

Success Story

Enhancing Pigeon pea Productivity through Improved Variety BDN 2013-41

1. Situation Analysis / Problem Statement

Pigeonpea (Tur) is one of the major pulse crops cultivated during the kharif season in Latur District of Maharashtra, mainly under rainfed conditions. The crop plays an important role in ensuring food security, improving soil fertility through biological nitrogen fixation, and providing additional income to farmers. Despite its importance, the productivity of pigeonpea in the district remains comparatively low due to several agronomic and management constraints.

Most farmers in the district traditionally cultivate old or local pigeonpea varieties which are highly susceptible to pests and diseases such as wilt and pod borer. Limited awareness about improved high-yielding varieties and scientific crop management practices is another major constraint. Farmers often do not follow recommended practices such as seed treatment with biofertilizers and fungicides, balanced application of fertilizers, and timely plant protection measures.

In addition, pigeonpea cultivation in Latur district is largely dependent on erratic monsoon rainfall, which leads to moisture stress during critical crop growth stages. Improper spacing, inadequate intercultural operations, and lack of integrated pest management practices further reduce crop productivity. Due to these factors, the average yield of pigeonpea in the district remains around **7–8 q/ha**, which is significantly lower than the potential yield of improved varieties.

Therefore, there is a strong need to promote improved pigeonpea varieties along with recommended production technologies through demonstrations, trainings, and extension activities to enhance productivity and profitability of farmers in the district.

2. Plan, Implement and Support

Considering the low productivity of pigeonpea in Latur District of Maharashtra, Krishi Vigyan Kendra planned a systematic intervention to improve the productivity and profitability of pigeonpea cultivation. The major objective was to introduce improved high-yielding and disease tolerant varieties along with recommended scientific crop management practices.

The plan focused on the following activities:

- **Identification of progressive farmers and suitable villages** where pigeonpea is widely cultivated under rainfed conditions.
- **Selection of improved variety BDN 2013-41 (Godavari)** for demonstration due to its higher yield potential and tolerance to wilt disease.

- **Organizing training programmes and awareness campaigns** to educate farmers about improved production technologies of pigeonpea.
- **Conducting Front Line Demonstrations (FLDs) / On-Farm Trials (OFTs)** to compare improved practices with farmers' traditional practices.
- **Preparation of extension literature** such as leaflets and technical guidelines for easy understanding by farmers.

The main aim of the plan was to increase awareness, demonstrate the advantages of improved varieties, and promote adoption of recommended practices among farmers.

Implement

The planned activities were implemented in selected villages through demonstrations on farmers' fields during the kharif season. Quality seed of improved pigeonpea variety **BDN 2013-41** was provided to the selected farmers along with technical guidance from KVK scientists.

The following improved technologies were demonstrated:

- Use of improved variety BDN 2013-41 with higher yield potential.
- Seed treatment with fungicide and biofertilizers such as Rhizobium and PSB to improve germination and nutrient availability.
- Recommended sowing time and spacing to ensure optimum plant population.
- Balanced application of fertilizers based on recommended doses.
- Integrated weed and pest management practices to reduce crop losses.
- Timely intercultural operations for better crop growth and development.

Field demonstrations were conducted in farmers' fields so that neighboring farmers could directly observe the performance of improved technology.

Support

Continuous technical support was provided to farmers throughout the crop season to ensure proper implementation of recommended practices. The support included:

- Regular field visits and monitoring by KVK scientists to observe crop growth and provide advisory services.
- On-field guidance for pest and disease management, fertilizer application, and intercultural operations.
- Farmer training programmes and group discussions to strengthen farmers' knowledge about improved pigeonpea cultivation.
- Field days and exposure visits organized during the crop season to demonstrate the performance of the improved variety to other farmers.
- Distribution of technical information through leaflets and personal advisories to ensure better adoption of the technology.

3. Output

S.N.	Technolog	Demonstration Plot					Check Plot				
		Yield q/ha)	Gross st (Rs.)	Gross urn 9Rs.)	Net urns (Rs)	B:C atio	Yield q/ha)	Gross st (Rs.)	Gross urn 9Rs.)	Net eturns (Rs)	B:C atio
1	FLD	20.9	39000	157795	118795	4.04	17.21	39000	129935	90935	3.33
2	CFLD	15.75	39000	118912	79912	3.04	11.70	39000	88335	49335	2.26

Under the FLD demonstrations of pigeonpea variety BDN 2013-41 were conducted on 25 farmers' fields covering 10 ha area. The yield recorded under improved technology ranged from 14.00 to 28.00 q/ha, with an average yield of 20.90 q/ha, whereas the farmers' practice recorded an average yield of 17.21 q/ha. This resulted in a 21.44% increase in yield over the farmers' practice. The economic analysis showed that the demonstration generated a gross return of Rs. 1,57,795/ha and net return of Rs. 1,18,795/ha with a benefit–cost ratio of 4.04, compared to the farmers' practice which recorded a gross return of Rs. 1,29,935/ha, net return of Rs. 90,935/ha and BCR of 3.33.

Similarly, under varietal demonstration with Integrated Nutrient Management (INM), the improved pigeonpea variety BDN 2013-41 was demonstrated on 300 farmers' fields covering 120 ha area. The demonstration recorded yields ranging from 12.25 to 19.25 q/ha, with an average yield of 15.75 q/ha, whereas the farmers' practice recorded 11.70 q/ha. This resulted in a 34.62% increase in yield over the local practice. The economic evaluation indicated a gross return of Rs. 1,18,912/ha and net return of Rs. 79,912/ha with a BCR

of 3.04, whereas farmers' practice recorded gross return of Rs. 88,335/ha, net return of Rs. 49,335/ha and BCR of 1.79.

The results clearly indicated that the introduction of improved pigeonpea variety BDN 2013-41 along with recommended nutrient management practices significantly enhanced crop productivity and profitability, encouraging farmers to adopt the improved technology in the region.

Outcome

The demonstrations on pigeonpea variety **BDN 2013-41** along with improved crop management practices in Latur District of Maharashtra resulted in significant positive outcomes in terms of productivity, profitability and technology adoption among farmers.

The introduction of the improved variety BDN 2013-41 under variety demonstration and varietal demonstration with Integrated Nutrient Management (INM) helped farmers realize the potential of improved seed and scientific crop management practices. Farmers observed better crop growth, increased branching, higher number of pods per plant and better grain filling compared to the traditional varieties cultivated earlier.

The demonstrations resulted in a **yield advantage of 21.44% under FLD and 34.62% under CFLD on Pulses** over the farmers' practice. This clearly indicated the effectiveness of the improved technology package. The higher yield obtained from the demonstrations helped farmers understand the importance of using improved varieties, seed treatment and balanced nutrient management.

Economic analysis also showed a substantial increase in farmers' income. The demonstrations recorded higher **gross returns, net returns and benefit–cost ratios** compared to the farmers' traditional practices. This improvement in economic returns motivated farmers to adopt the improved variety and recommended practices in the subsequent seasons.

The success of these demonstrations also increased awareness among neighboring farmers. Many farmers visited the demonstration fields and interacted with the beneficiary farmers to learn about the benefits of the improved variety and management practices. As a result, the demand for quality seeds of pigeonpea variety BDN 2013-41 increased in the villages.

Overall, the intervention strengthened farmers' confidence in improved pulse production technologies, enhanced knowledge about integrated nutrient management and encouraged wider adoption of improved pigeonpea cultivation practices in the district.

5.Impact

The large-scale demonstrations of pigeonpea variety **BDN 2013-41** along with improved crop management practices created a significant impact on pulse production and farmers' livelihood in Latur District of Maharashtra. The introduction of the improved variety and scientific production technologies helped farmers realize the benefits of adopting modern agricultural practices over traditional cultivation methods.

Due to the higher yield potential and better performance of variety **BDN 2013-41**, farmers experienced a substantial increase in crop productivity and profitability. The demonstrations recorded higher yields and better economic returns compared to farmers' practices, which improved farmers' confidence in using improved varieties and recommended nutrient management practices. The higher benefit–cost ratio obtained under demonstrations clearly showed that adoption of improved technology can significantly enhance farm income.

The successful results encouraged many neighboring farmers to adopt the improved pigeonpea variety and recommended cultivation practices in their own fields. As a result, the area under improved pigeonpea varieties gradually increased in the demonstration villages and surrounding areas. The demonstrations also helped in strengthening farmers' knowledge about improved seed use, integrated nutrient management and scientific crop management practices.

In the long term, the intervention contributed to increasing pigeonpea productivity, improving farmers' income and strengthening pulse production systems in the district. The wider adoption of improved pigeonpea technologies also supports soil health improvement through pulse cultivation and contributes to nutritional security by increasing the availability of pulses in the region. Overall, the initiative played an important role in promoting sustainable and profitable pigeonpea cultivation in the district.



Prekharif Training Programme

Group Discussion



Seed Distribution Programme

News paper Coverage

Mid kharif Training



Field Visit to demonstration Plot



Field Day Programme At-Tattapur Ta.Renapur

News Paper Coverage