

Oriental 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.

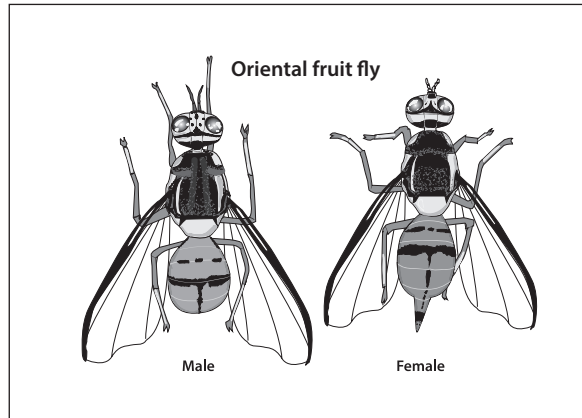
Description: The Oriental fruit fly is a harmful pest to fruits and vegetables. The adult is a little larger than a common house fly. Its body is about ½ inch long and its clear wings are a little less than a ½ inch wide. Oriental fruit flies are usually yellow and dark brown with black markings. The female has a pointed abdomen to lay her eggs inside fruit. These fruit fly eggs are tiny, long, white, and banana-shaped. Larvae that hatch from eggs look like little white worms. An Oriental fruit fly can develop from an egg into an adult in only 16 days if the weather is warm enough.

Habitat: The Oriental fruit fly came from Taiwan, and is now a problem in most of Asia and Hawaii. It has come into California many times since 1960 in fruit and vegetables, but has been taken care of each time. The Oriental fruit fly can live anywhere there are fruits and vegetables, year round. The female lays about 20 eggs at a time inside fruit. The eggs hatch and develop into larvae (also called maggots) which eat and tunnel through the fruit pulp. After about ten days, the maggots eat a hole in the fruit and fall to the ground, where they burrow into the dirt and wait another ten days to grow into adult flies. The adult comes out of the ground to start the cycle again. Each female fruit fly can lay about 1,500 eggs in her life.

How they spread: The most common way Oriental fruit flies come into California is inside infested fruit from another place. Once they are in the state, these fruit flies can fly up to 30 miles looking for new fruit.

Why it is a problem: Oriental fruit flies can infest new areas very quickly because of how far they can fly. They

also have very short life cycles compared to other fruit flies, so they can lay a lot more eggs. This makes a small problem quickly become a serious problem for farmers. Some farmers have had their entire crop destroyed by this fruit fly. It has been estimated that if the Oriental fruit fly became a problem in California, it could cost as much as \$175 million from destroyed crops and other needed costs. Shoppers would also pay more for fruits, nuts, and vegetables because of higher costs and damaged crops.



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 Oriental fruit fly has attacked around 200 different kinds California crops, including: pears, plums, cherries, peaches, apricots, figs, citrus, tomatoes and avocados.

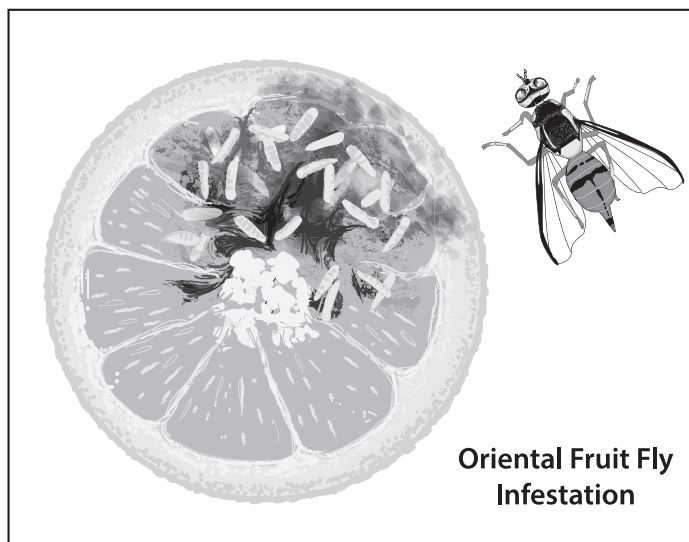
How you can help: The most helpful action you can take is to not bring in fruits, vegetables, and plants from out of the state or out of the country. This stops Oriental fruit flies from coming in the first place. If you find infested fruit or vegetables, place them in a sealed container and take it to your county agriculture commissioner's office.

The main way California regulators control the Oriental fruit fly is a strategy called the "male attractant technique." Gel bait stations are put out for the male fruit flies. Each bait station has pesticide gel with a smell like a female fly which kills the males after they eat it. The females then can't find a mate and don't lay any eggs. Another thing regulators do is limit the movement of fresh fruits and vegetables in an area where Oriental fruit flies are found.

For more information contact:
California Department of Food and Agriculture
1220 N Street
Sacramento, CA 95814
Pest Hotline: (800) 491-1899
www.cdfa.ca.gov



Oriental Fruit Fly Activity Sheet



Fantastic Facts

1. How is the female fruit fly different than the male?
2. Where can Oriental fruit flies live?
3. What are the Oriental fruit flies' favorite foods?
4. How do the Oriental fruit flies get into California?
5. What is the "male attractant technique"?

1) The female has a pointy end to lay her eggs inside fruit. 2) Anywhere there are fruits or vegetables year round 3) Avocado, mango, papaya, and citrus 4) Inside infested fruit from another place 5) The main way regulators control the fly - gel pesticide bait is put out for the male fruit flies to eat.

Lesson Ideas

- Create a Venn Diagram comparing and contrasting the Medfly and the Oriental fruit fly.
- Using the Internet, research where the latest Oriental fruit fly sightings have occurred.
- Pretend you are an Oriental fruit fly and write a fruit fly autobiography.
- Create an Oriental fruit fly illustration using a computer graphics program such as Paint. Share with a partner or group.

Lesson Plan: Exterminator Expo

Introduction: Students will understand what is involved in exterminating pests. In groups they will create a plan to take care of an Oriental fruit fly invasion, and present this plan in an "Exterminator Expo."

Materials:

Paper, notecards, pencils, colored pencils

Procedure:

1. Students read the Oriental fruit fly fact Sheet, reading closely for important details about the fruit fly.
2. Have a class discussion of factors involved with exterminating pests (ie humans and living things nearby, least amount of crop damage, pros and cons of using baits, etc).
3. Students divide into groups and decide on what they think is the overall best way to exterminate the fruit fly.

4. Each group will create a written report to present to the class. Each report should include:
 - Group members
 - Supplies needed
 - Method of extermination
 - Reason why method was chosen
 - Possible problems with using that method
 - Estimated total costs
5. If desired, the class can vote for the best way of exterminating the fruit flies.

Sources: CDFA, University of Florida Institute of Food and Ag Science, USDA

