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Impact of front line demonstration on mustard productivity and scientific temperament of mustard growers in Gorakhpur district (U.P.)

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Abstract
Front line demonstrations was conducted during the winter (*rabi*) seasons of 2018-19 and 2019-20 at two NICRA villages namely Mahopar and Girdharpur of block Kodiram, district Gorakhpur, Uttar Pradesh, to study the impact of FLD on productivity of *Brassica juncea* (L.) Czernj. & Cosson] and scientific temperament of mustard growers. The frontline demonstrations were conducted on sixty five farmer's field of both the village in each year. Variety NRCHB 101 of mustard with improved technologies under demonstration had significant impact on seed yield compared to local varieties and their production practice (control/FP). Further, mean results of the study revealed that adoption of improved production technology recorded additional yield 3.1 and 3.3 q/ha, increasement in yield was 22.9 and 30.1%, mean gross return (Rs. 56700/ha) and additional net return (Rs. 8800/ha), additional return (Rs. 11200/ha) and IBCR (3.66) over farmer practices. The improved technologies i.e. line sowing, thinning and control of aphid including improved variety NRCHB 101 showed the impact in demonstrations. It was found that a number of adopters for line sowing and line sowing + thinning and line sowing + thinning + aphid control were 20, 16.9 and 9.2 before demonstrations, which increased to 98.4, 92.3 and 100 per cent respectively after frontline demonstrations in adopted villages. The scientific temperament of the beneficiary farmer of FLDs was higher (87.3%) than the mean value of (52.3%) in non- beneficiary. Thus it can be stated that there is an impact of FLD programmes on scientific temperament of the mustard growers.

Keywords: Impact, yield, scientific temperament and technologies

Introduction
Rapeseed–mustard a group of oilseed crops in India accounts for approximately 20–22% of total oilseeds produced in the country. Out of 7 cultivated oilseeds species of genus *Brassica*, more than 80% of total area is occupied by Indian mustard alone (Chandrashekar *et al.*, 2013) [2]. The requirement of vegetable oils and fats will be much higher in coming years in view of ever increasing population. India would need 58 million tons of oilseeds by 2020 for maintaining minimum edible oil requirement (Mittal, 2008) [6]. To produce an additional quantity of oilseeds, the only option is to enhance productivity under the limited land resource condition. Among the oilseed crops, rape seed and mustard occupy rank next to soybean in acreage and production. The inadequate supply of inputs often leads to limit the yield potential of rapeseed and mustard (DACNET, 2014) [3]. Identification of the variety suitable for the area and technological gap to enhance the mustard production is the need of time. Apart from improved varieties and technologies, scientific temperament of the mustard growers is very important for achieving the target oilseed production. The main mandate of the KVKs are to plan and carry out on-farm trials (OFTs) to verify, test, validate and refine location-specific technologies developed by the National Agricultural Research System (NARS). The purpose is to have an appropriate technology, which may be economically profitable, ecologically sustainable, technically feasible and culturally compatible. Another important activity of KVKs is to conduct frontline demonstrations (FLDs) on flagship technologies developed by NARS on farmer's field. Therefore, KVKs system emphasizes the frontline demonstration as a long-term educational activity in a systematic manner on farmer's field under the close supervision of agricultural scientists to show the worth of new practice/technology. KVKs are being emphasized to organize large scale FLD programs on oilseed crops for harnessing its productivity potential. It is, therefore, the concerned stakeholders should know that how many FLDs help to increase the productivity of oilseeds, to what extent FLDs spreads improved

varieties of oilseeds in the operational area and to find out the adoption of different technologies by the farmers after exposure to FLDs. The present FLDs was therefore undertaken in farmers' participatory approach to study the response of improved mustard variety NRCHB 101, line sowing, thinning and aphid control in terms of yield, net monetary returns, adoption of new technologies by the farmers as well as of scientific temperament of mustard growers.

Methodology

The present study was conducted by KVK Belipar, Gorakhpur of Uttar Pradesh during 2018-19 to 2019-20, at 65 farmers field of two village Mahopar and Girdharpur in each year by using mustard variety NRCHB 101 with all package and practice as mentioned in Table 1. The farmer practice was considered as control plot/local check in demonstration cluster. These control plots were maintained by the farmers according to their own traditional cultivation practices. The KVK scientists had provided critical inputs such as seed, pesticide and implements to the farmers for demonstration plots. The demonstrations were laid out under the close supervision of KVK Scientists. The study was conducted in experimental designs ('Control-Treatment' and 'Before-After') of social research. Majority of demonstrations were sown in the first fortnight of Novembers during both the years. The soil of the demonstrations fields were sandy loam, (pH 7.75 to 8.5), low in organic carbon (0.2 to 0.3%), nitrogen (180.0 to 225 kg/ha) and phosphorus (12.4 to 26.5 kg/ha) and high in potassium (251 to 300 kg/ha). Fertilizers were applied @ 120:40:40 kg NPK/ha with 30 kg sulphur/ha. The nitrogen and phosphorus were given through di-ammonium phosphate and remaining quantity of nitrogen was given through urea applied as basal as well as top dressing at 40-45 days after sowing. The potassium was applied through murate of potash. All the 65 beneficiary farmers were selected and same numbers of non-beneficiary famers were selected randomly from the same village in both the years. Thus, 260 respondents were selected to constitute the sample of the study. For the study purpose 8 independent variables namely age, education, farm size, irrigation potentiality, crop disciplinary, extension participation, farm mechanization, information source utilization, were selected for analyzing their association with the response variable i.e.; scientific temperament. It has been defined in this study as farmers" mental disposition related to items pertaining to four areas of human behavior vis-à-vis scientific knowledge, scientific attitude, scientific habit and utilization of scientific method (Bathri *et al* 2010) [1]. The primary data were collected from the respondents by using a pre-tested semi- structured interview schedule. The "t" test was used for testing the significant difference of mean score of two categories of the respondents in relation to their scientific temperament.

Data Collection and Analysis

The yield data of demonstration plots as well as control plots were collected immediately after harvesting to assess the impact of FLDs intervention on the yield of oilseed crops during both the years. However, structured and pre-tested interview schedule was used to elicit the information from beneficiary farmers about adoption, varietal replacement and horizontal spread of oilseed crop technologies in adopted villages. The personal interview was conducted with the beneficiary farmers after harvesting of crop during both the years. The following formulae were used to assess the impact of FLDs on the different parameters of mustard crops.

$$\text{Impact on yield (\% change)} = \frac{\text{Yield of demonstration plot(/ha)- yield of control plot(/ha)}}{\text{yield of control plot(/ha)}} \text{ X100}$$

$$\text{Impact on adoption (\% change)} = \frac{\text{No of adopters after demo- No. of adopters before Demo}}{\text{No. of adopters before Demo}} \text{ X100}$$

Results and Discussion

Impact on yield: The results of two years (2018-19 & 2019-20) front line demonstrations indicated that improved variety NRCHB 101 of mustard with full package under demonstration had excellent impact on seed yield compared to local varieties used by farmers (Table 1). Highest (20.9 and 18.2q/ha) yield during both the years was recorded with Variety NRCHB 101 +line sowing + thinning + aphid control.

Table 1: Yield of mustard in improved and farmers practices through frontline demonstration

S.N.	Technology interventions	Number of farmers	Demo area (ha)	Average yield (q/ha)				Impact (% change in yield)	
				Control plot		Demo plot			
				2018-19	2019-20	2018-19	2019-20	2018-19	2019-20
1.	Var. NRCHB 101+ line sowing	20	5	10.4	8.8	13.8	12.6	32.69	43.2
2.	Var. NRCHB 101+ line sowing + Thining	20	5	15.2	11.3	17.2	14.5	13.115	28.3
3	Var. NRCHB 101+ line sowing + Thining + Aphid control	25	5	17.0	15.3	20.9	18.2	22.94	18.9
	Total	65	15	14.2	11.8	17.3	15.1	22.9	30.1

Variety NRCHB 101 proved its superiority on the varieties used by the farmers. From these results it is evident that the performance of improved variety was found better than the local checks under local conditions. Data further revealed that the use of improved practices line sowing, line sowing with thinning and line sowing + thinning + aphid with the NRCHB101 recorded 37.8, 20.9 and 20.9 per cent higher yield over farmers practices ie use of local variety with sowing through broadcasting, no thinning and use of improper pesticide for control of aphid. Meena and Meena (2015) [5] reported that the research emanated production technologies are capable of increasing production of mustard by 20-32 percent through frontline demonstration on farmer's field.

Higher gross monetary return (Rs. 56700 /ha) and additional return (Rs. 8800 /ha) with IBCR (3.66) were were obtained over farmer practices by adoption of improved production technology. The results suggest that improvement in productivity and economic viability of mustard were obtained

by adoption of improved practice under specific agro-ecological situation. These results corroborate with the results of reported by Meena *et al.*, (2018) [4]. The B: C ratio of improved technologies (2.27) was 12.37 percent higher over farmer's practice (2.02).

Table 2: Comparative economics of mustard improved practices and farmer practice (Mean of 2years)

Particulars	Farmer's practices	Improved Practices	Actual increase over farmer's practices	Increase over farmer's practice (%)
Average yield (q/ha)	13.0	16.2	3.2	**24.61**
Gross return (Rs./ha)	45500	56700	11200	**24.61**
Cost of cultivation (Rs./ha)	22500	24900	2400	**10.66**
Net return (Rs./ha)	23000	31800	8800	**38.26**
B:C ratio	2.02	2.27	3.66 (IBCR)	**12.37**

Impact of FLDs on Adoption of mustard Production Technologies

Data on adoption of mustard production technologies by the beneficiary farmers are presented in Table 3. It was found that a number of adopters for line sowing and line sowing + thinning and line sowing + thinning + aphid control were 20, 16.9 and 9.2 before demonstrations, which increased to 98.4, 92.3 and 100 per cent respectively after frontline demonstrations in adopted villages. Further it was found that majority of the participant farmers in FLD program had full adoption of improved practices *viz.*, Var. NRCHB 101+ line sowing + thinning + aphid control followed by Var. NRCHB 101+ line sowing and Var. NRCHB 101+ line sowing + thinning. Overall change in adoption of improved technologies was recorded 607 per cent. Finding are in accordance with the results of Patil *et al*. (2018) [7].

Table 3: Impact of frontline demonstrations on adoption of mustard production technologies

S.N.	Technology interventions	Number of adopters (N= 130)		Change in no. of adopters	Impact (% change)
		Before Demo	After demo		
1.	Var. NRCHB 101+ line sowing	26 (20)	128(98.4)	102	392.3
2.	Var. NRCHB 101+ line sowing + Thining	22 (16.9)	120(92.3)	98	445.5
3	Var. NRCHB 101+ line sowing + Thining + Aphid control	12(9.23)	130(100)	118	983.3
		Overall impact 607.03			

Scientific temperament of mustard growers under FLD program

The percentage distribution of the respondents according to their scientific temperament is shown in table 4. The scientific temperament of FLD beneficiary and non beneficiary farmers indicates that majority of the respondents possessed medium level of scientific temperament while about one forth (23.5%) of the respondents possessed low and 22.3% posses in high level of scientific temperament. Similar results are also reported by Bathri *et al*. (2010) [1] in case of maize. The mean value of scientific temperament of FLD beneficiary was higher (87.3) than the mean value of (52.3%) in none beneficiary farmers. Thus it can be stated that there is an impact of FLD programmes on scientific temperament of the mustard growers. Further analysis of the data showed that in low category of scientific temperament, none beneficiary famers had higher percentage (31.5) but in medium scientific temperament they have better value than beneficiary farmers it might be due to that beneficiary farmers have jumped in to high scientific temperament category (31.5%) due to continuous training and advisories by the KVK scientist. The t test was used for testing the significant difference of score of scientific temperament of the two groups. The found value of t" test(9.56) is highly significant at 0.01 level of significance with DF of 258, it shows that the scientific temperament of beneficiary mustard FLD was found to be higher than non beneficiary of mustard FLD. The hypothesis under this test was that the beneficiaries of FLD program and non beneficiaries differ in their degree of scientific temperament.

Table 4: Distribution of the respondents according to their scientific temperament

Scientific temperament	Beneficiaries (n1=130) %	Non-beneficiaries (n2=130) %	Total (n=260) %
Low (<55.5)	20(15.4)	41(31.5)	61(23.5)
Medium (55.5-80.7)	69(53.1)	72(55.4)	141(54.2)
High (>80.7)	41(31.5)	17(13.1)	58(22.3)
Total	130(100)	130(100)	260(100)
Mean	87.3	52.3	74.2
Sd	14.6	5.7	7.2
			't'=9.56**

Data in table 5 clearly indicates that, beneficiaries farmers had more scientific knowledge (96%), scientific attitude (90%), utilization of scientific methods (85%) and scientific habit (74%) compared to non-beneficiaries farmers scientific knowledge (41%), scientific attitude (32%) utilization of scientific methods (32%) and scientific habit (20%). It shows that KVK Gorakhpur has made good effort for providing scientific knowledge and training for adoption of improved mustard farming through FLD and they are more technically sound on their cropping and acquired knowledge and adoption of new scientific technologies proved by the scientist.

Table 5: Percentage of operationalization of scientific temperament- (N=260)

Operationalization of scientific temperament	F	Beneficiaries (N=130) %	F	Non-beneficiaries (N=130) %
Scientific knowledge	68	96	41	48
Scientific attitude	63	90	32	33
Utilization of scientific methods	74	85	32	41
Scientific habit	68	74	20	26

Conclusion

It may be concluded that improved production technology of mustard has found more productive, economic viable and also feasible to local conditions as compared to existing farmer practices. For getting higher production of mustard in Gorakhpur variety NRCHB 101 with line sowing +thinning + aphid control may recommended. The "t" test indicated that there is a significant difference between scores mean of both the group. Thus, it can be stated that, there is a significant impact of FLD program on scientific temperament of the mustard growers.

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References

1. Bathri T, Chouhan R, Choudhary S, Swarnakar VK. Impact of Front Line Demonstration on Scientific Temperament of Maize Growers in Jhabua District (M.P.). IOSR Journal of Agriculture and Veterinary Science 2010;7(10):01-04.
2. Chandrashekar US, Dadlani M, Vishwanath K, Chakrabarty SK, Prasad CTM. Study of morpho-physiological, phonological and reproductive behaviour in protogynous lines of Indian mustard (*Brassica juncea* L.). Euphytica 2013;193(1):277-291.
3. DACNET. Directorate of Economics and Statistics, DAC, Ministry of Agriculture Government of India, New Delhi 2014.
4. Meena BS, Meena DS, Meena KC, Meena CB. Enhanced Mustard Productivity and Profitability through Frontline Demonstrations in South-Eastern Rajasthan, India. International Journal of Current Microbiology and Applied Sciences 2018;7(7):800-805.
5. Meena DS, Jadon C, Meena BS. Impact of Production Technology on Soybean Productivity through Frontline Demonstration. Annals of Agricultural Research New Series 2015;36(2):219-224.
6. Mittal S. Demand Supply Trend and Projections of Food in India. Indian Council for Research on International Economic Relations 2008, 1-20.
7. Patil SS, Mahale MM, Chavan SKS. Impact of Frontline Demonstrations (FLDs) on Oilseed Crops in South Konkan Coastal Zone of Maharashtra. Current Agriculture Research Journal 2018;6(3):355-364.