



**Western SARE Program**

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## RENEWING POOR QUALITY SOILS

### Situation

A large portion of land in the northern and central portion of Guam is limestone with just barely 6-12 inches of topsoil, which has been left uncultivated and unproductive.

Laila Pierson, coordinator of this Western SARE Farmer/Rancher grant, learned as a young farmer in Ethiopia a method for growing bananas for a good harvest that can convert land of poor soil quality to more productive status.

The land-conversion technique involves digging beds up to 4 feet deep, 6 feet wide and 50 feet long, then filling the beds up to 2 feet deep with organic materials from around the farm, including trees, leaves, manure and soils. This is done just before the rainy season for the pit settle down and to store the moisture.

### Objectives

- Test in poor Guam soils a method used for centuries in Ethiopia – digging pits and filling them with organic debris – that can improve soils for growing crops like banana, taro and sweet potato
- Analyze the compost materials in the pit for nutrient content
- Conduct tissue analysis on banana, taro and sweet potato
- Demonstrate through field days how farmers in Guam and other Pacific islands can convert land of poor quality to more



Pierson plants a variety of cooking bananas 6 feet apart.



**Farmer/Rancher Grant**

**Project Number:** FW06-026

**Project Title:** Multi-Crops on Plant Beds on Guam

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*Western SARE, a USDA organization, funds grants for research and education that develop or promote some aspect of agricultural sustainability, which embraces*

- *profitable farms and ranches*
- *a healthy environment*
- *strong families and communities.*

*The Western Region, one of four SARE regions nationwide, is administered through Utah State University.*

**Western SARE:**  
<http://wsare.usu.edu>

**National SARE**  
[www.sare.org](http://www.sare.org)

productive status

- Craft and distribute publications showing the design and results to local farmers and farmers in the region

**Actions**

Four beds have been created and planted with bananas, taro and cassava. The plant beds are 4 feet deep, 6 feet wide and 50 feet long. A tarp was placed underneath before the pits were filled with organic material (the plants that were uprooted when the area was being prepared) along with sludge and selected soil.

Sweet potato were planted in between the plant beds when the taro and cassava plants reached a certain height.

Additional plant beds were prepared, and field days were organized and held when the plants were nearing production.

**Results**

Results from the project will be reported in early 2008.



Plants thrive in Pierson’s revitalized cropping beds..

**Potential Benefits**

Harvest coming from taro, sweet potato and bananas would bring more food and income to farms on the island. Greater supply of these local foods should lower the market price, enabling their purchase by local people.

An increase in the availability of these three staple foods can help to overcome the shift in the diet of Pacific islanders to rice and fatty foods, which has increased the incidence of diabetes, obesity and heart disease.

Positive results from this Western SARE grant may ignite new ideas in approaching how tracts of low-fertility, shallow soils can be put to the full benefit for the lessee or owner of these limestone-based farmlands.

This would encourage agricultural producers to look back at century-old practices that have sustained thousands of people, showing that old and proven management practices can be merged with new ideas.



Pierson evaluates the plants in her improved beds.