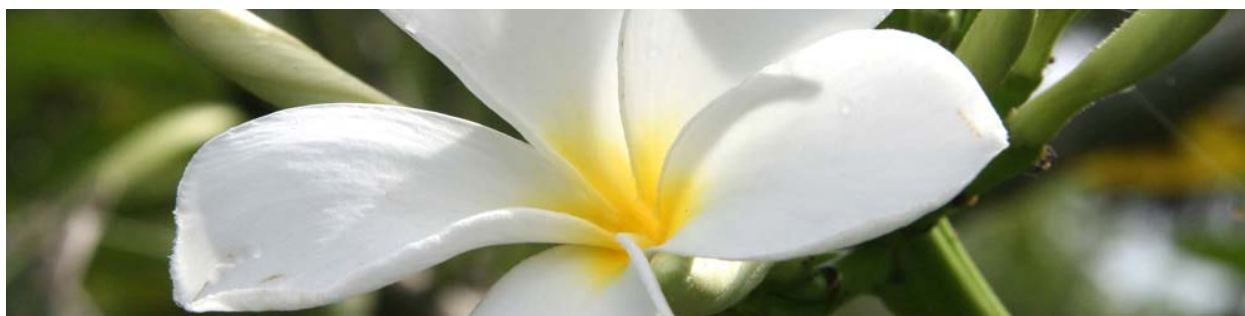




Western SARE

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HAWAI'I FRUIT IS IN THE BAG

Situation

Asian farmers have been covering their fruit for hundreds of years to protect its appearance and to increase the length of time the fruit is on the tree, which makes it sweeter. The bags, which also guard against pests, come in a variety of sizes and colors with differing light permeability, wax coverings and chemical impregnations. They typically have a small wire at the top to ease wrapping and slits in the bottom to drain rainwater.

Using the experience of the Asian farmers as a model, the Western SARE project team wanted to assess whether using bags to cover Hawaii'i fruit could produce similar results. Success could increase the volume of marketable fruits and may expand the types of fruit that could be marketed beyond those traditionally produced.

Objectives

1. Investigate the effects of using protective bags on tropical fruit as a means of increasing production and quality and developing new markets for Hawaii'i
2. Assess the value of using the covers as an alternative to chemical treatment
3. Measure the economic impact through market development
4. Disseminate results to growers in the islands



Actions

Members of the West Hawaii'i Chapter of the Hawaii'i Tropical Fruit Growers, the Kona Pacific Farmers Cooperative and Kona Young Farmers were engaged in several tests to determine the best time for bagging.

The main fruits bagged included loquat, white sapote, mango, lychee, figs and rambutan. Some collaborators



At left, an abiu tree with individual fruits bagged. Above, the results of bagging show a virtually unblemished abiu.

also bagged abiu, pineapple, strawberry guava, tomato, zucchini and eggplant.

The bags used in the project, made in Nigata, Japan, are typically used to cover apples, Asian pear, loquat, peaches, grapes and mango

...continued on page 2

Farmer/Rancher Grant

Project Number: FW02-008

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SARE Grant: \$12,850



Wax-coated bags allow 46% light transmission.



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

HAWAI'I FRUIT IS IN THE BAG

to control ripening time, achieve the desired color and prevent pests and rain-borne viruses.

Results

In all cases, the bags effectively controlled pests. The bags also increased fruit value by improving coloration and lengthening tree-hanging time for a higher sugar content and extending the growing season.

A surprising result was reduced labor, with the bags' success dramatically reducing time spent culling and inspecting harvested fruit.

The bags successfully protected fruit not normally found in local markets, usually because of insect or bird damage, expanding or opening markets for loquat, white sapote and abiu.

The volume of marketable lychee increased when bagged as did its price per pound. Bagged lychee fetched \$3.50 a pound compared with \$2.75 a pound for unbagged fruit. The additional profit per 1,000 lychee fruits harvested was estimated at \$44 owing to increased quantity, \$24 because of increased quality and \$12 from labor savings. Subtract \$5 for the bags, and the extra profit from bagging comes to



The 'octopus' hung in trees helps to discourage birds.



Members of the West Hawai'i Chapter of the Hawai'i Tropical Fruit Growers participate in bagging time trials.

\$75 per 1,000 lychees, or \$3,750 per acre.

Bagging mango, figs and guava also proved beneficial, but more testing is needed to determine the best bags. Tests on tomato, pineapple and cucumber are encouraging, but more testing is clearly needed before recommendations can be made.

Potential Benefits

Results from this fruit-wrapping project show clear benefits, especially economic. The time saved in the culling and inspecting process outweighs the time it takes to bag the fruit, and the difference in quality is both visible and marketable.

"We believe that as farmers adopt the use of the protective bags, the value

of the crop will increase both from quality and quantity," says project coordinator Ken Love. "Use of the bags enables farmers to increase production while staying chemical- and pesticide-free in what they grow and bring to market, thus promoting good stewardship of the land."



Lychee protected with bags, above, compared with unprotected lychee, at left.