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Original Article

Enhancing farmer's income through Participatory Seed Production- A Success Story

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ABSTRACT

After soil and water, seed is one of the most crucial elements of agricultural production to harvest a good crop. The quality of the seed used determines the potential yield of any given crop variety. Quality seeds alone have the potential to increase crop yield by 20-30% within a very short time, which not only eradicates problems of food security but also enhances livelihoods of poor people rapidly. Good quality seed is the key to success of any farmer and lack of timely availability of reliable good quality seeds of high-yielding varieties is the main reasons for low productivity of crops. The immediate increase in the productivity and production can be achieved by distribution of high quantity of quality seeds of new and high yielding varieties. Majority of the farmers still sown with seeds saved by their own from previous years which may not meet the quality aspects as expected for a seed which results in poor field stand, poor performance and resulting in to low yield. There is large gap between production and supply. Farmers are in need of quality seed material of wheat crop where multiplications of recent released high yielding varieties need to be done in large quantity which is not possible in the Institute farm. This article deals with the concept of participatory seed production at farmer's level under the guidance of scientists.

Key words: Participatory seed production, Seed, Success story, Wheat**BACKGROUND INFORMATION**

Wheat (*Triticum aestivum*) is the most widely cultivate crop of the world both in terms of area and production. India rank second after China in wheat production. It is cultivated on an area of 31.61 mha with 109.52 mt of production in India (Agricultural Statistics at a Glance, 2021). Bihar state contributed about 7.02% and 5.79% to all India area and production, respectively (Agricultural Statistics at a Glance, 2021). Good quality seed is the key input for obtaining optimum crop stand, healthy crop and realizing potential productivity. Most of the farmers depend on farm saved seeds

for sowing and part of it for next season which may not meet the quality aspects as expected for a seed which results in poor field stand, uneven performance and ultimately low yield. Adoption of on-farm seed production through farmer participatory approach can improve farmers' income besides ensuring the availability of good quality seed. Here is a success story of a farmer Mr. Mohammad Mahmood who was a participant farmer under participatory seed production programme of wheat has been narrated here.

A progressive farmer from Village Motipur, P.O.: Motipur, Distt. Muzaffarpur (Bihar), Mr. Mohammad Mahmood was chosen for seed production during *Rabi* 2018–19 as part of IARI, RS Pusa Bihar's farmers' participatory seed production program. Before seeding, a pre-seed agreement was made between IARI, RS Pusa Bihar, and the farmer to define terms and conditions for the efficient and effective implementation of the seed production activity and for maintaining the seed quality on farmers' field under strict supervision of IARI Scientist and technical staff. Agreement was made for production of truthful level seed (IARI T/L Seed) of wheat variety HD- 2967 in an area of 12.0 acres and 246.60 q seed was produced. Seed produced by the participatory farmer was procured by the Institute as per the agreement. Later this seed material was processed at the seed processing unit of IARI, RS Pusa and sold to the farmers.

The basic information of the farmer are mentioned below

<p>Name: Mr. Mohammad Mahmood Father's name: Haji Yakub Educational Qualification: Post Graduate Age: 55 years Address: Village Motipur, P.O.: Motipur, Distt. Muzaffarpur (Bihar)- 843111 Mobile Number: 9304224416, 8961522399</p>
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He had taken seed production activity of wheat crop var. HD 2967 and produced a total of 246.60 q processed seed. The participatory farmer received their cut grain back after processing, and the Institute only purchased processed seed at a price fixed by IARI, New Delhi. Formerly, Mr. Muhammad Mohmood's annual income from general grain production of various crops was lower before he became involved in participatory seed production. From general grain production he had not only faced problems like low income but also fluctuation in market price for their produce. With his involvement in farmers' participatory seed production he got more net income without facing any marketing problems. Mr. Mohammad Mahmood has been registering gross income between Rs. 1.20-1.45 lakh ha⁻¹ and net income between Rs. 0.85-1.10 lakh ha⁻¹ and a B: C ratio of 2.40-3.15 was obtained from wheat seed production under participatory seed production programme. Previously his gross income was between Rs. 0.70-0.80 lakh ha⁻¹ and net income was Rs. 0.45-0.50 lakh ha⁻¹ from wheat grain production. He also earns extra income from selling straw and earn about Rs. 52000 ha⁻¹.

IARI, Regional Station Pusa Bihar was directly and indirectly involved in the participatory seed production programme. The Institute and its scientists made the following interventions:

- Every year, training program on "Seed production" was organized for participatory and non-participatory farmers involving Scientists from IARI RS Pusa, Dr.RPCA, Pusa and Borlaug Institute of South Asia, Pusa.
- The participatory farmer from the Institute received high-quality breeder seed of the HD 2967 variety on cash basis.
- Seed sowing was done mechanically with the help of seed drill and sowing was done at a spacing of 22 cm from row to row and standard minimum isolation distance of 3.0 m was followed.
- Two roughing was done (before flowering and after flowering) in the presence of scientists and technical staffs to remove the off types plants grown in the field. This practice help to reduce contamination and thus good quality seed was produced.
- Need based plant protection measures were taken up under the supervision of scientists of IARI, RS Pusa, since beginning and finally harvesting was done by mechanical combine harvester.

Farmers' Response

Mr. Mohammad Mahmood expressed great satisfaction with the yield and advantages of producing wheat seeds, as well as the technical advice given by IARI and RS Pusa Bihar. But Mr. Mahmood acknowledged the possibility of seed loss during processing. Seeing this farmer's success, a few nearby farmers are inspired to engage in seed production and want to work with the IARI seed production program to generate good and sustainable income.

Future Perspectives

Modern advanced seed production techniques and full mechanization should be applied to wheat seed production in farmer's fields in order to lower production costs and increase farm income. Majority of the Indian farmers are small and marginal farmers having poor economic background and less risk bearing ability. They might not be prepared to step forward and produce seeds as a result. As a result, such farmers need to be inspired to produce seeds and given the necessary training, encouragement, and education.

Lesson learned

Following lessons were learned from the participatory seed production program

- Participatory seed production may be an effective tool to increase the quality seed production as well as seed replacement rate.
- The adoption of improved technology of seed production has greater impact. Therefore, the focus should be given on transfer of improved technologies and the buildup of farmers led extension mechanism will be established.

CONCLUSION

There is limited area and land for seed production in the Institutes and also facing problems of limited seed supply to the farmers. A collaborative seed production programme among farmer and ICAR Institute in a participatory mode is the need of the day where good quality seed production

may be made available at local level and it is also a very effective tool for combating seed shortage and fulfill the requirement of seed. The initiative of IARI, RS Pusa has been extremely beneficial to the farmer from social and economic point of view. The farmer recorded high levels of adoption for improved variety as compared to local one and showed his willingness to adopt seed production programme under participatory seed production. Farmer’s participatory seed production concept is needs to be promoted to facilitate production and timely distribution of quality seeds of desired and high yielding varieties to the farmers at village level. Hence, adoption of seed production under the supervision of Scientists through participatory approach can improve farmer’s income besides ensuring the availability of good quality seed.

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Fig 1: Performance of wheat crop under farmers’ participatory seed production programme and training programme organized by ICAR- IARI, RS Pusa Bihar