

# Spotted Wing Drosophila found in California, Oregon, Washington, and British Columbia

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Spotted wing drosophila (SWD), *Drosophila suzukii* (Matsumura) has recently been found in many West Coast areas infesting ripening cherry, raspberry, blackberry, blueberry, strawberry crops. It has also been observed attacking other soft-flesh fruit such as boysenberry, plums, plumcots, peach, nectarines, apple and persimmons. As of October 13, 2009, the Oregon Department of Agriculture (ODA) reports that it is also found in wine and table grapes.<sup>1</sup>

The reports note that the larvae are found in ripe but undamaged looking fruit. The skin of the fruit has small holes resembling ovipositor scars. SWD is native to China, Korea, and Thailand. Adults and maggots closely resemble the common vinegar fly, *Drosophila melanogaster*, and other *Drosophila* species that primarily attack rotting or fermenting fruit. The spotted wing drosophila, however, readily attacks undamaged fruit. See this key to SWD from the ODA for help with distinguishing this pest from other flies.<sup>2</sup> [www.ipm.ucdavis.edu/PDF/PMG/SWD-ID-Dsuzukii.pdf](http://www.ipm.ucdavis.edu/PDF/PMG/SWD-ID-Dsuzukii.pdf).

SWD was detected by the California Department of Food and Agriculture (CDFA) in fresh cherries near Gilroy CA in 2009. It now has been detected all along the west coast, including Oregon, Washington, and British Columbia. On August 4, 2009, SWD was also detected in Florida.<sup>3</sup> It has been in Hawaii since 1986.

## BIOLOGY

In Japan, 13 generations have been observed per year. Three to ten generations are predicted for most Californian production climates. It is believed that this fly can have several generations per season in Oregon. Flies are most active at temperatures of 68° F. Activity, longevity, and egg laying decrease at higher temperatures (above

86° F). They thrive at cool temperatures typically experienced during the most of early summer and fall, but do poorly at temperatures above 86° F. A single life cycle can be as short as 8-14 days, depending on the weather. Flies can be active from April to November. In mid-season, adult life span is 3-9 weeks. Late summer or fall emerging flies can overwinter. They will lay eggs during the following summer on early ripening fruit. Females typically will insert their ovipositor into the fruit, lay 1-3 eggs per fruit, 7-16 eggs per day, and greater than 300 eggs in their lifetime. Pupation can take place both inside and outside of fruit in about 3 to 15 days.<sup>4</sup>

## DAMAGE

Infestation in cherry initially is manifested by scars in the fruit surface left by “stinging” (ovipositing) females. As egg hatch time is very short (about 1 day), larvae soon begin feeding inside the fruit. Within as little as 2 days, the fruit begins to collapse around the feeding site. Thereafter, mold and infestation by secondary pests may contribute to further damage. Oregon State University has an excellent SWD website, updated frequently, at: [swd.hort.oregonstate.edu](http://swd.hort.oregonstate.edu). The California Department of Food and Agriculture (CDFA) has a Power Point presentation on the biology and damage of by SWD: [cesonoma.ucdavis.edu/files/69686.ppt](http://cesonoma.ucdavis.edu/files/69686.ppt).



Photo by Gevork Arakelian



Photo by Martin Hauser



Photo by Martin Hauser

*Drosophila suzukii* male (left and center) and female (right). Note that only the male has spotted wings.

**MANAGEMENT**

Spotted wing drosophila attacks ripening fruit, and unfortunately is often not noticed in commercial and backyard trees until fruit is being harvested. Sprays at this time will not protect the crop, because maggots are already in the fruit. In the immediate post-harvest period, remove any fruit that has fallen on the ground and any infested fruit remaining on trees. This may reduce populations of flies that might infest next year's crops or later ripening varieties. This remaining fruit should be bagged and buried. Composting may not be a reliable way to destroy eggs and larvae in fruit.

Because this pest is so new to the West Coast and in Florida, there has been limited research on treatments to manage SWD. Malathion is one mode of control of SWD. Application should be made about 2 weeks before harvest. Sprays must kill adults before they lay eggs. Malathion will not control larvae in fruit.

An alternative to malathion with fewer negative environmental effects would be Spinosad (Monterey Garden Insect Spray); however, it is not believed to be as effective against the fruit fly adults as malathion. Two sprays may be required at about 14 days and 7 days before harvest to get satisfactory control. As with malathion, all foliage and fruit on the tree must be covered with the spray. Partial coverage will not be effective. A compressed air sprayer will give more reliable coverage than a hose end sprayer.<sup>1</sup>

Before making a chemical application, be sure the product is registered for your crop. The permissible rate of application is subject to change, so consult the label and all updates before application. 🍇



Photo by Larry L. Strand

Larva of spotted wing drosophila, *Drosophila suzukii*.



Photo by Martin Hauser

Oviposition scars caused by spotted wing drosophila.



Photo by Ed Show

Black spots can be seen on the male spotted-wing drosophila that landed on this raspberry.

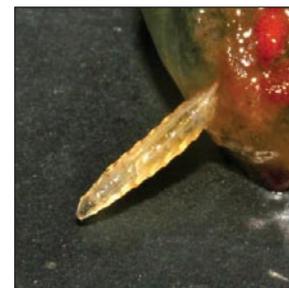


Photo by Mike Reitmajer

Fully emerged larva of *Drosophila suzukii*.



Photo by Ed Show

SWD mating pair.



Photo by Mike Reitmajer

SWD pupae next to dime for size comparison. They develop three days after last larval instar.

<sup>1</sup>Dreves, A.J., Walton, V. Fruit fly, "Spotted Wing Drosophila," identified in wine grapes. Oregon State University, Extension Service News. October 13, 2009.

<sup>2</sup>Caprile, J., Flint, M.L., Bolda, M.P., Coates, W.W., Grant, J.A., Zalom, F.G., Van Steenwyk, R. Spotted Wing Drosophila, *Drosophila suzukii*: A New Pest in California. University of California, UC IPM Online. June 18, 2010 <http://www.ipm.ucdavis.edu/EXOTIC/drosophila.html>

<sup>3</sup>Steck, G.J., Dixon, W, Dean, D. "Spotted Wing Drosophila, *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae), a fruit pest new to North America." Florida Department of Agriculture and Consumer Services. Division of Plant Industry. 2009 [http://www.doacs.state.fl.us/pi/enpp/ento/drosophila\\_suzukii.html](http://www.doacs.state.fl.us/pi/enpp/ento/drosophila_suzukii.html)

<sup>4</sup>Dreves, A.J., Fisher, G., Walton, V. A new pest attacking healthy ripening fruit in Oregon: Spotted Wing Drosophila, *Drosophila suzukii* (Matsumura). Regional Pest Alert (Submitted as OSU Extension Publication) 09-09-09 ajd