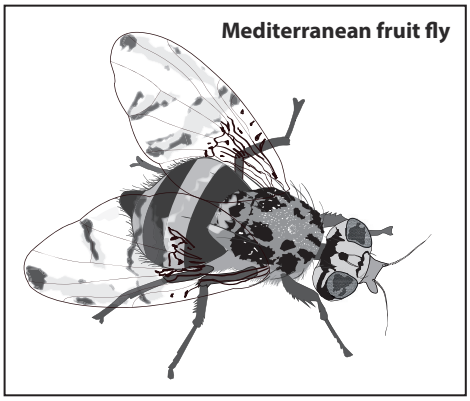
Invasive Species Fact Sheet

Mediterranean Fruit Fly

Background – Invasive species are organisms that are moved by nature, people, or animals into an ecosystem where they have not been previously found. Some of these organisms are spread naturally or accidentally by people, while others are spread intentionally, without understanding the harm they might cause. Although most of the organisms brought into our state cause no harm, a few are able to thrive in California to the detriment of native ecosystems, recreation, agriculture, including specialty crops, infrastructure, and public or animal health. These invasive species include plants and animals, insects and other arthropods, and pathogens.


Mediterranean fruit fly

Description: The Mediterranean fruit fly or Medfly has been called one of the world's most destructive pests. It is a little smaller than a house fly, with a short body about one- quarter inch long. It has a blackish colored mid-section marked with silver and a tan abdomen with dark stripes. Its wings are clear with light brown bands and gray flecks near the base.

Medfly eggs are tiny, white, and banana-shaped. Larvae that hatch from eggs look like small carrot-shaped worms before they enter their resting stage, called a pupa, which looks like a brown grain of rice. A Medfly can develop from an egg into an adult in about two and a half months depending on the weather.

Habitat: The Mediterranean fruit fly is originally from Africa, but has spread to many other parts of the world including Europe, Australia, Central America, and South America. Medflies need fruit or vegetable plants to survive. The female lays her eggs inside fruit growing on a tree or vine. The fruit is destroyed when the eggs hatch and develop into larvae, also called maggots, which eat the fruit pulp. After the infected fruit falls to the ground, maggots leave the fruit and burrow into the ground where they develop into adult flies. The adult comes out of the ground to start the cycle again. Each fruit fly can lay about 300 eggs.

How it spreads: The Medfly "hitchhikes" to California from infested areas. It comes into the state in three main ways: through mailed packages of fruit, fruit smuggling, and tourists bringing fruit back from a trip.

Why it is a problem: The Medfly can live in a variety of climates and in a large variety of plants. It can attack more fruits, nuts, and vegetables than any other fruit fly. If Medflies become established in California, both home gardens and farm crops would be at risk for infestations. Shoppers would pay more for fruits, nuts, and vegetables because of higher production costs and damaged crops. The Medfly can attack more than 250 fruits, vegetables, and nuts.

How it affects California specialty crops: Many of the affected crops are California specialty crops. Specialty crops are fruits and vegetables, tree nuts, dried fruits, and horticulture and nursery crops (including floriculture). Many of the fruits, nuts, and vegetables eaten in the United States are grown right here in California. The Medfly can attack more than 250 California plants, including: apple, apricot, avocado, bell pepper, citrus, date, fig, grape, grapefruit, guava, mango, nectarine, orange, papaya, peach, pear, persimmon, plum, pomegranate, tangerine, tomato, and walnut.

How you can help: Preventing Medflies from coming into California is the best way to control this invasive pest. Make sure you don't bring fruit or vegetables to California that you purchased when on vacation out of the state or country. If you find infested fruit or vegetables, place them in a sealed container and take it to your county agriculture commissioner's office. When Medflies are found, regulators limit the movement of fresh fruits and vegetables within the area. One way inspectors control the number of Medflies is to breed male flies that are infertile in the laboratory. These males are then released. When they breed with females, they are not able to produce offspring and over time, the number of flies drastically drops. Inspectors may also spray trees to prevent an outbreak of Medflies in an area where the flies have been detected. Traps can be put out in trees to keep track of how many flies are in the area.

For Additional Information:
California Department of Food and Agriculture
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Sacramento, CA 95814
Pest Hotline: (800) 491-1899
www.cdfa.ca.gov

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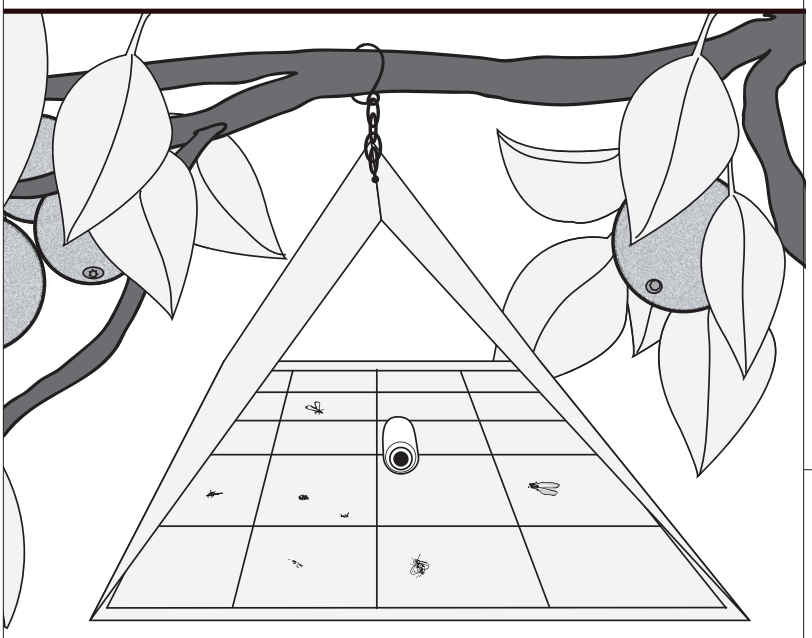
Medfly Activity Sheet

Pheromone Trap



Pheromone trap

These traps contain a pheromone or "perfume" that attracts Medflies. Inspectors examine the traps to determine if Medflies are in the area.

Fantastic Facts

1. How does the Medfly get into California?
2. Where does the Medfly lay its eggs?
3. How many plants can the Medfly attack?
4. What can you do to prevent the spread of Medflies?
5. What is one method that inspectors use to control Medflies?

1) "Hitchhikes" from infested areas 2) In fruit 3))250 4) Don't bring fruit from other states or countries to California 5) Release of infertile male flies

Lesson Ideas

- Make a video or podcast service announcement about Medflies.
- Invite a local fruit, nut, or vegetable farmer to visit and share how pests affect his/her business.
- Bring unblemished and damaged fruit to class. Create a skit of a grocery store scene to demonstrate how damaged fruit is not as desirable to most consumers and discuss any problems this can cause.

Lesson Plan: Fly Fragrances

Introduction: For students to understand the role of regulatory agencies in the protection of agricultural crops, they need to become aware of procedures to insure that invasive pests do not establish themselves in California. In order to detect the presence of Medflies, trappers use sticky traps that contain a pheromone or "perfume" to attract Medflies. Students will determine which perfumes are most enticing and then create their own insect sticky trap.

Materials: cardboard, bottles, tape, paperclips, petroleum jelly, marker, cotton balls, perfumes

Procedure:

1. Introduce students to a variety of perfumes. Have one student in each corner of the room with a different perfume. The remainder of the students move to the perfume they think smells the best. Record the results and discuss the findings with the class. Explain how the male Medfly finds a female Medfly through pheromones (perfume). Inspectors use this pheromone in their sticky traps to attract male Medflies.
2. Have students bring in materials to create their own Medfly trap using cardboard, milk cartons, poster board, and tape. A grid should be created on the bottom to allow students to count each square. A cotton ball with their choice of perfume should be taped to the top of the trap.
3. Students then hang their traps from trees and count the number of insects that land in their trap for one week.
4. Students can compare their data with other students in the class to see which "pheromones" attracted more insects. Explain that inspectors use these techniques to detect the presence of Medflies in their area.
5. Have a state trapper come into the class to show a real Medfly trap and discuss the process.

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This is one in a series of fact sheets composed by the California Foundation for Agriculture in the Classroom (CFAITC). For additional educational materials: CFAITC, 2300 River Plaza Drive, Sacramento, CA 95833-3293 (916) 561-5625 (800) 700-AITC Fax: (916) 561-5697
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