The Pharma Innovation Journal 2020; 9(9): 424-427

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2020; 9(9): 424-427

www.thepharmajournal.com
Received: 22-07-2020
Accepted: 24-08-2020

Chandan Singh
Krishi Vigyan Kendra, Auraiya, Uttar Pradesh, India

Sandeep Kumar Singh
Krishi Vigyan Kendra, Auraiya, Uttar Pradesh, India

Ankur
Krishi Vigyan Kendra, Auraiya, Uttar Pradesh, India

Anant Kumar
Krishi Vigyan Kendra, Auraiya, Uttar Pradesh, India

Nikhil Vikram Singh
ICAR-ATARI, Kanpur, Uttar Pradesh, India

Mohil Kumar
ICAR-ATARI, Kanpur, Uttar Pradesh, India

Corresponding Author:
Chandan Singh
Krishi Vigyan Kendra, Auraiya, Uttar Pradesh, India

Impact of improved technology and package of practices to sustain the productivity of Mustard in district Auraiya (U.P.)

Chandan Singh, Sandeep Kumar Singh, Ankur, Anant Kumar, Nikhil Vikram Singh and Mohil Kumar

Abstract
Mustard is a one of the important oilseeds crop in India. One of the major constraints of traditional mustard farming is low productivity due to non-adoption of recommended package of practices and improved varieties. To replace this anomaly, Krishi Vigyan Kendra Auraiya, UP had conducted Cluster frontline demonstrations (CFLDs) at adopted farmer's fields during 2018-19 and 2019-20. Cultivation practices comprised under CFLD viz., line sowing, application of balance fertilizers, use of secondary and micronutrients, weed management and control of insect-pest through insecticide-pesticides at economic threshold level. The result revealed that the average yield of mustard increased 14.5 percent over farmer's practice during the demonstration period. The technology gap on average basis 690 kg/ha it shows the gap in demonstration yield over potential yield, but the above gap reduced subsequently follows the recommended package of practices. The front line demonstrations recorded higher average gross returns (Rs. 79080/ha) and net return (Rs. 53235/ha) with higher benefit cost ratio (3.05) compared to farmers practice (Rs. 69923/ha, Rs.44933/ha and 2.81, respectively). The results suggest that higher profitability and economic viability of mustard demonstrations under local agro-ecological situation.

Keywords: Cluster frontline demonstration, technology gap, extension gap, variety (rh-749), technology index, mustard, client satisfaction index

Introduction
Mustard (*Brassica juncea*) is a one of the important oilseed crop of India. It is the second most important edible oilseed after groundnut and sharing 27.8% in the India's oilseed economy. The share of oilseeds is 14.1% out of the total cropped area in the country. The global area, production, and productivity of rapeseed-mustard are around 33.11 mha, 60.66 mt and 18.32 qha^{-} [1], respectively. India contributes 28.3% and 19.8% in world areas and production, respectively [8]. The total area in India was 6.30 million hectares along with million tones of production. Uttar Pradesh accounts for 14.03% and 13.78% of area and production, respectively in the country with the average yield of 1123 kg/ha which is equivalent to the national average (1143 kg/ha). It is mainly grown in the states of Rajasthan, Uttar Pradesh, Haryana, Madhya Pradesh and Gujarat. The state-wise yields obtained under both improved technology and farmers' practice ranges from 12-110% between states and the national average being 36%. The additional production that can be attained by exploiting the yield gap at national level is about 2 million tonnes [5]. Auraiya district has the sizeable area (14635 ha) under mustard cultivation but the productivity level is very low (**1547** kg/ha) during 2017-18.Therefore, keeping the above point in view, the CFLDs on mustard using integrated crop management technology was started with the objectives of showing the productive potentials of the new production technologies under real farm situation over the locally cultivated mustard crop.

Materials and Methods
The present study was carried out by the Krishi Vigyan Kendra, Auraiya during *rabi* season of 2017-18 and 2018-19 (02 years) at 150 farmers' fields of different (villages) situation of Auraiya district in Central Plain Zone of Uttar Pradesh. Totally 150 Cluster frontline demonstrations were conducted in 60 ha area. Materials for the demonstrations with respect to CFLDs 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 loam in texture and medium to low in fertility status. The CFLDs were conducted to study the gaps between the potential yield and demonstration yield, extension gap and technology index. In the present evaluation study, the data on output of mustard cultivation were collected from CFLD plots, besides the data on local practices, which is commonly adopted by the farmers of this region, were also collected. In demonstration plots, a few critical inputs in the form of sulphur, borax and agrochemicals etc. were provided and nonmonetary inputs like timely sowing in lines, thinning timing and proper weed management were also performed, whereas, traditional practices were maintained in case of local checks. The technologies demonstrated are mentioned in Table 1 and compared with local practices. The technology gap, extension gap and technology index were calculated using the following formula has given by Samui *et al.*

1. Technology gap = Potential yield - Demonstration yield.
2. Extension gap = Demonstration yield - yield under existing practice and
3. Technology index = {(Potential yield - Demonstration yield)/Potential yield} x 100.

   In all, 150 participating farmers' were selected to measure satisfaction level of farmers' for the performance of improve technology. The selected respondents were interviewed personally with the help of a pre-tested and well-structured interview schedule. Client Satisfaction index was calculated as below.
4. Client satisfaction index = (Individual score obtained/Maximum score possible) x 100.

The data collected were tabulated and satisfactory analyzed to interpret the results

The economic-parameters (gross return, net return and B:C ratio) were worked out on the basis of prevailing market prices of inputs and Minimum Support Prices of outputs.

Results and Discussion Mustard Yield: The data (Table-2) indicated that the Cluster frontline demonstration has given a good impact over farming community of Auraiya district as they were motivated by the new agricultural technologies applied in the demonstrations. Result of 150 Cluster frontline demonstration conducted during 2017-18 and 2018-19 in 60 ha area on farmers fields indicated that the cultivation practices comprised under CFLD *viz.*, balanced application of fertilizer (N:P:K@ 120:60:60 kg/ha with 40 kg/ha sulphur) line sowing, weed management and timely control of mustard disease and insect *viz.* Alternaria blight, White rust & Aphid through fungicide & insecticide, produce on an average 2305 kg/ha mustard yield , which was 14.5% higher compared to prevailing farmers practice (2012kg/ha). Kumar and Yadav [6]. also reported that recommended dose of phosphorus and sulphur increase the yield and quality of Indian mustard.

Table 1: Details of package of practices followed in the Front Line Demonstrations

S.N.	Inputs	Quantity per hectare	
		Demonstration	Farmers practice
1	Mustard variety	RH-749	RH-749
2	Seed rate	5 kg/ha	6.5 kg/ha
3	Seed treatment (Babastin)	2 g/kg seed	-
4	Di-ammonium phosphate (DAP)	125 kg/ha	100 kg/ha
5	Urea	180 kg/ha	100 kg/ha
6	MOP	50 kg/ha	-
7	Sulphur	25 kg/ha	10 kg/ha
8	Thinning	After 20 -25 days	After 40 - 45 days
9	Insecticides	Imidacloprid @ 250 ml/h	Mailaithian @2.0 Kg./ha
10	Fungicides (Mancozeb)	Mancozeb @2.0 kg/ha	-
11	Weed Management	Use of Pendimethalin	Manual weeding

Technology and Extension gap: The technology gap observed may be attributed to the dissimilarity in the soil fertility status and weather conditions. Hence, variety wise location specific recommendation appears to be necessary to minimize the technology gap for yield level in different situations. The extension gaps ranged from 290 to 295 kg/ha during the period of demonstration emphasized the need to educate the farmers through various means for the adoption of improved agricultural production technologies to reverse this trend of wide extension gap. More and more use of latest production Technologies with high yielding varieties will subsequently change this alarming trend of galloping extension gap. The new technology will eventually lead to the farmers to discontinuance of old varieties with the new technology.

Technology index: The technology index shows the feasibility of the evolved technology at the farmers' fields. The lower value of technology index more is the feasibility of the technology. The data (Table-2) showed that maximum technology index value 20.68% was noticed in the year 2018-19 followed by 20.34% (2019-20) whereas, average value of Technology index of 20.51%, it may be due to uneven & erratic rainfall and weather conditions of the area. The finding of the Present study is in line with the finding of Hiremath and Nagaraju [3] and Dhaka *et al.* [2],

Table 2: Yield performance of mustard under CFLDs at farmers' field

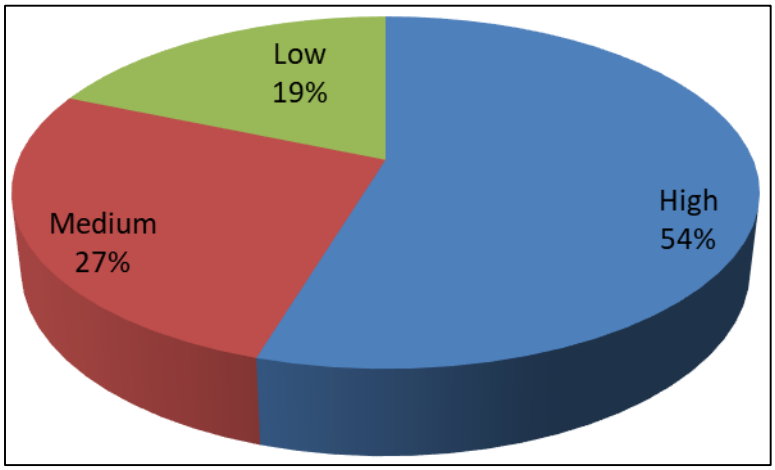
Year	No. of demo.	Area (ha)	Yield (kg/ha)		% yield Increase over FP	Techno logy gap (kg/ha)	Extension gap (kg/ha)	Techno logy Index (%)	District yield Gap kg/ha
			Demo	FP					
2018-19	100	40	2300	2005	14.7	700	295	20.68	753
2019-20	50	20	2310	2020	14.3	680	290	20.34	763
Avg.	150	60	2305	2012	14.5	690	292	20.51	758
AGR%	-	-	-0.43	-0.74	-	-	-	-	-

Table 3: Economic performance of mustard under CFLDs at farmers' field (Rs./ha)

Year	Cost of Cultivation		Gross return		Net return	
	Demo	FP	Demo	FP	Demo	FP
2018-19	23325	22180	74580	66000	51255	43820
2019-20	28600	27800	83581	73847	55251	46047
Mean	25962	24990	79080	69923	53235	44933

Table 4: Additional economic performance of mustard under CFLDs at farmers' field

Year	Additional Cost (Rs./ha) in Demonstration	Additional (Rs./ha) in Demonstration	BC Ratio	
			Demonstration	Farmers Practice
2018-19	1145	8580	3.19	2.97
2019-20	800	9734	2.92	2.65
Mean	972	9157	3.05	2.81



Level of Satisfaction out of 150 farmers

Cost of cultivation, Gross and Net return

The economics (cost of cultivation, gross & net return) of mustard under Cluster front line demonstration were estimated and the result has been presented in Table 3. The Cluster front line demonstration plots recorded higher average gross returns (Rs.79080/ha) and net return (Rs.53235/ha) with higher benefit cost ratio (3.05) compare to farmers practice. Additional cost of cultivation& Return and B:C ratio: Further data (table 4) shows that the average additional cost of cultivation (Rs.972/ha) under integrated crop management demonstrations and has yielded additional net returns of Rs.9157 per hectare. The results suggest that higher profitability and economic viability of mustard demonstration under local agro-ecological situation

Farmers satisfaction: The extent of satisfaction level of respondent farmers over performance of demonstrated technology was measured by Client Satisfaction Index (CSI) and result presented in draw pie chart. It is observed that majority of the respondent farmers expressed high (54%) to the medium (27%) level of satisfaction regarding the performance of FLDs, whereas, very few (19%) of respondents expressed lower level of satisfaction. The higher to medium level of satisfaction with respect to performance of demonstrated technology indicated stronger conviction, physical and mental involvement of in the Cluster frontline demonstration, which in turn would lead to higher adoption. The results are in close conformity with the results of Kumaran and Vijayaragavan[7] and Dhaka *et al.* [2],

Conclusion

It may be concluded that the Cluster frontline demonstration on integrated crop management technology in mustard crop has found more productive, profitable and feasible in Central Plain Zone of Uttar Pradesh as compared to prevailing farmers practice under real farming situations. Farmers were motivated by results 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.

References

1. Anonymous, Statistical Booklet of District Auraiya. Department of Statistics, State
2. Dhaka BL, Meena BS, Suwalka RL. Popularization of improved maize production technology through frontline demonstration in south eastern Rajasthan. Journal of Agriculture Science. 2010; 1(1):39-42.
3. Hiremath SM, Nagaraju MV, Shashidhar KK. Impact of frontline demonstration on Onion productivity in farmers field. Paper presented In: Nation Sem Appropriate Ext Strat Manag Rural Resources, Univ Agric. Sci., Dharwad, 2007, 100.
4. Kiresur VR, Ramanna RSV, Hedge DM. Improved technologies in oilseeds production – An assessment of their economic potentials in India. Agriculture Economics Research Review. 2001; 14(2):95-108.
5. Kumar A, Chauhan JS. Status and future thrust areas of rapeseed mustard research in India. Indian Journal of Agriculture Sciences. 2005; 75(10):621-635.
6. Kumar H, Yadav DS. Effect of Phosphorus and sulphur levels on growth, yield and quality of mustard (*Brassica juncae*) cultivars. Indian Journal of Agronomy. 2007; 52(2):154-157.
7. Kumaran M, Vijayaragvan K. Farmers statisfaction of

agriculture extension services in an irrigation command area. Indian journal of Extension Educations. 2005; 41(3&4):8-12.
8. Shekhawat K, Rathore SS, Premi OP, Kandpal BK, Chauhan JS. Advances in agronomic management of Indian mustard (*Brassica juncae* L.); An Overview. Int. J Agron. 2012, 1-14.