

Empowering Farmers and Entrepreneurs through Farmer Participatory Seed Production (FPSP)

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Introduction

Agriculture is the backbone of India's economy, supporting nearly 42.30 per cent of the population and contributing 18.20 per cent to the country's GDP (Economic Survey 2023-24). Among the various agricultural inputs, quality seed is the most critical factor influencing productivity and sustainability. However, ensuring the timely availability of high-quality seeds remains a significant challenge, necessitating the development of efficient seed systems.

The Indian seed production landscape has undergone major transformations since the Green Revolution, emphasizing the economic importance of high-yielding varieties and hybrid seeds. Despite these advancements, the inadequate availability of quality seeds of improved cultivars continues to hinder productivity. In many field crops where high-volume, low-value seeds dominate, nearly 80 per cent of the sown area still depends on farm-saved seeds, leading to outdated and obsolete varieties being cultivated (Ramanappa *et al.*, 2021).

Challenges in the formal seed production system include delays in transferring newly developed varieties to farmers, mismatches in varietal demand and production, and inefficiencies in seed distribution. Additionally, limited direct engagement with farmers often results in slow adoption of improved varieties. To address these challenges, a robust seed system is needed—one that strengthens stakeholder linkages and ensures the steady availability of quality seeds.

Farmer Participatory Seed Production (FPSP) as an Entrepreneurial Model

FPSP is a decentralized model that empowers farmers to actively participate in seed production while maintaining varietal purity and quality. To improve the availability of quality seeds, disseminate knowledge about new varieties and hybrids to farmers, and foster entrepreneurship and employment opportunities for rural youth, the ICAR-National Institute of Seed Science and Technology (ICAR-NISST), Mau, has implemented a Farmer Participatory Seed Production Programme (Figure 1). This initiative, supported by a buy-back system, engages farmers in seed production,

processing, and distribution to ensure the large-scale production of high-quality seeds of improved varieties and hybrids.

FPSP aims to:

- Improve the availability of quality seeds.
- Address the seed needs of farmers efficiently.
- Promote the production and distribution of certified seeds within local communities.
- Enable farmers to generate higher income through seed entrepreneurship.

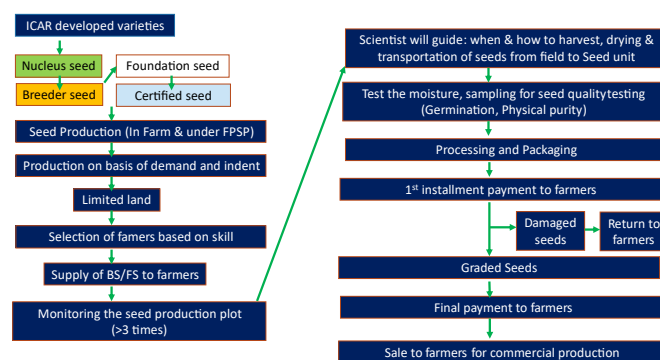


Fig. 1. Farmer Participatory Seed Production Programme (FPSP) model, ICAR-NISST

For an effective seed production program, crops that are widely grown in the region and varieties recommended for the specific agro-climatic zone with high seed demand should be selected. Based on essential criteria for quality seed production, only interested and resourceful farmers will be identified to undertake seed production of improved varieties and hybrids under the guidance of scientists. Farmers must be willing to allocate a significant portion of their land for quality seed production. Other key selection criteria include the availability of assured isolation distance, a reliable irrigation source, water quality, previous crop history, weed-free land, and suitable soil conditions, all of which will be verified through field visits. The selected farmers receive training from the ICAR-NISST scientists on all aspects of seed production technology for the chosen crop variety or hybrid. Each crop season includes four training sessions at critical stages- pre-sowing, before flowering, before harvesting, and after

harvesting. Breeder seed/Foundation seed is provided to the selected farmers for seed production. The seed production fields are closely monitored by a multidisciplinary team of scientists with active participation from seed growers at regular intervals (minimum 3 times) and will guide farmers regarding when and how to harvest, drying methods, etc. The seed crop is harvested at physiological maturity, dried to optimal moisture levels, and then transported to the processing plant for seed quality enhancement and first installment of payment will be deposited to farmers. Samples from each lot are sent for germination and physical purity testing, after testing the final payments are made at 25 per cent more than the Minimum Support Price (MSP) for the seed production farmers. The damaged or impure seed lot is returned to the farmers. Later, the quality seeds are sold to farmers and distributed through the institute's Seed Village Scheme and Scheduled Caste Sub Plan programs.

Successful FPSP Models in India

Several FPSP models have demonstrated success in different regions of India:

1. **Sahajeevan Agri-Producer Company Limited, Maharashtra:** Farmers in the Vidarbha region collaborate under this FPO to produce high-quality seeds of pulses and cereals, maintaining genetic purity through participatory techniques.
2. **JEEViKA (Bihar Rural Livelihoods Promotion Society), Bihar:** SHGs engage in seed production, enabling small farmers to access quality rice, wheat, and maize seeds.
3. **Community-Based Seed Production (CBSP) Model:** Encourages farmers to produce and distribute seeds within their own communities, ensuring local seed security.
4. **Desi Seeds Producers Company Limited, Karnataka:** This initiative enables farmers to monetize their traditional seed varieties and operate seed-saving enterprises.
5. **PDKV Seed System Model, Akola, Maharashtra:** Involves distributing small quantities of improved seeds to farmers, who multiply them across multiple growing seasons.
6. **Dharwad Seed Village Model, Karnataka:** Engages farmers in seed production, enabling them to access quality seeds at lower costs while ensuring availability within their villages.

Opportunities for Young Entrepreneurs in Participatory Seed Production

Seed production presents a promising opportunity for young entrepreneurs in agriculture, given the increasing demand for high-quality seeds in India and globally. Here are some key avenues for young entrepreneurs to explore:

1. Foundation and Certified Seed Production

- Partnering with agricultural universities, ICAR institutes, and state seed corporations to produce foundation and certified seeds.
- Registering with seed certification agencies to ensure quality standards.

2. Hybrid Seed Production

- Investing in hybrid seed production of high-value crops like vegetables, maize, and cotton.
- Collaborating with private seed companies for buy-back agreements.

3. Organic and Indigenous Seed Production

- Producing organic seeds for niche markets, which have increasing demand in organic farming.
- Reviving traditional and indigenous seed varieties for conservation and commercial sale.

4. Seed Processing and Packaging Units

- Setting up small-scale seed processing units, including cleaning, grading, treating, and packaging facilities.
- Offering contract processing services to farmer groups and small-scale seed producers.

5. Custom Seed Production for FPOs and Cooperatives

- Partnering with Farmer Producer Organizations (FPOs) and cooperatives to produce location-specific seeds.
- Engaging in community-based seed enterprises to meet local demand.

6. Seed Production Under Government Schemes

- Leveraging schemes like Rashtriya Krishi Vikas Yojana (RKVY), National Seed Corporation (NSC) contracts, and Start-up India support.
- Availing subsidies and incentives for setting up seed production businesses.

7. Seed Export and E-Commerce Platforms

- Exploring export markets for quality seeds, particularly in Africa and Southeast Asia.
- Using digital platforms and e-commerce to sell seeds directly to farmers.

8. Climate-Resilient and Biofortified Seed Production

- Producing seeds of climate-resilient, drought-resistant, and biofortified varieties.
- Partnering with ICAR and seed research institutions for licensing improved varieties.

9. Urban and Peri-Urban Seed Enterprises

- Producing and supplying high-quality vegetable and herb seeds for urban gardening.
- Establishing seed vending machines and subscription models for urban farmers.

10. Seed Banks and Conservation Initiatives

- Setting up community seed banks for conservation and sale of rare varieties.
- Working with NGOs and CSR initiatives for seed conservation and rural entrepreneurship.

Conclusion

Farmer Participatory Seed Production (FPSP) is more than just a model for ensuring seed security- it is a transformative opportunity for farmers and rural youth to become self-reliant seed entrepreneurs. By actively engaging in seed production, farmers not only contribute to agricultural sustainability but also unlock new income streams, reduce dependency on external seed sources, and create employment within their communities. The success of FPSP models across India highlights the immense potential of participatory seed production in bridging the gap between research

institutions and farmers while fostering an entrepreneurial spirit in agriculture. For young agripreneurs, FPSP offers a unique pathway to build profitable seed enterprises while playing a crucial role in strengthening India's food and nutritional security. With access to training, scientific guidance, and buy-back support, aspiring seed entrepreneurs can confidently venture into this field, harnessing innovation to enhance seed quality, productivity, and market reach. The future of Indian agriculture depends on dynamic and visionary individuals willing to embrace seed entrepreneurship. By stepping into this domain, young farmers and entrepreneurs can drive the transformation of India's seed sector, ensuring that high-quality seeds reach every corner of the country, empowering farming communities and shaping a more resilient agricultural ecosystem.

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