Current Recommendations for Managing Spotted Wing Drosophila (SWD), *Drosophila suzukii*, in PNW Strawberries* (July 18, 2010)

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Integrated Management of SWD in Strawberries:

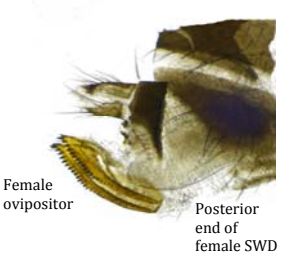
- Monitor fields and surrounding area with traps (see below).
- If SWD is detected, treat crop with registered insecticides[#]
  [#]See list of preferred insecticides on SWD Website: http://swd.hort.oregonstate.edu/files/webfm/editor/Strawberry_SWD_Pesticides_for_OR_and_WA_6-16-10.pdf
- Rotate chemistries with different resistance management groups.
- Evaluate your management program by monitoring for presence of flies with traps.
- Sample fruit for larval infestation using fruit-dunk flotation method (see below).
- Destroy leftover fruit on the plant or fruit that falls on the ground when practical to reduce fly's breeding site and food supply.
- Consider post-harvest clean-up spray to reduce populations if SWD is captured post-harvest.
- *Stay informed. The following recommendations are subject to change based upon updated information. Follow the SWD Website: http://swd.hort.oregonstate.edu/

Monitoring Traps:

Use a 32 oz cup or 1 quart "clear" deli container with numerous 3/16" to 3/8" holes drilled or punched around the cup for fly entry. Leave a 3-inch pour space on the side of the container for pouring out vinegar. Add 1.5 to 2 inches of apple cider vinegar (real not artificially-flavored), 1-2 drops of unscented dish soap, put a lid on trap. Place trap on the ground within the strawberry row. Trap should be clear from canopy/fruit and holes exposed so that SWD can easily fly through the holes. Check trap contents for flies and replace vinegar weekly. Don't pour the spent vinegar on the ground; remove it and dispose elsewhere.

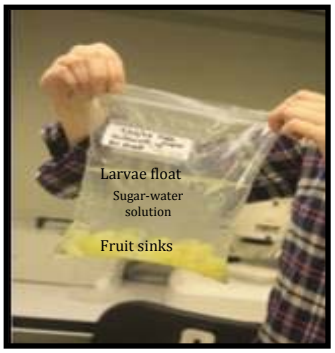
Trap contents can be filtered over a fine screen or colander then dumped into a white tray with a small amount of water for easy viewing of the male flies with. See identification guide on SWD website for *D. suzukii* prepared by Oregon Dept. of Agriculture at: http://swd.hort.oregonstate.edu/files/webfm/editor/ID_D_suzukii_060210_sm.pdf

It takes closer examination with a scope to identify a female SWD; and it is easy to mistake SWD females for other non-economic vinegar flies with weaker and rounded ovipositors (egg laying appendage), if not trained. Only identify and report male flies, unless female flies are confirmed by a specialist.



Another version of the trap includes a yellow sticky card that hangs down the middle or arches inside the cup. The card can capture flies as they enter holes making it easier for some growers to identify the male SWD captured on the card. Soap should not be added to the vinegar in this configuration.

Search for male SWD (one spot on distal portion of each wing). These are readily apparent with the naked eye or when viewed with a magnifier. Female SWD are not readily apparent and require magnification to see her ovipositor embedded on the sticky surface.



Fruit-Dunk Flotation Method:
Collect suspicious (oviposition scars and soft spots) fruits. Place fruit in plastic ziplock bag and crush lightly. Add sugar-water mixture (4 cups water and 1/4 cup sugar). SWD larvae should float to the top and separate from fruit pulp. Allow time for fruit to settle at bottom. Detection of small larvae may require the use of a hand lens.

Chemical Control:
Choice of effective insecticides is listed on the SWD website: http://swd.hort.oregonstate.edu/files/webfm/editor/Strawberry_SWD_Pesticides_for_OR_and_WA_6-16-10.pdf. Fruit appears to be susceptible from first blush of color through harvest and beyond. Japanese literature suggests that organophosphate and pyrethroid insecticides will provide a week of control. Organic products (Entrust) tested in California are less persistent providing only 2-3 days residual control. Results from recent laboratory studies on the residual efficacy of various insecticides can be found at http://swd.hort.oregonstate.edu/files/webfm/editor/SWD_Pesticide_Update_June_2010.pdf. Water volumes of 40 to 100 gpa for these foliar applications are common and dependent on plant size and amount of canopy foliage present. Consider REIs, PHIs, MRLs, surface water and buffers, and safety to pollinators and other beneficial arthropods when selecting a product. Remember to rotate classes of insecticides to delay development of insecticide resistance. To address pollinator safety, make late evening applications of all products. Please refer to PNW591 (http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf) for more detailed information on how to reduce bee poisoning from pesticides.

Sanitation Practices: Consider including sanitation or clean-up practices in your management program when practical. Destroy leftover fruit on the plant to reduce fly's breeding site and food supply. This will prevent SWD from utilizing the fruit. Properly dispose of and/or destroy infested fruit that falls on the ground. (We are currently testing the efficacy of various sanitation methods including: crushing, solarizing, composting, bagging, and burying infested fruit).

Other Considerations: The majority of early season SWD captured in 2010 (thru June 22, 2010) have been females. This means that those people looking only for male SWD in traps may have false negatives if there are unidentified females in their traps. This could lead to not treating for SWD when they actually may be present. It is important that you track SWD numbers in your area by following the statewide monitoring and mapping program (http://berrygrape.org/maps/or-county-map/). Both male and females are being recorded. Another suggestion to deal with this potential problem is to apply your first spray for weevils using a material recommended to control both weevil adults and SWD. The intent is to control both these pests concurrently while hopefully eliminating SWD from within the berry planting during that first spray. The same can be said for spray applications intended to control other insect pests as well.