change is recorded in Washi tehsil, farmers discarded lime fruits and chilli crop. Six crops to seven crops change is recorded in Paranda, Tuljapur and Lohara tehsils. In Paranda and Tuljapur Onion is entered in crop combination, whereas in Lohara tehsil Garlic is entered as new crop.

Table no. 1 A: Horticultural Crop Combination Region by Doi's Method 1999-2004

Sr. No.	Tehsil	5 Crop	6 Crop	7 Crop
1	Paranda		C+M+Ov+Os+OF+G	
2	Bhum	Os+M+C+OF+Ov		
3	Washi		M+O+Os+OF+L+C	
4	Kalam		Ov+M+Os+O+C+L	
5	Osmanabad			M+Ov+Os+OF+O+L+C
6	Tuljapur		M+OF+Gl+G+Os+Br	
7	Lohara		Os+Br+M+OF+G+T	
8	Omerga		M+Os+OF+G+Br+Gl	
9	District		M+Os+G+Ov+O	

Table no. 1 B: Horticultural Crop Combination Region by Doi's Method 2009-2014

Sr. No.	Tehsil	4Crop	5 Crop	6 Crop	7 Crop
1	Paranda				O+G+M+OF+Os+C+Ov
2	Bhum			OF+O+M+Os+Ov+G	
3	Washi	O+M+OF+Os			
4	Kalam		O+OF+Ov+M+Os		
5	Osmanabad				G+Br+OF+Gl+O+L+Os
6	Tuljapur				G+Gl+OF+O+Br+M+Os
7	Lohara				G+Os+Br+M+OF+Gl+T
8	Omerga		G+B+Br+M+OF		
9	District				O+OF+M+Ov+Os+G+C

Source: Compiled by Researcher on the basis of One Sheet Table prepared by Doi in 1957.

Note: M=Mango, G=Grapes, L=Lime fruits, B= Banana, OF= other fruits, O=Onion, Br= Brinjal, T= Tomato, Ov= other vegetables, C=Chilly, Gl=Garlic, Os= other spices

Five crops to six crops change is recorded only in Bhum tehsil. Instead of Chilli Grapes and Onion are entered in crop combination in Bhum tehsil. Six crops to five crops change is recorded in Kalam and Omerga tehsils. In Kalam tehsil, in place of chilli and Lime fruits, the other fruits are entered in crop combination, whereas in Omerga tehsil instead of other spices and Garlic, Banana is entered in crop combination.

B) Crop Combination by Rafiullah's Method:

The resultant of crop combination region by Rafiullah's method is as following.

Table no -2: Horticultural Crop Combination by Rafiullah Method 1999-04 and 2009-14

Sr.No	Tehsil	Monoculture	
		1999-2004	2009-14
1	Paranda	Chilli	Onion
2	Bhum	Other spices	Other fruits
3	Washi	Mango	Onion
4	Kalam	Other vegetable	Onion
5	Osmanabad	Mango	Onion
6	Tuljapur	Chilli	Onion
7	Lohara	Other spices	Onion
8	Omerga	Chilli	Onion
	District	Mango	Onion

Source: Compiled by Researcher

Monoculture:

During 2009-14, all the tehsils of Osmanabad district have monoculture crop combination. Monoculture crop is Onion except Bhum tehsil. In Bhum tehsil monoculture crop is other fruits. Due to favorable agro climatic conditions and soil fertility, Onion crop is very well suited in Paranda, Washi, Kalam, Osmanabad, Tuljapur, Lohara and Omerga tehsils, farmers devote most of their arable land to this crop.

The comparison of crop combination region in between quinquennial average 1999-2004 and 2009-2014 (table no. 1) reveals the change in crop combination regions based on maximum deviation method. No change is recorded in all the tehsils i.e. monoculture but crops are changed in all tehsils. During the period under review, Onion is entered in place of Chilli in Paranda tehsil, whereas Other spices are replaced by other fruits in Bhum tehsil. Mango, Other vegetables, Mango, Chilli, Other spices and Chilli is replaced by Onion crop in Washi, Kalam, Osmanabad, Tuljapur, Lohara and Omerga tehsils respectively.

Conclusions:

Forgoing analysis reveals that there is great influence of geographical factors on cropping pattern and crop combination in Osmanabad district. The special verification in the degree of combination are found to be result of the interaction of physiographic, climacteric, hydrological, socioeconomic and technological factors of study region. four horticultural crop combination i. e. Onion, Mango, other fruits and other spices only in Washi tehsils of the study region is a result of favorable soil condition and seasonal irrigation facilities. The five horticultural crop combination in Omerga tehsil, i.e. Grape, Banana, Brinjal, Mango and other fruits is mainly due to the medium deep to very deep type of soil and irrigation dacilities. The change in crop combination region based on Doi's method. Seven tehsils show the change in crop combination.

As per Rafiullha,s method all the tehsils of Osmanabad district have monoculture crop combination. Onion is Monoculture crop in all tehsils of study region except Bhum tehsil is a result of favorable agro climatic conditions and soil inadequate perennial irrigation facilities. As per Rafiullha,s method there is no change in number of crops but crops are changed in all tehsils mainly due to development of technological, infrastructural facilities and ups and downs in prices of commodity.

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