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**Harshpreet Singh**

University Institute of Agriculture  
Science, Chandigarh University,  
Mohali, Punjab, India

**Gurkaran Singh**

University Institute of Agriculture  
Science, Chandigarh University,  
Mohali, Punjab, India

**Dr. Gurshaminder Singh**

University Institute of Agriculture  
Science, Chandigarh University,  
Mohali, Punjab, India

**Corresponding Author:**

**Harshpreet Singh**

University Institute of Agriculture  
Science, Chandigarh University,  
Mohali, Punjab, India

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## Socio-economic and agricultural practices in Rupnagar district, Punjab: A study on farmer literacy, crop cultivation, and Government Scheme awareness

**Harshpreet Singh, Gurkaran Singh, Dr. Gurshaminder Singh**

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### Abstract

This research investigates the socio-economic and agricultural dynamics of five villages in Rupnagar District, Punjab, focusing on farmer demographics, education levels, crop cultivation patterns, and government agricultural scheme participation. Primary data were collected through surveys, revealing that the majority of farmers in these villages cultivate paddy and wheat, with limited diversification into crops like sugarcane and maize. The study highlights a high literacy rate (90%) among farmers, though a small portion remains illiterate, affecting their ability to adopt advanced agricultural practices.

Additionally, the study uncovers a significant gap in farmer participation in government schemes, with 80% of respondents not enrolled in any programs, signaling a need for improved outreach and accessibility. An assessment of educational interventions using video tools showed substantial improvement in farmer awareness of the Leaf Color Chart (LCC), a tool for nitrogen management. This demonstrates the effectiveness of targeted training in promoting sustainable farming practices. The findings call for broader educational initiatives and enhanced farmer participation in government programs to foster agricultural development and socio-economic upliftment in the region.

**Keywords:** Agriculture, Rupnagar district, Punjab, farmer literacy, crop cultivation, government schemes, leaf color chart, rural development, socio-economic conditions

### Introduction

Agriculture forms the cornerstone of India's economy, particularly in rural regions where it not only sustains livelihoods but also shapes the socio-economic fabric of communities. Punjab, often referred to as the "Breadbasket of India," is at the forefront of this agricultural dominance, contributing significantly to the nation's food security through the cultivation of staples such as wheat and rice. Within Punjab, the Rupnagar District represents a microcosm of rural India, where traditional farming practices coexist with emerging challenges related to modernization, socio-economic disparities, and resource limitations.

Despite the vital role that agriculture plays in the rural economy, farmers in regions like Rupnagar face a myriad of challenges that hinder both productivity and social well-being. Issues such as limited access to advanced farming technologies, low literacy levels among a segment of the farming population, lack of awareness about government agricultural schemes, and insufficient infrastructural support often leave rural farmers struggling to optimize their agricultural potential. These challenges are further compounded by socio-economic disparities within rural communities, as caste dynamics and land ownership patterns continue to influence access to resources and decision-making power in the agricultural sector.

This research seeks to provide a holistic understanding of the socio-economic conditions, agricultural practices, and government scheme awareness in five selected villages of Rupnagar District: Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanauri. The study delves into the demographic structure, highlighting population sizes, gender ratios, and family compositions, which offer insights into the social dynamics that shape agricultural labor and household decision-making processes. Furthermore, the research explores the educational profile of farmers, demonstrating how literacy and access to formal education impact their ability to adopt

modern farming techniques and engage with agricultural innovations.

A significant aspect of this research is its focus on the participation of farmers in government agricultural schemes. Despite the presence of various government initiatives aimed at enhancing agricultural productivity and farmer welfare—through financial aid, technological support, and infrastructure development—a large proportion of farmers remain unaware or unregistered in these programs. This disconnect highlights the challenges of outreach and accessibility in rural areas and underscores the need for targeted interventions to ensure that the benefits of these schemes reach the intended beneficiaries.

The study also investigates the major crop cultivation patterns in the region, identifying the dominance of wheat and paddy cultivation, while also noting crop diversification efforts such as the cultivation of sugarcane and Napier grass. These cropping patterns not only reflect the region's agricultural economy but also indicate broader trends in crop-livestock farming systems and the reliance on staple crops for both commercial and subsistence purposes.

In addition to the demographic and socio-economic analysis, this research incorporates an assessment of the effectiveness of educational interventions in improving agricultural knowledge among farmers. Specifically, the study measures the impact of video-based awareness programs on farmers' understanding of the Leaf Color Chart (LCC), a tool used for nitrogen management in crops. The significant improvement in farmer knowledge post-intervention demonstrates the potential for using technology and media to enhance agricultural education and promote the adoption of sustainable farming practices.

Overall, this study aims to bridge the gap between policy and practice by offering a comprehensive analysis of rural farming communities in Rupnagar. The findings emphasize the need for improved access to education, increased farmer participation in government schemes, and the implementation of targeted socio-economic interventions to address disparities within the agricultural community. By providing a nuanced understanding of the challenges and opportunities faced by farmers in these villages, the research contributes to the broader discourse on rural development and agricultural sustainability in India.

This research is significant in the context of policy formulation, as it provides evidence-based insights that can inform the design and implementation of more effective agricultural and rural development programs. Moreover, it highlights the importance of community-specific approaches that consider local socio-economic realities, thus ensuring that policy interventions are relevant and beneficial to the farming communities they aim to support.

### Method and Material

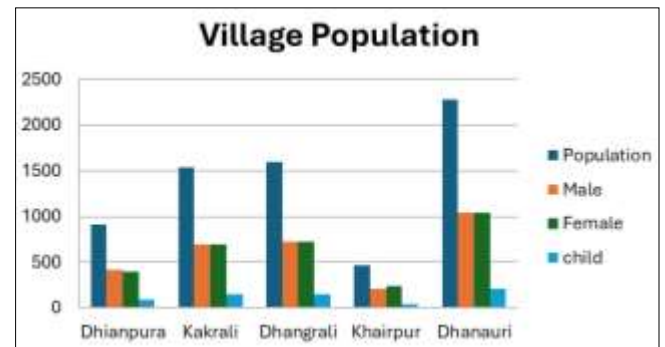
This study was conducted in five villages of Rupnagar District, Punjab, focusing on 90 farmers. A structured questionnaire was used to collect data on demographics, agricultural practices, crop cultivation, and farmer participation in government schemes. The survey also assessed farmers' awareness of the Leaf Color Chart (LCC) for nitrogen management.

To enhance LCC awareness, a video-based educational intervention was implemented. Before the intervention, farmers completed a baseline survey on LCC knowledge. They then watched a video demonstrating LCC usage for managing nitrogen levels in crops. After the video, the same survey was conducted to measure the improvement in understanding. Data were analyzed using descriptive statistics to assess the effectiveness of the video, revealing a significant increase in

LCC knowledge.

### Results and Discussion

The population details of five villages in Rupnagar District, Punjab, reveal a diverse demographic profile. Dhianpura has a total population of 908, with 416 males, 400 females, and 92 children. Kakrali is slightly larger, with 1,534 people, including 690 males, 692 females, and 152 children. Dhangrali has a population of 1,591, with an almost equal gender split of 723 males and 720 females, 148 children. Khairpur, the smallest of the villages, has 469 people, including 211 males, 223 females, and 35 children. Finally, Dhanauri is the largest village, with 2,280 residents, comprising 1,038 males, 1,036 females, and 206 children. These villages show a balanced gender ratio, moderate literacy rates, and varying population sizes.

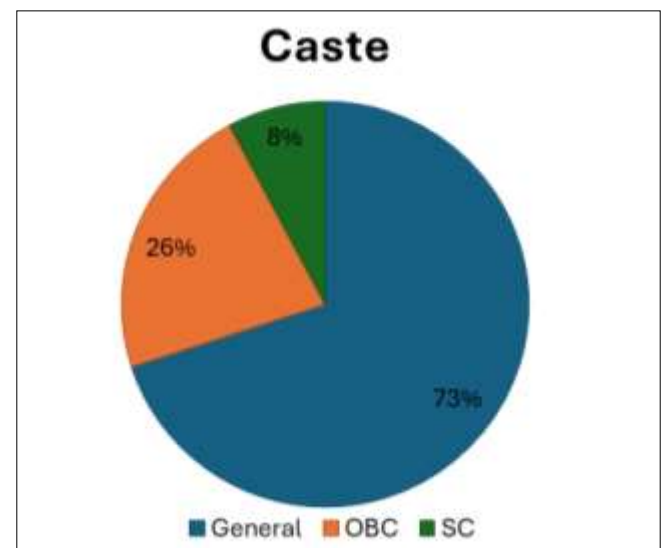


Source: Primary data was gathered using a questionnaire

Fig 1: Village Populations

### Caste Composition

The caste composition across the five villages, as illustrated in (Figure 1.2), indicates a predominance of the General category, comprising 70% of the total respondents (63 out of 90). The Other Backward Classes (OBC) represent 22% of the population, while the Scheduled Castes (SC) constitute the smallest group at 8%. Dhianpura has the highest number of respondents from the General category (14), whereas Dhangrali has no representation from the SC community. This distribution reflects the socio-economic stratification typical of rural settings, with a larger representation from the General and OBC categories, and a relatively lower presence of the SC population.

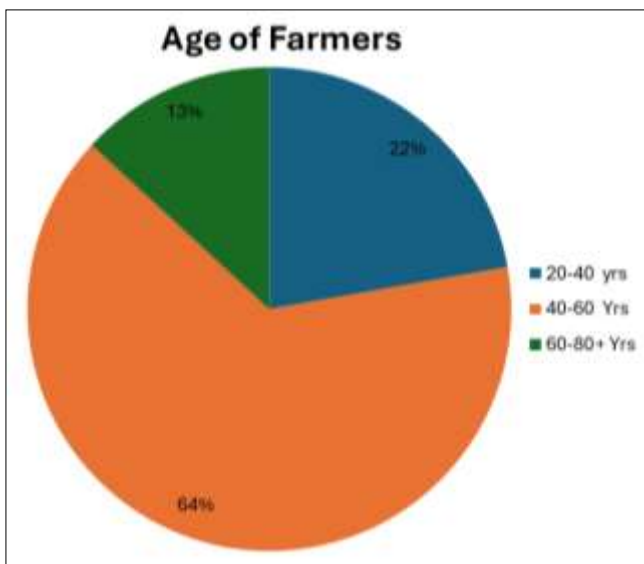


Source: Primary data was gathered using a questionnaire

Fig 2: Caste of Farmers

**Age of Farmers**

The age distribution across the five villages of Dhianpura, Kakrali, Dhangrali, Khairpur, and Dhanauri is presented in \*Figure 1.3\*, categorizing the population into three distinct age groups: 20-40 years, 40-60 years, and 60-80+ years. The majority of respondents, representing 64% of the total population, fall within the 40-60 years age group. This middle-aged cohort constitutes the primary workforce, playing a critical role in agricultural activities and household decision-making processes. Notably, villages such as Dhianpura and Dhanauri show higher concentrations within this age group, with 12 and 13 individuals, respectively. The younger population, aged 20-40 years, accounts for 22% of the total, representing the future workforce, with Dhangrali having the largest share in this category. Meanwhile, the elderly population, aged 60-80+ years, comprises only 13%, reflecting an aging demographic, particularly evident in Kakrali, which has the highest number of elderly individuals. This distribution highlights the predominance of a middle-aged working population, with smaller proportions of younger and elderly residents.



Source: Primary data was gathered using a questionnaire

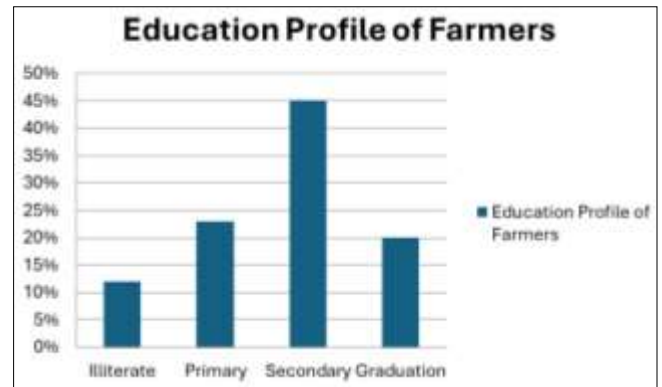
Fig 3: Age of farmers

**Education Profile of Farmers:**

The high level of literacy (90%) in the farmers surveyed from selected villages, Rupnagar district, Punjab; only 10% were illiterate. (Figure 1.4). Most, 45%, are literate up to high school (Study-10), which provides an optimum formal education background. Or quite a reasonably good base intelligent enough and get engage age with modern agriculture practices & technologies. In addition, 23% have completed primary education and acquired basic literacy and numeracy skills with only a minimal reach in the adoption process of prestigious farming methods as well expected benefits due to low capability flexibilities incorporated like bachelor degree holders always showing upper hand on better acceptance or decisions making etc.

But the small percentage of farmers who are unable to read and write underscores that some targeted interventions, like tailored training sessions or extension services, will be important in ensuring all can tap into agricultural progress. The education profile, overall suggests that the farming community generally has resources to utilise advanced technology and in a wider context there is need of broadening educational avenues with

specific focus on low individual formal educated individuals.

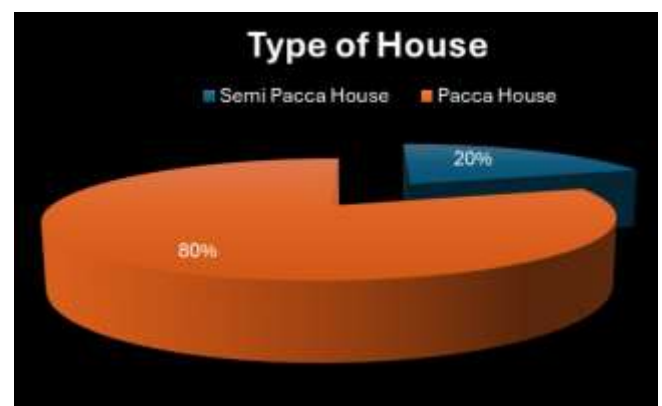


Source: Primary data was gathered using a questionnaire.

Fig 4: Education Profile of Farmers

**House Type**

The housing conditions of farmers in the surveyed villages of Rupnagar district, Punjab, reveal two main types of dwellings: pacca and semi-pacca houses. A significant 80% of the farmers live in pacca houses, which are permanent structures built with durable materials like bricks and cement, indicating a relatively high standard of living and economic stability within the community (Fig. 1.5). These permanent homes suggest that a majority of the farmers have sufficient financial resources, likely supported by stable agricultural income, to invest in long-term housing. On the other hand, 20% of the farmers reside in semi-pacca houses, which are constructed using a mix of durable and less permanent materials, reflecting more vulnerable economic conditions. Semi-pacca houses are typically less resistant to weather and may indicate limited financial means or access to resources. This distribution of housing types highlights a predominantly well-off farming community but also points to economic disparities that affect a smaller portion of the population, emphasizing the need for targeted support to improve living conditions for those in semi-pacca houses (Fig. 1.5).



Source: Primary data was gathered using a questionnaire.

Fig 6: Type of House

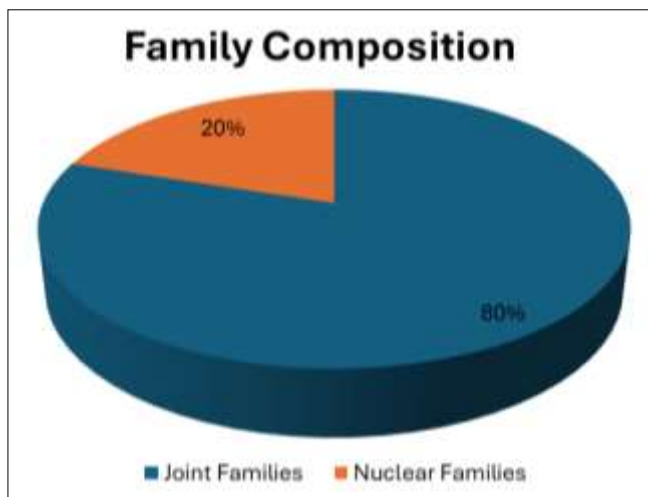
**Family Composition:-**

The information gathered from this farmer survey offers important insights into the social life of any community, which is greatly influenced by the makeup of families. Of the farmers polled, a significant 80% reside in joint families, with the remaining 20% living in nuclear households, according to Fig 1.7. This distribution illustrates the variety of family structures

found in the farming community. It is essential to comprehend the typical family structures of farmers in order to design social and economic interventions that address the particular requirements and dynamics of nuclear and joint family structures in the agricultural community.

through which farmers obtain knowledge related to agricultural practices, government schemes, and modern farming techniques. These sources are crucial in shaping farmers' decisions, improving productivity, and adopting innovative practices like the use of the Leaf Color Chart (LCC) for nitrogen management. The study identified several key sources of information used by farmers in Rupnagar District. These include traditional sources such as fellow farmers, local agricultural officers, and community meetings, where knowledge is often shared through word of mouth. Additionally, modern sources such as television programs, radio broadcasts, and printed materials (pamphlets, agricultural magazines) are also used, albeit to a lesser extent. In recent years, technology-driven platforms like mobile phone apps, social media, and agricultural websites have started gaining traction as well.

The research highlights the role of these diverse information sources in influencing farmers' awareness of government schemes and modern farming tools. However, the study also revealed a gap in the effectiveness of traditional information channels, as 80% of farmers were found to be unaware or unregistered in government agricultural programs. This underscores the need for improved outreach and the integration of more modern, accessible information delivery methods, such as visual and video-based tools, to enhance knowledge transfer in rural communities.



Source: Primary data was gathered using a questionnaire

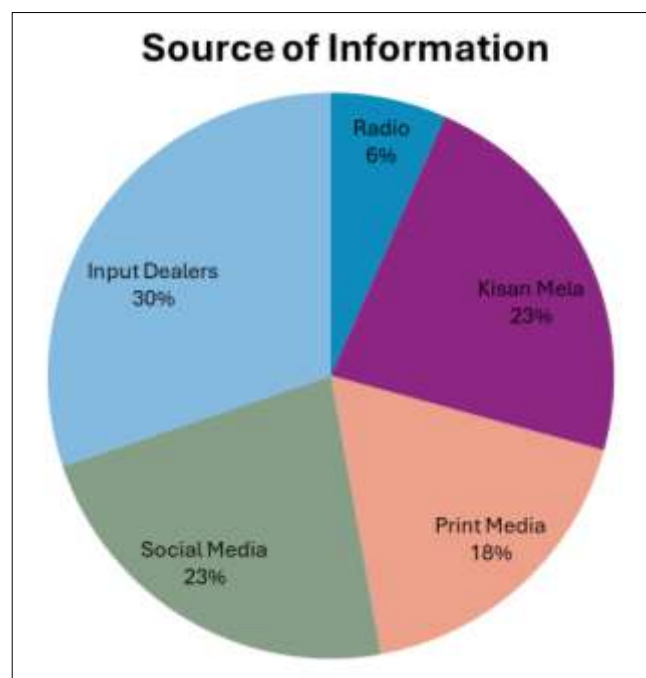
Fig 7: Family Composition

**Major crop cultivation**

The data on major crop cultivation among surveyed farmers in the Rupnagar district of Punjab underscores key agricultural practices in the region. Paddy and wheat are the dominant crops, with 80% of farmers growing these staples. This reliance reflects Punjab's agricultural economy, influenced by favorable climatic conditions, government support through minimum support prices (MSP), and established irrigation practices.

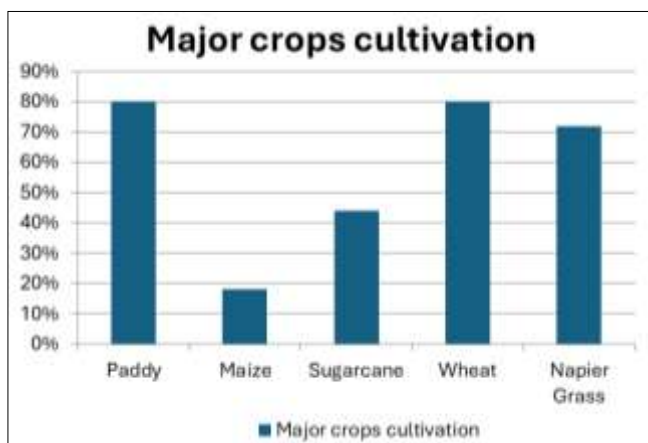
Beyond paddy and wheat, sugarcane is cultivated by 44% of farmers, likely for both commercial sale and local use, while napier grass is grown by 72%, serving as fodder for livestock. This indicates a blend of crop-livestock farming systems.

Maize is grown by about 18% of farmers, highlighting its role in crop diversification, though it remains less common than paddy and wheat. Overall, the cultivation patterns show a strong emphasis on cereal crops essential for food security and income, alongside diversification through fodder and commercial crops like sugarcane.



Source: Primary data was gathered using a questionnaire

Fig 9: Source of information



Source: Primary data was gathered using a questionnaire

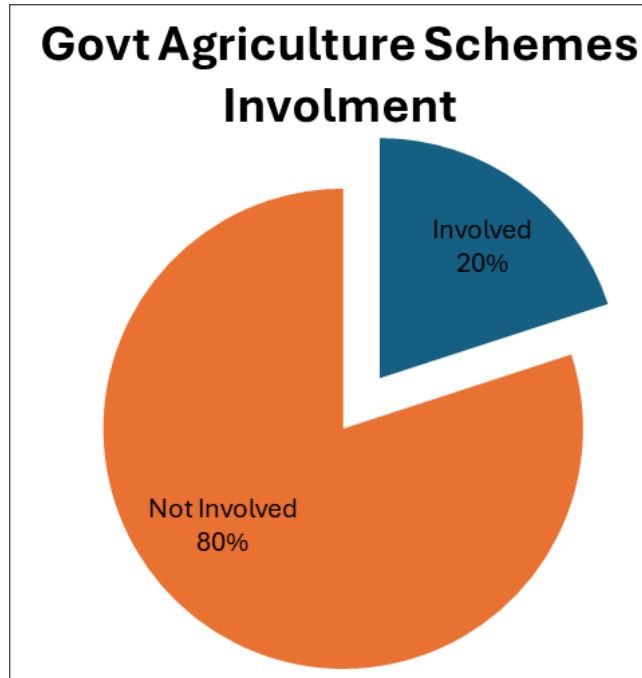
Fig 8: Major crops cultivation

**Source of information**

In this study, the source of information refers to the channels

**Govt. Agriculture Schemes Involment**

Through the provision of financial assistance, technological support, and infrastructure development, government programs significantly contribute to the uplift of farmers. These programs increase agricultural output, guarantee financial security, and provide farmers with information, all of which eventually support the expansion of the agricultural industry and the general well-being of rural communities. The results of a thorough survey reveal a startling fact: a significant 80% of farmers are still not registered in any government programs intended to encourage and improve agricultural practices.

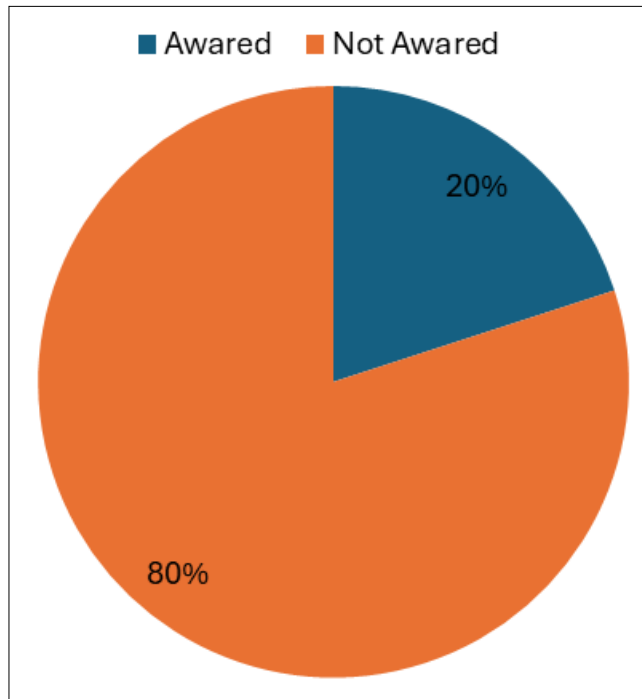


Source: Primary data was gathered using a questionnaire

Fig 10: Govt Agriculture Schemes Involment

This discrepancy draws attention to a serious outreach and accessibility issue. The potential impact of these initiatives is highlighted by the remaining 20% involved, underscoring the necessity for focused initiatives to guarantee fair participation,

encourage raise awareness and utilize the government's full potential efforts to improve the lot of Indian farmers and the entire agricultural sector.



Source: Primary data was gathered using a questionnaire

Fig 11: Govt Agriculture Schemes Involment

According to the results of this survey, most farmers are unaware of agricultural initiatives. For farmers to take advantage of those programs, they must be made aware of them.

**Assessing Awareness with Video Visual**

**Method:** To evaluate the effectiveness of video-based educational interventions, this study implemented a structured

approach to improve farmers' awareness of the Leaf Color Chart (LCC) for nitrogen management. Initially, 90 farmers from five villages in Rupnagar District, Punjab, were surveyed to assess their baseline knowledge of the LCC. The survey covered key areas such as nitrogen estimation, proper leaf selection, and interpreting the color ranges of the LCC. The results indicated limited awareness, with only 30% of farmers answering

correctly. Following this, a video was designed to demonstrate the practical use of the LCC. The video featured step-by-step guidance on identifying nitrogen deficiencies and applying the correct amount of fertilizer. It also included simple visuals and practical demonstrations to make the information easily accessible and engaging for farmers.

After viewing the instructional video, the same group of farmers took the survey again to measure any improvement in their understanding. The post-intervention results showed a

significant increase in knowledge, with 81% of farmers answering the questions correctly. This improvement highlighted the effectiveness of using visual tools to teach complex agricultural techniques, as the video successfully bridged the knowledge gap. The intervention not only raised awareness but also encouraged the practical adoption of the LCC among the farmers, showcasing the value of video-based education in rural agricultural settings.

**Table 1:** Questionnaires to check the farmers awareness about the leaf color chart (N=90)

Survey Questionnaires	Correct Answers No. Before Watching Video (in %)	Correct Answers No. After Watching Video (in %)
Which nutrient can be estimated through LCC	42(47%)	88(97%)
LCC should be tested on which leaves	23(26%)	76(85%)
What does the colour in LCC range from	16(18%)	73(81%)
Less value on LCC indicates the lack of which nutrient	39(44%)	82(92%)
Lack of Nitrogen can be indicated by	44(49%)	85(94%)
Where can you get the LCC	36(40%)	77(85%)
LCC should be measured during which time	25(28%)	69(76%)
How many leaves should be taken to measure LCC	22(25%)	52(57%)
When sample of six leaves matches with the 3.5 shade of LCC, the amount of urea required to apply is	14(16%)	60(66%)
How much urea can be saved by using Leaf Color Chart?	10(11%)	72(80%)
Mean	27	73
Mean %	30%	81%
SD	11.67	10.4

## Conclusion

This study provides valuable insights into the socio-economic and agricultural landscape of five villages in Rupnagar District, Punjab. The data revealed that the majority of farmers predominantly cultivate paddy and wheat, with some diversification into crops like sugarcane and napier grass. While literacy levels are high, a small percentage of illiterate farmers indicates the need for tailored interventions to ensure full participation in agricultural advancements.

A significant finding is the low participation (20%) in government agricultural schemes, underscoring a critical gap in outreach and accessibility. The effectiveness of video-based educational interventions was demonstrated through a marked improvement in farmers' knowledge of nitrogen management using the Leaf Color Chart (LCC), highlighting the potential of modern educational tools in driving sustainable farming practices.

In conclusion, the research calls for more comprehensive educational programs, better government outreach, and targeted support to improve both agricultural productivity and the socio-economic conditions of farmers in the region. Enhanced participation in government schemes and increased use of technology-based learning can contribute to long-term rural development and agricultural sustainability.

## References

- Gopalan C, Rama Sastri BV, Balasubramanian S. Nutritive Value of Indian Foods. National Institute of Nutrition (NIN), ICMR; 2007.
- Singh G, Sharma A, Bagal YS. Gain in knowledge level of farmers about recommended agricultural practices after watching video films of scientific temper. 2018;6(3-4):153-65.
- Van Mele P. Video-mediated farmer-to-farmer learning for sustainable agriculture. Ghent, Belgium: Agro-Insight; 2011.

- Maredia MK, Reyes B, Ba MN, Dabire CL, Pittendrigh B, Bello-Bravo J. Can mobile phone-based animated videos induce learning and technology adoption among low-literate farmers? A field experiment in Burkina Faso. *Inf Technol Dev.* 2018;24(3):429-60.