

EFFECT OF FRONTLINE DEMONSTRATIONS ON KNOWLEDGE AND ADOPTION LEVEL OF MAIZE FARMERS

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ABSTRACT

The present study was conducted in Panchmahals district where maize is cultivated as a main crop. Two talukas of Panchmahals district. i.e. Morva Hadaf and Godhra were selected. From each taluka five villages were selected for the study. Among the selected villages, five FLD farmers and five Fellow farmers were selected. Thus, total 100 maize farmers were selected for the study. Great majority (86.00 per cent) of FLD farmers and majority (70.00 per cent) of fellow farmers had knowledge about suitable time of sowing kharif maize. Majority of FLD farmers and two-third of the fellow farmers had knowledge about deep ploughing and 2-3 harrowing. Vast majority of the FLD and fellow farmers had knowledge about recommended variety of maize. Majority of FLD farmers (76.00 per cent) had medium to very high level of overall knowledge. Great majority (80.00 per cent) of the FLD farmer and more than three-fifth (62.00 per cent) of the fellow farmers followed proper sowing time. More than half (54.00 per cent) of the FLD farmer and 32.00 per cent of fellow farmers adopted seed rate as per the recommendation, while two-fifth (40.00 per cent) of the FLD farmer and three-fifth of the fellow farmers adopted seed rate more than the recommendation. Majority (70.00 per cent) of the FLD farmers had medium to very high level of overall adoption.

Keywords : front line demonstration, level of knowledge and adoption

INTRODUCTION

Maize (*Zea mays* L.) is the third most important cereal crop of the world and India after wheat and rice. Maize is an important cereal crop of Gujarat state, which is not only a staple diet of tribal farmers but also fulfill their diversified needs of foods, fuel and fodder. It is usually grown as kharif and rabi crop in district viz., Panchmahals, Dahod, Mahisagar, Chhotaudepur, Vadodara, Arravali, Sabarkantha and Banaskantha. The state of Gujarat is the traditional maize growing state that covers 06 per cent of the total maize area. Maize is predominantly cultivated under rained condition in kharif season. The productivity of maize in Gujarat state is about 1478 kg/ha. Which is low as compared to national average productivity (2509 kg/ha). Front Line Demonstration (FLD) was started in maize to generate production data and feedback information to various development agencies, which are engaged in dissemination of technological advances through researchers to the farmer's fields. Increasing the productivity and improving the economic condition of the farmers, depends on the level of knowledge, adoption and skills of the farmers.

The front line demonstration is an important

method of transfer of latest package of practices in totality to farmers. The main objectives of front line demonstration is to demonstrate newly released crop production and protection technologies and management practices at the farmer's field under different agro climatic regions and farming situations (Rai *et al.*, 2020). While demonstrating the technologies in the farmers' fields, the scientists are required to study the factors contributing to higher crop production, field constraints of production and thereby generating production factors and feedback by them. Front line demonstration are conducted in a one acre of land in order to have better impact of the demonstrated technology on farmers' field. The main objective of Main Maize Research Station is to promptly demonstrate the latest technology to the farmers as well as extension workers of state department of agriculture.

With this view in mind, the study entitled "Effect of Frontline Demonstration on knowledge and adoption level of maize farmers" were under taken.

OBJECTIVE

To study the effect of frontline demonstration on knowledge and adoption level of maize farmers

METHODOLOGY

The present study was conducted in Panchmahals district where maize is cultivated as a main crop. Two talukas of Panchmahals district. i.e. Morva Hadaf and Godhra were selected. From each taluka five villages were selected for the study. Among the selected villages, five FLD farmers and

five Fellow farmers were selected. Thus, total 100 maize farmers were selected for the study. The questionnaire was prepared in accordance with the objectives. The data were collected personally, tabulated, analysed and interpreted with frequency, percentage, using of t-test.

RESULTS AND DISCUSSION

Table 1 : Profile of maize farmers

(n=100)

Sr. No.	Characteristics/ Category	FLDs farmer (n=50)		Fellow farmers (n=50)	
		F	(%)	F	(%)
A	Personal characteristics				
1	Age				
	Young Age (up to 30 years)	10	20.00	13	26.00
	Middle Age (31 to 50 years)	25	50.00	20	40.00
	Old age (above 50 years)	15	30.00	17	34.00
2	Education				
	Illiterate	05	10.00	09	18.00
	Primary Education (up to 7)	11	22.00	12	24.00
	Secondary Education (8 to 10)	25	50.00	14	28.00
	Higher Secondary (11 to 12)	06	12.00	07	14.00
	Graduate	03	06.00	08	16.00
B	Situational characteristics				
1	Land holding				
	Marginal (up to 1.00 ha)	22	44.00	13	26.00
	Small (1.1 to 2.0 ha)	17	34.00	26	52.00
	Medium (2.1 to 4.0 ha)	09	18.00	11	22.00
	Large (above 4.0 ha)	02	04.00	00	00.00
C	Communicational characteristics				
1	Extension contact				
	(1) Formal sources				
	Very low (Up to 7 score)	07	17.00	10	20.00
	Low (8 to 9 score)	09	18.00	16	32.00
	Medium (10 to 11 score)	20	40.00	17	34.00
	High (12 to 13 score)	12	24.00	04	08.00
	Very high (Above 13 score)	02	04.00	03	06.00
	(2) Informal sources				
	Very low (Up to 7 score)	05	10.00	05	10.00
	Low (8 to 9 score)	11	22.00	13	26.00
	Medium (10 to 11 score)	20	40.00	16	32.00
	High (12 to 13 score)	09	18.00	14	28.00
	Very high (Above 13 score)	05	10.00	02	04.00
2	Mass media exposure				
	Very low (up to 8 score)	04	08.00	02	04.00
	Low (9 to 10 score)	11	22.00	17	34.00
	Medium (11 to 13 score)	20	40.00	24	48.00
	High (14 to 15 score)	12	24.00	06	12.00
	Very high (above 15 score)	03	06.00	01	02.00

The data presented in Table-1 revealed that, great majority of the FLD farmer (80.00 per cent) and majority of the fellow farmers (74.00 per cent) belong to middle to old age group. Majority of FLD farmers (72.00 per cent) and more than half (52.00 per cent) of fellow farmers had secondary to primary level of education. Majority of the FLD and fellow farmer had small and marginal size of land holding. Less than two-third (64.00 per cent) FLD farmer had

medium to high and two-third fellow farmer had medium to low level of extension contact form formal sources. Less than three-fifth (58.00 per cent) and three-fifth (60.00 per cent) of the FLD and fellow farmer had medium to high level of extension contact form informal sources. Less than two-third (64.00 per cent) FLD farmer had medium to high and vast majority (82.00 per cent) of fellow farmer had medium to low level of mass media exposure.

Table 2 : Effect of frontline demonstration on knowledge level of maize farmers

(n=100)

Sr. No.	Particulars	Knowledge level			
		FLDs farmer (n=50)		Fellow farmers (n=50)	
		F	(%)	F	(%)
1	Time of sowing	43	86.00	35	70.00
2	One deep ploughing and 2-3 harrowing	36	72.00	33	66.00
3	Varieties				
	University recommended	45	90.00	42	84.00
4	Seed rate (15 to 20 kg/ha)	31	72.00	22	44.00
5	Seed Treatment	09	18.00	04	08.00
6	Spacing	31	72.00	21	42.00
7	Weed management				
	Manual	24	48.00	28	56.00
	Knowledge of name of Herbicide to control weed	26	52.00	18	36.00
	Knowledge of recommended dose of Herbicide to control weed	18	36.00	13	26.00
8	Fertilizer Management				
	FYM	21	42.00	12	24.00
	Chemical Fertilizer				
	Recommended dose of Nitrogen	30	60.00	20	40.00
	Recommended dose of Phosphorus	28	56.00	12	24.00
9	Fertilizer application at different stage	14	28.00	07	14.00
10	Major Insect control in Maize				
	Stem Borer				
	Knowledge of occurrence of stem borer	40	80.00	35	70.00
	Knowledge of name of insecticide to control Stem borer	30	60.00	24	48.00
	Knowledge of recommended dose of chemical to control Stem borer	17	34.00	05	10.00
11	Major disease control in Maize				
	(a) Turcicum leaf blight				
	Knowledge of occurrence of turcicum leaf blight	34	68.00	28	56.00
	Knowledge of name of chemical to control turcicum leaf blight	24	48.00	20	40.00
	Knowledge of recommended dose of chemical to control turcicum leaf blight	15	30.00	06	12.00
	(b) Late wilt				
	Knowledge of occurrence of Late wilt	46	92.00	34	68.00
	Knowledge of name of chemical to control Late wilt	25	50.00	14	28.00
	Knowledge of recommended dose of chemical to control Late wilt	12	24.00	06	12.00
12	Harvesting				
	Maturity sign of Kharif Maize	41	82.00	38	76.00

The data presented in table 2 represent that great majority (86.00 per cent) of FLD farmers and majority (70.00 per cent) of fellow farmers had knowledge about suitable time of sowing kharif maize. Majority of FLD farmers and two-third of the fellow farmers had knowledge about deep ploughing and 2-3 harrowing. Vast majority of the FLD and fellow farmers had knowledge about recommended variety of maize. Majority of FLD farmers had knowledge about the seed rate and sowing distance of maize crop while in case of fellow farmer more than two-fifth had knowledge about the seed rate and sowing distance. As far as weed management is concerned more than half (52.00 per cent) and 36.00 per cent FLD farmers had knowledge about name of herbicide and its recommended dose where as 36.00 and 26.00 per cent of fellow farmers had knowledge about name of herbicide and its recommended dose. 42.00 per cent of FLD farmer and 24.00 per cent of fellow farmer had knowledge about application of FYM. Three-fifth of FLD farmer and two-fifth

of fellow farmers had knowledge of recommended dose of nitrogen in maize crop whereas more than half (56.00 per cent) of the FLD farmers and 24.00 per cent of fellow farmers had knowledge of recommended dose of Phosphorous. Great majority of the FLD farmers and majority of fellow farmers had knowledge about nature of damage of stem borer where as 60.00 and 34.00 per cent of FLD farmers, 48.00 and 10.00 per cent of fellow farmers had knowledge about name of insecticide and its recommended dose respectively. In case of disease management 68.00, 48.00 and 30.00 per cent of FLD farmers and 56.00, 40.00 and 12.00 per cent of fellow farmer had knowledge about nature of damage, name of chemical and its recommended dose to control TLB disease respectively. 92.00, 50.00 and 24.00 per cent of FLD farmer and 68.00, 28.00 and 12.00 per cent of fellow farmers had knowledge about nature of damage, name of chemical and its recommended dose to control late wilt disease respectively.

Table 3: Distribution of maize farmers according to their overall knowledge about maize production technology

(n=100)

Sr. No.	Categories	FLD farmers (n=50)		Fellow farmers (n=50)	
		F	(%)	F	(%)
1	Very low (0 to 20 score)	03	06.00	05	10.00
2	Low (21 to 40 score)	09	18.00	14	28.00
3	Medium (41 to 60 score)	14	28.00	25	50.00
4	High (61 to 80 score)	18	36.00	06	12.00
5	Very high (81 to 100 score)	06	12.00	00	00.00

Thus, it can be concluded that majority of FLD farmers (76.00 per cent) had medium to very high level of overall knowledge, whereas majority (78.00 per cent) of the

fellow farmers had medium to low level of overall knowledge about maize production technology.

Table 4 : Comparison between knowledge level of FLD and Fellow farmers about maize production technology

(n=100)

Sr. No.	Maize farmers	Mean score	Mean difference	t-value
1	FLD farmers	12.8	3.26	3.899**
2	Fellow farmers	9.54		

** Significant at 1 per cent level of probability, df = 98

In order to ascertain the knowledge level of FLD and Fellow farmers independent 't' test was employed. The knowledge mean scores of FLD and Fellow farmers were calculated

and 't' value presented in table 4. Statistically significant differences were found among the mean scores of FLD and Fellow farmers.

Table 5 : Effect of frontline demonstration on adoption level of maize farmers

(n=100)

Sr. No.	Particulars	Adoption level			
		FLD farmers (n=50)		Fellow farmers (n=50)	
		F	(%)	F	(%)
1	Time of sowing				
	At recommended time (15 th June to 15 th July)	40	80.00	32	62.00
	Early sowing	07	14.00	12	24.00
	Late sowing	03	6.00	06	12.00
2	Seed Rate (15-20 kg/ha)				
	As per recommendation	27	54.00	16	32.00
	Less than recommendation	03	06.00	04	08.00
	More than recommendation	20	40.00	30	60.00
3	Improved varieties				
	University recommended varieties	45	90.00	42	84.00
	Local variety	00	00.00	03	06.00
	Private Companies varieties	05	05.00	05	10.00
4	Seed treatment				
	Not adopted	05	10.00	07	14.00
	Used readymade treated seed	40	80.00	41	82.00
	Treated in correct way by own & used	05	10.00	02	04.00
5	Spacing				
	As per recommendation	20	40.00	17	34.00
	At narrow				
	• 45 x 20 (cm)	15	30.00	11	22.00
	• 30 x 10 (cm)	15	30.00	22	44.00
At wider spacing	00	00.00	00	00.00	
6	Weed management				
	Manual	25	50.00	29	58.00
	Chemical control				
	No-adoption at all	25	50.00	36	72.00
	Totally faulty adoption of Herbicide	00	00.00	00	00.00
	Below recommended dose of concentration.	04	08.00	01	02.00
	As per recommended dose of concentration.	16	32.00	13	26.00
	More than recommended dose of concentration	05	10.00	00	00.00
7	Fertilizer Management				
	FYM				
	Not used	18	36.00	31	62.00
	As per recommendation	09	18.00	06	12.00
	Less than recommendation	20	40.00	13	26.00
	More than recommendation	03	06.00	00	00.00
	Chemical fertilizers				
	Nitrogen				
	No-adoption at all	03	06.00	05	10.00
	Less quantity than recommended dose (Kg)	12	24.00	14	28.00
	As per recommended does (Kg)	20	40.00	13	26.00
	More quantity than recommended does	15	30.00	18	36.00
	Phosphorous				
	No-adoption at all	09	18.00	11	22.00
	Less quantity than recommended dose (Kg)	15	30.00	22	44.00
	As per recommended dose (Kg)	19	38.00	10	20.00
More quantity than recommended does	07	14.00	07	14.00	

Sr. No.	Particulars	Adoption level			
		FLD farmers (n=50)		Fellow farmers (n=50)	
		F	(%)	F	(%)
8.	Plant protection Measures in maize				
	Insect –pest name and their control measure				
	(a) Stem Borer				
	No-adoption at all	19	38.00	22	44.00
	Totally faulty adoption of chemicals	02	04.00	04	08.00
	Below recommended dose of concentration.	08	16.00	10	20.00
	As per recommended dose of concentration.	13	26.00	05	10.00
	More than recommended dose of concentration.	08	16.00	09	18.00
9	Disease name and their control measure				
	(a) Turcicum leaf blight				
	No-adoption at all	24	48.00	30	60.00
	Totally faulty adoption of chemicals	02	04.00	03	06.00
	Below recommended dose of concentration.	06	12.00	07	14.00
	As per recommended dose of concentration.	13	26.00	06	12.00
	More than recommended dose of concentration.	05	10.00	04	08.00
	(b) Late wilt				
	No-adoption at all	20	40.00	31	62.00
	Totally faulty adoption of chemicals	06	12.00	00	00.00
	Below recommended dose of concentration.	08	16.00	05	10.00
	As per recommended dose of concentration.	10	20.00	06	12.00
	More than recommended dose of concentration.	06	12.00	08	16.00

The data presented in table 5 indicate that a great majority (80.00 per cent) of the FLD farmer and more than three-fifth (62.00) of the fellow farmers followed proper sowing time. More than half (54.00 per cent) of the FLD farmer and 32.00 per cent of fellow farmers adopted seed rate as per the recommendation, while two-fifth (40.00 per cent) of the FLD farmer and three-fifth of the fellow farmers adopted seed rate more than the recommendation. Vast majority of FLD farmers and fellow farmers had sown recommended variety. Great majority of FLD and fellow farmers used treated seed. Two-fifth (40.00 per cent) of the FLD farmers and more than one-third (34.00 per cent) of the fellow farmers had sown maize as per the recommended spacing followed by three-fifth (60.00) of the FLD farmers and two-third (66.00 Per cent) of the fellow farmers had sown maize at narrow distance. More than half of the FLD and fellow farmers done hand weeding manually, as far as chemical control measure half of the FLD farmers and majority of the fellow farmers not used any herbicide for control of weed only 32.00 per cent of FLD farmers and 26.00 per cent of fellow farmers used herbicide as per the recommendation. In case of fertilizer management 36.00 per cent of FLD farmers and 62.00 per cent of the fellow farmers not used FYM application only 18.00 per cent of FLD farmers and 12.00 per cent of fellow farmers used FYM application as per recommendation while 40.00 per cent of FLD farmers and 26.00 per cent fellow

farmers used FYM application less than recommendation. Further in chemical fertilizer two-fifth (40.00 per cent) of FLD farmers and 26.00 per cent of fellow farmers used N as per the recommendation, while 30.00 and 24.00 per cent of FLD farmers and 36.00 and 28.00 per cent of fellow farmers used N more and less quantity, respectively. 38.00 per cent of FLD farmers and 20.00 per cent of fellow farmers used phosphorous as per the recommendation, while 30.00 and 14.00 per cent of FLD farmers and 44.00 and 14.00 per cent of fellow farmers used phosphorous less and more quantity than the recommendation. In case of plant protection measures in maize crop nearly two-fifth (38.00 per cent) of the FLD farmers and less than half (44.00 per cent) of the fellow farmers not used any insecticide to control stem borer. Only 26.00 per cent of FLD farmers and 10.00 per cent of fellow farmers used insecticide as per the recommendation. Moving to disease control nearly half (48.00 per cent) of FLD farmers and three-fifth (60.00 per cent) of fellow farmers not used any chemical to control TLB, only 26.00 per cent of FLD farmers and 12.00 per cent of fellow farmers used chemical control as per the recommendation. Two-fifth (40.00 per cent) of FLD farmers and more than three-fifth (62.00 per cent) of the fellow farmers not used any chemical to control late wilt disease, only 20.00 per cent of FLD farmers and 12.00 per cent of fellow farmers used chemical as per the recommendation.

Table 6 :- Distribution of maize farmers according to their overall adoption about maize production technology (n=100)

Sr. No.	Categories	FLD farmers (n=50)		Fellow farmers (n=50)	
		F	(%)	F	(%)
1	Very low (0 to 20 score)	01	02.00	05	10.00
2	Low (21 to 40 score)	14	28.00	17	34.00
3	Medium (41 to 60 score)	14	28.00	20	40.00
4	High (61 to 80 score)	18	36.00	08	16.00
5	Very high (81 to 100 score)	03	06.00	00	00.00

Thus, it can be concluded that majority (70.00 per cent) of the FLD farmers had medium to very high level of overall adoption whereas, majority (74.00 per cent) of fellow farmers had medium to low level of overall adoption about maize production technology.

Table 7 : Comparison between adoption level of FLD and Fellow farmers about maize production technology (n=100)

Sr No	Maize farmers	Mean score	Mean difference	t-value
1	FLD farmers	13.98	2.64	3.1058*
2	Fellow farmers	11.34		

** Significant at 1 per cent level of probability, df=98

In order to ascertain the adoption level of FLD and Fellow farmers independent ‘t’ test was employed. The adoption mean scores of FLD and Fellow farmers were calculated and ‘t’ value presented in table 7. Statistically significant differences were found among the mean scores of FLD and Fellow farmers.

CONCLUSION

Majority of the FLD and Fellow farmers had knowledge of proper time of sowing, deep ploughing and 2-3 harrowing operation, university recommended GAYMH-1 variety and occurrence of the stem borer insect. Majority of the FLD farmers having had enough knowledge of seed rate, Sowing distance, occurrence of TLB and Late wilt disease, while more than half of the FLD farmers had knowledge of name of herbicide, recommended dose of N₂ and P₂O₅, name

of insecticide and chemical to control stem borer, TLB and Late wilt disease while fellow farmers had not posses enough knowledge.

Vast Majority of the FLD and fellow farmers adopted university recommended maize variety and used already treated seeds. Half of the FLD farmers and more than half of fellow farmers done hand weeding manually not used any herbicide to control weed. Move forward to plant protection measures more than half of the FLD farmers used insecticide and chemical to control stem borer insect, TLB and late wilt disease while, more than half of the fellow farmers not used any control measure.

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