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On-Farm Evaluation of Front Line Demonstrations on Mustard in Eastern Plain Zone of Uttar Pradesh

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ABSTRACT

Rapeseed-Mustard is an important oilseed crops and contributes around 23.2 per cent of total oilseed production in India. It is pivotal in supplementing the income of small and marginal farmers of adjoining district of Varanasi i.e. Eastern Plain Zone of Uttar Pradesh. One of the major constraints of traditional mustard farming is low productivity due to non-adoption of improved high yielding varieties and recommended package of practices, Front-line demonstrations in farmers fields were conducted which comprised of cultivation practices such as use of improved high yielding varieties, line sowing, balanced application of fertilizers specially inclusion of sulphur and control of mustard aphid through insecticide at economic threshold level. The study revealed that the yield of mustard ranged from 8.0 per cent to 22.15 per cent over local check (Varuna) during the course of study during 2006-07 to 2008-09 (3 years). However, the technology gap of 8.21 q/ha as minimum during 2006-07 to maximum of 10.14 q/ha (2008-09) shows the gap in demonstration yield over potential yield. Hence increase in yield over farmers yield was evident which indicated the need of educating farmers through frontline demonstration.

Key words: Frontline demonstration, technology gap, extension gap, technology index, mustard

INTRODUCTION

Oilseeds constitute the second largest agricultural commodity in India after cereals accounting for nearly 5 per cent of gross national product and 10 per cent of the value of all agricultural products. Despite the fact that India is one of the leading oilseed producing countries in the world, it is not able to meet the edible oil requirement for its vast population. Among the oilseeds, rapeseed-mustard group of crops occupies prominent position in the country during winter season contributing nearly 21.6 per cent and 23.1 per cent to the total oilseed cropped area and production, respectively (Anonymous, 2007). Eastern Plain Zone of Uttar Pradesh has the sizeable area under mustard cultivation but the productivity level is very low. Keeping the above point in view, the FLD on mustard using new crop varietal technology with inclusion of sulphur fertilizer were started with the objectives of showing the productive potential of the new production technologies under real farm situation over the locally cultivated mustard crop.

METHODOLOGY

The present study was carried out by the Agricultural Research Farm under the Insititute of Agricultural Sciences, BHU, Varanasi during rabi season from 2006-07 to 2008-09 (3 years) in the adopted farmers' fields on the adjoining district of Varanasi i.e. Eastern Plain Zone of Uttar Pradesh. A total of 46 front-line demonstrations in 15 hectares area were conducted. Materials for the present study with respect to FLDs and farmers' practices are given in Table 1. In case of local check (Varuna) plots, existing practices being used by farmers were followed. In general, soils of the area under study were slightly alkaline in reaction and deficient in some of the nutrients required for normal crop growth. The FLDs were conducted to study the gap 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 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 etc. were provided and non-monetary inputs like timely sowing in lines, timely weeding and crop management practices were also performed. Whereas, traditional practices were maintained in case of local checks (Varuna). The farmers selected for FLDs were facilitated by BHU scientists in performing field operations like sowing, spraying, weeding, harvesting etc. The technologies demonstrated are mentioned in Table 1 and compared with local practices.

RESULTS AND DISCUSSION

The results of 46 front-line demonstrations conducted during 2006-07 to 2008-09 in 15 ha area on farmers'

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fields indicated that the cultivation practices comprised under FLD viz. use of improved variety (Ashirwad, Swarna jyoti and Maya), line sowing, balanced application of fertilizers (80 N, 40 P_2O_5, 40 K_2O, 30 S kg/ha) and control of mustard aphid through insecticide at economic threshold level, produced on an average more yield of mustard as compared to local check (Varuna). The results revaled that the front-line demonstration created good impact over the farming community of Varanasi district as they were motivated for adoption of the new agricultural technologies applied in the FLD plots. Data further showed that the yield of mustard in the following years increased successively which clearly speaks of the positive impact of FLD over existing practices of mustard cultivation (Table 2).The highest seed yield of Ashirwad, Swarna jyoti and Maya were observed over Varuna (check) which is due to the sum total effect of enhanced growth and increase in yield contributing characters like number of seed siliqua^{-1}, length of siliqua, number of siliqua plant^{-1}, and 1000-seed weight etc. Application of sulphur fertilization showed favorable improvement in seed oil content as well as oil yield. Similar result have been also observed by Jain et al. (1998). The technology gap in the rang of 8.21 to 10.14 q/ha. observed may be attributed to the dissimilarity in the varietal component and sulphur. Hence, variety wise location specific recommendation appear to be necessary to minimize the technology gap for yield level in different situations. The extension gaps which ranged from1.63 q/ha to 2.16 q/ha during the period of study emphasized the need to educate the farmers through various method or 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 varietal component viz. Ashirwad, Swarna jyoti and Maya will subsequently change this alarming trend of galloping extension gap. The new technologies will eventually lead the farmers towards discontinuance of old varieties with the new technology. The technology index shows the feasibility of the evolved technology at the farmers' fields. The lower the value of technology index more is the feasibility of the technology. As such, increasing of technology index, from 41.05 per cent (2006-07) to 50.70 per cent (2008-09) exhibited the feasibility of technology demonstrated (Table 2).

Table: 1. Particulars showing the details of mustard grown under FLD and existing practices

Operation	Existing practice	Improved practices demonstrated
Use of seed	Local seed (*Varuna)*	*Ashirwad* and *Swarna jyoti* adopted for late sown and *Maya* as a timely sown
Sowing method	Broadcasting	Line sowing by manual followed by thinning at 30 DAS.
Fertilizer application	60:40:0 (Kg N:P:K/ha)	80:40:40:30 (Kg N: P: K : S /ha); P through single super phosphate as it contains 12% sulphur.
Control of mustard	No any control measure	Three sprayings of Rogor 30 EC @ 1000 ml dissolved in 1000 litres of water/ha, respectively at 15 days interval when aph id reached the economic threshold i.e. 44 aphids/aphid cm central twig.

Table 2: Exploitable productivity, technology gaps, technology index, extension gaps and cost benefit ratio of mustard as grown under FLD and existing package of practices (Mean data of 3 years)

Years	Area (ha)	No. of FLD	Yield (q/ha)		%increase over existing	Extension gap (q/ha)	Technological gap (q/ha)	Technological Index (%)	Cost benefit ratio	
			FLD	Existing Practice					FLD	Existing Practice
2006-07	4.46	14	11.79	9.63	22.15	2.16	8.21	41.05	1.9	1.6
2007-08	4.88	15	10.78	8.86	21.82	1.92	9.22	46.10	2.06	1.96
2008-09	5.66	17	9.86	8.23	10.40	1.63	10.14	50.70	2.3	1.9

* Technology gap = Potential yield - Demonstration yield
* Extension gap = Demonstration yield - yield under existing practice
* Technology index = {(Potential yield - Demonstration yield)/Potential yield}x 100

CONCLUSION

By conducting front-line demonstrations of proven technologies, yield potential of mustard can be increased to a great extent. This will substantially increase the income as well as the livelihood of the farming community. There is a need to adopt multi-pronged strategy that involves enhancing mustard production through improved technologies in adjoining district of Varanasi. Hence, the farmers were motivated to adapt new high yielding varieties viz. Ashirwad and Swarna jyoti and Maya in Eastern Plains of Uttar Pradesh. This should be brought to the access of farmers through transfer of technology centres like Krishi Vigyan Kendra.

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