P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating: 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 11; November 2024; Page No. 126-133

Received: 02-10-2024
Accepted: 03-11-2024

Indexed Journal
Peer Reviewed Journal

A research examination of agronomic techniques

[1]Gurshaminder Singh, [2]Vishnu and [3]Pallvi Kapil

[1, 2, 3] University Insitute of Agricultural Sciences, Chandigarh University, Chandigarh, India

DOI: https://doi.org/10.33545/26180723.2024.v7.i11b.1299

Corresponding Author: Gurshaminder Singh

Abstract
A research examined the agronomic techniques of 120 farmers in Five Indian villages, Dhianpura, Kakrali, Dhangrali, Dhanouri and Khairpur to optimize agricultural production. Agriculture is critical for maintaining livelihoods, since it supports 58% of the population. Crops planted were wheat, rice, mustard, sugarcane, maize, berseem, Maize. Farmers employed a variety of techniques, including seed application, fertilizer dose, seed treatment methods, irrigation frequency, organic manure, pest and disease control chemicals, and crop yield range. The study discovered that farmers combine contemporary agricultural inputs with traditional wisdom, responding to environmental circumstances and market needs in order to improve sustainability and profitability. Strategic agronomic treatments are critical for increasing yields and promoting economic stability in farming communities.

Keywords: Cultural practices, sustainable agriculture, agronomical practices, crops grown

Introduction

Agriculture is crucial to India's economy, providing as its backbone. Agriculture provides a direct source of income for around 65% of the Indian population. Thus, agricultural education is an important instrument for increasing production while also maintaining sustainability, ecological balance, technological viability, job stability, and equitable resource allocation. Punjab's contribution to making India self-sufficient in food production is highly recognized. In crop production, every farmer aims to maximize yield per unit of land. High yields rely greatly on effective crop management techniques, often known as cultural practices [1, 2]. Cultural practices include all operations carried out on the farm, from the start of the growing season until its conclusion [3].

Good Agricultural Practices (GAPs) are defined as "those Ensure the environmental, economic, and social sustainability of on-farm processes, resulting in safe, high-quality agricultural and non-agricultural products (FAO CAOG 2003 GAP Paper). Farmers' agronomic approaches reflect their expertise and practical experience in farming.

Objectives

- To investigate the farming practices used by the surveyed farmers.
- To determine the respondents' comprehension of the recommended amounts of pesticides, fertilizers, and seeds.

Methodology

The research was conducted in three villages: Dhianpura, Kakrali, Dhangrali, Dhanouri and Khairpur. To gather information, an extensive survey was conducted. This entailed visiting houses to collect data and addressing their concerns through conversational inquiry. A standardized questionnaire was created to collect data, and it served as the framework for the interviews. The study entailed analyzing each field's inputs and comparing them to scientific concepts and conventional procedures. Every item in the questionnaire was answered as completely as feasible on a daily basis. A total of 120 people were questioned and data was collected. A total of 120 people were surveyed, including 30 in Dhianpura village, 35 in Kakrali, 25 in Dhangrali, 20 in Khairpur and 10 in Dhanouri. Throughout the study, land use and cropping patterns were predominantly centered on two crops: wheat and rice. Other crops, such as sugarcane, vegetables, and fodder, took up substantially less space.

Results and Discussions

A research examined the agronomic techniques of 120 farmers in three Indian villages, Dhianpura, Kakrali, Dhangrali, Dhanouri and Khairpur, to optimize agricultural production. Agriculture is critical for maintaining livelihoods, since it supports 58% of the population. Crops planted were wheat, Rice, Maize, mustard, sugarcane, maize, berseem, Farmers' information included seed application rates, fertilizer dosages, seed treatment methods, irrigation frequency, organic manure application, pest and disease control chemicals, and crop yield range. The data demonstrated a wide range of agronomic approaches for achieving optimal crop growth and output. Farmers attempted to mix modern agricultural inputs with traditional knowledge while responding to environmental circumstances and market demands in order to improve sustainability and profitability. The study emphasizes the necessity of deliberate agronomic interventions in generating improved yields, which contribute to economic stability and the overall agriculture industry in India.

Table 1: Major crops cultivated.

S. No	Crop	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
1	Wheat	100%	100%	100%	100%	100%	100%
2	Paddy	67%	71%	72%	25%	60%	59%
3	Sugarcane	17%	29%	28%	15%	30%	23.8%
4	Maize	16%	34%	40%	10%	30%	26%
5	Barseem	0%	0%	20%	0%	0%	5%
6	Mustured	33%	15%	0%	10%	0%	11.6%

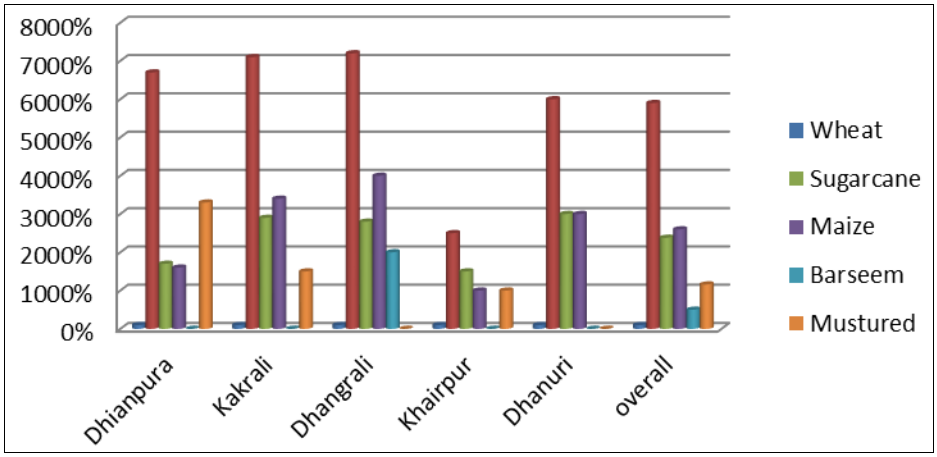


Fig 1: Crop grown by respondent farmers

The data in Table 1 depicts the crops grown by farmers over the course of one year. The great majority of farmers (100%) grow wheat.

Wheat is the primary crop in five villages: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanuri. Rice is the most common crop, with 72% of farmers in Dhangrali planting it. Sugarcane is farmed by 23.8% of farmers, with Dhanuri having the largest percentage. Maize is planted by 26% of farmers, with Dhangrali having the largest percentage. Barseem is grown by 20% of farmers in Dhangrali alone, while mustard is cultivated in lesser quantities, averaging 11.6%

The table shows the proportion of farmers adhering to recommended and non-recommended agricultural input dosages in five villages: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanuri. On average, 69% of farmers adhere to the required dose, with the highest adherence in Dhangrali (80%) and the lowest in Khairpur (60%). In Dhianpura, 67% of farmers use the prescribed dose, followed by 71% in Kakrali and 70% in Dhanuri. In contrast, 31% of farmers do not take the prescribed dosages. Khairpur has the largest proportion of non-recommended dosage consumption (40%), while Dhangrali has the lowest (20%). Dhianpura has 33% of farmers that use non-recommended dosages, followed by Kakrali (29%), and Dhanuri (30%).

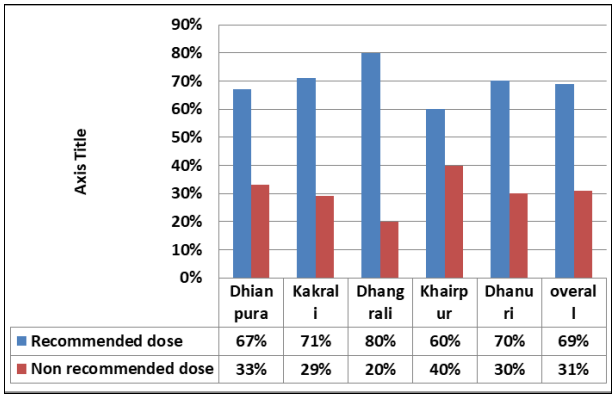


Fig 2: Seed Rate

Fertilizer Dose

Table 2: Shows the amount of urea administered in accordance with guidelines, above recommendations, and below recommendations.

Dose of Urea	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
Recommended dose	56%	57%	68%	60%	60%	61%
Below Recommended	26%	29%	20%	25%	30%	26%
Above Recommended	18%	14%	12%	15%	10%	13%

In Dhianpura, 56% of farmers used the required quantity of urea, 26% used less, and 18% used more. Similarly, in Kakrali, 57% of farmers used the appropriate dose, 29% used less, and 14% used more than the recommended amount. Dhangrali has the largest percentage of farmers applying the recommended dose (68%), with 20% applying less and 12% exceeding it.

In Khairpur, 60% of farmers used the required quantity of urea, 25% used less, and 15% applied more. Dhanuri also 60% of farmers used the suggested dose, with 30% using less and 10% applying more.

Table 5 shows the doses of Muriate of Potash (MOP) administered by farmers in various villages. It divides farmers into two groups according on how much MOP they used: those who applied the recommended amount and those who applied less. This data gives a critical overview of adherence to approved fertilizer methods, assisting in identifying any variations in MOP usage that may influence crop output and soil health. By examining this data, we may identify areas where fertilizer management might be improved.

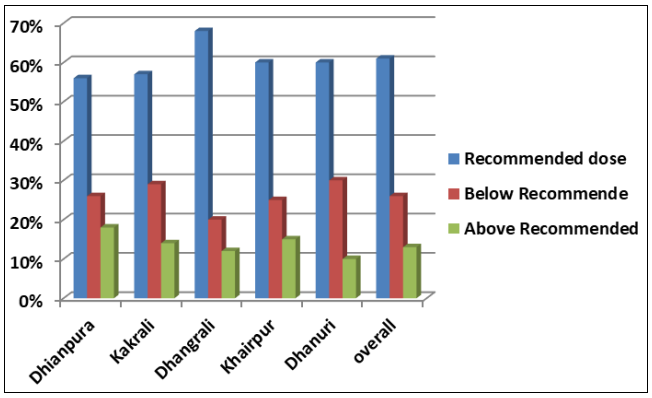
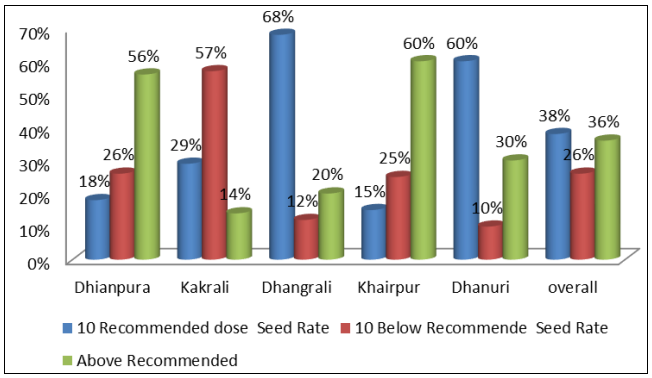


Fig 3: Farmers were divided into three groups based on how much urea they used: those who applied the recommended dose, those who applied less, and those who applied more.

Table 3: shows the doses of Muriate of Potash (MOP) administered

Dose of DAP						
	Dhianpura	**Kakrali**	**Dhangrali**	**Khairpur**	**Dhanuri**	**overall**
Recommended dose	18%	29%	68%	15%	60%	38%
Below Recommende	26%	57%	12%	25%	10%	26%
Above Recommended	56%	14%	20%	60%	30%	36%



The survey discovered that 38% of farmers in Dhianpura, Kakrali, and Dhanuri used the appropriate amount of DAP, with 26% using less and 36% exceeding the permissible dose. This suggests that many farmers, particularly in some communities, use too much or too little DAP, potentially affecting crop output and soil fertility. According to the statistics, discrepancies in DAP application techniques may be generating these concerns.

Farmers in Dhianpura, Kakrali, and Dhanuri were polled about their urea use, and 56% used the required dose, 26% used less, and 18% used more. The majority of farmers in these locations followed the prescribed dose (68%), with Dhangrali having the greatest proportion. Table 5 depicts the dosages of Muriate of Potash (MOP) administered by farmers in various villages. The poll also discovered that 38% of farmers used the recommended quantity of DAP, while 26% used less and 36% exceeded the allowable level.

The table displays information on Muriate of Potash (MOP) applications in five villages: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanuri. The majority of farmers, 82%, applied less than the prescribed dose in Dhianpura, 35% in Kakrali, 68% in Dhangrali, 44% in Khairpur, and 60% in Dhanuri. Overall, 34% of farmers used the prescribed dose, while 66% sprayed less. This shows a general tendency of under-application, which might have an influence on soil fertility and crop yields.

The table displays information on Muriate of Potash (MOP) applications in five villages: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanuri. The majority of farmers, 82%, applied less than the prescribed dose in Dhianpura, 35% in Kakrali, 68% in Dhangrali, 44% in Khairpur, and 60% in Dhanuri. Overall, 34% of farmers used the prescribed dose, while 66% sprayed less. This shows a general tendency of under-application, which might have an influence on soil fertility and crop yields.

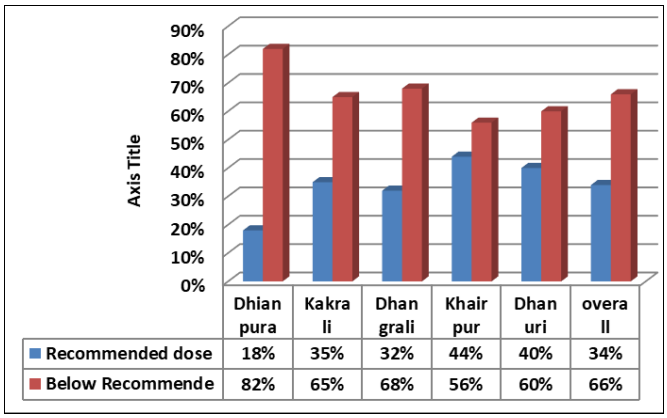


Fig 4: Represents the data of the dose of the MOP

Table 4: Shows that the organic manures applied by the respondents

Oragnic Mnauure applied						
	Dhianpura	**Kakrali**	**Dhangrali**	**Khairpur**	**Dhanuri**	**overall**
FYM	70%	58%	62%	70%	80%	68%
Compost	20%	37%	31%	30%	10%	26%
Poultary	10%	5%	7%	0	5%	6%

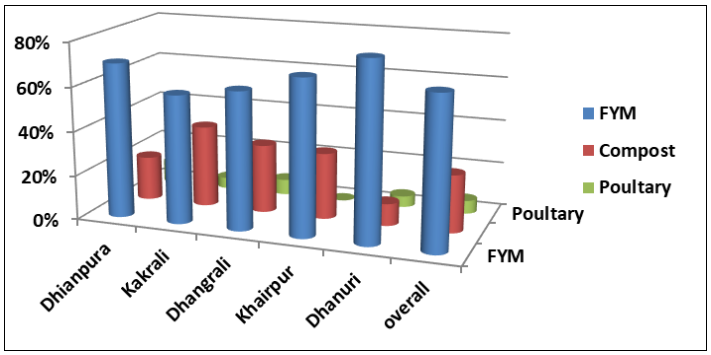


Table 3.9 Shows that the no of irrigation provided by the farmer. The table shows data on irrigation usage by farmers in five villages: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanuri. The majority (78%) applied 3 to 6 irrigations, while 22% applied 1 to 3 irrigations. In Dhangrali, 90% applied 3 to 6 irrigations, while 10% applied 1 to 3 irrigations. In Khairpur, 12% used 1 to 3 irrigations, while 88% applied 3 to 6 irrigations. In Dhanuri, 15% used 1 to 3 irrigations, and 85% applied 3 to 6 irrigations. Overall, 89% of farmers used 1 to 3 irrigations.

Table 5: No. Of Irrigations

	Dhianpura	**Kakrali**	**Dhangrali**	**Khairpur**	**Dhanuri**	**overall**
1 to 3	22%	30%	10%	12%	15%	89%
3 to 6	78%	70%	90%	88%	85%	11%

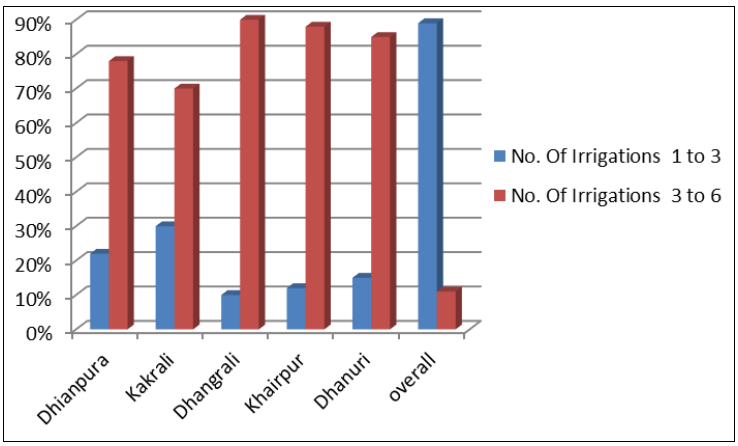


Table 3.10 shows that the seed trestment by the respondents. In Dhianpura, 68% of farmers utilized pre-treated seeds, while 32% treated them with fungicide. In Kakrali, 76% utilized pre-treated seeds, while 24% used fungicide. Dhangrali had the largest percentage of farmers utilizing pre-treated seeds, whereas just 20% used fungicides. Khairpur has the largest percentage of farmers utilizing pre-treated seeds (60%) and fungicides (40%).

Table 6: Seed Treatment

	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
Use already treated seed	68%	76%	80%	60%	70%	71%
Use Fungicide	32%	24%	20%	40%	30%	29%

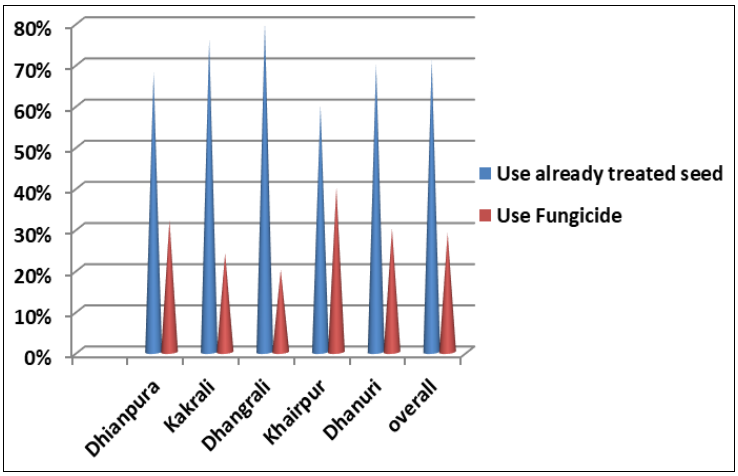


Table 3.11 data representants the data of the major pest effected the crops. Significant differences in the presence of main pests were found when pest prevalence was analyzed across several villages. Green hoppers were particularly prevalent in Dhianpura, impacting 15% of crops, while Kakrali recorded an even greater infestation rate of 105%. In contrast, Dhangrali had a lower frequency of 7%, followed by Khairpur and Dhanuri, which reported infestations of 8% and 3%, respectively. Overall, the green hopper impacted around 8% of the crops examined. The leaf folder also posed a concern, with variable degrees of infestation across the settlements. Kakrali had a minor influence of 8%, whereas Dhangrali had 5%. In contrast, Khairpur saw a more severe infestation, with 15% of the crops impacted. Dhianpura and Dhanuri had infestations of 7% each, resulting in the total average is 9%.

Table 7: Major pest

	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
Green hopper	15%	10%	7%	8%	3%	8%
Leaf folder	7%	8%	5%	15%	7%	9%
Beetle	2%	1%	0%	3%	0%	1%

Finally, beetles were the least common pest, with Dhianpura reporting 2%, Kakrali 1%, and Khairpur 3%. Notably, Dhangrali and Dhanuri reported no infestations, for an aggregate average of under 1%. These data emphasize the diverse degrees of insect difficulties experienced by farmers in different communities, underlining the importance of specialized pest control plans.

Table 3.12 shows the incidence of major agricultural diseases in five villages: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanuri. Sheath Blight, Yellow Rust, Dwarf Plant, and Loose Smut were the most prevalent, impacting 20% of farms in Dhianpura. Yellow Rust affected 18% of farmers in Kakrali, while Dhangrali had 9%. Dwarf Plant affected 6% of farmers in Dhianpura and 4% in Khairpur. Loose Smut affected 17% of farmers in Dhangrali.

Table 8: Major Disease

	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
Sheath Blight	20%	12%	5%	2%	1%	8%
Yellow rust	4%	18%	9%	10%	5%	9%
Dwarf Plant	6%	0%	2%	4%	0%	3%
Losse smut	10%	15%	17%	8%	8%	12%

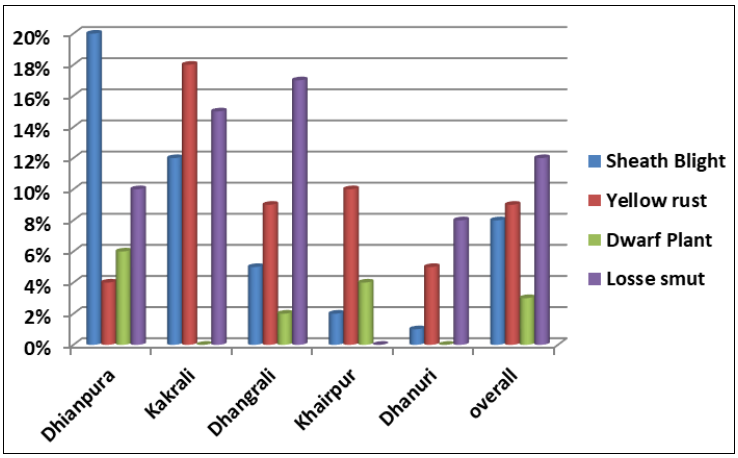


Table 3.13 shows that the major weeds found in the field of the respondents. The study reveals distinct patterns in weed prevalence across surveyed villages, with Kanki weed found in 8% of fields in Dhianpura, Swank weed in 15%, Motha weed in 7%, and Cheeni gha weed in 3%. Dhanuri had the highest infestation rate at 8%, while Dhangrali had the highest at 9%. These findings highlight the need for tailored monitoring and management of weed populations to address specific village conditions.

Table 9: Major Weeds

	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
Kanki weed	8%	2%	9%	2%	8%	6%
Swank weed	15%	8%	5%	7%	0%	7%
Motha	7%	5%	1%	6%	3%	4%
Cheeni gha Weed	7%	12%	3%	10%	5%	7%

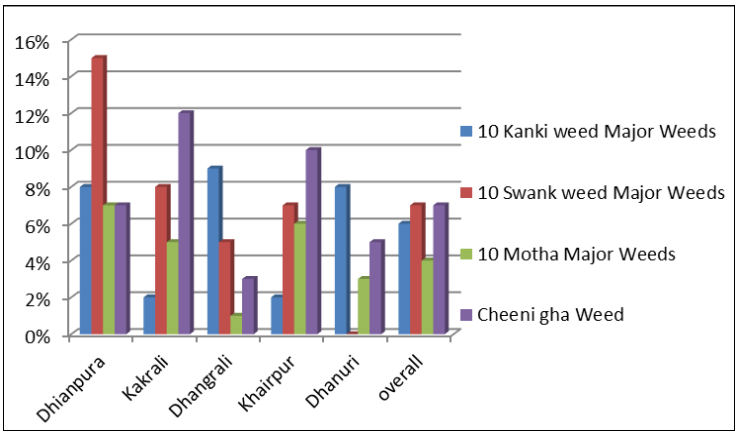
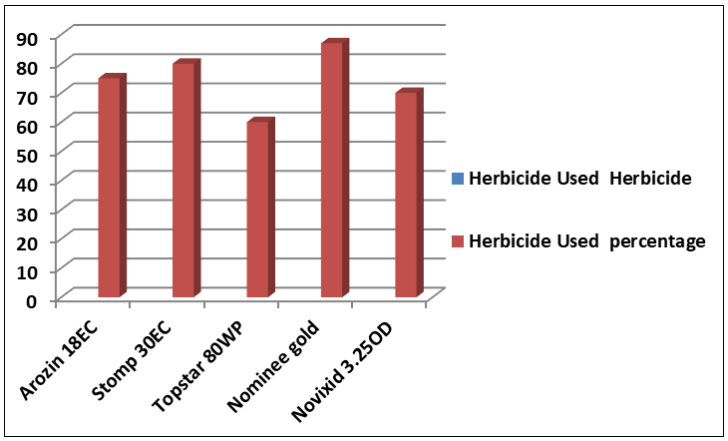


Table 3.14 Shows that the herbicide used by the respondents for the removal of the weed and on the other side the weeds are removal by the physical method also. The data on herbicide usage in agriculture shows varying levels of adoption. Nominee Gold has the highest usage rate at 87%, followed by Stomp 30EC at 80%. Arozin 18EC is used by 75% of farmers, while Novixid 3.25OD has a 70% usage rate. Topstar 80WP is the least popular herbicide at 60%, despite maintaining a significant share. These percentages show a diverse approach to herbicide application, with certain products leading in farmer preference and utilization.

Table 10: Herbicide Used

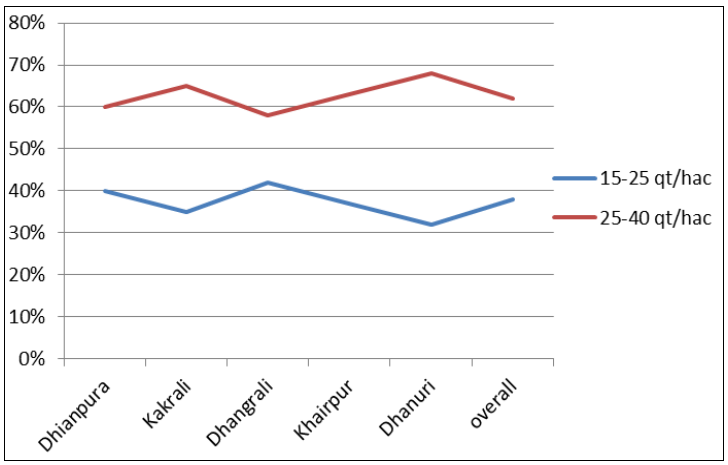
Herbicide	Percentage
Arozin 18 EC	75
Stomp 30 EC	80
Topstar 80 WP	60
Nominee gold	87
Novixid 3.25 OD	70



Data of the table 3.15 represents the yield obtained by the farmers in the data the overall yield 38% farmers get the 15-25 Qt and the 62% farmers get the more then 25 qt yield in the wheat field

Table 11: Wheat yield

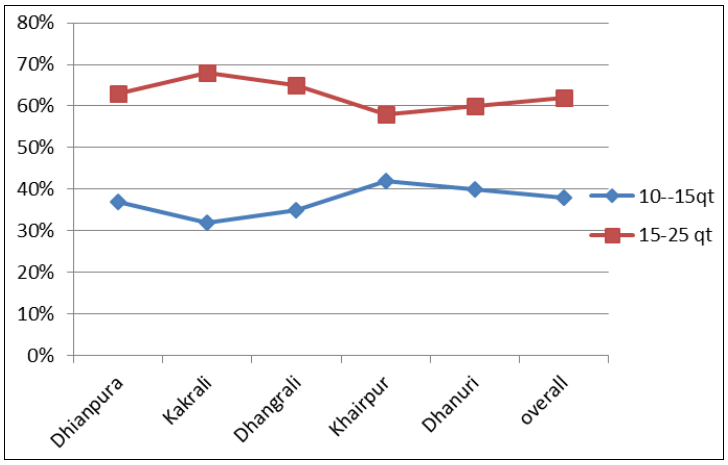
	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
15-25 qt/hac	40%	35%	42%	37%	32%	38%
25-40 qt/hac	60%	65%	58%	63%	68%	62%



In the data table 3.16 shows the yield obtain in the paddy field by the farmers. In this the 28% farmers get the 10-15 qt and the rest farmers gets the 15-25 qt the paddy yield.

Table 12: Paddy yield

	Dhianpura	Kakrali	Dhangrali	Khairpur	Dhanuri	overall
10-15qt	37%	32%	35%	42%	40%	38%
15-25 qt	63%	68%	65%	58%	60%	62%



Conclusion

In thus study we will find the the major crops in these five district is wheat, Paddy, Barseem, Sugarcane, Mustured and in this data we find the major crops is wheat and the paddy the the recommended seed rate used by the farmers is 69% and the rest of the farmers are sown the crops without recommended seed and the the fertilizer used by the farmers are the urea, Dia-mmonium phosphate and the murrate of the potash in this fertilizers the recommended dose of urea is used only 61% and the DAP 38% and the MOP 34% and the organic manures applied by the farmers that is poultry waste, farm yard manures and compost out of these the mostly used by the farmers is farm yard manure and the seed for the sowing is used the mostly already treated seed and the irrigation is provided by the farmers by the different method like canal, Tube well in these most of the use of the tubewell is more and they will give the 4 to 6 irrigation to the crops but in the paddy crops the water stagnation method is used for the irrigation purpose and the common pest leaf folder and the major disease effected the crops is loose smut for the controlling of the pest and the diseases the pesticides and the fungicide are used mostly farmers used the chemical method and the rare farmers are used the organic method znd for the weeds control use of the chemical and the physical method but the chemical method is more highly prior used and the farmers to grow the organic crops for the purpose to storage for homes for fir selling purpose use the chemical method to get the high yield and get the maximum output and the yield major respondents gets the higher yield in the crops.

References

1. Bureau of Indian Standards (BSI). The India GAP (Part 1- Crop Base) [Internet]. Available from: [insert URL if available].
2. Parmar D, Vardhini BV. Impact of recent agricultural practices on food safety and human health – A case study in Armoor Mandal of Nizamabad District. [Journal Name if available]. [Year];[Volume(Issue)]:[Page range].
3. Adams DA, Nelson RA, Todd PA. Perceived usefulness, ease of use, and usage of information technology: A replication. MIS Quarterly. 1992;16(2):227-24.
4. Tanda AS, editor. Advances in Integrated Pest Management Technology: Innovative and Applied Aspects. Springer Nature; c2022.