PROGRESS IN CASSAVA CORE GERMPLASM CONSERVATION IN THAILAND

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Introduction

Cassava (*Manihot esculenta* Crantz) is one of the most important crops in Thailand. It is efficient in carbohydrate production, adapted to a wide range of environments, and tolerant to drought and acid soils (Cock 1982). Creation of broad genetic variability in the cassava population through collections and introductions is essential for the successful recombination of certain desirable traits to produce superior cassava cultivars for release to the farmers (Sarakarn *et al.*, 2002). A subset of accessions, called "the core collection", has been assembled at CIAT to represent the genetic diversity of the complete germplasm collection in a more manageable size (Hershey *et al.*, 1994). The use of the core collection by CIAT's Cassava Program has been described by Iglesias *et al.* (1993). The core collection can be evaluated across different ecosystems in order to determine the genotype by environmental effects for important traits. Thailand is a suitable place for the safe duplication of this core collection. It is an opportunity for Asian cassava breeders to use a wider genetic diversity in their breeding programs.

The systematic collection of locally grown cassava varieties in Thailand started in 1956. This was supplemented by materials collected from Latin America (from CIAT) as well as introductions from the Virgin Islands and Indonesia. Formerly, the germplasm collection was maintained only in the field to ensure its long-term availability but with a certain risk of loss due to pests or pathogens, drought or excessive rain. In 2001, CIAT and DOA of Thailand agreed to establish a duplicate of the CIAT core collection in Thailand.

Materials and Methods

Rayong Field Crops Research Center (under DOA) received a duplicate set of the CIAT cassava core collection as *in vitro* plants in the form of two test tubes for each clone; 608 accessions have been received during the past two years.

1. Accessions from CIAT are subcultured

2. In vitro conservation and propagation

3. Transfer to the greenhouse

4. Transfer to the field

Results and Discussion

The core collection is now being maintained at RYFCRC, both *in vitro* and in the field. In the field bank, spacing is 1.5 m between plants and 1.0 m between rows. At the present about 125 accessions are planted in the field. For the *in vitro* collection, the cultures are maintained under slow growth conditions: 20 $\pm$ 1°C constant temperature with 1000 – 3000 lux illumination during 16 hours a day provided by cool white fluorescent lamps, and at 70-90% relative humidity. Three plants are grown in each 45x12 cm glass tube containing a modified Morishige and Skoog medium (Roca *et al.*, 1984); Ten plants of each clone are routinely maintained. At present, 399 accessions have survived and are being maintained *in vitro* culture.

There are many factors affecting the survival of accessions, such as environmental factors, time required for sending and quarantine clearance, and climatic changes in the process of hardening. In the future, several studies, such as variable improvement through molecular biology techniques, evaluation of physiological yield capacity of the breeding population, and on various aspects of utilization will be conducted at Rayong Center.

Conclusions

During the past two years, Rayong Field Crops Research Center has received from CIAT *in vitro* plants in two test tubes for each clone. Sofar we have received 608 accessions. Once received, the plants were subcultured and preserved at the Center. The core collection is maintained both *in vitro* and in the field, with presently 399 accessions in vitro and 125 in the field.

References

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