



Area-Wide Integrated Pest Management Framework Components:

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

What is male annihilation?

Male annihilation involves mass trapping using male lures such as cuelure, methyl eugenol, trimedlure, etc. with an approved killing agent. The tactic is useful if it is used with an "area-wide" suppression strategy. The concept of male annihilation grew out of the use of lures for monitoring. Reduction of males in a population will severely impact the frequency of fertile matings. If the tactic is used effectively, fruit fly populations will decline due to the lack of males in the population available to females for mating.

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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 Male Annihilation



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



How does male annihilation work?

Male annihilation takes advantage of powerful male attractants (lures) to attract most of the males in a fruit fly population. The same lures used in detection and monitoring are used. Male lure traps are put out on a given area in numbers sufficient to catch the majority of males in the population. The few remaining males fertilize fewer females, and the population gradually declines because of the shortage of males. Lowering the number of males in a population minimizes the chances of successful reproduction and regeneration. The goal is to annihilate and totally remove the male fruit fly population from an area.



How effective is male annihilation in fruit fly suppression?

Male annihilation is very effective when implemented at a sufficient density per given area and combined with other control measures. "Attract and kill" systems combining male lures and a toxicant are the most effective in suppressing fruit fly males. The effectiveness of male annihilation varies with the strength of the lures. Methyl eugenol is a powerful lure for oriental fruit fly; cuelure is reasonably effective in attracting the melon fly. Male lures for the Mediterranean fruit fly (trimedlure) and the solanaceous fruit fly (Latilure®) are less effective. Lures can last for weeks to months in the field. Still, the use of male annihilation integrated with other techniques can significantly contribute to overall suppression.



Male Annihilation Traps Per Acre

	No. traps/acre
Cuelure	10 – 20*
Methyl eugenol	5 – 10*
Trimedlure	25 – 50*
Latilure	Not recommended

*The trap densities are for use as a solitary tactic. Lower trap densities are expected in combination with baiting

Has this technology been used elsewhere?

This technique has been used successfully for eradication in some Pacific island countries where the fly population is isolated from incoming flies. In Japan, male annihilation was used to reduce the number of fruit flies to a level at which release of sterile males could reduce the populations even further. Similar programs using male annihilation are now under way in several other countries including Taiwan, Surinam, French Polynesia, and Australia.



Can male annihilation work alone?

No, male annihilation will not suppress large fruit fly populations by itself. The technique is most effective in combination with other fruit fly suppression techniques.

