Cornell Cooperative Extension
Eastern NY Commercial Horticulture Program

Vegetable News

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Be on the Look Out for Southern Blight

Ethan Grundberg–ENYCHP

Southern Blight is caused by the fungal pathogen *Sclerotium rolfsii* and has historically only been a concern to growers in southern states. However, Cornell pathologist Dr. Sarah Pethybridge has seen an increase in the incidence of Southern Blight in New York over the past several years. This winter, Dr. Pethybridge confirmed the presence of *S. rolfsii* on golden storage beets in Dutchess County. Given the wide host range of the pathogen that includes over 1,200 crops and weeds, it is imperative that growers who suspect a possible Southern Blight infestation on their farm contact extension to confirm the diagnosis.

Storage beet displaying both mycelial growth and sclerotia of Southern Blight (Grundberg)

The most common symptom observed in the field is wilting or collapse of the plant. Upon closer inspection, affected plants often have reddish-brown dry lesions at the soil line. Fungal mycelium is also sometimes present as a thick white mat around the base of the stem. The Southern Blight pathogen also produces overwintering bodies called sclerotia under the right environmental conditions (typically high humidity with temperatures about 80 °F, but sclerotia were found on beets in cold storage at 40 °F). The sclerotia formed by *S. rolfsii* are a key identifying feature; they are small balls similar in appearance to Dijon mustard seeds that change in color from white to golden to reddish-brown (see image). These sclerotia can survive in the soil for years and endure temperature extremes and drought while waiting to germinate in the presence of a host plant under the right environmental conditions.*continued on next page*

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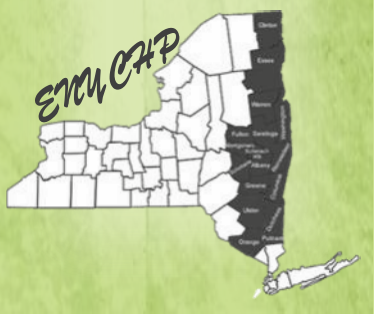

Crops that are most commonly impacted by Southern Blight are tomatoes, peppers, snap beans, and Jerusalem artichokes; however, as indicated above, the pathogen can grow and reproduce on a much broader range of plants. Like with most diseases, early detection and proper identification are critical! Infested plants should be removed and destroyed if possible. Symptomatic plants should NOT be placed in compost, as they may contain sclerotia that will then be spread with the compost to other fields. Some small grains and corn are less susceptible to Southern Blight and can be used in rotation in heavily infested fields, but crop rotation is typically not a viable strategy for management of this pathogen given its broad host range. Some extension systems in the south recommend deep plowing of infested fields to bury sclerotia and infested residue at least 6-inches deep to lower the pathogen's survival rate.

Sclerotia and mycelial growth of Southern Blight on tomato

Several effective chemical controls are available to conventional growers, but they must be applied preventatively. Labeled formulations of azoxystrobin (Quadris), pyraclostrobin (Cabrio), and penthiopyrad (Fontelis) have been effective for growers in the south. Some research has suggested that OMRI-approved biocontrol agents, such as *Trichoderma harzianum* (RootShield, TerraGrow) and *Gliocladium virens* (SoilGard), may also help reduce the number of Southern Blight sclerotia and prevent colonization of host plant tissue by the pathogen.

Spinach Woes

Amy Ivy, ENYCHP

Of all the winter greens, spinach is probably the most resilient. It's amazingly cold hardy, even in tunnels without any heat. It may stop growing during the coldest and darkest days but once it gets a little sunshine and longer days in early February, it takes off again. But, it is not without its problems. Fusarium root rot, cladosporium leaf spot, crown mites, aphids and more recently a downy mildew specific to spinach are some of the most common problems we see in eastern NY winter tunnels.

We are very interested to know what is showing up where, so don't hesitate to contact any of us on the vegetable team if you see anything suspicious. Even if you plan to pull it out to make room for spring crops, we'd still like to see what you have. And if you would please take this 5 minute survey, it would be a tremendous help to our colleague, Meg McGrath who is studying various diseases of winter greens, including spinach: https://goo.gl/forms/VgRaLJAYJw3Endkv1

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Spinach downy mildew in early stages causes yellowish patches on surface with purplish sporulation underneath

Cladosporium leaf spot on spinach causes distinct, individual spots on leaf surfaces. Favored by poor ventilation and excessive moisture.

Lettuce downy mildew, a different organism from spinach downy mildew, causes angular spots on leaf surface.

Top Left: *Lettuce powdery mildew causes distinctive white powdery spots on leaves. Salanova is resistant to downy mildew but susceptible to powdery mildew.*

Top Right: *Fusarium is a common problem in winter spinach since it thrives under cool, moist conditions. Hot water seed treatment before planting can help suppress this fungal disease.*

Bottom Left: *Some tunnels that were doing well have suffered some marginal leaf burn like this spinach leaf. We suspect the plants were exposed to intense heat unexpectedly when the sun came out after a long, cloudy spell. Only the leaf margins are damaged and new growth is fine. It is important to keep tunnels ventilated in late winter and avoid spikes in heat to plants accustomed to cold temperatures.*

Bottom Right: *Spinach crown mite is invisible to the naked eye but causes this distinctive distorted growth to spinach leaves as they try to expand after being damaged by the mites nestled down in the crown of the plants.*

Onion and Seed Corn Maggot Concerns in a Cold, Wet Spring

Crystal Stewart, ENYCHP

Last year we saw a lot of problems with root feeding damage from maggots early in the season, which has growers on edge about pest pressure this year. Seed corn maggots can damage a variety of crops, and in previous years have been observed on everything from sunflower shoots in the greenhouse to pea seedlings and onion transplants in the field. Onion maggots are more particular, and will only feed on allium hosts.

Both seed corn and onion maggot flies are attracted to and will lay eggs in fields with large amounts of decomposing organic matter. Large applications of compost and decomposition of robust cover crops benefit cash crops, but also have this unforeseen side effect. For this reason, planting early crops into fields with lower organic matter is a best practice if maggots are a concern on organic farms. Conventional growers will often choose to use seed treated with an insecticide to protect early plantings.

In small scale plantings it's also possible to exclude adults by applying insect netting or row cover during flights. Onion maggot flights are tracked on the NEWA website, which tracks growing degree days (GDD): http://newa.cornell.edu/index.php?page=onion-maggot Seed corn maggot flight is also predicted by growing degree days, although NEWA doesn't use a model.

When will the maggots arrive? Right now we have accumulated 83 GDD at a base of 40 F in Clifton Park (Saratoga County) and 148 GDD in Montgomery (Orange County) . Seedcorn maggots emerge at 360 GDD base 40, and onion maggots emerge at 400 GDD base 40. We have a ways to go, with GDD accumulating faster the higher the temperature climbs above 40. If using exclusion netting, get it on prior to the flight starting. Another option, if feasible, is to hold plants in a protected environment until after the flight has concluded.

Dry Fertilizer Unit Calibration

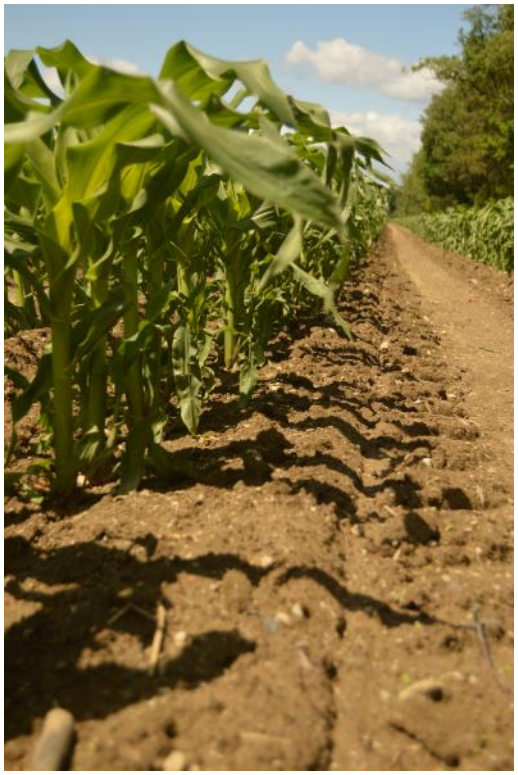
Chuck Bornt, ENYCHP

The first sweet corn was planted under plastic and some under rowcovers last week which is a sure sign of spring right? If you didn't get it done over the winter, now is the time to finish getting equipment prepared for planting season – especially calibrating your dry fertilizer units. Over time, the augers, fertilizer disk openers and other parts can get worn out, changing the amount of fertilizer actually coming out.

Calibrating your fertilizer delivery rates through your planter is really not that difficult using a 1/50th of an acre calculation. Follow these steps:

- Look at Table 1 to determine how far to drive to equal 1/50th of an acre using your row spacing. For example—if your between-row spacing is 30" then you need to travel 349 feet to equal 1/50th of an acre. If your row spacing doesn't show up in the table, figure it out by dividing 43,560 by your spacing in feet and multiply by 0.02 and that is the distance you need to travel. Use flags or stakes to mark the distance required.
- Disconnect the drop tubes from your fertilizer hoppers and attach a bag or bucket underneath to catch the fertilizer (be sure to weigh the bucket first in order to tare your scale or subtract it from the weight after you catch the fertilizer). Make sure the hoppers are at least half full of fertilizer when you start. Make sure augers are "primed" by dropping the planter and moving forward until you see fertilizer coming out of the hoppers.
- Remove the bucket or bag and weigh it separately and multiply by 50. The value you get should be the approximate amount of fertilizer you're applying in pounds per acre. **Do not add the fertilizer amounts from the hopper together.** The value you get per row should be similar. If they are not, you may need to exam your augers to see if they are worn differently etc. If the rates are similar, but not what you thought you were putting out, you need to review your manual and adjust your sprocket settings. I would also recommend you do this 2 or 3 times and average the values together per row. Repeat this process every time you change a sprocket combination as well.
- For example, if the amount you weigh from one tube equals 6 pounds, then you are applying 300 pounds of fertilizer per acre. You can also use the same formula and techniques to determine how much fertilizer you're using if you are sidedressing with a Cole or other type of unit.

Also be sure to check your fertilizer disk openers and make sure they are not worn out. Fertilizer injury is not caused only by high rates, but more often it's because the opener disks were worn or miss-aligned. For example, if your fertilizer openers are supposed to be 15" and you measure them at 13 ½", you're placing the fertilizer 1 ½" closer to the seed - the rule of thumb for fertilizer placement is 2" below the seed and 2" to the side of the seed - Anything closer than this can result in fertilizer burn. This is only one part of the planting operation! Be sure to check all the other parts of your planter including the meters, seed tubes etc. If you have questions, please feel free to call Chuck Bornt at 518-859-6213.



Length of Row to Equal 1/50 of an acre	
Row Spacing (inches)	Number of feet to Travel
28	373
30	349
32	327
34	308
36	290
38	275
40	261
48	218
60	174
96	109
108	97

Moldy Sunflower Shoots

Amy Ivy, ENYCHP

A few of our growers have struggled in late winter with gray mold growing over their flats of sunflower shoots. The mold is botrytis, growing on the outside of the hulls, and it can really ruin a flat of shoots.

I have been interested in hot water seed treatments for spinach, brassicas and tomatoes and I wondered if that process might be helpful for this problem on sunflowers. Meg McGrath has detailed information on hot water seed treating at http://vegetablemdonline.ppath.cornell.edu/NewsArticles/HotWaterSeedTreatment.html **Note**: This process is recommended only for small seeded crops and Meg has specific temperatures and times for treating each type. But I decided to experiment a bit on my own to see if I could at least lessen the severity of botrytis on sunflower shoot production.

I had 4 treatments: 10 minutes, 20 minutes, 30 minutes (all at 122 degrees) and the 4th was the control without any water treatment. I thought the 30 minute treatment might affect germination but as you can see from the pictures, for this crop it did not. After 2 weeks all 3 water treatments were germinating well with no visible mold while the control was heavily infested.

This is not a replicated, formal research study, just a casual test that had some interesting results, so I cannot guarantee this method. But growers who have had problems with moldy sunflower sprouts might want to give this a try so see if they get similar results.

Also interesting is the device I used for the hot water treatment. Available for around $110 online, this 'immersion circulator' was developed for cooking meat using the *sous vide* method popularized by Kenji Lopez-Alt, chef/author of The Food Lab and the blog Serious Eats. Click Here: for more information.

This 'immersion circulator' device can be used throughout the year for all kinds of home cooking; and can then be put into service for hot water treating particular seeds. Ideally you will need 2 units, one to pre-heat the seeds to 100 degrees and the second to precisely treat the seeds at the particular temperature listed in Meg McGrath's publication. I particularly like the way these units keep the water moving, for more even temperatures and distribution.

Photos above taken 3/21/18, 4 days after treatment and sowing. Extensive mold already visible on the control.

Above Left: *taken 3/30/18, 13 days after treatment. The control was completely killed by then. The 10 minute treatment has some damage. Both 20 and 30 minute treatments are healthy with no sign of damage from the treatment.*

Above right: *the sous vide immersion circulator set up in a soup pot with bag of seeds suspended in the water from a skewer.*

Best Practices for Seed Potato Handling

Chuck Bornt, ENYCHP

I know a few of you have already received your seed potato orders and I think many more will be arriving this week; here are a few thoughts about seed handling and cutting.

First, I understand that when we pay for seed we want to use everyone – but, consider the price of cutting and planting diseased seed? I continue to see more diseases like Silver Scurf (which tends to show up more in storage after harvest) every year. Grade hard and if you see anything that doesn't look right, err on the side of caution and get rid of it.

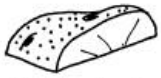
Cutting seed (information excerpted from University of Maines "Bulletin #2412, Selecting, Cutting and Handling Potato Seed"):

- Disinfect equipment including knives and mechanical cutters before each seed cutting session. Keep knives sharp and straight to prevent ripping the potato surface.
- Warming seed: Potatoes should be warmed to 45—50^{O} Fahrenheit prior to cutting.
- Cut seed tubers into blocky pieces about 1.75 -2.0 ounces in size with at least one eye. Pieces under 1.5 ounces should not be planted. Tubers weighing between 1.5 ounces but under 3.0 ounces should be planted whole. Tubers 3.0—5.0 ounces should be cut into two pieces; 5.0—7.0 ounce tubers should be cut into three pieces.
- Avoid blind pieces (no visible eyes) slab, sliver cuts or ripped pieces as they tend to have less vigor and may result in poor stands.
- Once cut, cool the cut seed to 38 to 40 degrees F and provide good air circulation with relative humidity levels at 85 to 95 percent for 6—10 days to promote healing and prevent dehydration.
- Re-warm seed again for two days before planting to get sprouts growing again and to avoid condensation on the seed.
- Cut potato seed is easily bruised and damaged areas allow decay organisms (on seed or in the soil) to infect the seed piece resulting in slower emergence and less stored energy to promote early growth.

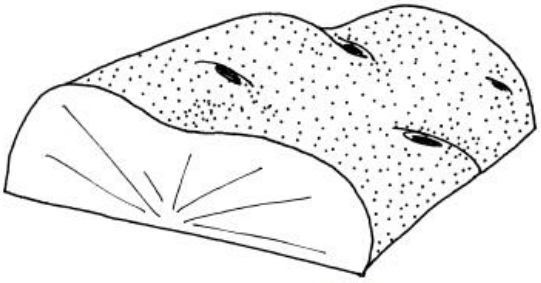
For more information visit the following link to the University of Maine Bulletin 412: https://extension.umaine.edu/publications/2412e/

Size of potato piece affects early plant vigor. These are cuts to avoid if possible when cutting potato seed. (source: Bulletin #2412, Selecting, Cutting and Handling Potato Seed, University of Maine)

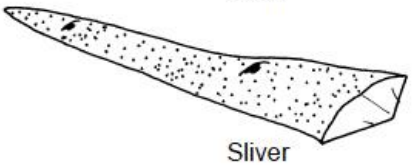
Blind



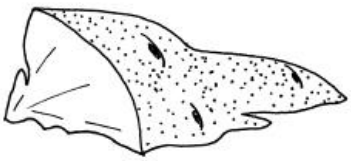
Undersized



Slab



Sliver



Ripped

Allium Leafminer Active in Southern Pennsylvania

Teresa Rusinek, ENYCHP

ALM oviposition/ feeding marks

A new invasive insect pest in the Northeast known as the Allium leafminer (ALM), *Phytomyza gymnostoma*, damages crops in the *Allium* genus (e.g., onion, garlic, leek, scallions, shallots, and chives) and is considered a major economic threat to *Allium* growers. Originally from Europe, ALM was first detected in Lancaster County, Pennsylvania in December of 2015 and in New Jersey and New York in 2016. As of fall 2017, ALM activity has been confirmed throughout eastern Pennsylvania, New Jersey, Delaware, southeastern New York as well as Thompkins and Suffolk counties.

ALM is currently active in Lancaster, PA where the first signs of adult fly emergence were detected on April 13, 2018. Based on our observations from last spring in the Hudson Valley, we expect emergence in our area in the next week or so. ALM will continue to emerge, feed and lay eggs in alliums over about 4 weeks. Leaf mining from larvae will begin to show up within two weeks after first adult emergence and intensify over the duration of the flight. The larvae mine their way toward the base of the allium plant where they will pupate.

Growers who have alliums with green tissue growing in the field or in high tunnels now in southeastern New York should consider protective measures soon, especially in Orange, Ulster, Dutchess, Columbia, Sullivan, and Schoharie counties where significant infestations were observed last year. If you have small plantings that can be covered with row cover to exclude emerging ALM flies, now is the time to do so as long as you didn't have infested alliums (including wild onion grass) in the same space last season. Growers with larger plantings may consider applications of insecticides if and when significant ALM activity is observed in the allium crop. There are both organic and conventional insecticides labeled for allium crops to control this type of leafminer. Insecticide efficacy tests are currently being conducted in both New York and Pennsylvania. It is important to carefully observe your allium crops over the next few weeks. ALM oviposition/feeding may initially be observed along field edges. Be vigilant and please call or email either Teresa Rusinek at 845 389-3562, tr28@cornell.edu or Ethan Grundberg at 617 455-1893, eg572@cornell.edu if you see evidence of ALM feeding or have any questions about management.

Important information for ALL U-Pick & Argi-tourism Operations

The New York State Department of Agriculture and Markets released guidance that clarifies the responsibilities of agri-tourism business operators and their visitors under the Safety in Agricultural Tourism Act.

Governor Cuomo signed the law in 2017, establishing enhanced protection for farm owners from liabilities associated with inviting the public onto their farms for agricultural tourism events and activities. ***This includes farm and winery tours, equine activities, and u-pick operations that are conducted for educational or recreational purposes, and that benefit the farm through the sale, marketing, production, harvesting or use of the farm's products.***

CLICK HERE for Guidance: https://www.agriculture.ny.gov/Press%20Releases/Inherent_Risk_Guidance.pdf

Connect with the Eastern NY Commercial Horticulture Team on Facebook for information on our events, research, and agricultural updates!

Find us on Facebook

https://www.facebook.com/CCEENYCHP/

New Technicians Join the ENYCHP Team!

We are pleased to welcome Natasha Field and Andy Galimberti to Cornell Cooperative Extension and Eastern NY. Andy is working out of the Clinton County office and Natasha will be working out of the Washington County office. Don't hesitate to introduce yourself at a meeting or when they visit.

Andy Galimberti

I came to Cornell from Michigan; I grew up in Ann Arbor and went to school at Kalamazoo College, where I studied biology. After graduating, I worked a few jobs which developed my interest in agriculture. As a research assistant at Michigan State, I helped with projects ranging from pest management in celery to soil health in corn and other crops. I also worked as a scout for several local greenhouses, inspecting plants for pests and diseases to help growers manage their pest issues. After that, I wanted to learn more about the subject, so I went to the University of Maine to get my master's in entomology. At Maine, I studied pest management in potato. I started as a field technician at Cornell Cooperative Extension at the beginning of March. I'm looking forward to getting out in the field and working with a bunch of different crops!

Natasha Field

I grew up on a small berry and agritourism farm in Wyoming County, PA. I went to Penn State for my bachelors in AgriBusiness Management and worked for Willard Agri-Service in Maryland after graduation. At Willard, I was a sales support person with a specialization in fruits and vegetables, scouting and sampling throughout the season. I also wrote MD and DE nutrient management plans, scouted agronomic crops and did data analysis for the growers. I'm very excited to work for Cornell Cooperative Extension as a Technician to get a hands on, ground level view of the agriculture industry in the region. I can't wait to learn about all the exciting work being done by the farmers in the area and be a part of it!

Cornell Cooperative Extension | Eastern NY Commercial Horticulture Program

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ENYCHP Facebook: https://www.facebook.com/CCEENYCHP/

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