GEOGRAPHICAL ANALYSIS OF CROP CONCENTRATION AND CROP DIVERSIFICATION OF DHULE DISTRICT (MAHARASHTRA)

Abstract-

The Present investigation aims in studying the geographical analysis of crop concentration and crop diversification in Dhule District. The present study is based on secondary data collected from different government organizations as well as government report. The data covers 2020-21. All the types of crops are considered for the present study. In this study the economics of crop diversification, land concentration was computed. tahsilwise study showed that area under kharif crop has found to be decreased in all the Tehsils of Dhule District. The area under Shindhkheda, Dhule & Shirpur have high production of cotton. The diversification from subsistence crop to more commercial crops to more commercial crops were taking place in all Tehsils. In Dhule Districts main commercial Crops are Onion, Pomegranate and cotton. Khandesh region in Maharashtra celled highest cotton growing region.

Dhule district is important agriculture district in Maharashtra. Cotton, Bajara, Maize, Gram, Sugarcane, Jawar, Onion, has major crop in Dhule district. The cropping pattern, crop concentration, crop diversification is play on role for agriculture planning and development. Present paper attempt to geographical analysis to crop concentration and crop diversification Dhule district in period of 2020-21.

(Keywords- Crop, Agriculture, Crop Concentration, Crop Diversification, Percentage of Cropped Area)

Introduction-

Number of research papers and research article were published relating to patterns of crop concentration and crop diversification. S.C. Nagpure, R.G. Deshmukh, Pawan Kumar Sharma and D. N. Ingole (2017) has studied on Pattern of crop concentration and crop diversification on vidhrbh region in Maharashtra. Ganguly Sandipan and Patra Palash (2015) has analysis on Crop concentration and crop diversification analysis of Maldah district, West Bengal. Nayak Dinesh Kumar (2018) has written research article on Changing Cropping Pattern, Agricultural Diversification and Productivity in Odisha. In this study he analysis on inter district diversity on crop concentration and crop diversification. Bidyut Kumar Ghosh (2011) has studied on crop diversification pattern in West Bengal. Malik and Singh (2002) has stated that Crop diversification is necessity for agriculturally based rural economy like Punjab, Haryana, utter Pradesh etc. since growing of staple food like cereals alone cannot support the process of sustainable agriculture development and growth. Joko Mariyono (2007) has studded on optimizing crop diversification to enhance the rural income generated from the agricultural sector. Agricultural product diversification is one way to increase rural income.

Study area-

Dhule district, has important district in Maharashtra. The Dhule district located between 20^0 38' to 21^0 39" North latitude and $73^050^{"}$ to 75^0 13" East longitude. It covers a geographical area of 7195 Sq. Km and population of 20,50,862 as per the 2011 census. The

density of population is 254 persons per sq. km. There are 04 tahsil were included in the Dhule district. Satpura ranges presented to the north of the study area. Because of the 'Satpura' ranges Dhule district is separated from Madhya Pradesh state, while 'Satmala' ranges separate the district from western Maharashtra the Dhule district is surrounded by Jalgaon district in the east, Madhya Pradesh state in north, Nashik district in the South, Nandurbar district and Gujarat State on the West. The climate of the district is generally dry expect during the monsoon season the average annual rainfall of the district as a whole is 544 mm.
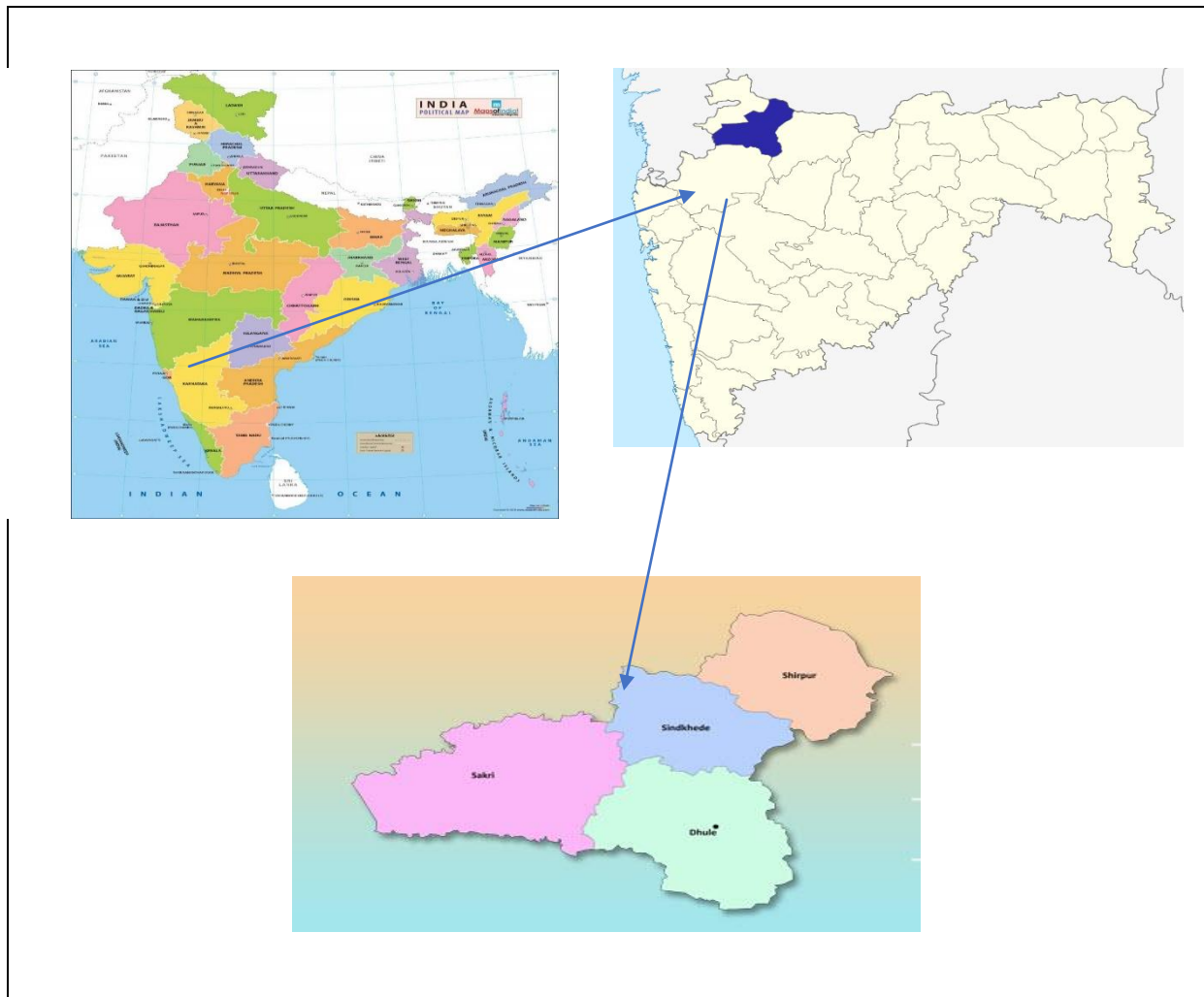
Objective-

1) To analysis the area under the various crop in study region

2) To analysis the crop concentration in study region.

3) To study crop diversification in study region.

Data source and Methodology-

This study is based on secondary data. The present study required statistical information is obtained from census handbook the record of the local bodies' statistical department Government of Maharashtra, meteorological department as well as socio-economic abstract

of Dhule district in 2020-21. The collected data was processed edited and analyzed by applying different statistical method and it's presented though tables maps.

For calculating crop concentration by use Bhatia method for location quotient may be expressed as under:

$$Crop\ concentration\ of\ crop\ a = \frac{\frac{Area\ of\ crop\ a\ in\ the\ component\ areal\ unit}{Area\ of\ all\ crop\ in\ the\ component\ areal\ unit}}{} \bigg/ \frac{Area\ of\ crop\ a\ in\ the\ entire\ region}{Area\ of\ all\ crop\ in\ the\ entire\ region}$$

The crop concentration is grouped under four heads:

1) Very High Concentration (Above 2%)

2) High Concentration (1% to 2%)

3) Moderate Concentration (0.75% to 1%)

4) Low Concentrations (Below 0.75%)

For calculating crop diversification by uses of Jasbir Singh's (1976) formula is used as given below:

$$Index\ of\ Crop\ diversification\ \ = \frac{Percentage\ of\ total\ cropped\ area\ in\ N\ crop}{Number\ of\ N\ Crop}$$

Where 'n' crops are those, which individually occupy 5% or more of the total cropped area in tahsil

Result and discussion –

Crop concentration-

Crop concentration means that area under different crops, livestock or agricultural enterprises when viewed together by superimposition reveal areas wherein their regional concentrations do not overlap.[3] Crop concentration means the variations in the density moderate level of any crop in a region at a given point of time.

a) **Wheat**:
   Table no 2 indicates that, Shirpur (1.20), Sakri (1.20) and Shindhkheda (1.00) tahsil have recorded high degree crop concentration under Wheat crop. while moderate concentration (0.75% to 1%) was found in Dhule tahsil has 0.65.

b) **Jowar:**
   Very High degree (above 2%) of Jowar concentration was found in Shirpur tahsil (2.15), while high degree (1 % to 2 %) of Jowar concentration was found in Dhule tahsil (1.02).modrate crop concentration was found in Shindhkheda tahsil (0.92), and low concentration (below 0.75%) are recorded in sakri tahsil (0.02).

Table no 1 – Area under the crop

Sr.no	Tahsil	Area under the crop								Total
		Wheat	Jawar	Bajara	Maize	Gram	sugarcane	Onion	Cotton	

1	Shirpur	14700	5126	6062	8595	8650	630	1000	65582	110345
2	Shindhkheda	13505	2384	10970	11400	9236	943	2000	70107	120545
3	Sakri	16212	54	24767	33515	10996	1165	20000	14854	121563
4	Dhule	9661	2922	13567	16440	4575	13	12000	73914	133092
	Total	54078	10486	55366	69950	33457	2751	35000	224457	485545

Source- socio-economic abstract Dhule district 2020-21

Table no 2 -Crop concentration of study region

Sr.no	Tahsil	Crop concentration							
		Wheat	Jawar	Bajara	Maize	Gram	sugarcane	Onion	Cotton
1	Shirpur	1.20	2.15	0.48	0.54	1.14	1.01	0.13	1.29
2	Shindhkheda	1.00	0.92	0.80	0.65	1.12	1.38	0.23	1.26
3	Sakri	1.20	0.02	1.79	1.91	1.31	1.69	2.28	0.26
4	Dhule	0.65	1.02	0.89	0.86	0.50	0.02	1.25	1.20

Source: Compiled by the Researcher
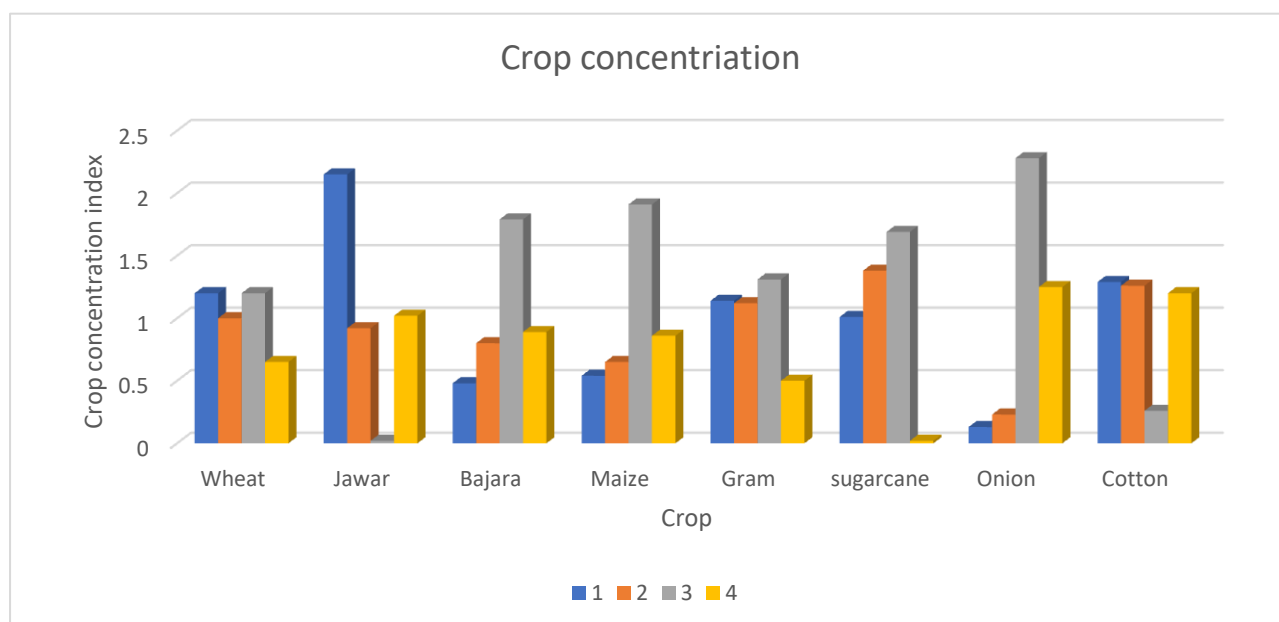
c) **Bajara:**

High degree (1% to 2%) of Bajara crop concentration was found in Sakri tahsil (1.79), otherwise moderate degree (0.75 % to 1 %) of Bajara crop concentration was found in Dhule (0.89) and Shindhkheda (0.80) tahsil. While low concentration (below 0.75%) are recorded in Shirpur tahsil (0.48).

d) **Maize:**

The crop concentration of maize crop Sakri tahsil has recorded High concentration is 1.91. while moderate degree of Maize crop concentration was found in Dhule tahsil (0.86). low crop concentration was found in Shindhkheda tahsil (0.65), and Shirpur tahsil (0.54).

e) **Gram:**

The crop concentration of gram crop Sakri (1.31), Shirpur (1.14) and Shindhkheda tahsil (1.12) has recorded High concentration. while low degree of crop concentration was found in Dhule tahsil (0.50).

f) Sugarcane:

High degree (1% to 2%) of sugarcane crop concentration was found in Sakri (1.69), Shindhkheda (1.38) and Shirpur tahsil (1.01), otherwise low degree (below 0.75 %) of sugarcane crop concentration was found in Dhule (0.02).

g) Onion:

The crop concentration of onion crop Sakri tahsil has recorded very High concentration is 2.28. while high degree of onion crop concentration was found in Dhule tahsil (1.25). low crop concentration was found in Shindhkheda tahsil (0.23), and Shirpur tahsil (0.13).

h) Cotton:

Cotton is important crop in study region the crop concentration of cotton crop Shirpur (1.29), Shindhkheda (1.29) and Sakri tahsil (1.20) has recorded High concentration. while low degree of cotton crop concentration was found in Sakri tahsil (0.26).

Crop diversification-

Crop diversification is a concept, which is opposite to crop concentration. crop diversification means a variety of crops involving intensity of composition amongst field crops for arable land. The diversification in structural forms of agriculture such as cropping pattern, structure or agricultural enterprises, explain why it is possible or necessary to raise a variety of these forms, which possess nearly or even proportion. Essentially, it is an indicator of multiplication of agricultural activities, which obviously involve intense competition among various activities for space.

Table no 3- Percentage area of cropped area

Sr.no	Tahsil	Percentage area of cropped area							
		Wheat	Jawar	Bajara	Maize	Gram	sugarcane	Onion	Cotton
1	Shirpur	13.32	4.64	5.49	7.79	7.83	0.57	0.91	59.52
2	Shindhkheda	11.20	1.97	9.10	9.45	7.66	0.78	1.65	58.15
3	Sakri	13.33	0.04	20.37	27.57	9.04	0.95	16.45	12.21
4	Dhule	7.25	2.19	10.19	12.35	3.43	0.009	9.01	55.53
	Total	11.13	2.15	11.40	14.40	6.89	0.56	7.20	46.22

Source: Compiled by the Researcher

Table no 4- Crop Diversification Index

Sr.no	Tahsil	No. of crop	% Area	Crop Diversification Index
1	Shirpur	05	93.95	18.79
2	Shindhkheda	05	95.56	19.11
3	Sakri	06	98.97	16.49
4	Dhule	05	94.33	18.86
	Total	06	97.24	19.44

Source: Compiled by the Researcher

Indices of crop diversification are calculated for the period i.e.,2020-21. Table No. 4 shows the indices of crop diversification, which are grouped into following four categories:

i) Areas of very high diversification (Below 14%)
ii) Areas of high diversification below (14% to 16%)
iii) Areas of moderate diversification (16% to 18%)
iv) Areas of low diversification (Above 18%)

The total crop diversification index of Dhule district is 19.44 its shows low diversification. Tahsil wise Areas of low crop diversification was found in Shindhkheda (19.11), Dhule (18.86) and Shirpur (18.79). while area of moderate crop diversification is observed in Sakri tahsil its 16.49.

Conclusion-

It is concluded from the above study that crop concentration of Shirpur tahsil has recorded very high concentration of Jawar crop while Wheat, Gram, Sugarcane and Cotton crop has recorded high crop concentration. In Shindhkheda tahsil has recorded high crop concentration in Wheat, Gram, Sugarcane and Onion crop. Another crop has recorded moderate and low crop concentration. Sakri tahsil has recorded very high crop concentration of Onion crop on the other hand Wheat, Bajara, Maize, and Sugarcane crop recorded high crop concentration and Jawar, Cotton crop has recorded low concentration.in Dhule tahsil has Jawar, Onion and Cotton crop are recorded high concentration. Other crop like Wheat, Bajara, Maize and gram has recorded moderate concentration. Thus Cotton, Gram, Wheat and Maize crop has recorded high or moderate crop concentration all tahsil of study region. Thus, eastern part of study region has highest concentration of cotton crop while western part has highest concentration of onion crop.

Crop diversification index of Dhule district is found low diversification. Shindhkheda, Dhule and Shirpur Tahsil has found low crop diversification. while in Sakri tahsil has found moderate crop diversification. Topography, climate, soil, market price and demand play important role on crop concentration and diversification in study region.

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