Strengthening Seed Production through Maize Seed Village in Thailand: A Case Study

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ABSTRACT: In recent years, farmers tend to invest more on seed purchasing for maize cultivation mainly due to increase of seed price, risk from climate change and seed shortage. In this regard, an attempt has been made to establish “Maize Seed Village” in order to ensure seed sufficiency among farmers thus saving cost of seed purchasing. The Department of Agriculture (DOA), Thailand and Rural Development Administration (RDA), Republic of Korea have jointly undertaken the project “Strengthening Seed Production through Maize Seed Village” in Thailand from 2010-2012 under the Asian Food and Agriculture Cooperation Initiative (AFACI). The project aimed to establish maize seed village of Nakphon Sawan 3, a drought-tolerant hybrid cultivar. The technology of hybrid seed production of this cultivar was transferred to the farmers in 5 provinces through training programs with 600 copies of hybrid seed production manual. 175 farmers from the 52 villages with a total of 96 ha joined the project and continuously produced drought-tolerant hybrid seeds in the summer of 2010-2011 during rainy season. The farmers were able to produce 79,988 kg of drought-tolerant hybrid seeds. The hybrid seed price produced by the farmers was 46 to 60 % low compared with commercial hybrid seed. The farmers were satisfied with the introduction of Nakphon Sawan 3 hybrid seed production technology and performance of their hybrid variety.

Key words: seed village, maize, hybrid seed production, Nakphon Sawan 3, Thailand

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This study was carried out for 3 seasons from 2010 to 2011 by Field and Renewable Energy Crops Research Institute (FCRI) as a collaborative project “Maize Seed Village”, between the Department of Agriculture (DOA), Thailand and the Rural Development Administrative (RDA), Republic of Korea under the Asian Food and Agriculture Cooperation Initiative (AFACI). The project aimed to make the farmers self-sufficient of maize hybrid seeds through the hybrid seed production and its training programs. In addition, the project has an alternative approach to reduce seed purchasing cost. Furthermore, the success of project could contribute to strengthening sustainable agriculture for food security. At present, farmers are facing difficulties with current maize type since it does not have enough resistivity against adverse conditions such as climate change. The current cultivars are easily destroyed by harsh environmental conditions (natural disasters such as drought, floods, etc.) and thus, farmers have to bear great loss. One of the most persistent problems in the locality is the seed shortage since seed supply is lower than the demand. In 2009, a new drought-tolerant maize hybrid cultivar “Nakhon Sawan 3” (NS3) developed by Nakhon Sawan Field Crops Research Center (NSFCRC) (Grudloyma et al., 2009) was released by DOA and AFACI. Later on DOA and AFACI disseminated the new hybrid seed and its production technology in June 2010. The FCRI launched the project in collaboration with Nakhon Sawan Field Crops Research Center (NSFCRC), Chiang Mai Field Crops Research Center (CMFCRC), Petchabun Agricultural Research and Development Center (PBARDC), Sukhothai Agricultural Research and Development Center (SKARDC) and Tak Agricultural Research and Development Center (TKARDC). So this study was to test the viability of NS3 with local cultivar among the farmers and how to help them in 5 provinces in the Northern Region, Nakhon Sawan, Chiang Mai, Petchabun, Sukhothai and Tak.

**METHODOLOGY**

**Study area**

Focus group discussion (FGD) is one of the important social tools to gather the knowledge and ideas of different people at a single time. The main objective of this study was also to disseminate the introduction of NS3 among the local farmers and make them self-reliant about the seed production. Therefore, FGD was carried out among the local farmers in order to make them familiar with the new seed production technology and their performance. Farmers, who were interested in producing hybrid seed, joined the training prior to planting in their field.

**Seed multiplication of inbred parents**

Since research and development of NS3 hybrid was conducted at Nakhon Sawan Field Crops Research Center (NSFCRC), NSFCRC was responsible for the seed increasing of inbred parents of NS3 hybrid, a single cross hybrid cultivar. The female inbred was Tak Fa 1 and male inbred was Tak Fa 3.

**Demonstration plots for varietal performance and seed production**

The NSFCRC also prepared demonstration plots for farmers training program. The plots included 1) varietal demonstration - NS3 hybrid vs. commercial hybrids; farmers were able to see different performances and then they scored and selected for preference of hybrids, and 2) demonstration of seed production of NS3 hybrid to show inbred row ratio of male and female, correct field inspection and off-type rouging (Koshawatana, 2007a, 2007b).

**Publication of seed production manual**

The FCRI has published hybrid seed production manual by collecting data and information from NSFCRC researchers. The manual was made easy to understand with illustrations for distribution to the farmers of the project or beginners in hybrid seed production. The manual was distributed to other farmers who were interested in producing of NS3 hybrid seed.

**Training programs**

Farmers or groups of farmers were trained on NS3 hybrid seed production - covering field management, field inspection and rouging, harvesting, processing etc. The activities also include fields visit to exchange experience among farmers from each province.

**Seed production by farmers**

Working teams of each site provided sufficient amount of inbred parent seeds to farmers/farmers groups then continuously inspected the field and advised farmers throughout a production process as well as helping them estimate cost of seed production to facilitate seed supply and distribution in their community. Activity plan and seed production program were discussed among working teams. The teams visited the areas for site selection then they conducted discussion with the farmers and local leaders. A total of 175 farmers from 52 villages, 34 sub-districts and 22 districts jointed the project. The areas of production totaled to 96 ha (Koshawatana et al., 2011) (Table 1).