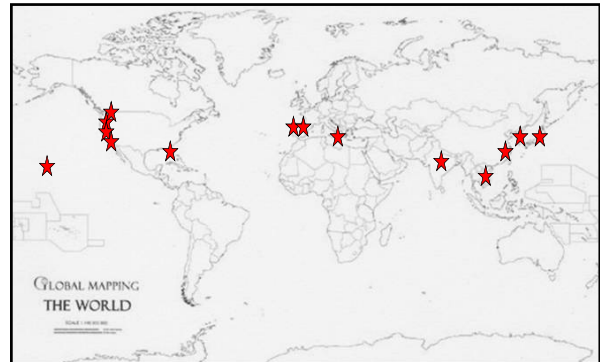


## Spotted Wing Drosophila

*Drosophila suzukii*



Photo by G. Ankelin



★ World distribution of *D. suzukii* as of April 2010

2010 IPM Workshop

## Why is SWD a concern?

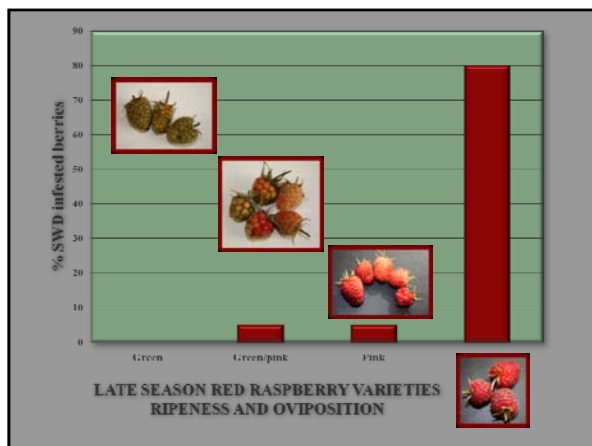
- Potentially explosive dispersal
- Adult activity highest at 68 degrees, declining above 86 degrees
- In Japan:
  - 13 generations/year
  - Life cycle 8-9 days
  - Adult lifespan 3-9 weeks
  - Females lay 7-16 eggs/day
  - Active from April - November
  - Overwinter as adults in protected areas.

2010 IPM Workshop



Male and female SWD on a raspberry

2010 IPM Workshop



## It likes fruit!



2010 IPM Workshop

## Wide Host Range

- **Favorites:** blueberries, blackberries, raspberries, cherries, strawberries, peaches
- **Less favorite:** apples, grapes and wine grapes, figs, boysenberries, elderberry, Italian prunes, kiwis, Asian pears, plums, plumcots, nectarines, and persimmons
- **Tomatoes** in the lab saw damage, but tomatoes in the field have fewer sugars and may not be as attractive

2010 IPM Workshop

## Male SWD

Spots on clear wings

Brown Body

Red Eyes are 50% of head



Photo by G. Ardell

Not SWD!

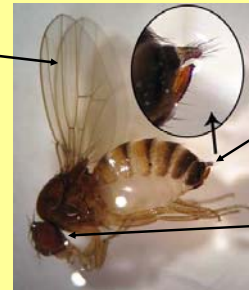


## Female SWD

No spots on clear wings

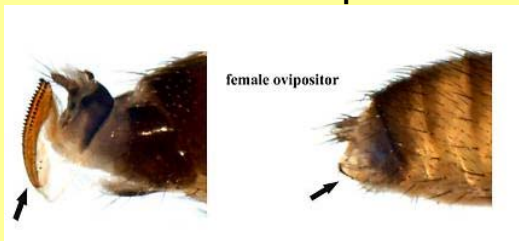
serrated ovipositor

red eyes are 50% of head



2010 IPM Workshop

## Difference in ovipositors



*Drosophila suzukii*

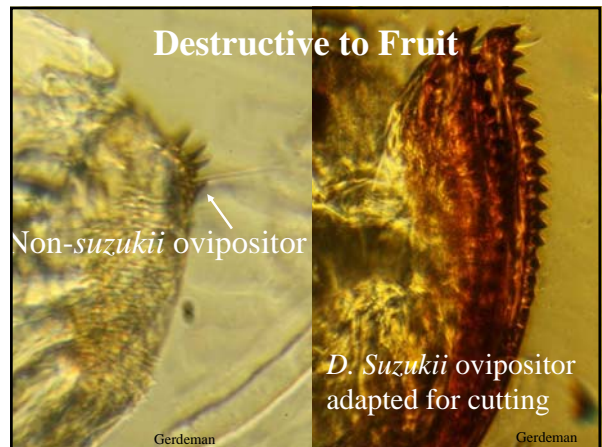
*Drosophila simulans*

2010 IPM Workshop

## Destructive to Fruit

Non-*suzukii* ovipositor

*D. Suzukii* ovipositor adapted for cutting



Gerdeman

Gerdeman

## Differences

- SWD appears brown, not black
- SWD is larger than other common fruit flies
- SWD has big red eyes
- SWD likes ripening fruit. Other fruit flies like over-ripe fruit only.

2010 IPM Workshop



Bruise typical of Spotted Wing Drosophila infestation in strawberry. As the larvae develop, a soft area at the area of infestation develops. The dark area is quite soft to the touch. On cutting open the bruise, one to two larvae can be found.

2010 IPM Workshop

## Cherry Damage



Larval development causes decay and sunken areas.

2010 IPM Workshop

Fruit with ovipositor scars



Puncture wounds on skin of a cherry from insertion of an egg.



Oviposition holes in a blueberry

2010 IPM Workshop

## SWD eggs



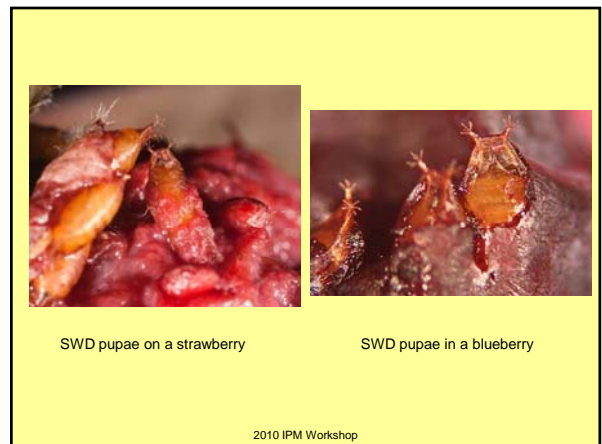
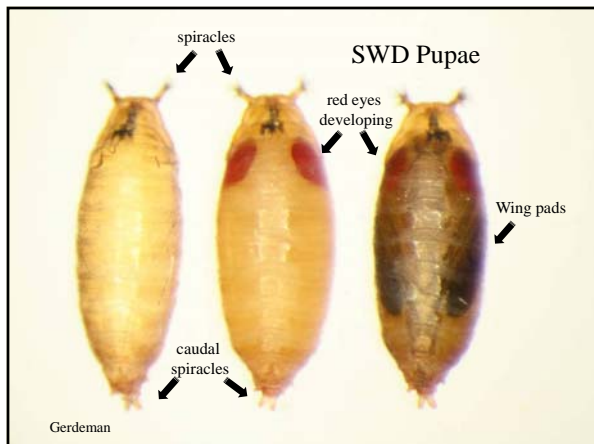
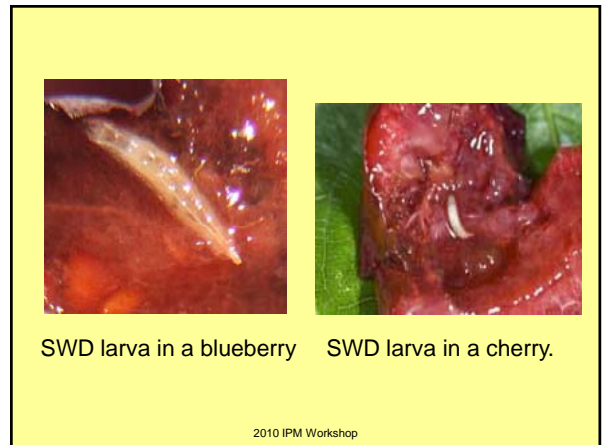
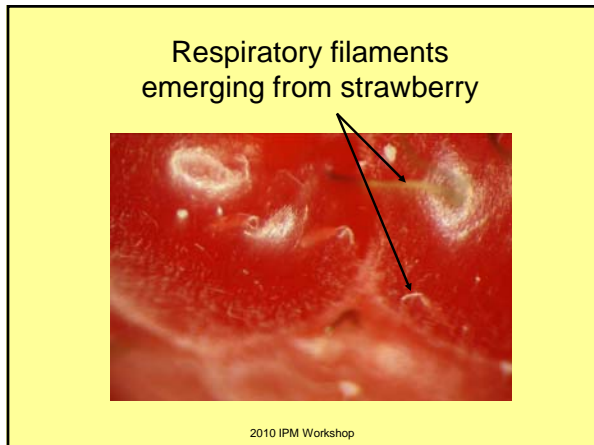
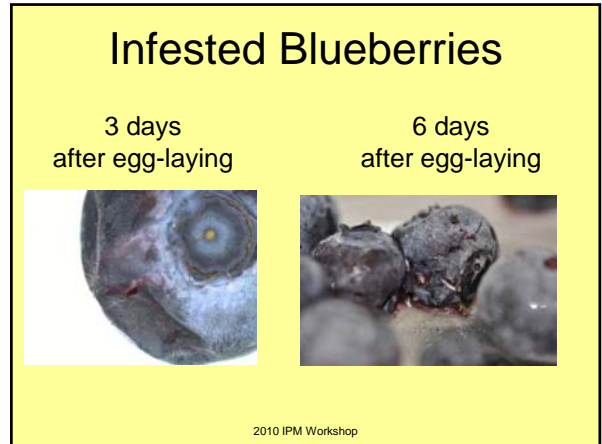
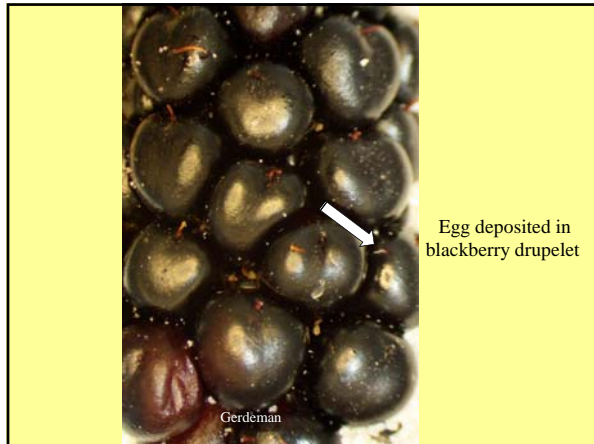
Oval, .6 mm long  
2 respiratory filaments at one end

2010 IPM Workshop

Respiratory filaments protruding from blueberry



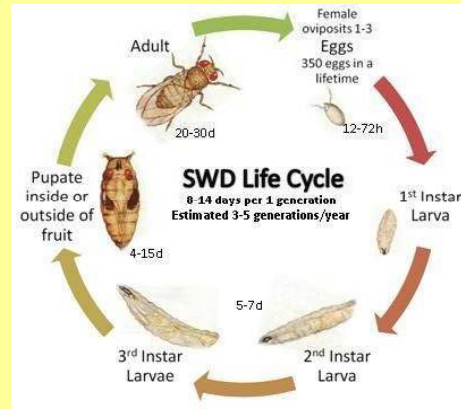
2010 IPM Workshop





Spotted Wing Drosophila pupae in and on a blueberry.

2010 IPM Workshop



## Managing SWD

- No control measure is effective once egg is inside the fruit!
- Keep leaf moisture low
- Trap with apple cider vinegar
- Reduce breeding sites
- Clean up and destroy over-ripe fruit
- Try netting with small holes
- No known chemical or biological controls in Washington state yet

2010 IPM Workshop

## Plastic Cup Trap



2010 IPM Workshop

## Nalgene Bottle Trap



2010 IPM Workshop

## WSU Hortense - <http://pep.wsu.edu/hortense/>

**Blueberry: Spotted wing Drosophila (SWD)**

Use IPM (Integrated Pest Management) for successful plant problem management.

**Biology**

Spotted wing Drosophila (SWD) is an insect pest that has recently been found in California, Oregon, Washington, and Florida, as well as in Mexico. It is a member of the Drosophilidae family, but it is not a member of the Drosophilidae subfamily. The SWD is a pest of many fruit crops, including blueberries, raspberries, and strawberries. It is a pest of many fruit crops, including blueberries, raspberries, and strawberries. It is a pest of many fruit crops, including blueberries, raspberries, and strawberries.

**Management Options**

Several non-chemical Management Options are available for SWD:

- Monitor for SWD using traps. Simple traps can be made from clear plastic beverage cups with holes or plastic water bottles. Other commercial traps are available.
- Use insecticides. Insecticides can be used to control SWD. However, insecticides should be used carefully and only when necessary.
- Use biological control. Biological control agents can be used to control SWD.
- Use cultural practices. Cultural practices can be used to reduce SWD infestations.

## For more information:

- <http://swd.hort.oregonstate.edu>
- [http://swd.hort.oregonstate.edu/files/webfm/editor/DRAFT\\_Monitoring\\_Trap\\_3-19-2010.pdf](http://swd.hort.oregonstate.edu/files/webfm/editor/DRAFT_Monitoring_Trap_3-19-2010.pdf)
- <http://www.mountvernon.wsu.edu/entomology/pests/SWD.html>

2010 IPM Workshop

## Thanks!

- Joyce Harms, King County Master Gardener
- Anne Knight
- WSU Mt. Vernon Research Center staff

2010 IPM Workshop