

SWD in New York State

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Spotted wing drosophila (SWD) was first detected in New York in 2011 and spread across New York causing significant damage to berry crops in 2012. For 2013, a coordinated approach was taken in the collection and delivery of SWD information to fruit growers, as well as home gardeners. An SWD website was launched at www.fruit.cornell.edu/spottedwing/ containing webpages on SWD hosts, monitoring, identification, management, distribution, impact, and biology; a blog at blogs.cornell.edu/swd1/ was started that currently has 42 voluntary subscribers; quick reference tables of labeled insecticides for at-risk fruit crops were developed; and a home gardener SWD fact sheet was written.

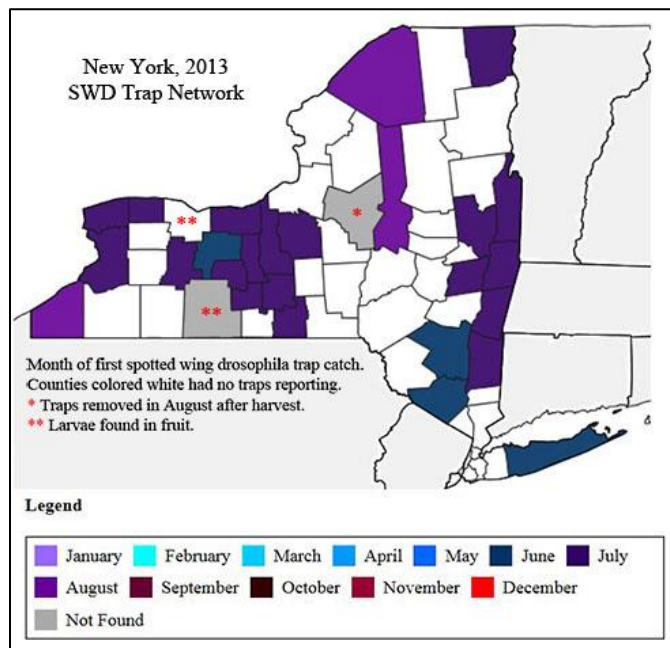


Figure 1. Four Counties reported first trap catch in June (dark blue), 19 Counties reported first trap catch in July (dark purple), and three Counties reported first trap catch in August (light purple). Two counties did not find SWD in traps (gray).

Because SWD was considered to be established throughout NY, efforts were undertaken to monitor and report first trap catch. Scientists at Cornell University, in Cornell Cooperative Extension County Associations and Regional Programs set out vinegar and yeast baited traps in 29 Counties and reported trap catch data to the Eastern SWD Volunteer Monitoring Network mapping system, www.eddmaps.org/project/project.cfm?proj=9. The SWD trap network data was used to generate a NY distribution map (Figure 1). Cornell Cooperative Extension personnel that participated in the trap network alerted growers to protect their crops when SWD was found in their area. On average, SWD was first trapped in NY at about the same time as in 2012, though peak activity seemed to occur later in 2013 than in 2012. This may have spared early maturing berries and lessened fruit damage to late maturing varieties of fruit.

Traps used were red or clear cups containing an apple cider vinegar drowning solution in which floated a specimen cup containing a bait mixture of bread yeast, whole wheat flour and sucrose in water, as described www.fruit.cornell.edu/spottedwing/pdfs/SWDTraps_CornellFruit.pdf. Traps were placed within the crop, on the edge of the crop, or in the adjacent wild hedgerow or woods (Table 1). Traps were checked weekly until sustained trap capture or until the crop was harvested. First reports were posted on the SWD blog and accumulated GDD (base 50) and day length calculated for the location. Weather data for GDD was obtained from the nearest station in the Network for Environment and Weather Applications (NEWA) newa.cornell.edu.

Table 1. Collaborators in the SWD trap network, the New York Counties where monitoring took place and the crops in which traps were located. ‘Wild edge’ indicates a hedgerow or a forested edge of the crop.

Name	Counties	Crops
Agnello	Ontario, Wayne	Cherry
Armata	Herkimer	Caneberry
Bachman	Erie	Caneberry, blueberry
Breth	Monroe, Niagara, Orleans	Caneberry, blueberry
Carlberg	Chautauqua	Caneberry
Carroll	Cayuga, Niagara, Onondaga, Orleans, Schuyler, Wayne	Cherry, strawberry, caneberry, blueberry
Cook	Dutchess, Ulster	Caneberry, blueberry, DN strawberry, wild edge
Fargione	Columbia, Ulster	Cherry, wild edge
Hetzler	St. Lawrence	Caneberry, blueberry, currant
Ivy	Clinton	Blueberry, wild edge
Jentsch	Orange	Cherry, caneberry, blueberry
Loeb	Monroe, Ontario, Schuyler, Seneca, Tompkins, Yates	Strawberry, caneberry, blueberry, wild edge
Loeck	Tioga	Caneberry
McDermott	Albany, Columbia, Rensselaer, Saratoga, Washington	Caneberry, blueberry, DN strawberry, wild edge
Mehlenbacher	Steuben	Blueberry
Miller	Oneida	June strawberry
O’Connell	Ulster	Blackberry
Thorp	Livingston	Caneberry
Zaman	Suffolk	Caneberry, peach, apple, blueberry, grape, wild edge

Preliminary results from the trap network data are summarized in Table 2 and Figure 2. Data was collected and input to the distribution map for 140 sites. The most common landscape location for the earliest trap catches in NY was in the crop edge or the wild edge. First catch in NY was found in Ontario County in the Finger Lakes region on June 11. Within a week first catch was also found on Long Island (Suffolk County) and in the lower Hudson Valley (Orange County).

Table 2. First SWD trap catch dates in NY by County. ‘Wild edge’ indicates a hedgerow or a forested edge of the crop and the crop is indicated in parentheses if no SWD was found in the trap placed in the crop. Preliminary data for GDD and day length are given and derived from NEWA and the Solar Topo Day length calculator, respectively.

County	Plant or Crop	1st Trap Catch	GDD	Day Length
Ontario	Blueberry edge	11-Jun	554	15:14
Suffolk	Wild edge & raspberry	12-Jun	650	15:07
Orange	Wild edge & raspberry	17-Jun	640	15:05
Ulster	Wild edge & blackberry	24-Jun	834	15:09
Dutchess	Sweet cherry	1-Jul	990	15:05
Yates	Blueberry	5-Jul	1001	15:09
Columbia	Stone fruit orchard	8-Jul	1193	14:52
Schuyler	Wild edge (blueberry)	11-Jul	1247	15:01
Seneca	Blueberry	17-Jul	1325	14:54
Wayne	Cherry & DN strawberry	22-Jul	1374	14:48
Rensselaer	Wild edge (blueberry & HT raspberry)	22-Jul	1287	14:44
Washington	Wild edge (blueberry)	22-Jul	1483	14:47
Livingston	Raspberry	24-Jul	1252	14:40
Tompkins	Blackberry	24-Jul	1447	14:40
Cayuga	Sweet cherry & raspberry	25-Jul	1416	14:40
Onondaga	Sweet cherry & raspberry	25-Jul	1481	14:41
Clinton	Wild edge (blueberry)	29-Jul	1344	14:52
Tioga	HT raspberry	29-Jul	1336	14:29
Niagara	Raspberry	30-Jul	1273	14:31
Orleans	Sweet Cherry	30-Jul	1475	14:31
Chautauqua	Raspberry	7-Aug	1458	14:07
St. Lawrence	Black currant	19-Aug	1632	13:48
Herkimer	Wild edge & raspberry	26-Aug	1888	13:23

Traps that were placed in June strawberries and monitored until after harvest, typically did not catch SWD, e.g. in Oneida and Niagara Counties. In contrast, at some locations, traps that were set in blueberries failed to catch SWD, but larvae were found in fruit, e.g. in Steuben County.

Grapes suffered low to no damage, though SWD oviposition was observed in intact berries. A sweet cherry orchard in the lower Hudson Valley suffered significant fruit infestation, though sweet cherry in the upper Hudson Valley and Western NY escaped damage. Damage in blueberries, as expected, was influenced by the timing of maturity of the cultivar. Infestations were noted in day-neutral strawberries. Crops most heavily damaged were fall raspberries and blackberries. The earliest fruit-bearing, wild host identified in NY, on Long Island, was black cherry, *Prunus serotina*, a common tree in northeast temperate forests.

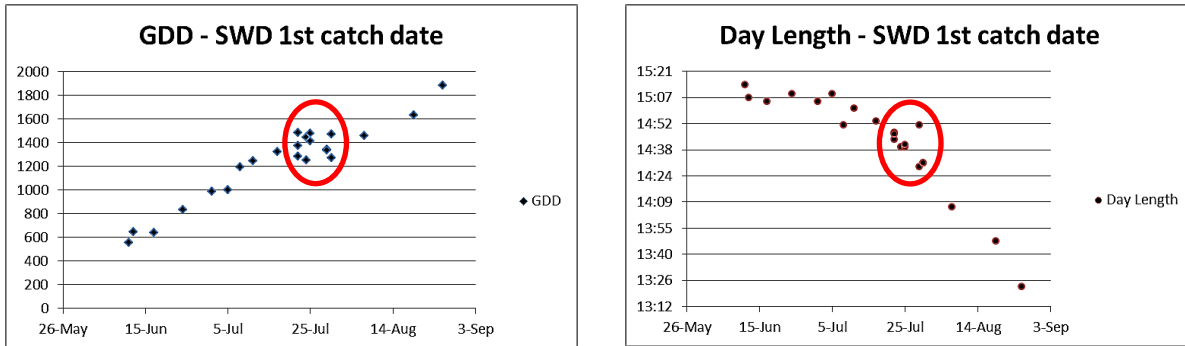


Figure 2. Growing degree days (GDD), on left, and day length (hr:min), on right, plotted against the first trap catch dates in the trap network in New York in 2013. The median and mode date was July 22. With July 24 and 25, these dates accounted for 30% of the first trap catch dates, while the eight day period from July 22 to July 30 accounted for 48%. The GDD and day length for these dates ranged from 1252 to 1483 and 14:29 to 14:52, respectively (circle).

Most berry crops grown in NY are for U-pick or direct markets. Insecticide applications appear to have provided acceptable levels of control in 2013, even in cases where only two early applications were made as fruit were beginning to ripen. Concentrating U-pick customers in berry plantings to aid in clean-picking was cited by some growers as an effective tactic in SWD management. The occurrence of only one susceptible fruit crop on a farm may also have an effect in reducing crop injury. Late-season first trap catch may be related to isolation of the crop in areas outside of commercial fruit production regions, e.g. Herkimer and St. Lawrence Counties. More research on SWD management is needed to address optimal insecticide timings, crop diversification, landscape ecology, and effective cultural management tactics.



Photo: T. Martinson

Figure 3. SWD male on blueberry, photo posted on the blog, blogs.cornell.edu/swd1/2013/09/05/swd-easily-found-now/.

The quick reference tables of insecticides were distributed relatively frequently to growers and may prove to be a useful approach to disseminating this type of information from the Cornell Guidelines. Information and photos (Figure 3) posted on the SWD blog were used, with permission, for newspaper articles on SWD.

The NY trap network seems to have proven successful in accomplishing its primary goal of monitoring for first trap catch of SWD and disseminating information to growers. The group will meet in November to discuss outcomes, impacts, and plans for 2014.