DOI: 10.15740/HAS/AU/15.3/157-161
Agriculture Update
Volume **15** | Issue 3 | August, 2020 | 157-161
Visit us : *www.researchjournal.co.in*
ISSN-0973-1520

RESEARCH ARTICLE :

Impact of cluster front line demonstration on oilseed crop in Barpeta district of Assam

Chittaranjan Deka, A.K. Deka, P. Barman and M. Mudoi

ARTICLE CHRONICLE :
Received :
20.04.2020;
Revised:
03.06.2020;
Accepted :
04.07.2020

KEY WORDS :
Impact, CFLD, Adoption, Yield, Economic, Horizontal

SUMMARY : The main objective of cluster front line demonstrations (CFLDs) is to demonstrate newly released crop production and protection technologies and its management practices at the farmer's field in cluster approach under different agro-climatic regions and farming situations. Pointing the importance of cluster frontline demonstrations in transfer of oilseed production technologies, Krishi Vigyan Kendra, Barpeta conducted CFLDs at farmers' field and accordingly study was conducted in Barpeta district of Assam. The study revealed that important package of practices where more increase in adoption was found were use of high yielding variety of rapeseed Var-TS-38 (72.5%), seed treatment (67.5%), use of proper seed rate (65.0%), recommended fertilizer dose (57.5%), line sowing on furrows (40.0%), weed management (27.5%) and sowing time (30.0%). There was noteworthy difference observed in yield of oilseed before conductance of CFLD and after CFLD programme. B:C ratio of oilseed crop after CFLD was higher than before CFLD. It showed impact of CFLD on adoption of oilseed production technologies. The factors responsible for low B:C ratio before CFLD was less adoption of all the recommended package of practices for oilseed crop in the region.

How to cite this article : Deka, Chittaranjan, Deka, A.K., Barman, P. and Mudoi, M. (2020). Impact of cluster front line demonstration on oilseed crop in Barpeta district of Assam. *Agric. Update*, **15**(3): 157-161; **DOI : 10.15740/HAS/AU/15.3/157-161.**

Author for correspondence :
Chittaranjan Deka
Krishi Vigyan Kendra (A.A.U.), Barpeta (Assam) India
Email: chittasarthebari@gmail.com
See end of the article for authors' affiliations

BACKGROUND AND OBJECTIVES

Cluster front line demonstration (CFLD) is an appropriate tool to demonstrate recommended technologies among the farmers in a cluster approach. This new concept of field demonstration was evolved by the Indian Council of Agricultural Research. The technologies developed at the agricultural universities and research stations through research activities are demonstrated under actual field conditions through CFLDs as this is one of the most powerful tools of extension because farmers in a group in general are driven by the perception that 'seeing is believing'. The main objective of CFLDs is to demonstrate newly released crop production and protection technologies and its management practices at the farmer's field under different agro-climatic regions and farming situations. The production of edible oil in India is still deficit as per requirement. In Assam among the all oilseed crops, Toria is the prime crops because of favourable climatic conditions and farmers preferences. But still the production of oilseed is not

Table A : Demonstrated package of practices and farmers' practice for oilseed production

Articular/aspects	Demonstrated package	Farmers' practice
High yielding variety	TS-38	Local variety
Sowing time	15th October to 15th November	October-November
Seed treatment	Seed treatment with Carbendazim 50 WP @ 2g/kg of seed	Not followed
Seed rate	7.5 kg/ha	10-12 kg/ha
Method of sowing	Line sowing	Broadcasting
Recommended fertilizer dose	40 kg N + 35 kg P_2O_5 + 15 kg K_2O per ha	Occasionally used chemical fertilizer
Plant protection measures to control pest and diseases	No severe occurrence found	Not followed properly
Irrigation	Rainfed	Rainfed
Intercultural operation	Hand weeding and thinning as required	Not followed
Harvesting at proper stage	Siliqua turns yellow	Siliqua turns yellow

sufficient in Assam and unable to meet the demand. The State of Assam is depends on other states for edible oil. The oils seed Rapeseed (*Brassica juncia* Var. TS-38) is growing by farmers as *Rabi* crop in Assam earning a regional market price. This crop gives good returns to the farmers, hence, emerged as important oilseed crop in Barpeta district due to market demand. As compare to other field crops, the oilseed crop is able to contribute towards the farmers doubling income to some extent in Barpeta district. It is mainly because the technology development with regard to improved varieties and other inputs have played important role in raising productivity. Realizing the importance of cluster frontline demonstrations in transfer of oilseed production technologies, Krishi Vigyan Kendra, Barpeta conducted CFLDs at farmers' field for last four years in different villages of Barpeta district with the objectives of convincing farmers and extension functionaries together about the oilseed crop production technologies for further wide scale diffusion. Keeping in view of an effective extension approach of CFLDs for dissemination of Oilseed production technology, it was thought that impact of CFLDs conducted by KVK, Barpeta to be assessed. Therefore, the present study was conducted with the specific objectives to evaluate the CFLD in terms of adoption of recommended production technology and to know the impact of CFLD on oilseed growing farmers.

RESOURCES AND METHODS

The present study was conducted in Barpeta district of Assam state where during 2016-17 a total of 75 farmers covering 30 ha of land demonstrated the Oilseed crop (Rapeseed Var-TS-38) production technologies through CFLDs. For this study, the four villages *viz.,* Rampur, Bonberia, Sarupeta and Holongbari were selected purposively in which Oilseed CFLDs had been given by KVK, Barpeta during *Rabi* season of the year 2015-2016. For selection of respondents, a list of farmers to whom CFLD Oilseed had been allotted and also who had actually undertaken demonstration were selected for the study. Randomly, ten farmers from each village were selected making a total sample size of forty. The data were collected after CFLD by personal interview technique with the help of interview schedule developed for the study. The interview schedule was developed through discussion with experts, scientist and extension officers working in the district. Under these CFLDs at 40 farmer's field, an area of 16.0 ha was covered. The information on demonstrated package of practices and farmers' practice followed were mentioned in Table A. The farmers were facilitated by KVK scientists in performing field operations like sowing, spraying, weeding, harvesting etc. during the course of training and visits. The raw data was further utilized to generate additional information regarding horizontal spread as per standard procedure (Reddy *et al.*, 2010). The data were analysed with appropriate statistical procedures.

OBSERVATIONS AND ANALYSIS

The data presented in Table 1 indicated that majority (90.0%) of the respondents had adopted sowing time followed by harvesting at proper stage (87.5%), use of high yielding variety of rapeseed (80.0%), weed management (77.5%), plant protection measures to control pest and diseases (72.5%), seed treatment (67.5%) and application of recommended fertilizer dose

(57.50%).

The important package of practices where more increase in adoption were found use of high yielding variety of rapeseed (72.5%), seed treatment (67.5%), use of proper seed rate (65.0%) recommended fertilizer dose (57.5%), line sowing on furrows (40.0%), weed management (27.5%) and sowing time (30.0%) whereas, the package of practices *viz.,* timely irrigation (20.0%), harvesting at proper stage (17.5%) and plant protection measures to control pest and diseases had found less increase in adoption after CFLD programme. These findings are in conformity with the results reported by Thakor and Patel (2006) and Manjarekar *et al.* (2015).

Yield impact:

The information regarding the impact of CFLD in terms of increase in yield have been presented in Table 2. The data in Table 2 revealed that the average yield of oilseed (Rapeseed Var-TS-38) per hectare increased by 6.15 q/ha during CFLD and 3.24 q/ha after CFLD. It means that even after two year of CFLD programme there was wider adoption of technologies demonstrated by the KVK scientist during CFLD programme. These findings are in conformity with the results reported by

Table 1: Extent of adoption of recommended package of practices of oilseed (Rapeseed Var-TS-38) crop before and after CFLD programme **(n=40)**

Sr. No.	Package of practice	Adoption (Before CFLD)		Adoption (After CFLD)		Increase in adoption	
		No.	Per cent	No.	Per cent	No.	Per cent
1.	Use of high yielding hybrid variety	3	7.5	32	80.0	29	72.5
2.	Sowing time	24	60.0	36	90.0	22	30.0
3.	Seed treatment	0	0	27	67.5	27	67.5
4.	Use of proper seed rate	0	0	26	65.0	26	65.0
5.	Line sowing on furrows	0	0	16	40.0	16	40.0
6.	Recommended fertilizer dose	0	0	23	57.5	23	57.5
7.	Plant protection measures to control pest and diseases	24	60.0	29	72.5	5	12.5
8.	Timely irrigation	8	20.0	16	40.0	8	20.0
9.	Weed management	20	50.0	31	77.5	11	27.5
10.	Harvesting at proper stage	28	70.0	35	87.5	15	17.5

Table 2 : Yield of oilseed before, during and after CFLD programme

Sr. No.	Average yield of rapeseed (Var:TS-38) crop (q./ha)			Average increase in yield (q/ha) during CFLD	Average increase in yield (q/ha) after CFLD
	Before CFLD	During CFLD	After CFLD		
1.	7.05	13.2	10.29	6.15	3.24

Table 3: Profitability of oilseed (Rapeseed Var:-TS-38) before, during and after CFLD

Sr. No.	Item	Before CFLD	During CFLD	After CFLD
1.	Cost of cultivation (Rs./ha)	18,200.00	20,700.00	20,130.00
2.	Yield of oilseed (q/ha)	7.05	13.2	10.29
3.	Gross return (Rs./ha)	24,675.00	46,200.00	36,015.00
4.	Net return (Rs./ha)	6,475.00	25,500.00	15,885.00
5.	B:C ratio	1.35	2.23	1.78

Table 4 : Horizontal spread of oilseed (Rapeseed Var-TS-38) from CFLD **(n=40)**

Sr. No.	Name of crops	Variety	Number of farmers			Number of villages			Area covered (ha)		
			Initial	Final	Per cent	Initial	Final	Per cent	Initial	Final	Per cent
1.	Rapeseed	TS-38	40	520	1300%	4	13	325%	16	203	1268.75%

Manjarekar *et al.* (2015).

Economic impact:

In this study, the economic impact of CFLD on oilseed (Rapeseed Var-TS-38) technology was worked out by calculating total cost, gross return, net return and B:C ratio (BCR) of before, during and after CFLD plot. Total cost was calculated by total sum of expenditure of land preparation, seed, manure and fertilizers, plant protection measures, irrigation and labour component. The data in Table 3 revealed that before CFLD the yield of oilseed (Toria) was 7.05 q/ha while during and after CFLD the yield were 13.2 q/ha and 10.29 q/ha, respectively. The prevailing market price was Rs. 3500/ - q before,during and after CFLD period. On that basis of market price the profitability was calculated which showed that net returns from oilseed (Rapeseed Var-TS-38) crop before CFLD was Rs. 6475/- per ha while the net returns from oilseed (Rapeseed Var-TS-38) crop during and after CFLD were Rs. 25,500.00/- per ha and Rs.15,885.00/- per ha, respectively. The B:C ratio for before CFLD was 1.35 increased from during and after CFLD to 2,23 and 1.78, respectively. It was evident from the results that, B:C ratio of oilseed crop after CFLD was higher than before CFLD. The factors responsible for low B:C ratio before CFLD was less adoption of all the package of practices recommended for oilseed crop in the region. However, increase in B:C ratio after CFLD plot was due to the adoption of 40 per cent to 90 per cent adoption of different package of practices even two year after CFLD programme. Similar results were reported by Sharma and Sharma (2004); Patel and Patel (2014) and Manjarekar *et al.* (2015). These results are also in close proximity with the result of Singh *et al.* (2005) who reported similar results while experimenting with pulse crops. The increase in productivity, rather than enhanced area, has contributed more towards increased production. This has been achieved mainly due to the adoption of new varieties and improved production technology (Singh *et al.,* 2009). The other reasons may be good extension contact by CFLD farmers with the scientist and extension workers.

Horizontal spread of oilseed crop:

Oilseed crop rapeseed (variety TS-38) has its bold size and the quality of grain and pod containing higher oil content. Hence, from an initial group of fourty (40 nos.) farmers it spread to five hundred and twenty (520 nos.) farmers covering from four (4 nos.) to thirteen (13 nos.) cluster villages (Table 4). At the same time, the area increased from sixteen hectares (16 ha) to two hundred three hectares (203 ha). The results are in accordance with the findings of Pandit *et al.* (2000) who concluded that farmers emphasized simultaneous selection more than an empirical selection based on yield only. Farmers' selected varieties are extending very rapidly and farmer-to-farmer seed transfers were found to be very effective in scaling-up the seed transfer and increase varietal diversity. The present findings are also in accordance with the findings of Singh *et al.* (2014).

Conclusion:

On the set of technologies of oilseed (Rapeseed Var-TS-38) crop before CFLD, the adoption was very less but after conducting the CFLD programme on farmers field most of the farmers became aware about recommended production technologies of oilseed crop. The important package of practices where more increase in use of high yielding variety, seed treatment, use of proper seed rate and spacing, recommended fertilizer dose, line sowing on ridges and furrows, weed management and sowing time after CFLD as compare to before CFLD. Increase in B:C ratio after CFLD plot was due to the adoption of 40 per cent to 90 per cent adoption of different package of practices even two year after CFLD programme which shows positive impact of CFLD on adoption of demonstrated technology with a higher rate of horizontal spread of seeds to more farmers. So, there is a scope of CFLD to play important role in contributing the doubling farmers' income in upcoming days.

Authors' affiliations :

A.K. Deka, P. Barman and M. Mudoi, Krishi Vigyan Kendra (A.A.U.), Barpeta (Assam) India

REFERENCES

Manjarekar, R.G., Mandavkar, P. M., Hanmante, A.A. and Talathi, M.S. (2015). Impact of front line demonstration on okra in Raigad district of Maharashtra. *J. Krishi Vigyan,* **4** (1) : 37-40.

Pandit, D.B., Islam, M.M., Rashid, M. H. and Sufian, M.A. (2000). Participatory varietal selection in wheat and its impact on scaling up seed dissemination and varietal diversity.

Bangladesh J. Agric. Res., **32** (3): 473–486.

Patel, R.N. and Patel, J.R. (2014). Impact of front line demonstration on mustard growers. *Gujarat J. Extn. Edu.,* **25** : 91 - 92.

Reddy, Ravinder Ch, Nigam, S.N. , Rao, P. Parthasarthy, Ahmed, Shaik, Ratnakar, R., Alur, Ashok, Kumar, Ashok, A., Reddy, B.V.S. and Gowda, C.L.L. (2010). Village seed banks: An integrated seed system for improved seed production and supply- A case study. Information Bulletin No. 87. Patancheru 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics. 40 pp.

Sharma, R. N. and Sharma, K.C. (2004). Evaluation of front line demonstration trials on oilseeds in barren district of Rajasthan. *Madhya J. Extn. Edu.,* **7** :72-75.

Singh, Dheeraj, Chaudhary, M.K., Meena, M.L. and Roy, M.M. (2014). Seed village programme: An innovative approach for small farmers. *Agricultural Information Worldwide*, **6**, 2013/ 2014.

Singh, Narahari, Prasad Agand, N.G. and Daya Ram (2005). Front line demonstration on rice in Manipur, *Agriculture Extension Review*. May-June 6-7.

Singh, R.K., Murty, H.R., Gupta, S.K. and Dikshit, A.K. (2007). Development of composite sustainability performance index for steel industry. *Ecological Indicators,* **7** : 565–588.

Thakor, R. F. and Patel, A.R. (2006).Usefulness of KrishiVigyan Kendra as perceived by the sugarcane growers. *Gujarat J. Extn. Edu.,* **16-17** : 51-54.