Olive fly (*Bactrocera oleae*)

Olive fly, *Bactrocera oleae* (Gmelin), poses an extremely serious threat to the California olive industry.

Background

Female olive fly.
Note pointed abdomen.

A native of the Mediterranean area, this insect is considered the most damaging pest of olives in southern Europe, North Africa, and the Middle East. The olive fly was first observed in North America infesting olive fruits on landscape trees in Los Angeles Co., October 1998. Detection surveys through June 2000 show olive fly generally infesting coastal areas from San Luis Obispo south to San Diego and into Baja California. Significant olive fly detections have also been made in Kern, Tulare, Fresno, and Madera Counties in the San Joaquin Valley. State and Federal regulatory officials have thus concluded that it is not possible to eradicate olive fly from California. Consequently, there is great potential for spread and damage to commercial California table olive and oil industries in the central valley and coastal growing districts. Olives grown by homeowners for home curing or oil are equally at risk. Once established in commercial groves, control procedures at considerable expense may be required to prevent extensive fruit damage or decreased quality of oil.

In areas of the world where olive fly is endemic and uncontrolled, its damage has been responsible for losses up to 100% of the table olive crop and 80% reduced value of olive oil. Some European districts cannot grow olives for table fruit due to the inability to economically control the fly. Expense of environmentally disruptive chemical treatments and likely crop damage have potential for eliminating olive culture as a viable industry in California. Organic olive production would be extremely difficult in infested areas.

Identification

Olive fly larvae (maggots) are the only stage causing damage and feed exclusively in olive fruits. Overwintered adult flies lay eggs in mature, unharvested olive fruits in late winter and spring. These infested fruits drop from the tree and produce new adults. Female flies from this generation then attack mature olives in trees or the new crop olives as they develop in June through August. It is believed that at least three, possibly four, generations of olive flies can develop in various areas of California. In warmer southern areas, development may be continuous if adult flies are present along with mature fruit on trees or on the ground.

Adult male olive fly

External fruit damage

Economic olive fly damage at harvest can be as little as oviposition "stings" on the fruit surface, by larvae causing fruit drop, or direct pulp destruction rendering fruits useless for canning. Larval damage increases acidity of the oil, lowering its quality.

The adult olive fly is approximately 3/16 inch (4-5 mm) long with clear wings containing dark veins and a small dark spot at the wing tip. The head, thorax, and abdomen are brown with darker markings. The thorax also has a white spot on top and several white or yellow patches on each side.

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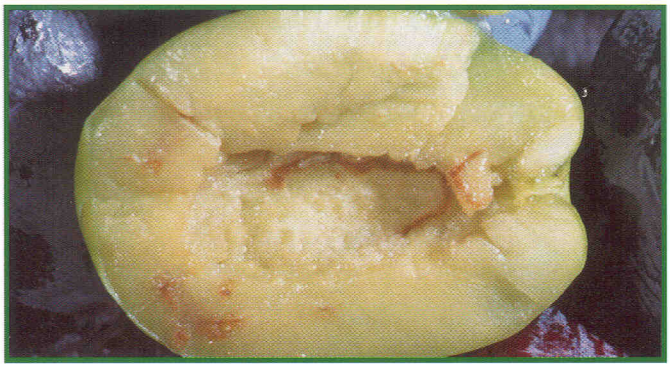
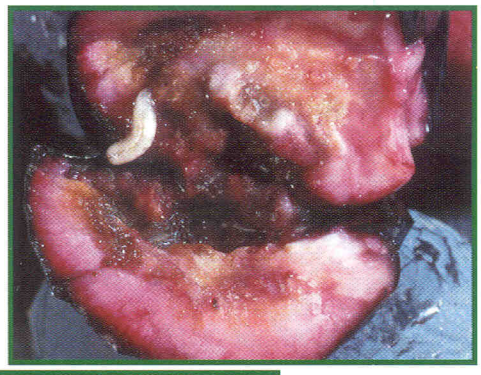
The larvae are yellowish white, intensity depending on color of the olive pulp they are infesting, with a pointed head. Mature olive fly larvae pupate in fruits during summer, and leave fruits in fall and pupate in the soil under the tree.

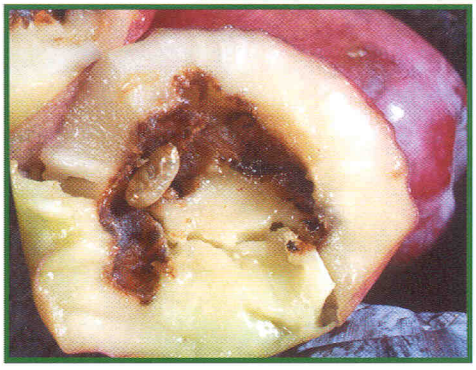


Initial internal damage. Note small larva and feeding track.

Mature larva in green fruit.



Mature larva in ripe fruit.



Olive fly pupa in fruit.

Detection

Early detection of olive fly in the central and coastal valleys of California is essential to preventing infestation in commercial production areas. The California Department of Food and Agriculture has developed a statewide management plan to detect and combat olive fly in commercial and urban olive growing districts including adult fly trapping and control procedures if and when flies are caught.

Olive farmers, home owners and landscape managers can assist in control efforts by observing olive trees under their supervision. If one finds fruits suspected of being infested with olive fly, contact your local University of California Cooperative Extension office or County Agricultural Commissioner. They can help with insect collection and positive identification. Please provide them the infested fruits and make careful notes of the "find's" location.

Treatment

The California Department of Food and Agriculture has obtained a Section 18 registration for use by CDFA and growers for spinosad (NAF-550) in bait sprays.

Check with your county Agricultural Commissioner for exact label and use requirements. Various trapping methods for reducing or removing adult flies from urban areas and small groves are also being developed.

Prevention

Olives left on trees or on the ground can result in continuing development of more generations of olive fly. Sanitation will be important to help prevent the spread of this pest. Homeowners and growers should clean up fallen olives and remove as much fruit as possible from the trees. Unused or fallen fruit should be disposed of in landfills or buried.

Yellow sticky (ChamP®) trap for collecting olive flies.

Prepared by the California Olive Committee, with help from the California Department of Food and Agriculture and the University of California. Photographs by Jack Kelly Clark, University of California.
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