



MELON FLY

Melon fly, *Bactrocera cucurbitae* (Coquillett) (Diptera: Tephritidae), is one of the world's most serious fruit fly pests, particularly on crops related to cucumber (Cucurbitaceae). Adult flies lay eggs in mature or immature (green) fruits. Sometimes even plant stems are infested. The eggs hatch into larvae, which burrow into fruits or stems, causing them to rot.

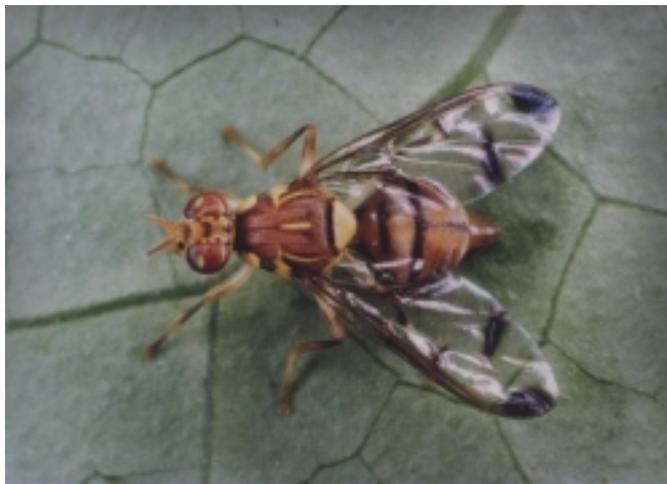


Figure 1: Adult female melon fly.



Figure 2: Eggs of melon fly.

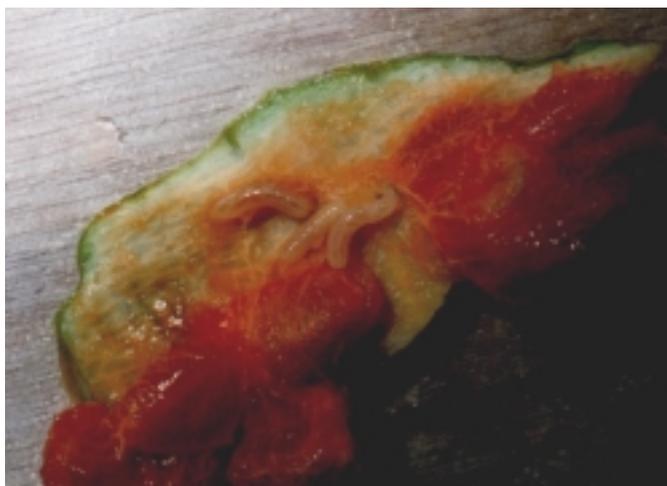


Figure 3: Melon fly larvae in damaged fruit (*Coccinia grandis*). Figure 4: Pupae of melon fly.



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Melon fly is native to Tropical Asia, as far west as Pakistan. It has spread to many areas outside of Asia, including the Indian Ocean (Mauritius and Réunion), Africa (Egypt, Kenya and Tanzania) and the Pacific (Hawaii, Guam, Commonwealth of Northern Mariana Islands, Papua New Guinea and Solomon Islands). It was eradicated by male annihilation from Nauru in early 1999.

Melon fly adults (Figure 1) are slightly larger than houseflies. Adult body length varies between 5-10 mm, depending on quality of food available during larval development. Body colour is orange-brown. Wings are clear, with a distinct pattern of dark markings. The upper side of the thorax has three narrow yellow stripes, two along the sides just above the base of the wing, and one in the middle. The abdomen has a distinct black coloured T-shaped marking.

The female fly lays eggs into fruits using her needle-like ovipositor (egg-laying tube at tip of abdomen) to pierce the fruit skin. The white, spindle-shaped eggs are about 1 mm in length (Figure 2). Eggs hatch in about 24 hours to produce larvae. In addition to eggs, the female's ovipositor introduces bacteria from the fruit surface. These bacteria cause the fruit to rot, providing a food source for the developing larvae. The larva is a creamy-white maggot (Figure 3). The larva grows in size by shedding its old skin and growing a new one. This process is called molting. There are 3 larval stages, which together last about one week.

When mature, the third-stage larva wriggles out of the fruit and burrows into the soil. In the soil, it forms a protective outer shell called a puparium. The pupae are brown and barrel-shaped (Figure 4). Inside the puparium, the insect begins developing into an adult fly. The adult fly emerges from the puparium after about one week.

Adult females begin mating and laying eggs about two weeks after emerging from the soil. During this time, females must feed on a protein source if they are to lay viable eggs. This requirement makes it possible to control melon flies using poisoned protein baits. Relative to many other fruit fly species, melon fruit flies are long lived, surviving for months or even a whole year in laboratory colonies.

Over 125 species of hosts have been recorded for this species, based on extensive host surveys in Asia and Hawaii. Plants in the family Cucurbitaceae are, however, the usual hosts. Host species recorded in surveys in the SPC region (Papua New Guinea, Solomon Islands, Commonwealth of Northern Mariana Islands or CNMI) are bittergourd (*Momordica charantia*), cantaloupe (*Cucumis melo*), cucumber (*Cucumis sativus*), ivy gourd (*Coccinia grandis*), pumpkin (*Cucurbita pepo*), snake gourd (*Trichosanthes cucumerina*) and watermelon (*Citrullus lanatus*). In CNMI, it has also been bred from tomato (*Lycopersicon esculentum*) and okra (*Hibiscus esculentus*). Some of the non-cucurbit hosts recorded in Asia and Hawaii include, among others, beans (*Vigna unguiculata* and *Phaseolus vulgaris*) and papaya (*Carica papaya*).

When females deposit eggs into fruits, they introduce bacteria which cause fruits to rot. The larvae burrow within this rotten tissue. The first evidence of damage is the small hole made by a female's ovipositor when she deposited her eggs. This hole may not be visible on all types of fruits. After the larvae have been feeding for several days, there will be a brownish soft spot at the surface of the fruit surrounding the place where the eggs were laid. In general, damaged fruits are unacceptable for sale in local markets. If fruits are intended for home consumption, it may be possible to save some of the fruit by cutting away the damaged part.

This leaflet was prepared by Robert Hollingsworth, United Nations Volunteer Entomologist working in the Solomon Islands, and Allan Allwood, Chief Technical Advisor, FAO/AusAID/UNDP/SPC Project on Regional Management of Fruit Flies in the Pacific. Further information can be obtained from the FAO/AusAID/UNDP/SPC Fruit Fly Project, Secretariat of the Pacific Community, Private Mail Bag, Suva, Fiji. Photographs taken by Steve Wilson (Figure 1) and Robert Hollingsworth (Figures 2-4).

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