Effect of Pesticides vs. Traditional Treatments for Banana Scab Moth in American Samoa

Final Report for FW99-037

Project Type: Farmer/Rancher
Funds awarded in 1999: $1,600.00
Projected End Date: 12/31/2004
Region: Western
State: American Samoa
Principal Investigator:
Rosaline Liu

Project Information

Abstract:

OBJECTIVES
The research was designed to determine whether traditional Samoan treatments for controlling banana scab moth are as effective as pesticide treatments.

ABSTRACT
In American Samoa, where bananas serve as a dietary staple, banana growers wrestle with the banana scab moth, considered by some to be their greatest problem. Damage to untreated bunches can cause losses of 10 to 50%.

In the past, American Samoans accepted the damage. But that appears to be changing as demand grows for more costly, unblemished imported fruit and as local growers' biggest market, the American Samoan Government School Lunch Program, now prefers undamaged fruit.

The female moth lays her eggs on the bracts of the emerging inflorescence. If left untreated before the inflorescence bends toward the ground, fruit damage from feeding larvae is likely. Countries producing bananas for export typically inject the inflorescence with pesticide as soon as it emerges from the pseudostem. But in American Samoa, where few have injectors, growers usually wait until the inflorescence droops before treating, which results in scabbing, especially on the older hands.

Two sites on the main American Samoa island of Tutuila were selected for the trials, a 20-acre plantation in the coastal village of Vaitogi with 12 acres planted to the Cavendish-type cultivar, Williams, and a 10-acre plantation in the inland village of Malaeloa planted to the same cultivar. Before the trials, bananas at Vaitogi had been treated with trichlorfon, and those at Malaeloa had been treated with primiphosmethyl. Both growers were satisfied with control levels.

For the trial, eight treatments were selected for testing with 15 replicates of each.

1. Water. Bracts are removed and the fruit sprayed with water.
2. Tridex. The outside of the bracts is sprayed with trichlorfon (2 oz/gal).
3. Bracts. Only the bracts are removed.

4. Ashes. The bracts are removed and the fruit dusted with ashes.
5. Tridex inject. Trichlorfon is injected while the inflorescence remains vertical.
6. Control. No treatment.
7. Dust. Bracts are removed and the fruit dusted with primiphosmethyl.
8. Tridex 2. Bracts are removed and the fruit sprayed with trichlorfon.

SPECIFIC RESULTS
This project showed that traditional Samoan treatments for banana scab moth are not as effective as pesticides. Of the traditional treatments, bunches treated with water had less damage than those treated by bract removal only, dusting with ashes and no treatment, although the differences were not significant.

The most effective treatments were spraying trichlorfon directly on the developing fruits and dusting them with primiphosmethyl, treatments previously used by the two growers in the trial. However, most hands still showed light scabbing, making them unsuitable for most export markets.

Injecting trichlorfon directly into an emerging inflorescence, the treatment of choice for many banana exporters, did not prevent scab moth damage, although those results may have been skewed by improper use of the injector.

None of the treatments had any appreciable impact on the number of hands per bunch. However, production can be affected by several factors, including variety, plant vigor and disease. Scab moth damage does not appear to reduce the number of hands, although growers who remove severely scabbed hands may decrease the number of marketable hands per bunch.

POTENTIAL BENEFITS
The research provides banana growers with information that will help them improve their decisions when it comes to treating for banana scab moth.

FARMER ADOPTION AND DIRECT IMPACT
After the trial, the grower from Malaeloa changed from primiphosmethyl to the water treatment for banana scab moth. The Vaitogi grower, meanwhile, remained satisfied with spraying the trichlorfon directly onto the fruit.

FUTURE RECOMMENDATIONS OR NEW HYPOTHESES
Little is known of the banana scab moth's life cycle or distribution in American Samoa. Fred Brooks, the SARE-funded project's technical advisor, along with the land-grant entomologist, have submitted a plan to expand these experiments. An injector will be used to apply a liquid suspension of Bacillus thuringiensis and trichlorfon insecticide, and 12-month survey will be conducted on Tutuila to estimate the scab moth's distribution and the pattern of feeding damage.

DISSEMINATION OF FINDINGS
Project coordinator Roseline Liu presented the tentative results of the trial to commercial growers during their monthly meeting. Also, a color brochure was produced for distribution through the land-grant extension service.

PRODUCER INVOLVEMENT
Two producers provided the banana plants on which the trials were conducted.

Research

Participation Summary

US Department of Agriculture

This site is maintained by SARE Outreach for the SARE program and is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award No. 2019-38640-29881. SARE Outreach operates under cooperative agreements with the University of Maryland to develop and disseminate information about sustainable agriculture. USDA is an equal opportunity provider and employer.
