

TIMELY INFORMATION

Agriculture & Natural Resources

New Pest Alert

Spotted Wing Drosophila (*Drosophila suzukii*)

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Spotted wing drosophila (SWD, Figure 1) *Drosophila suzukii*, Order Diptera, Family Drosophilidae, is a fruit pest new to North America. It was first reported in 2008 in central coastal California, when larvae were found on maturing fruits of raspberries and strawberries. The problem in California has since escalated, and has rapidly spread to new areas including Florida, Louisiana, Michigan, North Carolina, Oregon, South Carolina, Utah, Washington and Wisconsin in the U.S., and British Columbia in Canada. SWD was first found on yellow sticky traps in Coosa County, Alabama on June 28, 2011. A week later it was found on traps collected from Elmore and Chilton Counties. Currently, increased SWD population numbers are being observed.

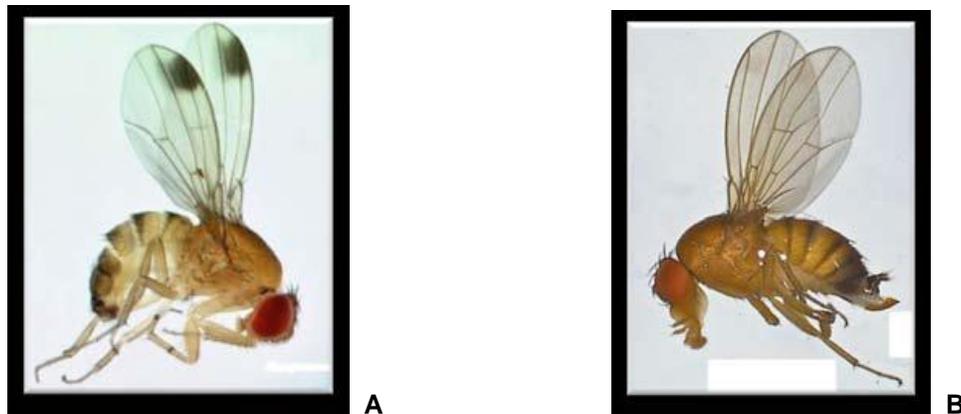


Figure 1. Adult male (A) and female (B) spotted wing drosophila (*Drosophila suzukii*).

Photo courtesy of G. Arakelian, Los Angeles County Agricultural Commissioner, CA.

SWD is similar in size and appearance to *Drosophila melanogaster*, or so called “vinegar” drosophila, but can infest immature (pre-harvest), and mature fruit in addition to over-ripe and spoiled fruits. The SWD attacks a broad range of fruits, including tree fruits, berry fruits, grapes, and some vegetables. Alabama growers should be alert to the presence of SWD in their area. Monitoring for this pest is an important part of management techniques.

HOST PLANTS

SWD flies were detected in a blueberry and blackberry field in Central Alabama through a trap survey. The list of SWD host plants include: tree fruits - peach, nectarine, apple, apricot, cherry, mulberry, persimmons, plum, pluot; small fruits - blackberry, blueberry, raspberry, strawberry; grapes – table and processing; vegetable fruits - melons, tomatoes. It is considered that any soft-skinned fruit may be susceptible to SWD.

PEST DESCRIPTION

SWD fly has an adult body length of approximately 2-3 mm, red eyes, yellowish-brown body color and dark bands on the abdomen. The males are relatively distinctive, as they have a small dark spot on the leading edge of the wing near the tip, hence the “spotted wing” name (Fig. 1A). Females lack the wing spot (Fig. 1B). The female has a saw-like, serrated ovipositor that enables it to penetrate thin-skinned fruits to deposit its eggs (Figure 2). The SWD flies are most active at 68°F, and egg laying decreases above 86°F. Both larvae and adults can cause damage. Larvae feed inside maturing fruit causing abscesses, which predisposes the fruit to secondary fungal and pest infections. Adults cause superficial surface scarring by sawing into fruit to lay their eggs. Eggs are white, and small, inserted into fruit. Over 350 eggs may be laid by a single female. Eggs hatch in about one day, and larvae soon begin to feed inside the fruit, causing the fruit to collapse around the feeding site. The immature stage is small (0.003 in) cream-colored maggot (Figure 3.) with black mouthparts. Pupae are small (2-3 mm or 0.1 in) brown, cylindrical capsules with two extensions on one end and are found in infested fruit, or just below leaf litter in soil. The number of SWD generations per year in Alabama is unknown at present, although three to eight generations per year have been observed in Oregon, and 10-13 generations per year recorded in California. Adult flies can lay eggs in unripe, ripe, overripe, shriveled, or spoiled fruit, and prefer to feed on damaged or fermenting fruit.



Figure 2. SWD female has a saw-like ovipositor that penetrates the thin-skinned fruits.



Figure 3. Small, cream-colored SWD maggot feeding inside a blueberry fruit.

MONITORING METHODS

Control is not recommended unless SWD is caught in monitoring traps, fruit injury is detected, or a high-value crop needs protecting.

A number of trap options are available for monitoring. For information on commercially available products, please visit <http://extension.psu.edu/ipm/agriculture/fruits/spotted-wing-drosophila/spotted-wing-drosophila-trap/view>

For homeowners or low-budget growers, simple traps can be made from a 16 to 32 oz clear plastic cup and lid, hanger, bait solution, twist-tie or paper clip, and a yellow sticky card (Figure 4).



Figure 4. Homemade SWD clear plastic cup trap.

How to make a SWD trap?

- On one side of the clear plastic cup, drill four to six, 3/16" holes in the upper portion of the cup.
- Drill two holes on opposite sides of the cup to put hanger through (to hang trap).
- Put yellow sticky card in cup by attaching to a twist-tie put through two small holes in the top of the lid. Optional, but may make monitoring easier.
- Prepare bait and add to cup: mix 2-3" of apple cider vinegar with 4 teaspoons sugar and 12 fl oz water.
- Add 1 to 2 drops of dish soap (optional, to improve fly capture), and attach lid.
- Hang traps at fruit level. In low-growing fruits such as strawberries, sink traps 2-3" in the ground.

CONTROL OPTIONS

The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is currently working with its stakeholders to identify all host species for SWD and determine the extent of its geographical distribution. The following are APHIS' preliminary recommendations for growers regarding the management and control of *D. suzukii*:

1. Apply environmentally safe toxicants (i.e., GF-120 and other products approved by the U.S. Environmental Protection Agency) across production fields and border areas to reduce any current SWD populations while minimizing effects on predators, parasitoids, and honeybees. Over time, these materials may need to be reapplied (at weekly or bi-weekly intervals) to ensure that the treatments remain effective.
2. Use good sanitation and cultural practices to prevent further SWD spread and establishment. Infested fruit that remains in the field allows eggs and larvae to develop fully and, consequently, serves as a source for increased fly populations. All fruit showing damage and signs of infestation should be removed from the field and destroyed, either by burial or disposal

in a closed container. Implementing the most appropriate control and management strategies is critical to the overall elimination of this fly. A single, unmanaged field will serve as a source of SWD infestation to any surrounding area. In this regard, APHIS strongly encourages all growers within infested areas to participate in SWD control and management efforts.

To learn more, please visit the following links:

BC Ministry of Agriculture and Lands: <http://www.al.gov.bc.ca/cropprot/swd.htm>

Google page on SWD: <http://sites.google.com/site/spottedwingdrosophila>

Oregon Department of Agriculture: <http://www.oregon.gov/ODA/PLANT/IPP>

Oregon State University: <http://swd.hort.oregonstate.edu>

University of California: <http://www.ipm.ucdavis.edu/EXOTIC/drosophila.html>

University of California SWD blog: http://ucanr.org/blogs/strawberries_caneberries/

Washington State University: <http://jenny.tfrec.wsu.edu/opm/displaySpecies.php?pn=165>