Volume 21 • Issue 20 • October 1, 2025

Beet Root Aphid Infestations Aggravated by Dry Soils

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

As if the hot, dry conditions during the summer of 2025 were not enough of a problem, to make matters worse large colonies of sugarbeet root aphids developed in some table beet fields creating additional plant stress. While sugarbeet root aphids (*Pemphigus sp.*) are common in beet production regions in North America, the environmental conditions in our area this summer were unusually favorable for populations to build.

Description

Soft-bodied sugarbeet root aphids are pale yellow and may or may not have wings depending on the time of year (Fig. 1, left). They are piercing and sucking insects that feed on the fibrous roots and secrete a white, waxy substance that resembles a fungal infection (Fig. 1, right). The secretion protects the aphids and experts believe it plays a role in repelling moisture from the aphid colony (Harveson, et al. 2009). The taproot may also become infested when populations are extremely high.

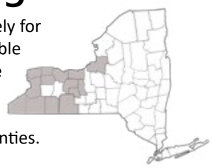
Figure 1. Yellow, soft bodied aphids on a beet root (left). White waxy substance secreted by beet root aphids (right). *Photos: J. Kikkert, CCE*

Damage/Economic Importance

Damage to plants from sugarbeet root aphids happens from direct feeding and the waxy substance which reduces water and nutrient uptake by the plants. When aphid populations are high, plants become yellow and easily wilt. The storage roots may also become limp. Aphid

continued on page 3

About VegEdge



VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.

The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

We're interested in your comments. Contact us at:
CCE Cornell Vegetable Program
480 North Main Street, Canandaigua, NY 14224
Email: cce-cvp@cornell.edu
Web address: cvp.cce.cornell.edu

Contributing Writers
Elizabeth Buck
Robert Hadad
Christy Hoepting
Margie Lund
Julie Kikkert
Lori Koenick
Judson Reid

Publishing Specialist/Distribution/Sponsors
Angela Ochterski

VegEdge is published 20+ times per year, parallel to the production schedule of western New York commercial vegetable growers. Enrollees in the Cornell Vegetable Program receive a complimentary electronic subscription to the newsletter. Print copies are available for an additional fee. You must be enrolled in the Cornell Vegetable Program to subscribe to the newsletter. For information about enrolling in our program, visit CVP.CCE.CORNELL.EDU. Cornell Cooperative Extension staff, Cornell faculty, and other states' Extension personnel may request to receive a complimentary electronic subscription to VegEdge by emailing Angela Ochterski at aep63@cornell.edu. Total readership varies but averages 700 readers.

Help us serve you better by telling us what you think. Email us at *cce-cvp@cornell.edu* or write to us at Cornell Vegetable Program, 480 N Main St, Canandaigua, NY 14424.

Contents

The next issue of VegEdge will be produced on November 5.

Sunflower and pea cover crop field in Yates County. *Photo: Judson Reid, CCE*

continued from page 1

infestations often occur in patches within a field and show up as elliptical shaped areas of wilted or dying plants. Sugarbeet root aphids use cracks in the soil to move between plants. Serious infestations can reduce yield and sugar content of the roots.

Life Cycle/Hosts

The sugarbeet root aphid has a complex life cycle with the primary host being *Populus* species (certain poplar and cottonwood trees). The aphids overwinter as eggs on the primary hosts. In the spring, the eggs hatch, and the resulting female aphids feed on developing leaf buds which cause galls to form on the midribs of the leaves. The next generation are winged adults that migrate to secondary hosts such as sugar beet, weedy pigweeds and common lambsquarters. Sugarbeet root aphids are also known to infest table beet, Swiss chard, and spinach. The aphids that develop on the secondary hosts are wingless females which continue to reproduce asexually for up to seven generations (Harveson, et al. 2009). In late summer, winged aphids develop and return to the *Populus spp.* trees. Alternatively, sugarbeet aphids can overwinter in the soil and infest crops or weedy hosts directly the following year.

Management

Hopefully, sugarbeet root aphids will not be a common occurrence on table beets in New York in future years. Management in sugarbeets starts with resistant varieties. I am not aware of resistance testing in table beets. The heavily infested field I was in was planted with 'Ruby Queen' the most grown processing table beet variety in our region. Other management strategies include cleaning equipment before moving from an infested to non-infested field, good crop rotation away from hosts for 3 years, control weed hosts and irrigate beets where possible in dry years. Soil type and moisture strongly influence the ability of sugarbeet aphids to infest beet roots. Soil cracking allows sugarbeet aphids to move through the field. Moisture around the roots deters the aphids. There are several natural enemies that feed on sugarbeet aphids.

References

Compendium of Beet Diseases and Pests, second edition. R.M. Harveson, L.E. Hanson, G.L. Hein, 2009, APS Press, St. Paul, MN, pp. 100-101.

Sugar beet root aphids: identification, biology, & management. 2011. E.J. Wenninger, University of Idaho Extension, CIS 1176, 7 pages. https://objects.lib.uidaho.edu/uiext/uiext13194.pdf

Fall Rye Tweaks to Reduce Pressure from Herbicide Resistant Weeds

Thomas Björkman and Lynn Sosnoskie, Horticulture Section, Cornell AgriTech, Geneva

Three weeds with multiple herbicide resistance are significant threats to many New York production systems. Waterhemp, marestail, and Palmer amaranth in New York are often resistant to multiple herbicide modes of action, which complicates control. These weeds are difficult to control even when susceptible to herbicides because they grow rapidly, produce abundant seeds, and emerge throughout the growing season. To keep these resistant weeds at bay, it is crucial to use every tool available to kill them.

One such tool is the familiar fall-seeded rye cover crop. Rye is routinely used in agronomic crops and vegetable growers can exploit it more. In particular, a good rye cover crop reduces the herbicide-resistant weed seedbank by spring through non-herbicide mechanisms.

First, a rye cover crop can suppress late emerging pigweeds that would otherwise go to seed in the fall. Second, the rye canopy provides good conditions for seed predators like ground beetles to eat the small pigweed seeds at or near the soil surface during the winter. Together, these cause a modest amount of mortality, but the value of avoiding infestation with yet another hard-to-control weed makes the following minor adjustments to your rye practices worth considering.

Reduce the weed seed bank by following the three keys to cover-crop success:

> ***Fast start.*** Plant as soon as the ground is open after the vegetable harvest. Early planting limits the chance for pigweeds to emerge, become established, and set seed. Early planting also extends the period when conditions favor seed predation, especially if weed seeds are left on the soil surface where predators can readily access them. A vigorous cover crop stand can also suppress or delay the germination or growth of spring-emerging weeds.
>
> ***No gaps.*** Use a slightly higher seeding rate than is typical for September plantings, like the October rate of 60 to 80 lbs per acre. Later plantings cannot produce a gap-free rye stand. Avoid adding radishes if adding companions because they winterkill and create gaps for these weeds by spring. Legumes, especially hairy vetch, complement well if termination will be mid-May or later.
>
> ***Kill on time.*** Terminate the rye at the time that makes sense for the vegetable crop you are raising and the conditions in the spring. Don't try to "plant green" into standing rye, despite its popularity for soybeans.

A guide to rye cover crops for NY vegetable growers: covercrop.org/cover_crops/rye

A guide to identifying waterhemp and Palmer amaranth: https://blogs.cornell.edu/weedid/palmeramaranthandwaterhemp/

A guide to marestail: https://blogs.cornell.edu/enychp/vegetables/weed-of-the-week-marestail-horseweed/

Root Crop Storage Considerations

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

Proper vegetable storage is more than just boxing up produce and sticking it in a refrigerated space. Losses from improper handling and storage can range from 10% - 40%, that is money being tossed away after all the hard work of growing and harvesting the crops. With attention to some details, losses can be greatly reduced.

Harvest Timing and Handling

Harvest timing and proper handling are essential first steps. **Once the crop is harvested, it is hard to improve quality in storage.**

Crop maturity at harvest is important. Baby vegetables don't store as well as mature crops. For example, new potatoes have a shorter shelf life than full-sized tubers harvested after vines die back. Carrots, garlic, and onions store best at full size (and for garlic and onions after the tops dry and bend over). Sweet potatoes should be harvested after foliage dries. Beets should be harvested at 2–3 inches in diameter (not too big), and timing should align with the variety's days to maturity.

When harvesting take care not to damage skin, either with mechanical harvesting or loading, transport, and handling. Beets and carrots should be topped, leaving no more than an inch of stem. Garlic and onion stems should be trimmed to a few inches and shortened after curing. Rutabagas and turnips stems should be cut close to the root.

For long term storage, avoid washing or removing dried soil. Course, dry soil helps protect root crop skins. Scrubbing may cause injuries that allow rots to enter during storage. Roots can be cleaned just before sale.

Some root crops benefit from "curing" after field harvest before going into storage (exceptions are carrots, beets, turnips, and rutabagas). Curing involves exposing roots to warm temperatures and good air circulation to dry the skin, heal over superficial wounds, and help seal skin from respiration moisture loss. Temperatures in the upper 70°Fs to upper 80°Fs along with good air movement (open air or with fans) speeds the process. Spread curing roots into a single layer to avoid damp spots.

Cooler Tips

Maintaining crop quality in long term storage depends on properly operating coolers, consistent appropriate storage temperatures and humidity levels, and adequate air flow.

Coolers should be well-insulated and free from condensation or dripping water from the condenser. Air exchange is important: coolers can have manual vents or if their door opens several times a day, that can also provide air exchange. Tightly sealed coolers save energy but need frequent air exchange to remove the CO_2 and ethylene that comes from the natural respiration of stored produce.

Storage bins should be kept away from the walls to help with air flow. Place several thermometers throughout the cooler, especially when bins are densely packed. Monitor temperatures for cold or warm spots, as dead air space can create freezing temperature pockets. If uneven temperatures are found, add small fans to help with air movement.

Understand specific crops' temperature and humidity needs

- Beets, carrots, horseradish, celeriac, parsnips, winter radish, salsify, turnips, and rutabagas: stay close to 32°F, 95–99% humidity
- Onions and garlic: about 32°F, but note lower 65–70% humidity
- Potatoes: 38–42°F, 90–95% humidity (If potatoes get too cold, an internal black ring forms around the flesh just under the skin.)
- Sweet potatoes: note warmer than potatoes at 55–60°F, 85–90% humidity

Maintaining humidity levels is a challenge. Some growers store roots in large plastic bags inside tote bins. These bags can be left open or perforated to raise the humidity levels within the bags without reducing all the airflow. Monitor closely to make sure it remains humid enough but doesn't excessively condense. If bins are stacked, regularly check bottom bins. Use multiple humidity meters around the cooler and keep tabs on the levels.

Even when doing everything that is needed, some roots won't last. S**cout the cooler frequently, especially the longer the roots are stored.** Inspect for off odors, puddling on the floor, or a plastic bag with more condensation in it than the others. Remove anything that has mold or is getting soft to prevent spreading. ●

Optimization of Row Covers in Sustainable Agriculture and Certified Organic Systems: Mesotunnels and Muskmelons

Kaitlin Diggins and Sarah Pethybridge, Cornell University

Organic and sustainable specialty crop growers face a unique balancing act, producing high-quality crops while preserving the health of the environment for seasons to come. However, every growing season brings a multitude of challenges: insect pests, diseases, weeds, sunburn, frost, mammals, and increasingly unpredictable weather. In organic systems where the toolbox is more limited, tackling these stressors can be especially tough. Many growers rely on OMRI-listed pesticides, but they're not always up to the task. Repeated applications can be costly, labor-intensive, and environmentally taxing, leading to issues like copper accumulation in the soil. Inconsistent product performance against important pests and diseases increases the risk of crop loss and chips away at already narrow profit margins. That's why physical tools like row covers have become staples in organic integrated pest management (IPM). In a 2022 survey of 377 organic specialty crop growers across the Midwest, Northeast, and Southeast, insect pests ranked as the top production challenge, followed by heavy rainfall, disease, and weeds (Cheng et al. 2023). Over 60% of growers reported using row covers not just for pest control, but also to soften the blow of extreme weather and reduce the reliance on pesticides and other chemicals.

Not all row covers are created equal, especially given the diversity of crops, rotations, and infrastructure, particularly on organic farms. Some growers produce more than a dozen species a season! While many growers are familiar with low tunnels and high tunnels, each comes with its own set of benefits and trade-offs. In recent years, a middle-ground option has emerged: mesotunnels. As the name suggests, "meso" means "middle," and that's exactly where these tunnels fall in size and structure (Fig. 1). Standing 36 to 48 inches tall, mesotunnels are taller than low tunnels but shorter than high tunnels, offering extended season-long protection. They are built with steel conduit hoops and covered with fine nylon mesh (such as ExcludeNet or ProtekNet) that allows light, air (including sprays), and rainfall to reach the crop while excluding insect pests (Fig. 2). The mesh can be reused for multiple seasons, especially if stored properly during the off-season. Mesotunnels are not a one-size-fits-all solution, but they show promise as a flexible tool in organic production, especially in specialty crops. At Cornell and partner institutions in southern and midwestern states, we tested them in cucurbit systems where insect-vectored diseases are a recurring issue. Pests like striped cucumber beetles and squash bugs don't just cause damage by feeding on crops—they spread bacterial pathogens that can cause plant death. For example, bacterial wilt is caused by the bacterium, Erwinia tracheiphila and spread by cucumber beetles. Cucurbit yellow vine disease is caused by the bacterium, Serratia marcescens, spread by squash bugs. Losses associated with these insect pests can really add up for smaller-scale organic farmers.

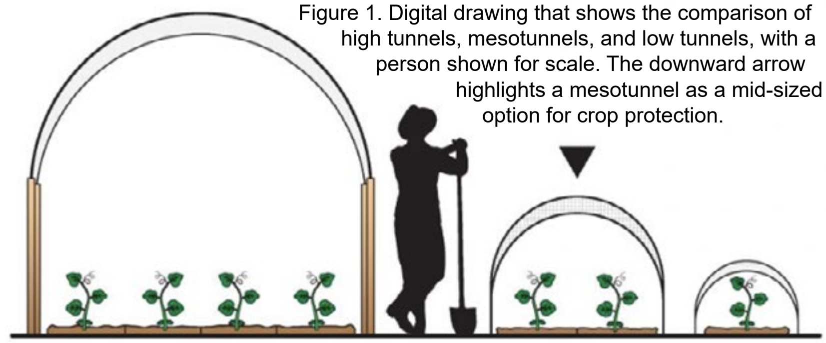


Figure 1. Digital drawing that shows the comparison of high tunnels, mesotunnels, and low tunnels, with a person shown for scale. The downward arrow highlights a mesotunnel as a mid-sized option for crop protection.

Figure 2. A fully constructed mesotunnel system in the field, featuring steel conduit hoops, sandbag anchors, and nylon mesh netting. Muskmelon plants are visible inside, protected from insect pests while still receiving light, air, and rainfall. *Photo: Sean Murphy, Cornell*

A key question surrounding the use of exclusion netting and row covers is how to balance pollination with the benefits of excluding insect pests. Trials in New York, Iowa, and Kentucky tested different approaches. One method involved clipping open the tunnel ends during flowering, or anthesis, which allowed pollinators to access the crop and achieve fruit set (Fig. 3). After pollination was completed, the netting was closed again and secured with sandbags. In contrast, completely removing the tunnels during flowering led to a surge in pest populations. When the netting was reapplied, many insect pests remained inside for the rest of the season, which eliminated the protective benefits of the system. The clipped-end approach provided a more balanced solution, supporting pollination while providing pest exclusion.

continued on page 6

continued from page 5

Pollinating insects, including honeybees and native squash bees, were able to navigate into the tunnels through the open ends, while pest insects were less successful. After the ends were closed, very few pests were found inside compared to the full removal treatment, which had pest numbers like plots that were not covered.

Mesotunnels are not silver bullets, but they are a valuable tool in the organic IPM toolbox. Like any system, they work best when used alongside practices like pest scouting, crop rotation, and cultural controls. Our initial trials began with acorn squash, but growers noted that for the labor involved, especially early in the season with tunnel establishment, the protected crop needed to be higher value. We listened, and shifted our focus to muskmelon, where full-season protection offers a better return. To help maximize return on investment, we optimized the materials by transferring the same mesotunnel structures onto a fall cole crop, such as cabbage, to extend their utility beyond a single specialty crop per year. While the setup can be labor-intensive at the start, once in place, mesotunnels allow for a relatively hands-off approach to pest and disease protection throughout the growing season.

To optimize this system further, we're exploring complementary practices that may improve outcomes under mesotunnels. This includes cultivar selection, cover cropping, and weed management strategies that could influence key variables like yield, disease pressure, insect populations, soil health, and microclimate. Though mesotunnels may not be the best fit for large-scale conventional operations, they hold real promise for small to mid-sized farms, especially those facing increasing pest populations and looking to reduce both chemical and plastic inputs. As food production systems continue to evolve, mesotunnels offer a way to balance protection, productivity, and sustainability to support the future of resilient, diversified farming.

Figure 3. Opening and clipping the mesotunnel ends during flowering supports pollination without increasing pest populations, as shown in multi-state trials evaluating pollination strategies. *Photo: Sean Murphy, Cornell*

References

Cheng, N., Zhang, W., and Gleason, M. 2023. Controlling Pests and Diseases Using Mesotunnels: Understanding Organic Cucurbit Crop Growers' Preferences and Choices. https://doi.org/10.2139.

Labor Roadshow IX Returns This December

The Agricultural Workforce Development Council of New York State, in partnership with Cornell Agricultural Workforce Development, is excited to announce Labor Roadshow IX—a series of in-person and online events designed to keep New York's agricultural employers informed and prepared for today's labor challenges.

Topics under development include Immigration and Farm/Family Preparedness; Compliance Updates; Unionization; Employee Engagement and Improving Culture; Employee Housing Operation and Management; Legality of Employee Monitoring; How to Interact with Regulators and the Public about Labor Issues; and more to be announced.

The Roadshow delivers essential updates on labor law, regulations, and workforce best practices—tailored for farm owners, managers, and ag service providers. Sessions also focus on practical strategies to boost communication, strengthen retention, and build a positive workplace culture.

Registration now open! Event cost: $75 per person. Cash, check, and advance online payments will be accepted. For questions, contact cu-agworkforce@cornell.edu.

Western Flower Thrips

Yaroslav Grynyshyn and Samantha Willden

Frankliniella occidentalis, commonly known as Western flower thrips (WFT), is a native insect from western North America and is now a common pest found globally on a wide range of crops. In New York, WFT are one of the most important insect pests of bedding plants. It is a harmful pest and virus vector, damaging outdoor and greenhouse vegetable and flower crops including, but not limited to lettuce, tomato, onion, chrysanthemums, and cucumbers (Hoddle n.d.).

WFT cause direct feeding damage to all plant parts that resembles damage made by other thrips species. Damage on leaves resembles irregular chlorotic "scrapes" on leaves that do not fully penetrate the leaves. On fruit, damage resembles "gold flecking" and rings are often present when populations are high and feed along the edge of the contact point to another fruit (Fig. 1). Two of the most important diseases for greenhouse producers, impatiens necrotic spot virus (INSV) and tomato spotted wilt virus (TSWV) are vectored by WFT (Fig. 2).

Figure 1. Western flower thrips, *Frankliniella occidentalis* feeding damage resembling "gold flecking" and rings from residual fruit contact on tomato. *Photo: Dr. Samantha Willden*

Less than 2 mm in size, a 10X hand lens is recommended to observe WFT. WFT are small, yellow to dark brown in color and similar in appearance to onion thrips and rose thrips (Fig. 3). WFT are distinguished by the number and shape of hairs (setae) located in the region between the head and the wings (i.e. two pairs of long coarse hairs on top of the pronotum near the head). The presence of two rows of setae on the wings that extend nearly the full length of the body, and the presence of a trio of eyespots (3 red ocelli) between their main compound eyes also discern WFT from other thrips species (Hoddle n.d.) (Fig. 4). Control methods range from cultural techniques, biological control, and in severe infestations chemical control is necessary if natural enemy populations are low. More information on control can be accessed online through a fact sheet about WFT provided by Dr. John Sanderson at Cornell University (http://hort.cornell.edu/greenhouse/pests/pdfs/insects/WFT.pdf). If you suspect WFT on your crops, please notify your local extension educator.

Figure 2. Impatiens necrotic spot virus (INSV) ringspots transmitted by Western flower thrips, *Frankliniella occidentalis*. *Photo: J.R. Baker, NC State University, https://content.ces.ncsu.edu/western-flower-thrips-2*

Figure 3. Mature adult western flower thrips, *Frankliniella occidentalis*. *Photo: J.R. Baker, NC State University, https://content.ces.ncsu.edu/western-flower-thrips-2*

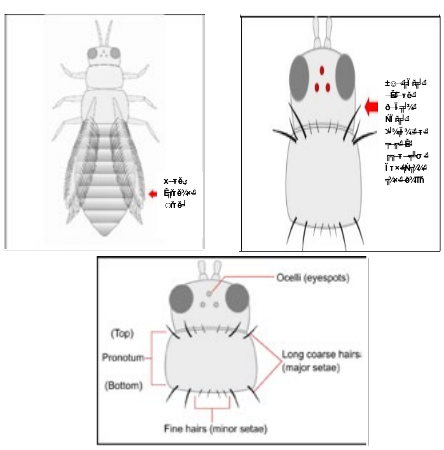


Figure 4. The top two pictures feature morphological features for Western flower thrips while the bottom picture is a closeup of features on the head and pronotum of adult thrips that compares common structures used for identification. The top two pictures display the long-fringed wings extending nearly the full length of the body with 2 pairs of long coarse hairs that are roughly equal in length on top of the pronotum and ocelli that are red. *Graphic: Summerfield & Jandricic, 2022*

References

Hoddle, M., Van Driesche, R. n.d. Western Flower Thrips in Greenhouses: A Review of its Biological Control and Other Methods. UC Riverside Applied Biological Control Research Department of Entomology.

Baker, J., Frank, S. 2009. Western Flower Thrips. NC State Extension Publications

Summerfield, A. and Jandricic, S. 2022. Simple key to important thrips pests of Canadian greenhouses (3rd ed).

Establishing Plantings for Attracting/Establishment for Beneficials on the Vegetable Farm

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

Over the last few seasons, more farms are using flowering plants and shrub plantings to attract and establish resident beneficial populations for their vegetable operation. I have seen plantings of annuals such as sweet alyssum, yellow marigolds, and mixes of flowering species that bloom across the season. These types of plantings can attract native pollinators which also are a great help for vegetables that need many pollinator visits to set proper fruit such as vine crops. The flowers also attract predatory insects that also go after pests in the vegetable rows, such as shield bugs, pirate bugs, and wasps. Buckwheat plantings alongside potatoes attract a number of predatory insects that feed heavily on Colorado Potato Bug larvae.

More permanent plantings of flowers that bloom across the season and flowering shrubs grown in hedge rows also are a way of creating a more permanent environment. The late August UMass vegetable farmers' newsletter, *Vegetable Notes*, has a great article about these types of plantings.

Pollinator Plantings on Vegetable Farms

by Nicole Bell, UMass Extension Pollinator Specialist; from UMass Extension Vegetable Program, Vegetable Notes, 9/25/25

As interest in pollinators has risen over the past decades, so too has the desire to provide habitat in a variety of locations, including farms. Two of the most common types of intentional pollinator plantings are hedgerows and floral or insectary strips.

> **Hedgerows** are typically defined as a dense mixture of native plants, including shrubbery that can act as a windbreak or a physical barrier for livestock, and provide floral resources for beneficial insects, amongst other benefits. They may be quite tall.
>
> **Floral or insectary strips** are typically defined as native flowering plant species, primarily included as habitat for pollinators and natural pest enemies. These strips may be lower-growing than hedgerows.

Flowering plants are quite attractive to native pollinators. *Photo: R. Hadad, CCE*

Research indicates that not only do native perennial plantings lining agricultural areas increase nesting sites and forage opportunities for insects, but they boost pollinator visitation to adjacent agricultural fields. This may increase pollination services on farm sites, while potentially also reducing the need for, and expense of, supplemental pollination by managed honeybees. Beyond habitat provisioning and boosted pollination services, these intentionally planted strips can also boost pest control services by supporting natural enemies.

While hedgerows and insectary strips can serve meaningful economic returns after several years of establishment, they also represent a conservation opportunity on lands that are often dominated by monocultural plantings or mixed-crop, cultivar plantings. Many native bee species in Massachusetts rely on native plants, with a preference for wild-type species rather than heavily altered cultivars. Some at-risk bee species native to the state, including the yellow bumble bee (*Bombus fervidus*), are associated with certain plants. Hedgerows or floral strips that include these flowering plant species can provide critical habitat for *B. fervidus* and other vulnerable insects.

For more local information, contact your county CCE office for resources on pollinators and attracting beneficials.

An Update on Insecticide Seed Treatments for Onion in New York: Guidelines for 2026

Christy Hoepting, CCE Cornell Vegetable Program, and Leonardo Salgado and Brian Nault, Cornell Entomology

Until just a few years ago, FarMore FI500 with either Regard or Trigard was the most common seed treatment package for maggot control in onions. Now, there are five insecticide products available as seed treatments. Because onions are attacked by the onion maggot (*Delia antiqua*) and seedcorn maggot (*D. platura*), determining which insecticide seed treatments to use for managing both is important. Our recent research has shown that seedcorn maggot may kill onion seedlings before and shortly after emergence, while onion maggot is the dominant species that kills onions after emergence (80–90% of infested plants), and seedcorn maggot is less prevalent (10–20% of plants). **This article provides an update on insecticide options for managing both maggot species using seed treatments based on results from multiple Cornell field trials in Oswego County from 2023 to 2025.**

Currently Available Insecticide Seed Treatments in Onions

NipsIt

NipsIt is the "newest" seed treatment option for onions. It is a neonicotinoid with the active ingredient clothianidin, which is the same principal active ingredient in Sepresto. NipsIt was primarily targeted for use in cereals and vegetables (lettuce, broccoli, and onions) in the western US. Recently, Gowan SeedTech (NipsIt distributor) has promoted NipsIt seed treatment in onions in the northeast. This summer we had an opportunity to evaluate NipsIt alone and in combination with other insecticides. Based on results from our 2025 trials, **NipsIt is just as effective as Sepresto for protecting onions from maggots.**

Sepresto

Sepresto is a seed treatment that contains a 3:1 blend of two neonicotinoids clothianidin and imidacloprid. Until recently, Sepresto has not been used very often as a seed treatment for onion growers in New York. In initial Cornell trials, FarMore FI500 with Regard outperformed Sepresto, and FarMore FI500 with Regard became the industry standard for well over a decade. However, over the past three years our research results in multiple locations in New York have identified Sepresto as one of the best-performing insecticide seed treatments for maggot control.

Lumiverd

Lumiverd is a spinosyn with the active ingredient spinosad, similar to Regard SC, which was originally in FI500. For over a decade, spinosad has been one of the most effective insecticides for controlling both onion and seedcorn maggot species. In recent years in central New York, we have observed a decline in spinosad's performance in our on-farm insecticide seed treatment trials. On one farm, we attribute the reduced effectiveness to **insecticide resistance**.

Trigard

Trigard is a triazine insect growth regulator, a type of insect growth regulator with the active ingredient cyromazine, which has been available commercially for several decades. Based on results from many research trials over the years, we know that Trigard is not very effective against seedcorn maggot. Because Trigard has been used for so many years, onion maggot populations may have acquired some insensitivity to it in some fields. Consequently, the **performance may not be as good as in past years**.

Cruiser

Cruiser is another neonicotinoid insecticide with the active ingredient thiamethoxam. Cruiser continues to be included in the FarMore FI500 package that has been commonly used on onion for well over a decade. Despite being highly effective for protecting beans, peas, corn, and cucurbit crops from seedcorn maggot, **Cruiser is only moderately effective against maggots in onion.**

Insecticide Seed Treatment Performance from 2023 to 2025

Since 2023, we have consistently evaluated the performance of different active ingredients available to us. Because there are five different insecticides labeled as onion seed treatments, we wanted to evaluate each alone and in various combinations to determine the best options.

These trials have been conducted across two farms in Oswego County for several years. We have summarized our results from 2023 to 2025 for four insecticides and their four combinations (Table 1). For these trials, we recorded the number of plants killed by maggots every week, as well as the number of plants remaining in plots after the first generation of onion maggots had been completed, which occurred in early July. Treatments with the most plants were considered best, and those with the fewest plants were considered the worst. Based on these results, we then ranked each insecticide seed treatment from 1 through 8, with 1 being the best and 8 being the worst. This was done for every trial in every year, and then the average was calculated across all locations and years.

Results from our five field trials indicated that the top-performing seed treatments all included Sepresto. Lumiverd + Sepresto is considered the top-performing seed treatment (ranked 1), which is closely followed by Sepresto alone (ranked 2) and Trigard + Sepresto (ranked 3). Generally, combining Sepresto with Lumiverd or Trigard does not provide significantly better control of maggots than Sepresto alone. The previous standards contained in FarMore FI500, Lumiverd + Cruiser, and Trigard + Cruiser rank in

continued on page 10

continued from page 9

a lower category (rank 4 and 5, respectively). Notably, when Trigard and Lumiverd were used alone, they performed poorly (rank 7 and 8, respectively). Generally, the combination of Trigard or Lumiverd with Cruiser has resulted in significantly better control of maggots than either product alone.

In 2025, we had the opportunity to evaluate NipsIt for the first time in our trials. As mentioned previously, **NipsIt was just as effective as Sepresto, and the two products may be used interchangeably.**

Table 1. Relative ranking of the efficacy of insecticide seed treatments for maggot control in onion evaluated under high pressure in Oswego, Co., NY from 2023 to 2025.

	2023	2024		2025			
Product(s)	**NY**	**NY1**	**NY2**	**NY1**	**NY2**	**Avg.**	**Rank[1]**
BEST!							
Lumiverd + Sepresto[2]	3	1	2	1	2	1.8	1
Sepresto[2]	1	3	1	3	3	2.2	2
Trigard + Sepresto[2]	2	2	5	2	1	2.4	3
MODERATE							
Lumiverd + Cruiser	4	4	3	5	4	4.0	4
Trigard + Cruiser (in FI500)[3]	6	5	6	4	5	5.2	5
Cruiser	5	6	4	6	8	5.8	6
FAIR							
Trigard[4]	7	8	7	7	7	7.2	7
Lumiverd[4]	8	7	8	8	6	7.4	8

1 Rankings are based on the total number of plants remaining in each treatment in early July. The lowest numbers in ranking were the best performing treatments, and the highest numbers were the worst.

2 In 2025 trials, NipSIT (a.i clothianidin) and Sepresto (a.i.s clothianidin + imidacloprid) performed the same. **Sepresto and NipsIT may be used interchangeably.**

3 Trigard + Cruiser is the insecticide combination that is used in the current version of FI500 along with the original three fungicides (mefenoxam, fludioxonil, azoxystrobin).

4 Trigard and Lumiverd alone are expected to perform good to very good under low maggot pressure. Note, that Trigard has no activity on seedcorn maggots, which may escape when Trigard is used alone, which is why it is recommended to be combined with Cruiser.

Insecticide Seed Treatments to Consider for 2026

Our seed treatment suggestions continue to be influenced by the expected performance of a seed treatment package used on farms with varying levels of maggot pressure. We also strongly suggest considering the rotation of insecticides that belong to different classes (See IRAC Classification) in an attempt to mitigate the development of insecticide resistance.

Based on research results 2023-2025, we suggest using one of the five packages listed below (Table 2). **Which insecticide(s) to use in 2026 should be made based on last year's perceived maggot pressure and insecticides used in 2025.**

Table 2. Insecticide seed treatment packages for maggot control in onion.

Product 1	Product 2	IRAC Group(s)
Sepresto or NipsIT		4A + 4A or 4A
Sepresto or NipsIT	+ Trigard	4A + 4A or 4A + 17
Sepresto or NipsIT	+ Lumiverd	4A + 4A or 4A + 5
Lumiverd	+ Cruiser	5 + 4A
Trigard	+ Cruiser	17 + 4A

Risk of maggot pressure may be predicted by these primary factors:

- History of maggot pressure in a field/muck pocket. Note, leaving "volunteer" onions, maintaining a cull pile near the onion fields, and planting onions in the same field/muck pocket year after year enhances the overwintering success of maggots and subsequent maggot pressure.
- Poorly drained soils (maggots favored by moist soil)
- Presence of freshly incorporated organic matter
- Recent applications of manure, green cover crops, or significant crop residue
- Potential onion plant damage caused by equipment, cultivation, or disease, as this stress attracts flies.

High Risk: For farms that have many of the maggot risk factors outlined above and maggot damage is expected to be high, it is suggested to use the following product combinations in a four-year rotation:

Year 1: Lumiverd + Sepresto/NipsIt

Year 2: Trigard + Sepresto/NipsIt

Year 3: Lumiverd + Cruiser

Year 4: Trigard + Cruiser

The rationale for this sequence is to minimize the use of any one product more than two years in a row.

Low Risk: For farms that do not have many of the maggot risk factors outlined above, and maggot damage is expected to be low, it is suggested to use the following product or product combinations in a four-year rotation:

Year 1: Sepresto/NipsIt

Year 2: Lumiverd + Cruiser

Year 3: Sepresto/NipsIt

Year 4: Trigard + Cruiser

The rationale for this sequence is to minimize the use of any one product in two successive years. This would be a good strategy for Elba muck where maggot pressure has notoriously been very low for the past several years.

These guidelines are based on the suggestion that the IRAC group of insecticides should be rotated every year to minimize the chance of developing insecticide resistance. **Unfortunately, we do not envision a scenario that would omit a neonicotinoid (IRAC 4A) insecticide from any of the seed treatment packages in our current guidelines.** We are hoping that an insecticide that belongs to a novel IRAC group be registered before this neonicotinoid (IRAC 4A) "titanic" that we are on crashes.

For these guidelines, all onion seeds should be treated with the following **fungicide active ingredients:** mefenoxam or thiram to **control damping off**,

continued on page 11

continued from page 10

and penflufen **(=EverGol® Prime) to control onion smut.** Note that Trigard + Cruiser + F300 = FarMore FI500. The three fungicides in F300 are mefenoxam for damping off caused by Phythium (most common in NY), fludioxonil for Rhizoctonia (not common in NY) and Fusarium, and azoxystrobin also for Rhizoctonia.

==> **See the updated "Cheat Sheet"** for Seed Treatment and In-Furrow Treatments for Managing Maggots and Soilborne Diseases in Direct-Seeded Onion in New York, 2026, on the CVP website at https://rvpadmin.cce.cornell.edu/uploads/doc_1222.pdf

For more details, please contact Christy Hoepting or Brian Nault.

Cornell Cooperative Extension
Cornell Vegetable Program
480 North Main Street
Canandaigua, NY 14424

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

VEGEdge
YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

VegEdge is the highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas, and research results from Cornell University and Cornell Cooperative Extension. VegEdge is produced every few weeks, with increased frequency leading up to and during the growing season.

Contact Us

VEGETABLE SPECIALISTS

Elizabeth Buck | 585-406-3419 cell | emb273@cornell.edu
fresh market vegetables, weed management, soil health

Robert Hadad | 585-739-4065 cell | rgh26@cornell.edu
farm food safety, organic, business & marketing, fresh market vegetables

Christy Hoepting | 585-721-6953 cell | cah59@cornell.edu
onions, cabbage, broccoli, garlic, pesticide management

Julie Kikkert, Team Leader | 585-313-8160 cell | jrk2@cornell.edu
processing crops (table beets, carrots, peas, snap beans, sweet corn)

Lori Koenick | 585-469-5798 cell | lbk75@cornell.edu
fresh market vegetables, mushrooms, urban agriculture

Margie Lund | 607-377-9109 cell | mel296@cornell.edu
potatoes, dry beans, post-harvest handling and storage

Judson Reid | 585-313-8912 cell | jer11@cornell.edu
greenhouses/high tunnels, small farming operations, fresh market vegs

PROGRAM ASSISTANTS & SUPPORT

Camila Ichazo | lichazo@cornell.edu

Angela Ochterski | aep63@cornell.edu

Destiney Schultz | ds2422@cornell.edu

ADMINISTRATION

Peter Landre | ptl2@cornell.edu

Steve Reiners | sr43@cornell.edu

Cornell Cooperative Extension
Cornell Vegetable Program

For more information about our program, email cce-cvp@cornell.edu or visit CVP.CCE.CORNELL.EDU