VOLUME-8, ISSUE-1, JANUARY-2019 • PRINT ISSN No 2277 - 8160

Original Research Paper

Agricultural Science

IMPACT ASSESSMENT OF CLUSTER FRONT LINE DEMONSTRATION ON MUSTARD CROP IN SULTANPUR DISTRICT OF UP

J.B.Singh Senior Scientist/Head, ICAR –KNKVK, Sultanpur

N.K.Singh* Scientist, ICAR –RDSKVK, Pratapgarh*Corresponding Author

C.K.Tripathi Scientist, ICAR –KNKVK, Sultanpur

ABSTRACT

Krishi Vigyan Kendra, Sultanpur conducted 121 demonstrations on mustard variety RH-406 during two consecutive years from 2016–17 to 2017–18. The critical inputs were identified in existing production technology through meetings and discussions with farmers & on the basis of soil sampling. Delayed sowing & use of higher seed rate resulting into dense plant population, uneven plant population, uncontrolled weeds, ignorance about fertilizers and lack of plant protection measures were the predominant identified causes of low productivity of oilseeds in district Sultanpur. In the same sequence the other parameters like technological impact, economical impact and extension gap were analyzed for Impact assessment of front line demonstration on mustard crop and feasibility of demonstrated technologies at grass root levels. The results of two consecutive years study revealed that the yield under demonstration plots was 19.85q /ha as compared to 14.77q /ha in traditional farmer practices plots. This additional yield of 5.08 q /ha and the increase in average mustard productivity by 40.1 per cent may contribute to present oilseed requirement on national basis. The average of technology gap, extension gap and technology index were found to 2.15, 7.23 and 10.22 per cent respectively. The results clearly indicate the positive effects of FLDs over the existing practices. Benefit cost ratio was recorded to be higher under demonstrations against control treatments during the years of experimentation.

KEYWORDS : Impact, mustard crops, Cluster front line demonstration, technology gap

INTRODUCTION

The Cluster Front Line Demonstration (CFLD) is an applied approach to accelerate the dissemination of proven & tested technologies at farmer's fields in a participatory mode with an objective to explore the maximum available resources of crop production and also to bridge the productivity gaps by enhancing the production. India is the third largest rapeseed-mustard producer in the world after China and Canada with 12 per cent of world's total production (2006-07). This crop accounts for nearly one-third of the oil produced in India, making it the country's key edible oilseed crop. Due to the gap between domestic availability and actual consumption of edible oils, India has to resort to import of edible oils. Rapeseed-mustard is the major source of income especially even to the marginal and small farmers in rainfed 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. By increasing the domestic production substantial import substitution can be achieved. About 90 per cent of the total edible oil produced in the country comes from two oil seed crops namely rapeseed-mustard and groundnut. The oil cakes are used as cattle feed and manures. In India, rape seed mustard is an important source of edible oil followed by ground nut (Panday et al., 1999). They are cultivated in 5.791 m ha in a wide range of agro- ecological conditions in India, resulted in the production of 7.87 m tonnes of seed mustard in 2013-2014 and our productivity is 10.9kg/ha (Anonymous 2016).

In Sultanpur district, mustard was raised on 2,722 ha with total production of 1,301 q and productivity of 9.0 q /ha during 2016-17. Still the area and productivity of mustard in Sultanpur is far lower than the several districts of other states because the farmers are reluctant towards proper scientific management of the crop. However, rapeseed-mustard group of crops have given the importance by the government because vast yield gap exists between potential yield and yield under real farming situation. KVK Sultanpur had done intensive efforts on training about scientific cultivation, demonstration on new variety and other interventions. The present study was conducted to impact assessment of front line demonstration on mustard crop in the operational area of the KVK.

Material and Methods: Krishi Vigyan Kendra (KVK) conducted 121 Front Line Demonstrations on oilseed crop of mustard on farmer's field in different blocks of Sultanpur district during 2016-17 and 2017-18. For conducting FLDs, farmers were identified/ selected following the survey suggested by Choudhary (1999).The required inputs were supplied and regular visits to the demonstration fields by the KVK scientists ensured proper guidance to the farmers. Field days and group meetings were also organized to provide the opportunities for other farmers to witness the benefits of demonstrated technologies. The sowing was done during mid-October under assured irrigated conditions and harvested during first fortnight of March. Seeds were sown in rows 45 cm apart by drill placed at 3-4 cm depth. However, the practices followed by farmers in general use local cultivar (varuna), seed rate @ 5 kg/ha, no seed treatment, sowing from last week of October to last week of November, in broadcasting manner, no use of fertilizer pattern to under dose application that's to use of Urea and DAP, no weed, water and plant protection measures followed. The data output were collected from both CFLD plots as well as control plots and finally the extension gap, technology gap, technology index along with the benefits cost ratio were work out (Samui et al., 2000) as given below:

Technology gap = Potential yield -Demonstration yield

Extension gap = Demonstrated yield - Yield under existing practice

$$\text{Technology index} = \frac{\text{Potential yield - Demonstrated yield}}{\text{Potential yield}} \times 100$$

RESULTS AND DISCUSSION

The analysis depicted in Table 2 showed the average yield of mustard varieties (RH-406) were 20.5, 18.8 & 20.25 q/ha during 2016-17 and 2017-2018, respectively under demonstrated technology however, under farmer's practices the average yield were 14.6, 14.2 &15.5 q/ha during respective years. However, the per cent increases against local yield were 40.41 & 32.4, 47.5 during 2016-17 and 2017-2018, respectively. The result is in conformity with the finding of Tiwari and Saxena (2001) and Tiwari et al., (2003). The results clearly indicated the positive effect of FLDs over the existing practices toward enhancing the yield of mustard in the study area due to use of high yielding variety, timely sowing, balance does of fertilizers along with sulphur, proper irrigation, need based plant protection etc.

Yield of the front line demonstration and potential yield of the crop was compared to estimate the yield gaps which were further

categorized into technology and extension gap. The technology gap in the demonstration yield against potential yield which ranged from 1.5 to 3.2 during both the year and reflects the farmer's cooperation in carrying out such demonstrations with encouraging results in subsequent years. The technology gap observed may be attributing to the dissimilarity in soil fertility status, timely sowing and weather conditions. Similar finding were recorded by Mitra and Samajdar (2010). Further, the higher extension gap was observed. The extension gap ranged from 6.5 to 7.8q /ha during the period of study that emphasizes the need to educate the farmers through various means for adoption of improved production technologies to mitigate the extension gap.

Table.1 Package of practices followed by farmers under FLD and in general

Particulars	Technology Interventions	Farmer's practices
Variety	RH-406	Local cultivar (Varuna)
Seed rate	4 kg/ha	5 kg/ha
Seed treatment	Carbendazim @2.5g/kg	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)	Broadcasting
Fertilizer management	120: 60: 30 (N:P:S) kg/ha	Use of urea 40kg/ha. and DAP (80 kg/ha)
Weed management	Pre-emergence application of Pendimethalin 30 EC 3.3 l/ha	No use
Water management	Light irrigation before flowering (If no rainfall)	No use
Plant protectio	Need based application of Imidachlorprid @ 0.5 ml/l lt. of water for the management of aphid control	No use

Table.2 Technical Impact of mustard crop demonstrations during 2016- 2018

No	Crop	Variety	Technology Demonstrated	Area (ha.)	No. of Demonstration	Potential yield (q/ha)	Yield of the crop (q/ha) under Demonstration			Variety and Yield of local Check (q./ha) (Varuna)	Increase in yield (%)
							Highest	Lowest	Average		
Year (2016-2017)											
1	Mustard	RH-406	HYV seed, weed management, nutrien management & P.P	2.5	06	22	21.9	19.1	20.5	14.6	40.41
2	Mustard	RH-406	HYV seed, weed management, nutrien management & P.P	5	21	22	20.1	17.5	18.8	14.2	32.4
Year (2017-2018)											
1	Mustard	RH-406	HYV seed, weed management, nutrien management & P.P	30	94	22	22.3	18.2	20.25	15.5	47.5

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 plot	Demonstration plot	Local Check plot	Demonstration plot	Local Check plot	
RH-406	14,800	13,600	71,750	51,100	56,950	37,500	4.8
RH-406	15,525	14,600	75,200	56,800	59,675	42,200	4.8
RH-406	16,625	14,200	81,000	62,000	64,775	47,800	5.0

The data of Table 3 reveals that as far as economics of mustard is concerned; gross cost, net income and benefit cost ratio were Rs. 14,800/ha, Rs. 56,950/ha and 4.8, respectively during 2016-17 and Rs. 15,525/ha, Rs. 75,200/ha and 4.8, respectively during 2017-18 under demonstration plot. However, Rs. 13,600/ha gross cost, Rs. 37,500/ha net return with 3.7 benefit cost ratio during 2016-17 and Rs. 14,600/ha gross cost, Rs. 42,200/ha net return with 3.8 benefit cost ratio observed during 2017-18 under farmer's practices. The superiority of recommended package of practices under frontline demonstration over farmers' practice was also reported by Mitra and Samajdar (2010) and Balai et al., (2012).

Extension gap

On an average extension gap under two year Demonstration programme was 7.4, 7.8 & 6.5 q/ha. This emphasized the need to educate the farmers through various techniques for the adoption of improved agricultural production technologies to reverse this trend of wide extension gap.

Technology gap

The technology gap, the differences between potential yield and yield of demonstration plots was 1.5, 3.2 & 1.75 q /ha. This may be due to the soil fertility, managerial skills of individual farmer's and climatic condition of the area. Hence, location specific recommendations are necessary to bridge this gap.

Technology Index

The technology index shows the feasibility of the demonstrated technology at the farmer's field. The technology index was 8.18, 14.54 & 7.95 which shows the effectiveness of technical interventions. This accelerates the adoption of demonstrated technical interventions to increase the yield performance of mustard.

CONCLUSION:

From the findings of present study, it can be concluded that use of latest technologies of mustard cultivation can reduce the technology gap to a considerable extent resulting in to increased productivity of mustard in the district. It requires collaborative extension efforts to enhance adoption level of location and crop specific technologies among of the farmers for bridging these gaps. Therefore, extension agencies in the district need to provide proper technical support to the farmers through various educational and extension methods for better mustard production in the district

REFERENCES

1. Ahmad, Afzal, Guru Prem and Kumar, Rakesh. 2013. Impact of front line demonstrations on Indian mustard through improved technologies. Indian Res. J. Extn. Edu., 13(1) : 117-119.
2. Anonymous. 2016. Department of Agriculture and Cooperation, Directorate of Economics and Statistics, Ministry of Agriculture and farmer welfare, GOI.

3. Balai, C.M., Meena, R.P., Meena, B.L. and Bairwa, R.K. (2012). Impact of frontline on rapeseed and mustard yield improvement. Indian Res. J. of Ext.n Edu., 12 (2): 113-116.
4. Choudhary, B.N. 1999. Krishi Vigyan Kendra- guide for KVK managers. Publication, Division of Agril. Extn., ICAR, pp 73-78.
5. Katare, Subhash, Pandey, S.K. and Mustafa, M. 2011. Yield gap analysis of rapeseed-mustard through front line demonstrations. Agric. Update, 6(2):57.
6. Mitra, B. and Samajdar, T. 2010. Yield gap analysis of rapseed and mustard through frontline demonstrations. Agril. Ext. Review, 22 (2):16-17.
7. Panday. I. D, Basudeo Singh and J.N. Sachan. 1999. Brassica Hybrid research in India: status and prospects. Proceedings of the tenth international rape seed congress. Canberra, Australia.
8. Samui, S K, Maitra, S, Roy, DK, Mandal, A K and Saha, D. 2000. Evaluation of front line demonstration on groundnut. J Indian Soc Coastal Agric Res, 18: 180-183
9. Tiwari, K.B. and Saxena, A. (2001). Economic analysis of FLD of oilseed in chhindwara. Bhartya Krishi Anusandhan Patrika, 16 (3&4): 185189.
10. Tiwari, K.B., Singh, Vinay and Parihar, P. (2003). Role of FLD in transfer of gram production technology. Maharastra J.Extn. Edu., 22 (1):19.