

Annual Report for Smith-Lever Funded Projects

Project Title: SWD Trap Network

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Project Start: 10/1/2014

Project Term: 9/30/2017

Report Year: 2014-2015

Executive Summary:

A New York State monitoring network for the invasive insect spotted wing *Drosophila* (SWD) will be set in June and monitored each year by Extension educators and faculty until first sustained trap catch is noted. Results from the trap network will be uploaded to a NY distribution map, the SWD blog, and in newsletters to inform fruit farmers of risk to fruit crops.

Progress Summary:

In 2015, 134 traps were monitored by 16 cooperators in 50 sites in 29 NY counties. Most locations had four traps, two in the crop and two on the crop edge. The traps used a fermenting whole wheat dough ampule for a lure and an apple cider vinegar drowning solution to catch the flies. Complete trap instructions were made available online, www.fruit.cornell.edu/spottedwing/pdfs/SWDTraps_CornellFruit.pdf. Traps were set in early to mid-June. Within the 50 sites in the network, diverse crops were monitored, though mainly raspberry and blueberry: 20 sites included raspberry, 15 blueberry, two blackberry, two grape, one strawberry, and one stone fruit.

First catch in NY occurred on June 18 in Schuyler County, in a raspberry planting at a trap lure research comparison site, not part of the network. In the network, the first County in which SWD was caught was Wayne, on June 24, 2015. The last site to report first catch was in Steuben County on August 18. Trap catch was reported to a mapping site, www.eddmaps.org/swd/. First trap catch of SWD across all sites spanned a period of 57 days in NY in 2015 and 56 days in 2014. In both years, the same trap design and lure were used. In 2013, first trap catch spanned a period of 76 days and trap design varied across sites and the lure used was apple cider vinegar without the whole wheat dough. Research on traps and lures in NY and the US has identified an improved lure, available commercially, which we hope to use in 2016.

SWD trap catch reports were posted on the SWD blog, blogs.cornell.edu/swd1/, and to the SWD EDD MapS NY distribution map, www.eddmaps.org/swd/. New subscribers were added to the SWD blog during workshops and presentations on SWD throughout the year.

Current subscribers total 228, primarily growers. Extension educators included SWD trap catch information in their newsletters and two berry growers monitoring traps supplied trap catch information for reporting on the blog.

We developed a full day workshop on SWD for growers and presented it three times during the project year. This workshop was very effective in delivering information via presentations and hands-on activities.

Data from the SWD monitoring network is shared with iMap Invasives for the NYS Department of Environmental Conservation. This helps track invasive species occurrences across New York State.

Expected and Observed Impact/Outcome:

For growers to protect susceptible fruit crops from SWD, in the absence of new knowledge and tools, they must treat repeatedly with insecticides throughout the harvest period resulting in significant economic costs from chemicals and fuel. When insecticides fail or are not used, SWD destroys the crop, growers cease harvesting and lose considerable revenue. The main outcome will be to address this by supplying accurate, targeted and timely information about the presence of SWD in New York.

We have preliminary data suggesting growers can hold off spraying crops until SWD is found in traps in a regional location (i.e. County). We implemented rapid-delivery of statewide SWD monitoring information for Extension and grower audiences. The positive impacts of deploying a SWD trap network are that fewer insecticide applications would be used by growers, crops would be better protected from SWD, and crop losses would be minimized.

Evaluation Approaches/Methods and Results:

We have done preliminary analysis of SWD trap catch results across the network and compared these to crop damage assessments. There were cases of trap catch coinciding with fruit infestation, trap catch occurring ahead of fruit infestation, and trap catch occurring after fruit infestation. The most useful results for spray decisions appear to be from traps that are situated as close as possible to the at-risk field, and the spatial relationships of field location associated with trap site density in a county or region are being examined more closely in order to better deploy an effective network. For instance, if there is only one raspberry grower in a county or region, it will be best for that farm to monitor traps, pay close attention to reports of trap catch from the surrounding region and potentially base spray decisions on crop maturity, regardless of trap catch reports. The value of the trap network reports is greatest for the earlier ripening berry crops, such as early-season blueberry varieties and summer raspberry. For late maturing crops, such as fall raspberry and blackberry and late-season blueberry, the crop may already be at risk and trap catch reports would serve to underline the need for protecting crops with insecticide programs. For early season crops, the trap network can provide an effective early warning, but more analysis and additional years of data are needed.

The project group met via email before the trapping season in 2015. Sixteen cooperators agreed to collaborate on the project, monitoring 134 traps at 50 sites in 29 counties. Information was provided on the type of trap to be used, how to report trap data to the mapping system, Eastern Spotted Wing *Drosophila* Volunteer Monitoring Network (SWD*VMN), www.eddmaps.org/swd/, and how to report trap data for inclusion in the SWD blog. Most suggestions for improvements related to the SWD distribution map and reporting system and, as a result, a new color scheme was decided upon for the map.

Four of six grower members of the NYS Berry Growers Association Board responded that they benefit from the SWD trap network information and the SWD blogs in their ability to manage SWD.

The Spotted Wing Drosophila blog, blogs.cornell.edu/swd1/, tracks subscriber numbers. Subscribers to the SWD blog rose 43% from 2014 (159 subscribers) to 2015 (228 subscribers). The majority of the new subscriptions were the result of the SWD workshop presentations given in 2014 and 2015.

Diverse Audiences Reached:

We indirectly served the interests of diverse audiences. The use of webpages to deliver SWD information and education is non-discriminatory and therefore may reach audience members of under-represented groups. A majority of berry farms in NY are operated by small farms or hobby farms, many of which may be operated by diverse audiences. “Cornell University is an equal opportunity, affirmative action educator and employer.” is posted on the Cornell Fruit Resources webpages where the SWD resources are published.

Publication(s):

- Carroll, J. What to do about SWD-infested fruit? Spotted Wing Drosophila. Cornell University, 4 September 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/09/04/what-to-do-about-swd-infested-fruit/>
- Carroll, J. Field Meeting on SWD Management. Spotted Wing Drosophila. Cornell University, 26 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/26/field-meeting-on-swd-management/>
- Carroll, J. First catch in Dutchess County. Spotted Wing Drosophila. Cornell University, 18 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/18/first-catch-in-dutchess-county/>
- Carroll, J. First catch in Steuben County. Spotted Wing Drosophila. Cornell University, 18 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/18/first-catch-in-steuben-county/>
- Carroll, J. First catch in Clinton County. Spotted Wing Drosophila. Cornell University, 17 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/17/first-catch-in-clinton-county/>
- Carroll, J. SWD network report & tips. Spotted Wing Drosophila. Cornell University, 17 August 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/08/17/swd-network-report-tips/>
- Carroll, J. Entrust organic insecticide – don’t overuse! Spotted Wing Drosophila. Cornell University, 12 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/12/entrust-organic-insecticide-dont-overuse/>
- Carroll, J. First catch in Herkimer County. Spotted Wing Drosophila. Cornell University, 10 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/10/first-catch-in-herkimer-county/>
- Carroll, J. First network trap catch in Tioga County. Spotted Wing Drosophila. Cornell University, 10 August 2015. Web. Accessed 8 October 2015.
<http://blogs.cornell.edu/swd1/2015/08/10/first-network-trap-catch-in-tioga-county/>

- Carroll, J. First catch in Essex County. Spotted Wing Drosophila. Cornell University, 6 August 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/08/06/first-catch-in-essex-county/>
- Carroll, J. First catch in Saratoga County. Spotted Wing Drosophila. Cornell University, 6 August 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/08/06/first-catch-in-saratoga-county/>
- Carroll, J. Double digits in traps—take action. Spotted Wing Drosophila. Cornell University, 2 August 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/08/02/double-digits-in-traps-take-action/>
- Carroll, J. First catch in Chemung County. Spotted Wing Drosophila. Cornell University, 2 August 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/08/02/first-catch-in-chemung-county/>
- Carroll, J. First catch in Monroe County. Spotted Wing Drosophila. Cornell University, 29 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/29/first-catch-monroe-county/>
- Carroll, J. First catch in Onondaga County. Spotted Wing Drosophila. Cornell University, 24 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/24/first-catch-in-onondaga-county/>
- Carroll, J. First catch in Wyoming County. Spotted Wing Drosophila. Cornell University, 24 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/24/first-catch-in-wyoming-county/>
- Carroll, J. First catch in Washington County. Spotted Wing Drosophila. Cornell University, 23 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/23/first-catch-in-washington-county/>
- Carroll, J. First catch in Orleans County. Spotted Wing Drosophila. Cornell University, 22 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/22/first-catch-in-orleans-county/>
- Carroll, J. First catch in Ulster County. Spotted Wing Drosophila. Cornell University, 17 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/17/first-catch-in-ulster-county/>
- Carroll, J. Grower report – SWD in Columbia County. Spotted Wing Drosophila. Cornell University, 17 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/17/grower-report-swd-in-columbia-county/>
- Carroll, J. First catch in Albany County. Spotted Wing Drosophila. Cornell University, 16 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/16/first-catch-in-albany-county/>
- Carroll, J. First catch in Livingston County. Spotted Wing Drosophila. Cornell University, 16 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/16/first-catch-in-livingston-county/>
- Carroll, J. First catch in Niagara County. Spotted Wing Drosophila. Cornell University, 16 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/16/first-catch-in-niagara-county/>
- Carroll, J. First catch in Rensselaer County. Spotted Wing Drosophila. Cornell University, 16 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/16/first-catch-in-rensselaer-county/>

- Carroll, J. Grower report – SWD in Tioga County. Spotted Wing Drosophila. Cornell University, 14 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/14/grower-report-swd-in-tioga-county/>
- Carroll, J. First catch in Erie County. Spotted Wing Drosophila. Cornell University, 13 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/13/first-catch-in-erie-county/>
- Carroll, J. First catch in Seneca County. Spotted Wing Drosophila. Cornell University, 13 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/13/first-catch-in-seneca-county/>
- Carroll, J. First catch in Suffolk County. Spotted Wing Drosophila. Cornell University, 13 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/13/first-catch-in-suffolk-county/>
- Carroll, J. First catch in Ontario County. Spotted Wing Drosophila. Cornell University, 10 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/10/first-catch-in-ontario-county/>
- Carroll, J. First catch in Yates County. Spotted Wing Drosophila. Cornell University, 10 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/10/first-catch-in-yates-county/>
- Carroll, J. First catch in Genesee County. Spotted Wing Drosophila. Cornell University, 8 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/08/first-catch-in-genesee-county/>
- Carroll, J. First “network” catch in Schuyler County. Spotted Wing Drosophila. Cornell University, 8 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/08/first-network-catch-in-schuyler-county/>
- Carroll, J. First catch in Cayuga County. Spotted Wing Drosophila. Cornell University, 2 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/02/first-catch-in-cayuga-county/>
- Carroll, J. Sustained catch in Wayne County. Spotted Wing Drosophila. Cornell University, 2 July 2015. Web. Accessed 8 October 2015. <http://blogs.cornell.edu/swd1/2015/07/02/sustained-catch-in-wayne-county/>
- Carroll, J. SWD at second Schuyler County research site. Spotted Wing Drosophila. Cornell University, 27 June 2015. Web. Accessed 8 July 2015. <http://blogs.cornell.edu/swd1/2015/06/27/swd-at-second-schuyler-county-research-site/>
- Carroll, J. First catch in Wayne County. Spotted Wing Drosophila. Cornell University, 25 June 2015. Web. Accessed 8 July 2015. <http://blogs.cornell.edu/swd1/2015/06/25/first-catch-in-wayne-county/>
- Carroll, J. SWD caught in Orange County. Spotted Wing Drosophila. Cornell University, 25 June 2015. Web. Accessed 8 July 2015. <http://blogs.cornell.edu/swd1/2015/06/25/swd-caught-in-orange-county/>
- Carroll, J. 2015 SWD season underway. Spotted Wing Drosophila. Cornell University, 22 June 2015. Web. Accessed 8 July 2015. <http://blogs.cornell.edu/swd1/2015/06/22/2015-swd-season-underway/>
- Carroll, J. Where else can SWD live? Spotted Wing Drosophila. Cornell University, 20 May 2015. Web. Accessed 8 July 2015. <http://blogs.cornell.edu/swd1/2015/05/20/where-else-can-swd-live/>

- Carroll, J. Young scientists monitored SWD in 2014. Spotted Wing Drosophila. Cornell University, 12 May 2015. Web. Accessed 8 July 2015.
<http://blogs.cornell.edu/swd1/2015/05/12/young-scientists-monitored-swd-in-2014/>
- Carroll, J. SWD Workshop, 4 March, Batavia. Spotted Wing Drosophila. Cornell University, 23 February 2015. Web. Accessed 7 April 2015.
<http://blogs.cornell.edu/swd1/2015/02/23/swd-workshop-4-march-batavia/>
- Carroll, J. 2015 Cornell Guidelines Available. Spotted Wing Drosophila. Cornell University, 12 February 2015. Web. Accessed 7 April 2015.
<http://blogs.cornell.edu/swd1/2015/02/12/2015-cornell-guidelines-available/>
- Carroll, J. 2014 Impact Survey. Spotted Wing Drosophila. Cornell University, 23 January 2015. Web. Accessed 7 April 2015. <http://blogs.cornell.edu/swd1/2015/01/23/2014-impact-survey/>
- Carroll, J. SWD Workshop, 14 Jan, Albany. Spotted Wing Drosophila. Cornell University, 5 January 2015. Web. Accessed 7 April 2015.
<http://blogs.cornell.edu/swd1/2015/01/05/swd-workshop-14-jan-albany/>
- Carroll, J. SWD Workshop, 17 Dec, Syracuse. Spotted Wing Drosophila. Cornell University, 1 December 2014. Web. Accessed 23 December 2014.
blogs.cornell.edu/swd1/2014/12/01/swd-workshop-17-dec-syracuse/
- Carroll, J. Monitoring network wrap-up. Spotted Wing Drosophila. Cornell University, 3 October 2014. Web. Accessed 23 December 2014.
blogs.cornell.edu/swd1/2014/10/03/monitoring-network-wrap-up/

Communication(s):

Web Sites

- Spotted Wing Drosophila, Cornell Fruit Resources. www.fruit.cornell.edu/spottedwing/
 Spotted Wing Drosophila, Latest information from the NYS IPM Program.
<http://blogs.cornell.edu/swd1/>
- Eastern Spotted Wing Drosophila Volunteer Monitoring Network (SWD*VMN).
www.eddmaps.org/swd/

Web Pages

- Crops of concern and wild hosts, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/cropshosts.html
- Monitoring, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/monitoring.html
- Identification, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/ID.html
- Management, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/mgmt.html
- Distribution map, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/dist.html
- Economic and environmental impact, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/ecoenvimp.html
- Biology and life cycle, Spotted Wing Drosophila, Cornell Fruit Resources.
www.fruit.cornell.edu/spottedwing/bio.html

Presentation(s):

- Spotted wing drosophila monitoring network and blog, 10/3/2014, 0.5 hr, presenter, Cornell Small Fruit Open House, Ithaca, NY, Farmers & Educators, 37 attendees.
- Spotted wing drosophila projects report, 11/25/2014, 0.25 hr, presenter, NYSBGA Board Meeting, Geneva, NY, Farmers, 15 attendees.
- Spotted Wing Drosophila Workshop, 12/17/2014, 8 hr, organizer, SWD Workshop, Syracuse, NY, Farmers & Educators, 44 attendees.
- Introduction of SWD working group priorities survey, 12/17/2014, 0.25 hr, presenter, SWD Workshop, Syracuse, NY, Farmers & Educators, 44 attendees.
- Recognizing SWD symptoms, 12/17/2014, 0.17 hr, presenter, SWD Workshop, Syracuse, NY, Farmers & Educators, 44 attendees.
- Demonstration and hands-on activity: Salt floatation to assess larval infestations of fruit, 12/17/2014, 0.58 hr, presenter, SWD Workshop, Syracuse, NY, Farmers & Educators, 44 attendees.
- SWD monitoring network and online resources, 12/17/2014, 0.25 hr, presenter, SWD Workshop, Syracuse, NY, Farmers & Educators, 44 attendees.
- Spotted Wing Drosophila Workshop, 1/14/2015, 8 hr, organizer, SWD Workshop, Voorheesville, NY, Farmers & Educators, 35 attendees.
- Introduction of SWD working group priorities survey, 1/14/2015, 0.25 hr, presenter, SWD Workshop, Voorheesville, NY, Farmers & Educators, 35 attendees.
- Demonstration and hands-on activity: Salt floatation to assess larval infestations of fruit, 1/14/2015, 0.58 hr, presenter, SWD Workshop, Voorheesville, NY, Farmers & Educators, 35 attendees.
- SWD monitoring network and online resources, 1/14/2015, 0.25 hr, presenter, SWD Workshop, Voorheesville, NY, Farmers & Educators, 35 attendees.
- Spotted Wing Drosophila Workshop, 3/4/2015, 8 hr, organizer, SWD Workshop, Batavia, NY, Farmers & Educators, 43 attendees.
- Introduction of SWD working group priorities survey, 3/4/2015, 0.25 hr, presenter, SWD Workshop, Batavia, NY, Farmers & Educators, 43 attendees.
- Recognizing SWD symptoms, 3/4/2015, 0.17 hr, presenter, SWD Workshop, Batavia, NY, Farmers & Educators, 43 attendees.
- Demonstration and hands-on activity: Salt floatation to assess larval infestations of fruit, 3/4/2015, 0.58 hr, presenter, SWD Workshop, Batavia, NY, Farmers & Educators, 43 attendees.
- SWD monitoring network and online resources, 3/4/2015, 0.25 hr, presenter, SWD Workshop, Batavia, NY, Farmers & Educators, 43 attendees.
- Instantaneous mapping and blog alerts for spotted wing drosophila catches, 3/26/2015, 0.35 hr, presenter, IPM Symposium, Salt Lake City, UT, Educators & Researchers, 20 attendees.