

PRISM Final Report

Project Title: Monitoring Vegetable Crops for Invasive Species in the Capital District Region: Allium Leafminer and Swede Midge

PI and Staff: Charles Bornt, Vegetable Specialist and Extension Educator, Cornell University Cooperative Extension, Eastern NY Commercial Horticulture Program

Crystal Stewart, Vegetable Specialist and Extension Educator, Cornell University Cooperative Extension, Eastern NY Commercial Horticulture Program

Natasha Field, Field Technician, Cornell University Cooperative Extension, Eastern NY Commercial Horticulture Program

One new invasive species, Allium Leafminer and one not so new invasive, Swede Midge, pose serious threats to fresh market allium and cole crops in eastern NY. In order to help growers prevent crop losses due to these pests and reduce the spread of these pests, funds provided to us through the Capital Mohawk PRISM Grant program allowed us to increase scouting on local farms in the region for these two pests.

Allium Leaf Miner: A new invasive insect pest in the Northeast known as the Allium leafminer (ALM), *Phytomyza gymnostoma* Loew, damages crops in the *Allium* genus (e.g., onion, garlic, leek, scallions, shallots, and chives) and is considered a major economic threat to allium growers. Originally, from Europe, ALM was first detected in Lancaster County, Pennsylvania in December of 2015 and in New Jersey and New York in 2016. As of 2018, ALM activity has been confirmed throughout eastern Pennsylvania (21 counties), eastern New York (8 counties) and New Jersey, Delaware, and western New England (Figure 1). There is serious concern that this pest will continue to migrate and threaten other major allium production areas in western New York, Quebec, Ontario, and all of New England in the next several years.

During the growing season of 2018 (March – October), 12 farms in seven counties (Table 1) were scouted weekly. Prompted by reports of ALM emergence during the second week in April in Pennsylvania, scouting in eastern NY started April 13, 2018 on a variety of allium crops including garlic, leeks, shallots, green onions, scallions and storage onions. The first confirmed report of Allium leaf miner feeding/egg laying damage in the region occurred April 27, 2018 in Ulster County indicating emergence and the first flight of this pest. Continued weekly scouting of the 12 farms listed in Table 1, found the first feeding/egg laying damage in Columbia County on May 1, 2018 in an early chive planting.

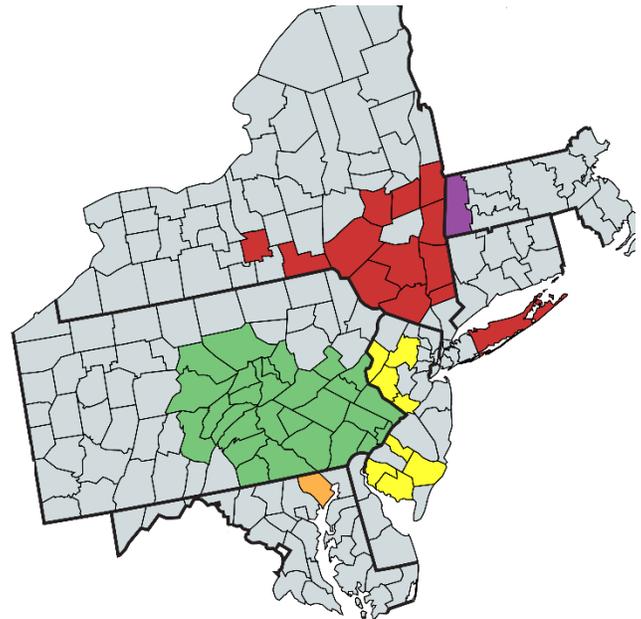


Figure 1: Counties in NY, PA, NJ, DE, and MA with confirmed Allium Leaf Miner infestations. Note the major concentration is located in PA and the lower Hudson Valley region of NY.

May 8, 2018, ALM damage was found on newly transplanted onions in Rensselaer County and garlic in Schoharie County. ALM Scouting slowed during the months of July and August but with the fall emergence of ALM looming, scouting resumed in early September and continued until the end of October.

The good news for allium growers within the Capital District region is that we did not add any new counties to the reporting site that were positive for Allium Leaf Miner for the spring or fall emergence cycle. However, farms with previous ALM infestations within Rensselaer, Schoharie and Columbia County, continued to have reoccurring ALM infestations during the 2018 spring and fall seasons. Although no farms were officially scouted for this project in Montgomery, Schenectady, Herkimer, Warren or Saratoga Counties, we did periodically visit farms in these counties and scout for ALM damage and found none. Unfortunately, new counties not in this region including Delaware, Putnam, Seneca and Tompkins County in NY and Berkshire County in western Massachusetts were added to the growing list of ALM confirmed reports.

Outreach/Education: The emergence of ALM in PA the week of April 13, prompted a warning newsletter article, “Allium Leafminer Active in Southern Pennsylvania” from CCE ENYCHP specialists to allium growers in the region in the April 18, 2018 issue of the CCE ENYCHP Vegetable News (Volume 6, Issue 1). In this article, growers were alerted to the fact that ALM had emerged in PA, which meant it would soon be emerging here in eastern NY. The article discussed taking protective measures like using floating insect netting or rowcovers to deter the fly from feeding and laying eggs on susceptible allium crops.

Growers were also reminded/alerted to the fall emergence of ALM via the CCE ENYCHP Weekly Vegetable newsletter (Volume 6, Issue 18). An article by CCE ENYCHP Vegetable Specialist Ethan Grundberg called, “Preparing for the Fall Flight of Allium Leafminer” was published on September 6, 2018 and encouraged growers to cover susceptible crops with insect netting or treat with approved insecticides. The article detailed Cornell University insecticide trials conducted in 2017 and gave best management recommendations. In addition, Teresa Rusinek, Vegetable Specialist with CCE ENYCHP will present information in regards to the spread, detection and insecticide trials conducted in the region during the 2018 growing season for ALM at the Eastern NY Fruit and Vegetable Conference in February 2019.

Swede Midge: Swede midge (*Contarinia nasturtii* Kieffer) is a serious insect pest of cruciferous plants such as cabbage, cauliflower and broccoli because the larvae feed on and disfigure or destroy the growing tip of the plant. The first discovery of swede midge in the US was in 2004 on a broccoli farm in Niagara County, NY. The insect is native to Europe and southwestern Asia and has been known in North America only since 2000 when it was identified in Ontario Canada. Vegetable growers in western NY and Ontario, Canada have had significant crop losses from Swede Midge.

The last survey of our region was in 2009 (Shelton, 2009), and only one county in the Capital Mohawk PRISM Region was confirmed to have the pest (Figure 2). Currently, CCE ENYCHP has observed no Swede Midge damage until 2017 when vegetable specialist from the team suspected several infestations in eastern NY, but could not confirm the presence of Swede Midge in the field or lab.

Funds provided through the Capital Mohawk PRISM, allowed the CCE ENYCHP to establish sixteen Jackson Traps baited with Swede midge mating pheromones and lined with sticky cards starting May 29, 2018 on 12 different farms in 7 counties of eastern NY. Sticky cards were changed every two weeks until the end of August. Chuck Bornt and Crystal Stewart, vegetable specialists and Extension Educators with the CCE Eastern NY Commercial Horticulture Program evaluated collected cards using a dissecting scope to identify possible adult Swede Midges. At the end of trapping, no adult Swede Midges were identified on the sticky cards. Weekly scouting for Swede Midge larvae on the farms in Table 1 commenced the second week in June. Trapping and scouting continued into September and at the conclusion of the trapping and scouting period, no adult Swede Midges or larvae were found within the farms located within the Capital/Mohawk PRISM region. However, pockets of potential activity were reported in Essex and Clinton County, but remained unconfirmed. St. Lawrence and Franklin Counties have also had positive Swede Midge outbreaks in their counties that were confirmed. The most likely conclusion is that these Swede Midges moved into that region from nearby outbreaks in Vermont and Canada (See highlighted locations in Figure 2) and continue to move into other northern counties such as Essex and Clinton.

Swede Midge Distribution 2009

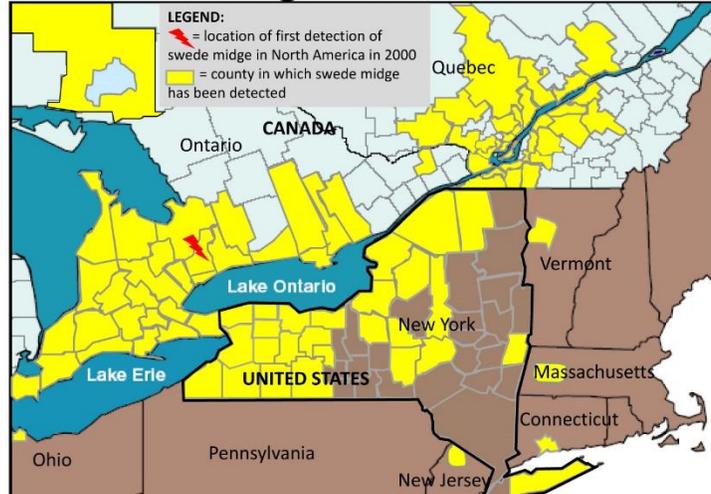


Figure 2: Map indicating counties in NY and Canada where Swede Midge has been detected and confirmed (Shelton, 2009).

Outreach/Education: Due to the lack of presence in the region of Swede Midge, only two articles were included in our newsletters both by CCE ENYCHP Specialist Amy Ivy. The first on June 20, 2018 was included in CCE ENYCHP Vegetable News, (Volume 6, Issue 10), titled “Who Did That?” looked at a number of different pests that have similar damage symptoms and can be confused with one another. The article described Swede Midge and the damage that it does. The second article by Amy Ivy also published in the CCE ENYCHP Vegetable News on July 26, 2018 (Volume 6, Issue 14) called, “Seen This? Let us Know!”, provided growers with several detailed pictures of Swede Midge damage on brassica crops and urged growers to contact CCE ENYCHP specialists if they saw damage like in the pictures.

We would like to take this opportunity to thank the Capital Mohawk PRISM Program for providing the funding that allowed us to monitor and educate growers in the region of these two very devastating pests. Through diligent scouting and outreach efforts, we hope we can continue to provide vegetable growers with information on outbreaks and control options both chemical and cultural, for Allium Leafminer and Swede Midge.

Table 1: Capital District Farms Involved in Scouting and Trapping of Allium Leaf Miner and Swede Midge			
Farm Name	County	Farm Name	County
Korona's Produce	Fulton County	Schoharie Valley Farms	Schoharie County
Stanton's Family Farm	Albany County	Moses Farm	Rensselaer County
*Black Horse Farm	Greene County	Happenchance Farm	Washington County
Barbers Farm	Schoharie County	Blue Star Farm	Columbia County
Denison Farms	Rensselaer County	Samascott Orchards	Columbia County
*Wertman Farm & Greenhouses	Rensselaer County	*Brizzell's Greenhouse and Produce	Rensselaer County
*Indicates that multiple Swede midge traps were placed on these farms due to the large amount of crucifer acreage planted.			

References:

Shelton, AM; Chen, M; Wang, P; Hoepting, CA; Kain, WC; Brainard, DC. Occurrence of the New Invasive Insect *Contarinia nasturtii* (Diptera: *Cecidomyiidae*) on Cruciferous Weeds. JOURNAL OF ECONOMIC ENTOMOLOGY 102 (1):115-120 2009