



Sweetpotato for sale in a market in Solomon Islands.

A sweeter crop

Training farmers to run trials of new sweetpotato varieties and farming systems is paving the way to sustainable gains for Pacific rural economies

BY WARREN PAGE

Samson Sonia and Anna Vathogi are farmers in Binu-Tetere, in Solomon Islands. They, like other farmers, thought that low yields for their sweetpotato crops were simply part and parcel of smallholder farming in the Guadalcanal Plains and beyond.

What Anna and Samson did not realise was that these low yields were not normal, but were caused by viral diseases. This knowledge came about through an International Potato Center (CIP) project, funded by ACIAR, examining the use of improved sweetpotato varieties and management changes to sweetpotato farming systems.

Sweetpotato is a staple food crop in much of the Pacific, including parts of Papua New Guinea, where an estimated 2.87 million tonnes are grown each year. In Solomon Islands, sweetpotato is grown on more than half of all arable land, with production in 2004 totalling 280,000 tonnes, representing 65% of all staple food crops grown.

Improving the sweetpotato farming system practised by smallholders has the potential to change lives. Samson and Anna aspire to produce surpluses to sell to local markets. It was this aspiration that saw them get involved with the CIP-ACIAR project. Project leader Fernando Ezeta and his colleagues wanted local farmers willing to attend Farmer Field Schools, designed

to introduce new varieties and improvements to the system used to grow sweetpotato.

And it was not just Anna and Samson and their fellow farmers who would be learning in the Farmer Field Schools. Fernando and the other scientists have seen the project as a learning exercise for all involved.

"This is a research project in which scientists and farmers learn together in a complementary way," he says. "Disease-free planting material can be obtained from the lab and introduced to farmers, but how long that material remains healthy and maintains its high productivity potential is not known. The project is prepared to test several alternatives to design a sustainable seed-supply system for the low-

input farming systems in the Pacific islands.”

Through the Farmer Field Schools a number of alternatives have been tested to refine the sweetpotato cropping system and make it more robust. Without the identification and understanding of such improvements the possibility of newly introduced sweetpotato varieties slowly declining over time was likely.

The 14 farmers selected for the initial Farmer Field School worked with project scientists to test a range of system options over 22 weeks. These included decisions on whether to remove shoot tips or keep them intact, fertiliser studies, the types of cuttings to use, as well as variety evaluation.

Participating farmers are trialling the results of these experiments in their own fields prior to extending the results to many other farmers at Malaita and Avu-Avu through further field schools.

Schoolchildren are also learning from the project. Scaling up of planting material is underway at King George's Secondary School and the Technical Mission Farm, in Honiara. Informal agreements have been put in place to use the facilities at the two schools to scale up planting material prior to dissemination.

The farmers have been attentive students too. Field school programs have done more than prove that new varieties such as those being bulked up at King George's Secondary School will be productive. Samson and Anna now understand that the sweetpotato system can be efficient enough to produce surpluses that help turn commercial aspirations into reality.

Other farmers will soon benefit from this understanding. Following the initial Farmer Field Schools coordinated by CIP from January through to June 2009, knowledge gained was integral to the Training of Trainers program. After this success, plans are being developed to extend the existing Farmer Field Schools program to areas in Bina, Malaita, as well as the Weather Coast of Guadalcanal during the latter part of 2009.

The project has also opened up possibilities that may extend outside Solomon Islands. “The project is contributing to the maintenance of local cultivars and introduction of improved cultivars, including orange-fleshed sweetpotato, and developing a training program on basic sweetpotato production technology through the Farmer Field Schools,” Fernando says.

As a result of this work, the design of a sustainable seed-supply system for the low-input farming systems in the Pacific islands is emerging as a genuine possibility. ■

Tapping into a global network

When viewed in isolation, ACIAR projects deliver a range of benefits to targeted end users, such as farmers growing sweetpotato in Solomon Islands. However, that view does not do justice to the reach of expertise tapped by an ACIAR project and flow-on of benefits beyond the project's completion.

The International Potato Center (CIP)–ACIAR sweetpotato project in Solomon Islands and Papua New Guinea has drawn on past research in East Africa, Cuba, the Philippines, China and beyond, together with the skills of Indonesian-based scientists, to deliver benefits to farmers in Solomon Islands.

At the centre of the research are pathogen-tested varieties of sweetpotato for use in improved Pacific farming systems. Some of these varieties originated in PNG and Solomon Islands and have been tested in field trials in the Philippines and China. These have helped refine the use of igloo-style screen houses in trials and field-testing of varieties in low or no-input systems.

CIP work in Cuba to breed varieties with slimmer stems and deeper roots that are harder for pests to reach has informed varietal choices. Field-testing of sweetpotato systems has also been undertaken in East Timor. Germplasm used in varietal testing in the project has come from CIP in Indonesia.

A survey conducted during the project to describe the seed-supply system in Solomon Islands has helped to develop baseline information. That evaluation was based on an earlier survey developed by CIP for use in eastern Africa, and then fine-tuned through CIP's headquarters in Peru.

The accumulation of knowledge through field trials, varietal breeding and experimentation provides an edge to research that ACIAR can utilise, and makes CIP an ideal organisation to lead the project. Rather than run the project through its Lima headquarters, the centre's Indonesia office is the hub of the project, providing opportunities for interactions with Indonesian scientists.

It is not just Indonesian scientists who benefit. Through the ACIAR-funded project, flow-on benefits accrue to other CIP research. In Solomon Islands, training in the use of NCM-ELISA kits (virus-detection techniques by serology), distributed by CIP, was conducted for staff from NARI-Bubia.

A visual inspection and serological survey for detecting viruses was conducted in Guadalcanal Plain and Malaita provinces in Solomon Islands. Training of collaborators on using NCM-ELISA kits was done in PNG. During these activities two viruses were detected in both countries, providing the first information on viruses infecting sweetpotato.

As a result of this information and the ACIAR project, CIP will increase its role in the region. The centre will supply the sweetpotato varieties that combine orange flesh and high dry-matter content from CIP to the Secretariat of the Pacific Community (SPC) based in Suva, Fiji, before introducing these to Solomon Islands and PNG. SPC will have these varieties available to disseminate elsewhere in the Pacific. This work is being done in association with HarvestPlus, a CGIAR initiative breeding better crops for improved nutrition, providing a further avenue for wider dissemination.

The lessons emerging from Farmer Field Schools in the project, based on past CIP experience in South-East Asia, will flow on to other projects in several Asian countries. This is the unseen aspect of ACIAR-funded research: the flow-on benefits that emerge from one project and become inputs into further research, which is then disseminated throughout the developing world through multilateral research projects and initiatives.

Orange-fleshed sweetpotato seed garden run by Peter Warito and a women farmers' group, Star Harbour, Makira, eastern Solomon Islands, May 2008

