

# The Invaders!

## Activity



### Here's the dirt...

Invasive species are insects, plants, animals, and diseases that are moved by nature or people into an ecosystem where they have not been previously found. They often have no natural predators to control their numbers and as a result, they outcompete or kill native plants and animals.

### Why do we care?

Invasive species can destroy agriculture crops, eliminate jobs, threaten food supplies, and damage our backyard gardens and wilderness areas. On average, a new pest is introduced into California every 60 days. Invasive species cost California's agriculture industry about \$3 billion per year in control methods and crop losses.

Farmer Fiona and her family grow oranges on their 100 acre farm. For this example, we will say the annual cost to grow oranges is \$6,000 per acre. This includes watering, pruning, weed, pest, and nutrient management, along with equipment maintenance, and hired farm workers.

Each year, Fiona's farm usually produces 550 cartons of oranges per acre that may sell for around \$15 per carton. However, an insect called the Asian citrus psyllid invaded the orchard and infected 50% of the trees with the huanglongbing disease. In order to prevent the spread of the disease, the infected trees must be removed. On a separate piece of paper, explain the economic impact of this invasive species on Fiona's farm. Do the math to find out how much the farm would have made selling oranges if the orchard had not been infested by the Asian citrus psyllid.

## WHO ARE THEY?

### Asian Citrus Psyllid



Spreads huanglongbing disease that causes bitter fruit and kills citrus trees.

Photo credit: David Hall, USDA Agricultural Research Service, Bugwood.org

### European Grapevine Moth



Caterpillars feed on grapes and grape flowers, destroying the harvest.

Photo credit: Todd Gilligan, CSU, Bugwood.org

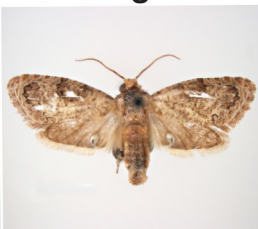
### Mediterranean Fruit Fly



Maggots feed inside fruit and cause it to rot.

Photo credit: Scott Bauer, USDA Agricultural Research Service, Bugwood.org

### False Codling Moth



Its caterpillars burrow into fruit and eat it.

Photo credit: Pest and Diseases Image Library, Bugwood.org

### Varroa Mite



A tiny parasite that feeds on honey bees.

Photo: Scott Bauer, USDA Agricultural Research Service, Bugwood.org

### Oriental Fruit Fly



Can infest new areas quickly because of how far they fly.

Photo credit: Florida Department of Agriculture and Consumer Services Bugwood.org

### How Can You Help?

- If you travel out of the area, don't bring home food, plants, animals, firewood, or other material that might carry an invasive species.
- Do not release pets such as hamsters, gold fish, and reptiles into the wild.
- Plant only native plants in your yard.

### Detective Dogs!

Photo: Josh Norem www.thefurrtographer.com



Dogs, trained to detect agricultural products in shipments play an important role in preventing the spread of invasive species. These dogs work with their handlers in airports, shipping centers, ports,

and state and country borders. When the dogs smell agricultural products like fruits, vegetables, plants, soil, wood, or certain insects, they scratch at the container. The container is then opened and inspected by a biologist to check for invasive species. If any are found they are properly disposed of or shipped back to the person who sent the package. After the dogs work for a few hours, they have mandatory play or nap time!

Meet the detective dogs working in California by visiting [www.cdffa.ca.gov/plant/dogteams](http://www.cdffa.ca.gov/plant/dogteams).

Research one of the invasive species above and find its country of origin. Write a creative story that tells how the invasive species made its way to California and what agricultural or environmental damage it created once it got here. Include information on methods used to prevent the spread of the invasive species.

## Activity