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Evaluation of Front Line Demonstration of Oilseeds in Raebareli District

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ABSTRACT

Low productivity of traditional varieties of oilseeds is a cause of concern for farmer's at large. To overcome the problem of low yield, Krishi Vigyan Kendra, Raebareli conducted front line demonstrations in the different localities of Raebareli District, Cultivation of high yielding varieties of oilseeds viz. Sesamum- (var. Tarun), Mustared- (var. CS-56 & Maya) yielded higher over local check. The cultivation practices considered under Front Line Demonstration viz. use of improved varieties, proper seed rate, integrated pest management, irrigation and spraying of weedicide along with one hand weeding gave an average higher yield of 26.75 to 57.5 per cent in case of Sesamum (variety- Tarun) and 37.3 per cent for Mustard- variety- CS-56 , 54.29 per cent higher yield in case of Mustard variety Maya as compare to farmer's practice. Yield of oilseed crops however varied in different years which might be due to the other factors like soil moisture availability, climatic conditions, disease and pest attack as well as the change in the location of trails. The productivity gain under Front Line Demonstration over farmer's practice created awareness and motivated the other farmers to adopt scientific crop production and management.

Keywords: Economics, Extension gap, Front line demonstration, Gap analysis, Mustard, Sesamum, Technology gap, Technology index

INTRODUCTION

India is world's fourth largest edible oil economy after U.S., China and Brazil. Globally, it contributes almost 6 per cent of global vegetable oil production, 14 per cent of vegetable oil imports and 10 per cent of edible oils. The total market size of the Indian oilseed sector is about Rs six hundred billion (US$13.4 billion). Apart from this India is also the second largest importer of edible oilseed after China. Country needs to spend over Rs. 60 thousand corers annually to augment domestic supplies. Thus attaining self-sufficiency in edible oil sector is critical for reducing current account deficit and also edible oil security of a burgeoning population. This necessitates a comprehensive road map to meet the challenge of bridging the widening gap of demand and production of edible oil and oilseed crops are expected to play a major role. However, attempts to enhance its productivity significantly are not fully successful due to their cultivation under diverse and mostly constrained ecologies. Climate change has further limited the productive potential of crops (Anonymous, 2013). In this context, Krishi Vigyan Kendra Raebareli has the responsibility in the district to meet the aspirations of farmers by conducting front line demonstrations (FLDs) with the improved package of practices in oilseed crops. The productivity of oilseed crop is far below the potential yield due to lack of knowledge and adoption about new production technologies.

METHODOLOGY

The study was carried out by the Krishi Vigyan Kendra, Raebareli during *Kharif* season 2015-16 to 2017-18 (3 years) in the farmers of 26 villages of 11 blocks in

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Raebareli district. In total 221 Front Line Demonstrations in 71 ha. area in different locations were conducted. The soil type of demonstration field was alluvial with pH ranging from 7.8 to 8.5 and average rainfalls 923 m with mean maximum and minimum temperature 44.2°C and 2.3°C, respectively. About 90 per cent of rainfall is distributed during June to September. The component of demonstration under front line demonstration comprised high yielding varieties of Sesamum- (Tarun) and Mustard (S-56 and Maya). In case of farmer's practices, existing practices being used by farmers were followed. Before conducting the demonstration, training to the farmers of respective villages were imparted with respect to envisaged technology interventions, site selection, farmers selection, layout of demonstration, farmers participation etc. as suggested by Choudhary (1999). The farmers were selected on the criteria that they were involved in cultivation of oilseed crops since last 5 years. The data on output of oilseed crops were collected from Front Line Demonstration plots besides the data on local practices commonly adopted by the farmers of this region were also collected. The collected data were tabulated and analyzed by using statistical tools like frequency and percentage. To estimate the technology index, extension gap and technology gap the formulae were considered as suggested by Samui *et al*. (2000); Kadian *et al*. (2004); Sagar and Chandra (2004) (Table 1).

RESULTS AND DISCUSSION

Result indicates that the cultivation practices considered under Front Line Demonstration viz. use of improved varieties, proper seed rate, integrates pest management, irrigation and spraying of weedicide along with one hand weeding produced a higher average of yield i.e. Sesamum variety- Tarun 26.75 to 57.5 per cent, Mustard variety- CS-56, 37.3 per cent and Mustard Maya 54.29 per cent more yield of oilseed crops as compare to farmer's practice. The result of Front Line Demonstration led to motivation to adopt the improved agricultural technologies applied in the Front Line Demonstration plots .Yield of oilseed crops however varied in different years which might be due to the other factors like soil moisture availability, climate conditions, disease and pest attack as well as the change in the location of trails. The high yielding varieties of oilseed crops yielded higher as compare to local check.

The technology gap, the gap in the demonstration yield over potential yield were found 6.4 q/ha for Mustard variety Maya, 3.7 q/ha for CS-56, 2.7 q/ha, 3.55 q/ha and 3.8 q /ha for sesamum variety Tarun during 2015-16 to 2017-18. Hence location specific recommendation appears to be necessary to bridge the gap between the yields of different oilseed varieties. The highest extension gap of 7.6 q/ha was recorded in Mustard variety Maya

Table 1: Description of technology intervention under FLD on Oilseed

Particulars	Technological intervention (T)	Farmers Practices (T)	Gap
Variety	Sesamum- Tarun & T-78 Mustard- CS56 & Maya	Local local	Full gap
Seed rate	Seasamum-4 kg/ha Mustard-5 kg/ha	6.7 kg/ha 7-8 kg/ha	Partial gap
Integrated Nutrient Management	N:P:K:S (30:20:20:20) kg/ha for Sesamum (120:40:40:20) kg/ha for Mustard at the time of field preparation	No use of fertilizer	Full gap
Integrated Pest Management	Seed treatment with Trichoderma virdae @ 5 g/kg seed + one spray of Imedachlarprit 17.8 SL 250 ml/ha at the ETL to control plant hopper in mustard	One or Two spray of insecticide	Partial gap
Irrigation	1st irrigation before flowering and 2nd irrigation at pod filling stage in Mustard	No irrigation	Full gap
Weed Management	Spray of Pendimethyline 30EC @ 3.3 lt/ha as pre-emergence + One hand weeding & thining at 20-25 Days after sowing of mustard	No spraying	Full gap

Table 2: Grain yield, technology gap, extension gap and technology index of different oilseed varieties

Year	Crop	Variety	Grain yield (q/ha)			% increase over FP	Technology gap (q/ha)	Extension gap (q/ha)	Technology index (%)
			Potential	FLD	FP				
2015-16	Sesamum	Tarun	8-9	6.3	4.0	57.5	2.7	2.3	30.00
2016-17	Sesamum	Tarun	8-9	5.45	4.3	26.74	3.55	1.15	39.44
2017-18	Sesamum	Tarun	8-9	5.2	3.4	52.94	3.8	1.8	42.22
2015-16	Mustard	CS-56	11-14	10.30	7.5	37.3	3.7	2.8	26.42
2017-18	Mustard	Maya	25-28	21.60	14.0	54.29	6.4	7.6	22.86

Table 3: Gross expenditure, gross return net return and B:C ratio of oilseed crops production under front line demonstrations

Year	Crop	Variety	Gross Expenditure (Rs/ha)		Gross Return (Rs/ha)		Net Return (Rs/ha)		B:C Ratio	
			FLD	FP	FLD	FP	FLD	FP	FLD	FP
2015-16	Sesamum	Tarun	9260	8850	28350	18000	19090	9150	3.06	2.03
2016-17	Sesamum	Tarun	10550	9200	35425	27950	24875	18750	2.35	2.04
2017-18	Seasmum	Tarun	12000	9500	36470	23940	24470	14440	3.42	2.52
2015-16	Mustard	CS-56	11780	10130	30900	22500	19120	12370	2.62	2.22
2017-18	Mustard	Maya	16500	14500	64800	43200	48300	28700	3.92	2.97

FLD = Front Line Demonstration, FP = Farmers Practice, B:C Ratio = Benefit : Cost Ratio

fallowed by CS-56 variety 2.8 q/ha. In case of Sesamum variety Tarun extension gap 2.3 q/ha, 1.8 q/ha and 1.15 q/ha were found. This emphasized the need to educate the farmers through various means for adoption of improved varieties and recommended practices. The technology index shows the feasibility of the evolved technology at farmer's field. The lower value of technology meter is the feasibility of the technology. The technology index for Mustard variety Maya was found lowest (22.86%), indicating the performance of this variety in Raebareli district was satisfactory

Table 2 indicates that the extension gap, technology gap and technology index of sesamum were 2.3,1.15 & 1.8 q/ha, 2.7, 3.55 and 3.8 q/ha and 30.00, 39.44 and 42.22 per cent respectively. Yield of mustard variety-CS-56 and Maya used in demonstration were 2.8 and 7.6 q/ha, 3.7 & 6.4 q/ha and 26.42 & 22.86 per cent in variety CS-56 and Maya respectively.

The data presented in Table 3 indicates the adoption of improved technology of oilseed not only gave higher yield but also provided higher benefit cost ratio as compared to the farmer's practices. This may be due to higher yield obtained under the recommended practices compared to farmer's practices. It was observed that front line demonstration recorded higher gross return and net return as compared to local check during different year in different oilseed crops. The additional cost per hectare in front line demonstrations yielded additional net return per hectare, showing higher profitability and economic viability of the demonstration.

CONCLUSION

The front line demonstration conducted on oilseed crops at farmers field resulted that the farmers may get increased yield by following the recommended package of practices in oilseed crops. A favorable benefit: cast ratio is self explanatory of economic viability of the demonstration. The productivity gain under front line demonstration over farmer's practice created awareness and motivated the other farmers to adopt scientific crop production and management. This study suggests strengthening extension approach to educate the farmer's for higher production and increase net return on sustainable basis.

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