

Sweetpotato Conservation Means Survival for Irian Jaya Families

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Recent experience in the eastern Indonesian province of Irian Jaya has shown just how crucial conservation of crop genetic diversity is for the sustainability and even the survival of farming populations. As farmers confront the devastating effects of the El Nino drought on the garden areas of Kurima, a village in Central Irian Jay, they talk about their hope of recovering at least some of their lost cultivars when volunteer roots sprout with the onset of the rains.

The desperation underlying this hope can only be appreciated when we understand just how important sweetpotato diversity is in Irianese culture. The crop is not only the staple food for the majority of the peoples living in the highlands, but it is also the main feed for pigs. Pig-raising is a central feature of the culture of many ethnic groups, underlying marriage arrangements, and acting as the currency of political power. A Swiss Technical Cooperation-supported project in Irian Jaya coordinated by CIP and Indonesian institutions has been trying to understand the genetic and cultural dimensions of sweetpotato diversity. Characterization data already show that cultivars grown in Irian Jaya cover a broad genetic range. Ethnobotanical and anthropological information indicate how the range of cultivars is shaped by the cultural needs of the population for different agronomic characteristics, different food and feed qualities, and for ritual purposes.

One immediate practical consequence of the project is that the Kurima farmers will not need to wait and hope for volunteer roots to sprout. Recovery of lost cultivars is immediately possible and more secure local maintenance of the diversity over the long term is a real possibility. How has this happened?

***Ex situ* backup**

An important part of the sweetpotato biodiversity project has been the collection and characterization of sweetpotato cultivars and the documentation of the indigenous knowledge associated with their cultivation and use. Collected materials have been maintained in a field genebank in Anggi, a highland site in western Irian Jaya, quite close to the Rootcrops Research Center of Cenderawasih University which is a key member of the project team. A duplicate set of accessions are also maintained *ex situ*, in a mid-altitude experiment station in Lembang, West Java, where researchers based in Java have been able to complete characterization and evaluation studies. Local knowledge of some of the cultivars, documented by the project team with UPWARD support, is available to help guide the researchers in their choice of accessions for evaluation.

In late 1997, the prolonged drought and loss of crops was starting to create famine in Irian Jaya. Urgent calls went out from government and non-government agencies for help in resuscitating local agriculture, particularly through the supply of much needed sweetpotato planting material. Kurima was one of the worst affected areas and they requested for planting materials which would produce as much food as possible in the shortest time. CIP plant breeder Il Gin Mok and his team selected 47 cultivars of the Kurima material on the basis of evaluation data already gathered. Four advanced clones from the sweetpotato breeding program were also included and

the Extension Service in Wamena sent the material for multiplication. Within the last few weeks, cuttings from the multiplication plot have been distributed to Kurima.

***In situ* conservation**

An important part of the sweetpotato biodiversity project in Irian Jaya is the exploration of *in situ* or community-based conservation to ensure local availability and dynamic local evolution of adapted material into the future. As with a similar experience in the Philippines, the long-term benefits of *ex situ* and on farm conservation become especially apparent to farmers during major natural disasters such as the Mount Pinatubo volcanic eruption. In Kurima, the effects of the drought on local diversity had a big impact on people's reactions to conservation. Those farmers with whom we first talked agreed immediately and enthusiastically to the idea of setting up a community conservation garden in the village, using the recuperated Kurima cultivars from Lembang as the first accessions.

Local R&D

After a village meeting supported the idea, villagers started immediately to clear a new site for the conservation, but also for pragmatic experimentation by local farmers together with representatives of regional research organizations and local extension offices. The cultivars from Kurima were evaluated for yield and earliness in a mid-altitude area of West Java. Do they perform the same in the highland conditions of Kurima? How will the advanced clones from the CIP's Sweetpotato Breeding Program perform under those conditions and how will local farmers evaluate them in relation to local cultivars? Finally, but very importantly, are the Kurima cultivars selected in Java on the basis of yield and earliness really the ones that farmers would like most to recover? What other lost cultivars would they like to recover and for what reasons? Are there other cultivars about which they are indifferent? Farmers have already indicated that they will continue to search their old gardens for volunteers to add to the garden. What will their response be to these chance finds?

Innovation

Answering these questions can help us contribute better to agricultural innovation in Irian Jaya. For example, our improved knowledge and understanding of sweetpotato diversity could provide an important contribution to research and development on the pig-raising systems. Not only is pig-raising central to the culture of Irian Jaya, it also offers great potential for improving the economic condition of households. Demand for pork is steadily increasing and improvements in the efficiency of the crop-livestock system could have a major impact on family welfare. Identifying best-bet local and exotic sweetpotato varieties for different kinds of feed is a central component of such an initiative, which we are currently pursuing.

Answering the questions can also offer an improved approach to crop conservation. We hope, for example, that based on farmers' assessments of lost and found cultivars we can identify a set of "dominant cultivars" covering the range of food and feed uses of sweetpotato in the locality. Based on similar work done by UPWARD in the Philippines, we would expect these dominant cultivars to capture a wide range of the available genetic diversity in the area, though that is an empirical question to be verified. These findings would then allow us to convert the majority of

accessions in *ex situ* genebanks to the more economical form of botanical seed leaving as genotypes a “core” collection that captures both genetic diversity and cultural salience.