



## **Dam Dependent Diversification: A Study Of Crop Cultivation In Ghod Dam Command Region (ms)**

**Prof. Hanumant Dattatray Shinde**

### **Abstract:**

*This essay attempts to study the crop diversification at the dam level in the talukas of Shrigonda, Karjat, and Shirur in the districts of Ahmadnager and Pune. The study area is in the Rain Shadow region and is situated in the western part of Maharashtra. Crop diversification is a strategy in agriculture where a variety of crops are grown on the same land over different seasons. This practice aims to enhance sustainability, mitigate risks, improve soil health, and provide farmers with more stable income sources. Planting a variety of crops reduces the risk associated with fluctuations in market prices, climate, and pests/diseases affecting a single crop. Different crops have varying nutrient requirements and contribute different organic matter to the soil, improving overall soil health and fertility. Diversification provides farmers with a continuous flow of income as different crops mature at different times, ensuring a more stable financial situation. Depending on the specific characteristics of the region, farmers can consider growing a mix of cereals, pulses, oilseeds, fruits, vegetables, and cash crops.*

**Key word:-** crop diversification, multiple crops, Crop Diversification Index, cropping sequences etc.

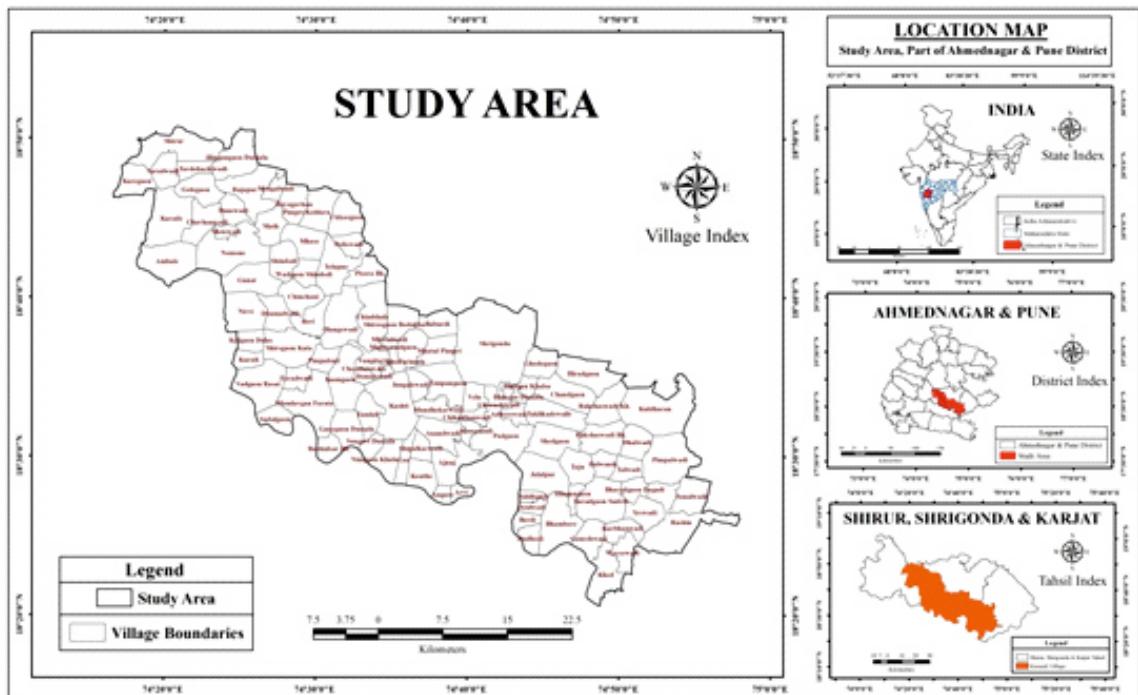
### **Introduction:**

Farmers in Western Maharashtra practice diversification by growing a range of crops such as cereals (rice, wheat), pulses (lentils, chickpeas), oilseeds (soybeans, groundnuts), fruits (grapes, pomegranates), vegetables, and cash crops (sugarcane). The presence of dams and irrigation networks allows for more controlled water availability, making it possible to cultivate a variety of crops that have different water requirements. This helps in reducing the risk of water scarcity affecting a single crop. Crop diversification helps in maintaining and enhancing soil health. Different crops have varying nutrient demands, and rotating crops can help prevent nutrient depletion and improve soil structure. : Growing a mix of crops can disrupt the lifecycle of pests and diseases, reducing the likelihood of large-scale outbreaks that might affect a single crop. Diversification can also be driven by market demand. If there's a growing demand for certain crops like fruits or vegetables, farmers might shift their cultivation practices accordingly. Crop diversification can provide a more stable income for farmers. If one crop fails due to adverse weather or market conditions, the income from other crops can offset the losses. A diverse crop mix contributes to biodiversity in the region and can have positive environmental impacts by reducing the need for excessive chemical inputs and promoting sustainable farming practices. Farmers should have access to information about modern farming practices, suitable crop varieties, pest management, and efficient irrigation techniques to make the most of diversification. : Many government programs and schemes are designed to promote crop diversification, improve irrigation infrastructure, and provide farmers with financial incentives to adopt sustainable agricultural practices. Diversification should be aligned with market demand to ensure that farmers have a ready market for their produce.

Crop Diversification Index (CDI) is a metric used to assess the diversity of crops being cultivated within a specific region or agricultural area. It provides a quantitative measure of the variety of crops grown by farmers. A higher CDI value indicates a higher level of crop diversification, which is generally associated with several benefits, including reduced risks, improved resilience, and sustainable agricultural practices. The formula to calculate the Crop Diversification Index varies, but it generally involves calculating the ratio of the number of different crops grown to the total number of crops grown. The Crop Diversification Index can be calculated for individual farms, communities,

regions, or even countries. the level of crop diversity and its implications for food security, sustainability, and resilience against various challenges like climate change, pests, and market fluctuations.

### The study area



### Objective

- 1) This research paper aims to study the crop diversification at the dam level in the talukas of Shrigonda, Karjat, and Shirur in the districts of Ahmadnager and Pune.
- 2) It aims to analyze the crop diversification trends within the region.
- 3) It intends to propose a solution by implementing improved agricultural practices in the regions under study.
- 4) It aims to study the correlation between sufficient irrigation and cultivation.

### Data Collection and Methodology:-

Researchers conduct field surveys to gather information directly from farmers. This can involve structured interviews, questionnaires, and discussions to understand the types of crops being cultivated, cropping sequences, and reasons behind crop choices.

The formula for the Crop Diversification Index is often presented as

Index crop Diversification =

Where production occupied by the  $n$  th crop and the summation across all different crops present in the system

The index calculates the degree of diversification based on the distribution of crops. It ranges between 0 and 1, where higher values indicate greater diversification. A value of 0 indicates that all the area or production is concentrated in a single crop, while a value of 1 indicates perfect diversification across all crops

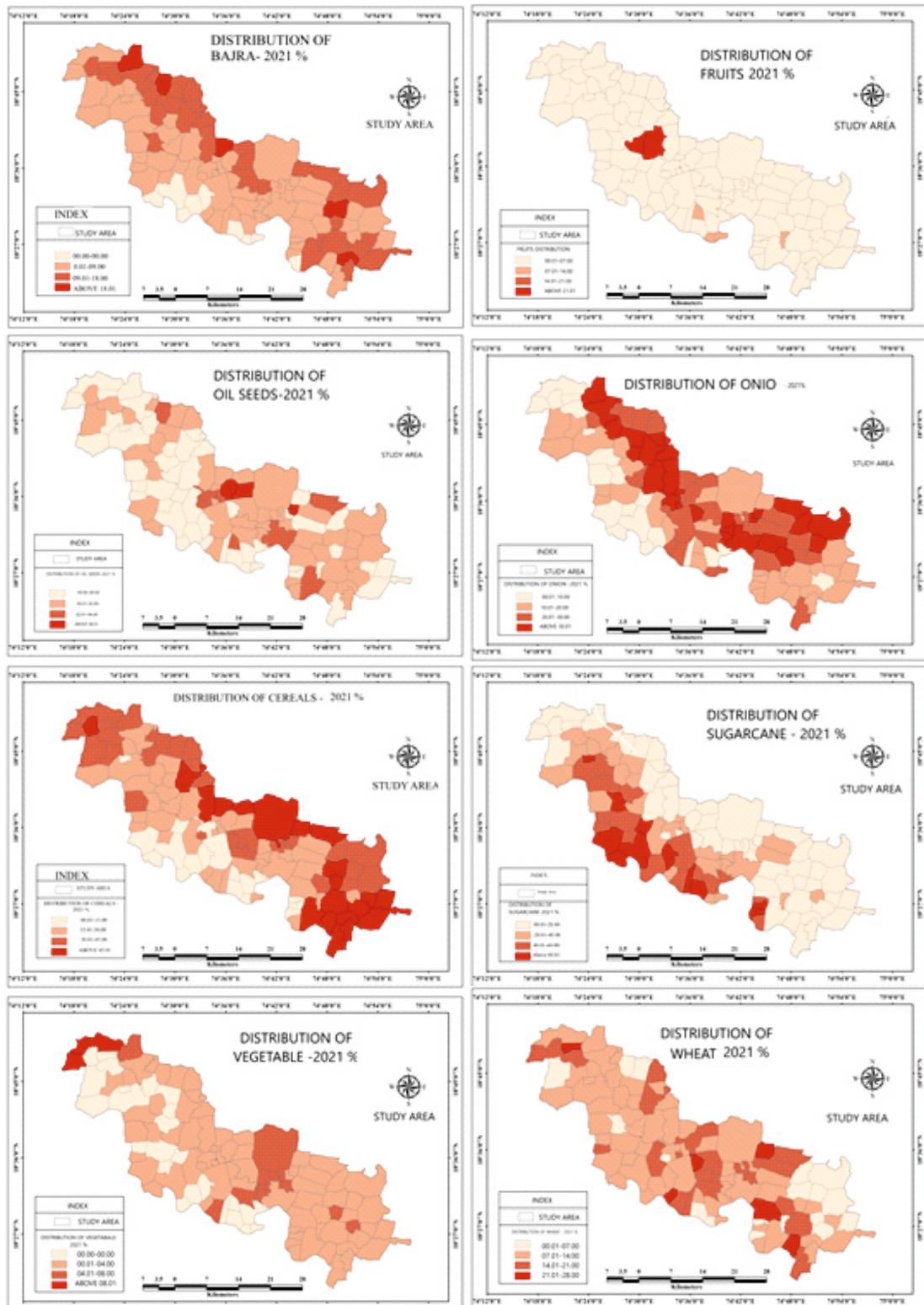
## Result Discussion

The number of different crop types grown within a defined area over a specific period. Explore factors that influence crop diversification, such as farm size, access to resources, market demand, and policies. Factors influencing crop Diversification Assess the economic viability of sugarcane and onion crops, including market prices, costs of production, and potential income. Conduct focuses discussions to understand farmers' perceptions, attitudes, and decision-making processes related to crop diversification. Study access to water, land, labour, and inputs, which can affect farmers' decisions on what to cultivate. Analyse consumer preferences and market demand for various crops, as these factors can drive crop choices

A total of 11 types of crops such as onion, sugarcane, millet, wheat, sorghum, maize, groundnut, tur, groundnut, sunflower, pomegranate, grapes, lemon bitter, garlic grass, and vegetables are grown in the study area. In the year 2000-01, eight crop combinations are observed in the study area. There are ten crop combinations in Srivonda and Karjat and six crop combinations in Shirur and sugarcane, millet, rabi jowar, onion, maize, cotton, wheat, moong are the major crops. And taluka wise in Srivonda taluka millet, sugarcane and onion are the three major crops. Sorghum, bajri are major crops in Karjat taluka and sugarcane, bajri and millet are important crops in Shirur taluka.

In Srivonda and Karjat talukas, onion crop was more than sugarcane crop. Also, in both these talukas, sorghum area is more than other food crops. In Srivonda, villages far from the Ghod Dawa canal have more sorghum area and less sugarcane. Shirur taluka has more sugarcane crop area due to Bhima and Ghod river and Ghod right canal passes through this taluka. Therefore, the amount of irrigation is high. As a result, the amount of cash crops is high.

	shrigonda	pedgav	kash ti	chimbhla	Belwandi	Devdhaithan	Bhambhora	Rashin	Shirur	Wadgav Rasai	Nimone
Sugarcane	7.62	29.39	28.93	10.52	14.20	18.88	24.53	4.74	17.25	54.01	41.28
wheat	15.81	11.91	16.34	12.58	10.88	9.64	8.10	13.69	16.75	11.03	10.66
Bajra	9.01	2.06	4.20	12.98	14.74	14.04	8.23	10.46	12.37	1.78	5.71
jawar	11.50	4.69	0.54	8.00	2.74	2.55	11.59	13.64	12.15	2.62	10.28
mug	0.84	0.36	1.62	0.81	5.09	2.50	1.30	2.07	10.35	1.13	2.59
Fruit	3.27	4.96	2.12	7.55	0.33	2.48	1.18	2.64	1.49	2.03	2.13
maize	1.95	0.06	0.20	2.44	5.10	2.47	1.79	7.85	0.79	0.40	0.12
Tur	4.06	0.95	0.98	0.75	0.80	0.29	1.28	1.17	0.03	0.00	0.00
onion	9.76	5.61	5.90	3.89	4.96	1.39	3.51	2.13	0.00	1.55	0.45
vegetables	0.62	0.45	0.43	0.05	0.44	0.19	0.75	1.31	0.00	0.43	0.25
Cotton	3.43	9.09	4.24	1.47	0.47	0.55	2.63	0.00	0.00	2.00	0.00



### **Conclusion**

Based on research findings, suggest policy interventions that could promote sustainable crop diversification. In the context of irrigated land in western Maharashtra, including areas like Shrigonda, Karjat, and Shirur Talukas, crop diversification can play a crucial role in maximizing the benefits of irrigation and improving overall agricultural productivity. The availability of irrigation facilities has allowed farmers to cultivate a wide range of crops beyond those that are rain-dependent. Traditional cropping patterns in these regions might have been dominated by a few water-intensive crops. However, with the availability of irrigation, there has been a shift towards growing multiple crops throughout the year. Some popular crops in the region might include wheat, jowar, bajra, sugarcane, grapes, pomegranates, onions, tomatoes, and more. Alternating crops in a sequence, known as crop rotation, can further enhance soil fertility and reduce pest and disease pressures.

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**\*Prof. Hanumant Dattatray Shinde**  
Geography (HOD)  
Shri Padmamani Jain college,  
Pabal Tal:-Shirur Dist:-Pune