

CROP DIVERSIFICATION REGIONS OF KOLHAPUR DISTRICT: 2010-11**Dr. J. M. Palkar**Asst. Prof. Dept. of Geography,
Arts and Commerce College, Madha, Solapur**Introduction:**

The Crop diversification technique is applied to compute crop diversification pattern of the region. Its meaning is to raise variety of crops on arable land. It reflects the impact of physico –socio variables. Moreover, it shows the contemporary competition among crops for an area, scope for rotation, the effect on double cropping, (Hussain, 1979). The greater number of crops led to greater competition, the higher is the magnitude of diversification. Many geographers and economists so far have applied the concept of diversification in variety of sense. This concept, initially, was applied in the field of manufacturing to identify the degree of diversification and concentration by Clean (1930) later on by Tree (1938), Florence (1942) and Rainwald (1949). Gibb Martin (1974) has used diversification concept in computing measurement of diversification of employment in industry. Among geographers, Bhatia (1965) adopted and introduced crops diversification technique in order to understand crop competition in the region followed by Jasbir Singh (1976). Ayer (1969) modified Bhatias method of crop diversification with accounting for that crop which occupy at least one per cent of the gross cropped area. (Dr. B. C.Vaidya, Agriculture land use in India).

Key Words: Crop diversification, Crop concentration, Crop rotation.**Methodology:****Crop diversification technique:**

In order to identify spatial pattern of crop diversification in present study, Bhatia's as well as Gibb's and Martin methods have been adopted in modified form. The crop having five or less than five percentage, have been excluded from computation. This modification formula expresses as

$$\text{Index of Crop Diversification} = \frac{\text{Percent of Net Sown Area}}{\text{Number of 'n' Crops}}$$

Where 'n' crops are those which individually occupy five or more than five percent of crop to net sown area in the village.

Crop Diversification Application And Results:

The obtained results have been displayed in Table and Map shows crops in number of villages and area in crop diversification in the Kolhapur district. Shows the area distribution pattern of crop diversification in the region Maximum crop diversification appears in eastern part and lowest at southern and northern parts in the region. It is seen from the above exhibit that three crop diversification –

Diversification region have been identified as:

- 1) Area of high crop diversification
- 2) Area of Medium diversification
- 3) Area of low diversification and

The three categories of crop diversification its class village and area as shown in Table, it is observed from this table that the smallest area appears in the low crop diversification class covering 17 percent area in the region.

Gibb's And Martin's Crop Diversification Index

Formula:

$$\text{Crop Diversification} = 1 - \frac{\sum x^2}{(\sum x)^2}$$

Where, X is the percentages of the total cropped area occupied by each crop or hectare under individual crop. If the total cultivated area in a region is devoted wholly to one crop (i.e., specialization) the index value will be zero (0) and if it is evenly distributed among all crops (i.e., maximum diversification) the index value approaches one (1). Thus according to this method crop diversification varies between 0.1 to 0.9.

This method is directly related to magnitude of diversification. Here higher the index higher the diversification and lower the index lower the magnitude of diversification.

Table-1: Crop Diversification by Gibb's and Martin Technique

Tahsil Name	Index Value
Gaganbavada	0.66
Shirol	0.73
Shahuwadi	0.77
Radhanagri	0.77
Bhudargad	0.77
Karveer	0.78
Panhala	0.79
Chandgad	0.81
Hatkanangale	0.82
Gadhinglaj	0.82
Ajra	0.85
Kagal	0.86

Source: compiled by Researcher

Table-2: Crop Diversification Index by Gibb's and Martin Technique

Diversification Categories	Range of Crop Diversification Index	No. of tahsils	Names of tahsil
Low	<0.73	02	GaganBavada, Shirol
Medium	0.74-0.79	05	Shahuwadi, Radhanaggri, Bhudargad, Karveer, Panhala.
High	>0.80	05	Chandgad, Hatkanangle, Gadhinglaj, Ajra, Kagal

Source: compiled by Researcher

AREAS WITH HIGH CROP DIVERSIFICATION (>0.80)

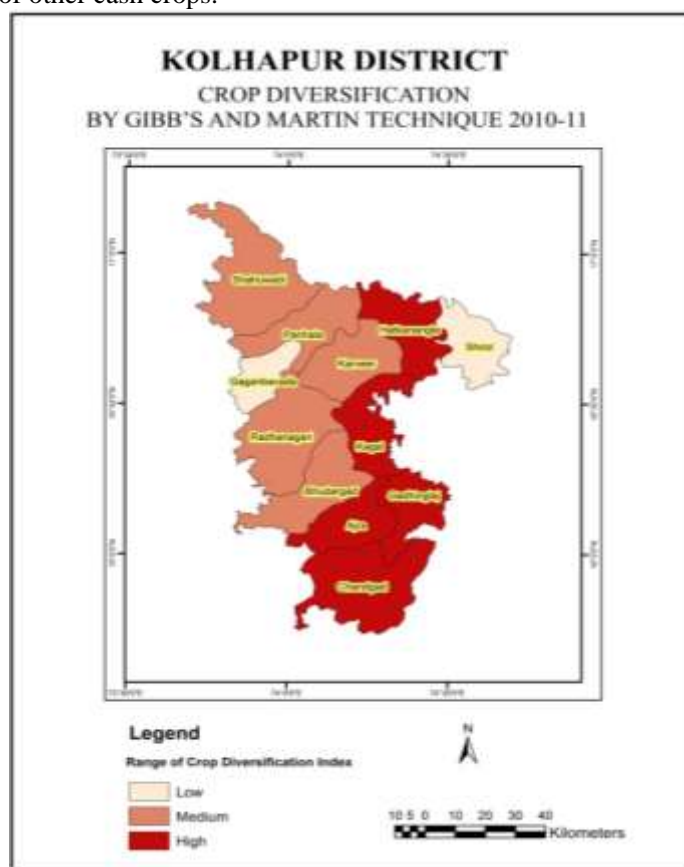
This category had covered five tahsils namely Chandgad, Hatkanangale, Gadhinglaj, Ajra, Kagal. Among these Chandgad, Ajra and Some part of Gadhinglaj lying in the hilly area of Sahyadri and faced the problems of hilly and dissected topography, soil erosion, low extent of irrigation, swift flowing seasonal torrents during rainy season etc. which resulted in high magnitude of crop diversification in these tahsils. While in Kagal and Hatkanangle the less developed irrigational facilities and fertile soil which entuse the farmers to grow more crops during *rabi* and *kharif* season. Due to the abovementioned physical obstacles and less developed infrastructure, farmers had grown number of crops from security point of view which resulted in high magnitude of crop diversification in above mentioned tahsils.

AREAS WITH MEDIUM MAGNITUDE OF CROP DIVERSIFICATION (0.74 TO 0.79 INDEX VALUE)

Shahuwadi, Radhanagri, Bhudargad, Karveer, Panhala formed this category. In these tahsils the farmers preferred to grow only those crops which respond well in the prevailing physical conditions of these areas viz. in Shahuwadi, Radhanagri, Bhudargad, Panhala, Rice, Fodder crops and Sugarcane were mainly cultivated during the study period owing to suitability of physical environment. While in case of Karveer tahsil, Sugarcane was observed as main crop followed with Rice in some part of the tahsil. Due to the suitability of physical environment, the magnitude of crop diversification was moderate in the above mentioned tahsils.

AREAS WITH LOW MAGNITUDE OF CROP DIVERSIFICATION (< 0.73 INDEX VALUE)

The category of low magnitude of crop diversification contained the tahsils namely Gaganbavada, Shirol. Here the index value of crop diversification varied between 0.66 to 0.73 index value in Gaganbavada and Shirol tahsils respectively. It was observed that in Gaganbavada Fodder crops and Sugarcane were the leading crops which covered about 76 per cent of the total cropped area while the other crops had very small proportion under the cultivation. On the other hand in Shirol tahsil Rice, Sugarcane and Fodder contains about 70 per cent of total cropped area of the tahsil. The main reasons for low crop diversification were the physical environment and less developed socio-economic environment. These areas were having high rainfall as compare to other parts of the study region. So these are categorized as floody regions of the district. Also in case of Gaganbavada less fertile soil, sandy and rocky surface in different parts of this region, low extent of irrigation, less developed agricultural infrastructure, far away from the major urban centers, less awakened farmers, were the main reasons for registering low crop diversification in this category. Thus the farmers prefer to take fodder crops instead of other cash crops.



Map-1

Conclusion:

The present study has identified 3 crops, 5 crops, 6 crops, 7 crops, 8 crops and 11 crops combinations in study area. Farmers cultivate numerous crops in the field rather than a single crop (but from the discussion it may be noted that the rice is the main primary crop throughout the district.)

There are three tahsils having three crops combination in Kolhapur district. These tahsils are Shirol, Gaganbavada and Radhanagri. In these tahsils crops like Sugarcane, Oil seeds and fodder crops are spread all over the region. Only Radhanagri tahsils is having dominance of Rice cultivation due to its particular physiography and climatic conditions.

The five crop combination is observed in three tahsils of Kolhapur District, i.e. Hatkanangle, Bhudargad and Chandgad. In two of these tahsils namely Bhudargad and Chandgad, Rice is the dominant crop, also Fruits and vegetables in Chandgad tahsil is very common. On the other hand Hatkanangle belongs to the plateau type topography and showing different crop combination than Bhudargad and Chandgad.

Six crops combination is found in Karveer and Gadhinglaj tahsils of Kolhapur district. Among those Karveer, having comparatively plane land than Gadhinglaj, which shows Sugarcane as dominant crop, whereas in Gadhinglaj, Groundnut is found as first ranking crop.

Kagal is the only tahsil comes under Seven Crop Combination as per 2010-2011. Kagal is basically dominated by Ground nut combined with Fodder crops, Rice, Sugarcane etc. Kagal is one of the nearest tahsils from the district and using advanced technologies. Thus the agriculture of Kagal tahsil is seen developed.

There is a single tahsil which has Eight Crop Combination named Ajra. Undulating ground, sandy loam soils, sufficient average annual rainfall exaggerate the paddy farming over the region.

Shahuwadi and Panhala, both the northern tahsils are having Eleven Crop Combination. In both the tahsils Rice dominates the other crops. As these two tahsils are having more or less same topography, they grow same crops with some exceptional differences.

Rice, sugarcane, jowar, Groundnuts and fodder are the crops which five crops hold first place in one or more tahsils as per 1981 data. Gaganbavada, Panhala, Radhanagri, Bhudargad and Ajra, Rice hold the first place in 1981. As per 2011 data, Rice got first rank in six tahsils of Kolhapur district i.e. Shahuwadi, Panhala, Radhanagri, Bhudargad, Ajra, and Chandgad. The hilly topography and favorable rainfall, soil, and artificial irrigation facilities led to the cultivation of rice in these tahsils. Because of the launching of new high yielding oil seeds as well as the improvement in the irrigation facilities in Shirol and Hatkanangle tahsils other Oil seeds replaced by the Jowar. Also the first rank of Rice had been changed by fodder crops in Gaganbavada tahsil and in Karveer tahsil there is no change in the crop ranking.

In the 1981, three numbers of crops having second rank in distribution. In 1981 fodder was dominating as second ranking crops in seven tahsils of the Kolhapur district. In the eastern part of the district Shirol and Hatkanangle tahsils having Groundnut as second ranking crop.

It is noted that during the period of 1981 to 2011, the groundnut had been replaced by sugarcane as second rank crop. In Kolhapur district the increasing irrigation facilities and high yielding varieties of sugarcane promoted the increase in sugarcane cultivation. Also Fodder crop had seen the dominating second ranking crop in Shahuwadi, Bhudargad, Ajra, Kagal, and Gadhinglaj tahsil.

Shahuwadi, Radhanagri, Bhudargad and Chandgad tahsils have recorded high level of rice concentration whereas Panhala, Ajra and Karveer tahsils have moderate level of rice concentration in the year of 2010-11, cause of rainfall pattern of the district.

Two tahsils from this district named Kagal and Gadhinglaj showed high level of groundnut concentration and Ajra, Chandgad and Hatkanangle tahsils recorded moderate level of groundnut concentration, because of the rainfall is moderately decreasing in the same region.

Hatkanangle and Shirol tahsils recorded high concentration of oil seeds, because irrigation facilities, improved varieties of oil seeds, fertilizers and modern equipments also these tahsils are having low rainfall comparatively other part of the district.

Karveer, Shirol, Gadhinglaj and Panhala registered high level of Sugarcane concentration, whereas Radhanagri, Hatkanangle and Chandgad tahsils recorded moderate level of Sugarcane concentration during 2010-11.

In Kolhapur district all the tahsils grow sugarcane but in western zone rice is observed more concentrated than other crops. Thus sugarcane is concentrated towards eastern part of Kolhapur district, cause of irrigation facilities, improved varieties of oil seeds, fertilizers and modern equipments.

All the tahsils of Kolhapur district grow fodder crops and Gaganbavada tahsil had recorded high fodder crop concentration, cause of its physiography.

Nachani is grown in six tahsils of Kolhapur district. Among them Only Chandgad tahsil showed high Nachani concentration, because this tahsil is having associated climate, physiography, soil with this crop.

Chandgad showed high level of concentration of Fruits and vegetables whereas Ajra tahsil recorded moderate level of fruits and vegetables concentration. The concentration of fruits and vegetables is seen only in four tahsils of Kolhapur district.

Jowar is grown only in three tahsils of Kolhapur district among which Hatkanangle showed high level of Jowar concentration. Because, basically Jowar is a dry region crop which is available here in this tahsil.

Chandgad, Hatkanangle, Gadhinglaj, Ajra and Kagal, these five tahsils were having with high crop diversification. Cause of less developed irrigational facilities and fertile soil which entuse the farmers to grow more crops during rabi and kharif season. Due to the abovementioned physical obstacles and less developed infrastructure, farmers had grown number of crops from security point of view which resulted in high magnitude of crop diversification in above mentioned tahsils.

Shahuwadi, Radhanagri, Bhudargad, Karveer, Panhala these are the areas with medium magnitude of crop diversification. Due to the suitability of physical environment, the magnitude of crop diversification was moderate in the above mentioned tahsils.

The category of low magnitude of crop diversification contained the tahsils namely Gaganbavada, Shirol. The main reasons for low crop diversification were the physical environment and less developed socio-economic environment. These areas were having high rainfall as compare to other parts of the study region.

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