

International Journal of Agriculture Extension and Social Development

Volume 8; SP-Issue 1; January 2025; Page No. 29-32

Received: 04-11-2024
Accepted: 09-12-2024

Indexed Journal
Peer Reviewed Journal

Introduction of new variety of Indian bean through front line demonstration in Bharuch district of Gujarat

¹DJ Modi, ²HM Vasava, ³LM Patil and ⁴MM Patel

¹SMS, Department of Horticulture, BAIF Krishi Vigyan Kendra, Bharuch, Gujarat, India

²SMS, Department of Extension Education, BAIF Krishi Vigyan Kendra, Bharuch, Gujarat, India

³SMS, Department of Soil Science, BAIF Krishi Vigyan Kendra, Bharuch, Gujarat, India

⁴SMS, Department of Plant Protection, BAIF Krishi Vigyan Kendra, Bharuch, Gujarat, India

DOI: <https://doi.org/10.33545/26180723.2025.v8.i1Sa.1521>

Corresponding Author: DJ Modi

Abstract

A preliminary survey was conducted by KVK, Bharuch to gather information on problems faced by Indian bean growers of Bharuch district. It was found that farmers prefer to use local variety and due to, which production of the crop is not up to the mark. Local variety is creeper habit, so labour cost is more for cutting of vines as well as intercultural operation are difficult. To overcome this problem in 2018-19 and 2019-20, Front Line Demonstration (FLD) of Indian bean variety GNIB-21 was conducted by KVK, Bharuch at 50 tribal farmer's field to evaluate the performance at farmer's field. The study revealed that GNIB-21 variety has performed superior over local variety check with respect to pod yield, gross returns, net returns and B: C ratio.

Keywords: FLD, Indian bean, yield, economics

Introduction

Indian bean (*Lablab purpureus* L.) is an important pulse crop of Gujarat. The total cultivated area under Indian bean in Bharuch district is 445 ha with the production of 6675 MT. There are two cultivated types of Indian bean viz., typicus and lignosus (Shivashankar *et al.*, 1971) [8]. Typicus is a garden type cultivated for its soft and edible pods. Lignosus type is known as field bean, mainly cultivated for dry seed as pulse and is more popularly recognized as 'Wal', 'Wal-papdi' and 'Valor' in Gujarat state. The green pods are used for vegetable purpose whereas; ripe and dried seeds are consumed as split pulse. It is also used as nitrogen fixing pulse crop. The fresh/immature pods contain 4.5 percent proteins and 10 percent carbohydrates (Kay, 1973) [2]. Indian bean variety of GNIB-21 has characteristic that it grow erect, early maturity, white flower type it also grown as intercrop in sugarcane and pigeon pea apart from sole cropping. It has higher sugar and protein content.

The main objective of Front line Demonstration (FLD) is to introduce new variety which is high yielding & to create awareness among farmers for seed treatment, scientific spacing, timely sowing, nutrient management, pest and disease management etc, accompanied with organizing extension programmes (field day) for horizontal spread of technology.

Materials and Methodology

The present study was conducted in Bharuch district of Gujarat with 50 tribal farmers. Improved Indian bean variety

GNIB-21 along with other improved practices were introduced through frontline demonstrations of Krishi Vigyan Kendra, Bharuch from 2018-19 and 2019-20 in the adopted villages. Each demonstration was conducted in an area of 0.4 ha. Adjacent to this, local variety was also grown as control group. The comparison of practices with respect to frontline demonstrations and farmers routine practices are given in Table 1.

The data on yield, cost of cultivation, net returns with the benefit cost ratio of variety were collected from FLDs as well as control from all selected farmers for further analysis.

Percentage increased yield =

$$\frac{\text{Demonstration yield} - \text{Local check yield}}{\text{Local Check yield}} \times 100$$

Benefit cost ratio calculated by the formula given below

$$\text{Benefit cost ratio} = \frac{\text{Gross Return}}{\text{Cost of cultivation}} \times 100$$

Results and Discussion

Comparison between FLD and farmer's practices

The differences between front line demonstration and farmers existing practice is shown in table 1. The farmers practices include use of local variety, no seed treatment,

imbalance fertilizer application and no adoption of plant protection measure, resulted low yield of Indian bean in the district. However, in FLDs all the improved package of

practices as recommended for of Indian bean was demonstrated.

Table 1: Details of Indian bean growing under FLD and Existing practices

Sr. No	Operation	Existing practices	Improved Practices of Demonstrated
1	Variety Use	Use of local variety	Improved high yielding variety GNIB-21
2	Seed treatment	No seed treatment	Seed treatment with Biofertilizer (20 ml/kg seed) & <i>Trichoderma viride</i> 3gm/kg seed.
3	Spacing	50cm x 20cm	30 cmX15 cm
4	Fertilizer application	Imbalance application of fertilizer	Application of recommendation dose of fertilizer: FYM 10 t/ha NPK@ 20:40:00 kg/ha
5	Weed management	Hand weeding	Spraying of pendimethalin @ 1.0 kg/ha with one hand weeding at 25 DAS.
6	Plant protection measure	Non adoption of IPM practices	Spraying of Imidacloprid 5ml/10 litre water for sucking pest.

Performance of front-line Demonstration

The improved practices consisting introduction of high yielding variety of Indian bean recommended doses of fertilizer resulted significantly higher plant height in 30 days (16.89 cm), 60 days (27.30 cm) and in 90 days (41.59 cm), highest number of pod per plant (32.44), 50% flowering (41.88 days) and maximum yield per hectare (34.93 q/ha) as

compared to farmer's practices plant at 30 days (14.20 cm), 60 days (24.94 cm) and at 90 days (36.65 cm), number of pod per plant (23.70), 50% flowering (50.46 days) and yield per hectare (25.41 q/ha) (Tables 2). Smiliar finding was in agreement with their results obtained by Sharma *et al.* (2014) ^[10], Ravinaik *et al.* (2015) ^[6] Das *et al.* (2015) ^[11] and Radhelal *et al.* (2017) ^[7].

Table 2: Yield performance of Indian bean, (2 Year Average data)

Treatments	50% flowering (Days)	No. of Pods / Plant	Plant Height (Days) in cm			Yield (q/ha)	% increase over FP
			30	60	90		
T ₁ : Local Variety	50.46	23.70	14.20	24.94	36.65	25.41	---
T ₂ : Frontline Demonstration with variety GNIB-21	41.88	32.44	16.89	27.30	41.59	34.93	37.46
C.D.5%	0.68	2.03	0.77	0.87	1.23	1.03	--
CV	3.71	13.54	12.43	8.30	7.87	8.56	--

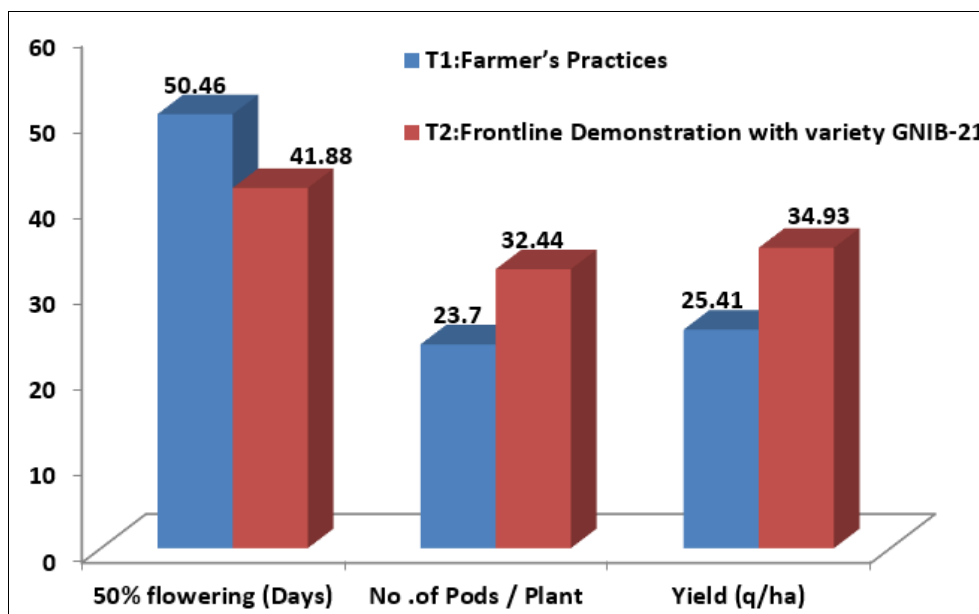


Fig 1: Yield performance

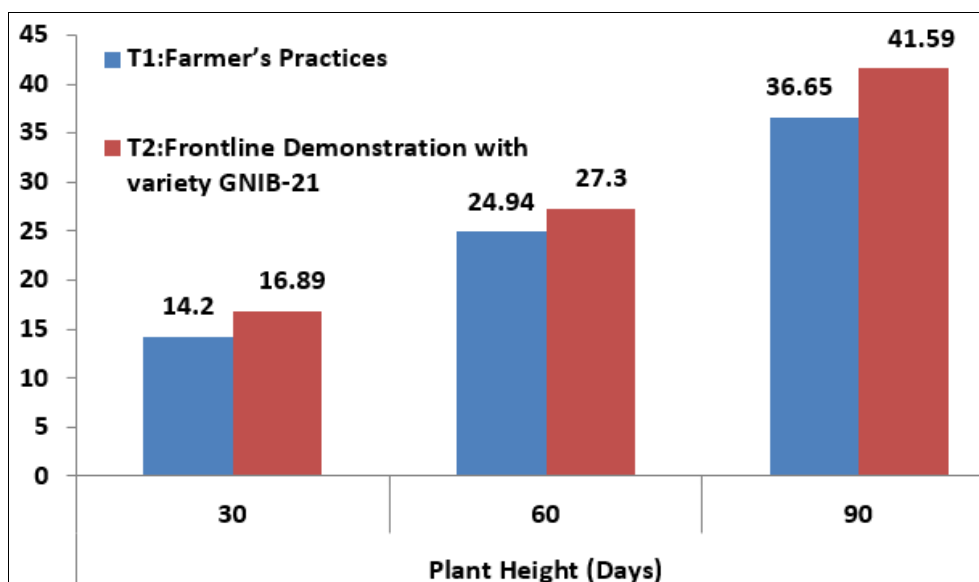


Fig 2: Plant height

Economic Return

The inputs and outputs prices of commodities prevailed during the study of were taken for calculating net return and benefit: cost ratio (Table 3). The cost of cultivation is comparatively more in Indian bean GNIB-21 variety (Rs 36530 per ha) as compared to local variety (Rs 29650 per ha). The cultivation of Indian bean under improved practices involved of recommended dose of fertilizer along with high

yielding variety gave higher net return of Rs. 103190/- per hectare as compared to local variety. The benefit cost ratio of Indian bean cultivation GNIB-21 under high yielding variety is 3.82 against 3.43 under local variety. This is due to higher yield obtained under improved variety compared to local variety. More or less similar findings were reported by Kiran Sharma and Brar and Suganiya.

Table 3: Economic impact of Indian bean

Economics of demonstration (Rs./ha)				Economics of check (Rs./ha)			
Gross Cost	Gross Income (Rs./ha)	Net Return (Rs./ha)	BCR	Gross Cost	Gross Income (Rs./ha)	Net Return (Rs./ha)	BCR
36530	139720	103190	3.82	29650	101640	71990	3.43

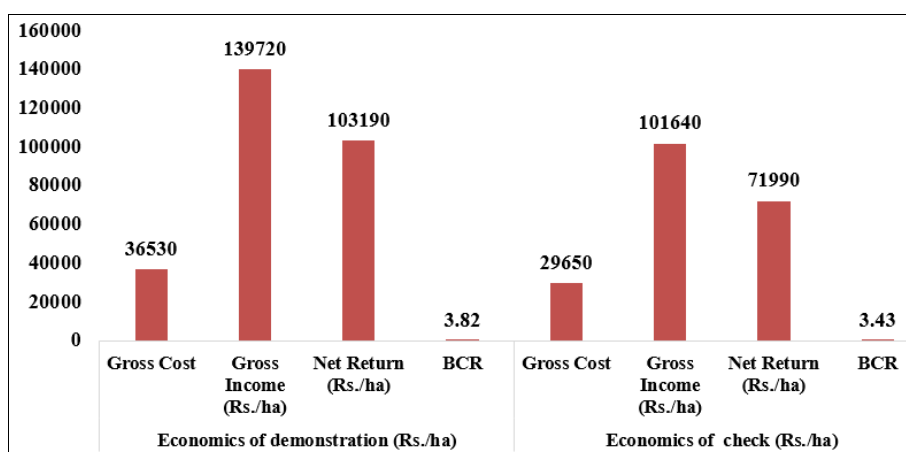


Fig 3: Economic Impact

Concussion

Concluded from the study that increased yield was due to adoption of improved crop variety, GNIB-21 and adoption of recommended scientific package of practices will be increased to greater extent. This will subsequently increase the production which directly impact on economics status of the farming community. Farmers of different villages gave positive response for the planning and execution of this technology. It is noticed that potential yield of crop will be increased only if awareness among farmers have to be

created for scientific knowledge as well as availability of good quality seed. However horizontal spread of recommended technologies may be achieved by the successful implementation of Front Line Demonstration (FLD) and various extensions activities like training programmes, Kisan gosthi, scientific visit and field day.

References

1. Das VD, Shende T, Seth Y, Chattopadhyay. Genetic analysis and interrelationships among yield attributing

- traits in pole and bush type Dolichos bean (*Lablab purpureus* L.). J Crop Weed. 2015;11(2):72-77.
2. Kay DE. Food legumes: Crop and product digest No.3. Tropical Product Institute, London; c1973. p. 303.
 3. Hiremath SM, Nagaraj MV. Evaluation of front line demonstrations trials on onion in Haveri district of Karnataka. Karnataka J Agric Sci. 2010;22(2):1092-1093.
 4. Mishra DK, Paliwal DK, Tailor RS, Deshwal AK. Impact of front line demonstrations on yield enhancement of potato. Indian Res J Ext Edu. 2009;9(3):26-28.
 5. Pandav AK, Nalla MK, Aslam T, Rana MK, Bommesh JC. Effect of foliar application of micronutrients on growth and yield parameters in eggplant cv. HLB 12. Environ Ecol. 2016;35(3):1745-1748.
 6. Ravinaik K, Hanchinmani CN, Patil MG, Imamsaheb SJ. Evaluation of dolichos genotypes (*Dolichos lablab* L.) under north eastern dry zone of Karnataka. Asian J Hort. 2015;10(1):49-52.
 7. Radhelal D, Vijay B, Praveen C, Anita K. Int J Curr Microbiol App Sci. 2017;6(8):3228-3232.
 8. Shivashankar G, Srirangasayi I, Kempanna C, Viswanatha SR. Day-neutral varieties of *Dolichos lablab* L. Mysore J Agric Sci. 1971;5:216-218.
 9. Sliman ZT. Response of faba beans (*Vicia faba* L.) to seeding date in central region of Saudi Arabia. J King Saud Univ Agric Sci. 1993;5(2):219-226.
 10. Sharma DP, Dehariya NK, Tiwari A. Genetic variability, correlation and path coefficient analysis in Dolichos bean (*Lablab purpureus* L.) genotypes. Int J Basic Appl Agric Res. 2014, 12(2).