International Journal of Agriculture Extension and Social Development

Socio-economic profile of the farmers and effect of multimedia on their knowledge enhancement of maize

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DOI: https://doi.org/10.33545/26180723.2024.v7.i4b.506

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Abstract

This paper provides an overview of the agricultural landscape in Punjab, India, focusing on the socio-economic dynamics of farming communities in five villages of SAS Nagar, Mohali area: Sahauran, Hasanpur, Radiala, Ghataur, and Allahpur. It highlights the significance of agriculture as the mainstay of sustenance, with Punjab being recognized as the "Granary of India." The study evaluates the socio-economic status of farmers in these villages, employing a questionnaire-based approach and gathering primary data through interviews. This research also underscores the importance of multimedia tools in disseminating agricultural knowledge and supporting farmers, particularly in staple crop cultivation like maize. Through innovative approaches such as video questionnaires, farmers are empowered with insights into cultivation practices, pest management strategies, and the broader significance of staple crops for food security and economic stability. The abstract concludes by advocating for continued use of modern multimedia technology to enhance agricultural extension services and promote sustainable farming practices among farmers. Farmers' understanding of pests and diseases affecting maize increased significantly as a result of watching the video films, which increased their level of understanding regarding disease and pest. The results also show that after watching a video about disease and pest control, from 38% to 76% of the respondents reported a medium level increase in knowledge.

Keywords: Socio-economics, multimedia, staple crops, video questionnaire, sustainable farming

Introduction

Agriculture is the main source of food production and the supply of vital nutrients for human consumption. The forward-thinking Indian state of Punjab has earned the moniker "Granary of India". Encompassing a total geographical expanse of 5.03 million hectares, Punjab dedicates 4.20 million hectares, constituting 83%, to cultivation. The cropping intensity in Punjab is recorded at 189% [1]. For over 65% of the population, agriculture is not just an occupation but a way of life, shaped by the transformative impact of the Green Revolution and accompanied by challenges such as land fragmentation and excessive resource utilization. The Indian government and the Reserve Bank of India have issued special directives and credit-linked subsidies in an effort to give small and marginal farmers and agricultural laborers top priority when it comes to credit disbursement [4].

This study aims to investigate the socioeconomic characteristics of farmers by looking at important variables like social networks, land ownership, income levels, and academic achievement. Simultaneously, the importance of multimedia—including digital platforms, radio, television, and mobile phones has grown as a means of supplying farmers with agricultural knowledge and information [5].Through an awareness of the interaction between the socio-economic status of farmers and the use of multimedia tools, policymakers and development professionals can create focused interventions that raise incomes, boost agricultural output, and support farming communities'

sustainable means of subsistence. In this context, the role of innovative and effective communication channels is pivotal [2]. In recent times, the challenges associated with conveying information about farm technology to farmers have captured the attention of agricultural extension scientists in India. The timely delivery of information is acknowledged as a critical factor influencing behavioural change among recipients.

Maize is a staple crop in many parts of the world; for the indigenous people living in impoverished rural areas, it is especially important because it makes their daily bread. They claim that the grain from the crop is the main reason it is grown—it is eaten by humans [3]. Maize plays a crucial role in Punjab's agriculture, contributing to both food security and economic growth. Substantial cultivation area, as indicated by statistics, underscores its importance in shaping the state's agricultural landscape.This study aims to enhance strategies for managing pest infestation in maize by providing evidence-based insights [6]. These insights can serve as guidance for formulating policies, prioritizing research, and implementing extension initiatives by arming farmers with the necessary knowledge and resources, we can enhance the resilience and sustainability of maize production systems. This, in turn, ensures food security for both present and future generations [7].

Materials and Methods

This study aimed to evaluate the socio-economic status of farmers residing in Sahauran, Hasanpur, Ghataur, Radiala and Allahpur villages situated in SAS Nagar, Punjab.

Employing a questionnaire-based approach, primary data was gathered. Interviews with 60 farmers were conducted and documented at the University Institute of Agricultural Sciences, Chandigarh University, Mohali, Punjab, India. The data collection adopted a quantitative approach, primarily relying on a census conducted in these five villages, covering 60 households inclusive of farmers, government employees, and self-employed business owners. The methodology involved systematic questionnaires, door-to-door interviews, direct observation, focus group discussions, community group interviews and video communications as rapid evaluation methods. This study aimed to understand the socio-economic status of farmers in Sahauran, Hasanpur, Ghataur, Radiala and Allahpur villages in Kharar Tehsil of SAS Nagar district, Punjab. Data collection involved a questionnaire based on primary sources, with recorded interviews of 60 farmers. Pre-structured sessions were organized to formulate the survey questionnaire, aligning with the study's objectives. In the following recorded data below, percentages are also provided for a better understanding using the formula:

Percentage (%) = N/ n*100

Where,
N = total no. of respondents from all the 5 villages i.e., 60 respondents.
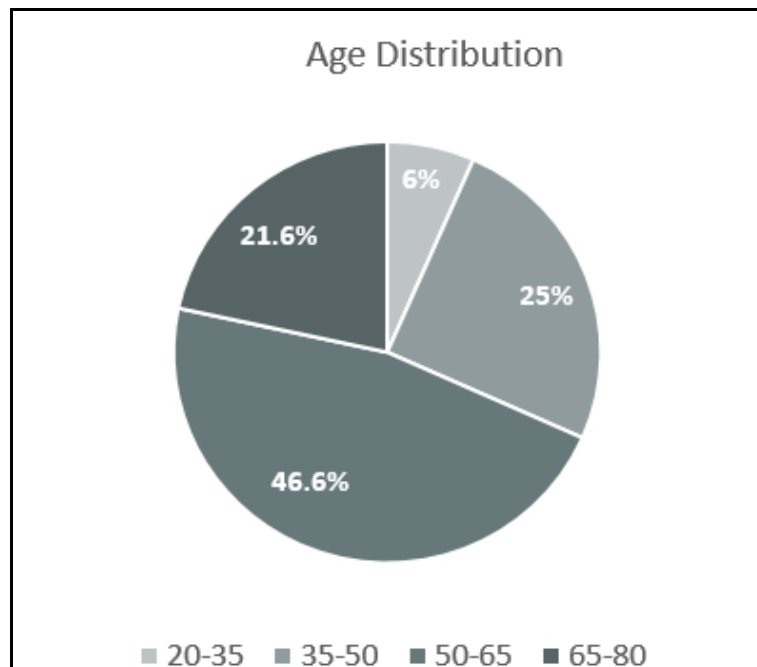n = the no. of respondents from each village.

Results and Declarations
From the data collected from 60 farmers residing in 5 villages, the following observations were made:

Age
The primary factors influencing every occupation are age and qualifications. According to the gathered data, a majority of farmers, accounting for 46.6%, fall within the age group of 50-65. Additionally, 25% of farmers belong to the 35-50 age bracket, while 21.6% fall into the 65-80 age range. Moreover, 6.66% of farmers are aged between 20-35, as illustrated in Table 1 and Figure 1.

Table 1: Depicts the age of the respondents from all villages

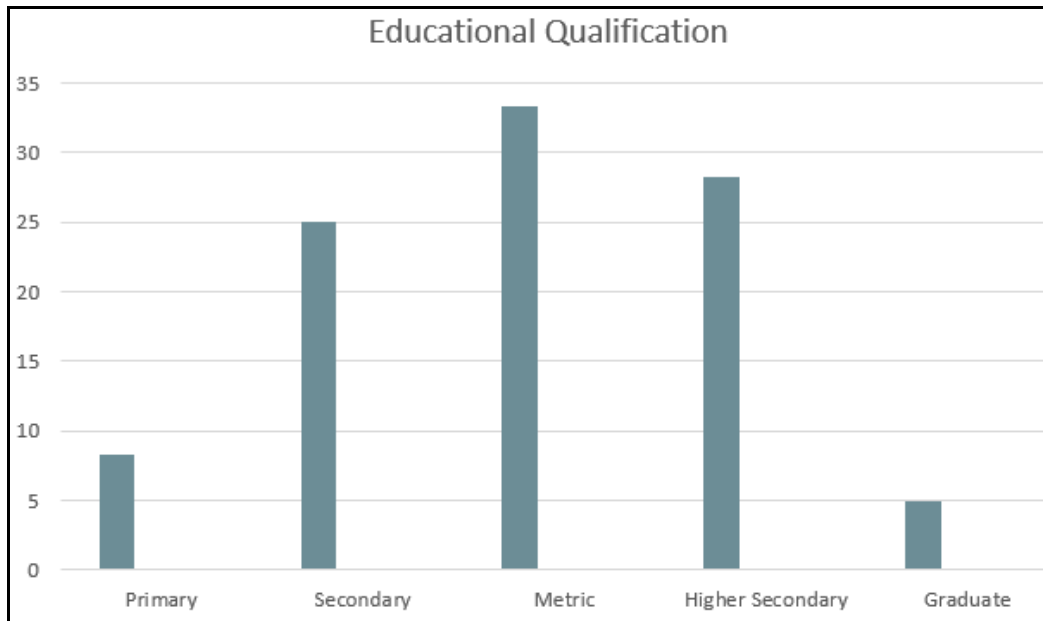| S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	20-35	0	1	2	1	0	6.66%
2.	35-50	3	3	4	2	3	25%
3.	50-65	7	4	4	6	7	46.6%
4.	65-80	5	3	0	3	2	21.6%

Fig 1: Depicts the age of the 60 farmers

Education
The educational background of the 60 farmers across all five villages revealed that 8.3% had received primary school education,25% had attended secondary level school education,33.3% had completed their Metric, 28.3% had attained a higher secondary school education and5% had graduated, as depicted in Figure 2. The number of illiterate farmers was minimal. Yet,on the flip side the number of graduates among the farmers too remain minimum. They attributed their lack of education to a previous undervaluation of its importance. However, over time, they recognized its significance and actively encouraged their children to pursue education by enrolling them in schools and colleges, as detailed in Table 2 and illustrated in Figure 2.

Table 2: Educational Qualification of 60 farmers

| S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Primary	3	1	0	1	0	8.3%
2.	Secondary	5	4	2	3	1	25%
3.	Metric	6	2	2	3	7	33.3%
4.	Higher Secondary	1	4	4	4	4	28.3%
5.	Graduate	0	0	2	1	0	5%

Fig 2: Represents education level of farmers

Head of the family

The head of the family in an agricultural household plays a pivotal role in decision-making, resource allocation, and overall management of the farm, influencing the family's economic stability. Among the 60 families, 61.6% had the farmer itself as the head of the family, followed by 30% headed by the father and 8.3% had the mother as the head of the family as detailed in Table 3 and illustrated in Figure 3.

Table 3: Demonstrates head of the family

S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Self	12	9	4	6	6	61.6%
2.	Father	2	1	4	6	5	30%
3.	Mother	1	1	2	0	1	8.3%
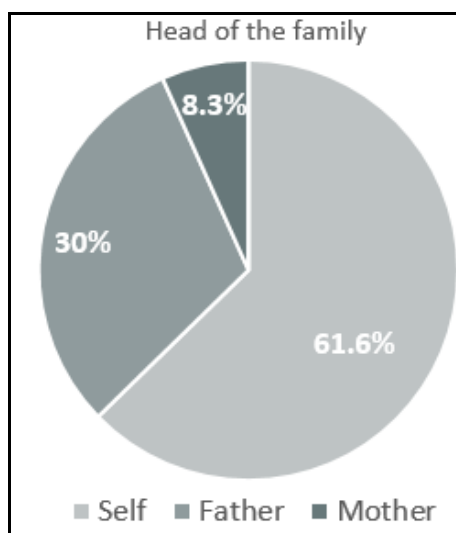
**Fig 3:** Represents head of the family

Family composition

The survey revealed that the majority of respondents, specifically 99% from the selected villages, fall into the General category. While other categories are present in these areas, a significant portion is not comprised of landlords or farmers; instead, they are involved in various occupations. Table 4 and Figure 4 illustrate the distribution of family types. The data indicates that 83.3% of respondents live in nuclear families, while only 16.6% of farmers opt for joint family setups.

Table 4: Demonstrates type of family composition

S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Nuclear	12	10	8	10	10	83.3%
2.	Joint	3	1	2	2	2	16.6%
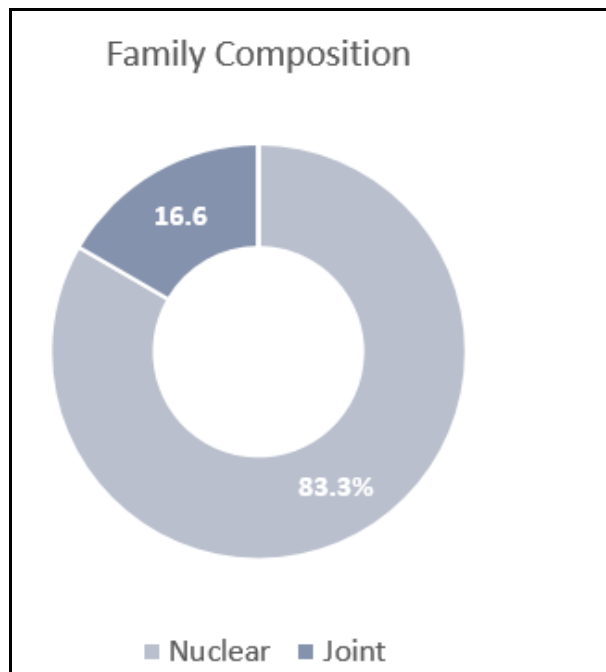
**Fig 4:** Represents type of family composition of 60 farmers

Mobile phone & internet connectivity

In total, 96% of the respondents possess mobile phones, and among them, 75% avail internet connectivity on their mobile devices. Only 4% of the respondents do not own any type of mobile phone. It's worth mentioning that all respondents in Village Radiala not only own mobile phones, but the whole lot of them have access to internet facilities, as indicated in Table 5 and illustrated in Figure 5.

Table 5: Demonstrates access to mobile phones and internet connectivity

S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Mobile Access	14	11	10	11	12	96%
2.	Internet Access	11	6	9	9	10	75%
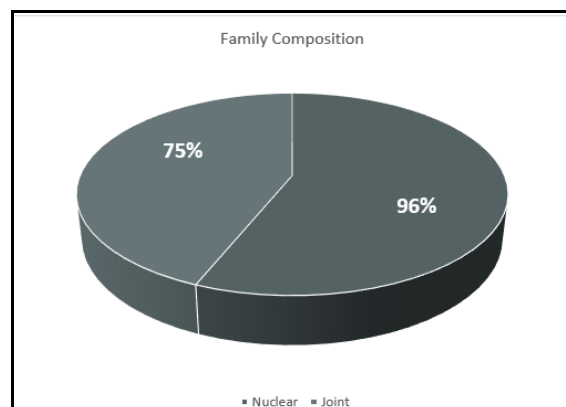
**Fig 5:** Represents mobile phone access and internet connectivity

Land holdings

According to the land holding capacity of the farmers, they can be classified into 5 categories of farmers. Table 6 presents a breakdown of the farmers, with 3.3% falling into the small farmer category, managing less than 1 hectare of land. Following this, 13.3% belong to the marginal category, with land holding between 1-2 hectares. Semi-medium category consists of 26.6% with a holding of land of 2-4 hectares and the medium farmer group with 4-10 hectares of land, comprises 43.3% of the total. The final category consists of large farmers, encompassing 10% who possess more than 10 hectares of land, as depicted in Figure 6.

Table 6: Demonstrates land holdings

| S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Small	0	0	1	1	0	3.3%
2.	Marginal	5	1	2	0	0	13.3%
3.	Semi-medium	2	6	1	4	3	26.6%
4.	Medium	7	2	4	4	9	43.3%
5.	Large	1	2	2	1	0	10%
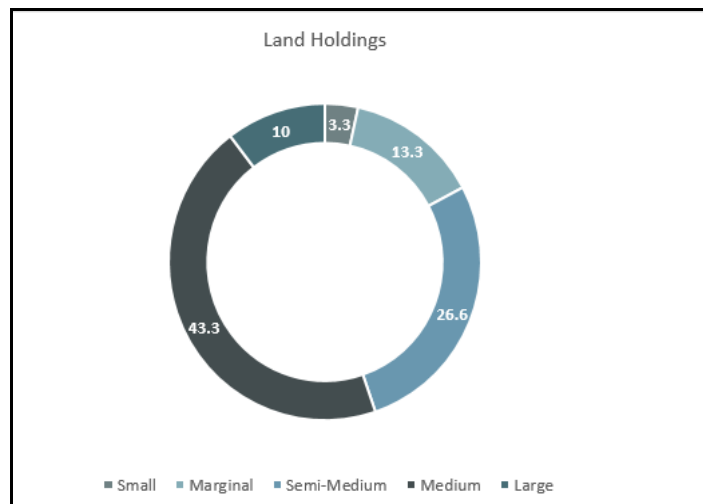
Fig 6: Represents land holdings of 60 farmers

Leased in & leased out land holdings

Leasing agricultural land holdings by a farmer indicates the size of his operations and his place in the regional agricultural economy. The degree to which a farmer leases property gives us information about the dynamics of resource management and land use in the farming community. In the Table and Figure mentioned, it is evident that 83.3 % farmers have leased in land, whereas 41.6% have leased out their land. A fraction of 38.3% farmers has lands leased in and leased out as illustrated in Table 7 and Figure 7.

Table 7: Demonstrates leased in and leased out land holdings

S.No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Leased In	9	8	10	11	12	83.3%
2.	Leased Out	6	3	5	6	5	41.6%
3.	Both	4	2	5	6	6	38.3%
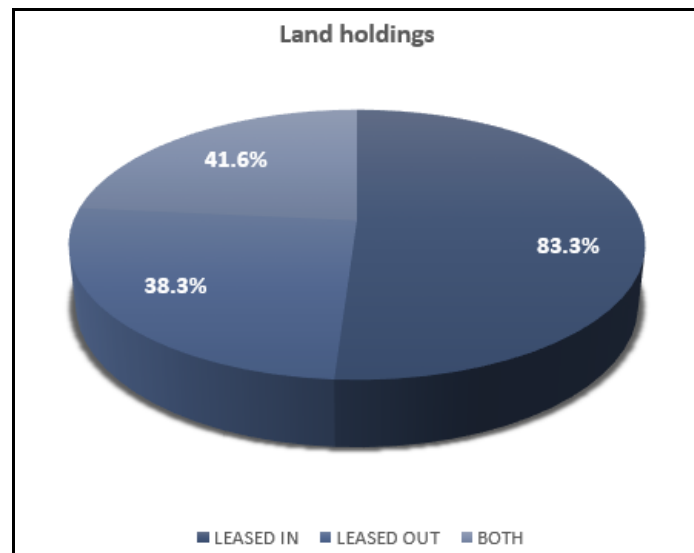
**Fig 7:** Represents leased in and leased out land holdings of farmers

Source of information

Each respondent relies on various sources of information and extension contacts. Approximately 20% of the total respondents maintain contact with progressive farmers, serving as valuable sources of information on farming methods, agro-chemicals and new seeds. A vast majority of farmers seek information from newspapers (93%), agricultural workshops (61%), and Kisan melas, with field visits contributing to skill enhancement for approximately 66.6% of respondents attending events in their nearby areas. Furthermore, 23.3% of young farmers utilize agricultural apps and groups on their phones for information, as illustrated in Table 8 and Figure 8.

Table 8: Demonstrates sources of information of 5 villages

S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Newspaper	15	11	9	11	10	93%
2.	Agricultural Workshops	13	6	6	5	7	61%
3.	Progressive Farmers	3	3	4	2	0	20%
4.	Social Networks	3	4	5	2	0	23.3%
5.	Kisan Mela	11	5	8	5	11	66.6%
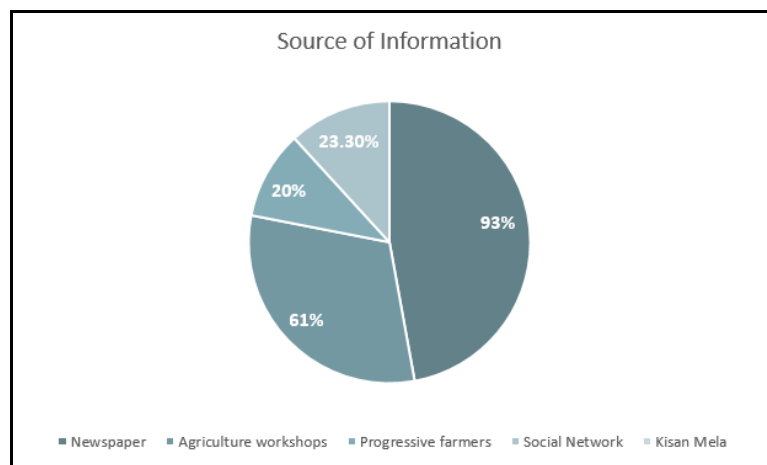
**Fig 8:** Represents sources of information of 5 villages

Extension contact

In the agricultural industry, extension contacts are essential because they give farmers access to critical information, cutting-edge methods, and best practices that increase crop yields and efficiency. According to the data collected, 18.3% gathers information from State agricultural universities, 40% from the veterinary department. Private agencies manage to provide 26.6% extension contact to the farmer, whereas Krishi Vigyan Kendra had a participation of 13.3% among the farmers, as showcased in the Table 9 and represented in Figure 9.

Table 9: Demonstrates extention contact of farmers

| S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	State Agriculture University	5	3	2	1	0	18.3%
2.	Veterinary Department	9	6	5	1	3	40%
3.	Krishi Vigyan Kendra	2	2	3	1	0	13.3%
4.	Private Agencies	7	3	2	1	3	26.6%
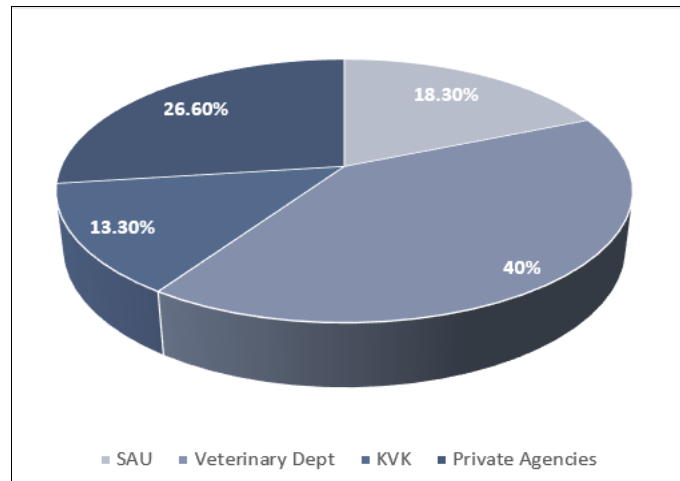
Fig 9: Represents extension contact of farmers

Allied sectors

The farmers highlighted that the allied sectors play a vital role in their rural communities by broadening farmers' income streams. As illustrated in the table 10 and figure 10, all over the five villages 75% of farmers maintain livestock and associated with it, 53.3% farmers produce manure. Poultry is maintained by 13.3% of the lot.

Table 10: Demonstrates allied sectors

S. No.	Parameters	Sahauran n=15	Hasanpur n=11	Radiala n=10	Ghataur n=12	Allahpur n=12	Overall % n=60
1.	Livestock	11	6	7	12	9	75%
2.	Poultry	3	1	1	2	1	13.3%
3.	Manure	8	6	3	10	5	53.3%
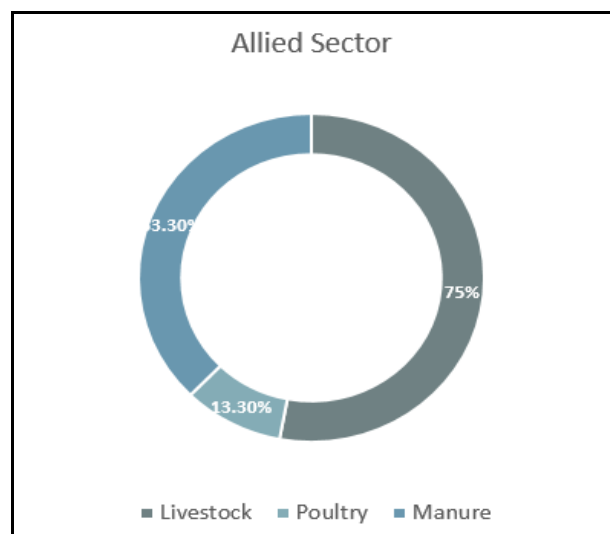
Fig 10: Represents the allied sectors

Video questionnaire

Within the survey, awareness regarding pest infestation in maize was initiated using videos and associated questionnaires. A carefully curated questionnaire was taken to check the understanding of the farmers. Same set of questions was asked before and after introducing the video to the farmers. Figure 12 depicts the score obtained before and after observing the video. The respondents of village

Hasanpur had the maximum increase in awareness by 5.60%, followed by Sahauran showing increase of 5.53%. Awareness in village Radiala showed an increase of 4.60%, Allahpur showcased increase by 4.50% whereas, Ghataur was found to be the village that showed minimum increase in awareness by 4.40%. The aforementioned data thus indicates that after watching the video, there was a significant increase in knowledge about various aspects of maize disease and pest; the mean score was 6 prior to watching the video, and 13 subsequent to watching it; the mean percentage was 38% and 76% before and after watching the video. The video changed 99% of the audience.

Table 10: Demonstrates the number of farmer aware about diseases and management of maize crop
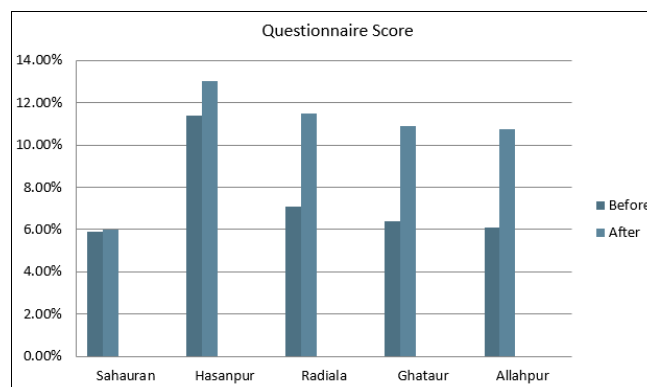
	Video Questionnaire	Before	After
1.	Shoot fly attacks the plants after how many days of sowing? (3-7 days)	15 (25%)	49 (82%)
2.	Can you identify an armyworm? (Yes)	52 (86%)	58 (97%)
3.	What type of damage is caused by shoot fly? (Drying of plant, Holes in leaf & Stunted growth)	10 (11%)	38 (63%)
4.	Which insecticide is used for seed treatment from shoot fly? (Gaucho)	6 (10%)	30 (50%)
5.	Which insecticide is used as direct application to maize plants? (Furadan)	5 (8%)	39 (65%)
6.	Type of damage caused by armyworm? (Holes & Faecal on leaves)	58 (97%)	60 (100%)
7.	Time of appearance of armyworm? (During night)	59 (98%)	60 (100%)
8.	Which part does silkcutter damage? (Cob and maize silk)	41 (68%)	52 (87%)
9.	Which insecticide used for managing silk cutter? (Gaucho and Furadan)	4 (7%)	45 (75%)
10.	Main morphological feature of fall armyworm? (Y alphabet on head and 4 dots on last body)	3 (5%)	43 (72%)
11.	How do fall armyworm feed on leaves? (By scraping and Circular holes)	52 (87%)	58 (97%)
12.	Insecticide used for managing fall army worm? (Coragen & Delegate)	7 (12%)	49 (82%)
13.	Concentration of coragen to be used? (0.4 ml per liter)	3 (5%)	35 (58%)
14.	Concentration of Delegate? (0.5 ml per liter)	9 (15%)	33 (55%)
15.	Major insect's pests of maize? (Shoot fly, Armyworm, Fall armyworm, & Silkcutter)	38 (63%)	47 (78%)
16.	Concentration of Gaucho for seed treatment in managing shootfly? (6 ml per kg)	2(3%)	36 (60%)
17.	Army worm feeds on which part? (Leaves)	25 (42%)	41 (68%)
	Mean	6	13
	Mean%	38%	76%
	%Change	99%	
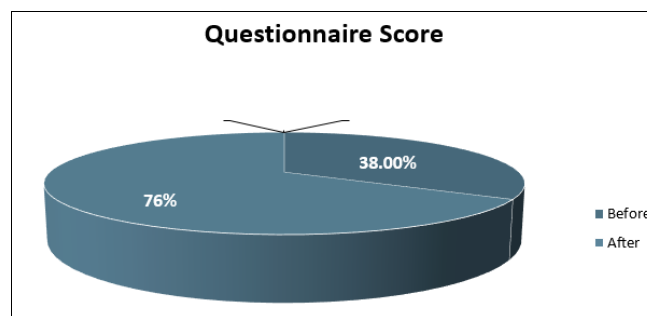
Fig 11: Represents before and after mean percentage of awareness among farmers

As observed in Figure 12 depicts the average score obtained by the farmers of each village before and after watching the video shown to them. From the graph, it can be said that respondents from village Hasanpur are to be most aware whereas the farmers of village Sahauran are likely to be least aware among all 5 villages, as shown below in the figure:
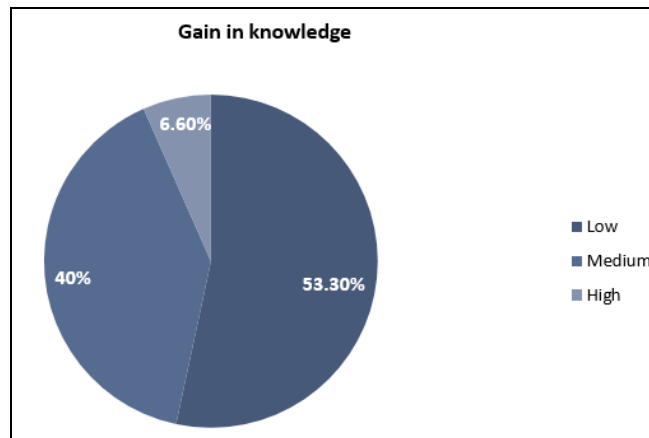

Fig 12: Represents before and after scores of Video Questionnaire

Table 12: Demonstrates gain in knowledge of all respondents after watching video on diseases of maize

S. No.	Category	Frequency	Overall % n=60
1.	Low (0-83)	32	53%
2.	Medium (84-163)	24	40%
3.	High (164-250)	4	7%

Fig 13: Represents gain in knowledge of all farmers after watching video

Conclusion

In summary, agriculture stands as the primary pillar of sustenance, particularly exemplified by Punjab's designation as the "Granary of India. This study delves into the socio-economic dynamics of farming communities of 5 villages of SAS Nagar, Mohali area i.e. Sahauran, Hasanpur, Radiala, Ghataur, Allahpur recognizing the pivotal role of multimedia tools in disseminating agricultural knowledge and fostering sustainable practices. Additionally, the significance of staple crops like maize in ensuring food security and economic prosperity cannot be overstated, emphasizing the need for evidence-based strategies to address challenges such as pest infestation. Through the video questionnaire survey, awareness was raised among farmers about maize cultivation has proven to be an effective tool in disseminating crucial information and knowledge. By utilizing modern multimedia technology, we have been able to reach a wider audience of farmers, empowering them with insights into the cultivation, management, and potential challenges associated with maize crops. In comparison to farmers in other villages, the data obtained indicates that Hasanpur farmers have the highest level of awareness, whereas Sahauran farmers have the lowest level of awareness. The interactive nature of video questionnaires not only engages farmers actively but also facilitates a deeper understanding of the subject matter. Through this initiative, farmers have gained valuable insights into best practices, pest management strategies, and the importance of maize in ensuring food security and economic stability. Moreover, the survey has provided a platform for farmers to voice their concerns and seek guidance on specific issues related to maize cultivation. Moving forward, it is imperative to continue leveraging innovative approaches like video questionnaires to enhance agricultural extension services and support farmers in adopting sustainable farming practices.

References

1. Bagal YS, Singh G, Sharma A. Gain in knowledge level of farmer about recommended agricultural practices after watching video films. Multilogic Sci. 2018;8(1):363-366.
[https://www.researchgate.net/publication/342662676]
2. Chopra RK. Impact of television on retention of knowledge among farmers. M.Sc. Thesis, PAU, Ludhiana; c1980. p. 2-5.
3. Issa FO, Kagbu JH, Abdulkadir SA. Analysis of socio-economic factors influencing farmers' adoption of improved maize production practices in Ikara Local Government Area of Kaduna State, Nigeria. Afr Journals Online. 2016;16(2):15-24.
https://doi.org/10.4314/agrosh.v16i2.3
4. Kaur HJ, Gupta S. Socio–Economic Conditions of farmers: A study of rural Punjab. Int J Appl Serv Market Perspect. 2018;7(3):3429-3450.
[https://asmp.gfer.org/index.php/asmp/article/view/14]
5. Kumar R, Fayaz A, Kaundal M. Vertical Farming: The Future of Controlled-environment Agriculture and Food-production System. Curr J Appl Sci Technol. 2023;42(48):74–86.
https://doi.org/10.9734/cjast/2023/v42i484334
6. Singh G, Iqbal T, Paswal S, Sharma LK. Identification of different pulse crops grown and inputs used for their cultivation in temperate area of Jammu region. Agric Mech Asia. 2023;54(4):12663-12672.
7. [https://www.researchgate.net/publication/370494372]
8. Singh G, Sharma A, Bagal YS. Perception of Farmers Regarding Informative Video Films on Dissemination of Selected Farming Practices. Int J Curr Microbiol Appl Sci. 2018;7(6):9-14.
[https://www.researchgate.net/publication/325971771]