



Vegetable News

Late Summer Problems

Amy Ivy, ENYCHP

1. Beets:

Cercospora is the most common leaf spot disease of beets but you may also find the less common *Phoma* leaf spot. There are no resistant varieties of beets and both diseases are treated the same. Due to the generally dry conditions we've had most of this summer, foliar diseases like these are less aggressive than in wetter years.



(Photo Amy Ivy)

In this photo Cercospora is on the left side and has distinct round spots with purple edges. Phoma is on the right side with larger, more irregular spots with gray interiors.



Leek Moth Damage (Photo Amy Ivy)

We are curious to know where Swede midge is showing up in the Eastern NY region so please let us know if you notice any suspicious damage. For more pictures and information about this new pest visit <http://web.entomology.cornell.edu/shelton/swede-midge/>

3. Leek Moth Damage to Leeks

True to their name, leek moths love leeks. Check the newest growth on fall leeks and let us know if you find any of this characteristic damage. For more information and pictures on this pest visit :

<http://web.entomology.cornell.edu/shelton/leek-moth/>

continued on next page

In this issue of Vegetable News:

Late Summer Problems	1-2
Basil Downey Mildew Has Arrived	2
Anthrachnose of Cucumber	3
Tomato Update	3
Tomato Woes	4-6
Weather & Trap Count Data	6

2. Swede Midge in Brussels Sprouts:

Check any of the brassicas for feeding injury from Swede midge and please let us know if you find any. This pest has 4-6 generations a year and the larvae feed primarily on the growing points and newly expanding tissue, such as the margins of leaves as they expand.



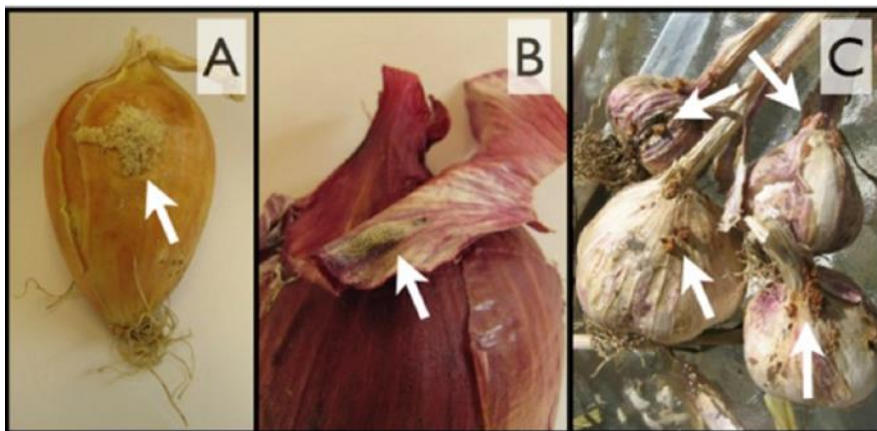
Swede Midge

In this picture, leek moth is damaging allium crops after harvest.

A – Frass and debris is pushed out of an onion bulb by the tunneling larvae.

B – The characteristic pupa attached to a dried onion scale. The pupa is about a half inch long and covered by a mesh-like netting.

C – Tunneling and feeding damage to cured garlic bulbs. This grower had a heavy leek moth infestation in all of her alliums and the last generation of moths laid eggs on her garlic as it was curing, resulting in the damage indicated by the arrows. This type of damage is less common so far, but of considerable concern since the bulbs are exposed during curing and storage. (photo credit M. Seto)



Basil Downy Mildew Has Arrived

Ethan Grundberg, ENYCHP

Not surprisingly given the recent spread of cucurbit downy mildew in the region, basil downy mildew (BDM) is popping up on a number of farms in the area. BDM (*Peronospora belbahrii*) is a different pathogen from cucurbit downy mildew (*Pseudoperonospora cubensis*); however, the environmental conditions that favor the spread of the two diseases are very similar and, as a result, often produce outbreaks around the same time. The first symptom of BDM is usually the development of angular yellow patches on the top side of basil leaves, followed shortly by the arrival of purplish gray spores on the leaf underside. After sporulation, the yellow patches turn brown and gray.

Growers have increasingly been planting the variety 'Eleonora' by Vitalis Organic Seeds due to its advertised intermediate resistance to BDM. However, 'Eleonora' is still very susceptible and I have found BDM on that variety already, including on high tunnel grown basil. Purple and Thai type basil typically have better resistance than sweet Genovese types. A breeding program at Rutgers is currently working to develop and release new sweet basil varieties with higher resistance to BDM, but those varieties are yet to be released commercially.

The best cultural practices to avoid BDM are those that minimize leaf wetness and humidity levels, especially in high tunnels. In order to effectively control BDM, fungicide applications should begin before visual symptoms develop. So, if you haven't seen signs of BDM yet, be sure to begin your preventative spray program now! Ranman (cyazofamid; FRAC code 21), Revus and Micora (mandipropamid; FRAC 40), and Quadris (azoxystrobin; FRAC 11) are all labeled for use on basil for BDM. Studies conducted on Long Island in 2013 found that Revus and Ranman were most effective at controlling BDM on

both 'Italian Large Leaf' and 'Eleonora' varieties. The same study tested the efficacy of several OMRI-approved fungicides as well (Regalia, Actinovate, and Trilogy), but found them to be mostly ineffective. Some studies have found Procidic (3.5% citric acid) to be somewhat more effective for organic growers and was deemed NOP compliant by the Washington State Department of Agriculture. Double Nickel 55 (*Bacillus amyloliquefaciens*), MilStop (potassium bicarbonate), Trilogy (neem oil), and OxiDate (hydrogen dioxide) are also labeled for use on basil for suppression of BDM. Since OxiDate is a contact fungicide with no residual activity, it should only be used in conjunction with another fungicide. If you are unable to control BDM on your crop, be sure to disk in the infected plantings as soon as possible to help reduce the inoculation source for other plantings.

For more information on BDM, please refer to <http://vegetablemdonline.ppath.cornell.edu/NewsArticles/BasilDowny.html#Report> and <http://livegpath.cals.cornell.edu/research/basil-downy-mildew/>.



Anthracnose of Cucurbits

Teresa Rusinek, ENYCHP



©W. R. Sitterly

Lesions on cucumber fruit are now uncommon, with many varieties having anthracnose resistance. Photo courtesy of W. R. Sitterly, Brevard N.C.

Last week, I came across a striking case of anthracnose on cucumbers growing in a high tunnel. The high tunnel is an ideal environment for this disease to develop as it is a warm and humid there. This is not a disease I see that often on actively growing crops because growers usually grow resistant cucumber varieties or spray fungicides that control this disease and others, which was not the case in this situation. All cucurbits can be affected by Anthracnose, melons and watermelon are moderately susceptible, while pumpkin, winter and summer squash are less so. Anthracnose can also show up postharvest especially in pumpkins and winter squash. If this disease shows up in

your high tunnel or field it is best to destroy crop residues as soon as possible to initiate the breakdown of debris and inoculum for subsequent crops. Rotating out of cucurbits for two years, using resistant cucumber varieties (especially important for production in high tunnels because of conducive environment and limited fungicides you can use in them) and fungicide sprays can all help prevent future infections.



Cucumbers with anthracnose lesions on leaves grown in high tunnel. Photo T.Rusinek

Tomato Update

Crystal Stewart, ENYCHP

So far late blight has not entered New York this year, and tomato yields and quality have been outstanding. A few problems have been showing up here or there, notably the bacterial issues discussed in previous newsletters and slow progression of Early Blight and Septoria. However, protectant fungicides have been enough to keep most issues at bay.

This week I saw the occasional problem most often confused with Late Blight, Zonate Leaf Spot. Like Late Blight, Zonate can cause lesions on upper foliate first, and the lesions can be quite large. Unlike Late Blight, the lesions are dry and do not sporulate



even under moist conditions. Zonate lesions also have pronounced rings like Early Blight lesions, but are differentiated by the location on the plant and by the lack of a yellow halo around the lesion.

A primary method of control for Zonate is avoidance. Alternate hosts for this disease are Boxelder and Black Walnut trees. Planting in fields not bordered by these plants is recommended. Chemical controls have not been well studied for this disease.

Tomato Woes!

Chuck Bornt, *ENYCHP*

Tomato Woes! There always tends to be two sides to every story right and the story I have this week is we were very happy to get those rains a couple of weeks ago. However, with those rains came a fair amount of issues with our tomato fruit including concentric and radial cracking and rain checking! So, as I said, there are always two sides to a story or in this case a blessing and a curse! I like to read other newsletters from around the northeast and in doing so I come across an interesting article by Jerry Brust, a Vegetable IPM Specialist for the University of Maryland discussing environmental and other factors affecting tomato fruit quality that I thought would be interesting for you to read. I also found the research he is doing with shade cloths and tomatoes interesting and I hope you will to:

Other Fruit Problems with the 2016 Tomato Crop

Jerry Brust, IPM Vegetable Specialist, University of Maryland (Source: University of Delaware Cooperative Extension Weekly Crop Update: August 26, 2016, Volume 24, Issue 23)

Last week I commented about not seeing much yellow shoulders or uneven fruit ripening problems caused by low levels of potassium in tomato. The lack of problems was due mostly to higher than normal potassium levels in the tomato crop. I heard from several growers who told me that their tomato harvests were not pretty and they sent pictures along to prove that. And I agree that some of our tomatoes look pretty ugly and this is what I'd like to talk about this week.

Some of the ugliness is due to high levels of gold fleck (Figure 1). Gold fleck is caused by calcium crystals being deposited in the epidermal layers of the fruit when certain varieties are under stress. Causes of this stress include high densities of thrips or moderately high numbers of two-spotted spider mites or most commonly when there are consistently high (>90°F day, >68°F night) air temperatures along with high dew points (>68°F).



Fig 1. Severe gold fleck in tomato



Figure 2. Rain check on tomato



Figure 3. White plastic mulch

We all experienced these high temperature and humidity conditions, but some fields also had high levels of mites or thrips, making matters even worse.

In some fields I found a great deal of raincheck (Figure 2). Rain check occurs in green and partially ripe fruit when there is rapid fruit growth and the skin can't expand fast enough. This often occurs when there has been a dry period with high humidity followed by heavy rains. Fruit that has poor foliage cover tends to have more problems with the disorder. These conditions cause small, or, at times, large cracks up around the stem that can expand over time (Figure 2).

There are ways to reduce the physiological disorders just discussed as well as yellow shoulders and other fruit ripening problems. Selecting some varieties that do well in heat is one, but these often have other undesirable attributes that growers and their customers do not want. Another is using white plastic mulch (Figure 3) rather than black mulch, which will REDUCE the amount of these disorders but they will still occur and the mulch must be put down early in the season. But one way to reduce many of these physiological disorders is by using shade cloths or canopies (Figure 4). These shade cloths can be put up after the first cluster or two of fruit have set if weather conditions indicate prolonged periods of hot humid weather.

I have been experimenting with using shade cloth in tomato over the last 5 years and they have worked remarkably well in increasing the marketable yields of many different cultivars of toma-

atoes by 20-50%. I use a 30% filtering shade (using any more than 30% tends to reduce yields and size of tomato fruit). The shade cloth is draped over the top of the tomato stakes and held down at both ends (Figure 4). I know this does not seem practical, but only the top 1/4 of the plant needs to be covered (not shown) which means a grower

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Fig 4. Shade cloth over a section of tomato row

could use shade cloth with a 4 ft width and as long as they wanted it to be. The shades can be used over and over for many years; the ones I am using have been in use now for 5 years. The shade cloth helps tomato plants come through very stressful weather conditions, i.e., high temperatures with high dew points and even heavy rains in much better shape than plants that were not covered.



Figure 6. Harvest bins of tomato fruit; bin on left from plants covered with shade and bin on right from plants that were not covered.



Figure 5. Part of tomato row (with red line) that was covered with shade cloth vs others that were not.

Figure 5 shows part of a row (with the red line) that had been covered with shade cloth for six weeks compared with the row next to it which had not -same cultivar planted on the same day. I arbitrarily selected that one section of row for the shade cloth in June. You can see how much better those plants that were covered look than the ones that were not covered. The benefit of using the shades is an increase in quality and size of tomato fruit, rarely in the number of fruit.

Figure 6 shows harvest bins of tomato fruit with the bin on the left from plants that were covered from the end of June through July while the bin on the right was from plants (same cultivar) not covered. These experiments were replicated 4, 6, and even 8 times in the field over several years and the results were always the same—an increase in marketable yield each year. Some years it was an 18.9% increase and some years it was a 47.7% increase. Once plants are covered, the shade cloth can stay on the rest of the season until harvest. We sprayed through the shade cloth with fungicides and insecticides. Foliar diseases were reduced for plants under shade compared with plants outside shade. I am not suggesting a grower would shade an entire field, but you might select a few of your cultivars that bring a very good price, but are prone to producing ugly tomatoes during stressful weather conditions and shade those.

Farmers' Market Pricing Project Survey & Evaluation

As August nears its end, our Farmers Market's Research Project is concluding. For the past few months, various staff members have traveled to markets attended by yourself, your friends, and neighboring farmers to collect the prices of specific products. These prices were aggregated each week according to region to create price summaries for your viewing.

The individual offices and dedicated staff of Cornell Cooperative Extension strive to provide valuable educational material and research to farmers just like you each and every day. Help us ensure that we continue to succeed at this goal by taking our brief online survey.

[Follow this link to take the survey online](https://cornell.qualtrics.com/jfe/form/SV_57ivb2VrwD5cWRD)

Or go to: https://cornell.qualtrics.com/jfe/form/SV_57ivb2VrwD5cWRD

Site	2016 Weekly Total 8/23- 8/29	2016 Season Total 3/1-8/29	2015 Season Total 3/1-8/29	2016 Weekly Rainfall (inches) 8/2238/29	2016 Total Rainfall (inches) 3/1-8/29	2015 Total Rainfall (inches) 3/1-8/29
Albany	162.4	2428.8	2455.0	0.32	17.5	18.7
Castleton	158.2	2345.5	2939.5	0.02	18.7	17.97
Glens Falls	144.2	2177.0	2118.5	0.07	22.6	16.9
Griffiss	147.0	2058.1	1962.0	0.37	27.6	25.96
Guilderland	148.5	2199.5	2224.5	0.00	18.1	23.31
Highland	169.7	2556.5	NA	0.00	19.2	NA
Hudson	168.5	2520.8	2451.8	0.02	25.8	21.22
Marlboro	165.8	2447.2	2368.1	0.01	18.6	16.68
Montgomery	159.4	2469.3	2412.5	0.00	17.6	17.39
Peru	155.0	2045.0	2004.4	0.02	11.1	19.49
Red Hook	155.6	2400.9	2336.2	0.03	16.5	17.84
Willsboro	146.2	2015.1	1958.0	0.13	15.3	23.26
N. Adams, MA	131.9	1967.0	1912.5	0.14	20.3	20.4

2016 Weather Table—The weather information contained in this chart is compiled using the data collected by Network for Environment and Weather Applications (NEWA) weather stations and is available for free for all to use. For more information about NEWA and a list of sites, please visit <http://newa.cornell.edu/>. This site has information not only on weather, but insect and disease forecasting tools that are free to use.

Sweet Corn Pest Chart (week ending 8/30)					
Location	CEW	ECBZ	ECBE	FAW	WBC
C. Clinton	12	0	7	59	10
S. Clinton	2	0	8	4	4
N. Washington	2	2	0	3	0
S. Washington	28	1	0	8	0
Albany	11	0	0	1	0
Rensselaer	31	0	0	27	9
Saratoga	NA	1	0	NA	0
Schoharie	NA	0	0	NA	NA
Fulton	NA	NA	NA	NA	NA
Greene	29	0	0	0	0
N. Ulster	0	0	0	0	0
S. Ulster	14	0	0	0	1

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