

RESEARCH PAPER

Assessment of Personal, Socio-economic and Communicational Attributes of Beneficiary and Non-Beneficiary Farmers Regarding Mustard Production Technologies Demonstrated Under CFLDs in Bikaner District of Rajasthan

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ABSTRACT

The present investigation was carried out to study the personal, social, economic and communicational attributes of beneficiary and non-beneficiary farmers regarding mustard production technologies demonstrated under Cluster Front Line Demonstrations (CFLDs). The study was conducted in Bikaner district of Rajasthan during 2023–24. A total of 160 respondents comprising 80 beneficiary and 80 non-beneficiary farmers were selected through proportionate random sampling from Bikaner and Kolayat panchayat samitis. Data were collected using a pre-tested semi-structured interview schedule and analysed using frequency, percentage, mean and standard deviation. The findings revealed that a majority of respondents (64.38%) belonged to the middle-age group, 60.63 per cent were from Scheduled Caste, and 40.00 per cent were illiterate. Agriculture was the principal occupation of 81.88 per cent respondents, while 70.00 per cent possessed large landholdings. Canal irrigation was the dominant source of irrigation. Most respondents exhibited medium levels of mass media exposure (68.12%), extension contact (67.50%), information-seeking behaviour (58.75%) and information-sharing behaviour (83.13%). Beneficiary farmers showed comparatively higher levels of communication attributes than non-beneficiaries, reflecting the positive influence of CFLDs. The study concludes that CFLDs significantly strengthen farmers' communicational behaviour and support adoption of improved mustard production technologies.

HIGHLIGHTS

- ① The majority of mustard growers were middle-aged (64.38%), largely from Scheduled Caste communities (60.63%), and 40% were illiterate, showing that CFLDs reached socially disadvantaged groups with limited formal education.
- ① Agriculture was the primary occupation for 81.88% of respondents, and 70% had large landholdings (>4 ha). Canal irrigation was the dominant source (40%), ensuring reliable water access for mustard cultivation.
- ① Beneficiary farmers consistently showed higher mass media exposure, extension contact, information-seeking, and information-sharing behaviour compared to non-beneficiaries. This demonstrates that CFLDs significantly strengthened farmers' communicational attributes, supporting wider adoption of improved mustard technologies.

Keywords: CFLDs, Mustard, Beneficiary farmers, Extension contact, Communication behaviour

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Mustard (*Brassica juncea* L.) is one of the most important oilseed crops in India, playing a vital role in meeting the country's edible oil requirements. India ranks among the leading producers of mustard globally and within the country, Rajasthan occupies a predominant position in terms of area and production. The agro-climatic conditions of Rajasthan, particularly in districts like Bikaner, are highly conducive to mustard cultivation, making the crop an integral component of the regional farming system (Bansal and Kukkar, 2020). Over the years, several improved mustard production technologies—such as high-yielding varieties, balanced nutrient management, improved irrigation practices and plant protection measures—have been developed and recommended by agricultural research institutions. However, the adoption of these technologies at the farmers' level remains uneven and often below the desired level (Shariff *et al.* 2022). This gap between recommended practices and actual field-level adoption can be attributed to a complex interaction of personal, social, economic and communicational factors (Ndwiga *et al.* 2025). Farmers' age, education, caste, landholding size, occupation, access to resources and exposure to information sources significantly influence their decision-making and adoption behaviour (Kadilikansimba *et al.* 2025). Effective communication and extension support play a crucial role in enhancing farmers' awareness, knowledge and adoption of improved agricultural technologies. Attributes such as mass media exposure, extension contact, information-seeking behaviour and information-sharing behaviour determine the extent to which farmers access, process and utilize agricultural information (Sharma *et al.* 2025). Strengthening these communicational attributes is therefore essential for accelerating technology dissemination and improving productivity in mustard cultivation.

Cluster Front Line Demonstrations (CFLDs), implemented through Krishi Vigyan Kendras (KVKs), are an important extension approach aimed at showcasing the performance of proven technologies directly on farmers' fields under real farming conditions. CFLDs emphasize cluster-based demonstrations, active farmer participation and close technical supervision, thereby facilitating faster diffusion of innovations and enhancing farmers' confidence in improved practices (Hooda

and Jangra, 2025). Evaluating the impact of CFLDs requires a comparative assessment of beneficiary and non-beneficiary farmers, particularly with respect to their socio-economic and communicational characteristics. In this context, an in-depth understanding of the personal, social, economic and communicational attributes of mustard growers is essential for assessing the effectiveness of CFLDs and for refining future extension strategies. Therefore, the present investigation was undertaken to analyze these attributes among beneficiary and non-beneficiary farmers engaged in mustard production in Bikaner district of Rajasthan, with a view to strengthening extension interventions and promoting wider adoption of improved mustard production technologies (Singha *et al.* 2020).

MATERIALS AND METHODS

The study was conducted in Bikaner district of Rajasthan selected purposely, where two Krishi Vigyan Kendra (KVK Bikaner and Lunkaransar) are functioning. The Bikaner district comprises nine panchayat samiti—Bikaner, Chhatargarh, Khajuwala, Kolayat, Lunkaransar, Nokha, Poogal and Dungargarh. Out of these nine panchayat samiti, two panchayat samiti Bikaner and Kolayat is selected purposely for the present study as highest number of cluster front line demonstrations on mustard were conducted by Krishi Vigyan Kendra (KVK) Bikaner-I during 2015-16 to 2023-24. A total of 160 respondents, comprising 80 beneficiary farmers (trained under CFLDs) and 80 non-beneficiaries, were selected through proportionate random sampling. Data were collected using a pre-tested semi-structured interview schedule and analysed using statistical tools such as frequency distribution, percentage, mean, standard deviation, mean percent score, correlation coefficient (r), rank correlation, z test, t test, and multiple linear regression.

Percentage: Percentage values were calculated to make simple comparisons. These were calculated by dividing the frequency of a particular cell by total number of respondents and multiplying by 100.

$$P = \frac{n}{N} \times 100$$

Frequency: It was calculated to find out the number of respondents in a particular cell.

**Table 1:** Distribution of respondents on the basis of age, caste and education

Categories	Respondents					
	Beneficiary respondents (n=80)		Non-beneficiary respondents (n=80)		Overall respondents (N=160)	
	f	%	f	%	f	%
<i>Distribution of respondents on basis of age</i>						
Young (<39 years)	24	30.00	9	11.25	33	20.62
Middle (39 to 53 years)	49	61.25	54	67.50	103	64.38
Old (>53 years)	7	8.75	17	21.25	24	15.00
<i>Distribution of respondents on basis of caste</i>						
Scheduled Caste	48	60.00	49	61.25	97	60.63
Other Backward Class	14	17.50	8	10.00	22	13.75
General Caste	18	22.50	23	28.75	41	25.62
<i>Distribution of respondents on basis of education</i>						
Illiterate	28	35.00	36	45.00	64	40.00
Primary	12	15.00	15	18.75	27	16.88
Middle	3	3.75	1	1.25	4	2.50
Secondary	13	16.25	15	18.75	28	17.50
Senior Secondary	15	18.75	11	13.75	26	16.25
Graduate and above	9	11.25	2	2.50	11	6.87

Mean: It was calculated to the average value of particular score. The formula is given below;

$$\bar{X} = \frac{\sum X_{ij}}{N}$$

Categorization: The categorization of respondents into different groups based on age and education utilized the cube root method, as outlined by Singh (1975).

RESULTS AND DISCUSSION

Personal Attributes

The data presented in Table 1 reveal that the majority of beneficiary respondents (61.25%) belonged to the middle age group (39–53 years), followed by young (30.00%) and old (8.75%) age groups. A similar trend was observed among non-beneficiary respondents, where 67.50 per cent were middle-aged. Overall, 64.38 per cent of respondents belonged to the middle age group, with a mean age of 45.63 years (S.D. = 7.13). Middle-aged farmers are generally more active and receptive to improved mustard production technologies. These findings are consistent with the findings of Rajeshwar *et al.* (2019), who concluded that the majority of cotton-growing farmers participating in FLDs were of

middle age. Caste-wise distribution showed that the majority of respondents belonged to the Scheduled Caste category. Among beneficiary and non-beneficiary respondents, 60.00 and 61.25 per cent respectively belonged to Scheduled Caste. Overall, 60.63 per cent of respondents were Scheduled Caste, followed by General Caste (25.62%) and OBC (13.75%). This indicates a higher representation of socially disadvantaged groups in mustard cultivation. A majority of respondents belonged to the Scheduled Caste category, indicating that mustard production programmes have considerable outreach among socially disadvantaged groups. The findings are supported by the findings of Kumari *et al.* (2020) concluded that majority of farmers belongs to other backward class followed by general caste, Schedule caste and Schedule tribe.

Educational status of respondents indicated low levels of formal education. Illiteracy was reported among 35.00 per cent of beneficiaries and 45.00 per cent of non-beneficiaries. Overall, 40.00 per cent of respondents were illiterate, while only 6.87 per cent had graduate-level education or above. Low educational status may affect comprehension of recommended mustard production practices, highlighting the importance of extension support. Low educational status among

Table 2: Distribution of respondents on the basis of social participation

Categories	Respondents					
	Beneficiary respondents (n=80)		Non-beneficiary respondents (n=80)		Overall respondents (N=160)	
	f	%	f	%	f	%
Non-member of social organization	45	56.25	55	68.75	100	62.50
Member of a social organization	35	43.75	25	31.25	60	37.50
Office Bearer	0	0	0	0	0	0

Table 3: Distribution of respondents on the basis of occupation, land holding and source of irrigation

Categories	Respondents					
	Beneficiary respondents (n=80)		Non-beneficiary respondents (n=80)		Overall respondents (N=160)	
	f	%	f	%	f	%
<i>Distribution of respondents on the basis of major occupation</i>						
Agriculture	66	82.50	65	81.25	131	81.88
Business	9	11.25	9	11.25	18	11.25
Service	5	6.25	6	7.50	11	6.87
<i>Distribution of respondents on the basis of land holding</i>						
Marginal (<1ha.)	1	1.25	2	2.50	3	1.87
Small (1-2 ha.)	12	15.00	4	5.00	16	10.00
Medium (2.1-4 ha.)	14	17.50	15	18.75	29	18.13
Large (>4 ha.)	53	66.25	59	73.75	112	70.00
<i>Distribution of respondents on the basis of source of irrigation</i>						
Canal Irrigated	30	37.50	34	42.50	64	40.00
Ground Water Irrigated (Tube-well)	27	33.75	25	31.25	52	32.50
Both Canal and Ground water Irrigated	23	28.75	21	26.25	44	27.50

mustard growers may limit understanding of technical recommendations, emphasizing the role of extension and demonstrations. The findings are in contradictory with the findings of Raghuvanshi *et al.* (2018) who concluded that majority of the pulse growers of Sehore district Madhya Pradesh requires higher initial investment.

Social participation

The findings in table 2 revealed limited social participation among respondents. More than half of the beneficiary respondents (56.25%) and 68.75 per cent of non-beneficiaries were not members of any social organization. Overall, 62.50 per cent of respondents had no social participation and none of the respondents held leadership positions. Limited organizational involvement may constrain collective learning and diffusion of mustard production technology. Social participation of mustard growers was low, which may restrict collective learning and dissemination of improved production technologies.

The findings are in agreement with previous studies (such as those by Jain and Kumar (2017) and Badhala and Hanuman Lal (2012), which suggest that while a substantial portion of beneficiary farmers are members of social organizations, active leadership or office-bearing remains uncommon.

Economic attributes

Agriculture was the principal occupation of the majority of respondents. Among beneficiaries, 82.50 per cent depended mainly on agriculture, while 81.25 per cent of non-beneficiaries reported agriculture as their major occupation (Table 3). Overall, 81.88 per cent of respondents depended on agriculture, indicating the importance of mustard cultivation in their livelihood system. Agriculture was the primary occupation of most respondents, highlighting mustard as an important livelihood crop. These findings highlight the predominance of agriculture as the primary occupation in the study area. The marginal share of business and service

Table 4: Distribution of respondents on the basis of communication attributes

Categories	Respondents					
	Beneficiary respondents (n=80)		Non-beneficiary respondents (n=80)		Overall respondents (N=160)	
	f	%	f	%	f	%
Distribution of respondents on the basis of mass media exposure						
Low (<10.64 score)	1	1.25	22	27.50	23	14.38
Medium (10.64 to 18.09 score)	56	70.00	53	66.25	109	68.12
High (>18.09 score)	23	28.75	5	6.25	28	17.50
Distribution of respondents on the basis of extension agency contact						
Low (<8.19 score)	5	6.25	16	20.00	21	13.13
Medium (8.19 to 19.97 score)	45	56.25	63	78.75	108	67.50
High (>19.97 score)	30	37.50	1	1.25	31	19.37
Distribution of respondents on the basis of information seeking behaviour						
Low (<13.29 score)	4	5.00	26	32.50	30	18.75
Medium (13.29 to 20.45 score)	50	62.50	44	55.00	94	58.75
High (>20.45 score)	26	32.50	10	12.50	36	22.50
Distribution of respondents on the basis of information sharing behaviour						
Low (<13.82 score)	1	1.25	7	8.75	8	5.00
Medium (13.82 to 19.52 score)	63	78.75	70	87.50	133	83.13
High (>19.52 score)	16	20.00	3	3.75	19	11.87

occupations among the respondents suggests limited occupational diversification, underscoring the continued significance of agriculture in sustaining rural incomes. Land holding analysis (Table 3) revealed that most respondents belonged to the large farmer category. Among beneficiary respondents, 66.25 per cent possessed more than 4 ha of land, while 73.75 per cent of non-beneficiaries were large farmers. Overall, 70.00 per cent of respondents had large land holdings. Larger farm size may facilitate better adoption of mustard production technology due to greater resource availability (Uddin *et al.* 2024). Large land holdings may facilitate better adoption of mustard production technology due to higher resource availability (Lal Reager *et al.* 2025). This analysis indicates that land ownership is concentrated among large farmers in the study area, while the number of respondents with small or marginal land holdings is minimal (Basediya *et al.* 2023). Canal irrigation (Table 3) was the dominant source of irrigation (40.00%), followed by tube-well irrigation (32.50%) and use of both sources (27.50%). Availability of assured irrigation supports timely adoption of recommended practices in mustard cultivation. This pattern reveals that canal irrigation is the dominant source, closely followed by ground water, while a significant proportion of farmers use

a combination of both to ensure reliable irrigation (Singh *et al.* 2025).

Communication attributes

The data in table 4 revealed that the majority of respondents had medium mass media exposure. Among beneficiaries, 70.00 per cent belonged to the medium category, while 28.75 per cent had high exposure. In contrast, only 6.25 per cent of non-beneficiaries reported high mass media exposure. Overall, 68.12 per cent of respondents had medium exposure, with a mean score of 14.37 (S.D. = 3.73). These findings reveal that while medium mass media exposure is most common overall, beneficiaries are much more likely to have high exposure to mass media compared to non-beneficiaries, potentially indicating better access to information and agricultural innovations among beneficiaries. Higher media exposure among beneficiaries enhances awareness of improved mustard practices (Choudhary *et al.* 2025).

Extension agency contact was predominantly at a medium level. A significantly higher proportion of beneficiaries (37.50%) had high extension contact compared to non-beneficiaries (1.25%). The overall mean extension contact score was 14.08



(S.D. = 5.89). Frequent interaction with extension personnel positively influences adoption of mustard production technology (Shah and Devkota, 2024). Most respondents exhibited medium information seeking behaviour. High information seeking behaviour was observed among 32.50 per cent of beneficiaries compared to 12.50 per cent of non-beneficiaries. Overall, 58.75 per cent of respondents belonged to the medium category, with a mean score of 16.87 (S.D. = 3.58). Information sharing behaviour of respondents was predominantly medium. Among beneficiaries, 20.00 per cent exhibited high information sharing behaviour, whereas only 3.75 per cent of non-beneficiaries belonged to this category. Overall, 83.13 per cent of respondents showed medium information sharing behaviour, with a mean score of 16.67 (S.D. = 2.85). Beneficiary farmers showed better information sharing behaviour, facilitating horizontal spread of mustard production technology (Singh *et al.* 2019).

CONCLUSION

The study concludes that mustard growers in Bikaner district are predominantly middle-aged, less educated, agriculturally dependent and possess large landholdings with canal irrigation facilities. Most respondents exhibited medium levels of mass media exposure, extension contact, information-seeking and information-sharing behaviour. Beneficiary farmers consistently performed better than non-beneficiaries in communicational attributes, demonstrating the positive impact of CFLDs. Strengthening extension outreach, particularly among non-beneficiary farmers and promoting participatory communication approaches can further enhance adoption of improved mustard production technologies.

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