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## CROP DIVERSIFICATION LEVEL IN SIKAR DISTRICT, RAJASTHAN

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### ABSTRACT:-

The agricultural plays an important role of all backbone of economics systems. It is controlled by various natural & cultural factor. The most important approached for sustainable agriculture development is crop diversification. Crop diversification allowing the farmers to employ biological cycles to minimize inputs, Conserve the resource base, maximize yields and also reduce the risk due to ecological and environmental factors. The district Sikar has a arid and semi arid region which is the study region of this research paper. It is in north part of Rajasthan .

This research paper is an attempt to analyse the over all level of crop diversification from the year 2014-2015 to 2017-2018 and a comparative study of the same among the 6 tehsils ( Sikar, Fatehpur, Lacchmangarh, Dantaramgarh, shrimadhopur, neemkathana) in the year 2017-2018 of sikar district, Rajasthan using the Gibb's & martin's method of crop diversification.

Keywords: crop diversification, sustainable agriculture

### INTRODUCTION:-

Crop diversification means competition among various grown crops for space in a given region. Diversification is a shift from less profitable and sustainable crop or cropping system to more profitable and sustainable crop or cropping system. Due to this it gives a opportunity to increase production, standards of living, income and mitigate the possible risk factors for the small farmers as well as for agricultural labourers throughout the year. This study undergoes the study of crop diversification of sikar district which implies raising a variety of crops from the soil.

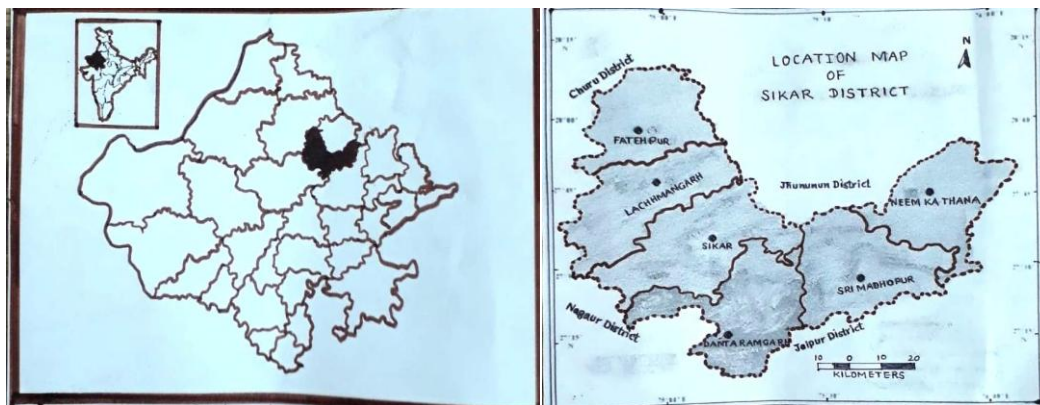
It provides on effective strategy for achieving food and nutrition security, income growth, employment generation, poverty alleviation, sustainable agriculture development and environmental improvement. It manages price risk, on the assumption that not all products will suffer low prices at the same time .

### STUDY REGION:-

The study area is the Sikar district of Rajasthan state. It is a district of Rajasthan having area of 77.42 square Kilometers. Its situated between 27.21 degree north to 28.12 degree north Latitude and 74.44 degree East to 75.25 degree East Longitude. The district is bounded on the North by Jhunjhunu district ,in the North west by Churu district,in south- west by Nagaur district & in the south-East by jaipur district. It also touches Mahendergarh district of Haryana on its North-East corner. The main aim for choosing Sikar district as the part of this study was its uniqueness an all the climatic aspects. It is a semi-arid climatic region with very hot summers , scanty rainy season and a bracing cold winters in Rajasthan. The district Sikar

has not many water bodies in it. The main source of irrigation in Sikar district are tubewell, well and rainfall. The normal rainfall, mostly received from the South-west monsoon is 459.8mm. major soil present is sierozem or arid soil, desertic soil, red desertic soil, saline soil, Lithosols. The district is divided into six tehsils, namely Sikar, Fatehpur, Lachhmangarh, Danta Ramgarh, Shri Madhopur & Neem ka Thana.

### Locational map of Sikar District



### OBJECTIVES:-

- 1.To undergo a comparative study between the six tehsils of sikar district in relation to the level of crop diversification in the year 2017-18.
- 2.To observe the level of crop diversification over the years ( from 2014-15 to 2017-18).
- 3.To find different types of crop diversification in the study area.
- 4.To find the benefits & barriers of crop diversification in the study area.

### Methodology:-

Data collection is one of the major part in any type of research. The study utilized both secondary and primary data to fulfill the objectives of present study. The data for the present study have been collected majority from the primary source through interviews with the help of pre-tested & structural schedules. The secondary data was collected from the district agriculture statistics, through books and internet. Gibb's & Martin's method is applied for present study.

### CROP DIVERSIFICATION:-

Crop diversification means competition among different cropped crops for the area or space in a given region. It also means increasing a variety of crops including intensity of



competition amongst field crops for agricultural land , the higher the level of competition, the more the value of crop diversification crop diversification is mainly a shift from low profitable cropping system to high profitable cropping system. It is a group of many components as different cropping system , increase the quality and quantity of the production. It Is used in the rainfed area to minimize the hazard related to crop failure due to less rain to drought. It is also used in the region having severe soil problem. In study region the crop diversification is actually a shift from conventionally cultivated low profitable crop to water saving crop, from alone to crop with crop-livestock many scholars as Gibb's & martin, Dr. Jasbir Singh. And Bhatia have developed methods for calculation of crop diversification. Among them Gibb's and martin's (1962) method is used in this study for calculating the index of crop diversification.

Gibb's and martin's method

$$1 - \frac{\sum x^2}{(\sum x)^2}$$

Here, x=the percentage of total cropped area occupied by and individual crop. According to index crop diversification varies .

**Cropped area under individual crop in hectare.**

<b>Tehsil</b>	<b>Pearl millet</b>	<b>Wheat</b>	<b>Barley</b>	<b>pulses</b>	<b>Gram</b>	<b>mustard</b>
Fatehpur	32389 (11.38)	1593 (1.84)	502 (2.35)	16302 (18.89)	1192 (1.78)	823 (1.33)
Lachhmangarh	47326 (16.62)	7415 (8.6)	1698 (7.98)	24565 (28.45)	4633 (6.92)	3993 (6.46)
Sikar	57883 (20.33)	21668 (25)	2356 (11.07)	28361 (32.85)	19668 (29.37)	12986 (19.55)
Dataramgarh	49633 (17.43)	23520 (24.14)	6737 (31.66)	12947 (15)	4510 (21.67)	11292 (18.27)
Shrimadhopur	58458 (20.53)	25143 (27.86)	8197 (358.52)	3616 (4.19)	16440 (24.55)	17465 (128.25)
Neemkathana	38999 (13.70)	2311 (9.6)	1791 (8.42)	541 (0.63)	10516 (15.70)	16164 (26.15)
Total	284688	86650	21281	86332	66959	61823

Table 1: Cropped area in hectare & in percentage

Sr. no.	Tehsil	Index of Crop Diversification year 2014-2015
1	Fatehpur	0.65
2	Lachhmangarh	0.77
3	Sikar	0.82
4	Data Ramgarh	0.82
5	Shri madhopur	0.80
6	Neem ka thana	0.77

Table . 2 index of crop diversification in 6 tehsils of sikar.

This table shows the tehsil wise index of diversification sikar district of rajasthan. Sikar & Dantaramgarh tehsi has an index vlue of 0.82, which shows that these both have a level of diversification towards a higher side. Tehsil Shrimadhapur has 0.80 and tehsil lachhmangarh, tehsil Neemkathana both have 0.77 index value which also is at a higher side but less than sikar & Dantaramgarh tehsils. The 6<sup>th</sup> tehsil fatehpur has an index value of 0.65 least among all and will be counted in the moderate level of diversification.

Graphical representation of above calculated level of crop diversification among the six tehsils of sikar district.

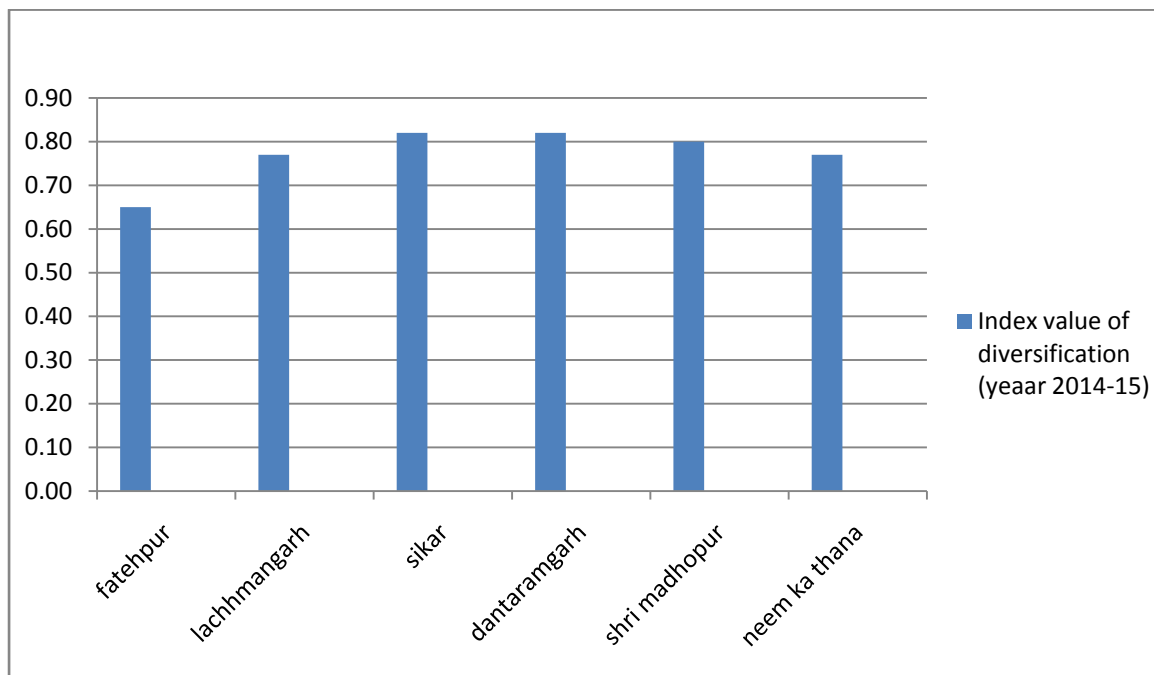


Figure 1: Index of crop diversification in the 6 tehsil of sikar district

Level of crop Diversification (yearly 2014-15 to 2017-18) .

A yearly study has also been done to show the change in crop diversification from 2014-15 to 2017-18 in study area which is as under-

Years	Gibb's & Martin
2014-15	0.665
2015-16	0.678
2016-17	0.670
2017-18	0.662

Table 3: yearly index of crop diversification.

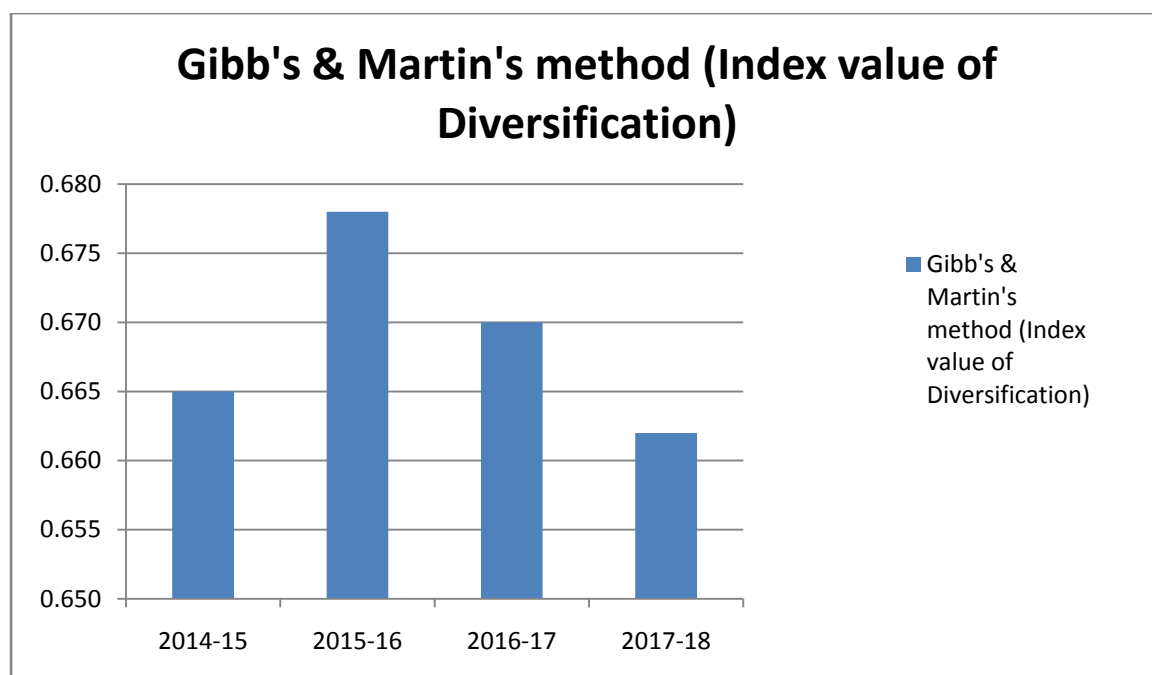


Figure 2 : Yearly comparison of index at crop diversification

The yearly comparison shows that there has been no much change in the level of diversification, it has been about 0.67 it show that the level of diversification of sikar districk is towards higher side according to the index value (0.1-0.9).

## Conclusion

1. The index of crop diversification calculated using Gibb's & Martin's formula among the different tehsils, five tehsils have the diversification towards higher side and one



tehsil name fatehpur has a moderate diversification ranging from 0.60-0.69 in the index from 0.1-0.9 .

2. Yearly comparison of crop diversification shows that since 2014-15 to 2017-18 the crop diversification is towards moderate to higher index value. It is at the same pace in all years showing the index value near 0.67 .
3. There are many types of crop diversification is present in study area named as improved structural diversity, crop rotation , micro water shed based diversification , field with fodder grasses diversity & genetic diversity in monoculture which increase potential benefits such as pest suppression, disease suppression, production stability, opportunity to livestock farming & climate change buffering.
4. The study are getting many benefits due to this crop diversity such as economic stability, help in mitigating natural calamities, balance food demand, increase income& also in natural resource conservation.
5. There are many barriers or challenges which the study area is facing in the path of crop diversification that are - rainfall dependent urable land, inadequate supply of seeds, technologies, infrastructures (road, power, transport communications), over use of resources, few research work, very weak agro-based industry, lack of trained human resource.

Although there are many barriers in the path in study region. It's very necessary to minimize their effects on crop diversification so we get opportunity to increase farmer's

Income & food security for the region. So the state government must promote crop diversification in the study area by purchasing crops produced other than grains (as wheat, bajra) at minimum support price.

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