

Original Research Article

<https://doi.org/10.20546/ijcmas.2020.911.200>

## Enhancing Productivity and Profitability of Sesame under Cluster Frontline Demonstration in Morigaon District of Assam, India

Ranjita Bezbaruah<sup>1\*</sup>, Rijusmita Sharma Deka<sup>2</sup>, Juli Sharma<sup>3</sup> and Pallavi Saikia<sup>4</sup>

<sup>1</sup>Horticultural Research Station, Assam Agricultural University,  
Kahikuchi, Guwahati, Assam, India

<sup>2</sup>Krishi Vigyan Kendra, AAU, Morigaon, Assam, India

<sup>3</sup>Krishi Vigyan Kendra, AAU, Nagaon, Assam, India

<sup>4</sup>Krishi Vigyan Kendra, AAU, Golaghat, Assam, India

\*Corresponding author

### ABSTRACT

#### Keywords

Sesame, Production, Cluster Frontline Demonstration, Net return, B: C Ratio

#### Article Info

##### Accepted:

12 October 2020

##### Available Online:

10 November 2020

Adoption of improved production technologies of sesame offers a great scope for increasing productivity and profitability to overcome the problem of low productivity under rainfed cultivation under poor management and input starved conditions. The study was conducted by Krishi Vigyan Kendra, Morigaon during summer 2016 and 2017 under Cluster Frontline Demonstration of Oilseed (CFLD) programme to enhance the productivity and profitability of sesame by transfer of improved technology. The result revealed that the maximum seed yield of sesame was obtained under demonstrated plots ranged between 627 kg/ha to 672 kg/ha with an average of 645 q/ha which was 25.97 percent higher as compared to local check with an average of 5.12 q/ha. Extension gap between demonstrated plots and local check was found with an average of 1.33 q/ha. The maximum average net returns (Rs. 39050 ha<sup>-1</sup>) and benefit cost ratio (2.23) were recorded under demonstrated plots as compared to local check (Rs. 15700 ha<sup>-1</sup> and 1.22, respectively).

### Introduction

Sesame (*Sesamum indicum* L.) is the oldest indigenous oilseed crop, with longest history of cultivation in India. It is called as 'queen of oilseeds crops' by virtue of its excellent oil quality. It is having the highest oil content (46- 64%) and dietary energy (6355 kcal/ kg) its oil unlike other fats is highly stable and does not develop rancidity leading to loss of flavor and vitamin (Sing *et al.*, 2018). Sesame

or gingelly is commonly known as til in Assamese. India ranks first in world with 19.47 Lakh ha area and 8.66 Lakh tonnes production. The average yield of sesame (413 kg/ha) in India is low as compared with other countries in the world (535 kg / ha). The main reasons for low productivity of sesame are its rainfed cultivation in marginal and sub marginal lands under poor management and input starved conditions. However, improved varieties and agro production technologies

capable of increasing the productivity levels of sesame are now developed for different agro ecological situations in the country. A well managed crop of sesame can yield 1200 - 1500 kg/ha under irrigated and 800 - 1000 kg/ha under rainfed conditions. As the production of sesame is comparatively low in the Morigaon district and farmers are interested to cultivate sesame during summer season as due to flood they were not able to go for Sali rice production. Use of improved production technologies of sesame offers a great scope for increasing productivity and profitability. Keeping in this view demonstrations on sesame were conducted to know improve the productivity and profitability of sesame in Morigaon district of Assam.

## Materials and Methods

The cluster front line demonstrations were conducted on 88 demonstrations at farmer's field of seven villages viz. Parojari, Silsaku, Morakolong, Sarantara, Oujari, Katalamaraand, Baghorain 3 clusters covering 35 hectares in District of Morigaon during Summer 2016 and 2017 in rain fed condition on low to medium soil fertility status. The package of practice of improved production technologies such as improved variety, seed treatment, plant protection measures were adopted in demonstrated plots. The HYV of Kaliabor local has been used. Seed treatment is completed with PSB @50g/kg of seed & Azotobacter 50 g/kg of seed. Line sowing method is used for seed sowing in demonstrated plots. Row to row distance 45 cm and plant to plant distance 10 cm is kept under demonstration practices. Seed rate of 4 kg/ha was kept under demonstrated plots. Organic manure viz., vermicompost @ 2.18 q/ha have been applied. Weed management in demonstrated plots were done by hand weeding at 25 DAS. During infestation by insect pest neem based pesticides have been

used. The crop was sowed during 25.03.2016 and 20.03.2017 and harvested 08.09.2016 onward to 12.09.2017 onward when the capsules are greenish yellow and leaves turns yellow colored. The technology index shows the feasibility of the evolved technology at the farmers' field. The lower the value of technology index more is the feasibility of the technology. The data were analyzed with appropriate statistical procedures. To estimate the technology gap, extension gap and the technology index the formulae given by Samui, *et al.*, (2000) as mentioned below have been used.

$$\text{Technology gap} = \text{Potential yield} - \text{Demonstration yield}$$

$$\text{Extension gap} = \text{Demonstration yield} - \text{Farmers yield}$$

$$\text{Technology index} = \{(\text{Potential yield} - \text{Demonstration yield}) / \text{Potential yield}\}$$

## Results and Discussion

### Yield characters

The data on yield attributing characters of sesame are presented in Table 1 showed that the maximum seed yield of sesame was found under demonstrated plots ranged between 510kg ha<sup>1</sup> to 780kg ha<sup>1</sup> in 2016 and 2017 with an average of 645kg ha<sup>1</sup> as compared to local check with an average of 324kg ha<sup>1</sup>. This may be due to the adoption of improved practices of high yielding variety, line sowing, seed treatment etc. Similar enhancement in seed yield of Sesame under demonstrated plots is reported by Sagar *et al.*, (2004), Deshmukh *et al.*, (2014) and Patel *et al.*, (2014). Yield of the front line demonstration trials and potential yield of the crop was compared to estimate the yield gaps which were further categorized into technology gap and extension gaps Hire math and Nagaraju, (2009).

**Table.1** Grain yield performance of cluster frontline demonstration on Sesame

Year	Area	No of FLDs	Variety	Yield(kg/ha)			Percent increase over farmers practices	Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
				Potential (kg/ha)	Recommended practices (kg/ha)	Farmers practices (kg/ha)				
2016	15	38	Kaliabor Local	900	510	263	93.91	390	247	43.33
2017	20	50	Kaliabor Local	900	780	385	103.0	120	395	13.33
Average					645	324	98.46	255	321	28.33

**Table.2** Economics of front line demonstration of Sesame

Year	Cost of cultivation (Rs./ha)		Gross Return (Rs./ha)		Net Return (Rs./ha)		Additional Return (Rs./ha)	Net return increase over FP(%)	B:C ratio	
	RP	FP	RP	FP	RP	FP			RP	FP
2016	17300	12200	51000	26300	33700	14100	19600	1.40	1.95	1.16
2017	18000	13500	62400	30800	44400	17300	27100	1.57	2.5	1.28
Average	17650	12850	56700	28550	39050	15700	23350	1.49	2.23	1.22



The technology index indicated the feasibility of evolved at the farmer field. Lower the value of technology index more is the feasibility of the technology demonstrated.

### **Extension gap and technology gap**

The data on Extension gap & Technology gap of sesame are presented in (Table 1) revealed that the extension gap between demonstrated plots and farmer's plots was recorded with an average of 321kg ha<sup>1</sup>. Technology gap of variety was found with an average of 255 kg/ha due to lack of rainfall during flowering and pod formation stage. The results clearly showed that due to knowledge and adoption of scientific practices by the farmers, the yield of Sesame could be increased by 98.46 percent over the yield obtained under farmers' practices. The above findings are similar with the findings of Dubey *et al.*, (2010) and Yadav *et al.*, (2004)

### **Economic return**

The data on Economic return of sesame are presented in (Table 2) illustrated that the maximum gross return of crop was obtained under demonstrated plots ranged from 51000 Rs ha<sup>1</sup> to 62400 Rs ha<sup>1</sup> with an average of 56700 Rs ha<sup>1</sup> as compared to local check with an average of 28500 Rs ha<sup>1</sup> in 2016 and 2017. Maximum Net return was obtained under demonstrated plots ranged from 33700 Rs ha<sup>1</sup> to 44400 Rs ha<sup>1</sup> with an average of 39050 Rs ha<sup>1</sup> as compared to local plots with an average of 15700 Rs ha<sup>1</sup>. Maximum B:C Ratio was obtained under demonstrated plots ranged from 1.95 to 2.5 with an average of 2.23 as compared to local check with an average of 1.22. Total cost of cultivation under demonstrated plots was found 17650 Rs ha<sup>1</sup> as compared to local check with an average of 12850 Rs ha<sup>1</sup>. The result is confirmed with similar findings of front line demonstrations on oilseed crops by Yadav *et al.*, (2004),

Singh *et al.*, (2012) and Lathwal (2010). The additional average net return of 23350 Rs ha<sup>1</sup> and 1.49% percent increase of net return over farmer's practice were observed.

The research study clearly showed that the front line demonstration was effective in changing attitude of farmers against cultivation of sesame production technology. The results reflected that the maximum seed yield of sesame was under demonstrated plots. The farmer's acceptance of the new technologies also well observed. Thus, Front Line Demonstration was helpful in replacement of local varieties with improved varieties of Sesame crops along with other improved practices.

### **References**

- Deshmukh, G., Patel, H.B. and Patel M.R. (2014). Frontline Demonstration Influences on Knowledge and Adoption of Mustard Growers. *Gujarat Journal of Extension Education*, 25(1): 27-30.
- Dubey, S., Tripathi, S., Singh, P. and Sharma R.K. (2010). Yield gap analysis of black gram production through frontline demonstration. *Journal of Progressive Agriculture*, 1(1): 42-44.
- Hire math, S.M. and Nagaraju, M.V. (2009). Evaluation of Frontline demonstration trials on onion in Haveri district of Karnataka. *Karnataka Journal of Agricultural Sciences*, 22(5): 1092-1093.
- Lathwal, O.P. (2010). Evaluation of front line demonstrations on blackgram in irrigated agro ecosystem. *Annual Agriculture Research*, 31(1&2): 24-27.
- Patel, R.N. and Patel, J.R. (2014). Impact of Front Line Demonstration on Mustard Grower. *Gujarat Journal of Extension Education*, 25(1): 91-92.
- Sagar, R.L. and Chandra, G. (2004). Frontline demonstrations on sesame in west

- Bengal. *Agriculture Extension Review*, 16(2): 7-10.
- Samui, S.K., Maitra, S., Roy, O.K., Mondal, A.K., Saha D. (2000). Evaluation on frontline demonstration on groundnut. *Journal of the Indian Society of Coastal Agriculture Research*, 18(2): 180-183.
- Singh, Jagmohan., Dhillon, B..S., Sing, A.P. (2012). Frontline demonstration an effective tool for increasing the productivity of summer moong in Amritsar district of Punjab *Asian Journal of Soil Science*, 7(2): 315-318.
- Singh, K.H., Meena, K.C., Meena, B.L. and Meena, R. (2018). Effect of front line demonstration on sesame in eastern region of Rajasthan. *International Journal of Microbiology Research*, 10(3):1024-1026
- Yadav, D.B., Kamboj, B.K. and Garg, R.B. (2004) Increasing the productivity and profitability of sunflower through Crop demonstrations in irrigated agro ecosystem of eastern Haryana. *Haryana journal of Agronomy*, 20 (1&2): 33-35.

**How to cite this article:**

Ranjita Bezbaruah, Rijusmita Sharma Deka, Juli Sharma and Pallavi Saikia. 2020. Enhancing Productivity and Profitability of Sesame under Cluster Frontline Demonstration in Morigaon District of Assam, India. *Int.J.Curr.Microbiol.App.Sci.* 9(11): 1678-1682.  
doi: <https://doi.org/10.20546/ijemas.2020.911.200>