



Western SARE Program

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RAT PATROL WITH ELECTRIC FENCE

Situation

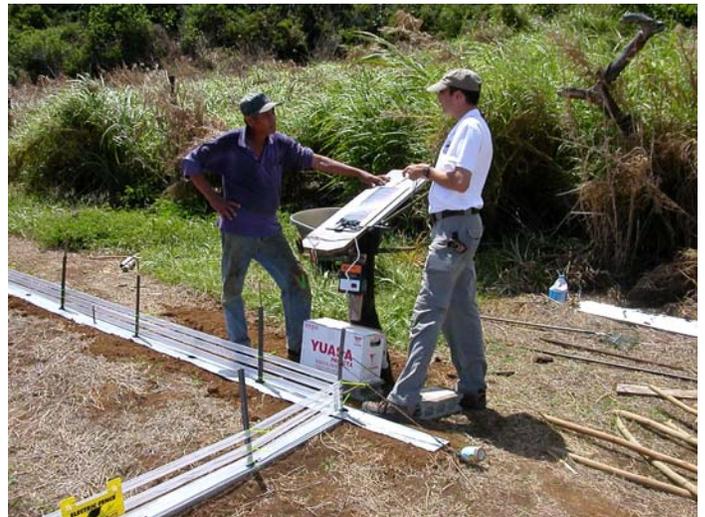
In the Commonwealth of the Northern Mariana Islands, three species of urban rats damage nearly every crop grown in the country. High-value crops like melons, sweet corn and pineapples are particularly vulnerable to rats. Lino Mendiola of Rota found that local rats had developed a taste for his expanding pineapple crops.

Standard rodent poisons are available at most agricultural retail outlets, but farmers find them expensive and ineffective as residential rats continue to enter farming areas. What's more, coconut crab, a land-based scavenger and historically and culturally important food species, eats poisoned rats and dies.

In addition to damage from rats, crops grown on exposed hillsides, including Mendiola's, suffer from wind and salt spray.



The fence is charge with a flexible solar panel.



Lino Mendiola and Scott Crockett with the electric rat control fence.

Objectives

- Establish a method for using an electric fence to control the rats that cause damage to pineapples
- Plant a double row of trees as a windbreak, da'ok (*Callophyllum inophyllum*) and *Glicicidia sepium*. (Powerful Typhoon Chaba in August 2004 interrupted the windbreak project.)

Actions

Mendiola built an electric rat-protection fence using materials readily available for purchase on the Internet. Scott Crockett, district conservationist with the Natural Resources Conservation Service, designed the fence:

- The electrified tape was 1.5-inch nylon/wire typi-

cally used for horse fences

- Aluminum building studs were bent flat along the ground under the tape
- The studs were staked

Farmer/Rancher Grant

Project Number: FW03-017

Project Title: Rat Control in Pineapples on Rota

Project Coordinator:

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Technical Advisor:

Scott Crockett
 Soil Conservationist
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SARE Grant: \$5,569



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.

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with 24-inch rebar posts; PVC pipe was slipped over the posts as insulation

- Zip ties held the tape to the posts
- The electrified tape was spaced at about half an inch – close enough to keep a rat from crawling through, but far enough to prevent sparks from jumping the gap



- The fence, 14-inches tall when finished, was electrified with a small cattle fence energizer powered by a car battery and charged by a flexible solar panel
- Aluminum building studs were bent flat along the ground under the electric tape to prevent weeds from growing up.

After the fence was up and running, poison bait was placed inside the fence to kill any remaining rats.

Results

The flattened metal studs created a contact pad and prevented weeds from growing up and touching the fence. Rats, which could jump the fence, won't jump where they cannot see, so they try to climb over. As soon as they touch the fence, they receive

a 7,000-volt jolt. If that doesn't kill them, they won't try again. Clever rats could dig under the fence, but the poison bait inside gets them.

The project was a tremendous success. Mendiola went from never harvesting a ripe pineapple before the fence was built to zero rat damage after the fence. The entire set up cost under \$500, not counting labor, which Mendiola did mostly himself.

Potential Benefits

The technology is cheap, simple and effective and will work for any rat-prone crop, such as corn, melons, sweet potato and pineapple. The fence is light weight and can be rolled up in anticipation of a typhoon.

Agricultural suppliers are now retailing the appropriate materials as a result of the successful model provided by this grant



The finished electric fence, 14 inches high, cost less than \$5,000.