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Improved Mustard Production Technology through Frontline Demonstrations in Bundlekhand Region of Madhya Pradesh

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ABSTRACT

Front Line Demonstration is one of the most powerful tools for transfer of technology. The present study was undertaken to find out the yield through FLDs on mustard crop. Krishi Vigyan Kendra conducted 10 demonstrations on mustard during 2017-18 in one adopted village of Chhatarpur district. Prevailing farmers' practices were treated as control for comparison with recommended practices. The average yield of demonstrated plot was obtained 11.24 q/ha which was 57% higher compared to over control (7.13 q/ha).

Keyword Mustard, Front line demonstrations, Production, Technology.

INTRODUCTION

Raising of productivity, technology development with regard to improved varieties and other inputs have played important role (Singh 2003).The mustard production scenario in the country has undergone a sea change. The main contributors to such transformations have been (i) availability of improved oilseeds production technology and its adoption, (ii) expansion of cultivated area, (iii) price support policy and (iv) institutional support, particularly establishment of technology mission on oilseeds in 1986 (Hegde 2004). The improved technology packages were also found to be attractive. Yet, adoption levels for several components of the improved technology were low, emphasizing the need for better dissemination (Kiresur *et al.* 2001). In wide range of agro-climatic conditions mustard crops are grown. Among the edible oilseed's crops, Rapeseed and mustard occupies an important position in Indian oilseeds scenario. Indian mustard is the most important member of the group, accounting for more than 70% of the area under rapeseed-mustard, followed by toria, yellow sarson and brown sarson. This crop accounts for nearly one-third of the oil produced in India, making it the country's key edible oilseed crop. Rapeseed-mustard is the major

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source of income especially even to the marginal and small farmers in rain-fed areas. Since these crops are cultivated mainly in the rain-fed and resource scarce regions of the country, their contribution to livelihood security of the small and marginal farmers in these regions is also very important. Due to its low water requirement (80-240 mm), rapeseed-mustard crops fit well in the rain-fed cropping system. Frontline demonstration (FLD) is one of the most powerful tools of extension because farmers, in general, are driven by the perception that 'Seeing is believing'. The main objective of Front-Line Demonstrations is to demonstrate newly released crop production and protection technologies and its management practices in the farmers' field under different agro-climatic regions and farming situations. While demonstrating the technologies in the farmers' field, the scientists are required to study the factors contributing higher crop production; field constrains of production and thereby generate production data and feedback information. Keeping this in view, front line demonstrations were organized in participatory mode with the objective to analyze the production by newly recommended package of practice.

MATERIALS AND METHODS

The present study was carried out by the Krishi Vigyan Kendra, Chhatarpur during *rabi* season from 2017-18 at the farmers field in one adopted village of Chhatarpur district in Madhya Pradesh. In one village total 10 frontline demonstrations trials were conducted. Materials for the demonstrations with respect to FLDs and farmers' practices were given in Table 1. In case of farmers practice plots, existing practices being used by farmers were followed. In general, soils of the area under study were sandy loam in texture and medium to low in fertility status. The FLDs were conducted to study the yield gaps of demonstration (recommended and farmer practices).

In the present evaluation study, the data on output of mustard cultivation were collected from FLD plots, besides the data on local practices commonly adopted by the farmers of this region were also collected. In demonstration plots, a few critical inputs in the form of quality seed, balanced fertilizers, agro-chemicals were provided and non-monetary inputs like timely

Table 1. Technology demonstration compared with local practices.

Package of practices followed by farmers under FLD and in general particulars	Technology interventions	Farmer's practices
Variety	RVM 2	Local cultivar (Varuna)
Seed rate	4 kg/ha	5 kg/ha
Seed treatment	*Carbandazim* @2.5g/kg or *Trichoderma* @ 8-10 g/kg seed	No use
Time of sowing	First fortnight of October	Last week of October to last week of November
Method of sowing	40-45 cm (row to row), 15-20 cm (plant to plant) and east west direction of sowing	Broadcasting, no direction of sowing methods
Fertilizer management	120: 60: 40 (N:P:K) kg/ha with 15 kg S/ha	Use of urea 80kg/ha and DAP (100 kg/ha)
Weed management	Pre-emergence application of pendimethalin 30 EC 3.3 l/ha followed by manual weeding at 30 days after sowing	No use
Water management	Light irrigation before flowering and after podding (If no rainfall)	No use
Plant protection	Need based application of immidachlopride @ 0.5 ml/l lt of water for the management of aphid control	No use

Table 2. Technical impact of mustard crop demonstrations during 2017- 2018.

Sl. No.	Crop	Variety	Technology demonstrated	Area (ha)	No. of demonstration	Yield of the crop (q/ha) under demonstration	Variety and yield of local check (q/ha) (Varuna)	Increase in yield (%)
1	2	3	4	5	6	7	8	9
Year (2017-2018)								
i.	Mustard	RVM-2	Timely sown HYV	04	10	11.24	7.13	57

sowing in lines and timely weeding were performed. Whereas, in farmers practice traditional practices prevailing in the area were maintained. The demonstration farmers were facilitated by KVK scientists in performing field operations like sowing, spraying, weeding, harvesting during the course of training and visits. The technologies demonstrated are mentioned in Table 1 and compared with local practices.

RESULTS AND DISCUSSION

Mustard yield

The data (Table 2) indicated that the frontline demonstration has given a good impact over the farming community of Chhatarpur district as they were motivated by the new agricultural technologies applied in the demonstrations. Results of 10 frontline demonstrations indicated that the cultivation practices comprised under FLD viz., use of improved variety RVM 2, balanced application of fertilizers (N:P: K@120:60:40 kg/ha with 15 kg S /ha), line sowing, timely weed management and control of mustard white rust and aphid through fungicide and insecticide, produced on an average 11.24 q/ha mustard yield, which was 57% higher compared to prevailing farmers practice (7.13 q/ha). Kumar and Yadav (2007) also reported that recommended dose of phosphorus and sulfur increase the yield and quality of Indian mustard.

Cost of cultivation, net return and bc ratio

The economics (Cost of cultivation, gross and net return) of rapeseed-mustard under front line demonstrations were estimated and the results have been presented in Table 3. The front-line demonstrations recorded higher net return (Rs 27,150/ha) with higher cost: Benefit ratio (2.5) compared to farmer's practice.

CONCLUSION

It may be concluded that the frontline demonstrations on integrated crop management technology in mustard crop has found more productive, profitable and feasible in Bundlekhand of Madhya Pradesh as compared to prevailing farmers practice under real farm situations. Farmers were motivated by results

Table 3. Economic impact of mustard crop.

Variety	Average cost of cultivation (Rs/ha)		Average gross return (Rs/ha)		Average net return (Profit) (Rs/ha)		Benefit- cost ratio
	Demonstration plot	Local check	Demonstration plot	Local check plot	Demonstration plot	Local check plot	
	1	2	3	4	5	6	8
Year (2017-2018)							
RVM -2	17810	15840	44960	28520	27150	12680	2.5

of demonstrations of integrated crop management practices in mustard and they would adopt these technologies in the coming years. This will substantially increase the income as well as the livelihood of the farming community.

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