

## “CROP DIVERSIFICATION IN MARATHWADA REGION: A GEOGRAPHICAL ANALYSIS”

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### **Abstract:**

*Agriculture geography has been defined as the science which deals with the regional or spatial variations in the distribution of agricultural entities and to explain the causes of such variations. Agricultural regionalization is an aggregation of areal unites in the form of contiguous in geographic and taxonomic spaces with similar features of agriculture. Delimitation of agricultural region have great importance because it is very important for agricultural planning and development. Crop diversification enables the geographers and planners to understand the areas of various crops grown in a region at a given point of time. The continuous cultivation of a particular crop in a unit or region, however leads to progressive reduction in yield, where as crop diversification leads replenish the soil fertility. Therefore an attempt is made here to study crop diversification region in Marathwada region. The present paper is based on secondary sources. To find out crop diversification Bhatia's (1965) method is used. The study reveals that crop diversification is high in Aurangabad, Beed, Hingoli Nanded and Osmanabad districts.*

**Keywords:** Agricultural regions, crop diversification, Bhatia's method.

### **INTRODUCTION:**

Agriculture geography has been defined as the science which deals with the regional or spatial variations in the distribution of agricultural entities and to explain the causes of such variations (M. Husain, 2002). Agricultural geography is as the study of regional variations in agriculture and the factors responsible for them. In India development of agriculture and allied activities provides a source of livelihoods to over 70 percent of its total population. (Katar Sing, 2009). Agriculture is base of industry, trade and transportation India.

Region is one of the basic concepts of geography. Region means any tract of the earth's surface with either natural or manmade characteristics which mark it off 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 is conveyed 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 its 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. Any segment of the earth's surface possessing a distinctive form of agriculture is an agricultural region (Jasbir Singh, 1987). The agricultural region is a device for selection and investigating regional grouping of the complex agricultural phenomena. According to Buchana (1959) agricultural region must be defined in terms of agricultural elements, that is by crop, livestock or enterprises data, so that attempt is made here to define agricultural region of Marathwada region based on crops.

Crop diversification is a concept, which is opposite to crop specialization. Diversification in cropping pattern means raising different crops in arable land. The keener the completion of crops higher is magnitude of diversification. The pattern of diversification is closely influenced by the soil characteristics, soil moisture; amount of rainfall received, the availability of irrigation facilities, the accessibility of the arable land and the technology deployed by the cultivators. Among these physical factors are more important (Kore K. S., 1981). The study of the spatial pattern of crop diversification is very important to understand the adoption of judicious crop rotation for the maintenance of soil fecundity. The fecundity of soil is associated with a mixed farming system rather than crop specialization. The study of diversification is important, which helps for the future planning and development of agriculture. In view of the important of these attributes of diversification, an attempt is made to investigate the spatial pattern of crop diversification. The diversification of crop in an area largely depends on its terrain, temperature, Rainfall and

pedological condition. Crop diversification enables the geographers and planners to understand the areas of specialization to different crops grown in a region at a given point of time. The continuous cultivation of a particular crop in a unit or region, however leads to progressive reduction in yield. This depletion of soil happens because the crop exhausts certain nutrients from the soil. Consequently, the natural fertility of the soil steadily declines. So that crop rotation is important for maintain soil fertility. Delimitation of agricultural region have great importance because it is very important for agricultural planning and development. Therefore an attempt is made here to study crop diversification region in Marathwada region.

#### **THE STUDY AREA:**

The Maharashtra state is administratively divided into six divisions, viz. Konkan, Nasik, Pune, Amravati, Nagpur and Aurangabad. The Aurangabad division is also known as Marathwada region, which was formerly a part of Hyderabad state. Marathwada forms the central portion of

Maharashtra with Aurangabad city being located almost in the centre of the state (Fig. -1). Marathwada is one of the most backward regions of Maharashtra state. The Marathwada region lies in the upper Godavari basin. The absolute location of district is  $17^{\circ} 35'$  to  $20^{\circ} 40'$  North latitude and  $74^{\circ} 40'$  to  $78^{\circ} 19'$  East longitude. The study region is bounded on the North by Jalgaon, Buldhana, and Akola districts, to the North-east by Yavatmal district, to the East by Kamareddi, Nizamabad and Adilabad districts of Andhra Pradesh, to the South and South-east by Bidar and Gulbarga districts of Karnataka state, to the West by Ahmednagar to the Southwest by Solapur and to the North-west by Nasik district. Its shape is roughly triangular. East-West maximum extent is 394 Kilometers and North-south extent is 330 Kilometers. The total geographical area of district is 64434 Sq. Km. which constitutes 20.95 percent of the state and its population is 1.87 cores which is 16.66 percent of the state (2011). Administratively area is divided into eight districts and 76 tehsils.

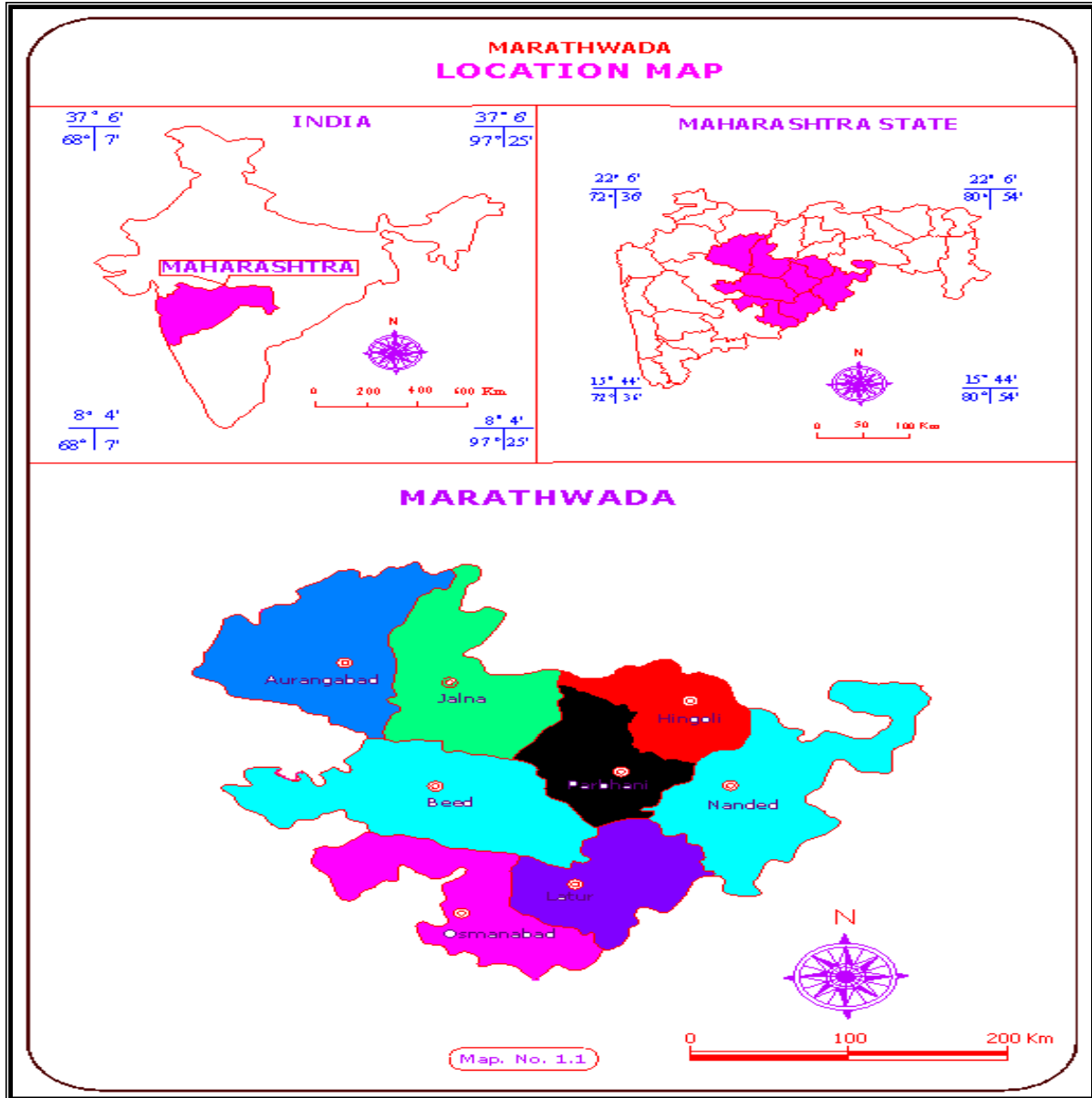


Figure -1

## **OBJECTIVES:**

The main objectives of this paper is to analyze crop diversification in Marathwada region

## **DATA COLLECTION AND**

## **METHODOLOGY:**

The present study is based on secondary data source. In order to meet these objectives the relevant information and data regarding area under selected crops are collected from Socio Economic Review

and District Statistical Abstract of Districts in Marathwada region and Season and Crop Reports for the year of 1981-2010. The data regarding population is collected from census of Maharashtra, the information about geographical area is collected from Gazetteers.

Collected rough data are processed. To determine crop diversification, Bhatia's (1965) formula is applied. The formula has been expressed as:

$$\text{Index of Crop Diversification} = \frac{\text{Percent of sown area under 'x' crops}}{\text{Number of 'x' crop}}$$

Where x crops are those crops that individually occupy one percent or more of the gross cropped area in a district as a unit. The indices of crop diversification are calculated for period of 1981-1986 and 2005-2010 (Table no. 1) and shown in figure 2 A and B respectively.

Analysis of the study has been made with help of the Bhatia;s techniques and on the basis of this results and conclusion are drawn.

## **DISCUSSION:**

### **Crop Diversification**

To analyse crop diversification in the study region the indices of districts of marathwada region are grouped in to three categories viz. (i) Area of high diversification, (ii) Area of moderate diversification and (iii) Area of low diversification.

Table No. 1 : Changes in Crop Diversification in Marathwada Region-  
1981-82 to 1985-86 to 2005-06 to 2009-10

Sr. No.	District	1981-1986			2005-2010		
		Sum of % of A.U.'X' Crop	Number of crops	C.D. Index Value	Sum of % of A.U.'X' Crop	Number of crops	C.D. Index Value
1	Aurangabad	96.88	13	7.45	97.99	15	6.53
2	Jalna	97.28	13	7.48	97.73	12	8.14
3	Nanded	96.98	12	8.08	96.65	13	7.43
4	Osmanabad	96.77	13	7.44	96.05	14	6.86
5	Latur	96.59	15	6.44	95.99	10	9.60
6	Beed	94.73	13	7.29	97.15	13	7.47
7	Parbhani	96.42	12	8.04	95.15	10	9.52
8	Hingoli	97.85	14	6.99	96.15	13	7.40
	Marathwada Region	96.57	14	6.90	96.77	14	6.91

Source: Compiled by Researcher

**(i) Area of high diversification:**

The figure 2A and table 1 indicates that during the period of 1981-86 the crop diversification is high in latur and Hingoli districts. The figure 2B exhibits that during the period of 2005-2010, crop diversification is high in Aurangabad, Beed, Hingoli Nanded and Osmanabad districts. It is high in Nanded and Hingoli district because these are the areas of extreme moisture, where as Aurangabad, Beed and

Osmanabad are the areas of erratic rainfall.

It also indicates that there is low degree of technology in these districts.

**(ii) Area of moderate diversification:**

The figure 2A and table 1 indicates that during the period of 1981-86 the crop diversifications is moderate in the districts of Aurangabad, Osmanabad, Jalana and Beed. The figure 2B indicates that during that during the period of 2005-2010, the

moderate diversification is only in Jalna district,

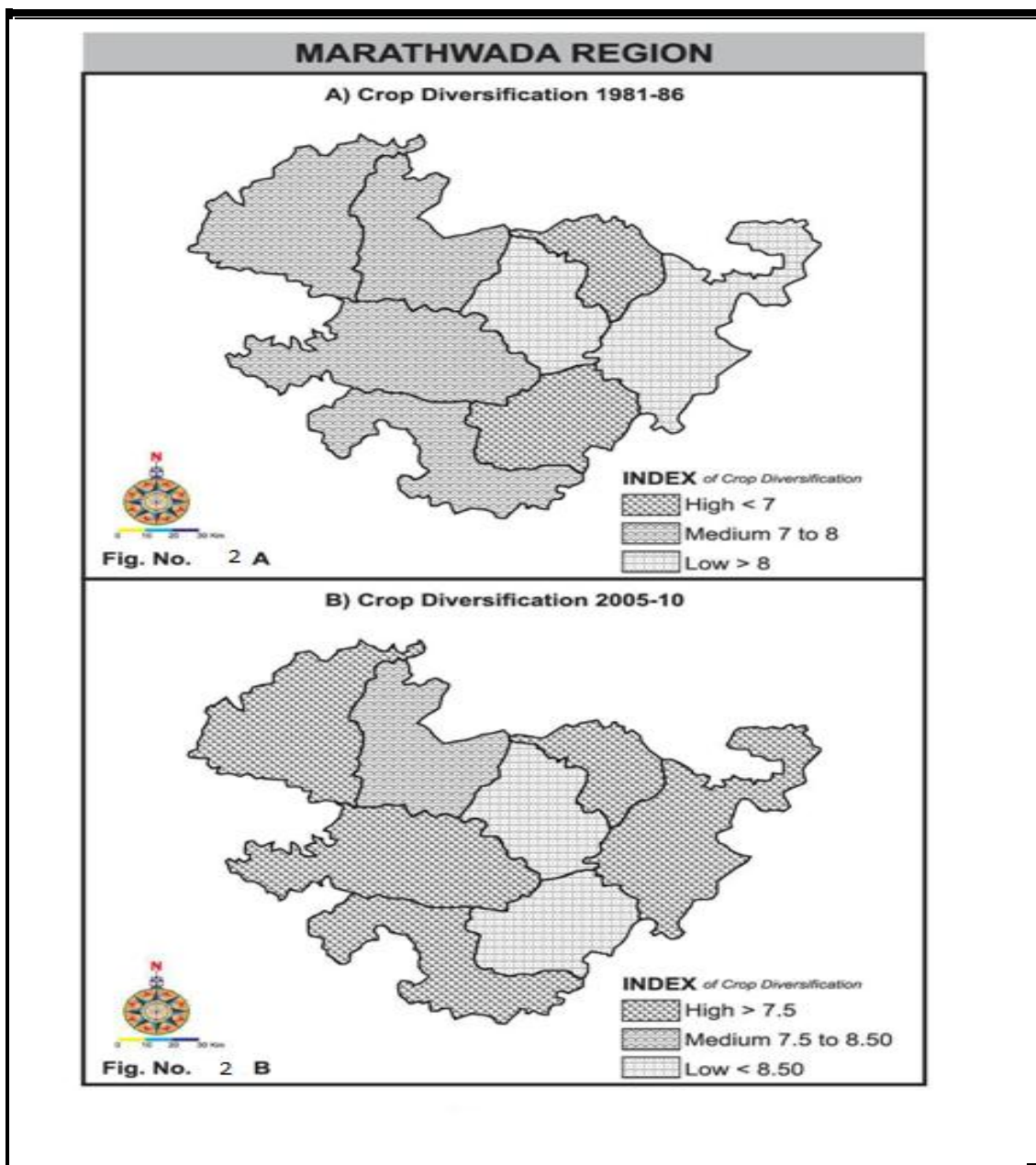


Figure-2.A&B

**(iii) Area of low diversification:**

The figure 2A table 1 indicates that during the period of 1981-86 the crop diversifications is low in Nanded and Parbhani districts. The figure 2B exhibits that during the period of 2005-2010, Low diversification of crop is found in the Parbhani and Latur districts. It means that there is requirement of inputs at specific time.

**Changes in Crop diversification:**

The comparison of figure 2 A. and B indicates that low to high diversification is recorded only in Nanded district, while moderate to high diversification is found in Aurangabad, Beed, Osmanabad districts due to development of irrigation. The high to low diversification is found in Latur district, which indicates that there is technological development. There is no change in crop diversification in the district of Jalna, Parbhani and Hingoli.

**CONCLUSIONS:**

The foregoing analysis reveals that during the period of 2005-2010, the Low diversification of crop in the Parbhani is mainly due to black cotton soil which leads to cotton cultivation, while it is low in Latur due to development of technological factors. The low diversification of crop is found in the Parbhani and Latur districts indicates that there is requirement of inputs at specific time. The crop diversification is high in Aurangabad, Beed, Hingoli Nanded and Osmanabad districts. It is high in Nanded and Hingoli district because these are the areas of extreme moisture, where as Aurangabad, Beed and Osmanabad are the areas of erratic rainfall. It also indicates that there is low degree of technology in these districts. The high to low diversification change in Latur district indicates that there is technological development in this district.



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