Fighting Melon Fly with Stinging Wasps
R. C. Bautista

Once, when I was asked by an inquisitive 6 year old child if my caged wasps had stingers like a yellow jacket’s, I had to show him otherwise by sticking my hand inside the cage full of wasps for two long minutes before he gave me a wide grin of approval. The wasp in question, identified by its Latin name as *Psytallia fletcheri*, is the nemesis of the melon fly, an obnoxious pest of a wide variety of fruits and vegetables. A female wasp is equipped with a needle-like tail, which she uses to poke into a fruit fly maggot or larva in order to lay her eggs. A wasp egg hatches, grows and feeds inside the fly maggot until that wasp emerges as a full-grown adult, thereby killing the fruit fly host in the process. Considered an insect parasite (or technically, an insect parasitoid), *P. fletcheri* attacks only the maggots of fruit flies, particularly the melon fly.

The use of insect parasitoids for natural enemies is known as “Biological Control,” which is a component strategy in a package of fruit fly management technology currently being implemented in the area wide IPM program against melon fly in Kamuela, on the island of Hawaii. This strategy consists of raising *P. fletcheri* in large numbers at the USDA-ARS Insect Rearing Facility in Honolulu, shipping the parasitoids to the Hori Building in Kamuela where Albert Kawabata and Greg Boyer temporarily hold the wasps in screen cages until females become sufficiently gravid (ready to lay eggs, usually at 5-6 days old) and then, unleashing them in the growers’ fields where wasps would search, locate and sting fruit fly maggots in infested fruits. Sustained releases of *P. fletcheri* are done every week to flood the target sites and ensure continuous presence of parasitoids in the melon fly habitat.

The first release of *P. fletcheri* in Waimea commenced in April 2002. Thereafter, between 150-200,000 parasitoids have been shipped every week from Honolulu and released in the demonstration sites. To date, a total of 2.75 million parasitoids (half of which were stinging females) had been released at growers’ farms. In the map, (following page) the release and recovery sites of *P. fletcheri* are indicated by asterisks and crosses, respectively. Baseline information provided by Cheryl Chan and Donna Ota indicated that wild *P. fletcheri*, although present in the natural habitat, was seldom if at all, recovered from fruit fly puparia that were collected from infested fruits.

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As shown in the graph (lower right), prior to April 2002 *P. fletcheri* releases, none (0) to fewer than 4-7 combined totals of parasitoids were recorded each month between August 2001 to March 2002. Nevertheless, barely 2 months after initial parasitoid releases had begun, *P. fletcheri* was recovered and numbers consistently picked up through August 2002 (the latest parasitoid data available). Majority of parasitoid releases were made in Lalamilo Farm Lots and infested fruits, namely zucchini, pumpkin, cucumber and crooked neck squash collected from the growers farms yielded the greatest number of *P. fletcheri* recovered. Trend in parasitoid recovery seemed to suggest that, subsequent to field releases, female wasps were able to find and attack melon fly worms infesting an array of fruit hosts.

Environmental Assessment of Technologies - GF-120
G. K. Uchida

GF-120 has been shown to be an effective tool for the control of the melon fly. However, its effect on non-target insects is unknown. Thus, a USDA-ARS-PBARC sponsored research was initiated on the islands of Hawaii at Kamuela and Maui at Kula to test the attraction of GF-120 on non-target insects. At Kamuela, nine trap sites were set along a transect on Kahilu Road and GF-120 bucket traps were set in castor bean bushes, the favorite roosting site of the melon fly. Similarly, nine trap sites were established along an altitudinal gradient transect along Naalae Road and Copp Road at Kula. All of the non-target insects captured in the traps will be identified and the data analyzed to determine if GF-120 is attractive to non-target insects.
Spreading the Word
J. Sugano

Due to Hawaii’s unique tropical environment, Hawaii residents are capable of growing a wide array of fruits and vegetables year round. Just by driving around your neighborhood, you will notice there is a little of everything. Mango, papaya, tomato, guava, citrus, cucumber, loquat, bitter melon and squash are just a few of the many possible hosts of Hawaii’s 4 fruit fly species. As a result, anyone who grows or has fruits and vegetables in their yards, in some way, contributes to Hawaii’s fruit fly situation. In order to achieve fruit fly suppression throughout the state, we need everyone to get educated and more importantly, get involved.

HAW-FLYPM has solicited the support of Doug Hamasaki and the UH-CTAHR Video Production Facility to assist us in the task of “spreading the word” throughout the state. Program staff, grower and community cooperators were asked to help in the development of an educational video series for public broadcast. Recommended fruit fly integrated pest management technologies are being refined for the intended audience: Hawaii’s homeowners, backyard growers and kama’aina (local residents). These videos will be used in combination with HAW-FLYPM educational brochures and outreach events.

What can you do to help?
An effective way to reach out and get people’s attention, especially in Hawaii, is through word of mouth advertising. The best thing HAW-FLYPM cooperators can do to help advance the program is to talk with neighbors, representatives, and other interested individuals. Share your success stories and personalized tips for effective fruit fly suppression. HAW-FLYPM started with 15 cooperators, and we’ve come a long way. More cooperators = greater area wide fruit fly suppression. The best is yet to come.
**Master Gardeners Team with the HAW-FLYPM Program**

L. Fujitani

Maui master gardeners are teaming up with HAW-FLYPM to help suppress fruit fly populations and boost fruit fly awareness in Maui. Master gardeners are very committed to enhancing their knowledge base. To increase HAW-FLYPM’s efforts in educating Maui residents, this group of master gardeners volunteered to serve as trainers for the fruit fly program with HAW-FLYPM guidance and support.

Recommended fruit fly suppression tactics are being implemented and maintained by master gardeners. Master gardeners have decided to lead by example. Every Thursday master gardeners gather at the Cooperative Extension Service office in Kahului to work in the UH sponsored Maui educational garden. Each master gardener is required to attend twelve classes taught by CTAHR faculty and “must volunteer at least sixty hours a year in the garden,” says club president Bill Syfer. On the 2.4 acre plot along side busy Kaahumanu Avenue is a tropical haven filled with banana, mango, lychee, and citrus trees. Also growing in the garden are rows of lettuce, bittermelon, eggplant, peppers, and string beans. A holiday spree for fruit flies.

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**Happy Holidays**

&

**Seasons Greetings**

from HAW-FLYPM

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Earl Fujitani: AW Maui

Don McInnis: ARS Scientist

Greg Boyer: AW Waimea

Raju Pandey: AW Oahu

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Meet Some Of Our Staff Members

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The purpose of this newsletter is to provide you with current updates on fruit fly activities across the State of Hawaii. We hope this information will be useful to you.

Jari S. Sugano

Extension Agent

Carla A. Hiraki

Newsletter Agent