

EFFECT OF FRONT LINE DEMONSTRATIONS OF SOYBEAN ON SOYBEAN GROWERS

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ABSTRACT

Front line demonstration (FLD) is a long term educational activity conducted in a systematic manner in farmer field to worth of a new practice/technology. Farmers in India are still producing crops based on the knowledge transmitted to them by their forefathers leading to a grossly unscientific agronomic, nutrient management and pest management practices. The frontline demonstration is the important objective of Tribal Research cum Training Centre. The present investigation is an effort to identify the Effect of front line demonstration of soybean on soybean grower of Dahod district. The present study was conducted in operational area of Tribal Farm Women Training Centre in Dahod district was selected for the study. Last 3 years (2015-16 to 2018-2019) FLDs of soybean were considered for the study. Four blocks namely Dhanpur, Devgadh Baria, Dahod and Limkheda were selected for the study. It could be concluded from the study that majority of FLD, fellow and non fellow farmers belong to middle age group, joint type of family with medium size of family. Majority of them farmers have secondary education, no membership any organization. Further, majority of the FLD farmers have small size of land holding and annual income between `70,000 to `1,00,000. On the other hand, majority of the fellow and non fellow farmers have marginal size of land holding and annual income between `50,001 to `75,000. Most of the farmers from the FLD and fellow farmers groups have 2.1 to 4.0 year soybean farming experience while non fellow farmers have up to 2.0 year soybean farming experience. Apart from this, 40.00 per cent of the FLD farmers, 12.00 per cent of the fellow farmers and only 6.00 per cent of the non fellow farmers have high level of knowledge of soybean cultivation. There is significant horizontal spread of knowledge of soybean cultivation in fellow farmers from the FLD farmers over non fellow farmers. Furthermore, 28.00 per cent of the FLD farmers, 8.00 per cent of the fellow farmers and 4.00 per cent of the non fellow farmers have high level of the adoption of the recommended package of practices of soybean cultivation. There is significant horizontal spread of adoption in soybean cultivation in fellow farmers from the FLD farmers over non fellow farmers. Additionally, nearly 20.00 per cent yield of soybean increase in fellow farmers over non fellow farmers due to horizontal effect of FLD farmers. Area of NRC-37 has been increase from 0.0 ha to 39.33 ha in sampled farmers in last three years while in case of selected village 74.83 ha area of NRC-37 has increased. Lastly, vast majority of the FLD farmers and fellow farmers are willing to continue NRC-37 varieties of soybean due to high production.

Keywords : front line demonstration, soybean, grower knowledge, adoption

INTRODUCTION

Front line demonstration (FLD) is a long term educational activity conducted in a systematic manner in farmer field to worth of a new practice/technology. Farmers in India are still producing crops based on the knowledge transmitted to them by their forefathers leading to a grossly unscientific agronomic, nutrient management and pest management practices. As a result of these they often fail to achieve the desired potential yield of various crops and new varieties. Front-Line Demonstration is the new concept of field demonstration evolved by the Indian Council of

Agricultural Research with the inception of the Technology Mission on Oilseed Crops during mid-eighties.

The present investigation is an effort to identify the Effect of front line demonstration of soybean on soybean grower of Dahod district. The study was designed to study and identify socio-personal-economics characters soybean growers and effect of soybean's FLD. Front Line Demonstration (FLD) was started in soybean to generate production data and feedback information to various developments agencies, which are engaged in dissemination of technological advances through researchers to the farmer's

fields. For increasing the productivity and improving the economic condition of the farmers, depend upon the level of knowledge and skills of the farmers. The FLD aimed at achieving this twin objective by bringing about the change in knowledge and adoption behavior of farmers (Rai *et al.*, 2020). The frontline demonstration is the important objective of Tribal Research cum Training Centre.

Results deal with the presentation, analysis, interpretation and discussion of the data collected through interview schedule.

OBJECTIVES

- (1) To study personal, socio-economical and communicational characteristics of FLD, fellow and non fellow soybean growers
- (2) To study the effect of front line demonstration of soybean on soybean growers of Dahod district

METHODOLOGY

The present study was conducted in operational area of Tribal Farm Women Training Centre in Dahod district was selected for the study. Last 3 years (2015-16 to 2018-2019) FLDs of soybean were considered for the study. Four blocks namely Dhanpur, Devgadh Baria, Dahod and Limkheda were selected for the study. Three villages were selected purposely from each Devgadh Baria and Limkheda blocks and two villages were purposely selected from remaining other two blocks thus total 10 villages were selected. 5 soybean FLD beneficiaries, 5 FLD fellow and 5 non fellow farmers were selected from each village, thus making the total sample of 150 soybean growers (50 FLD beneficiaries, 50 fellows and 50 non fellows). A well structured pre tested Gujarati version interview schedule was prepared in light of the objectives. The data were collected through personal interview method.

RESULTS AND DISCUSSION

The facts and findings of the study are presented under following heads:

Table 1 : Profile of soybean growers

(n=150)

Sr. No.	Socio-economic characteristics	Number			Percent		
		FLD	Fellow	Non Fellow	FLD	Fellow	Non Fellow
A	Age						
	Young (up to 25 year)	06	06	05	12	12	10
	Middle (26 to 50 year)	36	37	42	72	74	84
	Old (above 50 year)	08	07	03	16	14	06
B	Type of family						
	Nuclear Family	14	08	06	28	16	12
	Joint Family	36	42	44	72	84	88
C	Size of the family						
	Small size (up to 4 members)	06	04	05	12	08	10
	Medium size (5 to 8 members)	30	33	32	60	66	64
	Large size (more than 9 members)	14	13	13	28	26	26
D	Education						
	Illiterate	10	14	12	20	28	24
	Primary	12	11	14	24	22	28
	Secondary	16	16	17	32	32	34
	Higher Secondary	07	04	06	14	08	12
	Graduate or Post Graduate	05	05	01	10	10	02
E	Social Participation						
	No Membership	26	34	33	52	68	66
	Membership in one organization	13	12	17	26	24	34
	Membership in more than on organization	00	03	00	00	06	00
	Membership along with position holding	11	01	00	22	02	00

Sr. No.	Socio-economic characteristics	Number			Percent		
		FLD	Fellow	Non Fellow	FLD	Fellow	Non Fellow
F	Size of land holding						
	Marginal (up to 1.0 ha)	15	30	38	30	60	76
	Small (1.01 ha to 2.0 ha)	29	19	11	58	36	22
	Medium (2.01 ha to 4.0 ha)	06	01	01	12	02	02
	Large (above 4.0 ha)	00	00	00	00	00	00
G	Annual income						
	Up to ₹ 25,000/-	00	00	00	00	00	00
	₹ 25,001/- to ₹ 50,000/-	03	02	02	06	04	04
	₹ 50,001/- to ₹ 75,000/-	13	31	36	26	62	72
	₹ 75,001/- to ₹ 1,00,000/-	25	17	12	50	34	24
	Above ₹ 1,00,000/-	09	00	00	18	00	00
H	Type of house						
	Kacha	10	11	21	20	22	42
	Mix	22	23	08	44	46	16
	Pakka	18	16	21	36	32	42
I	Occupation						
	Only Agriculture	00	00	02	00	00	04
	Agriculture + Animal husbandry	43	38	27	86	76	54
	Agriculture + Labor work	02	05	05	04	10	10
	Agriculture + Animal husbandry + Business	00	03	03	00	06	06
	Agriculture + Labor work + Animal husbandry	05	04	13	10	08	26
J	Soybean farming experience						
	Up to 2.0 year	08	10	35	16	20	70
	2.1 to 4.0 year	27	30	07	54	60	14
	4.1 to 6.0 year	12	06	03	24	12	06
	6.1 to 8.0 year	03	02	01	06	04	02
	Above 8 year	00	02	04	00	04	08

The data presented in Table-1, revealed that, that majority of FLD, fellow and non fellow farmers belong to middle age group, joint type of family with medium size of family. Majority of them farmers have secondary education, no membership any organization. Further, majority of the FLD farmers have small size of land holding and annual income between ₹ 70,000 to ₹ 1,00,000. On the other hand, majority

of the fellow and non fellow farmers have marginal size of land holding and annual income between ₹ 50,001 to ₹ 75,000. Most of the farmers from the FLD and fellow farmers groups have 2.1 to 4.0 year soybean farming experience while non fellow farmers have up to 2.0 year soybean farming experience. The results are in line with Vinaya *et al.*, (2013).

Table 2 : Distribution of Soybean growers according to their knowledge of soybean cultivation

(n=150)

Sr. No.	Categories	FLD (n=50)		Fellow (n=50)		Non Fellow(n=50)	
		No.	%	No.	%	No.	%
1	Very Low knowledge (up to 20)	00	00	00	00	03	06
2	Low knowledge (21 to 40)	04	08	18	36	37	74
3	Medium knowledge (41 to 60)	23	46	26	52	08	16
4	High knowledge (61 to 80)	20	40	06	12	02	04
5	Very High knowledge (81 to 100)	03	06	00	00	00	00

It can be observed from the Table-2 that 46 per cent of the FLD farmers and 52 per cent of the fellow farmers have medium level of knowledge of soybean cultivation while 74.00 per cent of the non fellow farmers have low level of knowledge of soybean cultivation. Further, 40.00 per cent of the FLD farmers have high level of knowledge of soybean cultivation.

Table 3 : Analysis of variance (ANOVA) of knowledge score of FLD, fellow and non fellow farmers groups**Data Summary**

(n=150)

Groups	n	Mean	Std. Dev.	Std. Error
FLD Farmer	50	14.34	3.41	0.482
Fellow Farmer	50	10.74	3.19	0.451
Non Fellow Farmer	50	7.84	2.66	0.377

ANOVA summary

(n=150)

Particular	Degree of Freedom	Sum of Square	Mean square	F value	Table F _(0.01)
Between Groups	2	1060.33	530.16	54.9	4.75
Within groups	147	1419.55	9.65		
Total	149	2479.89			
Table t _(0.01)	2.61				
CD _(0.01)	1.62				

** -Significant at .01 per cent level

It can be observed from the summary table that mean of the FLD farmers, fellow farmers and non fellow farmers are 14.34, 10.74 and 7.84, respectively. The data from table 3.2 indicated that F value is significant at 0.01 per cent level therefore; there is a statistically significant difference in the mean knowledge level between groups.

Further, critical difference at 0.01 alpha level is 1.62 which is lower than absolute difference between FLD vs fellow, FLD vs non fellow and fellow vs non fellow group of the farmers. Hence, it can be concluded that there is significant horizontal spread of knowledge of soybean cultivation in fellow farmers from the FLD farmers over non fellow farmers.

Table 4 : Distribution of soybean growers according to their Adoption level in soybean cultivation

(n=150)

Sr. No.	Categories	FLD (n=50)		Fellow (n=50)		Non Fellow (n=50)	
		No.	%	No.	%	No.	%
1	Very low adoption (up to 20)	0	00	00	00	00	00
2	Low adoption (21 to 40)	11	22	20	40	39	78
3	Medium adoption (41 to 60)	23	46	26	52	09	18
4	High adoption (61 to 80)	14	28	04	08	02	04
5	Very High adoption (81 to 100)	02	04	00	00	00	00

It can be observed from the table 4 that 46.00 per cent of the FLD farmers, 52.00 per cent of the fellow farmers and 18.00 per cent of the non fellow farmers have medium level of adoption in soybean cultivation. Further, 28.00

per cent of the FLD farmers have high level of adoption in soybean cultivation, whereas 40.00 per cent and 78.00 per cent of the fellow and non fellow farmers have low level of adoption in soybean cultivation.

Table 5 : Analysis of variance (ANOVA) of adoption score of FLD, fellow and non fellow farmers groups

Data Summary

(n=150)

Groups	n	Mean	Std. Dev.	Std. Error
FLD Farmer	50	14.2	3.87	0.548
Fellow Farmer	50	11.4	2.47	0.349
Non Fellow Farmer	50	9.62	2.19	0.310

ANOVA summary

(n=150)

Particular	Degree of Freedom	Sum of Square	Mean square	F value	Table F _(0.01)
Between Groups	2	533.08	266.54	30.8	4.75
Within groups	147	1271.78	8.65		
Total	149	1804.86			
Table t _(0.01)	2.61				
CD _(0.01)	1.54				

** -Significant at .01 per cent level

It can be observed from the summary table that mean of the FLD farmers, fellow farmers and non fellow farmers are 14.20, 11.40 and 9.62, respectively. The data from table ANOVA summary indicated that F value is significant at 0.01

per cent level therefore; there is a statistically significant difference in the mean adoption level between groups. Further, critical difference at 0.01 alpha level is 1.54 which is lower than absolute difference between FLD vs fellow, FLD vs non fellow and fellow vs non fellow group of the farmers. Hence, it can be concluded that there is significant horizontal

spread of adoption in soybean cultivation in fellow farmers from the FLD farmers over non fellow farmers.

Table 6 : Technological gap of soybean growers according to their different package of practices

(n=150)

Sr. No.	Package of practices	TGI (%)		
		FLD (n=50)	Fellow (n=50)	Non Fellow (n=50)
1	Selection of improved variety	00	00	00
2	Seed rate	12	24	34
3	Seed treatment	60	84	90
4	Spacing	22	37	49
5	Farm Yard Manure	19	22	19
6	Chemical fertilizer			
	N- Basal Dose	34	34	45
	P-Basal Dose	27	38	34
	Top dressing (N)	49	65	82
7	Weed management			
	Pre	93	100	100
	Post	64	83	91
8	Sucking pest management	55	70	86
9	Lepidopterious pest management	60	78	87
10	Yellow Mosaic Virus management	92	95	100

It can be observed from the above table that technological gap in FLD, fellow and non fellow farmers are nil while technological gap in seed rate there are 12.00 per cent, 24.00 per cent and 34.00 per cent in FLD, fellow and non fellow farmers, respectively. Further, 90.00 per cent, 84.00 per cent and 60.00 per cent of technological gap in adoption of recommended seed treatment in non fellow, fellow and FLD farmers, respectively. Apart from this, 100.00 per cent

of technological gap in adoption of recommended pre weed chemical management in soybean in fellow and non fellow farmers while this gap in FLD farmers is 93.00 per cent. Furthermore, 55.00 per cent, 70.00 per cent and 86.00 per cent technological gap in adoption of recommended chemical to control sucking pest in soybean in FLD, fellow and non fellow farmers, respectively.

Table 7 : Distribution of soybean growers according to their technological gap in soybean cultivation (n=150)

Sr. No.	Categories	FLD (n=50)		Fellow (n=50)		Non Fellow (n=50)	
		No.	%	No.	%	No.	%
1	Very Low technological gap (up to 20)	02	04	00	00	00	00
2	Low technological gap (21 to 40)	14	28	04	08	02	04
3	Medium technological gap (41 to 60)	23	46	26	52	09	18
4	High technological gap (61 to 80)	11	22	20	40	39	78
5	Very High technological gap (81 to 100)	00	00	00	00	00	00

The data presented in table 7 revealed that 78.00 per cent of the non fellow, 40.00 per cent of the fellow farmers and 22.00 per cent of the FLD farmers have high technological in adoption of recommended soybean cultivation practices.

Additionally, 28.00 per cent of the FLD farmers have low technological gap in adoption of recommended soybean cultivation practices.

Table 8 : Effect of front line demonstrations on yield

Yield (kg/ha)			Impact (% appreciation) FLD over Fellow	Impact (% appreciation) FLD over Non fellow	Impact (% appreciation) Fellow over Non Fellow
FLD	Fellow	Non Fellow			
1292	1055	880	22.46	46.82	19.89

It can be calculated from the above table that there is 22.46 per cent of the per cent appreciation in yield of FLD farmers over fellow farmers. On the other hand FLD farmers have 46.82 per cent more yield than non fellow farmers.

It can be concluded from the table 10 that nearly one fifth (20.00 per cent) yield increase of soybean due to horizontal effect of the FLD on fellow farmers over non fellow farmers in soybean crop.

Table 9 : Effect of front line demonstrations on horizontal spread of variety of soybean crop (n=150)

Crop	Area (ha)		Change in area (ha)
	Before demonstration (year 2016-17)	After demonstration	
Soybean			
NRC-37	0.00	39.33	39.33

Note (1) -Area of NRC-37 of surveyed farmers (n=150)

(2) Total area of NRC-37 in selected villages is 74.83 ha by year 2019-20

The data presented in table 9 represent that after demonstration there are total 39.33 ha area increase from 0.00 ha among surveyed farmers.

Table 10 : Feedback of FLD and fellow farmers (n=100)

Sr. No.	Particulars	Per cent
(A) FLD farmers (n=50)		
1	Willing to continue NRC-37	96.00
2	Do not want to continue NRC-37	04.00
3	Reason to continue NRC-37	
	More production	84.00
	No shattering of pod at maturity stage	68.00
	Seed quality	12.00
4	Reason do not want to continue NRC-37	
	Less seed weight	02.00
	Less suitable to their land	04.00
(B) Fellow farmers (n=50)		
1	Entry of innovation	
	Direct visit to the FLD plot	78.00
	Know from training programme/meeting	06.00
	Know from relatives/friends	16.00
2	Willing to continue NRC-37	92.00
3	Do not want to continue NRC-37	08.00
4	Reason to continue NRC-37	
	More production	92.00
	No shattering of pod at maturity stage	56.00
	Seed quality	14.00
5	Reason do not want to continue NRC-37	
	Less seed weight	04.00
	Less suitable to their land	06.00

CONCLUSION

It could be concluded from the study that majority of FLD, fellow and non fellow farmers belong to middle age group, joint type of family with medium size of family. Majority of them farmers have secondary education, no membership any organization. Further, majority of the FLD farmers have small size of land holding and annual income between ₹ 70,000 to ₹1,00,000. On the other hand, majority of the fellow and non fellow farmers have marginal size of land holding and annual income between ₹ 50,001 to ₹ 75,000. Most of the farmers from the FLD and fellow farmers groups have 2.1 to 4.0 year soybean farming

experience while non fellow farmers have up to 2.0 year soybean farming experience. Apart from this, 40.00 per cent of the FLD farmers, 12.00 per cent of the fellow farmers and only 6.00 per cent of the non fellow farmers have high level of knowledge of soybean cultivation. There is significant horizontal spread of knowledge of soybean cultivation in fellow farmers from the FLD farmers over non fellow farmers. Furthermore, 28.00 per cent of the FLD farmers, 8.00 per cent of the fellow farmers and 4.00 per cent of the non fellow farmers have high level of the adoption of the recommended package of practices of soybean cultivation. There is significant horizontal spread of adoption in soybean cultivation in fellow farmers from the FLD farmers over non fellow farmers. Additionally, nearly 20.00 per cent yield of soybean increase in fellow farmers over non fellow farmers due to horizontal effect of FLD farmers. Area of NRC-37 has been increase from 0.0 ha to 39.33 ha in sampled farmers in last three years while in case of selected village 74.83 ha area of NRC-37 has increased. Lastly, vast majority of the FLD farmers and fellow farmers are willing to continue NRC-37 varieties of soybean due to high production.

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