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## **A Geographical Study of Crop Diversification of Junnar Tahsil in Pune District. (2011-2012)**

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### **Abstract:-**

Diversification of agricultural crops refers to the shift from the regional dominance of one crop to regional production of a number of crops, to meet ever increasing demand for cereals, pulses, vegetables, fruits, oilseeds, fibers, fodder and grasses, fuel, etc. Crop Diversification takes into account the economic returns from different value-added crops. It implies a shifting of resources from low value crops to high value crops, usually intended for human consumption such as fresh market fruits and vegetables.

Opportunities for Crop Diversification vary depending on risks, opportunities and the feasibility of proposed changes within a socio-economic and agro-economic context. Crop Diversification is the outcome of several interactive effects of many factors such as government policies, irrigation facility, deep shallow soil, availability of market for agro product and economic condition of farmers.

Junnar tahsil is much favorable for Crop Diversification due to availability of well irrigation facilities, deep shallow soil, labour, capital and market. Pune and Mumbai markets are near to Junnar tahsil. Junnar tahsil is in green zone area. Hence generally small and domestic industries are lacking in this area it means that there are no industrial development, so naturally they are depended on agriculture for their livelihood. As compare to western part of the region, the eastern part is more developed. This shows variations in the Crop Diversification of the study region.

### **Introduction:-**

Crop Diversification is applied concept to remove the plight of subsistence agricultural economy and to ensure diversified nutrition status of the poor countrymen. Crop Diversification means rising of a variety of crops involving intensity of competition amongst field crops for arable or cultivable land

With globalization of the market, Crop Diversification in agriculture means to increase the total crop productivity in terms of quality, quantity and monetary value under specific, diverse agro-climatic situations world-wide. There are two approaches to Crop Diversification in agriculture. First is horizontal diversification, which is the primary approach to Crop Diversification in agriculture production. Here, diversification takes place through crop intensification by adding new high-value crops to existing cropping systems as a way to improve the overall productivity of a farm or region's farming economy. The second is the vertical diversification approach in which farmers and others add value to products through processing, regional branding, packaging, merchandising, or other efforts to enhance the product.

The Crop Diversification will be the assist to alleviate rural poverty, improve family nutrition and food security, and raise foreign exchange earnings by promoting the export of traditional and non-traditional crops including food crops. Pune and Mumbai market are near to Junnar which is resulted in the variation of many crops like Vegetables, Fruits and Flower crops. This paper aims to implement Bhatia's method of Crop Diversification for a uniform data set of Junnar tahsil of Pune District. It focuses on status of Crop Diversification in different circles.



## Literature review:-

Many geographers and economists have applied the concept of diversification in the sense variety of crop.

Bhatia (1965) adopted an introduced Crop Diversification technique in order to understand crop competition in the region followed Jasbir singh (1976), Ayyer (1969) modified Bhatia's method of Crop Diversification with accounting for those crops which occupied at least One percent of the gross cropped area.

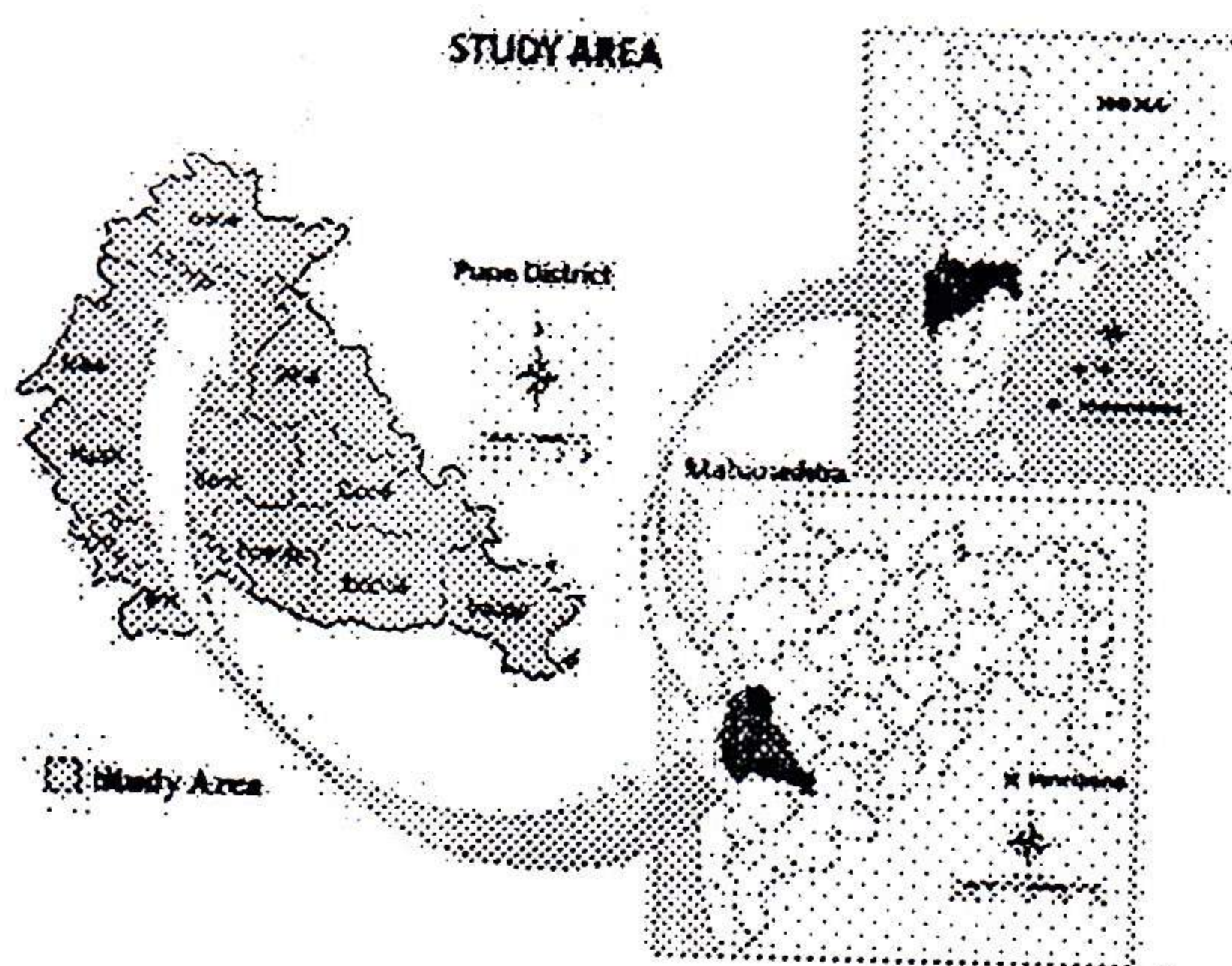
"The keener the competition, the higher the magnitude of the Crop Diversification and lesser the competition the greater will the trend toward specialization or monoculture farming where emphasis is on one or two crops" (Jasbir Singh 1976).

It shows the contemporary composition among crops for an area, scope for rotation, the effect on double cropping the greater number of crop lead to greater computation, the higher is the magnitude of diversification (Hussain, 1979).

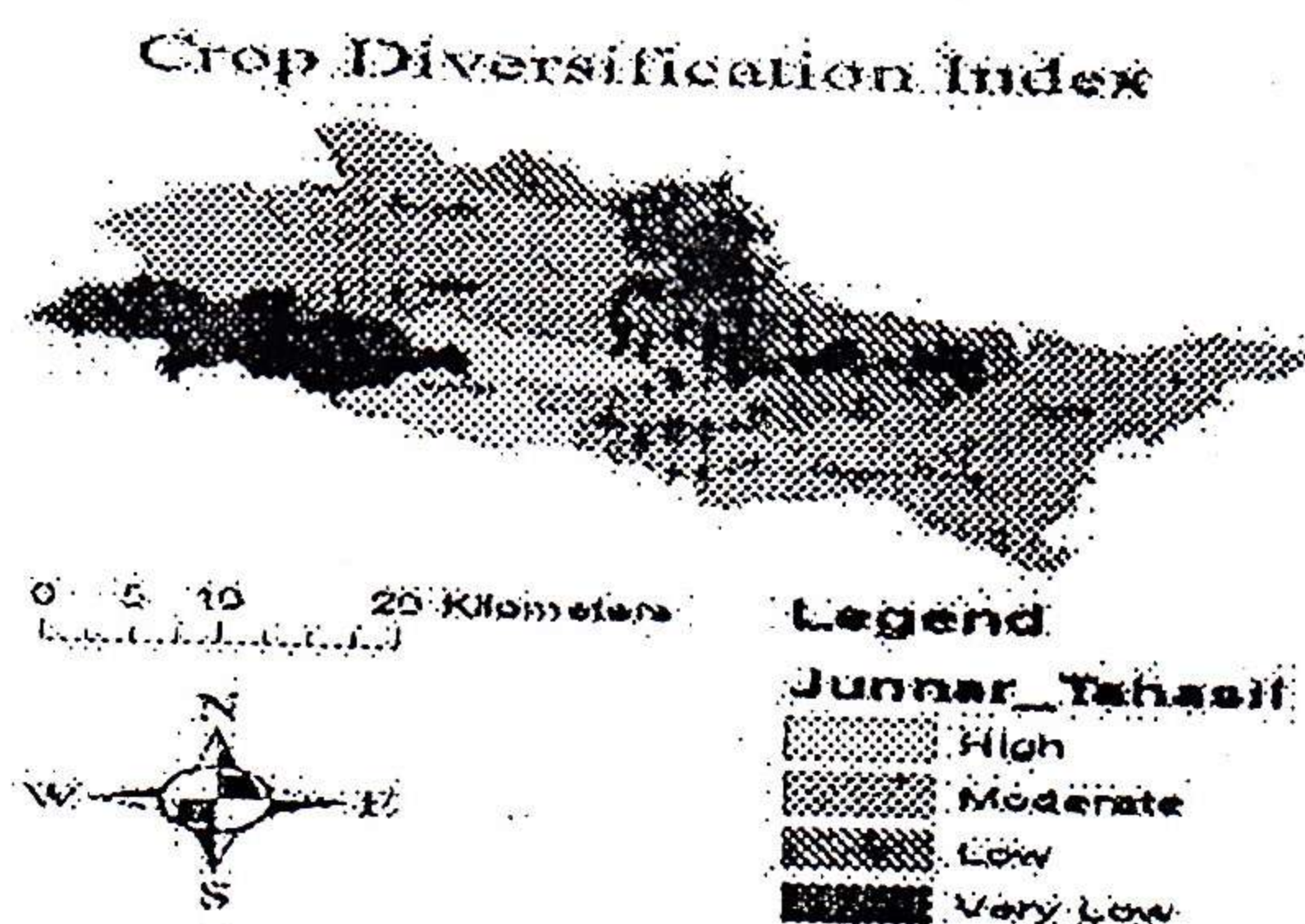
The main advantage of the study of diversification in a region lies in the fact that it enables us to understand the impact of physical and socio-economic conditions on the agriculture. Moreover, it helps us in knowing the contemporary competition among crop for area, for rotation and effect on double cropping, total production and per hectare productivity (Bhalsing, 2009).

## Study Area

Junnar Tahsil is located in the northern zone of the Pune district. It occurs in the zone of steep isohyetal gradient having rainfall between 50 to 250 cm. The latitudinal extent of the Tahsil is  $19^{\circ} 00'$  to  $19^{\circ} 24'$  north and longitudinal extent is  $73^{\circ} 40'$  to  $74^{\circ} 18'$  east. The area of the Tahsil is 1579.84 Sq.km. Junnar is mainly rural in character as 183 villages are there, according to 2001 census. Junnar Tahsil has the human population as about 3, 44,897, the rural population of the Tahsil is 98%, While the urban population is 2% according to 2001 census. Generally small and domestic industries are lacking in this area it means that there are no industrial development, so naturally they are depends on agriculture for their livelihood. The crops are growing more or less proportion in the study region. The Junnar tahsil mainly divided into nine circles namely Junnar, Nimgaonsava, Otur, Belhe, Aptale, Narayangaon, Vadgaon Anand, Dingore and Rajur. The total area under the crops covers 56287.15 hectares area.



Map No. 1



Map No.2



## Aims and objectives

The study mainly concerned with following objectives:-

- 1) To find out the levels of Crop Diversification in study region.
- 2) To identify the spatial distribution of Crop Diversification.
- 3) To analyzed the variables responsible for distribution of Crop Diversification in the study region.

## Data Collection

Primary data collected by direct observation. The secondary data of various crops have been collected from namuna no. 20 in land record department at tahsil office at circle level.

## Methodology

The distribution of Crop Diversification 2011-12 has studied in this research paper. All information analyzed with the help of GIS technique in software and drawing some conclusions. In order to identify spatial distribution of Crop Diversification in present research paper Bhatia's method has been used in modified form. Bhatia's Method Crop Diversification index (ICD) is inversely proportional to the degree of diversification i.e. higher is the value of the index, lower will be the degree of diversification and vice versa. The formula modified express as follows.

Percent of Net sown Area

Index of Crop Diversification =

Number of 'n' crops

Where - 'n' crops are those which individually occupy one or more than one percent of crop to net shown area in the tahsil.

## Results and Discussion:-

The results obtained have been displayed in table shows the Crop Diversification of all the circles in the study region. It is seen from table the whole Crop Diversification have been identified as following four groups:-

- 1) Area of High Crop Diversification (less than 04)
- 2) Area of Moderate Crop Diversification (04 - 08)
- 3) Area of Low Crop Diversification (08 - 12)
- 4) Area of Very Low Crop Diversification (More than- 12)

**Table No. 1: Circle wise Index of Crop Diversification of Junnar Tahsil**

Sl. No.	Circle	Index of Crop Diversification
1	Rajur	5.24
2	Dingore	7.61
3	Vadgaon- Anand	10.91
4	Narayangaon	6.93
5	Aptale	12.50
6	Belhe	6.76
7	Otur	8.35
8	Nimgaon-Sava	6.15
9	Junnar	3.13

Table No. 2: Patterns of Crop Diversification

Sr. No	Class	Magnitude	No. of Circles	Name of Circles	Percentage of Circles	Area Involved	Percent of area
1	0 to 04	High	01	Junnar	11.11	7074	12.57
2	04 to 08	Medium	05	Rajur, Dingore, Narayangaon, Belhe, Nimgaon-Sava	55.56	31358.15	55.71
3	08 to 12	Low	02	Vadgaon-Anand, Otur	22.22	16619	29.53
4	Above 12	Very Low	01	Aptale	11.11	1236	2.20
Total			09		100	56287.15	100

**Distribution of Crop Diversification:-****Area of High Crop Diversification:**

The table no. 2 shows, area under high diversification covers 7074 hectares (12.57 Percent Area). The area of high Crop Diversification appears in the Junnar Circle. Total 28 crops observed in this circle. Especially in the area which have been high diversification due to the well irrigation, medium to deep soils and daily market. The Cereals, Pulses, Vegetables, Fruits, Oilseeds, Fibers, Fodder Crops and Flower crops are compete to each other.

**Area of Moderate Crop Diversification:-**

The table no.2 depicts that, the index of Crop Diversification in the study region shows the area of moderate Crop Diversification covers 31358.15 hectares (55.71 percent to total area) of the area under study. The region of moderate Crop Diversification appears in five circles namely Rajur, Dingore, Narayangaon, Belhe, and Nimgaon-Sava. The largest patch of moderate Crop Diversification area appears in the North-west, East and South-East part of the study region. In this part Bajara, Onion, Soyabin, Pulses, Banana, Maize, and Sugarcane these crops are most diversified crops due to medium to deep black soils and irrigated tracts.

**Area of Low Crop Diversification:-**

Table no.2 clearly shows that, the area of low Crop Diversification covers 16619 hectares (29.53 percent). The distribution of low index of Crop Diversification is seen in two circles, namely Vadgaon-Anand and Otur. These circles are occurred in northern and eastern parts of the study area. In these circles medium deep to coarse shallow and hilly upland soils, well irrigation is found. Jowar, Bajara, Onion, Soyabin, Tomato, Groundnut, Sugarcane, Fruits, Vegetables and Fodder Crops are competing to each other.

**Area of Very Low Crop Diversification:-**

According to Table no. 2, the area of very low diversification found at Aptale Circle. This Circle lies in the northern part of the region. It occupies 1236 hectares (2.20 percent to total area) area. In the northern part at Aptale Circle crops like Nachani, Onion, Gram, Sugarcane, Mango, Potato, Groundnut and Karhale compete with each other. The northern part of the region identifies very low Crop Diversification due to medium coarse shallow and hilly upland.



## Conclusion:-

In order to understand the competition among the crops in the study region, the Crop Diversification method of Bhatia is applicable. According to Bhatia's method of Crop Diversification, it is clearly shows the relationship with phisio-socio-economic conditions of a particular region.

The area under moderate Crop Diversification is more than other categories. This region lies in North-West and South-East part of the study area, it covers 52.71 percent area. This includes five revenue circles, out of nine revenue circles. The area under moderate Crop Diversification is more due to medium to deep black soils and irrigated tracts. While in the Western part, particularly Aptale revenue circle has very low Crop Diversification, with 2.20 percent area. This is because of medium coarse shallow and hilly upland, inadequate supply of water. In middle part particularly Junnar revenue circle have High Crop Diversification, it occupies 12.71 percent area. This is because of well irrigation, medium to deep soils and daily market.

Western part of the region is mainly known as tribal region. The Index of Crop Diversification is found very low in this region as compare to other part of the region, it resulted by the imbalance level of development. Pune and Mumbai market are near to Junnar which is resulted in the variation of many crops like Vegetables, Fruits and Flower crops.

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