Cornell Cooperative Extension | Cornell Vegetable Program

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 20 • Issue 22 • September 11, 2024

Allium Leafminer in the Fall: Most Damaging in Leeks and Scallions; Garlic Bulbs May be Contaminated

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Last fall, Allium leafminer (ALM) decimated leek crops in Orleans, Genesee and Niagara Counties. This was its first detection in Western New York. **We are now assuming that ALM occurs throughout the 14-county CVP region in 2024. And, unfortunately, it is here to stay.** Here is a summary of management practices for ALM in fall Allium crops (leeks, scallions).

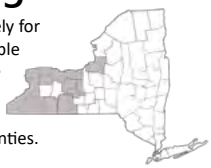
For more information, a detailed article with everything you need to know about managing ALM is available on the CVP website: https://rvpadmin.cce.cornell.edu/uploads/doc_1167.pdf

ALM damage in the fall – leeks most susceptible

- ALM has a bimodal lifecycle, with one generation occurring in early spring and the other in the fall. ALM is not active in the summer (Fig. 1 of ALM article on CVP website).
- Damage is higher in the fall than in the spring.
- ALM overwinters as pupae in the soil and in allium crop debris.
- **Adults from summer pupae emerge as flies in early-September through the end of October.**
  - Fly activity includes mating, foraging and egg-laying.
- **Egg-laying** begins 10-14 days after emergence and continues for a period of about 6-8 weeks **from mid-September to late-October** for a period of 6-8 weeks.
- Eggs hatch into larvae, which feed/mine between the upper and lower leaf surface until the end of their development, at which time they pupate within the mine, or drop to the soil.
- In the fall, eggs hatch and **larvae feed from late-September through December**.
  - ALM feeding/mining injury to the leaves can deem the leaves of leeks and scallions/chives unmarketable (Fig. 1, 2 & 3).
  - In leeks, ALM larvae and pupa squeeze between the leaves and contaminate the marketable portions (Fig. 1).

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
Judson Reid

Publishing Specialist/Distribution/Sponsors
Angela Ochterski

VegEdge is published 25 times per year, parallel to the production schedule of Western New York 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 North Main Street, Canandaigua, NY 14424.

Contents

The next issue of VegEdge will be produced on October 2, 2024.

Sweet Corn Pheromone Trap Network Report

Marion Zuefle, NYS IPM, 9/10/24

Statewide, 27 sites reporting this week (see trap count table). European corn borer (ECB)-E was trapped at 4 sites and ECB-Z was trapped at 1 site. Corn earworm (CEW) was trapped at 21 sites, with 20 sites high enough to be on a 3, 4, 5 or 6-day spray schedule (see chart). CEW have come down this week as compared to last week, but we still caught over 200 moths at one location. Fall armyworm (FAW) was caught at 6 sites and Western bean cutworm (WBC) was caught at only one of the reporting sites.

Erie County Farmland Protection Plan

Erie County is conducting its ten-year Farmland Protection Plan update and wants robust input from all segments and viewpoints of the ag & food sector. The county has a rough draft of the plan based on spring listening sessions. Now, they're gathering more feedback. **Please consider attending a discussion group session.** The county makes good use of the plan when considering ag economic policy, land use decisions, and many other rural-impact decisions.

Thursday, Sept. 12th | 6-7:30pm
Delavan-Grider Community Ctr., 877 E. Delavan Avenue, City of Buffalo

Friday, Sept, 13th | 12pm -1pm
Virtual Registration is required Register at bit.ly/eriefocusgroup

Thursday, Sept. 19th | 7-8:30pm
Clarence Town Hall, One Town Place, Town of Clarence

Thursday, Sept. 26th | 7-8:30pm
Holland Town Hall, 47 Pearl Street, Town of Holland

Thursday, Oct. 3rd | 7-8:30pm
North Collins Senior Center, 11065 Gowanda State Rd, Town of North Collins

continued from page 1

  - ALM feeding injury can be followed by secondary bacterial rot.
- In the fall, larvae become pupae from late October to early-December and overwinter until they emerge as adults the following spring.

The most important time to protect Alliums from ALM is during egg-laying.

Figure 1. ALM feeding/mining damage on leek, accompanied by larvae (pink arrows) and pupa (green arrows) contamination. ALM causes the most economic damage to leeks in the fall. *Photo: Ethan Grundberg, CCE ENY Commercial Horticulture Program*

Figure 2. Oviposition (yellow dots) and early mining of ALM in scallion, early-planted onion transplants and chives. *Photo: R. Harding, Cornell*

Figure 3. Twisting leaf injury caused by Allium leafminer in leek, making it unmarketable. *Photo: Pin-Chu Lai, Cornell*

Crop covers are the most effective control strategy for ALM

- Floating row cover or insect exclusion netting (e.g. ProtekNet 25 g) **must be installed before ALM flies emerge: late-August/early September for the fall generation.**
- Crop covers are not nearly as effective if they are applied after ALM egg-laying has started or if they are removed prior to finishing of egg-laying.
  - Hopefully, growers already have their leeks or fall scallions covered up. Otherwise, **it may be already too late, since everything seems 1-2 weeks early this year.**
  - Remove at end of October for fall generation.
- It is imperative that the covers be well secured to prevent gaps where ALM flies may enter under the crop cover.
- It is imperative that covers not be used over top of ALM-infested ground that has pupae in it (e.g. same site as previous ALM-infested crop).
- Use of **support hoops is highly recommended when using crop cover for leeks** to minimize growth restrictions and improve aeration to reduce incidence of foliar diseases.
  - Leek stems can bend when their growth is restricted under a row cover (Fig. 5 of ALM article on CVP website).
- Higher levels of diseases such as Botrytis leaf blight and poor weed control may occur under covers.

- ***Grower Experience:*** **Crop covers can provide close to 100% control of ALM.**
  - They have only been adopted by small-scale organic growers for fall leeks because they are more reliable than organic insecticides.
  - On a larger scale, crop covers are expensive and labor-intensive, especially when support hoops are used, and they come along with all of the other challenges associated with crop covers (e.g. weed control, too hot, etc.).

Control of ALM with Conventional Insecticides is Very Good

- Conventional insecticides are very effective (90-100% control) at reducing damage from ALM.
- The recommendation is to make **2-3 total applications when ALM flies are active on a 1-2 week interval beginning 2 weeks after adult activity begins.**
- Staging the insecticide applications too close to first emergence is too early and does not result in as good control.
- Similarly, starting insecticide application too late also does not result in good ALM control.
- Effective conventional insecticides for ALM management include:

continued on page 4

continued from page 3

  - **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. Do not apply more than 2 apps of IRAC 5 insecticides before rotating to a different mode of action.
- Exirel and Radiant work best when used with an adjuvant that has penetrating properties.
- **For insecticide resistance management, it is important to rotate IRAC groups.**
- First emergence of ALM flies is identified by the first detection of their activity (oviposition/egg-laying sites and mining, Fig. 2). This requires scouting. **The first insecticide application should be made 2 weeks after the first detection of ALM (e.g. oviposition sites on leaves), and the second 1-2 weeks after that.** If ALM pressure is high (e.g. lot's of crop damage), a third application should be made 1-2 weeks after the second.
- Note: Although the NYSIPM fact sheet discusses using growing degree day (GDD) models to predict ALM activity in the spring, field experience has not found GDD very reliable. **No GDD models exist for the fall generation.**

- ***Grower Experience:*** **Use of conventional insecticides has been readily adopted by conventional growers for fall leeks and spring and fall scallions with high levels of success.**
  - Since scouting for first detection of ALM requires a skilled scout and is labor-intensive, **most conventional growers simply make the first insecticide application during the third week of September (you probably want to begin earlier this year) and then spray every 7-10 days until mid-October for a total of 3-4 sprays.**

Control of ALM with Organic Insecticides is Variable

- Effective organic insecticides for ALM management include:
  - **Entrust SC** (spinosad, IRAC Group 5) at 6 fl oz/acre rate co-applied with **M-Pede** (potassium salts of fatty acids) 1%-1.5% v/v for better penetration of the waxy cuticle.
  - **Azera** (azadirachtin + pyrethrins, IRAC Group 3A) at 56 fl oz/acre co-applied with **OROBOOST** at 0.25% v/v adjuvant.
- Since these organic insecticides do not have as much residual activity as the conventional insecticides used for ALM control, the following is recommended:
  - 2 weeks after first ALM fly emergence: Azera + OROBOOST
  - 1 week later: Entrust + M-Pede
  - 1 week later: Entrust + M-Pede
  - If pressure is high: 1 week later: Azera + OROBOOST
- It is important to use the recommended adjuvants with each insecticide. Cornell research studies showed that Nu-film P did not increase efficacy of Entrust, while M-Pede reduced efficacy of Azera.

- ***Grower Experience:*** **Adequate control of ALM with organic insecticides has been hit and miss.**
  - **For fall leeks, organic growers have either stopped growing fall leeks or use row covers instead.**

Garlic Bulbs Can be Contaminated with ALM

- In the spring, garlic may sustain some feeding/mining injury and although rare, it is possible that **pupa can be captured within the wrapper leaves of garlic bulbs** (Fig. 4).
  - Such pupal contamination is generally removed with the wrapper leaves.
- Sometimes, **ALM may pupate in garlic cloves** (Fig. 5a), which cannot be as easily removed. And sometimes, **ALM may feed on garlic clove**, the injury of which looks similar to Fusarium disease (Fig. 5b).
- ALM flies may emerge from pupae stowed away in wrapper leaves of garlic bulbs. **Care must be taken to not use/ship ALM-contaminated garlic bulbs for seed**, because it is possible that the ALM flies will emerge from the pupa. This would especially be problematic when garlic is planted in close proximity to leeks or scallions where it could become established.
- Losses due to ALM in garlic in NY have been very minor.

Destroy ALM infested plant material by burning or burying as deep as possible.

Figure 4. Allium leafminer pupa nestled between cloves inside a garlic bulb. Generally, such pupal contamination can be easily removed with the wrapper leaves. *Photo: Plants4Food*

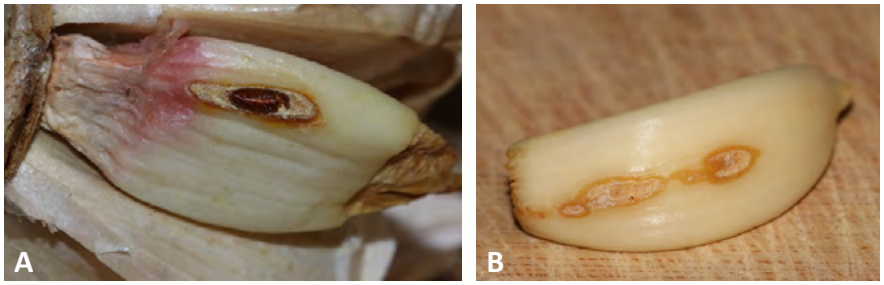


Figure 5. Allium leafminer pupa nestled inside a clove (A) and its feeding damage on a clove (B) inside a garlic bulb. ALM-contaminated cloves may introduce ALM to a new area, especially if they are planted near susceptible allium crops (e.g. leek, scallions) where they could become established. *Photos: Debbie Roo, North Carolina Extension*

Things to Consider When Adding Specialty Mushrooms to Your Farm

Lori Koenick, Cornell Cooperative Extension, Cornell Vegetable Program

Happy September and happy National Mushroom Month! Let's set aside the familiar button, cremini, and portabella mushrooms (all in the same species of *Agaricus* mushrooms) and focus on a different and growing segment of the mushroom industry: specialty mushrooms. The USDA defines "specialty mushrooms" as any non-*Agaricus* mushroom, which includes Shiitake, Oyster, Lion's Mane, and many more.

Specialty mushroom production benefits include new income sources, crop diversification, utilization of unused space or waste streams, and building soil health. These mushrooms are grown in a variety of low-cost ways in outdoor, indoor, and hybrid systems including on logs, in the ground, in raised beds, or in blocks contained in buckets or plastic bags. Crops are sold fresh, dry, powdered, or incorporated into value-added products.

Like plants, mushrooms need specific environmental conditions to form, but sunlight is not a necessity. Humidity, temperature, and air flow are the most important considerations.

Mushrooms are neither plants nor animals but in their own unique group of organisms called fungi. A mushroom is the fruit of a fungus. Underneath the mushroom is the branching, thread-like, main body of the organism called mycelia. To be able to grow mushrooms, we first need to grow healthy mycelia. Once we have a healthy mycelia base, then we can focus on the fruiting process to get mushrooms to form.

Let's define some common mushroom cultivation terms:

- **Substrate:** Food source for the mushroom—common substrates include logs, straw, sawdust, wood chips, compost, hardwood pellets, and combinations of such.
- **Spawn:** A mixture of mycelia and substrate used to inoculate (plant) a new mushroom crop—common forms are grain, sawdust, and plugs (wooden dowels).

The general process of growing specialty mushrooms is like growing vegetables. **Basic steps include:**

1. **Spawn and strain selection:** "variety selection"—Decide what type of mushroom to grow and which strain (variety) of the mushroom type. Spawn providers can be excellent sources of information.
2. **Substrate preparation:** "bed preparation"—Specifics depend on the substrate, and vary from chopping logs, pasteurizing straw, mixing and sterilizing block materials, and more.
3. **Inoculation:** "planting"—This involves mixing the spawn with the substrate. Drilling and filling logs with plugs or sawdust spawn is one example.
4. **Spawn Run:** This is the incubation growth stage where mycelium colonizes and grows throughout the substrate.
5. **Fruiting:** The growth stage where mushrooms are produced and then harvested.

Growing Oysters on straw blocks, Shiitake on logs, or Wine Caps in beds are common ways to begin exploring how to add mushrooms to your farm. When thinking about what type of mushroom to grow, consider the resources you have access to and the type of growing space you plan to use.

Indoor production consists of incubating and fruiting blocks in buildings and greenhouses using plastic bags, buckets or similar containers. Similar to controlled environment agriculture, indoor mushroom production offers the opportunity to grow more types of mushrooms year-round, producing higher and more reliable yields. Yet, indoor production can be more energy intensive, requires close monitoring of environmental conditions, and growing spaces must be kept cleaner than outdoor production due to higher contamination risk.

Mushroom blocks fruiting in an indoor grow room, Lion's Mane mushrooms featured in the center. *Photo: Lori Koenick, Cornell Vegetable Program*

Wine Cap mushrooms fruiting in raised bed. *Photo: Lori Koenick, Cornell Vegetable Program*

Outdoor production involves growing on logs, totems, or in beds. It can be done anywhere with some shade, humidity, and good airflow. Woodlots are a great option. It typically has lower costs with less infrastructure investment and energy usage, yet mushrooms can take longer to grow and produce less yield.

It does not have to be an either/or situation—growers are constantly experimenting with hybrid environments, such as growing Wine Cap beds in high tunnels or keeping fruiting logs indoors for better pest protection. Just as with growing vegetables, there is no one right way to grow mushrooms; you must figure out what works best for your farm. Experimentation is encouraged!

Pepper Anthracnose

Elizabeth Buck, Cornell Cooperative Extension, Cornell Vegetable Program

Pepper anthracnose is widespread this year. Unchecked, this disease can cause appreciable losses. Pepper anthracnose is typically a late season disease that needs cooler weather and increased humidity and moisture (nightly dews). It strikes ripe fruit and is much worse on colored peppers, which are more physiologically mature and susceptible than green ones. It will attack both bells and hots, though it is more noticeable on bells. Usually you'll see one to a few sunken blackish marks on the shoulders, occasionally further down on areas weakened by sunscald or other injury. A small percentage of peppers have anthracnose. We're well used to dealing with a little of this anthracnose every year.

Conditions this year have been highly favorable. As a result, anthracnose is not a background problem and is requiring active treatment on many farms. This year, I'm seeing:

- Dark black, sunken, roundish lesions up to an inch across
- Lesions mostly on the shoulders, some on the sides and tips, especially if in contact with another infected/wounded fruit
- Usually only a few lesions per fruit that occasionally grow into each other
- Lots of black spores produced. Occasionally some pink colored spores.
- Only infecting ripe fruit
- More than 10% of fruit infected, rarely over 30%.

Treatment is often necessary in high pressure years. A shift in weather certainly helps, but we're going to keep having cool, dewy nights. Timely picking helps protect fruit by removing them. Fruit will continue to sporulate for a longtime after they are dropped between rows, so discarded fruit are important to consider. In bad fields, you may have to sacrifice picking reds and take more green fruit. Reds are worth more, but only if you can sell them.

Copper is the organic treatment. It is weak so you'll need excellent airflow and good picking management. Group 11 and 3 fungicides perform well against anthracnose. One or two applications can usually clean a planting up quite well, barring continued re-infection from dropped fruit or overly dense canopies.

- Cabrio, Quadris, Quadris Top, Mettle and Rhyme are 0 day PHI and don't require a spray license.
- Cevya, Aprovia Top, and Priaxor are 0 day PHI and require a spray license.
- Bravo is the better protectant than copper but has a 3 day PHI.
- Luna Sensation (license required), Flint Extra and Tanos are 3 day PHI materials.

Tanos is a solid option if you're also battling bacterial or phytophthora (P. cap) issues as it offers suppression against those diseases.

It is a 3-4 year rotation after an anthracnose outbreak, and don't reuse any pepper stakes. In the future, consider hot water treating your seeds to prevent anthracnose (and bacterial) issues.

A final note: There is a small chance that a less common, new-to-NY anthracnose could be causing your pepper losses. Green Fruit Anthracnose is extremely aggressive. It is recognized by the many lesions it causes per fruit and the high proportion of pink spores. It attacks immature fruit and ripe fruit can cause upwards of 80-100% loss. Green fruit anthracnose can be managed, but it requires a more nuanced approach. **Please reach out to CCE if you suspect Green Fruit Anthracnose.**

Typical pepper anthracnose. *Photo: Margaret McGrath, Cornell*

Green Fruit Anthracnose. *Photo: Emily Reynolds, CCE Chautauqua County*

CROP Insights

Observations from the Field and Research-Based Recommendations

GENERAL

DACTHAL – The registration for the herbicide Dacthal was recently cancelled due to health concerns and must not be used. The manufacturer, AMVAC, has announced that it will accept all remaining supplies of Dacthal. If you have any Dacthal, please reach out to your pesticide dealer. They should soon be accepting grower stocks of the herbicide for ultimate return to the manufacturer. Don't keep this sitting around in your barn; take advantage of the opportunity to safely dispose of all Dacthal now. – EB

ALLIUM LEAFMINER – *From Teresa Rusinek ENY Commercial Hort Team:* "Allium leafminer (ALM) activity was detected on 9/9 in the Hudson Valley. Beginning in 2017, ALM emergence has been carefully detected and recorded for the Hudson Valley and has occurred between September 3 and September 19. Emergence may occur a little later farms north of the Hudson Valley. Growers with susceptible alliums such as scallion, chives, and leeks should cover these crops immediately with insect netting or row cover making sure there are no gaps along the edges. For larger plantings or other situations where row cover is not practical, there are effective OMRI listed and conventional insecticides that can be used to manage damage from ALM." See the cover article for more information on managing ALM on fall crops, and the general article on CVP website: https://rvpadmin.cce.cornell.edu/uploads/doc_1167.pdf – CH

PALMER AMARANTH – *From Lynn Sosnoskie, Cornell:* New occurrences of Palmer amaranth (*Amaranthus palmeri*) have been documented in CNY. Plants and seed have been collected by Dr. Vipan Kumar's lab and resistance screening will occur this winter. To date, we have confirmed resistance to glyphosate, several ALS-inhibiting herbicides, and atrazine in previously identified NY populations. Waterhemp (*Amaranthus tuberculatus*) is also in NYS (same resistances have been reported). Both pigweed species can grow rapidly and tall and produce significant amounts of seed, which can lead to sizable populations developing.

Weed seed movement between fields (and regions) can occur via contaminated seed, animal feed/manure spreading, and transport on equipment.

Please be on the lookout for both Palmer and waterhemp (especially if you see very large, unusual pigweeds in a field…)

Pigweed identification | CALS (cornell.edu)

http://hort.cornell.edu/sosnoskie/pigweed-identification-quick-guide.pdf

http://hort.cornell.edu/sosnoskie/palmer-waterhemp.pdf

ASPARAGUS

September is a good time to walk through your asparagus patch. The main reason is to assess disease pressure in your field. Fields with lots of foliar disease may benefit from mowing rather than allowing the ferns to stand all winter. Chopping crop residue before winter can help reduce disease load in your field. For further information about cleaning up diseased asparagus patches in the fall, please give Elizabeth a call.

Also make note of which weeds you have. If you can get through the field to mow off weeds between rows you can still reduce the amount of energy going down into perennials roots and weaken them heading into winter. Areas with annual weeds going to seed will have dense pressure next May and June. You can plan ahead now. Finally, we're beginning to see the emergence of winter annual weeds like chickweed and purple deadnettle. These are the weeds that are present once snow melts and choke your field during spear emergence. Knowing which weeds you have allows you to make effective management plans over winter. – EB

BEETS

It was common this year to see beet leaves turning red in August because of stress. I believe that a lot of this had to do with too much rain on the fields and/or heat stress such that the plants ran out of steam. Cercospora leaf spot (CLS) was difficult to keep under control because of the favorable weather conditions from July through September. CLS often does not affect root yield or size but makes it difficult to pull beets from the ground and many beets are left in the field with mechanical harvesters if the beets have weak foliage. Dr. Pethybridge at Cornell conducted a CLS fungicide trial to test several new and already labeled products. Results will be reported in our winter meetings. The incidence of root rot was higher this year because of the wet soil conditions which favored disease. Avoid planting in fields with a history of beets and beets with root rot. The yields of processing table beets were good overall. Harvest will continue into October. – JK

CARROTS

Harvest of the processing crop will begin soon. It is important to keep the foliage healthy for top-pulling harvest machinery. The weather has been favorable for root decay, which may be discovered upon harvest. For more information, see the article "Detecting Root Decay in Carrots at Harvest" in the October 4, 2023 issue of VegEdge – JK

continued on page 8

continued from page 7

COLE CROPS

Diamondback moths are damaging many plantings. The adult is a small, fast, not very moth-like insect that darts from plant to plant as you walk through the field. They are light tan and medium brown with a wavy diamond pattern going down their backs and very long antennas. They are about ½ inch long and narrow-bodied with wings that fold tightly against the back, overall more grasshopper shaped than what we tend to think of as moth shaped (broadly triangular flat winged). The caterpillars dangle from threads when poked at and they make lacy cocoons.

Diamondback moths can be quite difficult to manage. They migrate in and may carry resistance to any of a multitude of insecticide groups. Resistance is known to Bt (group 11A), pyrtheroids (group 3A), carbamates and organophosphates (groups 1A & 1B), anthranilic diamides (group 28), and spinosyns (group 5). Of these known issues, pyrethroid, organophosphate, and carbamate tolerances are most common.

A handful of growers in the NW section of the CVP region seem to be struggling to control diamondbacks using pyrethroids. If you're struggling too, you can try switching to or adding a group 5 (Radiant, Entrust) or 28 (Coragen, Exirel) material. There is also Avaunt eVo, a group 22A with 3 day PHI and Proclaim (group 6, long PHI suitable for late-harvest plantings). Organically, Bt products that are *aizawai* (like XenTari) have better efficacy than other strains. You also have Entrust. – EB

Sporadic aphids building up on some brassica plantings, mainly kale, some cabbage, and Brussell sprouts. Scout undersides of leads and treat before they become a major problem. For organic management, insecticidal soaps, azadirachtin, and horticultural oils work fairly well when used on a tight application schedule. The combination of products seems to be more effective than using single product applications. horticultural oil, and insecticidal soap can be used together—the combination is more effective than any one alone. – RH

No surprise, alternaria is impacting broccoli and cauliflower, threatening sprouts. I've heard good feedback from folks with small plantings who have used Quadris Top to control pressure. See Christy's alternaria write up on page 6 of the August 14, 2024 issue of VegEdge. Otherwise, seeing white mold on farms with a known history. – EB

GARLIC

Inspect garlic bulbs destined for seed for Allium leafminer (ALM) pupae, as ALM contaminated bulbs may introduce to ALM to new areas, especially if garlic is planted not too far from leeks, scallions or chives where ALM could become established – see article on page 1. – CH

LEEKS

Allium leafminer (ALM) tends to cause the most economic damage to leeks. Last fall, some plantings were decimated from the feeding mines and pupal contamination in the CVP region. Control of ALM (crop covers, conventional and organic insecticides) must be implemented now – see article on page 1. A detailed ALM article is also available on the CVP website. – CH

LETTUCE AND GREENS

On the whole, fall greens are looking nice out there. High beds can help with fall drainage and associated rot issues. White mold is active this time of year. Remember to be proactive with your slug control tactics. – EB

ONIONS

All farms have started onion harvest with some getting close to the halfway mark. Elba, Wayne and Oswego got 2 inches of rain over the past 2 weeks, as well as some 80-degree temperatures and breezy days, which hastened drying of foliage. Harvesting onions when the neck tissue is dry/no green tissue can reduce bulb rots caused by both bacterial and fungal pathogens (e.g. Botrytis). The majority of the crop is pulled at this time. Onions are ready to harvest when the neck tissue does not slide when you roll it between your fingers, and when the scales of the bulbs rustle when you tousle them. Planting cereal cover crops soon after harvest is a good idea to soak up leftover nutrients (that can be used in next year's crop) and to prevent soil erosion during the fall and winter.

In the CVP muck onion scouting program, bacterial bulb rot was highly variable among our 12 fields at our pre-harvest assessments, which ranged from 0% to 29%. **Growers are encouraged to assess their bulb rot situation before harvest to avoid rot surprises out of storage.** Scout fields that are pulled:

- **Can you smell rot?** If you can smell rot when you are walking a field of pulled onions, that it is an indication that the field probably has a rot problem.
- **Can you see rot?** Foliar symptoms of bacterial diseases can be tricky to see when the foliage is dry in windrowed onions. Cutting a random sample of bulbs from different parts of the field is the best way to assess the rot situation; the more bulbs you cut, the more accurate your assessment be. If you cut bulbs longitudinally through the neck and into the bulb you will see if bacterial disease is in the neck, if so, this may or may not progress into bulb rot. See article in August 21st issue of VegEdge on page 6 for more information. If onions are rotting from the basal plate up, this is a secondary rot that usually chases Fusarium basal rot or onion maggot injury.
- **Can you feel rot?** Onions that have bulb rot are squishy when squeezed. But, when only a single inner scale is infected while the outer scales remain firm, rot cannot be detected when the bulbs are squeezed – I call this "sneaky rot".

continued on page 9

continued from page 8

- **Some growers run their onions over a grading line before they are put into storage.**
  - During this process, squishy rotten bulbs are culled.
  - When rotten bulbs go into storage, they can leak onto adjacent bulbs and stain their scales, which reduces their quality or marketability.
  - Pre-grading may also identify fields that you did not know had bulb rot problems.
- Since incidence of bacterial bulb rot almost always increases the longer onions are in storage, **plan to sell onion with rot problems sooner than later.**
- See **videos on diagnosing onion bulb rot** on the Cornell Vegetable Program's YouTube channel: https://www.youtube.com/user/ccecvp.– CH

PEPPERS

Unusual pests in peppers right now. Typically we see holes getting frilled into fruit by European corn borers. But I'm actually seeing more damage from spotted cucumber beetles feeding on fruit. These lime-yellow spotted beetles drill a nearly perfectly round, pencil sized hole into the fruit (Fig. 1). Spotted cucke beetles seem more interested in the flesh of the fruit than the seeds and so the holes don't tend to go all the way through the pepper wall. Problems are more pronounced in pepper fields next to vine crops that have recently gone down, especially cucumbers, or near recently mown sweet corn.

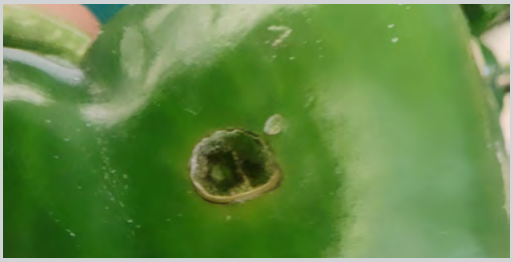


Figure 1. Spotted cucumber beetle damage on pepper. *Photo: grower contributed*

I've also received a report that corn earworm has been going after peppers (Fig. 2). They put a single large hole into the fruit and cozy up inside. The caterpillars are much larger than corn borers and have noticeable stripes. Remember the corn earworm is also the tomato fruit worm and does have a wide host range. If you're seeing worm damage in your peppers, you should cut a few to determine which pest you have. If you have corn earworms, follow the weekly trap sweet corn catches and consider a protective spray. We're in the peak flight for that pest. – EB

Figure 2. Internal image of corn earworm in pepper and associated damage. *Photo: grower contributed*

SNAP BEANS

White mold is being found in susceptible crops: snap, dry, and soybeans. Fungicide applications are meant to target early bloom because that is the susceptible stage for infection. Currently, we do not have any recommendations to halt or cure white mold once it has developed. Keep a record of the history of white mold in a field. A rotation of at least 2 years between susceptible crops is required to reduce primary inoculum. However, given that a small number of sclerotia (hard black structures that overwinter in the soil) are sufficient to initiate a white mold outbreak, a longer rotation (3+ years) may be beneficial. Timely tillage of crop residue to bury sclerotia after harvest to promote degradation is encouraged. – JK

SWEET CORN

Tar spot continues to be detected throughout Western NY with new reports this past week in Orleans and Oswego Cos. The national map is updated daily and can be accessed at https://cropprotectionnetwork.org/maps/tar-spot-of-corn. At this point, it is important to track the spread of tar spot. It is too late in the season for the disease to cause economic effect to corn (unless it gets on the husks of sweet corn). Northern corn leaf blight (NCLB) and common smut are widespread in the region. Both diseases overwinter in corn debris and thus, it is advisable to rotate out of corn for several years. This week, I observed aphids causing brown spots on the husks. Peeling back the husk revealed the aphids (Fig. 3). Luckily, these were processing fields where marketability will not be affected. – JK

Figure 3. Husk pulled back reveals aphids. *Photo: J. Kikkert, CVP*

TOMATOES

Late blight storms through here
A final insult ends this
Challenging season

It was dry last week
Then it rained like two inches
And my cherries split

Black sunken soft spots
Thumbprints of darkness draw tears
Anthracnose canners

Stakes held up my crop
Now they only hold disease
Time for a bonfire

Why so much leaf mold?
The resistance you must use
Yoda's produce wise

Winter Squash and Pumpkin Storage

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

To have good quality fruit going into the storage season, you need to be sure you are controlling powdery mildew (PM). PM affects more than just the leaves. Fruit size can be reduced if leaf canopy is inefficient at producing the nutrition goes into larger fruit. Poor canopy can also cause sun scald on the skin of squash. Maybe worse yet, PM can also affect stems, making them weaker and breakage is easier. If the stems break off the fruit, then this can open the squash up to disease. For pumpkins, a broken stem is the kiss of death from a customer sales standpoint. So, it is important to keep up with fungal disease management while crops are ripening in the field.

As the month of September moves on, there always seems to be a change in the weather bringing on a rush to get pumpkins and winter squash out of the field. Then later in the fall or early winter, there are calls about winter squash breaking down before their time. To get ahead of the game, you need to think about harvest and be ready to deal with an onslaught of tons of vine crops coming out of the field seemingly all at once.

One thing to be aware of is pumpkins and winter squash are susceptible to chilling injury starting when temperatures drop below 50°F. Each time the temperature drops below that, chilling injury can increase. It may not show up all at once but can affect coloration, ripening, or shelf life later. Of course, frost and freezing will show injury almost immediately.

Now is the time to be ready for harvest and curing. Where will you put the squash if you have to harvest in a hurry? How will you manage the curing process? Is your storage facility ready to clean and ready to take in bins of squash? Below is a great article laying out the harvesting of pumpkins and squash in advance.

Storing Winter Squash and Pumpkins

by Jonathan R. Schultheis, Extension Horticultural Specialist; and Charles W. Averre, Extension Plant Pathologist Department of Horticultural Science North Carolina Cooperative Extension Service, North Carolina State University

When to Harvest

Immature squash and pumpkins do not store well; therefore, be sure that fruit is mature before harvesting. Mature butternut, acorn and hubbard type squash have very hard skins that cannot be punctured with your thumb nail. Additionally, as squash mature, the fresh, bright, juvenile surface sheen changes to a dull, dry-appearing surface. Most true pumpkins have softer skin than those mentioned above but will exhibit the same surface appearance alterations.

Dead vines do not necessarily indicate the squash and pumpkins on the vines are mature. When vines die prematurely from disease, stress or early frost, fruits are usually immature, of low quality, and will not store as successfully as those grown on healthy vines which die naturally.

Guard Against Injury

Whether in a home, garden or commercial planting, special care should be exercised to protect harvested fruit from excessively high (>95°F) and cold (<50°F) temperatures, asphyxiation, and mechanical injuries such as scratches, cuts or bruises. Not only are mechanical injuries unsightly, they also provide an easy entrance for various rot-producing organisms. Packing lines and all conveyances should be padded with old carpeting, foam rubber or similar shock-absorbing material. Ideally, large fruit, such as pumpkins, should not be stacked on top of each other. Padding material, such as grain straw, should be used liberally if fruits have to be stacked during harvest. If they must be stacked for shipping, they should never be more than three fruit deep.

Curing and Storage

Storage facilities should be equipped with accurate temperature and humidity controls, and a system to provide at least one air exchange per day. A fan to provide air circulation is also recommended to maintain uniform temperature and humidity throughout the storage room. There is limited information on the value of a curing period. Except for acorn types, which lose their quality during curing, experience tends to support a 10-day curing period with 80 to 85°F and a relative humidity of 80 to 85%. After the curing period, maintain temperatures as indicated in Table 1.

Table 1. Recommended optimum storage conditions for pumpkins and winter squashes

Type	Relative Humidity	Temperature Conditions	Approx. Length of Storage	Remarks
Pumpkins	50 to 75%	50 to 55°F	2 to 3 months	Fruit should be mature. Don't store with apples.
Hubbards	70 to 75%	50 to 55°F	5 to 6 months	Stores well.
Acorn	50 to 75%	50°F	5 to 8 weeks	At temperatures >55°F, surface becomes yellow and flesh becomes stringy.
Butternut or Buttercups	50 to 75%	50°F	2 to 3 months	Keep from getting too cold.

When winter squash are removed from storage, they should be marketed or consumed immediately, as rot can develop quickly. Black rot, dry rot, and bacterial soft rot are the principal causes of spoilage in stored winter squash.

Upcoming Events

Post-Harvest Handling & Storage

September 21, 2024 (Saturday) | 4:00 pm, dinner follows
Oles Family Farm, 2112 County Line Rd, Alden, NY 14004

Ben Oles is a third-generation vegetable farmer who distributes produce to CSA members every month of the year and also supplies various restaurant accounts. At this Good Farmers Guild of Western New York event, learn all about the storage techniques that allow this small farm to successfully meet their customers' needs for high-quality vegetables year-round. Ben will show his facilities while talking about vegetable washers, different harvest and storage bin options, coolers and cooling equipment, and optimizing product flow. This event is free and open to farmers, people who work on farms, and ag service providers.

2024 Dry Bean Growers Twilight Meeting

September 24, 2024 (Tuesday) | 4:30 pm - 6:00 pm, dinner follows
Duyssen Farms (Red Barns), 6620 Westcott Rd, Stafford, NY 14143

At this on-farm meeting, hear updates in Western bean cutworm monitoring and management, white mold management, weeds and herbicides, and insights from the dry bean variety trial. 1.5 DEC credits in categories 1a, 10, 21, and 23, and CCA credits will be available. See the full meeting agenda at CVP.CCE.CORNELL.EDU. *Event sponsored by New York Bean, LLC.*

COST: $10 per person, includes dinner. Pre-register by Friday, September 20 at https://cvp.cce.cornell.edu/event.php?id=1978 or call Margie Lund at 607-377-9109 and pay cash at the door. *Registration will be accepted at the door but dinner cannot be guaranteed without pre-registering.*

WNY Seed Extravaganza

October 2, 2024 (Wednesday) | 3:00 pm - 7:30 pm
Massachusetts Avenue Project Farmhouse, 387 Massachusetts Ave, Buffalo, NY 14213

A seed themed event with three subsessions. Attendees can come to any or all of the subsessions but must pre-register for each:

- 3-5:15 pm: Speakers, wet fermentation demo, peer learning circles
- 3-5:00 pm: Free seed cleaning appointments available (dry seed only, cobbed corn ok, no wet ferment seed)
- 5:30-7:30 pm: Seed cleaning equipment demo, managing seed borne diseases, hot water treatment demo

FREE! Space is limited. Registration is required by 5pm on Sunday, September 29. Register online: https://cornell.ca1.qualtrics.com/jfe/form/SV_1RFg4y42tgPZ3MO. Register by phone: Cornell Cooperative Extension of Erie County: 716-652-5400

VEGEdge SPONSORS

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 frequency increasing 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 | 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

Sarah Mertson | slm369@cornell.edu

Angela Ochterski | aep63@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