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

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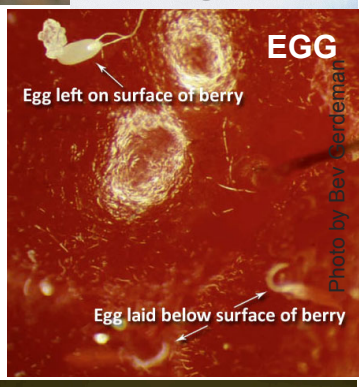
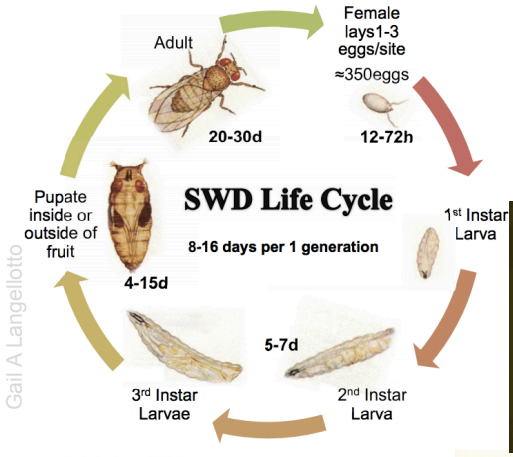
Introduction
- Looks like common vinegar flies on overripe, fallen, decaying fruit
- But the new species attacks healthy ripening fruit

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
  - Blackberries, raspberries, grapes, Aug.-Sept. 2012: VanWert, Licking, Pickaway, Ross, Franklin, Erie, Huron, Lorain, Ashland, Portage, Greene, Ashtabula Counties
  - July-September 2013: add Champaign, Clinton, Warren, Montgomery, Guernsey, Holmes, Wayne, Medina, Wood, Fulton, Fairfield, Meigs Counties

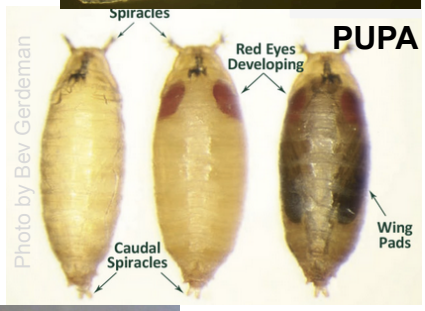


Hosts
- Early: cherries
- Mid: raspberries, blackberries, blueberries
- Late: grapes
- Also: peaches, plums, strawberries, pears, apples, tomato



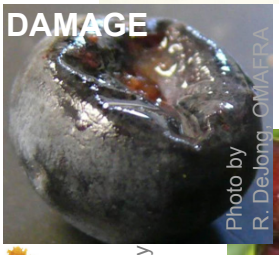
Damage
- Egg laying & larval feeding
- Starts as tiny scar on skin of fruit
- Skin collapses in 2-3 days; molds

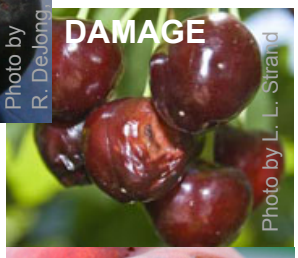
Life cycle
- Larvae feed inside fruit for 5-7 days
- Pupa inside or outside fruit
- 350 eggs per female fly
- One generation in 8-16 days
- Many generations per year
- Overwinters as adult in protected places

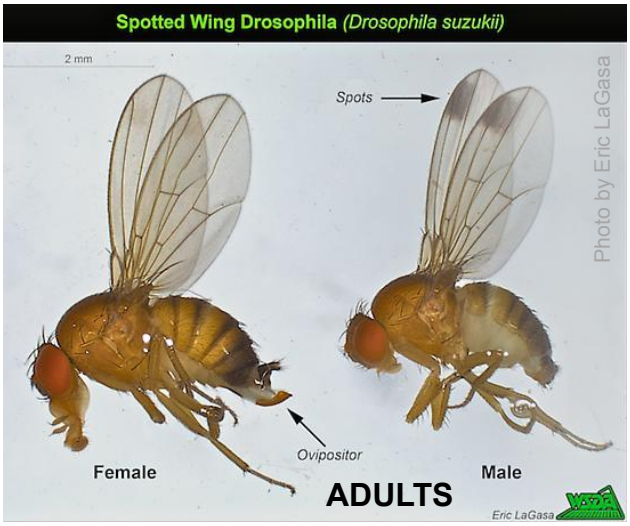


Identification
- Adult male:
  - Spots on wings (visible with naked eye)
  - Two dark bands on front leg (need magnifier)
- Adult female:
  - Saw-like, hard ovipositor (need magnifier)

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







OVIPOSITOR

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 flies with bait traps

- Make-your-own traps
  - Clear plastic cup with lid
  - Red color: adds attraction
  - Holes at top along one side
- Commercial trap made by Contech
  - Available via Great Lakes IPM, $9.45 for 2 traps
  - Pro: Catches fewer non-targets than other style trap
  - Con: Catches fewer SWD
- Bait: Apple cider vinegar (1 inch deep)
  - Add a drop of dish soap
- Use strainer and paintbrush to remove trapped insects
- Change bait weekly; do not dump in field
- Threshold: capture of a single confirmed SWD adult
- Beware, many non-target insects likely to be caught

Monitoring fruit for larvae using salt tests

- In zip-top bag: ¼ cup salt + 4 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 and destroy unharvested or damaged fruit every 2 days
  - Put culls in clear plastic bag or bury 2 feet deep
- Netting is a mechanical control option, especially for organic growers
- If any SWD found in trap, then fruit need protection by insecticide, 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
- For resistance management, rotate among different groups: spinosyns (yellow in chart), pyrethroids (pink in chart), organophosphates (blue in chart), carbamates (green in chart), and neonicotinoids (gray in chart)
- 2(ee) labels for some products add spotted wing Drosophila to list of target pests:
  - Baythroid XL, Danitol 2.4EC, Delegate WG, Mustang Max, Pounce 25WP, Radiant
- Insecticide options (based on trials in OR, WA, CA, MI, NJ, NC, FL in 2011 and 2012) shown in table below
- Home gardens: see separate document; spinosad is one good choice for most crops.

Efficacy	Product	Residual activity (days)	Pre-harvest interval (PHI)						
			raspberry, blackberry	blue-berry	straw-berry	grape	cherry	peach	plum
Very effective	§ Delegate	5-7	1 day	3 days	X	7 days	7 days	14 days	7 days
	§ Radiant	5-7	X	X	1 day	X	X	X	X
	! Mustang Max	7-10	1 day	1 day	X	1 day	14 days	14 days	14 days
	! Brigade	7-10	3 days	1 day	0 days	30 days	X	X	X
	! Hero	7-10	3 days	1 day	X	30 days	X	X	X
	! Danitol	7-10	3 days	3 days	2 days	21 days	3 days	3 days	3 days
	! Asana	7-10	7 days	14 days	X	X	14 days	14 days	14 days
	! Baythroid	7-10	X	X	X	3 days	7 days	7 days	7 days
	! Warrior	7-10	X	X	X	X	14 days	14 days	14 days
	! Pounce	7-10	X	X	X	X	3 days	14 days	X
	Imidan	7	X	3 days	X	14 days	7 days	14 days	7 days
	! § Diazinon	7	7 days	7 days	5 days	X	21 days	21 days	21 days
	! Lannate	3-6	X	3 days	X	X	X	4 days	X
Effective	Malathion	5-7	1 day	1 day	3 days	3 days	3 days	7 days	X
	Entrust [OMRI]	3-5	1 day	3 days	1 day	7 days	14 days	14 days	7 days
Moderately effective	Sevin	10	7 days	7 days	7 days	7 days	3 days	3 days	3 days
	§ Assail	1-3	1 day	1 day	1 day	3 days	7 days	7 days	7 days
Slightly effective	Pyganic [OMRI]	1-3	0 days	0 days	0 days	0 days	0 days	0 days	0 days
Not effective	Actara	1-3	3 days	3 days	X	5 days	14 days	14 days	14 days
	Admire Pro	1-3	3 days	3 days	7 days	0 days	7 days	0 days	7 days

! *Restricted-Use Pesticide*
§ *Not allowed in greenhouses or high tunnels*
X means that the product is NOT ALLOWED for use on that crop.

Compiled 26 March 2012, revised 23 April 2013, 5 November 2013