CFC Training Program boosts SE Asian scientists' know-how

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At the core of every successful project is a human resource base well equipped with the necessary knowledge, skills and tools to perform efficiently. With this in mind, implementers of the CFC/ISO/20: Sugar Variety Improvement in Southeast Asia and the Pacific project conducted a series of training seminars to upgrade the research and development capabilities of the regiuon's scientists and breeders.

Germplasm Characterization

Sixteen sugarcane experts from Bangladesh, Indonesia, the Philippines, and Thailand underwent intensive training on sugarcane genetic resources at the Institute of Plant Breeding – University of the Philippines Los Banos from April 11 to 15, 2005.

The training sought to enhance the participants' skills in 2 areas – the characterization of sugarcane germplasm, the documentation and management of information on plant genetic resources.

CFC/ISO/20 project leader PHILSURIN tapped sugar experts from IPB-UPLB to introduce 8 of the participants to the characterization of plant genetic resources, the standardization of sampling procedures for the characterization of sugarcane germplasm, as well as other various other characterization techniques.

"the Philippines has the most thorough and most complete characterization process," CFC/ISO/20 Project Manager and PHILSURIN Director Genral Leon M. Arceo said. "Through this training, we gave representatives of the participating countries a model of what to include in their characterization," he added.

In recent years, PHILSURIN has gone beyond the traditional method of characterizing germplasm collection which is based on the physical attributes of a plant. The institution has explored the use of molecular markers, which are more accurate and less affected by the environment, as early as 2002. To date, the Philippines is the only country using the DNA fingerprinting method that identifies genetic similarities and differences between organisms using genetic markers.

The other 8 participants attended the training on documentation and information management, which underscored the importance of having a well-managed sugarcane database system. The trainees were trained to use CANEPOINT.

The world's most comprehensive and most complete sugarcane database system, CANEPOINT was developed by PHILSURIN in tandem with IPB-UPLB. "We want CANEPOINT to be a model for other countries and other crops, too. If all sugar-producing countries such as Thailand, Malaysia and Bangladesh will have an information management system similar to CANEPOINT, the distribution and exchange of sugarcane information and material will be easier," Arceo said.

As a final exercise, the trainees performed the actual characterization of sugarcane varieties on the field using a standardized set of sugarcane descriptors developed by PHILSURIN and IPB.

Micropropagation

PHILSURIN sent Tissue Culture Specialists Jocelyn Almedilla and Ma. Angelita Rebadomia to Bangladesh in May 2004 to conduct a training program on micropropagation for which the institution has a special capability.

Held at the Bangladesh Sugarcane Institute, the 14 day training sought to give participants a clear understanding of tissue culture's role as a propagation tool. It also aimed to share knowledge, skills and basic techniques in explants excision, separation of plantlets, and rooting with CFC-member countries.

Eight sugarcane researchers participated in lectures on Overview and Application of Sugarcane Micropropagation, Laboratory Requirements, General Techniques and Procedures, and Micropropagation Stages and Procedures, Laboratory Procedures: Dos and Don'ts.

Laboratory activities such as stock solutions preparation, media preparation, separation of plantlets, disinfection of spindles, and explants excision for shoot tip and meristem culture allowed the trainees to apply what they have learned.

The group also visited a breeding nursery, a photoperiod facility, a trichogramma laboratory, variety trial sites, and a quarantine station.

DNA Fingerprinting

In September 2003, 10 sugarcane breeders, plant pathologists, tissue culturists and crop physiologists from the consortium members participated in a 6-day training on DNA fingerprinting at the PHILSURIN Biotechnology Laboratory.

Aimed at teaching participants basic DNA fingerprinting techniques, the seminar was a combination of lectures and hands-on activities in the laboratory and on the field. The training staff led by PHILSURIN Molecular Plant Breeder Dr. Rosendo Muyco discussed topics such as General Laboratory Procedures, Practices and Safety, Morphological Characterization of Sugarcane. Preparation of laboratory reagents, DNA extraction, DNA quantification, DNA amplification, band detection, gel scoring, data input and analysis and interpretation of results formed the seminar's laboratory activities.

Dr. Giovanni Cordeiro from the Centre for Plant Conservation Genetics, Southern Cross University in Australia was invited to talk about Molecular Plant Breeding: Crop Improvement With Molecular Markers, and Assessing Genetic Diversity: Understanding Relationships in Crop Plants.

Disease Indexing

To identify important diseases of sugarcane in germplasm exchange, the training program on disease indexing of sugarcane was held at the IPB-UPLB from March 4 to 9, 2002. Eleven sugarcane researchers from the 5 member countries were invited to participate in lectures and laboratory activities on DNA extraction, nucleic-acid-based techniques (PRC/RT-PCR) and serology (DBIA and EB-ELISA).

Principal lecturer Dr. Yong-bao Pan of the United States Bureau of Agriculture discussed disease indexing using molecular techniques. There were also lectures on Important Diseases of Sugarcane, Molecular Approaches of Bacterial Disease Detection in Sugarcane, and Immunological Tools for Disease Indexing in Sugarcane.

"It was deemed necessary that all participating countries use a standard procedure to index outgoing and incoming varieties to minimize the introduction of diseases to receiving countries," Arceo said. He added that "researchers in each country should have the capability to use new techniques in disease indexing."

Representatives to various training seminars agree that the CFC/ISO/20 project has increased the transfer of sugarcane technology and know-how to consortium members through lectures and laboratory activities, efficient germplasm exchange, as well as visitis to member-countries.