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Healthy High Tunnel Soils—Now is the Time for Cover Crops

Quality

Judson Reid, Cornell Cooperative Extension, Cornell Vegetable Program

Cornell Cooperative Extension has engaged in a multi-year research project to examine best management practices for soil based greenhouses, or high tunnels. Our data supports the implementation of cover crops in rotation with vegetable crops to improve soil health. The cover crop must be sown and terminated in a timely fashion, which means the choice of cover crop species depends on the date and cropping cycle. For warm season crops such as tomatoes, an early fall planting of a winter grain such as triticale is an excellent choice. The placement of a lightweight row cover in January can increase the total biomass of this cover crop. Terminating these cover crops several weeks prior to the next cropping cycle supports high tunnel soil health.

We consider soil health in three dimensions, which synergistically support crop health, ultimately leading to sustainable yields and ultimately farm profitability. The three dimensions of soil health are:

- Physical
 - Porosity, compaction and tilth
 - Percent organic matter
- Chemical
 - Specific plant nutrient levels and ratios
 - Salts 0
 - Soil pH
- Biological
 - Quantity and diversity of soil life; macro and microbiotic
 - Functionality of soil life to cycle crop nutrients



Cover crops under row cover produce more biomass and long term nitrogen for tomatoes. Photo: Judson Reid, CCE Cornell Vegetable Program

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

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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 North Main Street, Canandaigua, NY 14424.



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The next issue of VegEdge newsletter will be produced on September 6, 2023.

Accumulated Growing Degree Days, 8/28/23

Julie Kikkert, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - August 28, 2023

•	J		
Location**	2023	2022	2021
Albion	2062	2212	2408
Appleton	1948	2114	2172
Arkport	1709	1922	1870
Bergen	1924	2153	2148
Brocton	1930	2153	2189
Buffalo*	2077	2227	2349
Ceres	1698	1805	1943
Elba	1858	2031	2045
Fairville	1901	2081	2085
Farmington	1944	2082	2131
Fulton*	1945	2075	2078
Geneva	2052	2180	2176
Hammondsport	1862	2074	2054
Hanover	1894	2138	2170
Jamestown	1685	1841	1907
Lodi	2119	2362	1789
Lyndonville	2003	2055	2178
Niagara Falls*	2155	2335	2301
Penn Yan*	1987	2239	2266
Rochester*	2017	2218	2209
Romulus	2085	2241	2241
Sodus	2104	2260	2255
Versailles	1861	NA	NA
Waterport	1957	2115	2148
Williamson	1847	2048	2056
* Airport stations			- ·

Airport stations

** For other locations: http://newa.cornell.edu

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Cover crops contribute to each of these dimensions in a sustainable fashion. Cover crops reduce compaction and increase organic matter, scavenge and fix nitrogen without adding salts or spurious nutrients to the soil while the nitrogen, carbon and other plant compounds are 'feedstocks' for the soil life.

How do we implement cover crops in our high tunnels?

Here we'll focus on rotations with tomatoes, the most common high tunnel vegetable crop. Once tomatoes have reached the end of their cycle our approach has been to immediately remove all crop residue, mulch, stakes, drip irrigation and then lightly (shallow) till the soil to kill any weeds. Moving quickly, we sow our cover crop and then apply overhead irrigation to promote rapid germination and establishment of the cover crop. Then we move onto other fall pursuits which may include deer hunting, meditation, squash harvest or all three.

Cover crop growth in the fall depends on weather and seeding date. The earlier we seed the cover crop, the more biomass and soil health benefits we'll enjoy. Our earliest seeding date has been August 30th and latest has been in November. There is not a universal ideal date, however September is likely the best month for winter grain establishment in New York high tunnels.

Cover crop species?

We have enjoyed considerable success with the winter grain triticale, which reached levels of over 100 lbs of nitrogen per acre in our trials. With a Cornell recommended rate of 125-150 lbs. of nitrogen/acre for tomatoes, our project demonstrated tremendous potential to reduce fertilizer input costs! Bear in mind that soil health is a long term process, and we do not interpret those 100 lbs of nitrogen as immediately available. The placement of a lightweight row cover in January can increase the total biomass of this cover crop.

This work is funded by a USDA NRCS Conservation Innovation Grant, 'Best Management Strategies for High Organic Matter Soils in Urban and Rural Vegetable Production'.

Harvest and Post-Harvest Tips for Best Onion Quality

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

As a general rule of thumb, cool and wet growing seasons result in higher yields and bigger bulbs that tend to be of lesser quality mostly due to various bulb rot problems. Moderate seasons are favorable for onion growth, but ample rainfall and cooler temperatures also tend to favor leaf and bacterial diseases. Hot and dry growing seasons tend to result in smaller bulb size, but of very good quality. When onions are intended for storage, best management practices should be followed throughout harvest, curing and storage to ensure best bulb quality.

Lodging and Bulbing

- Onions lodge after the plant stops producing new leaves. The neck tissue becomes soft and can no longer support the weight of the foliage to stand upright. Thus, the leaves fall over and the plant lodges.
- After lodging, the goodness from the green foliage is pulled into the bulbs as they make size. Dry matter content and pungency increases, with a resulting increase in storage potential.
 - After lodging, bulb size increases an additional 25 to 33%.
- Onions lodge with varying degrees of green foliage from being green all the way to the tips (e.g. 95% green foliage) to much less.
- When biotic and/or abiotic stress is severe enough to result in excessive leaf dieback to the extent that the foliage does not have enough weight to lodge, then the plants can die "standing up".
- As a general rule of thumb, maximum yield may be achieved when onions have greater than 50% green foliage 2 weeks after 50% lodging (Fig. 1).
- If onions have excessive leaf dieback caused by disease, onion thrips or other stress, and the foliage does not have enough weight to lodge properly, and they are "dying standing up", you may want to consider rolling them if them to avoid increased incidence of bacterial bulb rot, if pulling is still 1-2 weeks away – see article in <u>August 23</u> <u>issue of VegEdge</u> on page 6 for more information on rolling onions.



Figure 1. If 2 weeks after lodging, onions have 50% or more green foliage (left), then maximum bulb size should be reached. If foliage is ravaged by disease, thrips or other stresses, and has less than 50% green foliage (right) the crop may not reach its maximum yield. *Photos: C. Hoepting, CCE*

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Pulling Onions

- Onions are pulled out of the ground either by hand or with equipment. Ideally, they are lifted out of the soil and placed into a single layer for quick drying (Fig. 2).
 - If they are mixed into the soil or placed multiple layers deep, it could take longer for them to dry and they could re-root.
- Storage-bound onions are ready to be pulled when at least half the leaves are dead.
- If you wait until all the leaves are dead and dry, it's likely that the outer skins will be loose and easily sloughed off. This may not hurt the keeping quality, but the onions will not look as nice.
- Pulling too green could make it difficult to cure them well and could reduce maximum yield potential.



Figure 2. Pulled onions are placed on a freshly made bed in a single layer to ensure quick drying. *Photo: C. Hoepting, CCE*

- Tug on the plants to see how easily the bulbs comes out of the ground:
 - if they come right out (e.g. roots letting go), go ahead and pull them;
 - if the roots are still holding on, this is an indication that the roots are still functioning and you can leave them in to size up a little bit longer.
 - In Cornell field studies (*Hoepting et. al.,* 2021), pulling onions when foliage was dry and roots had let go resulted in 5% higher total yield than when onions were pulled when foliage was green and roots were still holding on.
- At the earliest, onions should not be pulled until at least 50% of the plants have lodged.
 - When onions are pulled on the green side, the bulbs are prone to sunscald especially when temperatures are in the 90s and relative humidity is high. Laying the onion foliage over top of the freshly pulled bulbs may help to protect the bulbs from sunscald.

Topping and Harvesting

- Onions should only be topped when the neck is dry and has no more green tissue (e.g. the tissue does not slide when you roll the neck between your fingers) (Fig. 3).
- Bacterial diseases, Botrytis neck rot and black mold can enter into and move through green tissue into the bulbs. These diseases do not infect or move in dry tissue.
- Leave 2-4 inches of neck on the bulb. This increases the distance from the cut surface to the bulb for fungal and bacterial pathogens to travel. If the neck dries down before the disease gets to the bulb, the bulb should be sound in storage.
- Conduct harvest practices when the weather is dry.
- Ideally, onions should not be handled when wet to prevent skin quality issues from Brown Stain, caused by *Botrytis cinerea*. When wet harvested onions are placed into boxes, it takes longer for them to cure properly, and the added moisture can stimulate disease development and rooting, which in turn will stimulate sprouting.



Figure 3. Onions should only be topped when neck tissue is completely dry (back row). When onions are topped when neck tissue is green (front row), disease pathogens may enter and later infect the bulb. Disease pathogens do not infect or spread in dry neck tissue. *Photo: Christy Hoepting, CCE Cornell Vegetable Program*

- Do not harvest onions when conditions reach 90°F and 90% relative humidity, because black mold could develop.
- Harvest dry onions during the cooler part of the day as long as they are not wet from dew or rain or wait until a cooler day.
- Avoid bruising during harvest procedures. Bruises provide direct entry points for diseases to get started and can result in translucent scale, deeming the bulbs unmarketable.
 - Reduce drops to 6" and pad sharp surfaces.
 - On mechanical harvesters, minimize mechanical injury during harvesting by adjusting the chain speed to make sure the chain is always full. This will help reduce rolling and bumping of the bulbs.

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Drying and Curing

- For optimum storage quality, onions must be cured soon after harvest. Curing decreases the incidence of neck rot and bacterial diseases, reduces water loss during storage and is desirable for development of good scale color. **Optimum conditions** are 68-86°F and 70% relative humidity for at least 12 to 24 hours.
- Onions can be left in the field to dry.
- Temperature artificial curing can be done with outside air, which is heated to approximately 77°F or 3-5°F above the ambient air temperature.
 - Higher temperatures, up to 90°F can be used if onions are of high quality with several layers of good skins. Higher temperatures are favorable for development of bacterial diseases. Black mold is more likely to develop when temperatures exceed 82°F.
 - A lower temperature, down to 68°F should be used if onions are poorly skinned, have been touched by frost or have bacterial diseases. Best skin color develops at 75-90°F.
- **Relative humidity (RH)** should not fall below 65% or exceed 80%. RH going into the boxes should ideally be 50% and less than 100% coming out.
- Airflow ideally should be no less than 3 cubic feet per minute per cubic foot of product. Be aware that when bulb size is down, air circulation through the boxes is reduced (onions pack tighter with smaller air spaces in between).

Onion Storage

- To ensure maximum storage life, onions should be stored after curing. The optimum temperature for long-term storage of onions is 32°F with 65-70% relative humidity.
- It is important to bring them down to this temperature slowly. Holding onions in a barn or garage so that they cool along with the average outdoor temperature in late summer and fall works quite well. If you are selling them within a couple of months, keeping them in an un-insulated barn is fine. An insulated storage room is needed for longer storage.
- Protect cured onions from direct sunlight; exposure to light after curing will induce greening of the outer scales.
- Damaged or rotten bulbs should be graded out before putting them into storage. Damaged bulbs give off moisture, which is favorable for development of diseases in storage. Rotten bulbs can ooze onto healthy bulbs and stain them.



Figure 4. Onions in boxes on a drying wall. Artificially heated air is being forced through the boxes for a quick cure that will dry down green neck tissue in a few days. You can see the sponges stuffed into the fork lift holes in each box that block the air from escaping. *Photo: C. Hoepting, CCE Cornell Vegetable Program*

CR P Insights

Observations from the Field and Research-Based Recommendations

GENERAL

It is a bad year for phytophthora blight, aka P.cap. Treat fields with history of disease aggressively. Remember that the disease moves very easily on infected fruit and that it can take several days post-harvest for symptoms to start appearing. If you have P.cap in your winter squash or pumpkin plantings, hold your produce at least 3 days post-harvest to allow symptoms to begin to manifest before packing and shipping. Dispose of rotting fruit in the field it came from, do not introduce to another field. There is a real argument for knowing when to throw in the towel in years that P.cap gets out of hand. Work in fields (or portions thereof) that are out of control and plant a grass or grass-brassica cover crop. Follow with corn, alliums, brassicas or small grains for four years. – EB

BEETS

The Cercospora leaf spot (CLS) Decision Support System indicates low risk of infection in most of the area this week, with moderate risk on August 29 and 30 at the Sodus Lake weather station (Table 1). Rain splash can spread spores throughout a field. Continued leaf wetness within a canopy in areas that receive rainfall or irrigation also increases the risk of infection. – JK

Table 1. Cercospora Leaf Spot 2-Day Risk

Risk of Cercospora leaf spot on table beet from August 27 to September 1 using a forecasting model. Risk classification of CLS is based on cumulative 2-days/risk, and the forecast is based on weather data from Network for Environmental and Weather Applications (NEWA) models.

	achieved			forecast			
Location	Aug 27	Aug 28	Aug 29	Aug 30	Aug 31	Sept 1	
Albion	3	0	2	2	0	0	
Bergen	3	0	3	3	0	0	
Elba	3	0	0	0	0	0	
Geneva	2	0	3	3	0	0	
Lyndonville	3	0	3	3	0	0	
Medina	0	0	0	0	0	0	
Sodus	0	0	0	0	0	0	
Sodus (Lake)	0	0	4	5	1	0	
Waterport	2	0	2	2	0	0	

Low \leq 3; Moderate 4 to 6; High \geq 7.

Data from newa.cornell.edu accessed 9:00 am on 8/30/2023.

CARROTS

In processing fields that we have scouted, <u>Cercospora</u> <u>leaf spot</u> has been the primary disease observed. Lesions are small, circular, tan, or gray spots with a dead center which appear along the leaf margins, causing them to curl. <u>Powdery mildew</u> was also observed in a few fields. As harvest approaches, keep an eye out for leaf blights in fields that still have a long way to go until they are harvested. <u>Alternaria leaf blight</u> is the biggest concern in late August and September because it can blow up quickly. Alternaria first appears as deep brown to black irregular spots on the margins of the leaflets. Lesions on the petioles and stems are deep brown and girdle the stems, killing them. As the disease progresses, entire leaflets may shrivel and die. Lesions are more prevalent in older foliage. <u>Bacterial</u> <u>lesions</u> are small yellow areas on the leaflets with brown, dry centers often surrounded by a yellow halo. There are several fungicides labeled for carrots and are outlined in the 2023 Cornell Vegetable Guidelines. Choices should be based on what organisms you are trying to control, cost, and PHI. – JK

COLE CROPS

Continuing to see alternaria, including head rots of broccoli and cauliflower. Diamondback moths have been active again. Those blue gray, waxy looking cabbage aphids tend to start flaring up moving into cooler weather, wouldn't be a terrible idea to start keeping an eye out for them. They're a particular nightmare and difficult to control in Brussels sprouts, so start looking there. – EB

DRY BEANS

Early planted fields are being desiccated, while later planted fields are still a few weeks away. White mold is showing up in fields with dense foliage. See this week's article on white mold (page 9) for more information. – ML

ONIONS

Most fields have had sprout inhibitor or will get it this week and are in various stages of lodging and drying down before pulling. Fields with a portion of onions "dying standing up" are being rolled this week in Elba. For more pulling, harvest and storage tips, see article on page 3. **Muck Donut Hour in Elba is closed for the season** – thank you to all the growers, crop consultants, scouts, Cornell researchers and industry representatives who participated in this outstanding outreach activity! – CH

The Onion Rot Race

With the growing season being wetter than normal, it is likely that there might be higher than normal incidence of bacterial diseases in some fields. Most of the bacterial diseases that cause bulb rot in onion infect the inner green leaf/leaves of an onion plant and then move down through the neck and into the corresponding bulb scale(s). Bacterial diseases are thought to infect and spread in green leaf tissue, while infection and movement is halted in necrotic or dry tissue. In general, hot temperatures and moist conditions favor bacterial diseases.

We have been seeing plants with multiple inner leaves exhibiting foliar symptoms of bacterial diseases. When these onions are cut longitudinally, the bacterial infection had entered into the bulbs in less than 20% of the plants (Fig. 1). The begs the question whether the bacterial disease is going to make its way into the bulbs in the remaining 80% of the plants? The "rot race" is the race

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to get the neck tissue dried down before the bacterial infection reaches the bulb. Theoretically, pulling the onions early so that they get busy drying down or harvesting them early and getting them on a drying wall with artificially heated forced air to rapidly cure them in 3-5 days are two approaches to win the rot race. We just set up a trial this week to test these two management strategies.

The disadvantage of harvesting early is that onions are topped when the neck tissue is green. The cutting bar can easily be contaminated with bacterial pathogens that then introduce new infections to healthy bulbs during harvest. Theoretically, an artificial fast cure can also prevent these new infections from reaching the bulb. **Since there may be more bacterial rot in the onion crop this year in general, care should**



Figure 1. Foliar symptoms of bacterial diseases include the collapse of 1 or more inner leaves (left). When such plants are cut longitudinally through the neck and bulb, it reveals whether the bacterial infection has already spread into the bulb (left), is still making its way through the neck (middle) or has not even gotten started in the neck yet (right). The rot race is about getting the neck tissue to dry down before the rot makes its way into the bulb. *Photos: Christy Hoepting, CCE*

be taken to not harvest/top onions with green neck tissue, and to ensure leaving 2-4 inches of neck length. Studies have shown that when onions are topped with 0-1 inch neck that bacterial rot can increase substantially compared to leaving 2-4 inch neck length. For more information on the effect of neck length at harvest on bacterial bulb rot, check out the Stop the Rot website: https://alliumnet.com/frequently-asked-questions/does-neck-length-at-harvest-affect-bacterial-bulb-rot/

The disadvantage of pulling early is that the crop may not finish sizing resulting in a slight yield reduction. Will the yield reduction from pulling early to reduce bulb rot outweigh the yield reduction from increased rot if pulled at the normal time? Also, the forecasted temperatures in the 80s and 90s for the first week of September this year will be favorable for both drying down onion foliage and movement of the bacterial diseases. Time will tell the winner of the rot race!

Interestingly, some strains of bacterial pathogens of onion only cause disease in the leaves and fizzle out once they reach the bulb. An onion bulb actually has lot of antimicrobial properties that can be a hostile environment for bacteria. If this is the case, that would be great! – CH

POTATOES

Even though we are towards the end of the season, be sure to continue monitoring for diseases! Late blight has been reported in three NY counties so far this year (Onondaga, Tompkins, Yates), so it is important to be consistent with your late blight prevention until vines are killed.

Arkport, Brant, Buffalo, Ceres, Dansville, Farmington, Fulton, Geneva, Hammondsport, Niagara Falls, and Wellsville are above the 30 blight units (BU) needed to trigger a spray for late blight this week. However, with wet weather this week, all locations should consider their fungicide programs. If the weather station closest to you has not yet reached 30 BU and the forecast indicates that it will in the next 2-3 days, a spray is still recommended. New late blight has been reported in Onondaga and Tompkins County, NY this past week, as well as in North Carolina. Past reports include on potato in Ontario Canada, and on tomato in Yates County, NY and North Carolina. – ML

SNAP BEANS

If you observe white mold in your beans, see the general article on page 9. White mold usually shows up the worst in late-planted beans. - JK

SQUASH

Reminder that we're looking for fields that appear to have bacterial wilt, even though cucumber beetle control was pretty good. Please give us a call!

SWEET CORN

Bird pressure has decreased on many farms, but I have seen large flocks of European starlings in parts of the region, and they are pecking at ears of corn. Keep attuned to your fields and keep bird deterrents available for use as needed. Continue to scout for insects and leaf diseases. – JK ●

Table 3. Late Blight Risk Chart, 8/30/23

Location	Blight Units 8/23-8/29 ¹	Predicted Blight Units 8/30-9/1 ²
Albion	22	22
Arkport	33	42
Baldwinsville	23	24
Bergen	28	28
Brant	40	46
Buffalo	40	57
Burt	-	-
Ceres	38	44
Dansville	30	48
Elba	22	22
Fairville	18	18
Farmington	32	38
Fulton	40	58
Geneva	31	31
Hammondsport	32	32
Knowlesville	23	23
Lyndonville	26	35
Medina	17	22
Niagara Falls	43	60
Penn Yan	35	53
Rochester	35	52
Sodus	18	23
Versailles	22	29
Wellsville	41	59
Williamson	25	32

Calculated using a May 31 crop emergence date. Last fungicide application August 23 on susceptible cultivar Reba. Numbers in red indicate locations that have or will surpass the 30 BUs needed to trigger a fungicide application.

1 Past week Simcast Blight Units (BU)

2 Three-day predicted Simcast Blight Units (BU)

Vegetable Haikus

Elizabeth Buck, CCE Cornell Vegetable Program



What to Do After a Bad Sclerotinia White Mold Season

Julie Kikkert and Margie Lund, Cornell Cooperative Extension, Cornell Vegetable Program, and Sarah Pethybridge, Cornell AgriTech

Wet weather during the 2023 growing season was conducive to many diseases, particularly white mold caused by the fungus *Sclerotinia sclerotiorum*. This disease can infect many vegetables and field crops except for alliums, corn, and grains. In New York, white mold is regularly seen in cabbage and other cole crops, snap beans, dry beans, and soybeans. Sunflowers, tomatoes, potatoes, lettuce, pumpkins, and winter squash are also common hosts. Velvetleaf and ragweed are weed hosts.

The first symptoms of white mold are often bleached, water-soaked spots. In beans flagging (wilting) of upper leaves is an early symptom. As the fungus grows, white cottony mycelial strands appear, hence the name white mold. The fungus may grow on the outside of the plant or may be hidden inside stems or seed pods. *S. sclerotiorum* is distinguished from other molds by mounds of fungal mycelium that harden and darken into black sclerotia embedded in the cottony mycelium.

Sclerotia are really important to the lifecycle of *S. sclerotiorum* and influence the risk of white mold in subsequent crops. The sclerotia fall to the soil (see photo) and, much like weed seeds, they can remain in the soil waiting for the right conditions to germinate and become a problem in subsequent years. If you have a crop with white mold this year, we recommend incorporating the residue into the soil to bury sclerotia. Burying the sclerotia in the soil promotes degradation by soil micro-organisms.

What to Do if You Observe White Mold This Year

- It is too late to apply fungicides once disease symptoms are observed.
- Remove diseased plants if possible, to prevent sclerotia falling to the soil.
- Take and keep accurate notes about which fields or portions of fields are affected and how much white mold is observed. Record disease and yield data for different crops and varieties on your farm to help in future planning.
- Harvest diseased fields last to avoid spreading sclerotia to non-affected fields.
- Tillage current research in NY recommends tillage of crop residue to bury sclerotia after harvest to promote degradation.
- Plant only non-susceptible cover crops such as grasses and grains. Red clover and other legumes are hosts.

Additional Steps for Future Years

- Crop rotation with grains and corn or other non-hosts for three or more years.
- Plant certified seed because seed saved from a diseased field may contain sclerotia.
- Avoid fields where infected plant debris, such as cabbage leaves and winter squash were dumped.
- Manage plant canopies to improve air-circulation.
- In high risk situations, consider fungicides during periods of high risk (e.g. over bloom in beans). Check the Cornell Guidelines for more information and always read and follow product labels.
- Watch for additional information at our winter meetings.

Sweet Corn Pheromone Trap Network Report, 8/29/23

Marion Zuefle, NYS Integrated Pest Management Program, Cornell; https://sweetcorn.nysipm.cornell.edu/

Statewide, 26 sites reported this week. Often at this time of year, we are catching CEW at most locations and in high enough numbers that other moths will be controlled by the spray timing needed for CEW. In the absence of CEW, continue to scout for ECB and FAW egg masses, larvae and feeding damage, using a threshold of 15% infested plants in tassel emergence stage fields and 5% in silk stage fields.

Avera	age Corn Earworm		
Per Day	Per Five Days	Per Week	Days Between Sprays
<0.2	<1.0	<1.4	No spray (for CEW)
0.2-0.5	1.0-2.5	1.4-3.5	6 days
0.5-1.0	2.5-5.0	3.5-7.0	5 days
1-13	5-65	7-91	4 days
over 13	over 65	over 91	3 days

Add one day to the recommended spray interval if daily maximum temperatures are less than 80°F for the previous 2-3 days.

WNY Pheromone Trap Catches: August 29, 2023

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC
Batavia (Genesee)	0	0	NA	5	0	2
Bellona (Yates)	0	6	1	16	0	0
Eden (Erie)	NA	NA	NA	NA	NA	NA
Geneva (Ontario)	0	9	0	18	0	0
Hamlin (Monroe)	NA	NA	NA	NA	NA	NA
Leroy (Genesee)	NA	NA	NA	NA	NA	NA
Lyndonville (Orleans)	2	0	NA	0	0	14
Oswego (Oswego)	0	0	NA	2	0	0
Panama (Chautauqua)	2	0	NA	2	0	0
Penn Yan (Yates)	0	1	0	1	0	0
Portville (Cattaraugus)	NA	NA	NA	NA	NA	NA
Ransomville (Niagara)	0	1	NA	1	0	2
Stanley (Ontario)	0	9	0	9	0	0
Williamson (Wayne)	0	2	NA	2	6	1
ECB: European Corn Borer: CEW: Corn Earworm: EAW: Fall Armyworm: WBC: Western						

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm



Hard black sclerotia on the ground with bean leaf debris. *Photo: J. Kikkert, CCE*

Preparing for Fall Flight of Allium Leafminer

Ethan Grundberg, Cornell Cooperative Extension, Eastern NY Commercial Horticulture Program

Allium leafminer (*Phytomyza gymnostoma*), has been established in the Northeast since 2016 and has caused damage to 98% of leeks that were not covered or treated with insecticides in research trials. **Fall ALM adult activity typically begins in early September and continues through the end of October.** There are effective cultural and chemical control options available to reduce Allium leafminer (ALM) damage to fall alliums, but timing is critical for success.

Cultural Controls

The most effective management tactic for organic growers is covering host crops with either floating row cover or insect netting to exclude the adult flies from laying eggs in the leaf tissue. Row cover or netting must be installed before the beginning of the fall flight. It is imperative that the covers be well secured to prevent gaps between the soil and the covers where adult flies can gain access to the crop. Covers should not be removed until early November. The use of row cover is not effective in perennial chives where pupae emerge from the soil right around the plant. The use of reflective (metalized) plastic mulch also reduces ALM damage by about 33% compared to alliums grown on black or white plastic mulches. However, the use of reflective mulch alone is typically not sufficient to reduce damage to acceptable levels. Find more information on cultural controls for ALM in the report Developing Integrated Pest Management Strategies to Reduce Damage from the Invasive Allium Leafminer on Organic Farms.



An adult ALM next to the diagnostic line of oviposition scars near a scallion leaf tip. *Photo: Ethan Grundberg, CCE*

ALM maggots (yellow circles) and pupae (blue circle) in the shaft of an untreated leek with visible mining/feeding injury. *Photo: Ethan Grundberg, CCE*

Chemical Controls*

Insecticides are most effective at reducing damage from ALM when 2-3 total applications are made during the flight on a 7-10 day interval beginning 2 weeks after adult activity begins. Effective insecticides for ALM management include:

- Exirel (cyantraniliprole, IRAC Group 28) at 13.5 fl oz/acre. 2(ee) label required for NY growers.
- Radiant (spinetoram, IRAC Group 5) at 8 fl oz/acre
- Entrust SC (spinosad, IRAC Group 5) at 6 fl oz/acre rate co-applied with a 1%-1.5% v/v solution of M-Pede (potassium salts of fatty acids) for better penetration of the waxy cuticle.

Damage

Crop injury from ALM is most severe in fall leeks. As the maggots feed on the leaf tissue, they cause physical wounds where soft rot pathogens can enter. The feeding activity also causes visible white mining on green foliage that can reduce the marketability of scallions and chives. Economic losses to garlic and onions have not yet been documented in New York, though the maggot feeding injury during the spring flight can cause extreme foliar distortion in those crops.

Lifecycle

The flies create a diagnostic line of oviposition puncture marks on allium leaves during feeding and egg-laying. Larvae that hatch from eggs eat their way down the inside of the leaves toward the basal plate. The maggots then pupate either inside the bulb and stem or in the soil around the plants for the winter and early spring. The spring generation typically emerges in mid-April and is active for 5-6 weeks.

*Changes in pesticide registrations occur constantly and human errors are possible. Read the label before applying any pesticide. The label is the law. No endorsement of companies is made or implied.



NY23 Farm Bill **Listening Session**

NY23 Farm Bill Listening Session

September 6, 2023 (Wednesday) | 9:30 am Cornell Lake Erie Regional Grape Program, 6592 West Main Rd, Portland, NY

You are cordially invited to attend the NY 23 Farm Bill Listening Session, hosted by Representative Nick Langworthy with Special Guest, House Committee on Agriculture Chairman Glenn "GT" Thompson. This listening session will help us gather feedback while we work on crafting the 2023 Farm Bill.

This event will be held on September 6, 2023 at 9:30 am at the Cornell Lake Erie Regional Grape Program offices at 6592 West Main Road, Portland, NY.

If you would like to attend or speak at the event, please fill out the Participant RSVP form available at https:// docs.google.com/forms/d/e/1FAIpQLSe6LztXKrvSNxgujcMs-qUnWXkq5gyHx0ZufB9GR3zwARxvzQ/viewform

Upcoming Events

Field Walk (Clymer, NY)

September 12, 2023 (Tuesday) | 6:30 - 8:00 pm 8868 Cherry Hill Rd, Clymer, NY 14724

Free! RSVP not required. For more info, contact Elizabeth Buck at 585-406-3419

Field Walk (Wellsville, NY)

September 13, 2023 (Wednesday) | 6:00 - 7:30 pm 1086 Fortner Rd, Wellsville, NY 14895

Free! RSVP to Elizabeth Buck at 585-406-3419

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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 frequency increasing leading up to and during the growing season.

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Cornell Cooperative Extension Cornell Vegetable Program

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