

CITRUS PEST SPOTLIGHT

Fruit flies

By Lukasz Stelinski

Fruit flies can be very important pests of citrus in various parts of the world. Fortunately, the more damaging species are not established in Florida. The species that does sporadically occur in Florida is the Caribbean fruit fly (*Anastrepha suspensa*, Fig. 1), commonly referred to as ‘Caribfly.’ Caribfly is not a direct threat to citrus production in Florida; however, export restrictions to certain markets, both domestic and foreign, may require management to maintain so-called “fly-free zones” to produce fruit for export.

Another fruit fly species that is a pest of citrus is the Mediterranean fruit fly (*Ceratitis capitata*) or ‘Medfly.’ The medfly is considered the most economically important fruit fly species in the world because of the very wide range of fruit and vegetable hosts it infests, including citrus. In Mediterranean countries, this species can significantly limit citrus production, and in some cases, only early varieties can be grown because late-season varieties become too infested and thus unmarketable. Luckily, this species has not become established in the continental United States, and previous eradication efforts in Florida, California and Texas have been successful.

Finally, the Mexican fruit fly (*Anastrepha ludens*) is another pest that requires attention. Generally similar to the other two species described above, it could be a particular threat to citrus if it becomes established in Florida, because grapefruit is one of its preferred hosts. Fortunately, detection of this species in Florida has been extremely rare and this species has not established in



Fig. 1. Male Caribbean fruit fly adult.
Photo by D. Achor, CREC, Lake Alfred

the state. Eradication of Mexican fruit fly was successful in Texas, and the fly is thought to be currently eradicated in the continental United States.

IDENTIFICATION

Adult fruit flies are small, yellowish-brown flies. The Caribfly is typically slightly larger than the common house fly, while both the Medfly and the Mexican fruit fly are generally smaller than a housefly. Each species has distinct markings on their wings, which are quite different than the generally translucent wings of a common housefly. When looking at adult fruit flies from the rear, the wing coloration appears to look like the legs of a spider. This spider ‘look-alike’ mimicry is thought to be a defense mechanism to scare away potential predators. The immature stages are typical maggot-like insect larvae (Fig. 2).

DAMAGE

Adult female fruit flies will puncture fruit with an organ referred to as an “ovipositor” with which they also lay eggs. Caribfly deposits a single egg per puncture hole, while the other two species may lay up to approximately 10 eggs per puncture. Caribfly will lay eggs into mature or over-ripe fruits. The egg-laying punctures appear like small shot holes, and larvae will crawl out of fruit through these same holes



Fig. 2. Typical appearance of fruit fly maggot larva. The larva pictured is of the Mediterranean fruit fly. Head is at the tapered left end.
Photo by J. Lotz, Florida Department of Agriculture and Consumer Services, Division of Plant Industry; www.forestryimages.org

after completing their larval development in order to fall to the ground, where they will form pupae and undergo metamorphosis. Cutting fruit open that contains feeding fruit fly larvae will reveal rotting fruit tissue where the larvae are feeding.

MANAGEMENT

In Florida, only very ripe citrus fruit has been attacked by Caribfly. The other two species, which may attack fruit before ripening, are currently not present in the state. Therefore, although Caribfly is seen as a potential threat, it is not considered a major pest of citrus in Florida. However, as mentioned above, export regulations may mandate need for management. Fruit fly-free zones require that a designated area and buffer is maintained that is free of the preferred hosts of Caribfly (guava, loquat, rose apple and Surinam cherry), and trap surveys must demonstrate absence of flies in the designated area. Outbreaks of fly captures in traps in such areas may trigger management protocols, including application of bait sprays that combine a small amount of a short-lived toxicant with a protein and carbohydrate feeding stimulant for the flies. These sprays target adults, as eggs and larvae are afforded protection while developing within fruit.

Much more intense eradication efforts would likely be implemented if populations of Medfly or Mexican fruit fly were detected in Florida. Other options that can be implemented in management of Caribfly (or the other two species) include mass release of sterilized males to outcompete natural males and crash fly populations, and reliance on biological control agents.

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