

INVASIVE SPECIES & EXOTIC PESTS

Spotted Wing Drosophila *Drosophila suzukii*

Juliet Carroll, New York State Integrated Pest Management Program, Cornell University

Spotted wing Drosophila (SWD) is a vinegar or fruit fly of East Asian origin. It has been in Hawaii since the 1980s, but was first discovered in California in 2008. By 2010, it had made its way into Florida, Utah, the Carolinas, and Michigan and into New York by 2011. Today, it has spread throughout most of the continental US. It can directly infest the fruit of many plants, but is most attracted to raspberries, blackberries, blueberries, day-neutral strawberries, elderberries, cherries, and other late-season, soft-flesh fruits — cultivated and wild.

Damage

SWD deserves notice because, unlike her relatives, which lay eggs on over-ripe or rotting fruit, she can lay eggs inside fresh fruit, often before harvest. Aside from the tiny, superficial scars left by the female's ovipositor (her egg-laying device), most damage occurs when larvae feed inside the fruit, breaking it down and causing juice to leak out. After only a few days, the fruit skin becomes dimpled or wrinkled, forming craters in the fruit. Damaged fruit is more prone to decays and rots. It is possible, however, for early-stage larvae or eggs to leave no visible impact on the fruit. Without control measures, late season raspberries, blackberries and blueberries can suffer upwards of 80% crop loss.

Description

Just as one could imagine from the insect's common name, male SWD have a single black spot on the tip of each wing. Females lack this particular trait, making them more difficult to identify, but both genders have distinct golden brown torsos and red eyes. What sets female SWD apart from other fruit flies are the dark brown to black, saw-tooth edges that line either side of her ovipositor. While SWD generally have striped abdomens like so many other fruit flies, females tend to have a wider black band at the very end. SWD are a medium sized fruit fly, about 1/8 inch (2-3 mm) long.



Adult male spotted wing drosophila. Photo: Tim Martinson, Horticulture, Cornell University



Adult female spotted wing drosophila on raspberry. Photo: Juliet Carroll, NYS IPM Program, Cornell Univ.

Life Cycle

Female SWD use their ovipositors to cut through the surface of the fruit into the flesh to lay their eggs. They lay approximately 1-3 eggs per fruit, 7-16 eggs per day, and about 350 eggs during their life span. Damage is initially a tiny pinhole on the fruit's surface, but after 5-7 days of the larvae feeding inside, the skin collapses and the fruit may leak juice, turn soft and begin to rot. The larvae typically exit the fruit to pupate on the ground, taking anywhere from 3-15 days for adult flies to emerge. As adults, the lifespan of SWD can be as long as 3-9 weeks or, in mid-season at optimal conditions, as short as 8-14 days. In its native land of Japan, SWD has roughly 13 generations per year, and upwards of 10 per year are predicted to occur in the United States, depending on local climate.

Management

Practicing IPM against SWD means using the best combination of:

- trapping to know when SWD has arrived at the fruit planting;
- carefully monitoring the ripening fruit crop;
- sanitation — immediate disposal of over-ripe or infested fruit;
- sanitation — clean harvesting fruit;
- pruning and weed management to maintain good air and sunlight penetration into the planting;
- protecting the crop with insecticide treatments or exclusion netting;
- refrigeration of harvested fruit.

Commercially produced traps and lures are now available (e.g. Scentry and Trece). The Suzuki Trap bait is fairly selective for SWD and can be used in simple traps made from deli cups. Because SWD have such small defining features, the only real way of knowing whether or not there are any in the trap is to look at all of the specimens under a dissecting microscope. Once fruit are ripe and SWD has been found in the planting, treatments every seven days with insecticides labeled for use against SWD may be needed. Clean harvesting and sanitation will help reduce the rate of SWD population buildup — before discarding fruit either freeze it or solarize it in a clear plastic bag to kill eggs and larvae. Refrigerating harvested fruit at 33-38°F will kill or slow development of eggs and larvae in fruit. Learn more about IPM tactics against SWD on the Cornell Fruit Resources web page on SWD management, fruit.cornell.edu/spottedwing/management.

For More Information

Spotted Wing Drosophila, Cornell Fruit Resources, fruit.cornell.edu/spottedwing

Spotted Wing Drosophila blog, NYS IPM Program, blogs.cornell.edu/swd1

Spotted Wing Drosophila in the Northeast, NE IPM Center, northeastipm.org/about-us/publications/ipm-insights/spotted-wing-drosophila-in-the-northeast



Spotted wing drosophila larvae among raspberries. Photo: Susan Gwise, Jefferson County CCE.



Vinegar trap. Photo: Juliet Carroll, NYS IPM Program, Cornell University