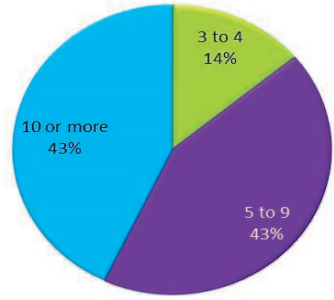


IPM for Consumers & Urban Environments

Workshop evaluations of “Alien Invaders of the Worst Kind” presentations conducted for program development and improvement were summarized (response scale: 1= Poor, 2=Fair, 3=Good, and 4=Excellent), with mean response of “Excellent”. All attendees (100%) perceived increased knowledge and understanding of the topics presented. Participants felt the methods conveyed in this presentation would assist them to better manage risk from insect and other pests. Evaluations indicated that participants were exposed to at least 3 to 4 new concepts, with the majority (86%) learning 5 or more IPM strategies that were applicable to their operations (see graph). Future

Participant Self-Assessment: Number of Applicable IPM Strategies Learned from Training



The community discussed means of cooperating to monitor, purchase product, and treat for little fire ants.

workshops were requested on more pest and disease control, crop insurance, new varieties, crops and products, record keeping, fertilization, and marketing and adding value. The presentation “Hawaii’s Little Fire Ant Crisis” resulted in 12 confirmation samples (7 at the event, 5 during follow-up telephone and walk-in visits). ✍

Risk Management Hawaii (RMH) project’s “Farm Doctor” program (R. Hamasaki) is a valuable resource to novice farmers and established farmers alike. Although this is often a reactive, one-on-one approach, the client presents a very “teachable moment” and tends to be more responsive to adopting recommendations.



Farmers workshop, Kamuela, HI

IMPACT Consumers and urban gardeners are often the first to encounter new plant pests in the state. Extension exposure ensures that they know to whom to report pest sightings, how and where to submit samples for ID, and are confident that appropriate action will be taken.

The IPM Coordinator and staff participated in several training sessions for Master Gardeners and provided hands-on displays at community events to bring awareness to IPM in urban environments:

“Alien Invaders of the Worst Kind”, Master Gardener Training (Mar 2014, Hilo, HI)

“Alien Invaders of the Worst Kind - A Systems Approach to Pest Management” (Mar 2014, Kamuela, HI)

“Pest Alerts: Little Fire Ants, Coconut Rhinoceros Beetle, Coqui Frogs” and “Sending Pest-free Flowers to the Mainland”, Big Island Association of Nurserymen Annual Plant Sale & Show (Apr 2014, Hilo, HI)

“Hawaii’s Little Fire Ant Crisis”, community presentation (Apr 2014; Hilo, HI).



A new powdery mildew disease of rhododendrons on Hawaii island reported by a home gardener (R Hamasaki)

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IPM REPORT

HAWAI‘I IPM



Drive-through hot water shower facility for potted ornamentals, Hilo, HI

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OBJECTIVE

The University of Hawai‘i Extension IPM Coordination and Support (UH EIPM CS) Program will provide support for IPM education and technology transfer in two emphasis areas that were identified by extension personnel and stakeholders for their potential to generate the most IPM adoption, subsequent impact on reduction of risks to human health and the environment, and to be especially applicable to other areas of the Pacific Basin:

AREAS OF EMPHASIS

IPM Implementation for Specialty Crops

and

IPM Training for Consumers & Urban Environments

IPM for Specialty Crops

ORNAMENTALS

Hawai‘i nurseries shipping ornamental potted plants out-of-state continued to be encouraged to use hot water on plants for disinfestation of coqui frogs (*Eleutherodactylus coqui*), nettle caterpillar (*Darna pallivitta*), and little fire ants (*Wasmannia auropunctata*) as part of a systems approach to quarantine pest management. Hawai‘i Department of Agriculture inspectors and staff monitor hot water treatments by nurseries in Hawai‘i County.

In the past year, 96,000 potted plants (estimated \$4.7 million) were hot water-showered prior to shipment. Nearly all 49 species and cultivars tolerated the heat well; 2,968 coqui frogs, and numerous arthropods, slugs, snails, and lizards were killed and removed by the treatment. ✍

IMPACT Hot water on potted ornamental plants continues to be validated as a practical, cost-effective IPM strategy available to large-scale commercial growers, to prevent potential pest interceptions by receiving ports in the US and Guam.

The IPM Coordinator and staff participated in several seminars for growers with insect pest management presentations: (>400 attendees).

Presentations can be viewed at <http://www.ctahr.hawaii.edu/haraa/grower.asp>

“Maintaining our Ornamental Export Markets”, Sustainable and Organic Agriculture Program’s Extension and Research Update (Sep 2013, Honolulu, O‘ahu).

“Common Pests: ‘Green’ Solutions”, Hawaii Export Nursery Association Horticultural Conference (Jul 2013, Kohala, Hawai‘i)

“Insect Pests”, Landscape Conference (August 6, 2013, Lihu‘e, Kaua‘i)

“Coconut Rhinoceros Beetle, A Major Threat to Hawaii’s Coconut and Palm Trees”, (Mar 2014, Kahului, Maui)

“Old, New, and Expected Landscape Pests in Hawai‘i”, Maui Association of Landscape Professionals (Mar 2014, Kahului, Maui)



UNIVERSITY
of HAWAI‘I
MĀNOA

Extension Agents Jari Sugano (O`ahu County) and Randall Hamasaki (Hawai`i County) planned and implemented the following workshops, field days, and programs **to promote IPM adoption by commercial and home garden growers of vegetables** in the state:

Educational workshops targeting Chinese, Thai, and Laotian basil growers, with translators: “Farmers Resource Workshop: Chemical Sprayer Calibration and Chemical Mixing Demonstration (O`ahu: Apr 2013, Kahuku and Aug 2013, Kunia; Sep 2013, Lihu`e, Kaua`i)

“Waianae Basil Growers’ Top Issues of 2013”, (Oct 2013, Wai`anae, O`ahu)

“Diamondback Moth Insecticide Resistance Management Program”, “2013 Insecticide Rotation Calendar”, and DBM field sampling and laboratory resistance screening (Oct 2013)

“Spray Coverage and Sprayer Calibration” (Jun 2013, Kula, Maui)

Train-the-Trainer session “1/128th spray calibration method”, Sustainable and Organic Agriculture Program’s Extension and Research Update (Sept 2013, Honolulu, O`ahu).

IPM PUBLICATIONS

Uyeda, J., J. Sugano, S. Fukuda, M. Kawate, R. Shimabuku, and K.-H. Wang. 2013. Sprayer calibration using the 1/128th method for handheld spray gun systems. CTAHR Cooperative Extension Service PRRE-7. <http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PRRE-7.pdf>

Uyeda, J., J. Sugano, S. Fukuda, M. Kawate, R. Shimabuku, and K.-H. Wang. 2013. Sprayer calibration using the 1/128th method for boom spray systems. CTAHR Cooperative Extension Service PRRE-8. <http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PRRE-8.pdf>

VEGETABLES and TROPICAL FRUITS AND NUTS

Educational sessions for **basil growers** in Hawaii covered common pests, the safe use of pesticides registered for basil, Hawaii Department of Agriculture’s pesticide inspection process, and the Hawaii Department of Health’s commodity sampling program. Farm visits were coordinated with Chinese language translators to work one-on-one with growers on crop production, pesticide use and safety. J. Sugano’s team effectively communicated management of new and existing pathogens with vegetable growers. ✂

See ‘Local Immigrant Farmers Education’ translated training materials



http://www.ctahr.hawaii.edu/life/Site/Training_Materials.html

IMPACT: Workshop participants developed the “2013 Insecticide Rotation Calendar” for O`ahu and Hawai`i counties. Crucifer crop growers rotated insecticides from 6 modes of action groups in a coordinated area-wide basis to reduce the risk of resistance in DBM populations. Bioassays in October 2013 in Hawaii county indicated preserved effectiveness of the insecticides, enabling growers to achieve their yield goals. Approximately 50% of acres in brassica production (7 farms) are participating in this area-wide program on O`ahu, and approximately 457 acres in Hawaii county (7 farms).

A series of workshops emphasized the importance of properly applying chemicals to edible and non-edible crops. Worker protection standards and personal protection equipment were discussed to ensure farm employees are knowledgeable about a safe working environment. J. Sugano developed publications that simplified spray equipment calibration using the 1/128th spray calibration method for both booms and hand-held spray guns for better pesticide spray coverage and accuracy. Lay terms and photos were used to communicate the concepts and step procedures to farm employees with varying levels of English proficiency. In September 2013, a Train-the-Trainer educational event conducted in coordination with the Sustainable and Organic Agriculture Program (SOAP) and Western SARE program, provided nearly 30 extension educators hands-on experience with the 1/128th spray calibration method, a fast, easy way to compute the gallon-per-acre rate (GPA), to pass onto their respective clientele. ✂



Watch “Mistblower Calibration using 1/128th Method” (J Sugano)

http://www.youtube.com/watch?v=y_Lrx2QmABc



Hawaii Dept of Agriculture

UH extension staff continue to cultivate trust with and among growers, and perpetuate participation in educational activities.

The Diamondback made to the insecticide rotation. Moth (DBM, *Plutella xylostella*) Insecticide Resistance Management Program was developed by UH CTAHR for growers to effectively manage DBM by rotating insecticide chemistries on an area-wide basis. Extension faculty Robin Shimabuku, Dr. Ronald Mau (emeritus), Ming Yi Chou, Randy Hamasaki, Jari Sugano, Steve Fukuda (emeritus), Jensen Uyeda and Sharon Motomura worked with the crucifer growers in their counties to provide grower education and conduct periodic field sampling for laboratory resistance screening. At workshops, growers learned how to identify stages of the DBM life cycle and damage symptoms (*pictured, right*). Growers also learned about host plant resistance, insecticide resistance, spray concentration and coverage, and effective pesticides available. Based on resistance screening in October 2013, adjustments were made to the rotation calendar. ✂



R Hamasaki

IMPACT: Vegetable growers use IPM strategies for weed control, such as placing a portable piece of clear plastic on a plowed, irrigated field to increase the depth of solar heat penetration causing weed rhizomes sprout and be more easily accessed with herbicides. By implementing this strategy and also properly calibrating their spray equipment, growers have decreased frequency of herbicide applications and volume of herbicides applied.

Macadamia felted coccid (MFC, *Eriococcus ironsidei*) was first recorded in Hawai`i in 2005. Similar to mealybugs and scales, MFC feed on plant sap by inserting their needle-like mouthpart into plant tissue, and also secrete honeydew that serve as food for other insects and disease organisms. Last year, MFC damaged 500,000 pounds of nuts at the state’s largest macadamia nut grower. Current management of MFC involves spraying with horticultural oils. Some oils are compatible with certified organic production and are mild on beneficial insects that help to reduce MFC populations. Growers learned to look for leaf yellowing and dieback in tree canopies (*pictured, left*), stunted or distorted new growth, and masses of white scale-like insects on trunks and leaves, and to prevent the spread of MFC by monitoring plants being moved in and out of orchards. ✂

IMPACT: In collaboration with the University of Hawai`i, John A. Burns School of Medicine (JABSOM), extension agent Glenn Teves, Hawaii Department of Agriculture pesticide educators, agricultural chemical representatives, and the Local Immigrant Farmer Education (LIFE) program, Jari Sugano and her team worked with a group of Wai`anae basil farmers to address priority crop production and human safety issues. As a result of intensive training and recognition of government and private sector resources, these farmers were able to control armyworm damage to their crops safely by selecting appropriate products, learning to decipher pesticide labels, and applying according to label with proper personal protection equipment.



R Hamasaki

Vegetable farmers in Hawai`i county indicated an emerging weed problem. Extension agent R Hamasaki submitted samples that were identified as yellow nutsedge, *Cyperus esculentus*, then proceeded with a workshop and demonstration for affected farms. Information on the weed’s biology and chemical and cultural management strategies were covered by Weed Specialist, Dr. Joe DeFrank. A video of the workshop is posted on-line for accessibility by others encountering this weed. ✂

Young lettuce seedlings overgrown by yellow nutsedge.

The “Easy as 1-2-3” Fruit Fly Suppression in Hawaii program promotes an environmentally friendly, cost-effective technology that, when used in an “area-wide” approach, can increase economic benefits to growers, the community and the state of Hawaii through expanded opportunities in diversified agriculture. Participants signed on as cooperators and were trained in using the program’s three-pronged approach (field sanitation, an effective protein bait, and trapping) to manage fruit flies in more than 30 fruit and vegetable crops.

IMPACT: Thirty cooperators representing 172 acres practiced the “Easy as 1-2-3” Fruit Fly Suppression in Hawaii program during the past year. As a result of training, the participants **were able to make informed decisions** for managing fruit flies in their farm or garden. **Farmers who have been following these practices for several years attest to decreased pest infestation and crop damage levels.**



HAW-FLYPM
Hawaii Areawide Fruit Fly Pest Management Program
A Collaborative Project Between the UH CES, USDA ARS, and HDOA