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Impact Assessment of Front Line Demonstration on Toria

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ABSTRACT

Krishi Vigyan Kendra, Imphal West has conducted 65 demonstration on toria var. M-27 during five consecutive years from 2013-14 to 2017-18. The results revealed that the yield of toria with improved practice under rain fed conditions ranged from between 7.45 to 9.5q/ha whereas in farmers' practice from 5 to 6.5 q/ha. The increase in yield with improved practice over farmers' practice was recorded to the tune of 33.55 to 46.15 per cent. The average of technology gap, extension gap and technology index were found to be 1.64 q/ha, 2.48 q/ha and 16.44 q/ha, respectively. By conducting front line demonstration of proven technologies, yield potential of toria cultivation can be enhanced to a great extent with increase income of the farming community.

Key Words: Demonstration, Farmer's practice, Improved Practice, Toria.

INTRODUCTION

The demand for rapeseed and mustard oil outstrips the production and as a result, India is importing on an average 46.8 lakh tonnes of edible oil to meet its requirement during the last five-six years at a cost of around 10,000 crores annually. Population pressure coupled with better standards of living, low oilseed production due to aberrant weather for several years and liberalization of import-export policy are the major causes behind such an import scenario (Kumar, 2012).

In Manipur, Rapeseed-Mustard is one of the most important and widely cultivated oilseed crops. Maximum area is occupied by rapeseed and mustard in the state. Among the rapeseed-mustard the toria variety M-27 plays a significant role in the economy of the farmers of Manipur during *rabi* season. The production and productivity of this variety is comparatively low due to lack of irrigation facility but this variety is still existing due to its distinguish character of growing in *rainfed* condition. In general, Rapeseed-Mustard is cultivated in the *rabi* season after harvest of *kharif* rice. Zero tillage cultivation with burning of stubbles or left over paddy straw in the field itself just after sowing is widely practiced by the farmers. The annual rainfall in this state is around 1500 mm but not scattered over time. Dryness of field at the time of sowing is the major constraint which leads to low yield as delay sowing. The high and low yield depends on usual rains in the critical stages of crop period and package of practices followed by the growers. Due to the changing of climate, productivity of oilseeds in *rabi* season is an alarming scenario. Adoption of technical interventions is the most important to makeup such yield gap in the unusual situations.

The available agricultural technology does not serve its purpose till it reaches and adopted by the farmers. Technology transfer refers to the spread of new ideas from originating sources to ultimate users. Conducting of front line demonstrations at farmers' field help to identify the constraints and potential of rapeseed-mustard in specific area as well as it helps in improving the economic and social status of the farmers. However, Manan and Sharma (2017) mentioned that infact there is MSP declared by Govt of India for oilseed crops but there is no purchaser in the market at the prescribed

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Table 1. Package of practice followed for improved practices and farmer practices under FLD

Particular	Improved Practices (IP)	Farmer Practices (FP)
Variety	M-27	M-27
Seed rate	8-10kg/ha	15-20kg/ha
Seed treatment	Carbendazim @ 2 g/kg seed	Nil
Time of sowing	Last week of October to Last week of November	November to December
Method of Sowing	30 cm row to row,15 cm plant to plant and east west direction of sowing	Broadcasting, no direction of sowing
Fertilizer Application	Balance fertilizer use N: P_2O_5:K_2O @ 60 :30:30 Kg/ha	Imbalance use of fertilizer 150 kg Urea and 100 kg DAP/ha
Irrigation	2 live saving irrigations	*Rainfed*
Plant Protection	Need based application	Nil

MSP in Punjab, as a result of which there was great difficulty in convincing the farmer to adopt this crop in place of other rabi crops especially wheat. The present study was conducted to study the impact assessment of front line demonstration on rapeseed type toria var. M-27 in the operational area of KVK Imphal West.

MATERIALS AND METHODS

Krishi Vigyan Kendra, Imphal West conducted *rabi* oilseed production programme in the district and tried to disseminate the improved technology to the farming community. During the period from 2013-14 to 2017-18, about 60 FLDs involving 65 farmers were carried out in *rabi* season in an area of one hectare per demonstration where 0.50 ha each for improved technology and farmers' practices. The demonstration was conducted just after harvest of *kharif* rice and no tillage in both practices. Seed rate was differed from farmers' practice (15-20 kg/ha) and improved practice (8-10 kg/ha). To save the environment and ecology, burning of paddy straws in the field practiced by the farmers was restricted during the demonstrated period. Before conducting front line demonstrations farmers were selected and training was imparted to the selected farmers regarding different cultivation aspect were followed as suggested by (Choudhary, 1999). The sowing was done from last week of October to last Week of November and in broadcasting manner. The data output were collected from both the improved practice and farmers' practice were analysed and cost of cultivation, net income and benefit cost ratio were also worked out (Samui *et al,* 2000). The technology gap, extension gap and technology index were calculated by using the following formula as given below

Technology gap	=	Potential yield (kg/ha) – Demonstration yield (kg/ha)
Extension gap	=	Demonstration yield (kg/ha) – Farmers yield (kg/ha)
Technology index	=	{(Potential yield – Demonstration yield)/ Potential yield} x 100

RESULTS AND DISCUSSION

Yield

The data (Table 1) showed the average yield of toria variety M-27 were 8.65, 7.45, 7.90, 8.28 and 9.50 q/ha during 2013-14, 2014-15, 2015-16, 2016-17and 2017-18, respectively under improved practice however, under farmers' practice the average yield was 6.4, 5.0, 5.3, 6.2 and 6.5 q/ha during respective years. Even if higher seed rate was used by the farmers, the result showed that there was a wide yield gap between improved practice (IP) and farmers' practice (FP). The percentage increase of yield over control ranged from 33.35 to 49.06 during five years of study. The result is

Table 2. Productivity, technology gap, extension gap and technology index of Rapeseed variety M-27 under FLD.

Year	Area (ha)	No. of farmers	Seed yield (q/ha)			% increase over control	Tech. Gap (q/ha)	Extension gap (q/ha)	Tech. Index (%)
			Potential	Demo	Control				
2013-14	16.6	20	10.0	8.65	6.4	**35.16**	1.35	2.25	13.5
2014-15	10.4	12	10.0	**7.45**	**5.0**	49.00	**2.55**	2.45	**25.5**
2015-16	5.00	11	10.0	7.90	5.3	**49.06**	2.10	2.60	21.00
2016-17	10.0	12	10.0	8.28	6.2	33.55	1.72	**2.08**	17.2
2017-18	18.0	10	10.0	**9.50**	**6.5**	46.15	**0.50**	**3.00**	**5.00**

in conformity with the findings of (Tiwari *et al,* 2001; Raj *et al,* 2013).

The results indicated that the front line demonstrations have given a good impact over the farming community of Imphal West district of Manipur as motivated by the new agricultural technologies applied in the FLD plots (Table 1). This finding was in corroboration with the findings of Poonia and Pithia (2010).

Technology Gap

The yield gaps in the present study were categorized into technological and extension gaps. The data (Table 1) depicted the technology demonstration yield against potential yield which ranged from 0.5 to 2.55 during five years of study and reflects the farmers' cooperation in carrying out such demonstration with emerging result in subsequent years. The technology gap observed may be attributing due to dissimilarity in soil fertility status, timely sowing and weather condition. Similar finding were recorded by (Mitra and Samajdar, 2010). The results clearly indicate the positive effect of FLDs over the existing practices towards enhancing the yield of toria variety M-27 in Imphal West district due to use of high yielding variety, timely sowing, balance dose of fertilizer with proper irrigation, weed management , need based plant protection measure.

Extension Gap

The extension gap ranges between 2.08 to 3.0 q/ha during the period of study emphasizes the need to educate the farmers through various means for adoption of improved production technologies to mitigate the extension gap.

Technology Index

The technology index shows the clear picture of the feasibility of the evolved technology at the farmers' field and lower the value of technology index was more the feasibility of the technology (Jeengar *et al.* 2006).The average technology index was 16.44 percent during the five years of study.

Economic Return

The input and outputs prices of commodities prevailed during the study of demonstrations were taken for calculating the gross return, cost of cultivation, net return and benefit: cost ratio (Table 2). The cultivation of rapeseed under improved technologies gave higher net return of Rs 25725/-, 22070/-, 26250/-, 30780/-, 42750/ha during 2013-14, 2014-15, 2015-16, 2016-17 and 2017-18, respectively as compared to farmers' practices. The benefit cost ratio under improved technologies was 2.95, 2.45, 2.53, 2.63, 3.25 compared to 2.30, 1.71, 1.82, 2.12, 2.33 under farmers' practices. This may be due to higher yield obtained under improved technologies compared to farmers practice. The

Table 3. Gross return (Rs./ha), Gross Cost (Rs./ha), Net Return (Rs./ha) and B:C Ratio as affected by improved practice (IP) and Farmer practice(FP).

Year	Gross cost		Gross return		Net return		B:C Ratio	
	Improved Practice	Farmer Practice	Improved Practice	Farmer Practice	Improved Practice	Farmer Practice	Improved Practice	Farmer Practice
2013-14	13200	12500	38925	28800	25725	16300	2.95	2.30
2014-15	15180	14580	37250	25000	22070	10420	2.45	1.71

superiority of recommended package of practices under frontline demonstration over farmers' practice was also reported by (Mitra and Samajdar 2010; Balai *et al,* 2012; Raj *et al,* 2013; Jyothi *et al,* 2016; Chaudhary *et al,* 2018).

CONCLUSION

It can be concluded from the findings that use of improved technologies can reduce the technology gap to a considerable extent resulting in increased productivity of rapeseed in the district. It needs the efforts of both extension and farmers to enhance adoption level of location and crop specific technologies among farmers for bridging these gaps. Therefore, the farmers' need to provide proper technical support and guidance through various improved agronomic practices for better production and productivity in the district.

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