

## Technology transfer and information dissemination

*Growing corn, growing hope*

### Modern corn cultivation technology transfer in Caraga region, Philippines (Year 1)

*The overall goal of this technology transfer program is to improve the productivity and achieve sustainable production of quality corn in the Caraga region through the extension of modern cultivation techniques and introduction of hybrid corn varieties.*

**CORN IS THE SECOND MOST IMPORTANT CROP** in the Philippines. It comprises about 70 percent of livestock mixed feeds in the country, and is the preferred main staple food of about 12 million Filipinos. With the corn-livestock sector contributing 16 percent of the country's gross value added (GVA) in agriculture, corn production has become an important source of livelihood for many small-scale farmers, with some 600,000 farm households directly dependent on corn production for their subsistence.

About 60 percent of the Philippines' annual corn production is from Mindanao, and of this island's six main corn production areas, the Caraga region has the lowest average yield production of 1.77 MT/hectare in 2005. This is mainly attributed to low adoption of modern corn production technologies and use of low-yielding traditional/open-pollinated varieties by the farmers.

#### The FFTC-Philippines technical cooperation

There is enormous potential for the Caraga region to develop a comprehensive corn production program toward providing improved livelihood opportunities for its small-scale corn farmers. To realize this potential, FFTC and the Department of Agriculture (DA), Philippines; the Northern Mindanao State Institute of Science and Technology (NORMISIST); and the Manila Economic and Cultural Office (MECO) launched a three-year (2006-2008) agricultural technical assistance program that aims to extend modern cultivation

techniques and introduce hybrid corn varieties to corn farmers in the Caraga Region.

The overall goal of this technology transfer program is to improve the productivity and achieve sustainable production of quality corn in the Caraga region through the extension of modern cultivation techniques and introduction of hybrid corn

**FFTC, RDF and MECO delegation with farmers and technicians during the Farmers' Field Day at the NORMISIST DemoFarm.**





Taiwan corn hybrids TNG-1 (left) and TN-20 (below) planted at the NORMISIST DemoFarm.



varieties. With the technical assistance of scientists from Taiwan ROC, the project aims to achieve the following objectives:

- ❑ To improve the average corn yield per hectare of the farmers in the Caraga region from 1.77 MT/ha to 3.0 MT/ha;
- ❑ To establish an appropriate cultivation system of group farming in corn production areas of the Caraga region, incorporating the use of modern and sustainable corn production technologies and use of F1 hybrid varieties;
- ❑ To promote local capacity-building among technicians, extensions workers, and leading farmers through the conduct of on-farm demonstrations/pilot testing, as well as training courses on modern corn cultivation techniques;
- ❑ To organize leading farmers into a farmers' group/cluster to adopt the introduced improved corn cultivation techniques and be subjected to the technology diffusion process;
- ❑ To ensure sustainability and availability of good quality seeds by transferring to local technicians the technology on the production of F1 hybrid seeds; and
- ❑ To produce and disseminate extension materials on improved corn cultivation for practical use by extension workers and farmers.

### Technology needs assessment and selection of suitable variety

The first year implementation of the project focused on the identification of the technology needs of corn farmers in the Caraga region. Information were gathered to serve as basis for the introduction of

improved and appropriate cultivation techniques.

The needs assessment was done to identify appropriate corn hybrid seeds, and the suitable package of technology such as land preparation, water management, fertilization, planting date, crop care and maintenance, and harvesting. These information are vital in the introduction of appropriate technology to achieve the goal of improved productivity and sustainable production of quality corn.

**Technology assessment preparatory to project implementation.** The local Project Team was organized to conduct an informal survey of the farmers' technological needs through interview/consultation with farmers, technicians and extension workers. The findings were then presented during the first meeting of the Project Organizing Committee attended by FFTC and the Technical Team from Taiwan ROC. Basing on the findings of the technology needs assessment (TNA), identification of specific activities and technology package was deliberated between the local Project Management Team and the Taiwan Technical Team. The teams agreed to conduct a varietal screening, utilizing two corn hybrids from Taiwan (Tainung No.1 and Tainan No. 20), one traditional open-pollinated variety (Tiniguib), one improved open-pollinated variety (USM Var-12), and a commonly planted hybrid (GSI-40). A technology package for the cultural management of corn production used in this experiment was also developed.

**Establishment of a three-ha farm demonstration plot.** The corn production technology trial was conducted in a 3-ha demonstration site at the NORMISIST farm. The demofarm was originally subdivided into three (3) 1-ha corn fields to accommodate the 3x5x5 experiment laid-out in split-plot design. The experiment adopting the split-plot design consists of three mainplots (planting date), five subplots (corn variety), and five replications.

During the course of the project implementation, weather did not permit the 10-day interval in planting date at the start of the project implementation. However, the next two plantings of corn adopted the 10-day interval in planting date.

Data gathered from the different corn varieties/hybrid include the following: a) plant height (cm); b) ear height (cm); c) ear number per plant; d) days to tasseling (days DAP); e) days to silking (days DAP); f) days to maturity (days DAP); g) kernel rows per ear; h) kernel numbers per row; i) 100 kernel weight; j) grain yield (t/ha); and k) percent shelling.

**Establishment of a farmer-managed demonstration plot.** To further evaluate the corn production technologies in Caraga region, a farmer-managed demonstration farm was established at Tiniwisan, Butuan City (labeled as Tabelon Demofarm). The demofarm was located about 7 km from the NORMISIST demofarm. Seven (7) hybrids of corn were tested, as follows: TNG-1, TN-20, PGH-95-5, PGH 9501-1, PWX90-3, Dekalb 9051 and Pioneer 30W30. The first five (5) hybrids are introduced from Taiwan, while the last two (2) are commercially available hybrids in the locality.

The experiment was laid out in RCBD with seven entries and four replications. Data taken were the same as those taken at the NORMISIST Demofarm.

### Significant achievements of year 1 (2006) implementation

Considerable progress have been achieved in terms of technology field demonstration both at the NORMISIST experiment station and at the Tabelon demofarm, in consideration of the actual condition resource-poor farmers have growing corn in this area. Based on the results of year 1 implementation, the following conclusions and recommendations were drawn:

- ❑ Corn production in Caraga region can be increased by planting hybrids. Hybrids PGH95-5 and TN-20 showed promising field performance in the area. Most hybrids yielded better than traditional OPVs.
- ❑ Significant interaction between cultivar yield and planting date indicated that timing of planting is an important factor in corn production, taking into consideration various environmental stresses (e.g. pests, climate and soil) that could hamper production. Therefore, further field evaluation is needed for introduced hybrids.



FFTC consultant and local Project Team discuss corn harvest of first cropping season at the DemoFarm.

- ❑ The interplay between corn variety's potentials and the environmental conditions prevailing in any planting season must be carefully assessed to serve as basis in scheduling planting to maximize production.
- ❑ A critical study on the rainfall and temperature pattern needs to be given attention in relation to corn farming, since these factors have great influence on corn yields.

### **Capacity building and farm demonstrations for year 2 (2007)**

- ❑ Identification of farmer-cooperators and on-site demofarms.
- ❑ Conduct of training courses and on-farm demonstration for leading farmers and technicians/extension workers. Field extension officers and local government unit technicians will undergo a comprehensive training on all aspects of the corn production technology package.
- ❑ Training of local researchers/technicians on the production of F1 hybrid seeds. This aims toward the sustainability of production of quality corn by making available to the local area good quality and affordable seeds. On-farm training and field demonstration on F1 hybrid seed production and postharvest seed technology will also be conducted to minimize if not eliminate seed losses.

It is hoped that this corn project could be sustained for another two years, to completely achieve the goal of increasing corn farmers' income and reducing poverty incidence in the Caraga region. Other future components of the project shall include introduction of small-farm machineries under a cooperative system among small-scale corn farmers, and inclusion of white corn production, in response to the food security agenda of the Philippines' agriculture department.

### **Modern Corn Cultivation Technology Transfer in Caraga Region, Philippines (Year 1)**

This three-year (2006-2008) corn technology demonstration and transfer project is being implemented in Butuan City, Caraga Region, Mindanao, Philippines

Cooperating organizations:

Department of Agriculture (DA) - Caraga Region  
Northern Mindanao State Institute of Science and Technology (NORMISIST)  
Manila Economic and Cultural Office (MECO), Taipei Office  
Rural Development Foundation (RDF), Taiwan ROC

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