

Our Goal

The goal of the Hawaii Area Wide Fruit Fly Integrated Pest Management Program (HAW-FLYPM) is to develop and implement environmentally acceptable, biologically based, sustainable pest management strategies that reduce use of organophosphate and carbamate insecticides while suppressing fruit flies to economically manageable levels for the benefit of Hawaii.

Hawaii Area-Wide Fruit Fly Integrated Pest Management Program will:

- Promote a sustainable suppression program utilizing an "area-wide" approach to managing fruit flies.
- Introduce environmentally acceptable, cost-effective technologies that address grower needs.
- Increase community involvement in educational programs supported by USDA-ARS, UH-CES, and HDOA.
- Increase economic benefits to growers, the community, and the state through expanded opportunities in diversified agriculture.

Components of the HAW-FLYPM

Population Monitoring

Baseline Trapping
Grid Trapping
Host Mapping and Infestation Monitoring

Suppression Techniques

Field Sanitation
Male Annihilation
Protein Bait Applications
Biological Controls

For more information, contact:
www.extento.hawaii.edu/fruitfly



Roger Vargas / Eric Jang
United States Dept. of Agriculture
Agricultural Research Service
P.O. Box 4459
Hilo, Hawaii 96720
(808) 959-4329 / (808) 959-4340
E-mail: rvargas@pbarc.ars.usda.gov
ejang@pbarc.ars.usda.gov



Ronald Mau
University of Hawaii at Manoa
College of Tropical Agriculture and Human Resources
Dept. of Plant and Environmental Protection Sciences
3050 Maile Way, Gilmore 611
Honolulu, HI 96822
(808) 956-7063
E-mail: maur@ctahr.hawaii.edu



Lyle Wong
Hawaii Department of Agriculture
Division of Plant Industry
P.O. Box 22159
Honolulu, HI 96823
(808) 973-9560
E-mail: lwongpi@yahoo.com

HAW-FLYPM

Hawaii Area-Wide Fruit Fly Integrated Pest Management

The HAW-FLYPM program integrates cultural, chemical, and biological control measures to suppress and maintain pest populations below economic injury levels.

Photo credit:
Agricultural Research Service, USDA
UH-CTAHR

Production:
Publications and Information Office, UH-CTAHR

9/02 10M

HAW-FLYPM

Hawaii Area-Wide Fruit Fly Integrated Pest Management



Improving Hawaii's Agriculture Through Research, Education, and Innovation

A USDA/Agricultural Research Service-funded partnership with the University of Hawaii College of Tropical Agriculture and Human Resources Cooperative Extension Service and the Hawaii Department of Agriculture

Population Monitoring

Baseline Trapping: Male lures and food-based attractants are used to monitor fluctuations in populations of the four species of economic importance in and around agricultural cropping areas throughout the state.



Grid Trapping: Kamuela (Big Island), Kula (Maui), and central Oahu were identified for further trapping in a grid which consists of the target agricultural and surrounding areas.



Male lure traps are placed in every square kilometer to identify the fluctuation in populations within the 40–50 sq. kilometer grid. Flies are collected identified to species and recorded in the HAW-FLYPM database.

Host Mapping and Infestation Monitoring:

Wild and cultivated host plants of fruit flies within the grid will be identified and mapped using GPS/GIS. Samples of host material within the grid will be collected and held to evaluate relative infestation levels throughout the grid area.



Economically Important Fruit Flies



Melon Fly

Hosts crops include squash, cucumber, melon, tomato, pumpkin, guava, papaya, cowpea, string bean, lima bean, bitter melon, strawberry and guava.



Oriental Fruit Fly

Host crops include guava, mango, papaya, cherimoya, breadfruit, loquat, peppers, tomato, citrus, star apple, nectarine and persimmon.



Mediterranean Fruit Fly

Host crops include peach, nectarine, loquat, citrus, coffee, guava, eggplant, peppers, tomato, papaya, cherimoya, mango, persimmon, mountain apple and poha.



Solanaceous Fruit Fly

Host crops include peppers, tomato, eggplant, poha, cucumber, ipu, wax gourd, Jerusalem cherry, popolo, Sodom apple, and turkey berry.

Fruit Fly Suppression Tactics

Field Sanitation: Removing infested fruit from the field by placing damaged or rotten fruit in



bins, barrels, plastic bags, deep pits, or under a mesh material can reduce fruit fly populations.

Male Annihilation: Mass-trapping with male lures such as methyl eugenol or cue lure with an approved killing agent is used within the grid to provide "area-wide" suppression. Attractants can be applied in traps on fiberboard blocks or in a gel formulation and maintain their effectiveness for up to several months.

Protein Bait Applications: Attractant-based protein bait sprays utilizing environmentally safe toxicants will be used at low volumes in growing areas and border crops to further reduce fruit fly populations in economically important crops.

Biological Controls: Male-only sterile fly releases and augmentative releases of natural enemies (parasitoids) provide another method



for maintaining fruit fly populations at or below economically acceptable threshold levels. Biological controls work best in ecologically

balanced agro ecosystems, which the HAW-FLYPM program will promote.