

# Exploring cassava's potential

Improving yields of staple crop cassava will help improve food security and also lead to more commercial opportunities, reports Janet Lawrence

**PARTNER COUNTRIES:** Indonesia, East Timor **PROJECT:** CIM/2003/066: Adoption of cassava in Indonesia and East Timor

**DESCRIPTION:** Cassava is the third most significant crop in Indonesia and East Timor, but yields are well below their potential **CONTACT:** Dr Reinhardt Howeler, [ciat\\_bangkok@cgiar.org](mailto:ciat_bangkok@cgiar.org)

**A**s a staple food crop and the raw material for many industrial uses, the hardy root crop cassava has an important role in many parts of South-East Asia, particularly Indonesia and East Timor. Its tolerance of drought, poor soils, diseases and pests also add to its value in farming communities.

Although cassava is the third most significant crop in Indonesia and East Timor, yields are well below their potential.

Indonesia, for example, has gone from a net exporter to a net importer of cassava chips and starch in the past decade. Improved breeding lines grown in Indonesian trials have yielded up to 58 tonnes a hectare, yet the average yield for the country is only 14t/ha. In East Timor, trials have yielded around 40t/ha – 10 times the local average of 4t/ha.

The challenge is to lift on-farm yields to the demonstrated potential so that food security can be established.

Dr Reinhardt Howeler, from the International Center for Tropical Agriculture (CIAT) regional office in Thailand, is leading the ACIAR project 'Enhancing the adoption of improved cassava production and utilisation systems in Indonesia and East Timor' to address the yield disparities.

The project draws on findings of an earlier ACIAR-supported 'Seeds of Life' project in East Timor, in which five Consultative Group on International Agricultural Research (CGIAR) centres supplied crop materials and expertise to identify better-yielding varieties of sweet potato, maize, rice, peanut and cassava. In this earlier project, CIAT supported the introduction of improved cassava varieties in East Timor, so it is well placed to help improve on-farm yields.

The new project is in the second year of its three-year life. Taking part are five research institutes and universities in Indonesia and a non-government organisation. In East Timor, both the National University and the Ministry of Agriculture are involved.

In Indonesia the project is building on previous collaborative cassava experiments and farmer participatory research (FPR) activities. In East Timor it is building on four years of participation in the Seeds of Life project.

Dr Howeler says: "We were fortunate that in both countries some demonstration plots were already in place, where farmers from the surrounding area could participate in the evaluation and

selection of the varieties or technologies being tested, using their own criteria for selection. Some farmers are now conducting FPR variety trials on their own farms, which should enhance the adoption of new practices and increase farmers' yields and income."

Farmers in different regions have tested different varieties, chosen according to their end use.

In Lampung province, Indonesia, where cassava is used mainly for starch extraction, farmers selected for high yield as well as high starch content.

In Yogyakarta province, where cassava is grown for human consumption and some processing, farmers selected for yield and taste (sweetness).

At the two East Timor sites, where cassava is grown almost exclusively for food, farmers selected mainly for sweetness and texture, almost irrespective of yield or starch content.

Dr Howeler says it will be interesting to see if farmers' selection criteria change as, with a bigger harvest, they find other uses for cassava roots and leaves.

Meanwhile, in Lampung farmers have also visited a long-term fertiliser trial that has shown how potassium applications, and to a lesser extent nitrogen and phosphorus, can lift yields and improve soil conditions. In another development, feeding trials using cassava roots and leaves will start soon, involving pigs in East Timor and goats in Indonesia.

ACIAR has also supported successful work in Cambodia, where ensiled cassava leaves were fed to cattle. ◀



Indonesia, March 2005: a farmer and Indonesian researcher observe the response to fertiliser and manure application in an on-farm fertiliser trial conducted by farmers in Yogyakarta.

Tamanbogo, Lampung, Indonesia, September 2004: farmers are very happy with the high yields of some new breeding lines.



Betano, East Timor, January 2005: farmers evaluate the yields, taste and plant type of new introduced varieties from Indonesia.

## FEEDING PEOPLE AND INDUSTRY

Cassava (*Manihot esculenta* Crantz) has many uses, making it a vital staple food and cash crop for many farm families throughout the developing world. It is also used to produce commercial animal feed and for paper and textile manufacturing. Its starch is used for food manufacture (tapioca and arrowroot are both derived from cassava starch), pharmaceutical purposes and for the production of many other starch-derived products and ethanol.

Its tolerance to drought and poor soils means it is frequently grown in conditions too harsh for other more traditional crops. It is also easy to grow and relatively free of diseases and pests in much of Asia. Indonesian farmers grow cassava mainly for off-farm sale to processors. In East Timor, it is grown largely for on-farm and household use and to boost food supplies as needed.