

Northeastern IPM Center Partnership Grants Impacts

Spotted Wing Drosophila (SWD) Working Group (2016)

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SWD on Blueberry. Photo: Tim Martinson, Cornell University.



SWD larvae developing inside blueberry fruit. Photo: Carolyn Teasdale, ES Cropconsult.



Adult SWD on raspberry. Photo: Alan Eaton, University of New Hampshire.



SWD larvae feed on the raspberry. Photo: Juliet Carroll, Cornell University.

THE NEED

- **Spotted wing drosophila (SWD)***, an invasive fruit fly, has exploded onto the scene in essentially **all northeastern states** since the 2011 growing season, causing significant injury to small fruits in several areas.
- In 2012, the susceptible crop value in the eastern states was **\$420 million** and **crop loss was estimated at \$1.6 million and counting.**
- Unlike many other fruit flies, **SWD can lay eggs in intact and marketable fruit. Berries are especially vulnerable**, but SWD has been reported in many other crops and wild plants.
- To protect fruit from egg-laying adults, an **unsustainable schedule of foliar applications of chemical insecticides—from the onset of ripening through harvest—has become the norm since 2012.**
- **The damage to fruit production and the increased use of insecticides prove a clear need for IPM research.**
- A working group was funded to address the threats posed by SWD.



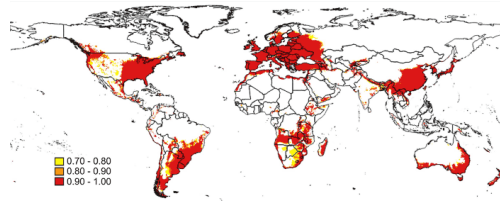
Larvae of SWD in strawberry fruit. Photo: Hannah Burrack, North Carolina State University, www.bugwood.org.



Closeup of SWD larvae in strawberry fruit: Photo: John Obermeyer, Purdue Extension



SWD requires frequent pesticide applications. Photo: USDA Crop Profile for Raspberries (Red) in Washington.



Predicted SWD global distribution generated by the GARP algorithm. Dos Santos et al., 2016. PLOS One.

**Drosophila suzukii*

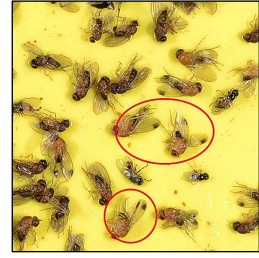
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Monitoring trap for adult SWD flies. Photo: Hannah Burrack, NC State University, www.bugwood.org



Commercial yellow sticky trap baited with insect pheromone for SWD fly monitoring. Photo: Caitlin Krueger, NDSU



SWD flies stuck on a sticky trap. Photo: John Obermeyer, Purdue Extension Entomology



A trap for monitoring SWD. Photo: Juliet Carroll, Cornell University.



Exclusion netting supplements this high tunnel where raspberries are being grown. Photo: Laura McDermott, Cornell University.



Inside the exclusion netting over a blueberry planting. SWD infestation can be managed without insecticide sprays, provided no SWD get inside. Therefore, monitor for SWD inside the exclusion net with traps and fruit sampling. Photo: Greg Loeb, Cornell University.

IMPACTS

- **Significant progress in IPM approaches** to reduce reliance on chemical tactics and help protect at-risk fruit crops.
- **IPM guides were published** for blueberry, raspberry, and blackberry with high-quality photos to help growers, consultants, and extension educators **identify** SWD, **learn about monitoring**, and **recognize symptoms** of infestation.
- “Evaluating a push-pull strategy for management of *Drosophila suzukii* Matsumura in red raspberry” (Wallingford et al., 2017) was published.
- Growers have learned IPM tactics to reduce risks to the **environment**, their **bottom line**, and **worker and consumer exposure** from repeated and frequent pesticide applications.
- Working group has reached over **900 growers, educators, and other stakeholders** so far.
- Building on initial USDA-NIFA funding of \$20,000 awarded by the Northeastern IPM Center, the group **leveraged an additional \$520,000** from 2017 to 2019 through the New York State Department of Agriculture and Markets.

CASE STUDY: EXCLUSION NETTING WORKS

- A case study on the impact of exclusion netting on blueberries at The Berry Patch in NY has allowed the owners, Dale-Ila Riggs and Don Miles, to stop applying pesticides with less than 1% incidence of SWD each year.
- Another major benefit of exclusion netting is cost: at The Berry Patch, in a .1-acre high-tunnel raspberry plot, Riggs spent roughly \$300 on exclusion netting, whereas it would cost her \$600 for a season’s worth of pesticides.
- “Ultimately, the quality of the berries at our farm is most rewarding,” she said. “Under these nettings, we are breaking records and giving Oregon and Washington blueberry yields a run for their money.”
- Riggs, Gregg Loeb and Cornell Cooperative Extension (CCE) collaborators plan to use a demonstration plot at the Berry Patch in the year ahead to show other New York berry producers the success of exclusion netting as well as best practices.

www.northeastipm.org/working-groups/spotted-wing-drosophila/
www.stopswd.org

**Drosophila suzukii*

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