Impact of Frontline Demonstration on Adoption of Improved Practices of Oilseed Crops

Anuj Kumar Singh[1], Kinjulck C. Singh[2], Y.P.Singh[3], D.K. Singh[4]

1 & 2. Directorate of Extension Services, JNKVV, Jabalpur, 3. Krishi Vigyan Kendra, Ujjwa,
4. Krishi Vigyan Kendra, JNKVV, Jabalpur, M.P.
Corresponding author e-mail:anujksingh_2007@rediffmail.com

ABSTRACT

This investigation is an attempt to study the impact of front line demonstration on oilseed productivity. The study was conducted in three villages of Tikamgarh block and district of Madhya Pradesh. An increase in productivity was observed due to adoption of interventions like seed testing, use of high yielding varieties, seed treatment, fertilizer application and plant protection measure. The results showed that majority (90.83%) of farmers after FLD activities adopted high yielding varieties. Difference in production was found maximum in case of sesame (195% increase) after FLD activities where as B:C ratio was found to be the highest in mustard (3.13) The study has shown that the FLD programme was found to be useful in imparting knowledge and adoption level of farmers in various aspects of oilseed production technologies. FLD practices created greater awareness and motivated the other farmers to adopt appropriate oilseed production technologies.

Key words: *Front line demonstration; Adoption; Soybean; Mustard; Sesame;*

The extent of adoption of improved agricultural technologies is a crucial aspect under innovation diffusion process and the most important for enhancing agricultural production at a faster rate. Large number of technologies evolved in the field of agriculture is not being accepted and adopted to its fullest extent by the farmers. The gap between recommendations made by the scientists and actual use by farmers is frequently encountered. With the start of technology mission on oilseeds, frontline demonstration on oilseed crops using new crop production technology was started with the objectives of showing the production potential of the new technologies under real farm situation over the locally cultivated oilseed crops. The main objective of FLD is to demonstrate the crop production technologies and management practices in the farmers' fields under different agro-climatic regions and farming situations. The Krishi Vigyan Kendra has followed the concept of FLD in true spirit and conducted large number of demonstrations in different villages of Tikamgarh district. Oilseeds are next only to food grains in acreage, production and value & form an essential part of human diet. Groundnut, rapeseed and mustard, soybean, sunflower, sesame, safflower and niger are the major source of edible oils (*Shenoi, 2003*).

METHODOLOGY

The investigation was conducted in Tikamgarh district. The district comprises six blocks. One block namely, Tikamgarh was purposively selected and three villages were taken on the basis of large number of FLD conducted on oilseed crops during Kharif and rabi season. Total 120 respondents were selected from three villages. The data were collected with the help of interview schedule using pre tested structured schedule by personal interview method. The collected data were analyzed in frequency and percentage.

The rank correlation were calculated through formula suggested by *Spearman* as follows:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}.$$

Where,

di = difference in rank

n = No. of observations

$d_i = x_i - y_i$ between the ranks of each observation on the two variables are calculated.

RESULTS AND DISCUSSION

The data presented in Table 1 shows the adoption gain after FLD conducted on farmers' fields among the production technology of oilseed crops.

Table 1. Adoption of recommended technology (N=120)

Improved technoies	Before FLD		After FLD		Rank
	No.	%	No.	%	
Selection of varieties	60	(50.00)	109	(90.83)	I
Time of harvesting	45	(37.50)	101	(84.17)	II
Integrated Pest Management (IPM)	40	(33.33)	100	(83.33)	III
Precaution before storage	36	(30.00)	99	(82.50)	IV
Application of fertilizers	45	(37.50)	97	(80.83)	V
Disease management	36	(30.00)	96	(80.00)	VI
Sowing method	22	(18.33)	96	(80.00)	VII
Selection of land	50	(41.66)	90	(75.00)	VIII
Seed treatment	24	(20.00)	72	(60.00)	IX
Use of culture	15	(12.50)	61	(50.83)	X
Time of sowing /seed rate	30	(25.00)	59	(49.17)	XI
Depth of sowing/spacing	24	(20.00)	50	(41.67)	XII
Land preparation	40	(33.33)	49	(40.83)	XIII
Crop rotation	25	(20.83)	40	(33.33)	XIV
Irrigation management	18	(15.00)	35	(29.17)	XV
Weed management	16	(13.33)	29	(24.17)	XVI

Regarding selection and use of high yielding varieties, 90.83 per cent of farmers were adopting it after FLDs activities with rank as first. The highest adoption was found in use of the high yielding variety because production of crop depends on the qualities of seed. Further, non adoption of the HYV might be due to the non availability of recommended variety in required quantity at sowing time. Another reason was that cost of the recommended variety seed was rarely 40-60 per cent more than the local variety. The findings are in line with *Kumawat (2008)*. Maintaining the time of harvesting and storage of oilseed crops mainly soybean, mustard and sesame was adopted by 37.5 and 30 per cent farmers before FLD activities and 84.17 and 82.5 per cent after FLD respectively ranking at second and fourth place.

Integrated weed management, integrated pest management and integrated disease management practices were adopted by 13.33, 30.33 and 30 per cent farmers respectively before FLD activities for some components. After FLD 24.17, 83.33 and 80 per cent farmers were adopting the entire IWM, IPM and IDM package respectively.

Out of the total respondents, 12.5 per cent farmers were habituated to no use of culture and 37.5 per cent to apply only basal dose of NPK fertilizers before FLD activities, that too below the recommended levels. The demonstration programme helped the farmers to get convinced of the benefits of balanced use of nitrogenous fertilizers application in the form of urea as top dressing with increased 50.83 and 80 per cent respectively rank at V and X place respectively.

In case of suitable land selection and preparation 41.66 per cent and 33.33 per cent farmers follow the practices before FLD respectively, whereas, after FLD activities 75 and 40.83 per cent farmers were adopting the practices, rank-VIII and XIII respectively. With regard to the seed treatment, only 20 per cent of them were adopting it before the FLD activities, 60 per cent adopted after FLD rank with IX.

Regarding time of sowing/seed rate and depth of sowing/spacing were adhered by 25 and 20 per cent of the farmers before FLD activities, after FLD 49.17 and 41.67 per cent of them were adopting the time of sowing/seed rate and depth of sowing/spacing respectively rank at XI and XII place respectively.

Before the FLD activities, the farmers (81.67%) were following broad cast sowing with mixed other crop seed which resulted in difficulty for intercultural operation and plant protection measures. This was overcome (80%) with FLD interventions which recommended row to row and plant to plant spacing (rank–VII). Only 15 per cent farmers followed management of irrigation which to 29.17 per cent after benefitted the FLD activities rank with XV.

The findings of the investigation revealed that the

Table 2. Yield performance of recommended technology

Crop	Variety	Productivity (qt./ha)		Difference (qt./ha)	Increase (%)
		Before FLD	After FLD		
Sesame	JT 22/TKG -1	2.1	6.2	4.1	195
Soybean	JS – 335/JS 9305	9.58	15.67	5.09	63.34
Mustard	Pusa Jaikisan/ Pusa Bold	5.96	14.01	8.05	135

Table 3. Economic indicators of recommended technology

Crop	Variety	Cost of additional cash input (Rs./ha)		Gross return	Net return	B : C ratio
		Before FLD	After FLD			
Sesame	TKG-1	884	3345	14671	9171	2.67
Soybean	JS -335, JS 9305	2750	5000	26806	15806	2.43
Mustard	Pusa Jaikisan, Pusa bold	2306	3898	23800	16200	3.13

adoption with respect to new farm technology was different from practice to practice. Similar finding was also reported by *Khan et al (2005)*. The calculated value of *Spearman's* rank correlation is found to be positive and lies between 0 to +1, the correlation of rank is considered to be positively significant.

The data in Table 2 show that the oilseed crop yield received by the farmers before the FLD activities was 2.1, 9.5 and 5.96 qt/ha for sesame, soybean and mustard respectively which rise to 6.2, 15.67 and 14.01 qt/ha after the FLD activities respectively. The increase in yield was found to be 195, 63.34 and 135 per cent respectively for sesame, soybean and mustard crop. Thus it is clear that the FLD programme had a positive impact over the existing practices in enhancing the oilseed crop productivity. *Kirar et al (2005)* also reported the similar type of findings.

Economic indicators i.e. cost of addition cash inputs; gross return, net return and BC ratio are presented in Table 3**.** The data clearly shows that the additional cost of cash inputs were higher (Rs. 3345 to 5000 per hectare) than before FLD (Rs. 884 to 2705 per ha). The table also revealed that the net return from recommended practices was observed as Rs. 9171 to 16200 per hectare. The incremental benefit cost ratio was also calculated; it ranged from 1 : 2.43 to 1 : 3.13. Similar findings were reported by *Balai et al* (2012) in mustard.

CONCLUSION

The study has shown that the FLD programme was found useful in enhancing the knowledge and adoption level of farmers in various aspects of oilseed production technologies. FLD practices created great awareness and motivated the other farmers to adopt appropriate oilseed production technologies. The area of high yielding varieties of oilseed has increased which will spread in the whole district including the adjoining area. The selection of critical input and participatory approach in planning and conducting the demonstration definitely help in the transfer of technology to the farmers.

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