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Impact of Front Line Demonstration on Sesamum Crop in Lalitpur District of Bundelkhand Region

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ABSTRACT

The cluster front line demonstrations on Sesamum were conducted by Krishi Vigyan Kendra, Lalitpur during 2017-18 to 2018-19 during *kharif* season. All the 200 demonstrations on Sesamum were carried out on 80 ha by the active participation of farmers. Farmers were selected and in demonstration plots seed was treated with thiram fungicide @2g/kg seed. In improved package of practices, good quality seed, recommended seed rate @5 kg/ha, recommended NPK fertilizer (30:15:0) and sulphur 25 kg/ha, timely sowing, effective plant protection and manual weed management and monitoring the farmers field time to time during cropping season were demonstrated. The maximum yield was obtained under demonstrated plots 4.5 and 3.25q/ha during 2017-18 and 2018-19, respectively. The per cent increase in yield over farmers' practices was 60.71 and 47.72 per cent during 2017-18 and 2018-19, respectively. The benefit to cost (B:C) ratio for demonstration was 2.9 and 3.4 and farmers' plots were 2.1 and 2.5 during 2017-18 and 2018-19, respectively.

Key Words: B:C ratio, Bundelkhand, Front Line Demonstration, Lalitpur, Sesamum.

INTRODUCTION

Sesamum (*Sesamum indicum* L.) is the oldest indigenous oilseed crop cultivated in India. Sesamum or Gingelly is commonly known as Til and Tili in Bundelkhandi language. Sesamum seeds are rich in oil (40-50%), protein (20 %), unsaturated fatty acids, vitamins, minerals folic acid used in baking, candy making and health care products. It is used in edible oil products and it also medicinal and cosmetic uses. The crop is grown in almost all parts of country. More than 85 per cent production of Sesamum is from West Bengal, Madhya Pradesh, Rajasthan, Uttar Pradesh, Gujarat, Andhra Pradesh and Telangana state. In Uttar Pradesh, major Sesamum growing districts are Jhansi, Hamirpur, Jaluan, Mahoba, Hardoi, Banda, Unnao, Lalitpur, Fatehpur, Sitapur, Shahjahanpur and Sonbhdra. The area, production and productivity of Sesamum in Lalitpur district are 6943 ha, 778 MT and 1.12 q/ha, respectively (Anon, 2017). The main reasons for low productivity of Sesamum are its rain fed cultivation in marginal and sub marginal lands under poor management and unavailability of high yielding varieties. An improved verities and scientific cultivation technologies are capable for increasing the productivity levels of Sesamum. In order to increase the area, production and productivity of Sesamum, cluster front line demonstrations were evaluated in the Bundelkhan region of Uttar Pradesh.

MATERIALS AND METHODS

Krishi Vigyan Kendra, Lalitpur conducted cluster front line demonstrations on Sesamum high yielding varieties namely Shekhar and Pragati at the farmers field of Gadhiya, Basatguwan, Bamhorikhadet, Ladwari Paron, Baruad, Pipariabansa of Lalitpur district during 2017-18 to 2018-19. The soil of demonstrated plots ranged from red series to black series soil. The district is divided into two agro-ecological situations (AESs) as AES-I is having red soil series as Rakar and Parwa with medium slope, AES-II black soil series as Mar and Kabar with slight to medium slope. In district

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Table 1. Set of practices followed at the farmers' field and under demonstration plots.

Sr. No.	Particular	Demonstration Package	Farmers' practice
1	Improved variety	Shekhar and Pragati	Local Variety
2	Seed rate	5 kg/ha	6 kg/ha
3	Time of sowing	First fortnight of July	First week of July
4	Method of sowing	Line sowing (30 cm x15 cm)	Broadcasting
5	Seed treatment	Thiram @2 g/kg seed	No seed treatment
6	Basal application of fertilizers	NPK (30:15:0) and 25 kg sulphur/ha	DAP and no use of sulphur
7	Weed management	One hand weeding	No weeding
8	Control of phyllody	Removal of disease infected plants, spraying of Imidacloprid 17.8 SL @ 0.5 ml/l water for Jassids.	No control measures

Lalitpur, soil strata is rocky, terrain is undulating and slope ranges between (0.5 to 10%) and hillocks spreading here and there. Red soils originate from barren rock genesis granite and sometimes from sand sup ton. Black in contrast are formed partly in situ and partly transported with material like lime stone and trap.

For conducting cluster front line demonstration, farmers were selected on the basis of survey. The required inputs were provided to selected farmers and regular visits of scientist to the demonstrated field. Under demonstrated technology trainings, grouping meetings and field day were organized to increase awareness of technologies among the farmers. The sowing was done in first fortnight of July during all trial years. In demonstration plots seed was treated with thiram fungicide @2g/ kg seed. In improved package of practices, good quality seed, recommended seed rate @5 kg/ha, recommended NPK fertilizer (30:15:0) and sulphur 25 kg/ha, timely sowing, effective plant protection and manual weed management and monitoring the farmers field time to time during cropping season were demonstrated. The yield data were recorded from demonstrated plots as well as farmers' practices plots. Cost of cultivation, gross return, net return and B:C ratio were computed and analyzed. Crop yield was recorded and gross return calculated on the basis of market value of Sesamum. Further technology index, technology gap extension gap, and B:C ratio calculated using the following formula as given by Samui *et al* (2000).

Technology index = Potential yield - Demonstration yield/potential yield x 100

Technology gap = Potential yield - Demonstration yield

Extension gap = Demonstration yield - Yield under farmers' practices

B:C = Net income (Rs./ha) / Cost of cultivation (Rs./ha)

RESULTS AND DISCUSSION

Results of cluster front line demonstrations conducted 2017-18 and 2018-19 in different villages of Lalitpur district comprised of use of high yielding variety, line sowing, judicious use of fertilizers and management of insect pests and diseases showed that the maximum yield was obtained under demonstrated plots 4.5 and 3.25 q/ ha during 2017-18 and 2018-19, respectively. An intensification in yield by using technical interventions in FLDs plots reported by Patil *et al* (2019) in oilseed . The per cent increase in yield over farmers' practices were 60.71 and 47.72 per cent during 2017-18 and 2018-19, respectively. Similar results also have been reported by Teggelli *et al* (2018) and choudhary and Suri (2014) in Sesamum. The technology gap was

Table 2. Grain Yield performance of cluster frontline demonstration on Sesamum.

Variety & year	Area	No. of farmers	Yield (q/ha)			Per cent increase over farmers practices	Technology gap (q/ha)	Extension gap (q/ha)	Technology Index (%)
			Potential	Recommended Practices	Farmers Practices				
Shekhar	40	100	7.0	4.5	2.8	60.71	2.5	1.7	35.71
Pragati	40	100	7.5	3.25	2.2	47.72	4.25	1.05	56.67

Table 3. Economic performance of cluster frontline demonstration on Sesamum.

Years	Yield (q/ha)		Economics of demonstration plot (Rs./ha)				Economics of farmers plot (Rs./ha)			
	Demo	Check	Gross Cost	Gross Return	Net Return	BCR (R/C)	Gross Cost	Gross Return	Net Return	BCR (R/C)
2017-18	4.5	2.8	11000	31500	20500	2.9	9400	19600	10200	2.1
2018-19	3.25	2.2	12450	42250	29800	3.4	11340	28600	17260	2.5

found to be 2.5 and 4.25 while extension gap was recorded 1.7 and 1.05 during 2017-18 and 2018-19, respectively. These results were in conformity with findings of Anand Naik *et al* (2016) and Singh *et al* (2018). The technology gap was observed due to high rainfall and soil fertility status. These results were in conformity with findings of Sagar and Chandra (2004) in Sesamum.

Yield of Sesamum varied in different years, which might be due to the rainfall, pests attacks and change in soil types. The data (Table 3) indicated that the gross returns of demonstration plot were Rs. 31,500/- and 42,250/- and for farmers' plot Rs 19,600/- and 28,600/- during 2017-18 and 2018-19, respectively. B:C ratio for demonstration 2.9 and 3.4 and farmers plots were 2.1and 2.5 during 2017-18 and 2018-19, respectively. Similar results also have been reported by Meena *et al* (2018) and Singh *et al* (2018). Higher net returns in demonstration plots as compared to farmer practices. Similar results also reported by Sandhu and Dhaliwal (2019) in rapeseed.

CONCLUSION

It can be concluded that newly introduced variety of Sesamum along with improved package of practices performed well in the lalitpur district of Bundelkhand region and front line demonstrations on Sesamum at farmers' field revealed that adoption of improved technologies significantly increased yield and net returns to the farmers.

Fig. a and b Field monitoring of demonstration plots.

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