INTRODUCTION
The 20th century began with a report from Java of a leaf blight disease of taro (Colocasia esculenta) caused by Phytophthora colocasiae (Raciborski 1900). Yield losses 100 years later vary from 25-50% in some areas of Oceania and Southeast Asia to more than 90% in others. Taro leaf blight arrived in the Samoan Archipelago in 1993, destroying most of the susceptible taro cultivars. At that time (Western) Samoa’s export market was valued at US$3.5 million and American Samoa produced 357,000 kg of taro corms. When at least five taro hybrids are ready for the field, agricultural extension agents select farmers from different climatic areas of the island(s) and invite them to a workshop. We discuss the goals of the project and agree upon a uniform method of cultivation and harvesting. Land Grant staff measure taro growth and harvest. Farmers are responsible for planting, raising, protecting, and harvesting the crop. Land Grant staff measure taro growth and development, plus leaf blight incidence and severity. After harvest, we evaluate each hybrid for horticultural and eating qualities. Farmer input weighs heavily in the overall evaluation and the decision whether or not to release a particular hybrid.

IMPORTING TARO HYBRIDS
American Samoa does not have a plant breeding program, so new material must come from off-island. Numerous programs in Southeast Asia and Oceania offer tested and untested taro breeding lines through the Secretariat of the Pacific Community’s Regional Germplasm Centre in Suva, Fiji. Our plant tissue culture laboratory has imported over 40 new hybrids to date from the Centre and is multiplying them for field and laboratory testing.

A Taro Evaluation Program for American Samoa
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FIELD EVALUATION PROGRAM
We have established a farmer participatory evaluation program that relies heavily on stakeholder assessments (Singh and others 2001). When at least five taro hybrids are ready for the field, agricultural extension agents select farmers from different climatic areas of the island(s) and invite them to a workshop. We discuss the goals of the project and agree upon a uniform method of cultivation and harvest. Farmers are responsible for planting, raising, protecting, and harvesting the crop. Land Grant staff measure taro growth and development, plus leaf blight incidence and severity. After harvest, we evaluate each hybrid for horticultural and eating qualities. Farmer input weighs heavily in the overall evaluation and the decision whether or not to release a particular hybrid.

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LEAF BIOASSAY
Plant breeding programs are a major commitment of resources for small countries and island nations. To help reduce these costs we developed a detached leaf bioassay, in this case to evaluate taro resistance to Phytophthora colocasiae. Most spore-producing pathogens can be evaluated using this method, but it is especially effective for calculating concentrations of swimming spores (Xu and Ko 1998). Spore concentrations are estimated by diluting inoculum until 1.0 microliter drops on a microscope slide contain about 5-10 spores. For taro inoculations, we adjust the pipette to deliver 50 zoospores per 6-8 microliters.

Whole leaves of colocasia-type taro are collected from the greenhouse or field. On large taro leaves 10 inoculations are made per leaf with a micropipette, fewer on smaller leaves. The drops of inoculum are covered with 20 microliters of molten water agar (35-50 C). The water agar holds the inoculum in place and protects the spores from drying. Inoculated leaves are placed on wet paper towels in plastic containers with snap-on lids. Lesion diameters are measured and compared daily for five days.

REFERENCES