

# Monitoring Traps for Spotted Wing Drosophila (SWD)



## *Drosophila suzukii*, a vinegar fly

As we gain more knowledge during the 2014 season, recommendations for assembling, placing, and servicing traps may change. New trap designs are being explored. Two traps that have proven highly effective can be made for capturing adult SWD flies.



### Assembling Traps: “Clear 20-hole”

- Obtain a **32 oz durable clear** (or red if available) **plastic deli-type cup** with a lid.
- Drill twenty 1/8- to 3/16-inch holes around the bottom 1/3 of the cup; spaced 7/16 inches apart, alternating between 1 7/8 inches and 2 3/8 inches above base of trap. Leave a space without holes for pouring out bait when servicing trap.

### Assembling Traps: Red “Lucky 13-Hole”

- Obtain an **18 oz red party-type cup** with a lid. Seal straw hole with tape on lid
- Drill thirteen 1/8 to 3/16-inch holes in the trap, spaced 1/2 inch apart and alternating between 2 and 2 1/2 inches above the base of the trap. Leave a space without holes for pouring out bait.

For most current information, see central website:

**spottedwing.org**

- Optional: Cut a strip of yellow duct tape 3/8 inches wide and place directly above holes, encircling the trap.
- Cut a strip of black duct tape 3/4 inches wide and place directly below holes, encircling trap.

### Adding Handles and Baits

- Attach a heavy-coated wire, strap or durable twist tie for hanging and securing trap.
- Add ≈1 to 1.5 inches (150-175ml) of either:

- \* Pure *apple cider vinegar* and a tiny drop of non-fragrant liquid soap to break surface tension
- \* A *Baker’s yeast-sugar solution*: two teaspoons active dry baker’s yeast (1 packet), 4 teaspoons white sugar and 12 ounces (1 ½ cups) warm water.

- Flies will sink in liquid. Attractive baits (e.g., Chinese vinegar) are still being studied. Check the central website for current recommendations.
- Chinking Vinegar, Suzukii Trap®, and a Trece lure are promising attractants found in 2013.

### Placing Traps

- Place traps early in the season, when daytime air temperatures are above 50°F for several days; and before fruit begins to color (ripen). If you desire, you can hang traps in shade of perimeter trees and wild Himalayan blackberry bushes adjacent to fruiting crop to detect early presence of flies.
- Place as many traps in your susceptible crops as you can maintain (e.g., 1 trap/5 acres or 3 traps per crop; 60 traps/acre).
- Hang trap on shady, cooler side of plant at fruit level; or securely place on ground next to strawberry plants.

Trap placed in field with the aid of a PVC pipe or stake →



You can place a metal rod with a hook into ground to hang trap.

- Pay particular attention to hang traps close to areas with higher chance of catching flies if present (border of crop close to diverse field edge with ample shade and refuge; wild cherries, Himalayan blackberry border, other trees).

### Servicing Traps

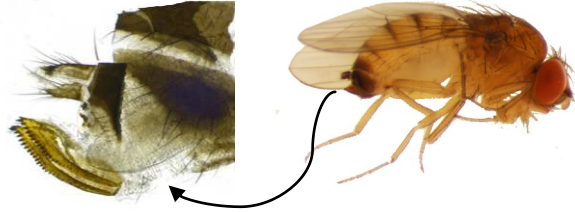
- Check traps once a week for SWD.
- Trap contents can be filtered over a fine screen or colander. Empty fly catches into a white tray with a small amount of water. Use 10x hand lens or microscope for easy viewing of SWD flies.
- See dichotomous key for identifying spotted wing drosophila on SWD website, prepared by Oregon Dept. of Agriculture at:  
[http://swd.hort.oregonstate.edu/files/webfm/editor/ID\\_D\\_suzukii\\_060210\\_sm.pdf](http://swd.hort.oregonstate.edu/files/webfm/editor/ID_D_suzukii_060210_sm.pdf)
- Replace bait once a week for maximum effectiveness.
- Dump bait away from fruiting plants.
- Optional: A yellow sticky card can be placed loosely-arched or hung off lid inside the top half of cup for a quick assessment of male SWD flies stuck on card. It is easy to see the male flies. Use a 10x hand lens or OptiVisor to better see the spots on male fly wings.
- Do not mistake SWD males for other 'spotted imposters' - know the position of the spot on the wing. Review the identification webinar at:

[gpdn.org/webinar\\_2012](http://gpdn.org/webinar_2012)



### Recording Fly Numbers

- As there are numerous flies and other insects that will be captured, learn to identify this drosophila fly and have positive catches confirmed by a specialist.



- Take counts of **male** SWD flies (one spot on leading edge of each wing; spot may be faint-colored). These are readily apparent with the naked eye or when viewed with a magnifier. Confirm SWD identification. Continue monitoring through harvest and follow abundance of seasonal fly catch.
- 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 less defined ovipositors (egg-laying appendage), if not trained.
- Females will **not** have spots on wings, but a distinguishable and prominent saw-like ovipositor on posterior end. If time permits and as you gain experience, identify female flies. In many cases, her ovipositor will stick out from end after soaking in the apple cider vinegar bait.
- Commercial growers can report fly counts on SWD website, "Statewide SWD Real-Time Mapping" or directly to: <http://berrygrape.org/>

### Suggestions to find monitoring trap supplies:

32 oz clear or red plastic deli cups;

Cash & Carry in bulk or stores like the "Dollar Store"  
Commercial traps available (Zoro, Sombrero, yellow dome)




Coated wire:

14 gauge: Any hardware store

Apple cider vinegar:

Local grocery stores from \$3.99 to \$5.00, 1 gallon jug; (still exploring effective baits)

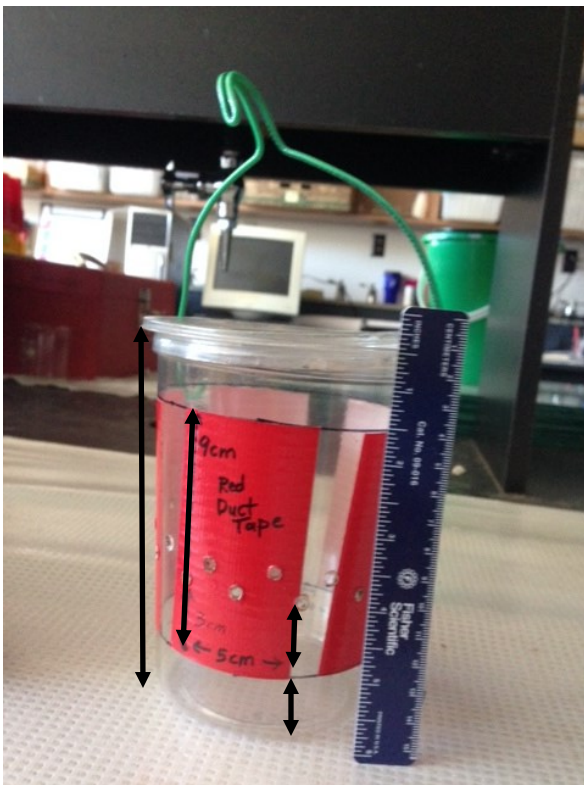
3-7x OptiVisor: 

BioQuip ([www.bioquip.com](http://www.bioquip.com)) or <http://www.doneganoptical.com/optivisor.php>, or similar supplier

10-30x illuminated loup (hand lens):



[http://www.amazon.com/SE-30x-Illuminated-Jewelers-Loupe/dp/B001T40WZ/ref=sr\\_1\\_2?ie=UTF8&s=home-garden&qid=1268198938&sr=8-2](http://www.amazon.com/SE-30x-Illuminated-Jewelers-Loupe/dp/B001T40WZ/ref=sr_1_2?ie=UTF8&s=home-garden&qid=1268198938&sr=8-2), or similar supplier



**Red Stripe 20-Hole Trap:** We purchased 32 oz clear plastic deli-type cups (5 1/2 inches tall) with lids. We added five vertical bands of red duct tape (5 x 9 cm), as data has shown increased attractiveness to SWD flies. Twenty holes were drilled 3/4 away around the cup with a soldering iron, 3 cm above the bait solution. We left space around cup of approx. 8.5 cm for pouring out bait. Bait was approximately 1 inch deep (≈175 ml). We bought coated wire to create hangers, which withstand the weather conditions and acidity of baits.

**Potential Baits/lures for Traps:** Chinkiang Vinegar, Suzukii Trap®, Yeast sugar baits, as well as a Trece lure (we did not test in our lab) revealed promising results.