

Cornell University
Cornell Cooperative Extension
Eastern New York Commercial Horticulture

Vegetable News

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Allium Leafminer Update

Ethan Grundberg—ENYCHP



Allium leafminer (ALM) flies continue to feed on chives, garlic, leek transplants, and onion transplants in the lower Hudson Valley. Though most of the early adult feeding was observed on chives, garlic, and volunteer onions in cull piles and ditch banks, the flies are now also feeding on onion transplants in the field.

However, we have yet to find a field of onion transplants with widespread feeding damage. Since the adults lay eggs on the same leaves where feeding damage occurs, it DOES NOT currently appear that onion growers need to spray entire fields of transplants. Most feeding damage in onion fields has been observed on field edges, so spot insecticidal treatments targeting areas with evidence of feeding may be effective.



ALM adult feeding on onion plant in Orange County

There are several important steps that should be taken to limit the potential for damage this spring and to help keep local ALM populations down to prevent more serious infestations in the future:

Cull pile management: It is becoming apparent that ALM adults are very attracted to onion cull piles. All growers should take action to destroy new green growth emerging from onion culls. Thorough bulldozing will help, but complete burial is recommended. If adult feeding damage is present in cull piles, be sure to thoroughly doze material to destroy any eggs or larvae that may be in allium leaves. If bulldozing or burial are not possible, assess the extent of ALM adult feeding in the cull pile and either

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remove affected leaves or consider applying an insecticide labeled for leafminer species like Trigard, Radiant, Mustang Maxx, or Warrior. Agri-Mek, Exirel, and Assail may also have some efficacy, especially against larvae. Many of these chemistries are used for onion thrips management, so be sure to avoid exceeding the labeled annual maximum application rates per crop.

Volunteer allium management: As is the case with cull piles, volunteer alliums emerging from last year's unharvested onions and leeks in the field are early ALM attractants. Inspect volunteer alliums for signs of adult ALM feeding and, if labor availability allows, walk fields to remove and destroy those volunteer plants. For growers on the black dirt in Orange County, extra precautions must be taken to limit the number of onions that fall or are discarded into ditches to prevent early feeding in those fields next spring.

Continue monitoring: We anticipate that ALM adults will continue to feed and lay eggs for at least a couple more weeks. If you suspect adult ALM feeding on your alliums, please contact your nearest ENYCHP vegetable specialist or send them a picture for confirmation. As recently transplanted alliums push new growth in the upcoming weeks, they may become a more desirable host for ALM adults.

Teresa Rusinek and I dissected several alliums including onion plants, volunteer leeks, cull pile onions, and overwintered scallions in an effort to find ALM eggs or larvae. Unfortunately, we found both as of 5/9/17, which would indicate that the earliest laid eggs are now hatching. If you have serious infestations, which we have observed on several occasions in both Orange and Ulster Counties in chives this spring, now is the time to take action to control ALM. We believe that an effective approach for organic growers will be to cut chives at the base, destroy the greens by burning them or burying them at least a few feet deep, and then apply Entrust mixed with either a 0.5% to 1% concentration of M-Pede or 1% to 1.5% concentration of stylet oil for better penetration to the base of the now-cut chives. Continuous and thorough agitation of these tank mixes is necessary for them to be effective. Growers should not spray mixes with M-Pede or stylet oils if temperatures will be either above 80 degrees or at or below freezing to avoid leaf tissue damage. The pesticide application should help manage larvae that may have already made their way to the base of the plant and won't be managed with the removal of the leaves. Conventional growers should begin applications of one of the systemic insecticides listed on pages 2-3 in the "critical updates" to the 2016-2017 Mid-Atlantic Vegetable Recommendations Guide available at <http://extension.psu.edu/publications/agrs-028>.



In This Weather, Who Isn't Rotting a Little Bit?

Crystal Stewart -ENYCHP



There are a lot of calls coming in from growers wondering what they are doing wrong because plants in the greenhouses are failing to thrive, and, in some cases, starting to die. The biggest factor in this is of course the weather—when we have cool, cloudy weather plants are not growing, or transpiring, and the relative humidity of the air tends to be quite high. This is a perfect recipe for fungi which usually feed on dead tissue to grow out of control and start damaging live tissue too.

This may not be a situation that growers are causing, but it is a situation which warrants careful management. First, do anything you can to reduce soil and air moisture to a bare minimum. Water carefully, only as needed, and ideally early on sunny days. Increase air movement in the greenhouse with venting and, if necessary, with the addition of more fans. Drying out the leaf and succulent stem surfaces, especially in the center of the plant (see image), can reduce the probability of fungi attacking. Careful sanitation by removing dying plants or plant parts is also helpful. Surface sanitizers like Oxidate can be used to kill inoculum as well, but be careful not to burn plants or flowers. Apply product carefully to the label (note the requirements for PPE in the greenhouse!) and test to see if there is any phytotoxicity.



Finally, it's important not to over-love your plants right now. Adding extra fertilizer, or trying new concoctions to "jump start" growth, will not improve the health of a cold, wet plant which can't effectively photosynthesize. Instead, focus on taking away factors which are likely to make the situation worse. And maybe do a little sun dance. It can't hurt.

Speaking of diseases, Dr. Meg McGrath, Plant Pathologist, has just confirmed downy mildew on kale and kohlrabi seedlings from a Long Island grower, and she is interested to know if anyone else is seeing anything suspicious. Please contact any of us if you see anything that looks like this damage below.



The black dots on the cotyledons are the downy mildew. The white patches are fungicide residue.
Photos by Margaret McGrath.

Garlic Update

Crystal Stewart -ENYCHP

One of the keys to success in garlic production is aggressive field-culling of poorly performing plants. There are a few critical times to complete this activity: as the garlic concludes its reliance on the original clove for nutrients (right about now); at scaping, and at or just prior to harvest. In order to field cull, give each garlic plant a moment of your attention. Remove and dispose of plants which are stunted and yellow, misshapen, or otherwise different from the rest of the stand. Do not compost or discard these plants in the field—either bury them in an unfarmed area or place them in the garbage.

It's certainly easiest to pull these plants out by their tops, but it's worth taking some time to dig a few up and inspect the nature of the damage or disease. If you only pull the garlic and then inspect, much of the damaged or infested material will stay in the ground, and you get an incomplete picture of the issue. Dig 5-10 plants out, and carefully remove the soil around the plant. Notice whether there is fungal growth, what color the growth is, and whether any insects are present. Here are some examples of symptoms you might see, along with their cause:

Fusarium: Cloves which either had or developed severe *fusarium* infestations prior to spring growth may give rise to small, weak plants, often with poorly developed and dying root systems. The roots will be missing from parts of the basal plate, and rotting in others (image). Decaying material may have a pinkish color.



Garlic sampled in late April as the original clove was disappearing. This could just be fusarium or fusarium and bloat nematode. The only way to know for sure is to test.

This year we are again offering free testing for *fusarium* and will gladly accept samples. If you would like to send in ten bulbs for testing, please print the form at https://rvpadmin.cce.cornell.edu/uploads/doc_460.pdf and send it with the garlic. Or you can have Crystal or another vegetable specialist help you pull samples.

White rot: The good news is that scouting this year has not recovered any obvious white rot. However, we still want to scout for the disease as the garlic develops, because we are not entirely sure when symptoms develop. Look for the outside of the clove or newly forming bulb to start rotting and sloughing off. Either tiny (poppy seed sized) sclerotia or white mycelia right below the soil level may be present. Roots may rot, but will not be pink.

Garlic bloat nematode: Damage also shows up on the basal plate with this pest, but roots which remain intact will generally not be decaying. The best way to determine if you have bloat nematode is still do test for it. The grant subsidizing testing has expired, so samples are now run through the diagnostic clinic at the standard rate of \$50 per sample or can be sent to Frank Hay at Geneva and processed for \$40.

The reason it is important to identify any issues your garlic may have is that future management strategies differ. Fusarium is managed by culling and changing the environment if needed. White rot infested garlic, on the other hand, should only be sold for food and even during this season you would want to take care not to move soil and plant materials to other part of the farm. Management is similar for bloat nematode.

As always, if you have any questions about any of these issues, you can call or email Crystal at cls263@cornell.edu or 518-775-0018 or reach out to any of the other vegetable specialists.

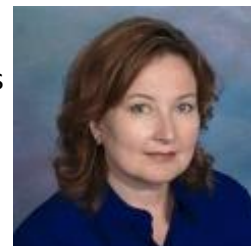
Roly Poly Danger

Teresa Rusinek -ENYCHP



Pillbugs and damage on greenhouse cucurbit planting.

Photo provided by grower



Many of us commonly refer to pillbugs as “Roly-Polies” because when touched, this little terrestrial crustacean curls up into a ball. Sowbugs look very much like pillbugs but they will not curl into a ball when touched. To the grower, it makes no difference which species you are dealing with as damage and management are the same.

Both these creatures have a chewing rasping mouthpart and often feed on decaying organic matter such as mulch and grass clippings. You might find them under stones or logs and leaf litter as they prefer damp dark habitats. Unfortunately, we sometimes create roly-poly habitats in greenhouse/high tunnel structures under and between wood benching and under flats of plants where moisture collects between surfaces for a long time. Sowbugs and pillbugs will feed on transplants and young tender plants and if there are many of them, you can see some serious damage. I’ve seen them munch away trays of zinnia packs and more recently cucurbits planted in beds in a greenhouse. In this case, the grower brought in composted mulch that was infested with sowbugs and has never been able to get rid of them.



Sowbugs and Pillbugs

Photo by Drees, Texas A&M Extension.

If you see damage to your plants resembling caterpillar damage and don’t see caterpillars, check under flats and wood structures for roly-polies. They may be the culprit! They tend to come out to feed on foliage during the night, so grab your flashlight to look for them.

To control and minimize breeding sites:

- Water plants early in the day so that soil surfaces dry out by night time.
- Eliminate areas that are dark and moist
- Avoid heavy organic mulches that shelter these pests.
- Trellis cucumbers and other vining crops as soon as possible to avoid contact of plant with soil surface.
- Bug-N-Sluggo (<http://128.253.223.36/ppds/536351.pdf>) is a bait product, organic-compatible for commercial production, containing both iron phosphate and spinosad. The label claims efficacy on sowbugs and pillbugs. See the label for some additional details.

Weed Control in Brassicas

Chuck Bornt –ENYCHP



I know that a fair amount of cole crops went in before the rain, but I know that there is quite a bit still to be planted. So, I thought I would share some information on weed control options from my colleague in western NY, Christy Hoepting with the Cornell Vegetable Program—she did a great job explaining Dual Magnum and other options for control of weeds in our cabbage, broccoli and other cole crops. Bottom line is there is no silver bullet and multiple steps are going to be needed in order to achieve good weed control in these crops! One of the better options on labeled crops is Dual Magnum post transplant (within 72 hours) followed by GoalTender 2-3 weeks after crop has established itself or Stinger. To learn more about these two products (especially precautions when using GoalTender) **see more information from Christy below.**

Dual Magnum Herbicide Expands Label for Cole Crops

Christy Hoepting –Cornell Vegetable Program

The Dual Magnum Special Local Needs label (EPA No. 100-816/SLN No. NY-110004; a.i. metolachlor; Syngenta) **now includes transplanted Brussels sprouts and cauliflower**, which make use of this product more convenient in mixed brassica plantings.

Dual Magnum provides excellent pre-emergence control of annual grasses, as well as some broadleaves like pigweed, hairy galingsoga, Shepherd's purse and nightshades. Generally, Dual Magnum provides better control of broadleaf weeds than Treflan. **And, unlike any other herbicide labeled in Cole crops, it provides excellent control of yellow nutsedge (Fig. 1).** Table 1 includes a summary of the rates and uses for Dual Magnum in the various Cole crops. The full label is available is at <http://132.236.168.99/ppds/543435.pdf>

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Cole Crop	Rate (per acre)	Timing		Crop Stage for Direct- seeded	PHI
		Prior to trans- planting	After trans- planting		
CABBAGE Transplanted & Direct Seeded	0.5 to 1.33 pt* Single app nonincorporated	allowed	Within 48 hours**	4-leaf	60 days
BROCCOLI Transplanted & Direct Seeded	0.5 to 1.33 pt* Single app nonincorporated	allowed	Within 72 hours**	4-leaf	60 days
MUSTARD GREENS, Broccoli (raab), Chinese cabbage (bok choy), col- lards, kale, mizuna, mus- tard greens, mustard spin- ach, and rape greens	0.67 to 1.33 pt* Single app nonincorporated	prior to crop emer- gence	n/a	At least 1 true leaf	30 days
BRUSSELS SPROUT Transplanted	0.5 to 1.33 pt* Single app nonincorporated	allowed	Within 48 hours**	n/a	60 days
CAULIFLOWER Transplanted	0.5 to 1.33 pt* Single app nonincorporated	allowed	Within 48 hours**	n/a	60 days

*Use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils.

**Less injurious than prior to transplanting.

Brassica Weed Control... continued from page 6

Dual Magnum does not control emerged weeds. Goaltender and Stinger are labeled in selected Cole crops for control of broadleaf weeds (see side-bar), while Poast (a.i. sethoxydim) and Select Max (a.i. clethodim) and generic versions of these active ingredients are available to control emerged grasses. Go to the CVP website for “Relative Effectiveness of Herbicides Available for Use in Cabbage in New York for 2015” chart at http://rvpadmin.cce.cornell.edu/uploads/doc_289.pdf.

Restrictions for all Cole crops: 1) Make only one application per crop. 2) Do not apply more than 1.33 pt/A per crop. 3) Do not incorporate. 4) Do not use in combination with Goal.

Caution on injury for all Cole crops: 1) Weed control may be reduced on muck soils. 2) Crop maturity may be delayed. 3) May cause reduced yields in broccoli. 4) The risk of crop injury increases when nitrogen sources (e.g. AMS, UAN), fertilizers or other pesticides are applied with Dual Magnum.

The use of Dual Magnum under Special Local Needs labeling requires users to sign a waiver which releases Syngenta Crop Protection, Inc. from all liability and indemnification by the user and/or grower for failure to perform and crop injury, crop yield reduction, and/or crop loss from use of the product in accordance with the SLN labeling. For directions, visit: https://cvp.cce.cornell.edu/submission.php?id=369&crumb=crops|crops|cabbage|crop*8

Other vegetable crops included on Dual Magnum SLN are asparagus, transplanted bell pepper, carrots, garden beets, dry bulb and green onions, spinach, Swiss chard, pumpkins and winter squash, melon crop sub-group 9a (cantaloupe, muskmelon and watermelon), cucumber, and other new additions for 2016 including lettuce (head and stem) and summer squash.



Fig. 1. Yellow nutsedge is a perennial weed that seems to be thriving this year. Dual Magnum is the only herbicide (pre-emergent activity only) labeled in Cole crops with activity against this aggressive weed. Its label has recently expanded to include transplanted Brussels sprouts and cauliflower for more convenient use in mixed brassicas. *Photo: C. Hoepting.*



Keep On Pruning!

Amy Ivy -ENYCHP



May through June is a crazy, busy time on New York farms. Everything needs attention, so once the high tunnel tomatoes are planted, it's easy to put off pruning them. Many growers assume pruning takes too much time to be worth the effort anyway. Here's a pep talk to get you pruning!

- The earlier and more often you prune, the less time it takes.
- Harvesting will go more quickly from plants that have not become a dense jungle. This is especially true with cherry tomatoes.
- Pruning early takes only a second to snap off young suckers. The job goes quickly and the plant hasn't wasted energy growing a large sucker that will be removed.
- The wound made from a small sucker heals more quickly than a larger wound.
- Any indeterminate type can be quickly and easily trained to a double leader.
- Make a quick walk through the tunnel a couple times a week from now until mid-June or so and you can move rapidly down the rows, removing the newest suckers as you go.
- Last year we conducted a trial comparing 3 training and pruning methods for high tunnel cherry tomatoes.
 - The single leader system took the least amount of time to train and prune and even to harvest.
 - The double leader system took a little bit longer, but had a higher yield.
 - The messy, mostly unpruned plants took the longest to prune and harvest, and did not have a statistically higher yield than the double leader.
 - We are repeating the trial this summer to strengthen our conclusions.



Helpful Resources for WPS and Farm Worker Training from NYCAMH (New York Center for Agriculture Medicine and Health)

Farmworker Education

In addition to farm safety services, NYCAMH offers a wide variety of bilingual print materials that are appropriate for short, informal training sessions held on the farm or in the field. Our posters and flyers are designed for easy readability and are offered in English and Spanish with select materials also available in Haitian Creole. Posters can be requested by calling 800-343-7527, emailing us at info@nycamh.com or PDF files can be downloaded and printed. We also have farm safety articles on a number of topics.

Visit <http://www.nycamh.org/resources/farmworker-ed/> to download and print posters.

Vegetative and Reproductive Growth in Greenhouse Tomatoes

Vern Grubinger— UVM

Balancing Vegetative and Reproductive Growth in Greenhouse Tomatoes

(adapted from Univ. of Arizona and DeRuiter Seeds, Inc.)

Vegetative growth favors development of roots and shoots for a strong plant structure and leaves for photosynthesis. Reproductive growth favors flowering and fruit formation for development of a marketable crop. A balance is needed between the two types of growth in order to sustain tomato plant growth and productivity.

Characteristics of Vegetative versus Reproductive Growth.

Character	Reproductive Growth	Vegetative Growth
Leaves	Flat and open, light green, soft	Curled, thick, dark green
Stem diameter	Thin; small diameter (relative to tomato type*) Usually less than 0.8 cm	Thick; larger diameter (relative to tomato type*) Usually greater than 1.2 cm
Flowering	Close to the top of the plant, within 5-8 cm Flowers open fast and uniform Rapid flowering within truss	Further from the top of the plant, greater than 13 cm away Flowers open poorly; sepals stick Poor uniform flowering within truss
Flower color	Dark yellow	Pale, light yellow
Truss stem	Thick, sturdy, short and curved	Thin, long and sticking upwards Sometimes with leaves or suckers
Fruit	Large, many, good shape and fast development	Small, few, poor shape and slow development

*Beef types have thicker stems than cherry types

Steering the Plant refers to using environmental or nutritional factors and different cultural practices to affect the growth habit of tomato plants so they become more reproductive or more vegetative. The goal is to keep plants in balance: not too vegetative and not too reproductive.

Techniques to Steer Plants Towards Reproductive or Vegetative Growth.

Factor or practice	Steer towards reproductive	Steer towards vegetative
Difference between day and night temperature	Larger difference	Smaller difference
Day to night cooling rate	Speed up	Slow down, or no difference
Relative humidity	Lower (make drier)	Raise (make more humid)
Ventilation	Increase	Decrease
Carbon dioxide	Increase (to 800-1000 ppm)	Decrease
Electrical conductivity (salt level) of irrigation water	Stress plants with either very low or very high EC (1-1.5 or 3-4 mmhos/cm)	Moderate EC (2-2.5 mmhos/cm)
Irrigation: how often and how long	Less frequent but longer duration	More frequent but shorter duration
Irrigation start time	Later in day	Earlier in day
Irrigation end time	Earlier in day	Later in day
Truss pruning	Leave more fruit on	Remove more fruit
Leaf pruning	Remove more leaves	Leave more leaves on plants

Vern Grubinger, University of Vermont Extension, 4-20-17

Updates

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Ag Business Days with Liz Higgins, Business Mgt Specialist

Are you a farmer in Eastern New York with a question about the management side of your farm business? The Cornell Cooperative Extension Eastern NY Commercial Hort Team, in collaboration with CCE County offices, is offering free farm business technical assistance appointments this summer on Tuesdays at various locations in our service region. See our website for the complete listing of dates and times.

May 16 – CCE Dutchess County

May 30 – CCE Schoharie County

June 20 - CCE Orange County

June 27 - CCE Essex County

July 11 - CCE Clinton County

July 25 - CCE Warren County

June 12

Tiny Hearts Farm
FREE Field Workshop
10:00am - Noon

Cut-Flower Field and High Tunnel Production

Tiny Hearts is a cut flower farm, growing on 15 acres in the Hudson Valley. .

Free workshop but please register here: <http://bit.ly/2pBTROB>
Contact Dr. Lily Calderwood with questions: lbc75@cornell.edu

Lavender and Mint Essential Oil Project

July 12
Hay Berry Farm
FREE Field Workshop
2:00 - 4:00pm
1176 Babcock Lake Rd,
Hoosick Falls, NY

This field day will highlight Lawrie and Karen's experience growing lavender and Dr. Lily Calderwood's Northeast SARE partnership grant titled "Development of Mint and Lavender Production in the Northeast." The goal of this research project is to evaluate essential oil herb cultivars for pest challenges, winter hardiness, yield, and oil quality.

Free workshop but please register here: <http://bit.ly/2qlrCvh>
Contact Dr. Lily Calderwood with questions: lbc75@cornell.edu

Save the Date:

Wed, July 12 5:00-7:00 pm Grower Twilight Meeting at Slack Hollow Farm in Argyle, NY.

Topic: Managing Soil Health and Nutrition in High Tunnel Tomatoes. Hosts Seth and Martha Jacobs, guest speakers Judson Reid, Cornell Vegetable Program and Andy Fellenz, NOFA-NY. Registration details to come.

Keep checking here for more summer on-farm meetings that are in the works! These on-farm experiences are a fantastic way to learn, get ideas for new things to try on your own farm and learn from others.