Oregon State University | Extension Service

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What Backyard Fruit Growers Need to Know About SWD

For most current information, see central website:
SWD.hort.oregonstate.edu

Drosophila suzukii, a fly pest

The Spotted Wing Drosophila (**SWD**) is a new, invasive pest that was found in Oregon, California and Washington in 2008 and 2009. SWD may infest a variety of fruits (**Box 2**) that are grown in Oregon backyards. Infested fruits are ruined due to the damage caused by fly maggots as they consume the fruit and accelerate the rate of rotting. This fly also has the capacity to inflict great economic losses to Oregon's vibrant small and stone fruit industries if not controlled or managed. The fact that SWD favors intact, ripening fruit that is still on the plant, as opposed to favoring overripe and fallen fruit on the ground as in other drosophilid vinegar flies, makes *D. suzukii* a particulary a nasty problem.

Box 2
Fruit affected by SWD*
Cherries • Raspberries
Blackberries • Strawberries
Blueberries
Peaches • Grapes
*Dependent on environment and practices. Cherries and berries are prime targets. Some fruits (grapes, peaches) are subject to SWD if damaged, overripe or have split skins. Implementation of control and management strategies reduces risk to all fruit crops.

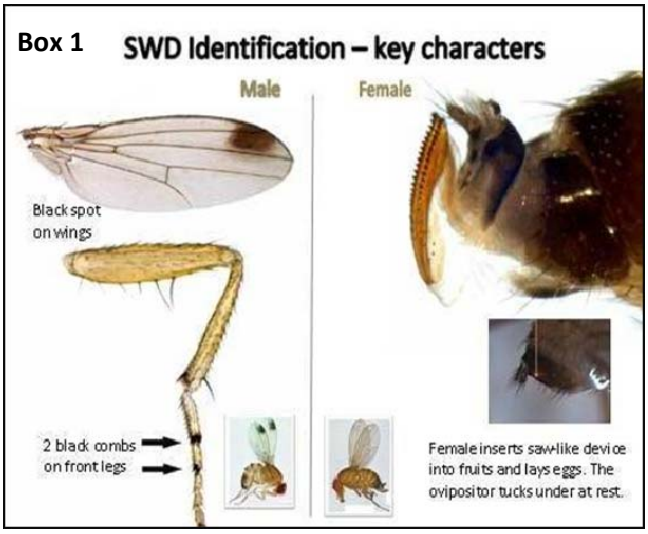
The Pest

Adult SWD flies resemble the common small fruit or vinegar flies, frequently seen in your kitchen or on fallen fruit, outdoors (**Box 1**). At 2-3 mm in length, SWD are slightly larger than the common vinegar fly, but both have red eyes and a yellowish-brown-colored body and striped abdomen. Key characteristics which distinguish SWD from other vinegar flies are the black spot near the tip of each male wing and 2 black combs on each front leg (foot); the saw-like ovipositor that females use to insert their eggs into ripe fruit.

Recognizing the Damage (see EM 9021)

After a female lays 1-3 **eggs** in a fruit, a tiny scar or spot appears on the fruit. Each egg has 2 fine 'hairs' that stick out of fruit that are adapted for breathing. You can sometimes see the hairs on the surface of the fruit. The female has the potential to lay several hundred eggs over her lifetime (avg. 20-30 days). The fruit will begin to collapse, bruise, or wrinkle and become soft after 2-3 days; and then will mold in the area where the egg(s) were laid and the larva is feeding (**Box 3**). The **larvae** will feed inside the fruit for about 5 to 7 days, until they are ready to pupate. The brownish-yellow **pupa** is a non-feeding stage lasting 4-5 days. They often remain inside of fruit until the fly emerges from the pupae. The **adult** fly will mate and begin a new generation.

Box 1 SWD Identification – key characters



Monitoring In Your Backyard

Trapping Adult Flies

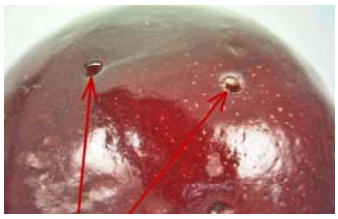
A heavy duty plastic 16 or 32 oz. deli-size **cup with lid** can be used to make a trap for capturing and monitoring adult flies. Here is how to make a trap:

- Drill several (10) 3/16-inch size holes on side of cup, keeping 3 inches of pour space on side for changing bait solution.
- Attach wire or twine to hang trap.

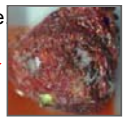
Author: Amy J. Dreves, Entomologist, Department of Crop and Soil Science, Oregon State University, 3017 ALS Bldg., Corvallis, OR 97331; Amy.Dreves@oregonstate.edu

- In cup, add ≈1-1.5 inches of pure **apple cider vinegar** + a drop of unscented dish soap to reduce surface tension so flies sink in cider.
- Hang trap near fruit level or place on ground in cool shady area.
- Once a week, filter out flies from bait solution.
- Count male flies. Confirm identification. If trained, count females too.
- Use a **magnifying glass** or **hand lens** to identify the male flies with spots near the tip of wing. Females have a prominent ovipositor.
- Replace apple cider vinegar once a week.

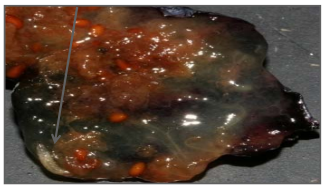
Damage from SWD



- Oviposition scarring or spotting on fruit surface. Juice exits out hole
- Fruit can collapse at scarring site, ≈ 2-3 days after egg laying.
- Fruit can soften and bruise, mold can occur at damaged site.



- Two hair-like breathing filaments attached to each egg sticking out of fruit at scar site.
- Presence of small white larvae.



Sugar or Salt Extraction Methods

The following methods can be used to check fruit in your backyard for SWD larvae.

- Collect suspicious fruits (potential SWD damage?).

For Sugar-Water Solution (cherries):

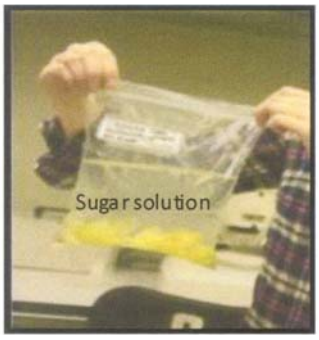
- Add 3 Tbsp of brown sugar to 1 cup water.
- Pour solution over lightly crush fruit inside plastic Zip-lock bag.
- SWD larvae should exit fruit and float to top.
- Allow time for fruit to settle at bottom.
- Use good lighting for examination.

For Salt Extraction Solution:

- Dissolve 1 Tbsp of salt in 1 cup warm water.
- Pour solution over fruit in shallow white pan.
- Detection of small larvae may require the use of hand lens and good lighting.

Report Findings at http://berrygrape.org/

It's a good idea to keep track of your findings. Record location, date collected, fruit they were found in or fly counts from traps, etc.



SWD Management Plan for Backyard Growers (see EM9026, OSU Ext Bulletin)

1. Set up monitoring traps early in the season to follow seasonal fly activity before fruit begins to ripen.
2. Check fruit for larvae with the sugar or salt extraction methods described to the left.
3. If possible, cover fruiting plants with fine netting (.98mm) to exclude flies before they lay eggs on fruit.
4. Increase number of traps around borders of yard (mass-trapping) to kill out those flies that survived the winter before your fruit ripens in spring.
5. Pick ripe fruit frequently to avoid infestation by SWD. Ripe and overripe fruit appear most susceptible to SWD.
6. If fly numbers are high and other methods are not providing adequate control, use insecticides registered for home use, such as spinosyns, pyrethroids, malathion, and carbaryl.
   a. Follow the label and do not apply when bees are present.
7. Include sanitation practices (e.g., solarizing with 1-2 ml clear plastic over fruit, clear or black bagging, and/or crushing fruit to kill larvae) in your management plan. Clean up and destroy fallen or overripe fruit left on plant to reduce SWD populations.

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