



Area-Wide Integrated Pest Management Framework Components:

- Population Monitoring
- Field Sanitation
- Protein Bait
- Male Annihilation
- Biological Controls

What is monitoring?

Monitoring is an action that is used to understand insect activity to make pest management decisions. Surveillance to determine fluctuations in fruit fly populations is accomplished using traps baited with attractants (lures). Trap catches are used to monitor the relative numbers of fruit flies in an area and changes in insect abundance over time. Monitoring results can be useful in gauging the impact of fruit fly control actions. With highly mobile insects like fruit flies, monitoring is more efficient with traps and male lures.

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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.

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Fruit Fly Monitoring



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



Why is monitoring important to fruit fly suppression?

Monitoring forewarns growers of on-going changes in the fruit fly population within or outside of one's immediate cropping area. Comprehensive monitoring records are useful to understand seasonal abundance patterns to employ effective control tactics.



What are some ways I can monitor fruit fly abundance?

Trapping with protein baits or male lures with a minimum of three traps per farm is the least labor-intensive method for monitoring fruit fly populations in local as well as wide geographic areas. Changes in fruit infestation levels is another way that fruit fly abundance can be monitored, but it is more labor intensive.

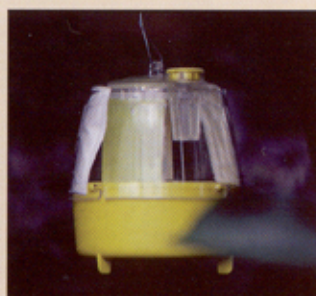
What is a protein bait?

Flies need sugars and proteinaceous food to survive and mature. They utilize various sources such as fungi, bird droppings, pollen, etc. Because of their inherent needs, fruit flies are highly attracted to high-quality protein and sugar baits. Protein bait lures will capture both males and females of most fruit fly species but may not be as attractive to a given fruit fly species as the male lures.



What is a male lure?

Fruit fly scientists have identified effective male lures (para-pheromones) that are attractive to the male fruit fly. Each lure is specific to a fruit fly group or, in some cases, a certain species of fruit fly. Some male lures are highly attractive and can attract flies from a long distance. Other lures are less efficient and only attract flies from short distances. USDA has standardized the best available lure for a given species of fruit fly pest. The scientists are constantly evaluating new lures to find better ones.



How do lures work?

There is a biological basis for fruit flies' attraction to the odor of male lures. Fruit flies are attracted to odor components in the lure, which are sometimes related to their food hosts. Some experimental evidence indicates certain species of fruit fly utilize components in the lure to attain sexual maturity.

Does one male lure attract all fruit flies?

No. It is very important to distinguish which fly species one is trying to capture before selecting a male lure. For example, fruit trees are usually attacked by Oriental or Mediterranean fruit flies. Depending on the pest species, one would use



either methyl eugenol or trimedlure, respectively. While trimedlure is commonly used to monitor Mediterranean fruit fly populations, a new lure, Biolure®, successfully attracts both males and females and has been used to mass-trap Mediterranean fruit flies in commercial persimmon orchards. Biolure® contains three different chemical odors. Fruiting vegetables such as melons, cucumbers, and squash are usually attacked by the melon fly. The proper lure for melon fly is cuelure.