United States Department of Agriculture | National Institute of Food and Agriculture

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Northeastern IPM Center

www.northeastipm.org

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.

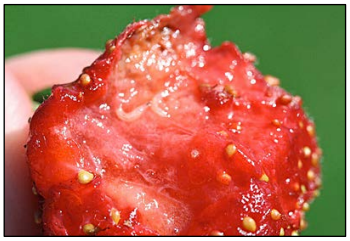
SWD larvae developing inside blueberry fruit. Photo: Carolyn Teasdale, ES Cropconsult.

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

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

THE NEED

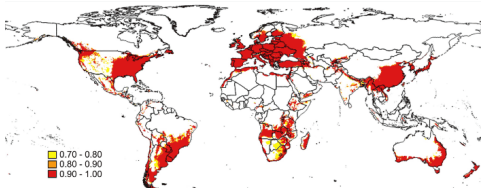
- **Spotted wing drosophila** (**SWD**)*, an invasive fruit fly, has exploded onto the scene in essentially **all northeastern states** since the 2011 growing season, causing significant injury to small fruits in several areas.
- In 2012, the susceptible crop value in the eastern states was **$420 million** 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 Entomology)

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*

This work is supported by Crop Protection and Pest Management Program (CPPM) grant numbers 2018-70006-28882 and 2014-70006-22484 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

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.

WEBSITES

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

**Drosophila suzukii*

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