IMPACT OF FRONTLINE DEMONSTRATION ON MUSTARD THROUGH IMPROVED PRODUCTION TECHNOLOGY UNDER RENFED CONDITION

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ABSTRACT

Mustard (Brassica juncea L.) is a most important oilseed crop in India. It is also one of the new oilseed crops of Panchmahal district of Gujarat. However, its productivity is very low in the district compared to other districts of Gujarat. The KVK Panchmahal has carried out 25 frontline demonstrations on mustard covering an area of 10 ha. of farmers field in 3 taluka (Kalol. Godhra and Shehra) in 2016-17 to exhibit latest production technologies and compared it with farmer's practice. An attempt has also been made to know the productivity of frontline demonstrations and the adoption of latest production technologies by the 25 FLD farmers and controls. The results were compared between FLD plots and control plots. The results revealed that improved technologies of mustard enhanced yield from 13.7 q/ha in frontline demonstrations as compared control plots (11.5 q/ha) and increase in yield 18.28 percent. The extension gap and technology gap were recorded 2.20 q/ha and 3.62 q/ha, respectively. The technology index ranged from 20.9 %. The results indicated that the FLD was effective in changing attitude, knowledge and adoption of improved technologies of mustard and ultimately in obtaining sustain income.

Keywords: *extension gap, FLD, technology gap*

INTRODUCTION

Edible oilseed crops have significant contribution in Indian Agriculture. The average contribution of rapeseed-mustard to the total oilseed production in India was 24.2% during 2012-13, its average productivity was 1167 kg/ha as compared to 1135 kg/ha of total oilseeds. Though, rapeseed-mustard ranks second in terms of production after soybean, however due to more oil contain (ranging from 35- 45%), rapeseed-mustard rank first in terms of oil yield among all oilseed crops. The rapeseed-mustard production trends represent fluctuating scenario with on all time production of 8.3 million tons from 6.90 million hectares during 2010-11(Anonymous (2010-11). Newly introducing mustard (Brassica juncea L.) crop grown in Panchmahal district of Gujarat conducting of frontline demonstrations on farmer's field help to identify the constraints and potential of the rapeseed-mustard in specific area as well as it helps in improving the economic and for several components of the improved technology were low, emphasizing the need for better dissemination (Kiresur et al., 2001). Several biotic, abiotic and socio-economic constraints inhibit exploitation of the yield potential and this need to be addressed. Middle part of Gujarat has the new area social status of the farmers. The aim of the frontline demonstration is to introduce the mustard production technical message to farmers that if they use recommended package and practices. The improved technology packages were also found to be financially attractive. Yet, adoption levels under mustard cultivation. Keeping the FLDs on rapeseed-mustard using improved production technologies was conducted with the objective of sowing the productive potentials of the new production technologies under actual farm situation.

OBJECTVIE

To know the impact of frontline demonstration on mustard through improved production technology under renfed condition

METHODOLOGY

The present study was carried out by the KVK Panchmahal, Gujarat during Rabi season 2016-2017 at farmer's field of five adopted villages of three different taluka of Panchmahal district. An area of 10 ha was covered with plot size 0.33 ha under front line demonstration with active participation of 25 farmers. Before conducting FLDs a list of farmers was prepared from group meeting and training was imparted to the selected farmers regarding different aspects

of cultivation etc. were followed as suggested by Choudhary (1999) and Venkattakumar et al, (2010). Material for the present study with respect to FLDs and farmer's practices has been given in table-1.

Table 1 : Comparison between adoptions of demonstration package & farmers practice under rapeseed –mustard FLDs

Particular	Demonstration package	Farmers practice
Improved Variety	NRCHB-101	Local seed
Optimum seed rate	5kg/ha	6-8kg/ha
Sowing Method	Line sowing(40cm.x10cm.)	Broadcasting
Seed Treatment	Carbendazim 50WP @2.5gm/Kg seed	Not used
Time of Sowing	1st fortnight of October	Last week of October to mid -November
Use of Bio-fertilizers	Seed inoculation with Azotobactor and PSB	Not used
Basal Application of Fertilizers	50kgN+60kgP_2O_5+40kg per ha	Used 100kg/ha, 25 DAP
Top Dressing of	Urea 50kg/ha N at after first irrigation(35-40DAS)	100-150kg/ha N used
Weed Management	Pendimethalin 30 EC @ 3.3 lit./ha as pre-emergence followed by one hand weeding after 1st irrigation (35DAS)	Not used
Control of Mustard Aphid	Spray Dimethoate 30 EC @ 1.0 lit./ha	No Insecticide used

In case of local check plots, existing practices being used by farmers were followed. In general, soils of the area under study are black and medium in fertility status. In demonstration plot, use of quality seeds of improved variety, line sowing, recommended dose of fertilizers and bio-fertilizer inoculation, timely irrigation and plant protection management were demonstrated on the farmer's field through frontline demonstration of different locations. Visit of farmers and extension functionaries was organized at demonstration plots to disseminate the message at large scale. The necessary step for selection of site and farmers, layout of demonstration etc. were followed as suggested by Choudhary (1999). The traditional practices were maintained in case of local checks. The data were collected from both FLD plots as well as control plots (farmers' practices) and finally the extension gap, Technology gap and technology index were worked out (Samui et al. 2000) as given below:

Technology gap = Potential yield –Demonstration yield

Extension gap = Demonstration yield – Farmers yield

$$\textbf{Technology index} = \frac{\text{Potential yield} - \text{Demonstration yield}}{\text{Potential yield}} \text{ X } 100$$

RESULTS AND DISCUSSION

Performance of production technology

Table 2: Extension gap, technology gap and technology index of FLD on indian mustard (n=25)

Variables	Yield (q ha^{-1})	Increase (%) over local check	Technology gap- (qha^{-1})	Extension gap (qha^{-1})	Technology index (%)
Local check	11.5	-	-	-	-
Demonstration (NRCHB-101)	13.7	19.13	3.62	2.20	20.9

Results of 25 frontline demonstrations conducted during 2016-17 in 10 ha area of farmers field in five adopted villages of three different taluka of Panchmahal district (Table-2) included the cultivation practice under FLD *viz.* use of improved variety (NRCHB-101), timely sowing, biofertilizer inoculation with *Azotobactor and phosphate solubilizing bacteria (PSB)*, balanced application of fertilizer (100 kg. N: 60 kg. P_2O_5: 40 kg.) through urea and DAP. The average yield of Indian mustard 13.7q/ha over the observation period. On an average 19.13% increase in yield has been observed as compared to local check. The variation in yield from site to site accounted for varying climatic conditions

and variation in Agricultural practices followed. The similar results of yield enhancement in rapeseed-mustard crop in frontline demonstration have been documented by Mitra and Samajdar (2010) in Tarai zone of West Bengal. The similar reasons were provided by Tomer *et al.* (2003*) and* Singh *et al.* (2008).

Table 3 : Yield parameters under demonstrations package and existing farmers practice

Yield parameters	Demonstration package	Existing farmers practice
No. of Siliqua/plant	110-120	78-95
No. of Seed/siliqua	12-17	8-11
Test weight (gm.)	4.6-5.2	3.1-3.2

The results indicate that the front line demonstrations have given a good impact on the farming community of these districts as they were motivated by the improved Agricultural technologies used in the frontline demonstrations. The results clearly indicated the positive effects of FLDs over the existing practices toward in enhancing the yield of rapeseed-mustard in adopted districts, with its positive effect on yield attribute

These results were also supported by Singh *et al.* (2008) who found that the improved technologies of mustard crop have significant effect in higher productivity of mustard. The finding revealed that a gap exists between the actual farmer's yield and realizable yield potential of the variety. Use of improved variety carries potential to enhance the present level of mustard productivity which is not percolating down at desired pace due to lack of confidence among the farmers. Hence, to exploit the potential of improved production and protection technologies efforts through FLDs ought to be increased awareness among the farmers. The extension gap showed an increasing trend.

The extension gap 2.2 q/ ha during the period of study emphas\izes the need to educate the farmers through various means for adoption of improved agricultural production technologies to reverse the trend. The average technology gap was observed 3.62 q/ha. Similar findings were also recorded by Mitra *et al.* (2010), Katare *et al.* (2011) and Vinaya *et al.* (2017).

Technology index shows the feasibility of the variety at the farmer's field. The lower the value of technology index, more is the feasibility. Result of study depiction in table 3 revealed that the technology index values were 20.9%. The results of the present study are in consonance with the findings of Rai et al. (2015), Poshiya *et al.* (2019).

CONCLUSION

The productivity enhancement under FLDs over traditional method of Indian mustard cultivation created greater awareness and motivated the other farmers to adopt appropriate production technology of Indian mustard in these adopted three taluka of Panchmahal districts of Gujarat. The selection of specific technology like improved and recommended variety, seed inoculation with bio-fertilizers, plant protection measures were undertaken in a proper way. These technologies were found to be the main reason for increase in yield and thus, it would be said the FLDs were the most successful tools for transfer of technology for productivity enhancement of Indian mustard.

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