IPM Implementation for Animal Agriculture

“Natural Farming” incorporates a maintenance-free green waste bedding system, which eliminates the need for manure handling; as a result, labor requirements and water usage are much lower than deep-litter or concrete wash-down facilities. Monitoring at nine “Natural Farming” swine operations and 23 poultry operations in the state indicate that generation of odor and flies were well below “nuisance” levels, and waste runoff or seepage were non-existent. In 2011, four new piggeries using “Natural Farming” waste management concepts from Korea were built in Hawai‘i County, ranging from backyard operations with one to two sows, to a family farm raising 4 sows, with capacity for up to 10 sows, and finally to the expansion of a commercial herd of 50 sows.

Extension agent Michael DuPonte has also assisted adoption of “Natural Farming” technology to poultry production. Two more stand-alone poultry housing structures were constructed in eastern areas of Hawai‘i County.

IMPACTS

ORNAMENTAL PLANT IPM

In the past three years, since the development of a mobile, large-scale shower treatment facility, more than 73,000 potted plants (estimated $3.6 million) were treated, with nearly all species tolerating hot water well, and nearly 2,400 coqui frogs (adults, juveniles, egg clutches), 165 arthropods, and numerous slugs, snails, lizards, and worms were killed and removed by the treatment, preventing potential pest interceptions by receiving ports in the US and Guam.

The four cooperating nurseries demonstrated successful integration of hot water as a quarantine treatment for potted ornamentals just prior to shipping for large-scale commercial production systems.

TOP: Construction of a large capacity (50 sows) pig facility using “Natural Farming: concepts

BOTTOM: Two types of poultry housing that incorporate “Natural Farming: concepts

IPM for Specialty Crops

Nurseries shipping ornamental potted plants out of Hawai‘i were encouraged to use hot water for disinfestation of coqui frogs (Eleutherodactylus coqui), nettle caterpillars (Darna pallivitta), and little fire ants (Wasmannia auropunctata) as part of a systems approach to quarantine pest management. Dr Arnold Hara and his staff trained plant nursery workers and Hawai‘i Department of Agriculture inspectors and staff to operate a mobile hot water shower system. Short, multi-session (2-4 hrs) training over two to three days appeared to be the most effective for knowledge transfer and retention.

A pictorial manual was produced to supplement training, especially for those operators not proficient in English. Hours and extent of training were documented as assurance to both shippers and HDOA that the heat treatments were being implemented consistently for optimal efficacy against target pests.

SEMINARS FOR GROWERS

CPS Series of Seminars for Horticultural Industry:

“Insect Identification”

“Controlling Spiraling Whitefly in the Landscape”

“Systemic Insecticides, Insect Growth Regulators, and Biological Controls against Ornamental Pests in Hawai‘i”

“California and Hawai‘i Quarantine Issues”

“Biological Control, Systemic Insecticides, and Insect Growth Regulators against Landscape Pests in Hawai‘i”

“Invasive Species: Impact and Control”

“Insect Identification and Control: The Good and the Bad”

All presentations can be viewed at: http://www.ctahr.hawaii.edu/haraa/grower.asp

Eight HDOA inspectors and 8 individuals representing 4 East Hawai‘i nurseries ARE currently operating the hot water shower and can provide cross-training to others at their respective facilities.
Diamondback moth resistance management

**IPM strategies have helped to prolong the effectiveness of low-risk, environmentally sound insecticides in all counties.**

**VEGETABLE CROP IPM**

The Area-wide Fruit Fly Suppression Program, in collaboration with USDA ARS and Hawai‘i Department of Agriculture, conducted 93 outreach education activities in all counties of the state, through displays at county and farm fairs, agricultural awareness days, and farmers markets, providing DVDs to home gardeners, and training Master Gardeners in fruit fly suppression.

Nearly 2,700 home gardeners and commercial growers have been provided with information on fruit flies, including identification, biology, and management strategies.

The Diamondback Moth (DBM) Management Program continues to use IRAC (Insecticide Resistance and mode of Action Classification) to schedule insecticide rotation in monthly spray windows.

Extension agents Robin Shimabuku and Randall Hamasaki sampled and screened DBM populations for resistance using leaf disc bioassays on progeny (larvae) of collected pupae. Five educational workshops/field days were conducted in Maui County (total of 54 attendees).

Workshops were held in \( n \) counties, reaching 1,177 growers. Immigrant Farmer Outreach workshops were conducted in all counties, reaching 1,177 growers.

Immigrant Farmer Outreach workshops were the result of a collaborative effort between University of Hawai‘i extension, USDA Farm Services Agency, O‘ahu Conservation and Resource, Hawai‘i Department of Agriculture, and Hawai‘i Farm Bureau. Problems, such as crop nutrition, and pest and disease identification and control were the most pressing issues with which participants wanted assistance. Spray coverage and nozzle technology and the diamondback moth insecticide resistance management program were among the IPM strategies taught to crucifer growers. Many farmers with limited English proficiency have indicated in post-workshop evaluations that they prefer one-on-one or small group sessions that provide a non-threatening environment, a personalized pace, and a higher level of confidentiality.

To that end, 224 farm visits were conducted through direct and referral contacts and were scheduled around workshop dates. An interpreter was used as needed and translated training materials were introduced during these sessions. Personalized, hands-on instruction was provided to address nearly all concerns during these and follow-up visits.

For more information:
http://www.ctahr.hawaii.edu/life/ Site/LIFE_Overview.html

**HIGH-RISK MANAGEMENT TRAINING**

In collaboration with Local Immigrant Farmer Education Program (LIFE), extension agent Jari Sugano conducted a risk management training program for developing pesticide management recommendations. Participants wanted assistance. Spray coverage and nozzle technology and the diamondback moth insecticide resistance management program were among the IPM strategies taught to crucifer growers.

Many farmers with limited English proficiency have indicated in post-workshop evaluations that they prefer one-on-one or small group sessions that provide a non-threatening environment, a personalized pace, and a higher level of confidentiality.

These small changes have improved their operations’ sustainability and economic viability.

For more information:
http://www.ctahr.hawaii.edu/life/ Site/LIFE_Overview.html

**PUBLICATIONS**


**IMPACTS**

VEGETABLE CROP IPM

Nineteen Master Gardeners throughout the state are trained in area-wide fruit fly suppression strategies, and are able to conduct workshops in their respective counties. Workshop participants indicate an increase in knowledge in fruit fly identification and biology, and their ability to apply suppression techniques. Commercial growers who have been practicing these techniques for several years have made adaptations to better suit their respective operations, resulting in reduced infestation rates, crop losses, and reliance on organophosphate insecticides with the use of GAP-129 protein bait, and ultimately increased farm revenue.

Diamondback moth populations were very low in Maui and Hawai‘i Counties through 2011, which may be an indication of the resistance management program’s effectiveness, and more importantly, the commitment of vegetable growers on the majority of acres in each county to adopt the spray rotation schedule.

Ninety-two percent of participants indicated that concepts presented through demonstration at the workshops were sufficiently compelling to consider adopting one or more techniques into their respective operations.