Spotted Wing Drosophila: A new pest in Ohio’s fruit crops

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Introduction
• Looks like common vinegar flies on overripe, fallen, decaying fruit
• But the new species attacks healthy ripening fruit

Detected locations
• In Hawaii since 1980
• California in 2008
• Florida, Washington, Oregon in 2009
• Michigan, Carolinas, Utah in 2010
• Many States in 2011 & 2012
• Ohio:
  – Raspberries, September 2011, VanWert County in Northwest Ohio
  – 2013 and 2014: many more counties

Hosts
• Early: cherries
• Mid: raspberries, blackberries, blueberries
• Late: grapes
• Also: peaches, plums, strawberries, cherry tomato

Damage
• Egg laying & larval feeding
• Starts as tiny scar on skin of fruit
• Skin collapses in 2-3 days; molds

Life cycle
• Larvae feed inside fruit for 5-7 days
• Pupa inside or outside fruit
• One generation in 8-16 days
• Many generations per year
• Overwinters as adult in protected places

Identification
• Adult male:
  – Spots on wings (visible with naked eye)
  – Two dark bands on front leg (need magnifier)
• Adult female:
  – Saw-like, hard ovipositor (need magnifier)

Current Status
• Please alert us if this pest is found or suspected
  – Via your local extension educator
  – Or me (C. Welty) directly

Figure 5. An enlarged view of the SWD ovipositor showing serrated edge (a); an example of a common vinegar fly ovipositor which does not have a sclerotized ovipositor (b).
Monitoring adult SWD flies with bait traps

- Option #1: commercial trap & lure made by Scentry Biologicals Inc.
  - hang lure from lid of trap
  - make drowning solution: 25% apple cider vinegar, 75% water
  - put solution in trap, 1 inch depth, add drop of detergent (to prevent floating)
  - change lure every 4 weeks
- Option #2: make-your-own traps
  - clear plastic container (1 quart) with lid
  - drill ¼” holes across top, along one side
  - bait option #1: commercial lure from Scentry Inc. or Trécé Inc.
  - bait option #2: apple cider vinegar, full strength, 1 inch deep + drop soap
  - bait option #3: yeast + sugar + flour + water in small cup with net lid, float on vinegar
- Use strainer and fine brush to remove trapped insects once per week
- Threshold: capture of a single confirmed SWD adult
- Beware, many non-target insects likely to be caught

Monitoring fruit for SWD larvae using salt tests

- In zip-top bag: 2 tablespoons salt + 2 cups warm water + fruit
- After 20 minutes, look for larvae floating to top

Management

- Do not delay harvesting; pick as soon as fruit first ripen.
- Keep harvested fruit cooled as soon as picked.
- Sanitation is critical: collect & destroy damaged fruit every 2 days; put culls in clear plastic bag in sun for 1 week.
- Fine netting is a mechanical control option, especially for organic growers.
- If any SWD found in trap, then fruit need protection by insecticide sprays, starting when fruit begin to ripen (berries start to turn color), until final harvest.
- Spray every 7 days with insecticides that provide 7 days residual activity.
- Do a salt test weekly to see if control program working well; if control not good, try sprays every 5 days.
- Insecticides for home gardens: see separate document; spinosad is one good choice for most crops.
- Insecticide options: see table below.
- For resistance management, rotate among different mode-of-action groups: spinosyns (yellow in chart), diamides (light gray), pyrethroids (pink), organophosphates (blue), carbamates (green), and neonicotinoids (dark gray).
- Adjuvants that can increase efficacy slightly are NuFilm-P or sugar or sugar plus yeast.

### INSECTICIDE OPTIONS

(based primarily on trials in OR, WA, CA, MI, NJ, NC, FL in 2011 and 2012):

<table>
<thead>
<tr>
<th>Efficacy on SWD</th>
<th>Mode of action group</th>
<th>Product</th>
<th>Residual activity (days)</th>
<th>Pre-harvest interval (PHI)</th>
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1. Restricted-Use Pesticide.
2. § Not allowed in greenhouses or high tunnels.
3. X means that the product is NOT ALLOWED for use on that crop.
4. OMRI means allowable for use in organic production.