



Enhanced First Detector Training
Spottedwing Drosophila:
A New Pest of (Small) Fruit

Drosophila suzukii

Dan Gilrein
Extension Entomologist

Faruque Zaman
Associate Entomologist
Cornell Cooperative Extension of Suffolk County

Spotted wing drosophila (SWD)

- Potential impact
- Distribution & pathways
- Life cycle
- Identification
- Hosts
- Signs & symptoms
- What to do if you suspect SWD is present

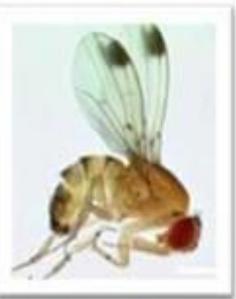


Spottedwing Drosophila

Background Information

- A fruit fly (aka vinegar fly, cherry fruit fly, wine fly)
- First reported 1939 (Japan)
- Native to SE Asia
- Found in Asia, Europe, Central America, Canada, US
- Hawaii in 1980's
- Continental U.S. 2008 (Santa Cruz, CA)
- In at least 37 states in U.S.





SWD in NY Spotlight

TOPNEWS TODAY .ORG
THE NEWS FROM THE BEST

Home US Sport Business Technology LIT

Top News Today » US » Pesky Asian fruit fly threatens late-season berries in Hudson Valley

Pesky Asian fruit fly threatens late-season berries in Hudson Valley

lahud.com (13 hours ago) Sep 9, 2013

An Asian fruit fly that caused millions of dollars worth of damage to cherry crops on the East Coast has made its way east and has now been found all over New York, closing in on the Lower Hudson Valley counties. [FULL STORY](#)

News Regions Events Video Pest & Prod

Chemical Updates New Products Citrus Greening Pests Techno

Home > News > New York grape growers warned of two new pests

New York grape growers warned of two new pests

ShareThis Resize text PRINT THIS

03/23/2011 03:24:00 PM
By The Grower staff

Damaging Long x
om/2013/09/10/fruit-flies-damaging-long-island-berry-crops-could-cause-price-hike/#listen-live

CBS
New York

Home News Sports Best Of Health Video Audio Traffic Weather Place

News Home New York New Jersey Connecticut 2013 Elections Business Health

yp
the new way
to do.

NEWS

Fruit Flies Damaging Long Island Berry Crops, Could Cause Price Hike

Expert: 'There Will Be A Financial Impact On Both Industry And Consumers'

September 10, 2013 7:36 PM

Like 35 Tweet 8 Share 2

View Comments



Why SWD is a problem

- Fruit damage to 100%; attacks even unripe fruit
- Huge population size, several wild hosts
- Short life cycle
- Frequent insecticides needed, few options



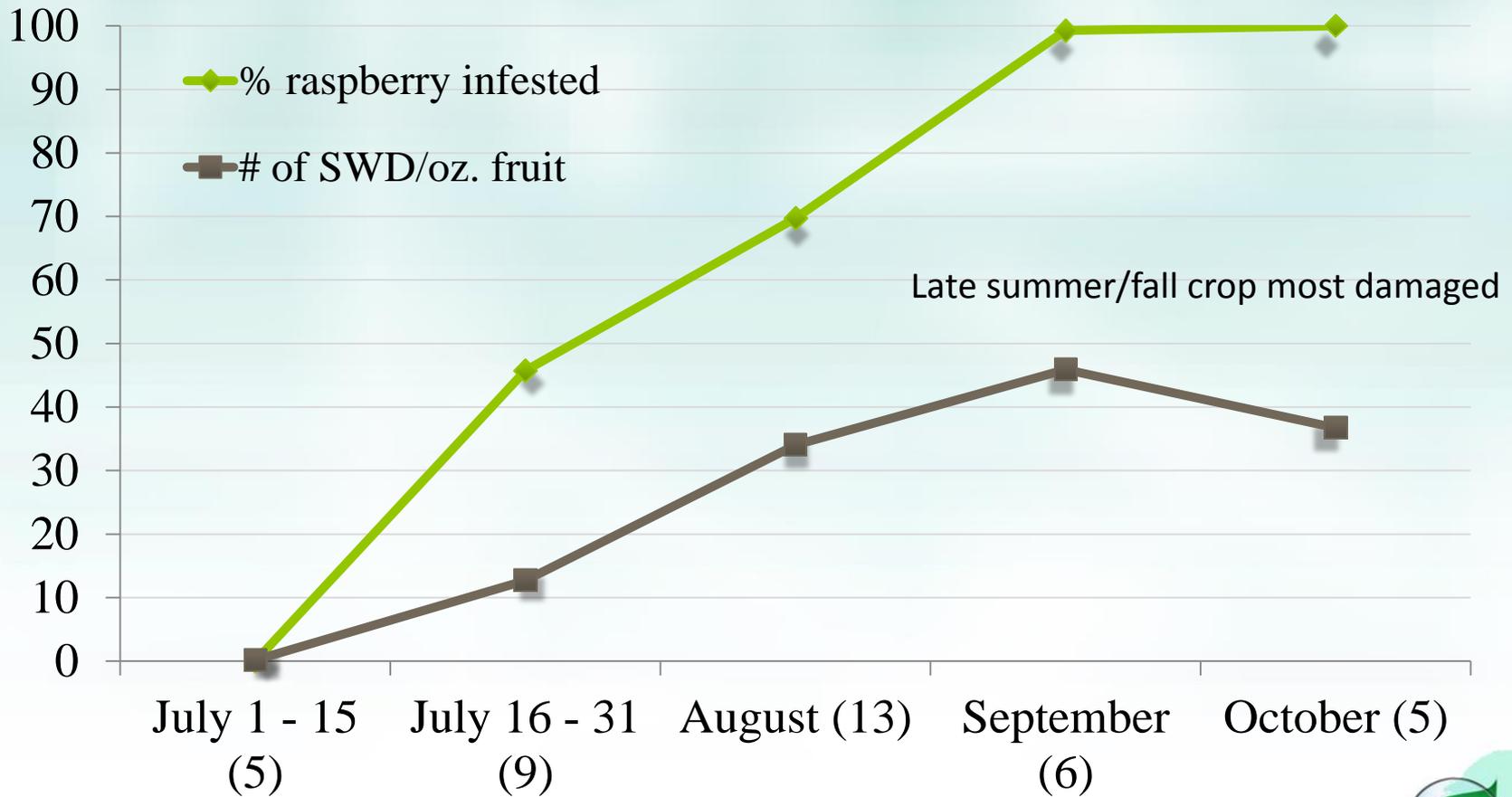
F. Zaman

SWD infested raspberries

Amy Ivy



Raspberries: SWD infestation & adult emergence Long Island - 2013

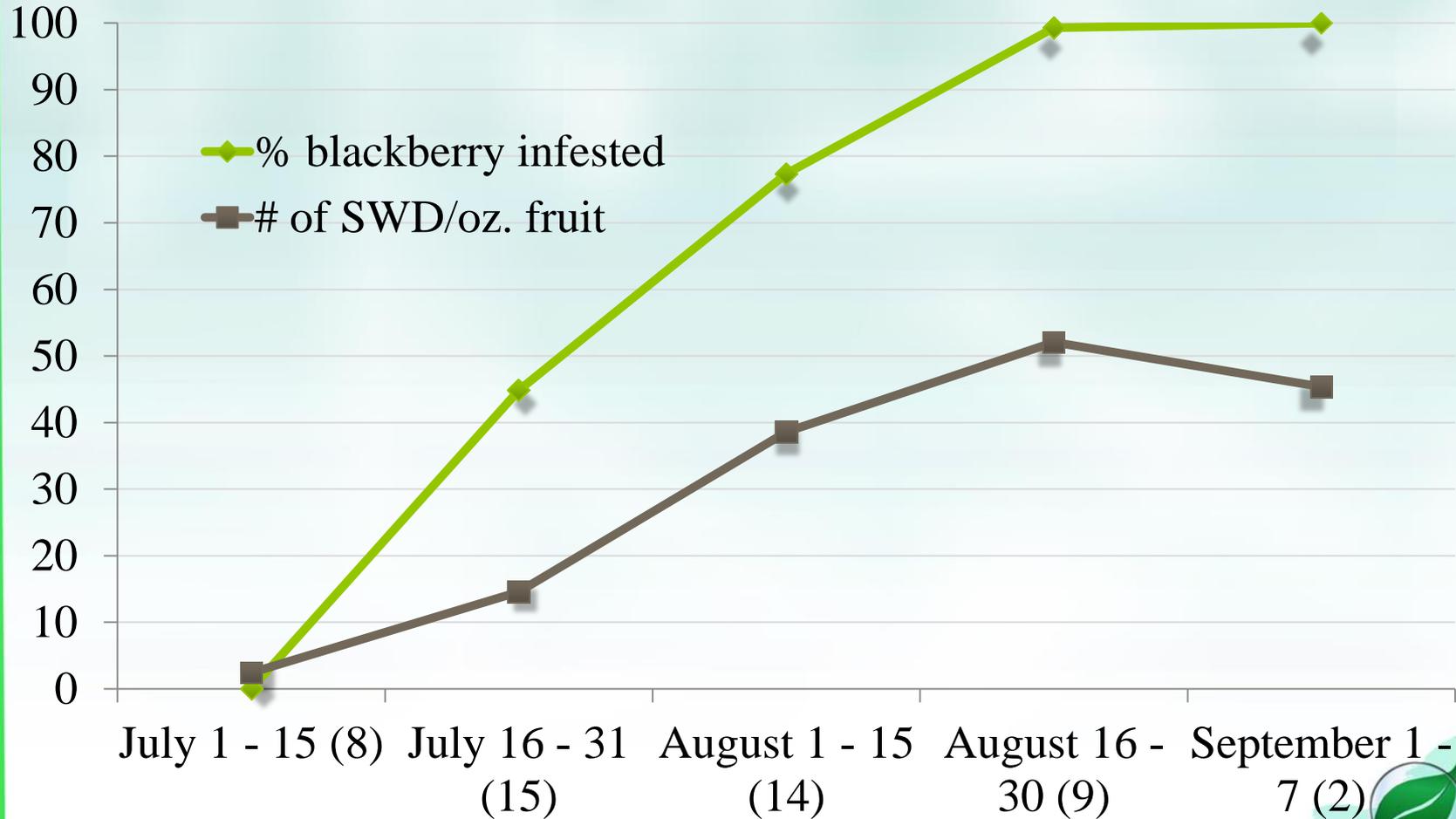


Note: numbers of 4.0 oz. samples collected in a given period in parentheses





Blackberries: SWD infestation & adult emergence Long Island - 2013

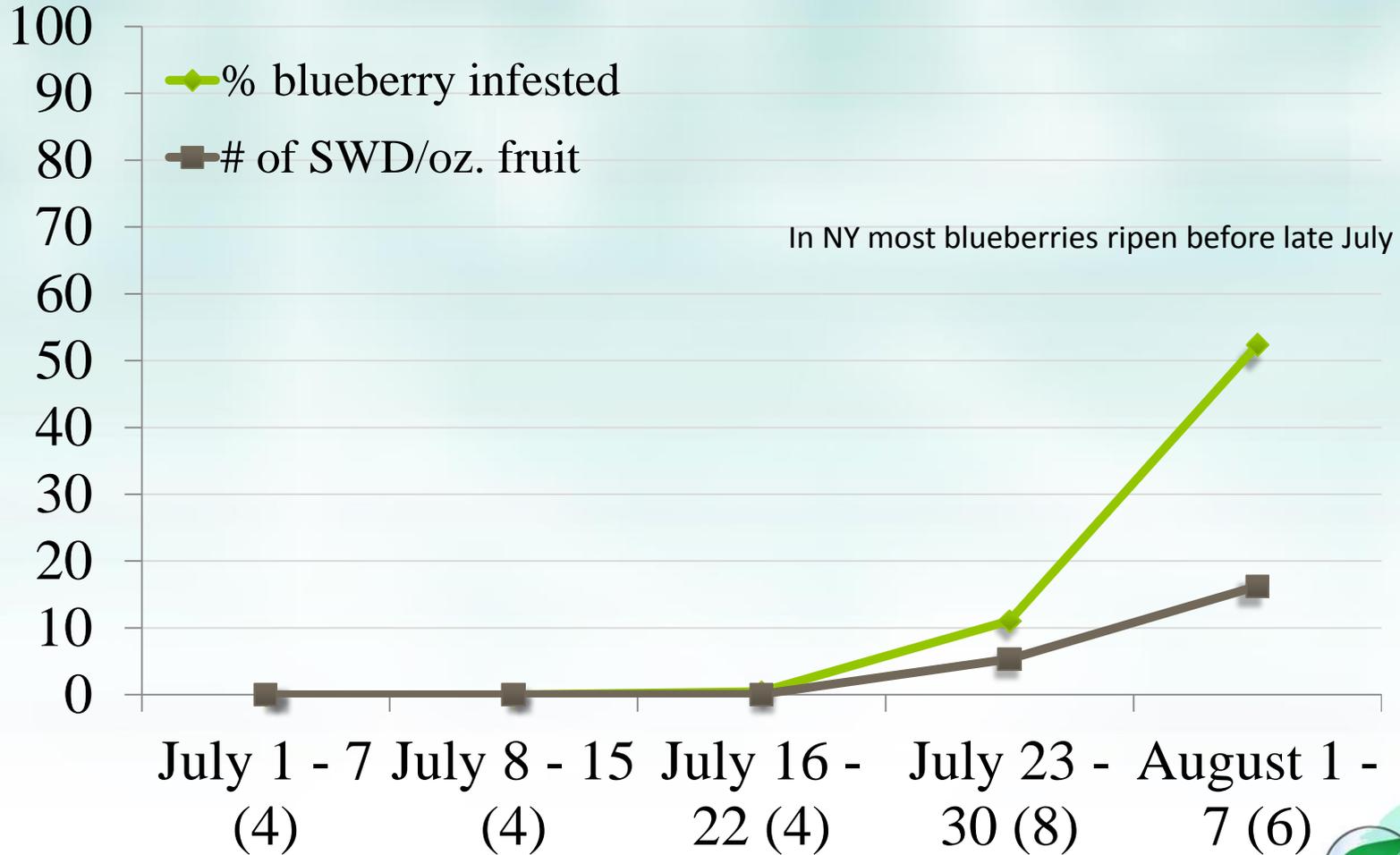


Note: numbers of 4.0 oz. samples collected in a given period in parentheses





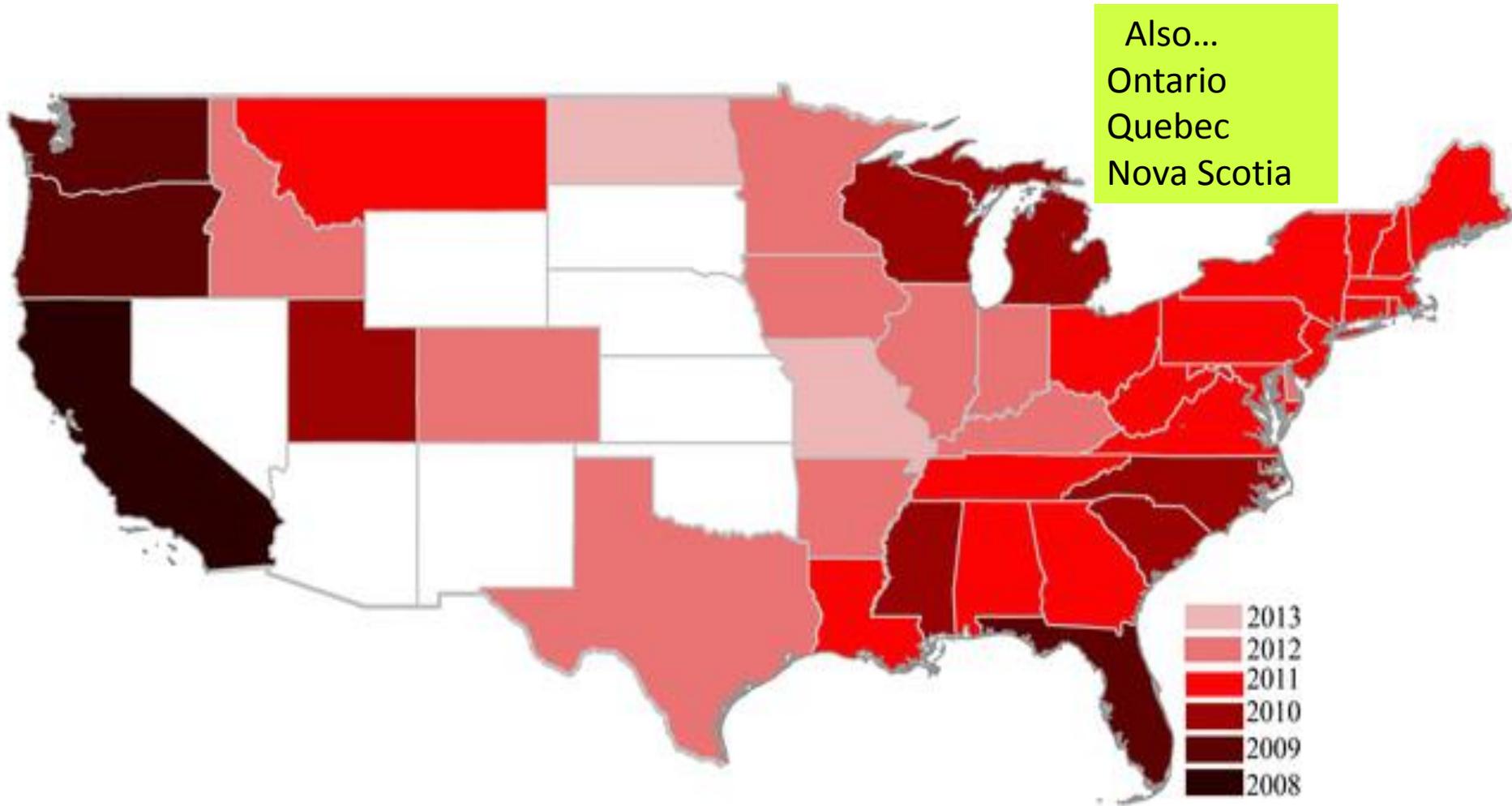
Blueberries: SWD infestation & adult emergence Long Island - 2013



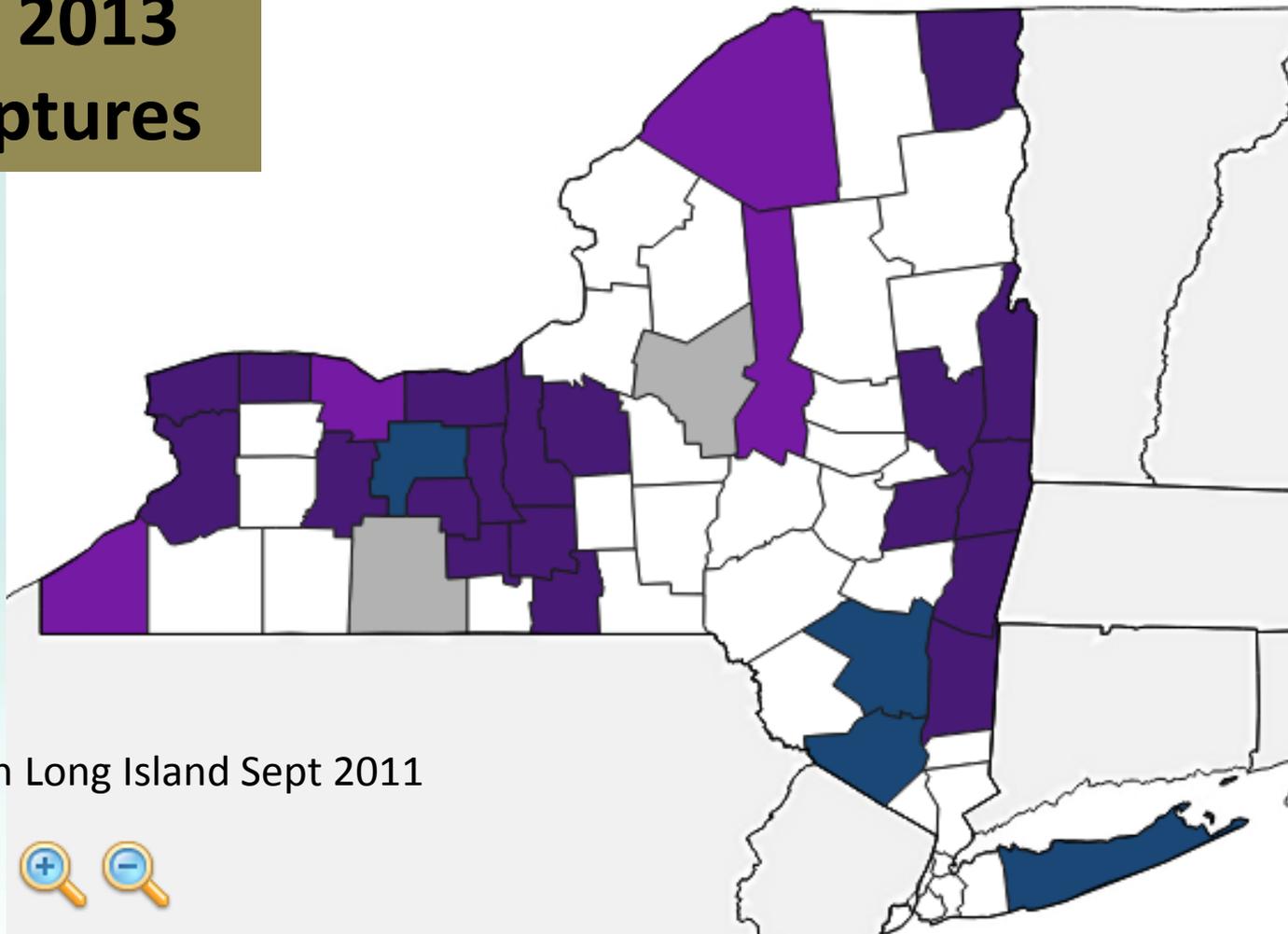
Note: numbers of 4.0 oz. samples collected in a given period in parentheses



SWD detections in continental US



Confirmed 2013 NY trap captures

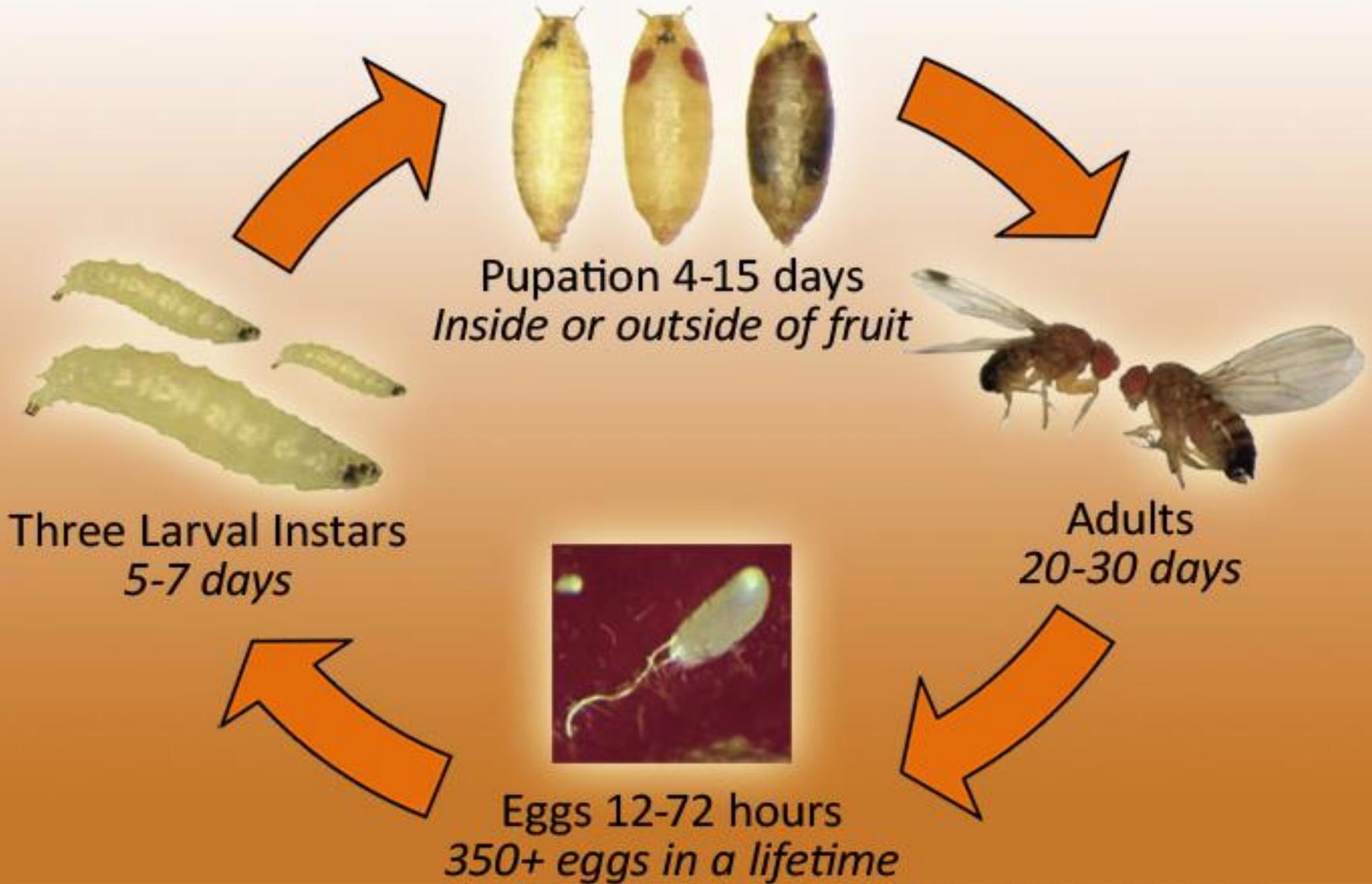


Legend



Life Cycle of the Spotted Wing Drosophila

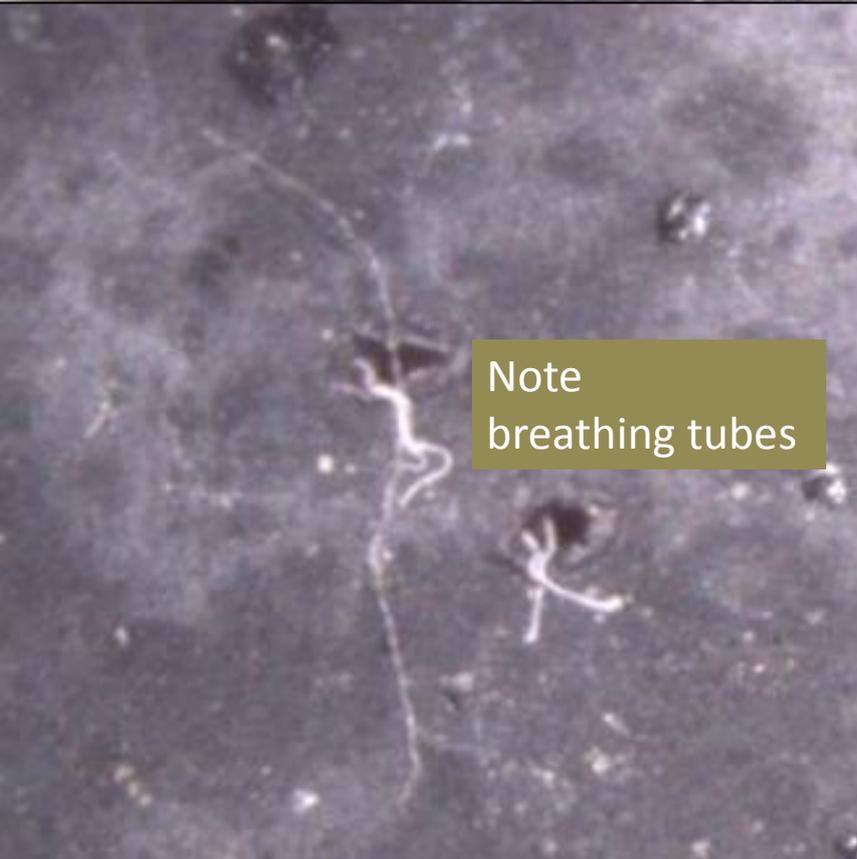
Drosophila suzukii (Matsumura)



SWD on raspberry



SWD can lay eggs in intact & unripe fruit
unlike other fruit flies



Note
breathing tubes

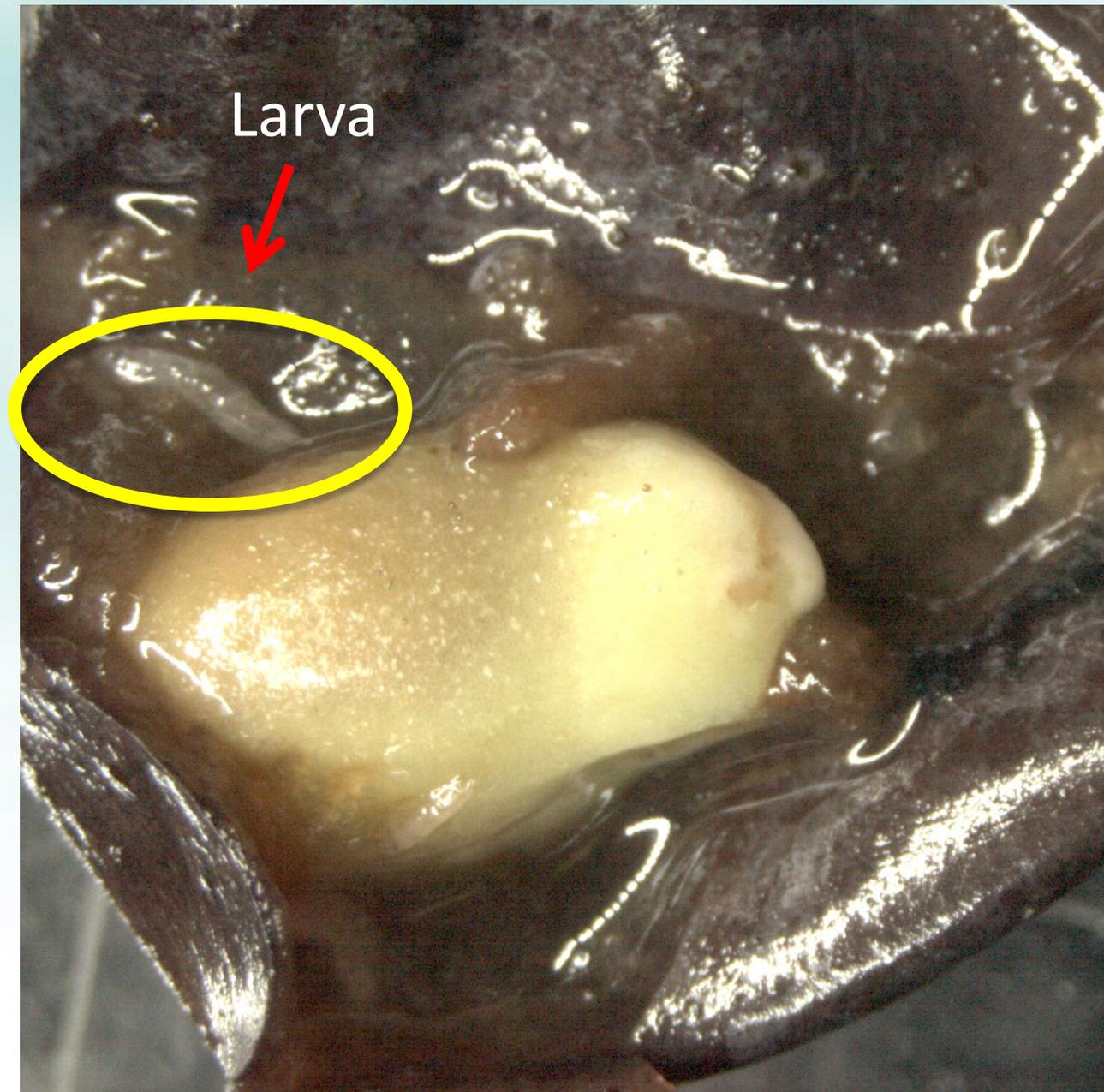


Egg and Larva

Egg to adult in about 2 wk

Long breathing tubes

Egg



Larva



Monitoring SWD Adults

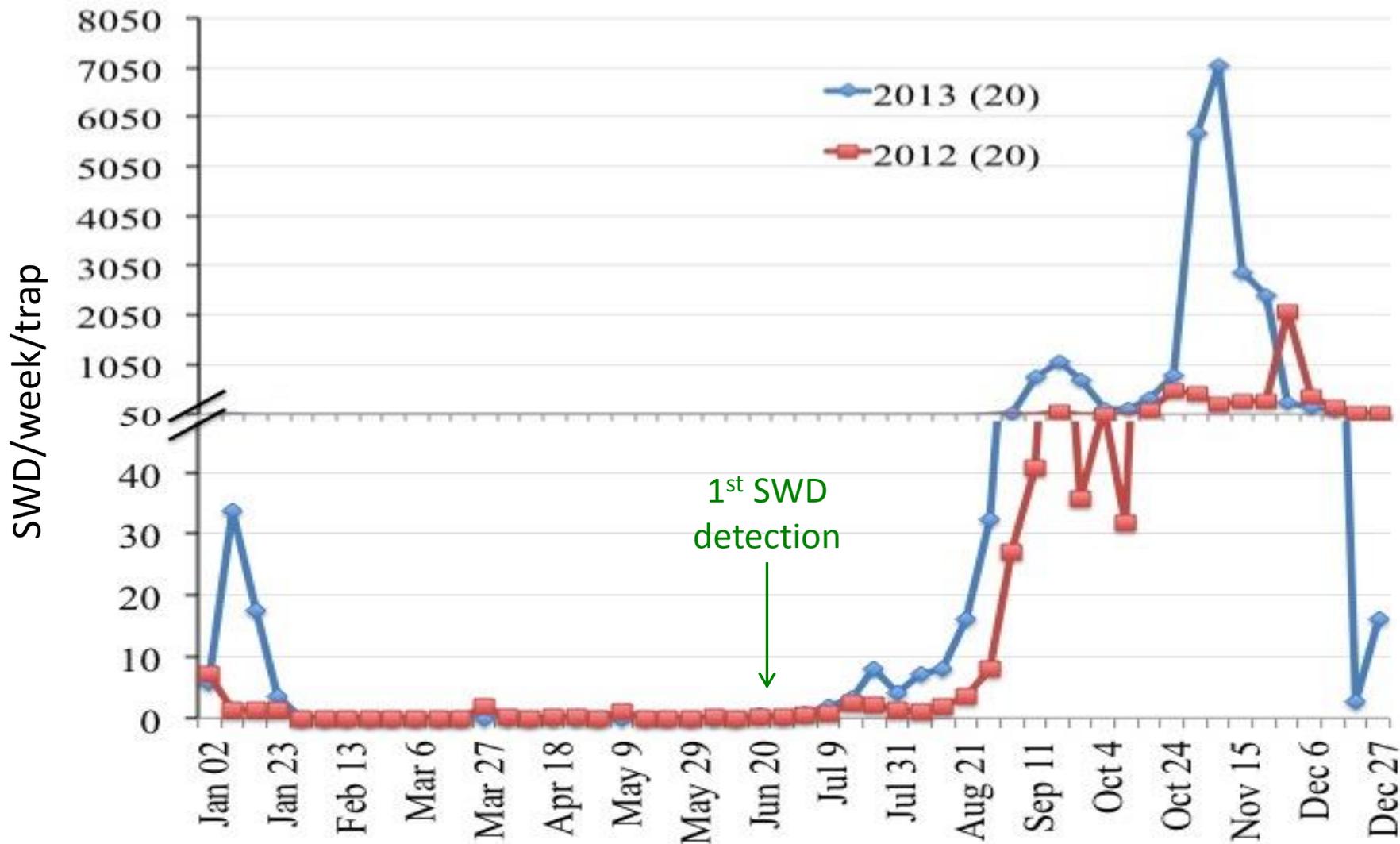
SWD can be caught in traps hung in orchards or vineyards.



- Deli cup, 5 mm holes near top
- 1 – 2” apple cider vinegar bait, with a drop of unscented soap
- Hang in fruit canopy near fruit and in the shade
- Filter vinegar to collect adults
- Check weekly



SWD Trap Counts on Long Island, 2012 - 2013



Numbers of traps in each crop in parentheses. Bait used: 2012- apple cider vinegar, 2013- ACV + yeast + sugar.



male

SWD Identification



female

Males have two wing spots just forward of tips



SWD ID

Dark spot on each wing



No dark spots on wings.

Saw-like serrations on ovipositor.



Two dark comb-like structures on each foreleg.



M. Hauser

MALE

FEMALE



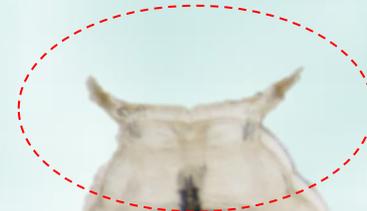
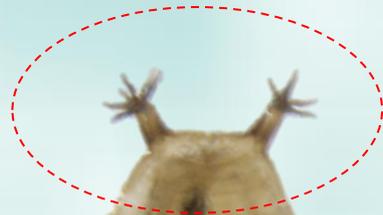
F. Zaman

Serrated ovipositor



SWD ID - Pupa

Finger like structure



SWD

Other drosophila





Hosts

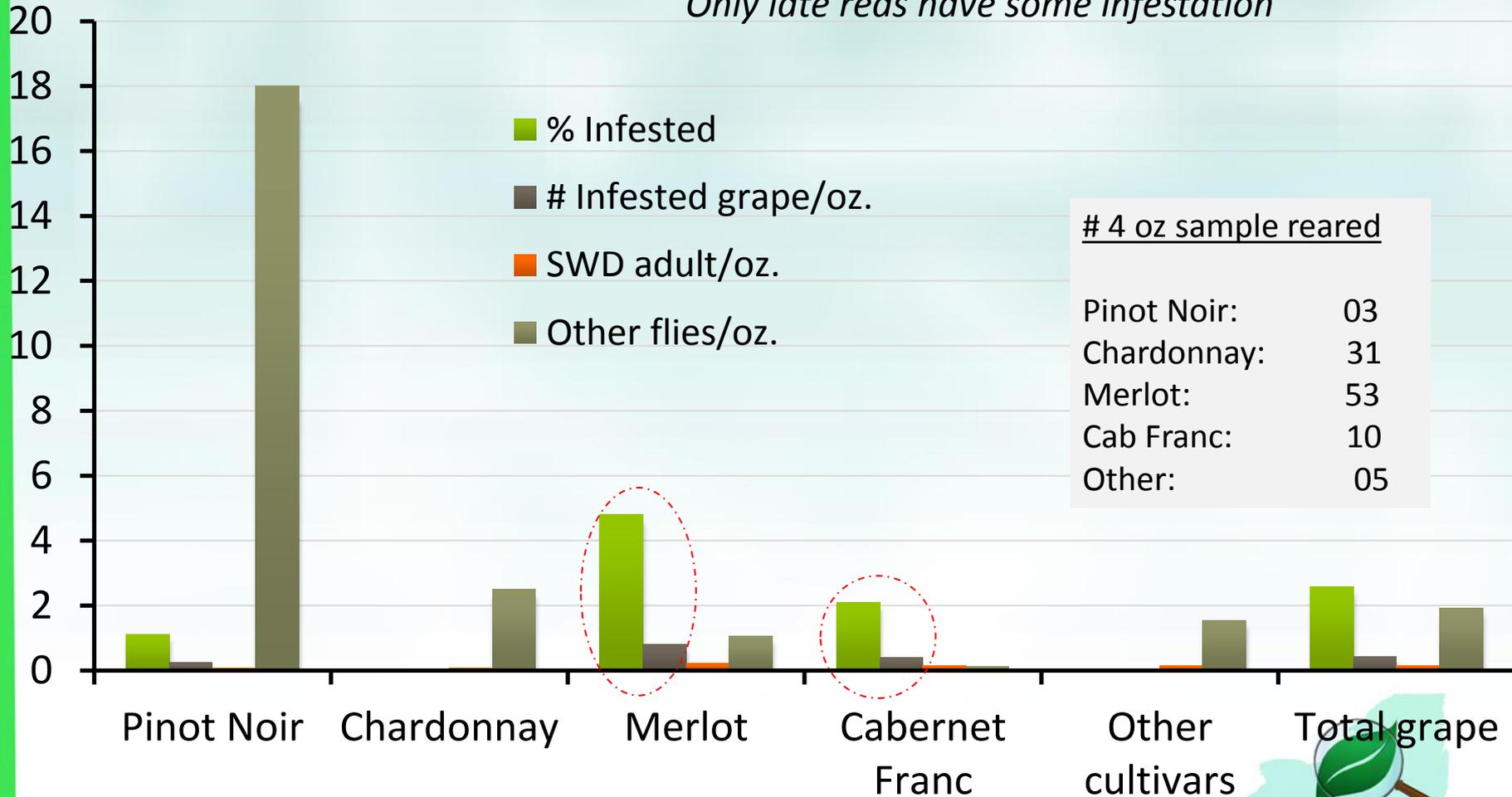
Favorites include brambles (raspberry, blackberry), blueberry, strawberry, cherry, others



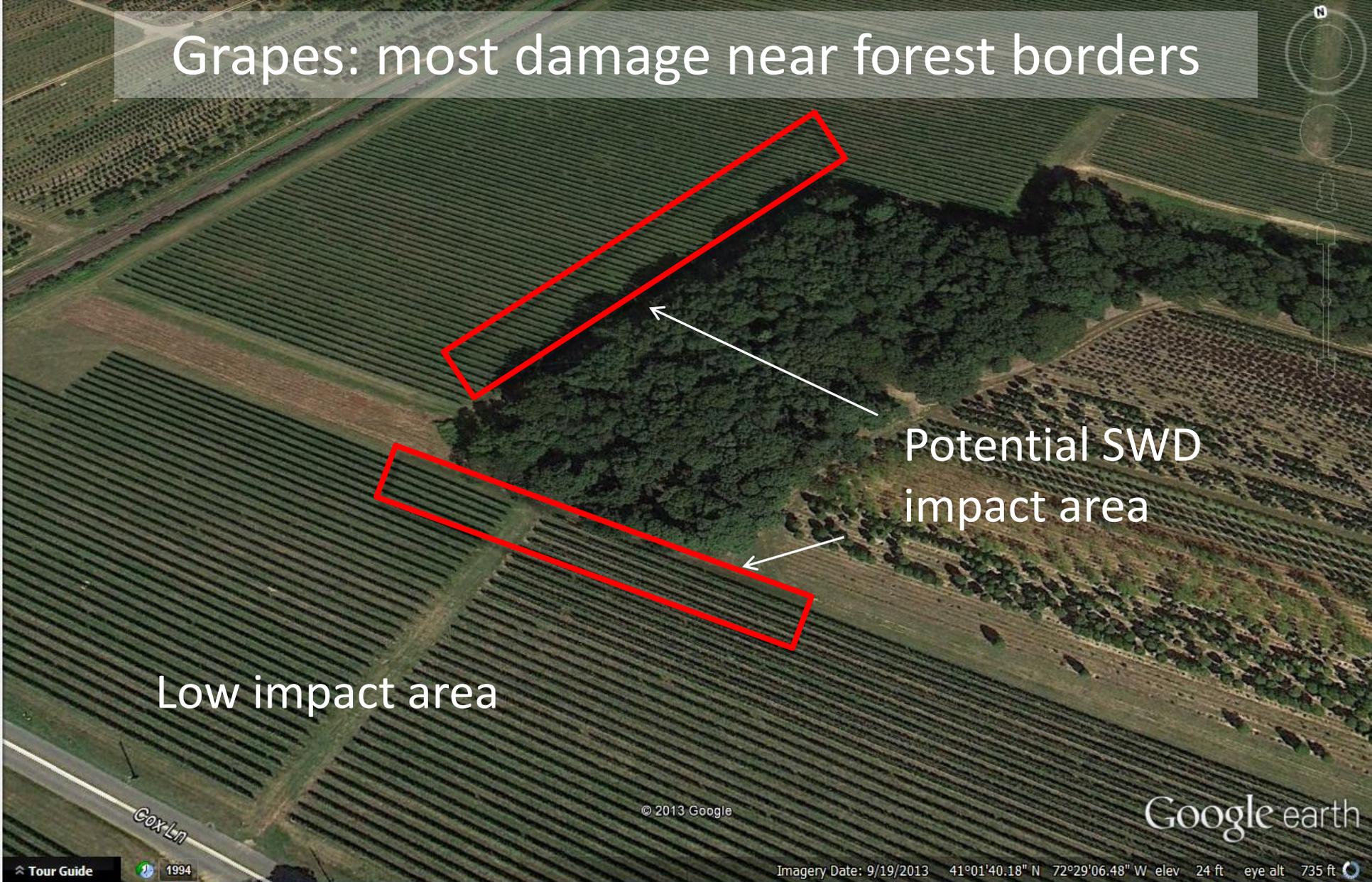
SWD emergence from grapes

Long Island - 2013

*Grape does not appear to be important host
Only late reds have some infestation*



Grapes: most damage near forest borders



Potential SWD impact area

Low impact area



© 2013 Google

Google earth

Imagery Date: 9/19/2013 41°01'40.18" N 72°29'06.48" W elev 24 ft eye alt 735 ft

Tour Guide 1994

Wild Hosts

many wild hosts
Including ...



Black cherry

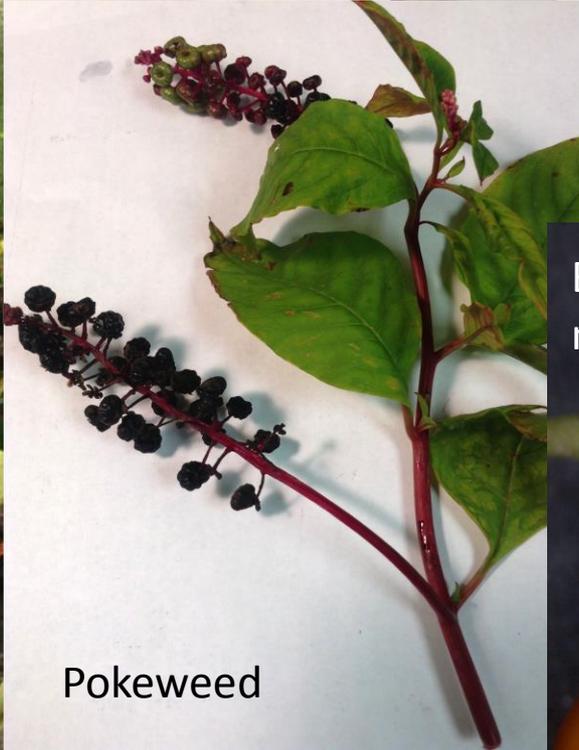


Yew

Zaman



Autumn olive



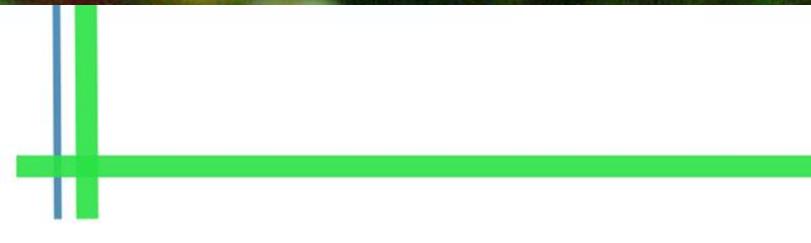
Pokeweed



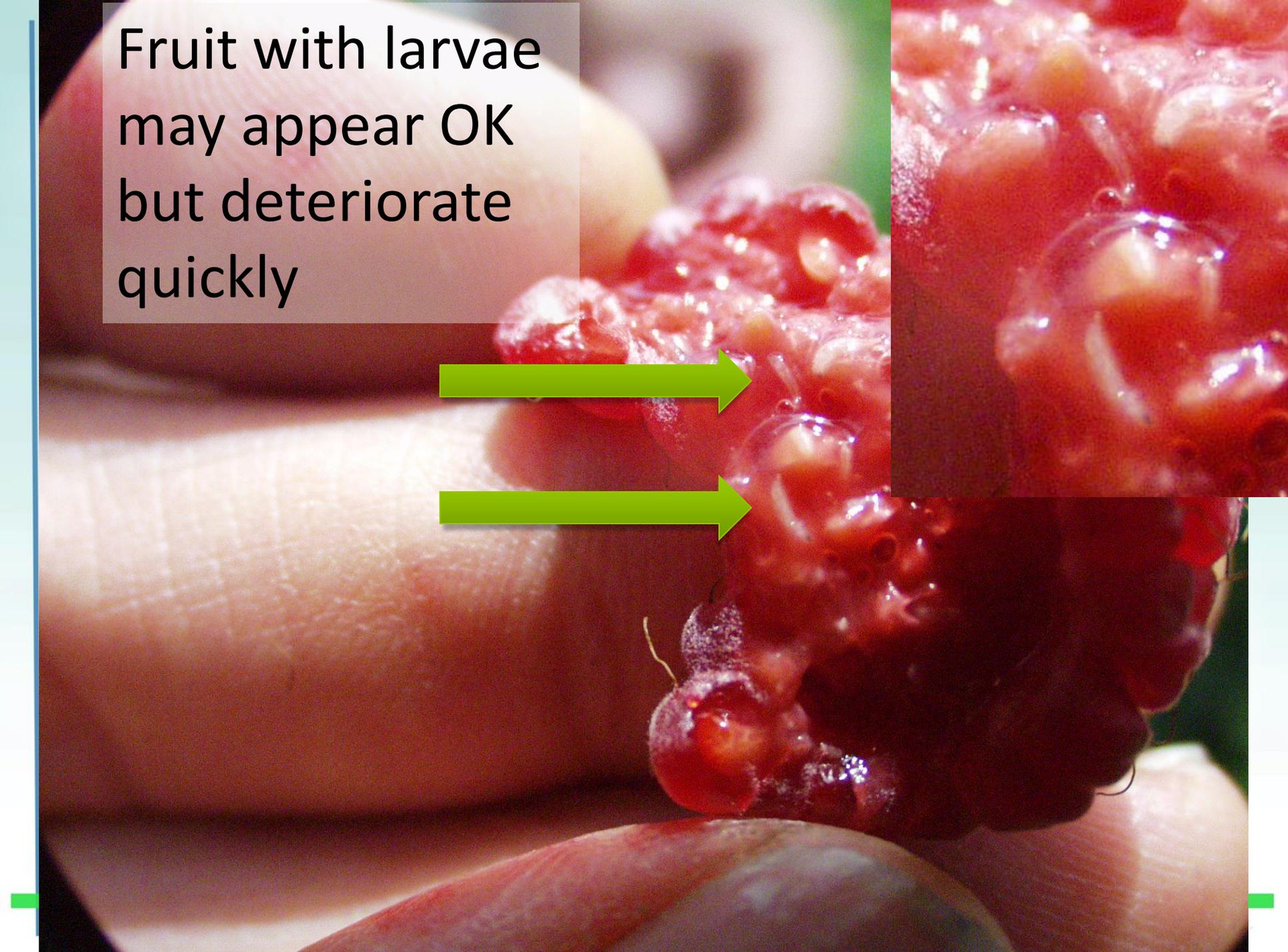
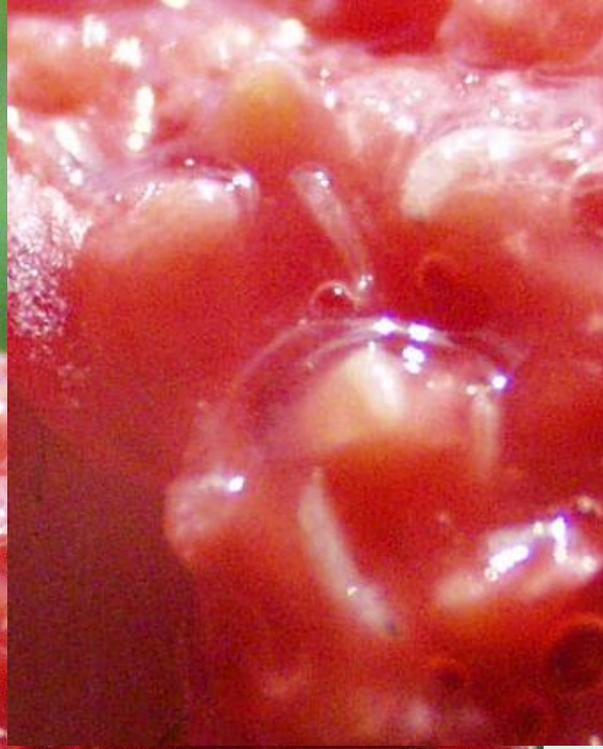
Bittersweet
nightshade



Signs/Symptoms
Infested fruit may
loosen, fall, show
sunken areas



Fruit with larvae
may appear OK
but deteriorate
quickly

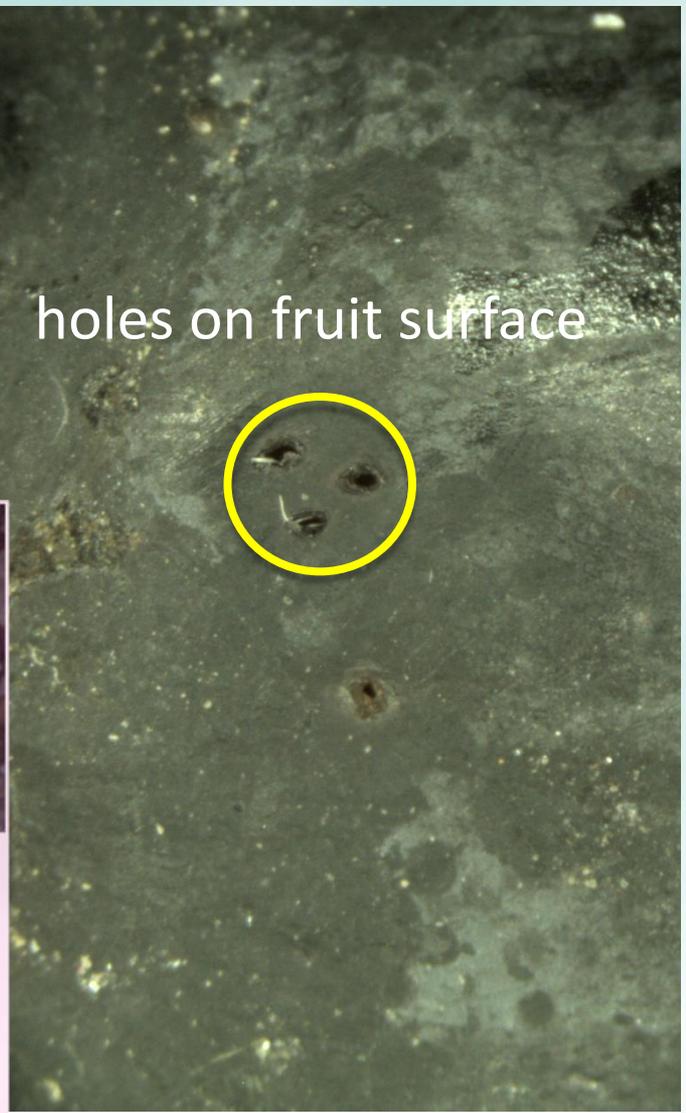
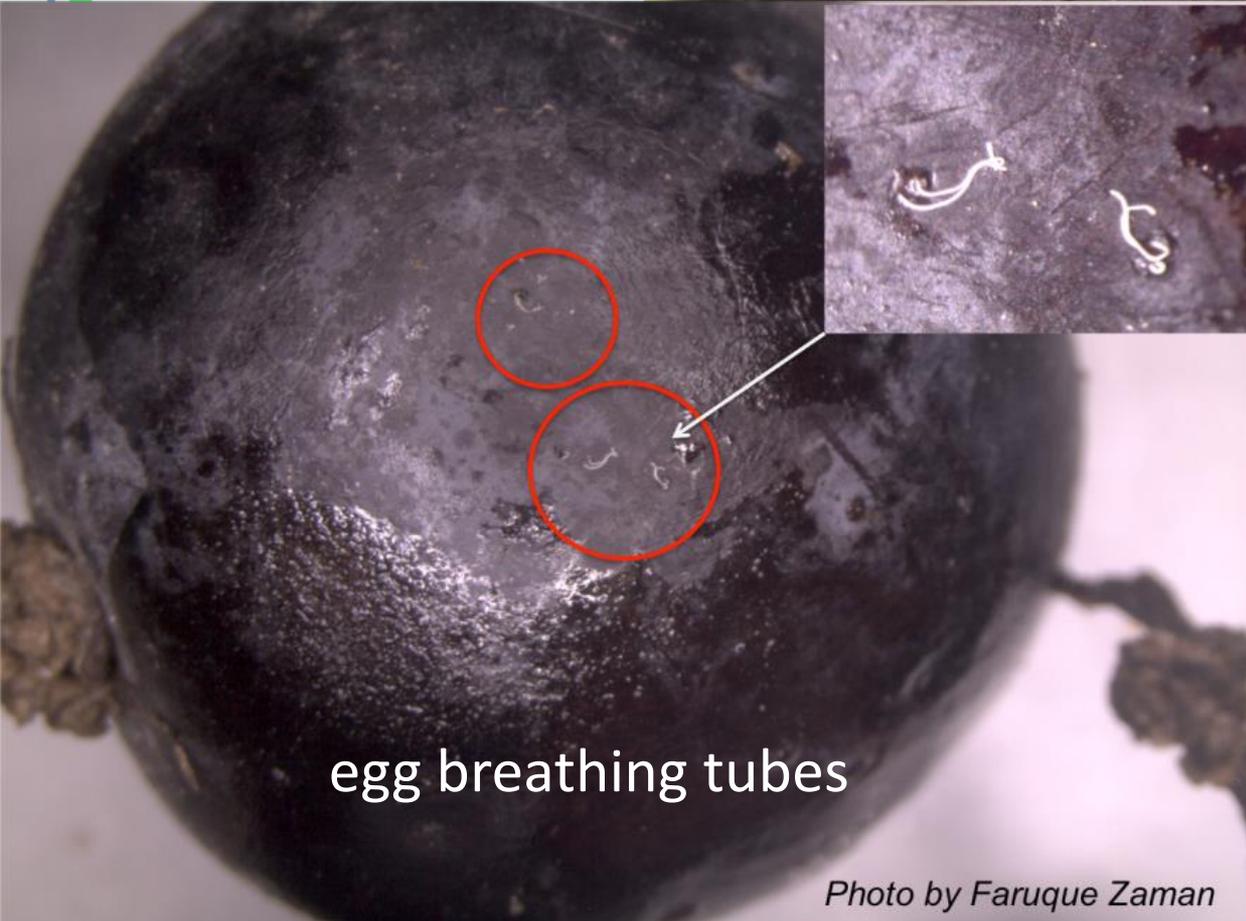


Signs of Infestation

Egg-laying sites visible under magnification

Fruit looks healthy

holes on fruit surface



egg breathing tubes

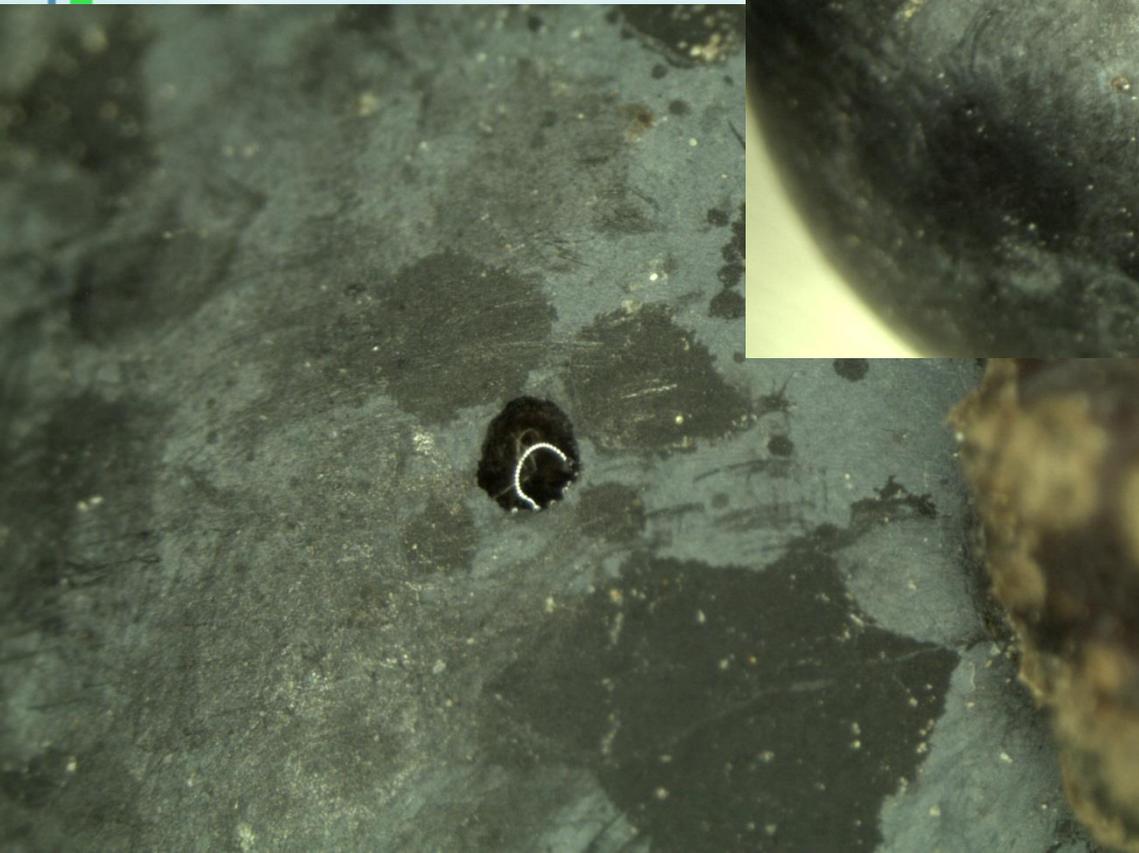
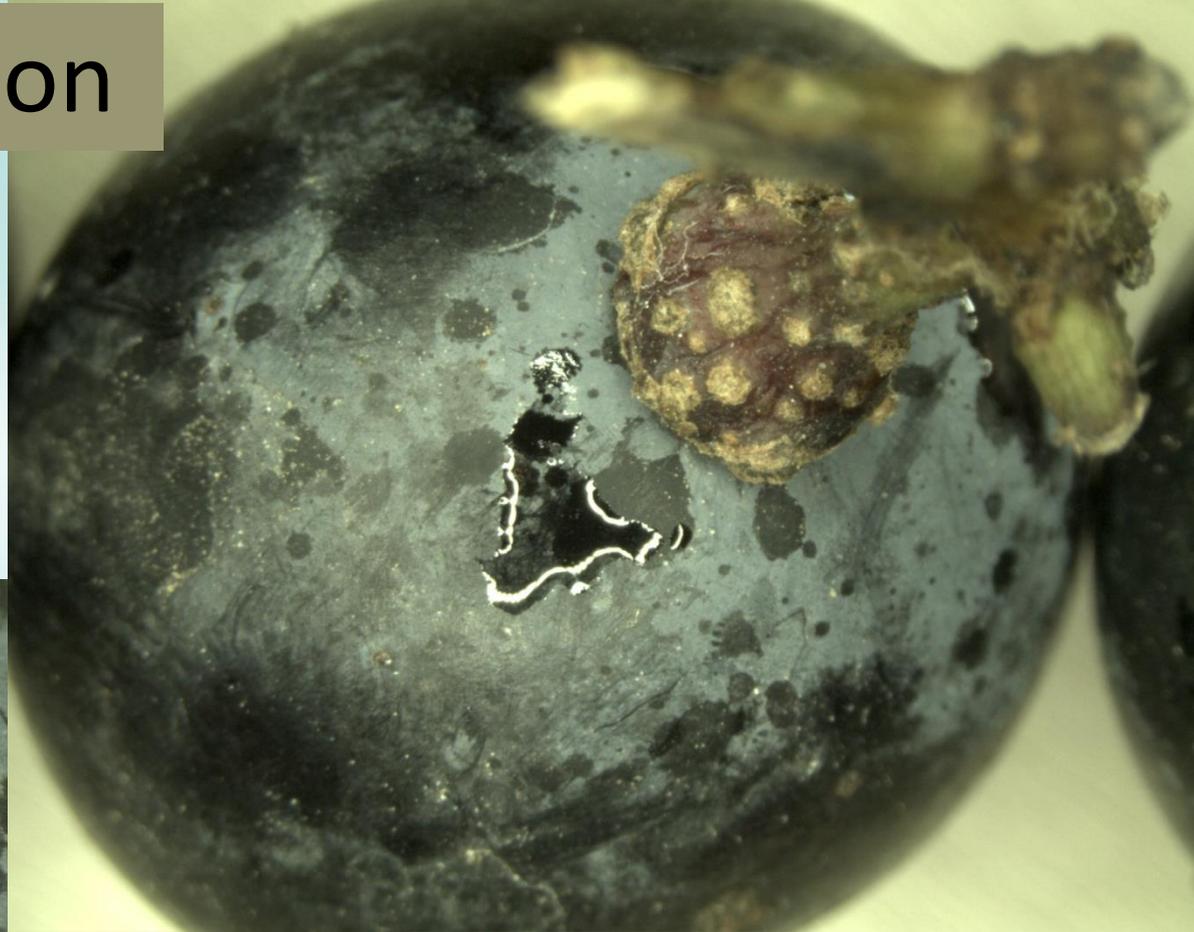
Photo by Faruque Zaman

Inspector Training for New York State

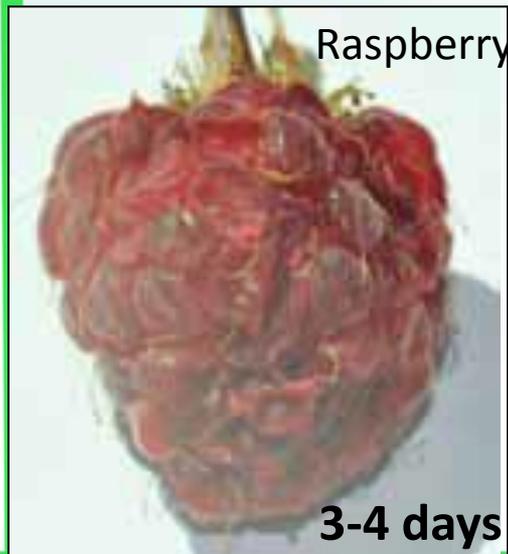


Signs of Infestation

Juice from egg holes
with gentle pressure



Infestation progression in ripe fruit



What to do if you see/suspect SWD?

- Don't need to report but new hosts of interest
- Appears to be established & widespread
- Adults easiest to ID – can rear out
 - submit samples in 70% alcohol
- Population may be migrating in after mid-summer
- Early strawberries, raspberries, blueberries OK
- Late summer/fall berries may need protection (insecticides)
 - check with Extension for current approved controls and alternatives



Acknowledgements



Dr. Greg Loeb – NYSAES, Geneva, NY

**James O'Connell, Cornell Cooperative Extension
of Ulster County**

Julie Carroll, NYS IPM Program

L.I. Grower Cooperators

Collaborating Agencies

U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS)

Cooperative Agricultural Pest Survey Program (CAPS)

New York State Department of Agriculture and Markets (NYSDAM)

National Plant Diagnostic Network (NPDN)

Sentinel Plant Network (SPN)

Protect U.S.

Department of Plant Pathology and Plant-Microbe Biology,
Cornell University



Reviewed by



Online Resources

Oregon SWD Website (ID, monitoring, etc.)

<http://spottedwing.org/>

Cornell Fruit SWD page

<http://www.fruit.cornell.edu/spottedwing/>

SWD Pest Alerts

http://www.aphis.usda.gov/publications/plant_health/content/printable_version/Drosophila_Suzukii.pdf

And

<http://www.ncipmc.org/alerts/drosophila.pdf>

