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

NAAS Rating (2025): 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 9; September 2025; Page No. 239-245

Received: 22-06-2025
Accepted: 26-07-2025

Indexed Journal
Peer Reviewed Journal

Profile of maize growers and impact of maize front line demonstrations conducted by AICRP on maize growers

[1]VR Bawa, [2]BT Kolgane and [3]HP Sonawane

[1]PG Scholar, Agricultural Extension Education, RCSM College of Agriculture, Kolhapur, Maharashtra, India

[2]Associate Professor of Agricultural Extension Education, RCSM College of Agriculture, Kolhapur, MPKV, Rahuri, Maharashtra, India

[3]Professor (CAS) of Agricultural Extension Education, RCSM College of Agriculture, Kolhapur, MPKV, Rahuri, Maharashtra, India

DOI: https://www.doi.org/10.33545/26180723.2025.v8.i9d.2406

Corresponding Author: VR Bawa

Abstract

The study was undertaken to assess the impact of maize Front Line Demonstrations (FLDs) conducted by the All India Coordinated Research Project (AICRP) on maize growers in Kolhapur district, Maharashtra. A total of 150 respondents, comprising 75 beneficiary and 75 non-beneficiary farmers, were selected using proportionate random sampling from three purposively chosen tahsils—Panhala, Hatkanangale, and Gaganbawda. Data were collected through a pre-tested interview schedule and analysed using appropriate statistical tools. The impact was assessed in terms of change in knowledge, adoption of recommended practices, area under maize cultivation, productivity, and income. The impact of FLDs was found to be considerable in improving maize cultivation outcomes among beneficiaries, with limited improvement observed among non-beneficiaries. Beneficiaries showed a substantial increase in knowledge, adoption of recommended practices, area under maize cultivation, productivity, and net income. Notably, productivity and income rose by 40.70 per cent and 48.14 per cent respectively. Non-beneficiaries exhibited relatively stagnant performance in these indicators, indicating the absence of direct technical interventions. The contrast clearly demonstrated the influence of FLDs on the farming outcomes of beneficiaries compared to non-beneficiaries. The average overall impact of FLDs was calculated at 41.03 per cent. Z-tests showed statistically significant differences at the 0.01 level between beneficiary and non-beneficiary farmers across all impact indicators, validating the strong positive influence of FLDs on technology adoption and performance.

Keywords: Maize, front line demonstrations, AICRP, technology adoption, productivity, income, Maharashtra

Introduction

Maize (*Zea mays* L.) is the third most important cereal crop in India after rice and wheat, with remarkable versatility in its uses for food, feed, fodder, and industrial applications. Over the past two decades, maize has recorded the highest compound annual growth rate among cereals in terms of area, production, and productivity, largely due to increasing demand from the poultry, livestock feed, and starch industries. In Maharashtra, the area under maize has grown from 8.91 lakh hectares in 2010-11 to 13.14 lakh hectares in 2022-23, accompanied by notable improvements in production. However, productivity remains constrained by factors such as low adoption of improved varieties, sub-optimal crop management practices, and biotic and abiotic stresses.

Front Line Demonstrations (FLDs), conceptualized on the principle of "Seeing is Believing," are a proven extension approach to accelerate the transfer of technology from research to farmers' fields. Conducted under the close supervision of subject matter specialists, FLDs serve to showcase newly released varieties, recommended production technologies, and integrated crop management practices in real farming conditions. The All India Coordinated Research Project (AICRP) on Maize has been instrumental in implementing FLDs across different agro-climatic zones to demonstrate the performance and benefits of improved maize technologies.

Front Line Demonstrations (FLDs) under AICRP on Maize address this by showcasing advanced technologies. This study evaluates their impact on farmers' knowledge, adoption, yield, income, and area, while analyzing how socio-economic and psychological traits influence adoption.

Objectives

1. To study the personal, socio-economic and psychological characteristics of maize growers
2. To study the impact of maize Front Line Demonstrations Conducted by AICRP on the maize growers

Methodology

The study was conducted in Kolhapur district of Maharashtra, where AICRP on Maize has been implementing FLDs for the last three years. Three tahsils—

Panhala, Hatkanangale, and Gaganbawda—were purposively selected. A total of 150 farmers (75 beneficiaries and 75 non-beneficiaries) were selected through proportionate random sampling.

The research design was ex-post-facto as the demonstrations had already been conducted. Data were collected through a structured interview schedule covering respondents' knowledge, adoption behavior, area, productivity, and income. Statistical tools such as mean, percentage, and t-test were used for analysis.

Results and Discussion

Table 1: Personal, Socio-Economic and Psychological Characteristics of the maize growers

Sr. No.	Characteristics/ Category	Beneficiary farmer (n=50)		Non-Beneficiary farmers (n=50)	
A	Personal characteristics	Frequency	(%)	Frequency	(%)
1	**Age**				
	Young age (Up to 35 Years)	01	01.33	02	02.67
	Middle age (36 to 55 Years)	56	74.67	51	68.00
	Old age (56 and above)	18	24.00	22	29.33
2	**Education**				
	Illiterate	01	01.33	00	00.00
	Primary Education (up to 7)	10	13.33	09	12.00
	Secondary Education (8 to 10)	32	42.67	30	40.00
	Higher Secondary (11 to 12)	29	38.67	26	34.67
	Graduation	03	04.00	10	13.33
3	**Experience in maize farming**				
	Low (Up to 15)	60	80.00	64	85.33
	Medium (16 to 27)	13	17.33	08	10.67
	High (28 and above)	02	02.67	03	04.00
4	**Occupation**				
	Agriculture	16	21.33	20	26.67
	Agriculture + labour	09	12.00	14	18.67
	Agriculture + Dairy	43	57.33	38	50.67
	Agriculture + Business	04	05.34	02	02.66
	Agriculture + Service	03	04.00	01	01.33
5	**Area under maize cultivation**				
	Low (Up to 0.30 ha)	00	00.00	49	65.33
	Medium (0.31 - 0.55 ha)	63	84.00	19	25.33
	High (0.56 ha and above)	12	16.00	07	09.33
6	**Scientific orientation**				
	Low (Up to 39)	03	04.00	13	17.33
	Medium (40 to 44)	46	61.33	41	54.67
	High (45 & above)	26	34.67	21	28.00
7	**Land holding**				
	Marginal (up to 1.00 ha)	23	30.67	34	45.33
	Small (1.1 to 2.0 ha)	41	54.67	34	45.33
	Semi-medium (2.1 to 4.0 ha)	10	13.33	06	08.00
	Medium (4.0 to 10)	01	01.33	01	01.34
	Large (above 10 ha)	00	00.00	00	00.00
8	**Extension contact**				
	Low (Up to 7)	07	17.00	10	20.00
	Medium (8 to 12)	09	18.00	16	32.00
	High (13 and above)	20	40.00	17	34.00
9	**Economic motivation**				
	Low (Up to 14)	41	61.33	10	13.33
	Medium (15 to 20)	22	29.34	20	26.67
	High (21 and above)	12	09.33	45	60.00
10	**Innovativeness**				
	Low (Up to 5)	00	00.00	30	40.00
	Medium (6 to 8)	46	61.33	33	44.00
	High (9 and above)	29	38.67	12	16.00

The data presented in Table-1 revealed that, majority belonged to the middle-age group (74.67%), had secondary to higher secondary education (81.34%), and possessed low to medium maize farming experience (97.33%). Agriculture combined with dairy (57.33%) emerged as the most common occupation. Most beneficiaries had a medium area under maize cultivation (84.00%), medium scientific orientation (61.33%), and were concentrated in the small landholding category (54.67%). A considerable proportion showed high innovativeness (38.67%) and maintained a high level of extension contact (40.00%).

On the other hand, non-beneficiary farmers also predominantly fell into the middle-age group (68.00%), with secondary to higher secondary education (74.67%), and low

experience in maize farming (85.33%). Agriculture with dairy (50.67%) was the major occupation, but the majority had low area under maize (65.33%) compared to beneficiaries. Their scientific orientation was mostly medium (54.67%), and they were equally distributed among marginal and small landholders (45.33% each). In contrast to beneficiaries, a large share had low innovativeness (40.00%) despite a reasonable level of extension contact (34.00% high category).

Impact of Front Line Demonstration of maize

The impact of FLDs conducted by AICRP on maize was assessed as the dependent variable through changes in farmers' knowledge, adoption of recommended technologies, area under maize and productivity. These changes, expressed in percentages, were used to measure the effectiveness of FLDs in enhancing the performance of maize growers.

Table 2: Distribution of the maize growers according to their practice wise knowledge about recommended cultivation practices of maize crop

Sr. No.	Practices of maize crop	Knowledge of Beneficiary (N=75)		Knowledge of Non-beneficiary (N=75)	
		Yes Frequency	No Frequency	Yes Frequency	No Frequency
1.	Soil type	68 (90.67%)	07 (9.33%)	55 (73.33%)	20 (26.67%)
2.	Land preparation	73 (97.33%)	02 (2.67%)	65 (86.67%)	10 (13.33%)
3.	Sowing time	71 (94.67%)	04 (5.33%)	60 (80.0%)	15 (20.0%)
4.	Seed rate	75 (100.0%)	00 (0.0%)	65 (86.67%)	10 (13.33%)
5.	Seed treatment	75 (100.0%)	00 (0.0%)	32 (42.67%)	43 (57.33%)
6.	Spacing and sowing method	75 (100.0%)	00 (0.0%)	27 (36.0%)	48 (64.0%)
7.	Gap filling and Thinning Practices	75 (100.00%)	00 (0.0%)	22 (29.33%)	53 (70.67%)
8.	Intercropping	30 (40.00%)	45 (60.00%)	40 (53.33%)	35 (46.67%)
9.	Fertilizer application	72 (96.00%)	03 (4.00%)	56 (74.67%)	19 (25.33%)
10.	Application of micronutrients	75 (100.0%)	00 (0.0%)	32 (42.66%)	43 (57.33%)
11.	Water management	65 (86.67%)	10 (13.33%)	57 (76.0%)	18 (24.0%)
12.	Hoeing and weeding	70 (93.33%)	05 (6.67%)	62 (82.67%)	13 (17.33%)
13.	Major pest	55 (73.33%)	20 (26.67%)	27 (36.0%)	48 (64.0%)
14.	Control of measure pest	75 (100.0%)	00 (0.0%)	31 (41.33%)	44 (58.67%)
15.	Control measures for diseases	60 (80.0%)	15 (20.0%)	40 (53.33%)	35 (46.67%)
16.	Time of harvesting	75 (100.0%)	00 (0.0%)	55 (73.33%)	20 (26.67%)

(* figures in parenthesis indicates per cent)

Among beneficiary farmers, knowledge about most recommended practices was remarkably high, with 100% awareness regarding seed rate, seed treatment, spacing and sowing method, gap filling and thinning, application of micronutrients, control measures of major pests, and time of harvesting. Similarly, very high knowledge levels were recorded for land preparation (97.33%), sowing time (94.67%), fertilizer application (96.00%), and hoeing and weeding (93.33%). Moderate knowledge levels were observed for soil type (90.67%), water management (86.67%), and control measures for diseases (80.00%), whereas comparatively lower awareness was found for intercropping (40.00%) and major pest identification (73.33%).

In contrast, non-beneficiary farmers exhibited much lower knowledge levels across most practices. While relatively higher awareness was noted for land preparation (86.67%), sowing time (80.00%), soil type (73.33%), fertilizer application (74.67%), and water management (76.00%), their knowledge was drastically low in seed treatment (42.67%), spacing and sowing method (36.00%), gap filling and thinning (29.33%), application of micronutrients (42.66%), pest identification (36.00%), and pest control measures (41.33%). Intercropping knowledge (53.33%) was slightly higher among non-beneficiaries compared to beneficiaries, but still moderate overall.

Scientifically, these results highlight that beneficiary farmers of FLDs had significantly higher knowledge across almost all improved maize cultivation practices compared to non-beneficiaries. This suggests that Front Line

Demonstrations played a crucial role in transferring scientific recommendations and enhancing farmer competence in adopting advanced practices, especially in technically demanding areas like seed treatment, pest and disease management, and nutrient application. Non-beneficiaries lagged behind due to limited exposure to demonstrations, inadequate extension contact, and lower innovativeness, which restricted their access to updated scientific information.

Table 3: Distribution of maize growers according to the Overall knowledge level about recommended cultivation practices of maize

Sr. No.	Knowledge	Score	Beneficiary (N=75)		Non-Beneficiary (N=75)	
			Frequency	Per cent	Frequency	Per cent
1	Low	Up to 54	00	00.00	16	21.33
2	Medium	55 to 77	15	20.00	56	74.67
3	High	78 & above	60	80.00	03	04.00
	Total		75	100.00	75	100.00
Average knowledge of about recommended cultivation practices of maize			83.00		61.75	
% difference in knowledge over non-beneficiary			34.41			
Min: 31.25 Max: 100						

The results show that a majority of beneficiary farmers (80.00%) had high knowledge levels**,** while most non-beneficiaries (74.67%) fell in the medium category, and 21.33% remained in the low category. The average knowledge score of beneficiaries (83.00) was substantially higher than that of non-beneficiaries (61.75), reflecting a 34.41% knowledge gain due to FLDs. This clearly indicates that participation in demonstrations significantly enhanced the knowledge of farmers regarding recommended maize cultivation practices.

Table 4: Distribution of the maize growers according to their practice wise adoption about recommended cultivation practices of maize crop.

Sr. No.	Practices of maize crop	Adoption of Beneficiary (N=75)			Adoption of Non -Beneficiary (N=75)		
		Complete adoption	Partial adoption	No adoption	Complete adoption	Partial adoption	No adoption
1.	Soil type	75 (100.00%)	00 (0.0%)	00 (0.0%)	55 (73.33%)	20 (26.67%)	00 (0.0%)
2.	Land preparation	57 (76.0%)	18 (24.0%)	00 (0.0%)	40 (53.33%)	35 (46.67%)	00 (0.0%)
3.	Sowing time	75 (100.00%)	00 (0.0%)	00 (0.00%)	30 (40.0%)	42 (56.0%)	03 (4.0%)
4.	Seed rate	75 (100.00%)	00 (0.00%)	00 (0.00%)	19 (25.33%)	32 (42.67%)	24 (32.0%)
5.	Seed treatment	75 (100.0%)	00 (0.0%)	00 (0.0%)	34 (45.33%)	27 (36.0%)	14 (18.67%)
6.	Spacing and sowing method	75 (100.00%)	00 (0.0%)	00 (0.0%)	30 (40.0%)	25 (33.33%)	20 (26.67%)
7.	Gap filling and Thinning Practices	65 (86.67%)	10 (13.33%)	00 (0.00%)	20 (26.67%)	40 (53.33%)	15 (20.0%)
8. Th	Intercropping	00 (0.0%)	00 (0.0%)	75 (100.0%)	30 (40.0%)	15 (20.0%)	30 (40.0%)
9.	Fertilizer application	75 (100.0%)	00 (0.0%)	00 (0.00%)	18 (24.0%)	52 (69.33%)	05 (6.67%)
10.	Application of micronutrients	75 (100.00%)	00 (0.00%)	00 (0.00%)	15 (20.0%)	15 (20.0%)	45 (60.0%)
11.	Water management	48 (64.0%)	26 (34.67%)	01 (1.33%)	12 (16.0%)	50 (66.67%)	13 (17.33%)
12.	Hoeing and weeding	70 (93.33%)	05 (6.67%)	00 (0.00%)	44 (58.67%)	25 (33.33%)	06 (8.0%)
13.	Control of measure pest	75 (100.0%)	00 (0.0%)	00 (0.00%)	05 (6.67%)	40 (53.33%)	30 (40.0%)
14.	Control measures for diseases	31 (41.33%)	35 (46.67%)	12 (16.0%)	04 (5.33%)	35 (46.67%)	36 (48.0%)
15.	Time of harvesting	75 (100.0%)	00 (0.0%)	00 (0.00%)	30 (40.0%)	45 (60.0%)	00 (0.0%)

(* figures in parenthesis indicates per cent)

Among beneficiary farmers, the adoption of recommended practices was consistently high. Complete adoption (100%) was observed for soil type, sowing time, seed rate, seed treatment, spacing and sowing method, fertilizer application, micronutrient application, pest control measures, and time of harvesting. High adoption was also recorded in hoeing and weeding (93.33%), gap filling and thinning (86.67%), and land preparation (76%). Moderate adoption appeared in water management (64%) and control measures for diseases (41.33% complete, 46.67% partial). The only exception was

intercropping, where no beneficiary adopted the practice.

Non-beneficiary farmers, however, showed much lower levels of adoption. While moderate complete adoption was noted for soil type (73.33%), land preparation (53.33%), hoeing and weeding (58.67%), and seed treatment (45.33%), adoption remained low in most other practices. Notably, only 25-40% followed sowing time, seed rate, spacing, and harvesting fully, while practices like fertilizer application (24% complete), micronutrient application (20%), and pest control measures (6.67%) had very poor adoption. A majority remained in partial or no adoption categories, especially for gap filling, thinning, pest/disease control, and water management.

Scientifically, these findings confirm that beneficiary farmers of FLDs demonstrated a far higher level of adoption across almost all critical maize practices compared to non-beneficiaries. The higher adoption among beneficiaries can be attributed to increased knowledge through demonstrations, better extension contact, and greater scientific orientation. Conversely, non-beneficiaries lagged behind due to limited technical exposure and resource constraints, resulting in partial or non-adoption of many recommended practices.

Table 5: Distribution of maize growers according to the overall adoption level about recommended cultivation practices

Sr. No.	Adoption	Score	Beneficiary(N=75)		Non-Beneficiary (N=75)	
			Frequency	Per cent	Frequency	Per cent
1	Low	Up to 57	00	00.00	47	62.67
2	Medium	58 to 77	07	09.33	28	37.33
3	High	78 & above	68	90.67	00	00.00
	Total		75	100.00	75	100.00
Average adoption about recommended cultivation practices of maize crop.			78.49		56.44	
% difference in adoption over non-beneficiary			39.06			
Min: 36.67 Max: 96.67						

The findings indicate that an overwhelming proportion of beneficiary farmers (90.67%) achieved a high adoption level of recommended maize cultivation practices, while only 9.33% were in the medium category and none in the low group. In contrast, a majority of non-beneficiaries (62.67%) fell into the low adoption group, with 37.33% in the medium category, and not a single farmer attained a high adoption score. The average adoption score of beneficiaries (78.49) was substantially higher than that of non-beneficiaries (56.44), reflecting a 39.06% gain in adoption due to participation in FLDs.

Table 6: Distribution of the maize growers according to the area of maize crop

Sr. No.	Category	Area (ha)	Beneficiary (N=75)		Non-Beneficiary(N=75)	
			Frequency	Per cent	Frequency	Per cent
1	Low	Up to 0.30 ha	00	00.00	1	Low
2	Medium	0.31 - 0.55 ha	75	100.00	2	Medium
3	High	0.56 ha and above	00	00.00	3	High
	Total		75	100.00	75	
Average area under maize cultivation			0.40		0.28	
% difference in Area over non beneficiary			42.85			
Min.0.04 Max. 0.81						

All beneficiary maize growers (100.00 per cent) belonged to the medium category of area under maize cultivation, with an average area of 0.40 ha. In contrast, non-beneficiaries were distributed across all categories, with 1.33 per cent in the low category, 2.67 per cent in the medium category, and 4.00 per cent in the high category, and an average area of 0.28 ha. The percentage difference in area under maize cultivation between the two groups was 42.85 per cent.

Table 7: Distribution of the maize growers according to the productivity of maize crop

Sr. No.	Productivity	Qtl/ ha	Beneficiary (N=75)		Non-Beneficiary (N=75)	
			Frequency	Per cent	Frequency	Per cent
1	Low	Up to 35	00	00.00	24	32.00
2	Medium	36 to 59	03	04.00	50	66.67
3	High	60 and above	72	96.00	01	01.33
	Total		75	100.00	75	100.00
Average productivity of maize cultivation			63.71		45.28	
% difference in productivity over non-beneficiary			40.70			
Min: 10.55 Max: 85.30						

Beneficiary maize growers had significantly higher productivity, with 96.00 per cent in the high category and an average productivity of 63.71 qtl/ha. In contrast, 66.67 per cent of non-beneficiaries were in the medium category, 32.00 per cent in the low category, and only 1.33 per cent in the high category, with an average productivity of 45.28 qtl/ha. The productivity difference between the two groups was 40.70 per cent.

Table 8: Distribution of the maize growers according to the Income from maize crop

Sr. No.	Category	Income from maize (Rs)	Beneficiary (N=75)		Non-Beneficiary (N=75)	
			Frequency	Per cent	Frequency	Per cent
1	Low	Up to 58,940	17	22.67	69	92.00
2	Medium	58,941 to 1,15,990	56	74.67	05	06.67
3	High	1,15,991 and above	02	02.66	01	01.33
	Total		75	100.00	75	100.00
Average income from maize cultivation			1,20,000 Rs		81,000Rs	
% difference in income over non beneficiary			48.14%			
Min:1,890 Rs Max:1,73,040 Rs						

Beneficiary maize growers earned a higher average income (₹1,20,000) compared to non-beneficiaries (₹81,000). Most beneficiaries (74.67%) fell in the medium income group, while 92% of non-beneficiaries were in the low category. The income difference between the two groups was 48.14%, with earnings ranging from ₹1,890 to ₹1,73,040.

Table 9: Impact of maize front line demonstration on the beneficiary farmers over non-beneficiary Farmers

Sr. No.	Impact dimension	Mean score		Per cent Change
		Beneficiary	Non- Beneficiary	
1.	Knowledge	83.00	61.75	34.41
2.	Adoption	78.49	56.44	39.06
3.	Area in maize cultivation	0.40	0.28	42.85
4.	Productivity	63.71	45.28	40.70
5.	Annual Income from maize	1,20,000 Rs	81,000 Rs	48.14
	Mean Impact			41.03

The results clearly indicate that the Front Line Demonstrations (FLDs) had a significant positive impact on beneficiary farmers compared to non-beneficiaries. Beneficiaries recorded higher knowledge (83.00), adoption (78.49), area under maize (0.40 ha), productivity (63.71 q/ha), and annual income (₹1,20,000) than non-beneficiaries. The percentage change across all impact dimensions ranged from 34.41% (knowledge) to 48.14% (income), with an overall mean impact of 41.03%. This demonstrates that FLDs effectively enhanced awareness, technology adoption, resource utilization, and economic returns of beneficiary farmers over non-beneficiaries.

Conclusion

The present study convincingly demonstrates that the Front Line Demonstrations (FLDs) conducted by AICRP on maize exerted a significant positive influence on the knowledge, adoption, area under maize cultivation, productivity, and income of beneficiary farmers compared to non-beneficiaries. Beneficiaries were predominantly middle-aged, comparatively better educated, and more innovative, with medium to high levels of scientific orientation and extension contact, which enabled them to effectively acquire and apply scientific recommendations.

Knowledge gains were particularly remarkable, as beneficiary farmers exhibited high to complete awareness regarding crucial and technically demanding practices such as seed treatment, seed rate, spacing and sowing method, pest and disease management, and micronutrient application. In contrast, non-beneficiaries exhibited only moderate to low levels of awareness in most practices. This knowledge advantage translated directly into adoption, as nearly all beneficiaries achieved complete or high adoption of recommended practices, whereas non-beneficiaries mostly remained at partial or low adoption levels.

The measurable gains further confirm the effectiveness of FLDs: knowledge gain of 34.41%, adoption gain of 39.06%, increase in area under maize cultivation by 42.85%, productivity gain of 40.70%, and income enhancement of 48.14% among beneficiaries over non-beneficiaries. These improvements clearly indicate that FLDs served not only as effective platforms for technology demonstration but also as instruments for enhancing the economic status of farmers.

Therefore, it can be concluded that FLDs acted as a transformative extension intervention in bridging the gap between research recommendations and actual farm-level practices in maize cultivation. Scaling up FLDs, with emphasis on strengthening extension contact, promoting innovativeness, and ensuring wider participation, would further accelerate the dissemination of improved maize production technologies and contribute to sustainable yield and income enhancement of farmers.

References

1. Ahire RD, Kapse PS. Impact of FLD programme on extension contact among farmers. Agric Ext Rev. 2017;29(3):45-8.
2. Ali S, Kumar R, Singh P. Farm size and productivity relationship in maize: An empirical assessment. Int J Agric Sci. 2021;13(2):215-21.
3. Barad PD. Impact of mustard FLDs on socio-economic status of farmers. J Ext Educ. 2022;34(4):65-72.
4. Bhanarkar KP. Impact of FLDs on productivity and adoption of linseed crop. Agric Update. 2019;14(2):158-62.
5. Chaudhary MK. Comparative analysis of FLD and non-FLD farmers in mungbean cultivation. Int J Farm Sci. 2018;8(3):102-8.
6. Chaudhary R. Sources of information utilization among FLD and non-FLD beneficiaries. Indian Res J Ext Educ. 2020;20(1):44-9.
7. Chavhan RL. Adoption behaviour of maize growers under FLD programme. Indian J Ext Educ. 2020;56(2):55-60.

8. Deshmukh M, Patil B, Jadhav S. Impact assessment of soybean FLDs. Agric Ext Rev. 2018;30(2):22-6.
9. Ghagare PN. Knowledge gain through seed production training under RKVY. J Agric Dev Policy. 2018;28(1):76-82.
10. Gudadhe RV. Impact of NRTT project on soybean productivity. Int J Agric Sci. 2015;11(1):93-6.
11. Jadhav P. Change in knowledge and adoption among soybean farmers under CROPSAP. Agric Update. 2017;12(4):765-8.
12. Kakkad DK. Relationship of socio-economic variables with adoption of castor production technology under FLDs. Gujarat J Ext Educ. 2019;30(1):15-20.
13. Kumar S. Scientific orientation and adoption behaviour in redgram cultivation. Indian J Ext Educ. 2019a;55(4):112-6.
14. Kumar S. Landholding patterns and adoption levels among FLD farmers. Agric Ext Rev. 2019b;31(1):55-8.
15. Mansuri S. Socio-economic characteristics and adoption of improved chickpea technologies. Int J Agric Sci. 2020;12(2):140-6.
16. Patil R, Desai S, Jadhav N. Farm size and productivity in maize cultivation. Indian Res J Ext Educ. 2021;21(3):90-4.
17. Pokar RP. Extent of adoption in FLD beneficiaries and non-beneficiaries. Agric Ext Rev. 2023;32(1):29-34.
18. Singh R. Impact of FLDs on chickpea growers in Uttar Pradesh. J Ext Educ. 2019;35(1):101-7.
19. Srinivas A, Reddy S, Kumar M. Yield gap analysis of cotton under FLDs. Indian J Ext Educ. 2015;51(4):83-7.