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IMPACT OF BACKWATER OF UJANI DAM ON CROP PATTERN IN INDAPUR TEHSIL IN PUNE, MAHARASHTRA A GEOGRAPHICAL ANALYSIS

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ABSTRACT :

The main purpose of this research paper is to analyze the impact of backwater of Ujani dam on cropping pattern in Indapur tehsil in Pune district of Maharashtra state, since last five years (2018-19 to 2022-23). The research is based on secondary data which gathered from Agricultural department of Indapur tehsil and the data has analyzed and interpreted by using tables and graphs. The impact of lift irrigation on crop pattern has been observed in Ujani backwater region in Indapur. The findings of this current study has shows that the revenue circles around the backwater area having dominance of Sugarcane and Maize crop and area under revenue circles which are not under influence of Ujani backwater region having dominance of maize and Other food grains crop. And concentration of sugarcane factories around Ujani backwater region are also indicates the impact of backwater on crop pattern around the available water resource.

KEYWORDS : *Cropping Pattern, Backwater Region, Lift Irrigation, crop seasons.*

1. INTRODUCTION

The foundation of the Indian economy is agriculture because it's provides employment for the large portion of the working population, and generates a sizable portion of the nation's foreign exchange. Vital for feeding the world's growing population and providing raw materials for agriculture-based industries. The land use has a specific significance in planning, assessing the land, and determining cropping patterns. As a result, scientific land use has grown in importance.

The agriculture sector is constantly susceptible to problems brought on by shifting climate patterns and the degradation of arable land. The current Study area has the primary concerns are unpredictable weather patterns, exorbitant input costs, unpredictable markets, and unpredictable precipitation. Comparing last five years crop pattern and crop distribution in the Indapur tehsil, it is anticipated that the area planted in sugarcane and maize are very high in percentage around the backwater region, while the area planted in cereals, vegetable crops and some food grains are having dominance in the revenue circles which are not having the benefits of backwater irrigation in the study region.

2. OBJECTIVE:

The main objectives of the present research paper are as fallows

1. To study the impact of Ujani dam backwater on cropping patterns in Indapur tehsil in Pune.
2. To identify the changes in crop distribution in selected revenue circles in study area.

3. STUDY AREA:

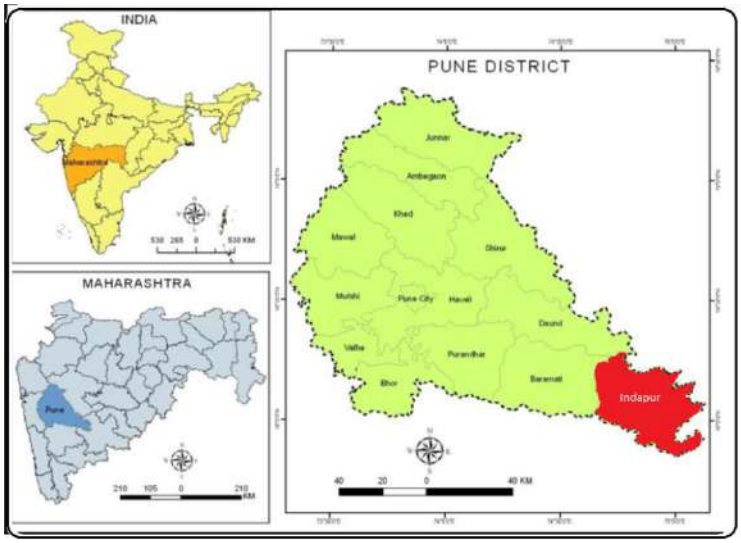
The Indapur tehsil is located in the eastern part of Pune district. It is surrounded by Ahmadnagr, and Solapur district and the area lies in- between two rivers Bhima and Nira. Bhima is flowing from west to east in the northern side of the tehsil. Nira River flows from west to east along the southern boundaries of the study region.

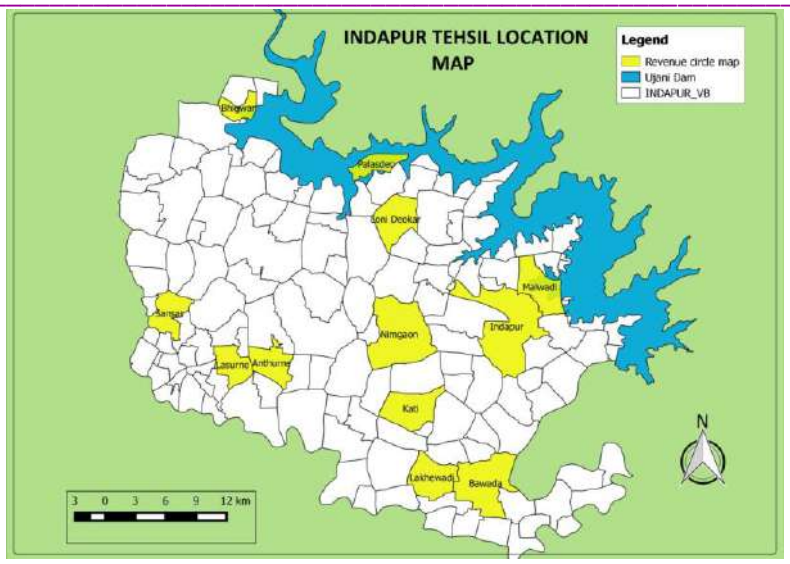
The current study area lies in backwater area of Ujani dam, it is also known as Bhima Dam or Bhima irrigation project, on the Bhima River, a tributary of the Krishna river, Ujani dam is located near Ujani village of Madha Tehsil in Solapur district of the state of Maharashtra in India. Ujani Dam lies at Latitude - 18°04'23"N, Longitude75°07'15"E with an altitude (above mean sea level) of 544 m and can be approached by National Highway number 65 (NH 65).

Indapur tehsil has total geographical area of 1.48 lakh hectares (1478 Sq.km). It is 9.38% of the total area of the Pune district. The tehsil has 143 villages and it's divided into 12 revenue circles.

4. DATABASE AND METHODOLOGY:

Secondary source of data has been used for present research work. This Secondary data is taken from Department of Agriculture in Indapur Tehsil from last Five years (2018-19 to 2022-23), Current study region having total 12 revenue circles out of these six revenue circles has randomly selected for the current study. Revenue circle has been taken as a unit for the analysis of the changes in cropping pattern in the study region. Data is processed and represented with the help of Tables, graphs, Choropleth map by using different GIS and computer tools.





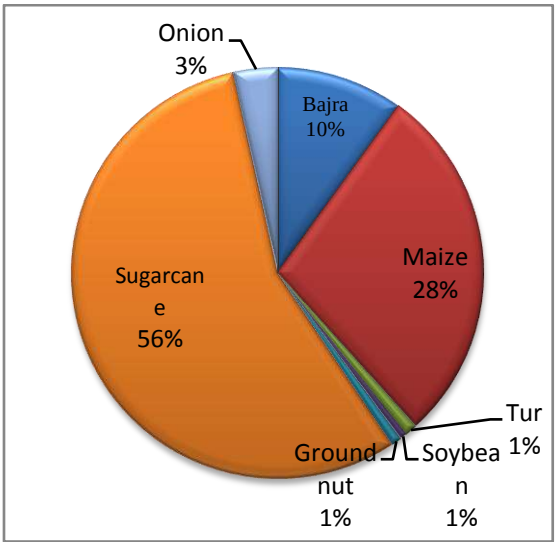
Map no1. Location map of Study Area

5. RESULT AND DISCUSSION:

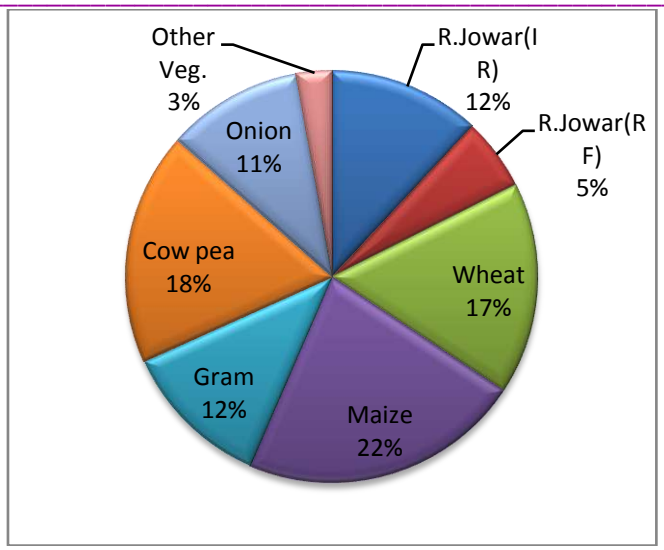
TABLE NO 1. PALASDEO REVENUE CIRCLE CROP PATTERN IN 2018-19-2022-23

KHARIF CROP	PERCENTAGE	RABBI CROP	PERCENTAGE
Bajra	9.92	R.Jowar(IR)	11.91
Maize	28.17	R.Jowar(RF)	5.63
Tur	1.03	Wheat	16.69
Soybean	0.50	Maize	22.13
Groundnut	0.81	Gram	11.71
Sugarcane	55.56	Cow pea	18.24
Onion	3.44	Onion	10.70
		Other Veg.	2.73

Source: Agriculture Department of Indapur tehsil



Graph no 1-A Kharif Crop



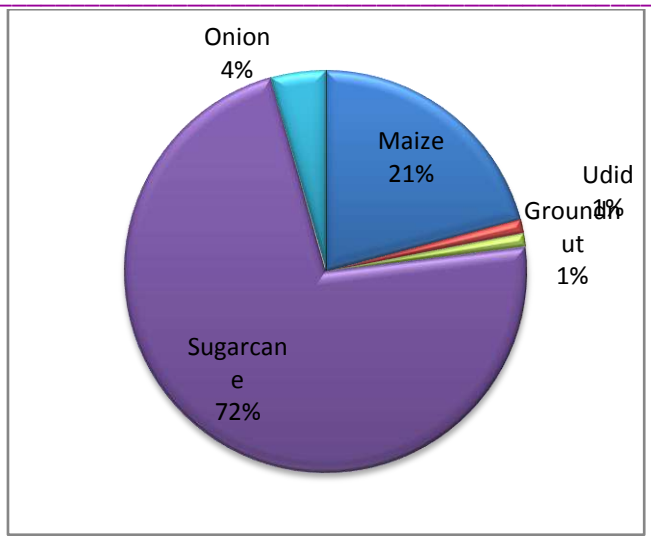
Graph no 1-B Rabbi Crop

Table no 1 shows that Sugarcane and Maize are two major crops in Palasdeo revenue circle having area under 56 % and 28 % respectively in kharif season and in the same period other crops like Bajra (10%), Onion (3%) Tur (1.03%) and remaining crops are having less than one percent area each and in Rabbi Season area under Maize (22%), Cow pea (18%), Wheat (17), Jowar IR+RF (17%), Gram (12%), Onion (10%) and other vegetables around (03%). The crops distribution determines that as Palasdeo revenue circle is located near Ujani Backwater region and it's having the influence of lift irrigation facility of Ujani Dam

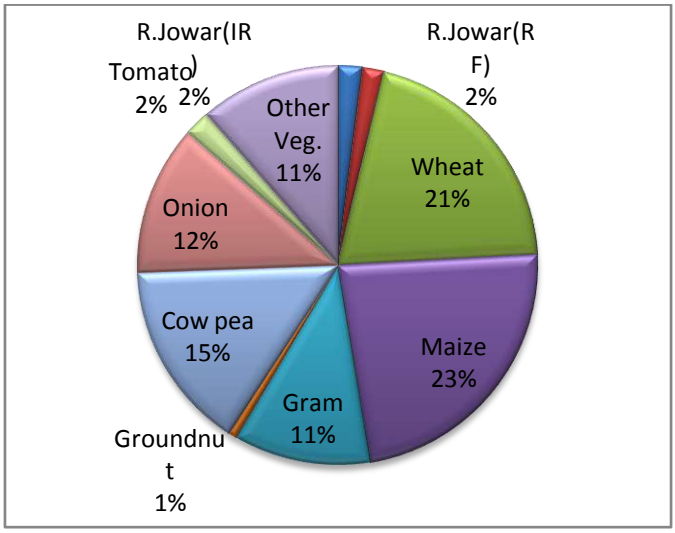
TABLE NO. 2 MALWADI REVENUE CIRCLE CROP PATTERN IN 2018-19-2022-23

KHARIF CROP	PERCENTAGE	RABBI CROP	PERCENTAGE
Maize	20.57	R.Jowar(IR)	1.96
Udid	1.09	R.Jowar(RF)	1.76
Groundnut	1.04	Wheat	20.41
Sugarcane	71.48	Maize	23.24
Onion	4.29	Gram	11.04
		Groundnut	0.74
		Cow pea	15.22
		Onion	12.13
		Tomato	2.07
		Other Veg.	11.38

Source: Agriculture Department of Indapur tehsil



Graph no 2-A Kharif Crop



Graph no 2-B Rabbi Crop

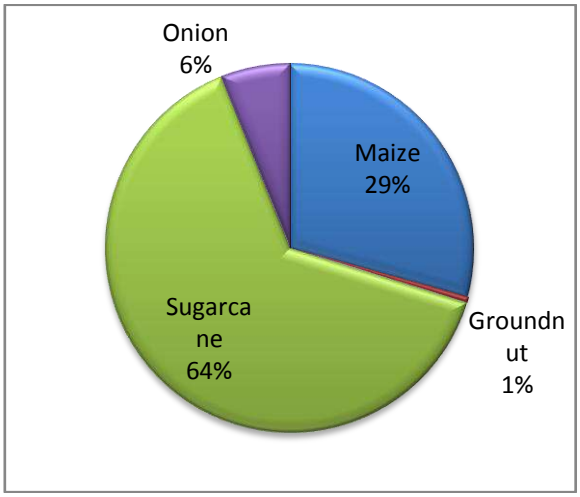
Table no 2 shows that Sugarcane and Maize are two major crops in Malwadi revenue circle having area under 72 % and 21 % respectively in kharif season and in the same period other crops like Onion (4%) Udid (1.09%), Groundut (1.04%) and in Rabbi Season area under Maize (23%), Cow pea (15%), Wheat (21), Jowar IR+RF (3.72%), Gram (11%), Onion (12%), Tomato (12%) and other vegetables around (11%). The crops distribution determines that as Malwadi revenue circle is closely located to Ujani Backwater area and its shows the major impact of it.

TABLE NO. 3 LONI DEOKAR REVENUE CIRCLE CROP PATTERN IN 2018-19-2022-23

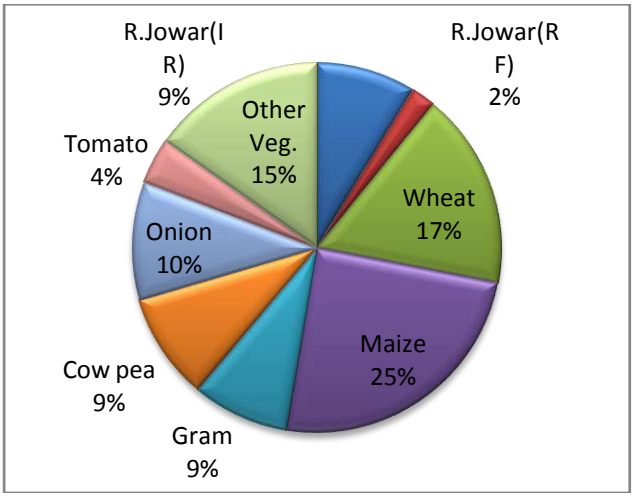
KHARIF CROP	PERCENTAGE	RABBI CROP	PERCENTAGE
Maize	28.89	R.Jowar(IR)	8.67
Groundnut	0.50	R.Jowar(RF)	2.15
Sugarcane	63.34	Wheat	17.13
Onion	5.94	Maize	24.50
		Gram	8.43

		Cow pea	9.33
		Onion	10.24
		Tomato	4.01
		Other Veg.	15.14

Source: Agriculture Department of Indapur tehsil



Graph no 3-A Kharif Crop



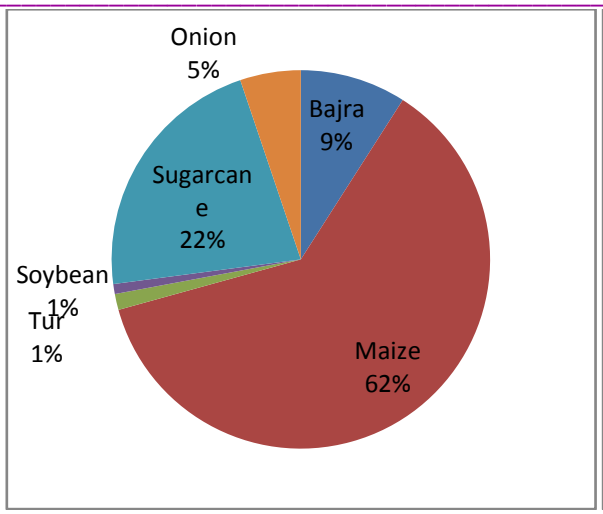
Graph no 3 -B Rabbi Crop

Table no 3 shows that Sugarcane and Maize are two major crops in Loni Deokar revenue circle having area under 64 % and 29 % respectively in kharif season and in the same period other crops like Onion (6%) Groundut (1%) and in Rabbi Season area under Maize (25%), Cow pea (9%), Wheat (17), Jowar IR+RF (11%), Gram (9%), Onion (4%), Tomato (4%) and other vegetables around (15%). The crops distribution determines that as Loni Deokar circle is located near to Ujani Backwater region and its shows the major impact of backwater of Dam.

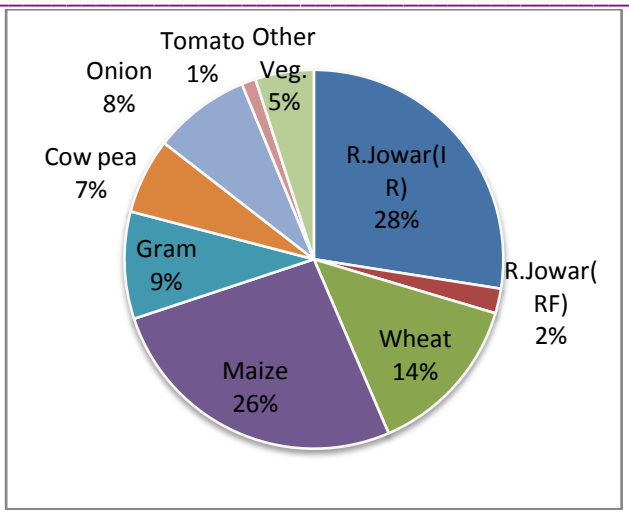
TABLE NO. 4 LAKHEWADI REVENUE CIRCLE CROP PATTERN IN 2018-19-2022-23

KHARIF CROP	PERCENTAGE	RABBI CROP	PERCENTAGE
Bajra	8.95	R.Jowar(IR)	27.44
Maize	60.90	R.Jowar(RF)	2.11
Tur	1.35	Wheat	13.91
Soybean	0.84	Maize	26.32
Sugarcane	21.64	Gram	9.13
Onion	5.12	Cow pea	6.43
		Onion	8.27
		Tomato	1.20
		Other Veg.	4.99

Source: Agriculture Department of Indapur tehsil



Graph no 4-A Kharif Crop



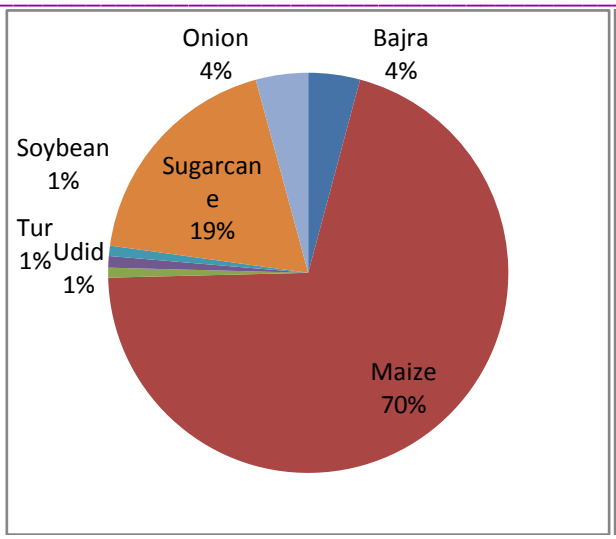
Graph no 4-B Rabbi Crop

Table no 4 show that Sugarcane and Maize are two major crops in Lakhewadi revenue circle having area under 22 % and 62% respectively in kharif season and in the same period other crops like Onion (5%), Tur (1%) Bajra (9%) Soybean (1%) and in Rabbi Season area under Maize (26%), Cow pea (7%), Wheat (14%), Jowar IR+RF (29%), Gram (9%), Onion (8%), Tomato (1%) and other vegetables around (5%). The crops distribution determines that as Lakhewadi revenue circle is located away from Ujani Backwater region and its shows the less impact of Ujani Dam backwater on crop pattern.

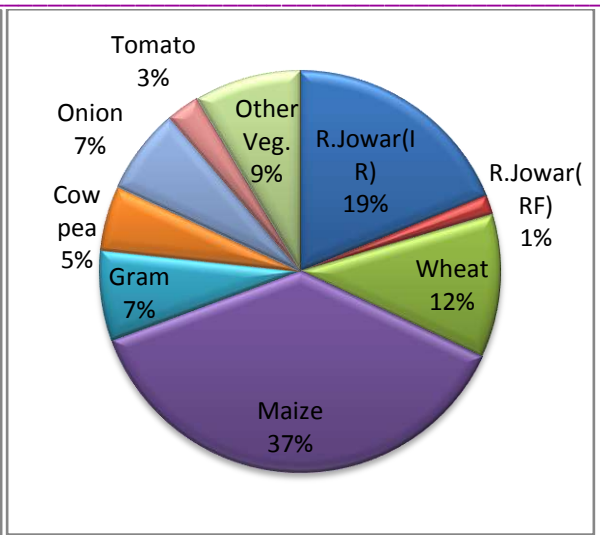
TABLE NO. 5 KATI REVENUE CIRCLE CROP PATTERN IN 2018-19-2022-23

KHARIF CROP	PERCENTAGE	RABBI CROP	PERCENTAGE
Bajra	4.14	R.Jowar(IR)	18.82
Maize	69.75	R.Jowar(RF)	1.56
Udid	0.79	Wheat	11.57
Tur	0.92	Maize	37.34
Soybean	0.82	Gram	7.26
Sugarcane	18.42	Cow pea	5.18
Onion	4.18	Onion	6.88
		Tomato	2.66
		Other Veg.	8.56

Source: Agriculture Department of Indapur tehsil



Graph no 5-A Kharif Crop



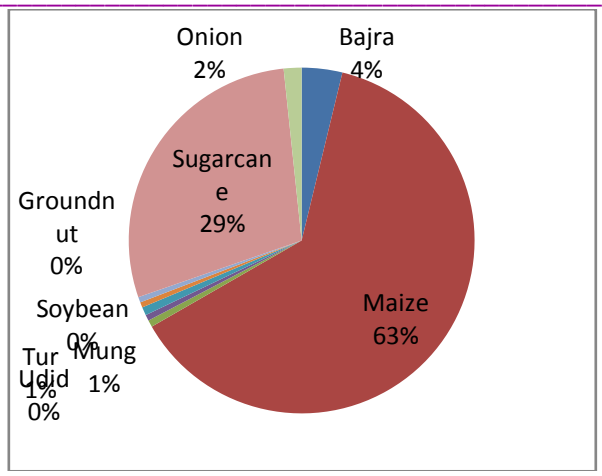
Graph no 5-B Rabbi Crop

Table no 5 shows that Sugarcane and Maize are two major crops in Kati revenue circle having area under 18 % and 70 % respectively in kharif season and in the same period other crops like Onion (4%), Tur (1%) Bajra (4%) Soybean (1%) Udid (2%) and in Rabbi Season area under Maize (37%), Cow pea (5%), Wheat (12%), Jowar IR+RF (20%), Gram (7%), Onion (7%), Tomato (3%) and other vegetables around (9%). The crops distribution determines that as kati revenue circle is located away from Ujani Backwater region and its shows the less impact of Ujani Dam backwater on cropping pattern.

TABLE NO. 6 NIMGAON CIRCLE CROP PATTERN IN 2018-19-2022-23

KHARIF CROP	PERCENTAGE	RABBI CROP	PERCENTAGE
Bajra	3.79	R.Jowar(IR)	8.76
Maize	62.83	R.Jowar(RF)	5.35
Mung	0.64	Wheat	14.67
Udid	0.56	Maize	38.87
Tur	0.78	Gram	5.26
Soybean	0.50	Cow pea	8.76
Groundnut	0.51	Onion	4.13
Sugarcane	28.62	Tomato	2.57
Onion	1.66	Other Veg.	11.23

Source: Agriculture Department of Indapur tehsil



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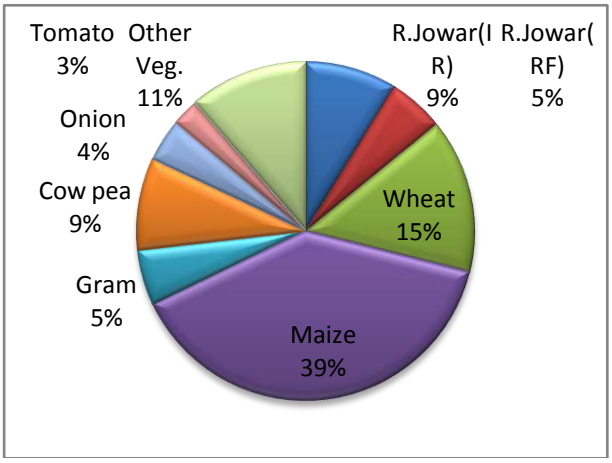

Graph no 6-B Rabbi Crop

Table no 6 shows that Sugarcane and Maize are two major crops in Nimgaon revenue circle having area under 29 % and 63 % respectively in kharif season and in the same period other crops like Onion (2%), Tur (1%) Bajra (4%) Soybean (0.50%) Udid (0.56%) and in Rabbi Season area under Maize (39%), Cow pea (9%), Wheat (15%), Jowar IR+RF (14%), Gram (5%), Onion (4%), Tomato (3%) and other vegetables around (11%). The crops distribution determines that as Nimgaon revenue circle is located away from Ujani Backwater region and its shows the less impact of Ujani Dam backwater on crop distribution.

CONCLUSION:

The recent research findings shed light on the significant concentration of sugarcane cultivation within three specific circles in the study area: Malwadi, Palasdeo, and Loni Deokar Revenue circles. These regions exhibit remarkably high percentages of sugarcane cultivation, with rates of 73%, 56%, and 64% respectively. This concentration is primarily attributed to their close proximity to the backwater of the Ujani dam, facilitating easy access to water for irrigation purposes, thereby favoring sugarcane farming practices among local farmers.

Conversely, the research indicates that during the same period, revenue circles situated outside the direct influence of the Ujani dam's backwater experience a different agricultural landscape. In particular, areas such as Nimgaon, Kati, and Lakhewadi are identified as less impacted by the dam's backwater, resulting in a varied crop pattern. In these regions, the cultivation spectrum diversifies significantly, encompassing crops such as maize, wheat, jowar, bajra, as well as various vegetables and onions.

The disparity in crop patterns between the two sets of revenue circles underscores the pivotal role of water availability, particularly from the Ujani dam, in shaping agricultural practices. Regions benefiting from close proximity to the dam's backwater prioritize sugarcane cultivation due to the accessibility of irrigation water, while areas less affected by this water source exhibit a more diverse range of crops. This stark contrast in crop choices reflects the intricate interplay between geographical factors, water resources, and agricultural decision-making processes within the study area.

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