



International Journal of Research in Agronomy

E-ISSN: 2618-0618
P-ISSN: 2618-060X
© Agronomy
NAAS Rating: 5.20
www.agronomyjournals.com
2025; 8(5): 210-212
Received: 07-03-2025
Accepted: 11-04-2025

Chandu Lal Thakur
Krishi Vigyan Kendra, Kanker,
Chhattisgarh, India

Birbal Sahu
Krishi Vigyan Kendra, Kanker,
Chhattisgarh, India

Upendra Kumar Nag
Krishi Vigyan Kendra, Kanker,
Chhattisgarh, India

Performance of front line demonstrations on yield and economics of linseed (*Linum usitatissimum*) in Uttar-Bastarkanker district of Chhattisgarh

Chandu Lal Thakur, Birbal Sahu and Upendra Kumar Nag

DOI: <https://www.doi.org/10.33545/2618060X.2025.v8.i5c.2910>

Abstract

Linseed (*Linum usitatissimum* L.) is gaining popularity as a nutritional and sensible meals, with its seeds being a wealthy source of every non-safe to eat and healthy to be eaten oil. Frontline demonstrations have been performed at some point of seventy five farmers' fields, covering 30 hectares in nine villages. those demonstrations aimed to show off the manufacturing ability and monetary advantages of superior technologies, together with wilt tolerant kinds (RLC-92) sown at a seed price of 25 kg in step with hectare, line sowing with a spacing of 30 cm among rows and 10 cm among plants, seed treatment, a balanced fertilizer dose, weed management, and plant protection measures. The demonstrations came about in the Uttar Bastar Kanker district of Chhattisgarh in the course of the rabi seasons of 2018-19 to 2020-21. The improved technology ended in higher yields, recording a mean yield of eight.33 quintals in keeping with hectare, which grow to be 61 percentage extra than the 5.17 quintals constant with hectare completed with farmers' traditional practices.

Keywords: Linseed, demonstration, FLD

Introduction

India holds the principle function globally in terms of the location under linseed cultivation and ranks 0.33 in production global. Nationally, linseed is cultivated on about 468,000 hectares, with a whole manufacturing of 163,000 metric hundreds (FAOSTAT, 2017) ^[3]. in masses of areas, farmers regularly sow late, resulting in a shortened boom duration for the linseed crop. This past due sowing coincides with excessive temperatures and heat winds at a few level within the reproductive growth section, predominant to pressured maturity and therefore, lousy grain yield. The sowing date is a important control tool for minimizing the destructive effects of immoderate temperature and moisture pressure throughout the vital flowering and seed-filling ranges (Chauhan *et al.*, 2008) ^[2]. some of the numerous oilseed vegetation grown in the usa, linseed is considered India's most critical enterprise oilseed. it's far cultivated every for the oil extracted from its seeds and the fiber acquired from its stems. The seeds incorporate an oil content material cloth beginning from 37 to forty three percent. in reality every a part of the linseed plant reveals business use, each without delay or after processing. most people of the extracted oil is applied in industries for production paints, varnishes, inks, and cleaning soap, with a very small detail used for fit to be eaten capabilities. over the past four many years, there has been a non-forestall decline in the area underneath linseed cultivation inside the Bastar region. The primary elements contributing to the decrease yield capability encompass inappropriate manufacturing generation including the published method of sowing, the usage of community kinds, the absence of fertilizer software, and premature weed manage at 45 days after sowing (Anon., 2013) ^[1]. The yield hole, that is maximum e4028a5c6dae3ad5086501ec6f3534d0 inside the Bastar place, may be possibly bridged via the adoption of the encouraged package deal deal of practices through farmers.

The frontline demonstration programme proved effective in selling a shift in mind-set, improving the talents and know-how associated with improved linseed practices among farmers, and therefore selling their adoption. specifically, this initiative also reinforced the connection

Corresponding Author:
Chandu Lal Thakur
Krishi Vigyan Kendra, Kanker,
Chhattisgarh, India

and constructed mutual self assure amongst farmers and scientists. Kirar *et al.* (2004) ^[4] mentioned that under situations of partial and full adoption, there has been a 17.50 and seven.50 percent increase, respectively, in the percentage of farmers who have come to be adopters compared to those who did not. Verma (2013) ^[9] cited that the distribution of beneficiaries based totally on the modifications in their cultivated region following the implementation of FLDs on their fields. however, the persistent use of community types coupled with horrible nutrient control keeps to result in very low yields.

Materials and Methods

Frontline demonstrations (FLDs) on linseed were conducted with the aid of Krishi Vigyan Kendra, Kanker (Chhattisgarh), India, for the duration of the duration from 2018-19 to 2020-21 in nine villages: Kotela, Bhaisakatta, Arod, Dumali, Kapasi, Sureli, Albeda, Choriya and Varchegondi of Uttar Bastar Kanker district. a total of 75 demonstrations had been performed. In general, the soil of the examine place become sandy loam with low to medium fertility fame. The factor demonstration of frontline era in linseed covered an improved variety (RLC-92), right tillage, seed price, sowing time, method, a balanced dose of fertilizer (40:20:20 kg per hectare of N:P₂O₅:K₂O), using carbendazim + mencozeb at three g according to kg of seed as seed treatment and Trichoderma culture at 10 g per kg of seed, proper irrigation, weed control and plant safety measures (desk 1). a total of 30 hectares of place became protected over 3 consecutive years. In every demonstration, one manage plot become maintained where farmers' practices have been accompanied. The FLDs had been conducted to look at the era hole among capacity yield and demonstrated yield, the extension gap between verified yield and yield below existing exercise, and the era index (to assess the performance of the validated generation). The yield statistics have been amassed from both the demonstration plots and the farmers' exercise plots the usage of the random crop cutting method and analyzed the use of easy statistical equipment. The generation hole, extension gap and technological index (Samui *et al.*, 2000) ^[5] were calculated through using following method as given below:

$$\text{Per cent increase yield} = \frac{\text{Demonstration yield} - \text{Farmer practice yield}}{\text{Farmer practice yield}} \times 100$$

Technology gap = Potential yield - Demonstration yield.

Extension gap = Demonstration yield - Farmer practice yield.

$$\text{Technology index} = \frac{\text{Potential yield} - \text{Demonstration yield}}{\text{Potential yield}} \times 100$$

Results and Discussion

The gap between the existing and recommended technologies for linseed cultivation in the Uttar-Bastar Kanker district was presented in Table 1. A full gap was observed in the adoption of improved varieties, seed treatment, seed inoculation, fertilizer dose, and weed management. In contrast, a partial gap was noted in spacing, irrigation, and plant protection measures. These gaps undoubtedly contributed to the failure in achieving the potential yield. Farmers were not aware of the recommended technologies. Generally, farmers used local or older varieties instead of the recommended high-yielding, resistant varieties. The unavailability of seed in time and a lack of awareness were

the main reasons for this situation.

The results obtained from three years of FLDs are presented in Table 2. The data revealed that the average yield recorded was 8.33 q ha⁻¹ under demonstrated plots compared to 5.17 q ha⁻¹ under farmers' practice. The highest yield of 8.50 q ha⁻¹ was observed in the demonstrated plot during 2020-21, and 5.55 q ha⁻¹ under farmers' practice in the same year. These results clearly indicate that the higher average grain yield in demonstration plots over the years compared to farmers' practice was due to the knowledge and adoption of the full package of practices, i.e., improved variety such as RLC 92, timely sowing, seed treatment, use of a balanced dose of fertilizer, timely weed management, and need-based plant protection measures. The average yield of linseed increased by 61 per cent. The yield of linseed could be increased compared to the yield obtained under farmers' practice (use of old varieties, untimely sowing, no use of a balanced dose of fertilizer, and no plant protection measures) of linseed cultivation. The above findings are similar to the findings of Singh *et al.* (2006) ^[8].

Extension gap

Extension gaps of 3.25, 3.28, and 2.95 q ha⁻¹ were observed during 2018-19, 2019-20, and 2020-21, respectively. On average, the extension gap was 3.16 q ha⁻¹, which underscores the importance of farmer education through various extension methods such as training programs, field days and information materials.

Technology gap

The technology gap was 1.90, 1.60, and 1.50 q ha⁻¹ during 2018-19, 2019-20 and 2020-21, respectively. On average, the technology gap under the three-year FLDs program was 1.66 q ha⁻¹. The observed technology gap may be attributed to differences in soil fertility status, agricultural practices, and local climatic conditions.

Technology index

The technology index varied from 15 to 19% (Table 2). On average, the technology index observed was 16.66%, which shows the effectiveness of the technical interventions. This indicates the potential to accelerate the yield performance of linseed.

Economic

The economic viability of improved technologies compared to farmers' practices was calculated based on prevailing prices of inputs and outputs (Table 3). It was found that the cost of cultivation of linseed ranged from Rs. 22,000 to Rs. 24,000 ha⁻¹ with an average of Rs. 23,000 ha⁻¹ for the demonstration plots, compared to the cost of cultivation ranging from Rs. 14,800 to Rs. 15,100 ha⁻¹ with an average of Rs. 15,000 ha⁻¹ in farmers' practice. Cultivation of linseed under demonstration yielded higher net returns, ranging from Rs. 23,075 to Rs. 33,400 ha⁻¹ with a mean value of Rs. 29,372 ha⁻¹. In contrast, farmers' practice recorded net returns ranging from Rs. 6,200 to Rs. 10,700 ha⁻¹ with a mean of Rs. 7,725 ha⁻¹. The higher benefit-cost ratios of 2.90, 2.72, and 2.25 were observed under demonstration compared to 1.42, 1.71, and 1.42 under farmers' practice in the corresponding seasons. This difference can be attributed to the higher yields obtained under the demonstrations compared to farmers' practice.

Table 1: Differences between Improved practice and farmers practices under front line demonstration on linseed

S. No.	Component	Improved practice	Farmers practice	Gap
1	Land preparation	Three ploughing	Three ploughing	Nil
2	Variety	Improved variety (RLC-92)	Age old variety	Full
3	Seed rate	20-25 kg ha ⁻¹	40-50 kg ha ⁻¹	Higher seed rate
4	Seed treatment	Carbendazime+mencozeb @ 2-3 g kg ⁻¹ of seed	No seed treatment	Full
5	Seed inoculation	<i>Trichoderma</i> culture @ 10 g/kg of seed	No seed inoculation	Full
6	Sowing method	Line sowing	Broadcasting / Utera	Full
7	Plant population	Optimum	Uneven	Full
8	Fertilizer dose	20:40:20, N: P ₂ O ₅ : K ₂ O kg ha ⁻¹	Imbalance and inadequate	Full
9	Weed management	Application of pre-emergence herbicide (As per recommendation)	Weeding is not common	Full
10	Irrigation at critical stage	Two irrigations at pre-flowering and capsule development stage	Two irrigations	Partial
11	Plant protection	Use of correct dose and time of insecticide (As per recommendation).	Plant protection is not common.	Partial

Table 2: Productivity, extension gap, technology gap and technology index of linseed as grown under FLD and existing package of practices.

Year	Area (ha)	No. of Demonstration	Variety	Average yield (q/ha)			% increase in yield over farmer practice	Extension gap (q/ha)	Technology gap (q/ha)	Technology Index
				Potential	Demonstration	Farmers practice				
2018-19	10	25	RLC 92	10	8.10	4.85	67%	3.25	1.90	19.00
2019-20	10	25	RLC 92	10	8.40	5.12	64%	3.28	1.60	16.00
2020-21	10	25	RLC 92	10	8.50	5.55	53%	2.95	1.50	15.00
Average				10	8.33	5.17	61%	3.160	1.66	16.66

Table 3: Economics of linseed through front line demonstration

Year	Average cost of cultivation (Rs/ha)		Average gross return (Rs/ha)		Average net return (Rs/ha)		Benefit cost ratio	
	Demonstration	Farmers practice	Demonstration	Farmers practice	Demonstration	Farmers practice	Demonstration	Farmers practice
2018-19	17600	14800	51000	21000	33400	6200	2.90	1.42
2019-20	18400	15100	50040	25800	31640	10700	2.72	1.71
2020-21	18400	15100	41475	21375	23075	6275	2.25	1.42
Average	18133	15000	47505	22725	29372	7725	2.62	1.51

Conclusion

The FLDs produced massive tremendous consequences and provided researchers with an opportunity to demonstrate the productiveness ability and profitability of the cutting-edge technology underneath actual farming situations, which they had been advocating for a long term. this will stay away from a number of the regulations in the existing switch of era device within the Uttar Bastar Kanker district of Chhattisgarh. The higher grain yield beneath FLDs in comparison to present practices of linseed cultivation created greater focus and influenced different farmers to adopt suitable production technology in the district. the restrictions confronted with the aid of farmers varied for considered one of a kind era. Efforts ought to, therefore, be made through the extension companies of their era transfer programs to recollect the limitations as perceived thru the farmers on this studies and through private interactions. therefore, for reinforcing the manufacturing and productiveness of linseed crop, strategies need to be evolved to encourage the wider adoption of endorsed technology (Singh, P. ok. 2002)^[7]. The version in the proportion yield increase modified into attributed to a lack of understanding, the usage of antique kinds, now not preserving an best plant population and a loss of plant safety measures. inside the context of sustainable agricultural practices, this take a look at concludes that the FLDs packages had been effective in changing the mind-set, abilities, and know-how of farmers through the adoption of improved package deal and practices for linseed.

References

1. Anon. Report of Agricultural Statistics Division, Directorate

of Economics & Statistics, Department of Agricultural & Cooperation, Fourth Advance Estimation of Production of Food Grain and Oil Seed Production and Other Commercial Crops for 2012-13. 2013. p. 1-2.

2. Chauhan DVS, Lodhi MD, Verma NK. Effect of sowing dates, varieties and number of irrigations on yield attributes, yield and quality of linseed under Bundelkhand condition of Uttar Pradesh. *Agric Sci Dig*. 2008;28(4):271-273.
3. FAOSTAT. Food and Agriculture Organization Statistical Database. 2017.
4. Kirar BS, Mahajan SK, Nashine R. Impact of technology practices on the productivity of soybean in FLD. *Indian Res J Ext Edu*. 2004;5(1):15-17.
5. Samui SK, Maitra S, Roy DK, Mondal AK, Saha D. Evaluation on front line demonstration on groundnut (*Arachis hypogea* L.). *J Indian Soc Coast Agric Res*. 2000;18:180-183.
6. Shaikh FG, Gokhale DN, Rokade BS, Jadhav PJ. Effect of sowing date on some growth characters in linseed. *J Agrometeorol*. 2009;11(2):203-205.
7. Singh PK. Impact participation of planning on adaption of new technology through FLD. *MANAGE Ext Res Rev*. 2002 Jul-Dec;45-48.
8. Singh VK, Singh T, Bohra JS. Comparative performance of sulphur, seed rate and date of sowing on yield, quality and nutrient uptake by linseed under rainfed conditions of Varanasi region. *Crop Res (Hisar)*. 2006;31(1):63-65.
9. Verma DP. A study on impact of front line demonstrations on pulses by Krishi Vigyan Kendra, Panna M.P. [MSc thesis]. Jabalpur: Jawaharlal Nehru Krishi Vishwa Vidyalaya; 2013.