



Vegetable News

Brassica Downy Mildew Detected

Ethan Grundberg, ENYCHP

The parade of downy mildew pathogens affecting Eastern New York continues. The oomycete pathogen, *Hyaloperonospora brassicae* (formerly known as *Peronospora parasitica*), is responsible for downy mildew in cole crops. Similar to early symptoms caused by downy mildews of other crops, affected brassicas can develop yellow areas on the upper leaf surface, which can then turn brown and desiccate (fig 1). More advanced infections sometimes result in a grayish-blue streaking at the heart of leaf lesions with yellowish discoloration at the margins (fig 2). Downy mildew can also damage cabbage, cauliflower, and broccoli heads rendering them unmarketable. The cool evenings and dewy mornings that we've experienced lately are ideal conditions for the spread of the pathogen, which reproduces by generating spores on the underside of infected leaves.

If you notice downy mildew symptoms in your fields, take precautions to avoid spreading the disease into other brassica crops. Spray and harvest newer and unaffected brassica plantings first before working in fields with visible downy mildew symptoms to avoid transporting spores. Begin a preventative fungicidal spray program on all cole crops in proximity to plantings showing symptoms. Dr. Chris Smart at Cornell University has conducted fungicide efficacy trials for downy mildew control on brassicas. Manzate Pro-Stick



Image: Ethan Grundberg

(mancozeb, FRAC M3, only labeled for broccoli and cabbage) is effective when used preventively and can be alternated or mixed with with Champ Formula 2F (copper hydroxide, FRAC M1). Bravo Weather Stik (chlorothalonil, FRAC M5) and Presidio (fluopicolide, FRAC 43, Presidio must be tank mixed with another fungicide with a different mode of action for resistance development prevention) are the other two fungicides

recommended by Dr. Smart.

For organic growers, avoidance is crucial. Increase plant spacing to improve air circulation and minimize leaf-to-leaf disease transmission. Make sure to rotate fields out of brassicas for at least three years and work to control cruciferous weeds that may also act as sources for inoculation. Most OMRI-approved fungicides have little demonstrated efficacy. Organic copper formulations, like Badge X₂ (copper oxychloride + copper hydroxide, FRAC M1) are the best bet, but products like Double Nickel 55 (*Bacillus amyloliquefaciens* strain D747, FRAC 44), Serenade (*Bacillus subtilis*, no FRAC), and Regalia (*Reynoutria sachalinensis* extract, FRAC P5) are also labeled for downy mildew on most cole crops.



Image: Ethan Grundberg

In this issue of Vegetable News:

Sweet Potato Harvesting/ Curating	2-3
New to us: Pepper Maggot	3-4
Harvesting Irish Potatoes	4
Powdery Mildew & Leaf Mold in Tomatoes	5
Upcoming Events	5-6
Cover Crop Field Demonstration Day	7
Sweet Corn Trap Counts/ Weather Data	8

Sweet Potato Harvesting and Curing Reminders

Chuck Bornt, *ENYCHP*

I haven't talked much about sweet potatoes this year, but the time is here for harvesting and curing. One thing to always remember is that sweet potatoes are nothing like your standard Irish potatoes. Sweet potatoes are much more delicate and require more attention when harvesting and storing. With this year's hot, dry growing season, we should see pretty good yields and sizable roots by now (Figure 1) so you can start harvesting anytime now and our current dry soils are ideal for digging sweet potato as the drier soil reduces the chance of soft rot bacteria invading wounds on the roots as they are dug.

Keys to sweet potato harvesting:

1. Do not let the roots get exposed to cold temperatures (less than 50°F), especially soil temperatures. Sweet potato vines can be hit with a light frost, but when roots are exposed to prolonged colder temperatures, they can form an internal white ring of tissue which really decreases the quality of the root. The roots will not store as long or taste as good. That is also why we recommend storing sweet potato roots at or around 55°F.
2. Mowing or cutting the vines will help make the harvest go easier, but it will not help "set" the skins or "toughen up" the skins as it does with regular Irish potatoes. You can mow and dig sweet potatoes the same day and the skins would be no different than if you cut the vines two weeks prior to harvesting.
3. If you are using a mechanical digger such as a potato digger to harvest your roots, make sure you run the chain as slow as possible and carry as much dirt up the chain as possible to reduce the amount of bouncing that occurs. The sweet potato has a thin, delicate skin that is easily broken. Any cuts, bruises, or skin abrasions will reduce quality and storability significantly. It might even be worth taking the shakers off of your digger to reduce the amount of bouncing of the roots on the rods. The longer the chain, the more dirt that can sift down through the rods exposing the roots which can then allow workers to pull the roots off the digger before they are put back on the ground. This would eliminate one more potential bruising opportunity.
4. What should you put the roots in? I get this question a lot and if possible when picking up your sweet potatoes, use some kind of slotted crate or small bin (apple bins Figure 2, stackable crates Figure 3 or collapsible crates Figure 4) that will allow air to flow through them. Instruct your workers to gently place them in these containers. If picking up with buckets and dumping into bins, reduce the distance the roots have to fall as much as possible. This again will help reduce cuts and bruises.
5. Do not wash your roots until you are ready to go to market with them! Remove as much dirt as possible when digging, keep them dry and place directly into the harvest containers. These containers should then be taken an area to cure.
6. You need to cure them after harvest for several reasons. First, curing allows any cuts, abrasions or bruises to heal which allows for better storability of roots. Second, curing is when the roots develop there flavors and starches are converted into sugars which give sweet potatoes their sweetness.
7. Ideal curing conditions are a temperature of 85°F with 90% humidity for 5-7 days. At this time of year empty greenhouses can be an excellent place to cure sweet potatoes, but there are a couple of things that need to be

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Figure 1: Nicely developed roots of the variety Covington ready to be dug.



Figure 2: Apple bins are good for curing and storing roots especially those growing several acres.

done. First, floors of the greenhouse should be watered several times a day in order to keep the humidity levels at 90%. Second, make sure fans are set for 85°F and the heater is turned on and set to keep the greenhouse as close to 85°F night.

8. Once your sweet potatoes are cured, store as close to 55 - 60°F as possible, but no lower, and maintain a high humidity. If done properly, sweet potatoes should easily store into February and even into April if conditions are right.



Figure 3 and 4: These slot-together and collapsible harvest totes make excellent containers for curing and storing sweet potatoes. They can also be used for drying roots after being washed and getting ready for the market.

New-to-us Pest: Pepper Maggot

Crystal Stewart, ENYCHP

As the seasons continue to get warmer, the pests from more temperate regions keep wandering north. The latest find is pepper maggot, *Zonostema electa*, in a field of eggplant.

About 75 percent of the fruit had a black tunnel through them, along with an exit hole somewhere on the side of the fruit. The tough part was how hard the damage was to detect—short of cutting open a fruit, you would not know there was anything wrong in this case. Damage to peppers is often more dramatic because damage invites soft rots, which can become a particularly severe issue on fruit being allowed to color. On green fruit, larva often manage to go undetected, being eaten as tiny little bits of extra protein or discarded with the seeds.

Pepper maggots are the larval stage of a very handsome little fly, shown here. Its notable qualities are three yellow stripes across the back (thorax) and striped wings. The maggots are plain, white, and not handsome, growing to a final length of about a centimeter at the most. Here they are shown in peppers and in eggplant, along with representative damage. So, how concerned should we be about this pest? It depends on how many of them move north, and if they stay. They are a persistent, sometimes very troubling pest in other areas, infesting up to 100% of fruit. Infestations seem to be spotty, so monitoring

is very important. There are only a few weeks in June and July that the adults are laying eggs, and this will be the only time that spraying is effective. Jude Boucher from UConn has been doing great work on ways to monitor and control this pest, and offers the following advice:



Image: Jude Boucher



Image: Jude Boucher

On scouting: “Why not just spray all pepper fields after fruit set and to hell with scouting and monitoring?”, inquires Jude. Ok, I didn’t have to quote that, I could have just written about scouting. But I liked that he wrote it, since I know it’s what some of you are thinking, and heck it’s near the end of the season, so let’s run with it. Jude, why should we monitor? Here’s what he says: “All of the broad-spectrum chemical insecticides registered for pepper maggots also kill off the predator and parasites that very effectively control aphids on peppers. The later you wait into the season to make your first insecticide application, the less likely your pepper field is to develop high aphid populations. In short, growers who have to battle pepper maggots often have to also fight aphids late in the season; those that don’t have to spray for the fly, almost never have a problem with aphids.” Ah! Excellent point.

On monitoring: Jude did an interesting study on using early-maturing indicator plants around susceptible crops to determine when flies are laying eggs:



Image: Crystal Stewart

“In 1997, each pepper field with a history of pepper maggot damage was surrounded with hot-cherry pepper plants spaced at 25, 50 and 100 meters apart, depending upon the size of the field. All the hot pepper plants were located in the outermost row of bell peppers along the margins of the fields. Still's-style traps in trees were also employed at almost every site.

The idea was to utilize the early-set and high attraction of the chili peppers as indicator plants to detect the start of egg laying. We then proceeded to check for oviposition

scars or (egg deposit) stings on the hot-cherry fruit on the indicator plants and the traps every three to four days. Stings are easily recognized on the high-gloss, smooth surface of a cherry pepper as a shallow indentation of the fruit surface with a tiny scar in the center. In every case, the flies appeared on the traps at the same time that the first few stings appeared on the hot-cherry peppers. Both the number of flies captured and the number of fruit stings increased over time. By timing insecticide applications with the first occurrence of the stings on the indicator plant's fruit, damage to the main crop can be avoided with a minimum of spraying.”

What to do now: For now, this is a pest on the “Keep an eye out for it” list. If you have been seeing little maggots in the peppers or eggplants, let us know. In the meantime, we'll be creating recommendations for organic and conventional controls.

For the entire UConn article on pepper maggots: <http://ipm.uconn.edu/documents/raw2/Pepper%20Maggot/Pepper%20Maggot.php?aid=57>

Harvesting Irish Potatoes for Storage

Chuck Bornt, ENYCHP

If you are digging potatoes now for storage, it will be important that you read and follow some of the tips below:

1. One of the key components to ensuring the highest quality potatoes is proper vine killing. Minimally, vine killing should occur 2-3 weeks before harvest to ensure the tubers set their skin, making the tubers more resistant to skinning and bruising. Vine killing can be done many different ways including flail mowing, flaming and chemical desiccants (see Table 1 for a list of approved vine desiccants).
2. Maintain fungicide applications as long as there is green tissue left exposed including those stumps of vines from flail mowing. These tissues are still susceptible to diseases such as Late Blight.
3. If digging with a machine, be sure use the proper tractor and chain speed ratio to keep the conveyors as full of potatoes as possible. Sometimes this means keeping a little more dirt on the chain than we might like to see, but it will help keep the potatoes from sliding down and bouncing around on the chain.
4. Make sure that tubers are not falling from heights greater than 6 inches (this includes digging and handling). This will also help reduce the potential for bruising and black spot (a result of bruising).
5. **Do not put harvested potatoes directly into a cold storage.** Potatoes should go in a dark area and allowed to cool down gradually and heal or cure up a bit. The best temperatures for this to happen is 60 -65 degrees F for about 5 - 20 days at a high humidity with good air circulation. This will be extremely important this year seeing our soils are still pretty warm. Cooling them down rapidly could result in condensation developing and that is not what we want as that can increase rot organisms that might already be there. After this healing period they can be moved into storage and cooled slowly to 40 F maintaining a high relative humidity of about 90 - 95%. This should help reduce the shrinking that happens in storage.
6. Do not wash potatoes before putting them into storage, but rather wash what you need as you need them. **Do not put warm potatoes into wash water that is 10 degrees colder as this will increase bacterial breakdown.** For that matter, you should follow this rule for all produce that is washed!
7. Don't dig and plan on storing tubers from wet areas of a field. If possible keep them separate and plan to market those immediately to reduce the chance of brining disease into the storage.
8. Cull hard! Do not put any potatoes that do not look healthy into your storage, and when it doubt, don't put it in!

Powdery Mildew and Leaf Mold in Field Tomatoes

Teresa Rusinek, ENYCHP

Once in a while I find Leaf Mold and Powdery Mildew in field grown tomatoes. These two tomato disease often show up in high tunnel or greenhouse tomato production where humidity tends to be higher and air movement is restricted. But this year it did show up in a field that received no fungicide sprays whatsoever. Powdery Mildew can occur on tomatoes at any stage of plant development. Symptoms begin as circular, white powdery spots typically first on shaded leaves inside the canopy. Eventually, leaves yellow, turn brown, and die. Fruits may have poor flavor and/or be sunburned because of loss of foliage. The primary source of this pathogen are wind-dispersed spores from weed hosts so crop rotation is not considered a viable management option. Several fungicides labeled for use on tomato for Powdery mildew control are: Quadris, Quadris Opti, Quadris Top, Inspire Super, Vivando (supplemental label), Rally 40 WSP, and Kaligreen (OMRI).



*Powdery Mildew on Field tomato –
Photo Teresa Rusinek*

Fulvia leaf mold symptoms begin as pale green to yellowish spots on the upper leaf surface. Olive green to gray mold often develops in the underside of the leaf that correspond to the yellow spots on the upper surface. High humidity, over 85%, favors this disease. There are several varieties that show resistance to leaf mold but the pathogen continues to mutate into new races. Some fungicides labeled for use on tomato for Fulvia leaf mold are: Bravo Weather Stik, Mankocide, Quadris Top, and a number of fixed copper compounds. In High tunnels, trials using copper compounds have not proven effective in stopping the spread of Fulvia leaf mold. More research is currently underway. Please always read and follow the pesticide label.

Source: 2016 Cornell Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production



Leaf Mold on field tomato-Photo Teresa Rusinek

UPCOMING EVENTS

Informal Grower Discussion: Cover Crops for Soil Health

Wednesday, Sept 21, 2016

6:30-7:30pm

Cornell Willsboro Research Farm

48 Sayward Lane, Willsboro

Free and open to the public. Dress for the weather. If raining we will meet in the brick farmhouse.

We'll look at and compare the two identical summer cover crop plots we planted this summer, one on sandy soil and the other on clay soil; there is quite a difference between them. And we'll also talk about cover crops in general – timing, advantages of different ones, and hear about your experiences using them.

Attendees will receive a copy of *Managing Cover Crops Profitably*, thanks to funding from the Northern NY Agriculture Development Program.

Come at 6:00 if you want to see the high tunnel cherry tomato trials, and our eggplant and pepper trials.

Please email Amy Ivy if you plan on coming, so she can notify you if we have to make a last minute change to the schedule adi2@cornell.edu

WPS Mock Inspection

Wednesday, October 5 at Dickman Farms in Auburn, 9:30-12:00.

Wednesday, October 19 in Riverhead and Oct 26th in Lockport.

To assist producers in getting up to speed on the new regulations that take effect January 1, 2017, DEC is running some mock WPS inspections in October to help. No registration fee and no need to pre-register. 2 DEC credits for 1a, 1d, 10, 21, 22, 23, 24 and 25. Watch the newsletter for additional information.

Farm Ops: Special Program for Veterans

The Cornell Small Farms Program is pleased to offer partial scholarships for military veterans to take our online courses as part of the [Farm Ops](#) initiative. The courses, normally \$250, will be offered to veterans for \$125. In order to be eligible a person must be active or retired military, a resident of New York State, and have plans to begin selling farm products (filing a Schedule F) in 2016 or 2017. In order to view the course offerings and schedules go to:

<http://www.nebeginningfarmers.org/online-courses/>. If you are eligible and would like to apply for a scholarship, complete a short form [here](#).

Registration is limited and will be offered first come, first served. Participants will be asked to complete a targeted survey at the end of the course as well as 6 months from completion, to determine the effect on their operation.

Cornell University Cooperative Extension's Eastern NY Commercial Horticulture Program and the Hudson Valley Farm Hub present the 2016

Root Crop Variety Trial Twilight Meeting

Wednesday, September 21st, 4-6 pm

Hudson Valley Farm Hub: 1875 Hurley Mountain Rd, Hurley NY

Farmers are invited to tour 16 varieties of beets and 16 varieties of carrots, and to learn about their disease resistance, eating quality, and yield potential. This year's focus is on finding the best Nantes typed carrot and best red bunching beet! We will taste test raw carrots and cooked beets.



This year's meeting allows ample time for growers to experience the different varieties while also getting your beet and carrot questions answered by Extension Specialists and other farmers. Bring your questions, challenges, samples in sealed bags, and an appetite!

There is no charge for this event, but pre-registration is appreciated.

To register, visit <http://enych.cce.cornell.edu/>

Questions? Call Crystal at 518.775.0018.

1.5 DEC credits applied for.



Cover Crop Field Demonstration Day

With the increasing interest in using cover crops, the Eastern NY Commercial Horticulture Program would like to invite you to learn from expert cover crop researchers including Dr. Paul Salon, Northeast Soil Health Specialist, USDA-NRCS Soil Health Division at Big Flats Plant Materials Center and Dave Wilson, Research Agronomist and Cover Crop Specialists, formerly with King's Agriseeds. Paul and Dave will provide an overview of the cover crops selected for this demonstration and how species selection was determined. Come and see over 20 different species or combinations planted no-till into standing sweet corn at 3 different planting dates. In addition our hosts will demonstrate their Unverferth Ripper Stripper unit and discuss their reduced tillage and cover crop experiences systems used for vegetables.

Registration fee: \$5.00 per person.

Because we are offering lunch, pre-registration is appreciated so we have enough food, but walk-in's are welcomed.

**Thursday, October 13, 2016,
10:30 am – 2:00 pm**

**Stanton's Feura Farm
210 Onesquetha Road
Feura Bush, NY 12067**

Tentative Agenda:

- 10:30 Registration and check-in
- 11:00 Introductions
- 11:05 Overview of cover crops and reasons for selection
- 11:50 Lunch
- 12:30 Travel to cover crop plots
- 12:45 Unverferth Ripper Stripper demonstration
- 1:00 Tour the plots
- 2:00 Adjourn



Cornell University
Cooperative Extension
Eastern New York Commercial Horticulture



**Sustainable Agriculture
Research & Education**

To register visit <http://enveh.cce.cornell.edu/event.php?id=609>
or call Abby at 518-746-2553

For more information about the program, call Chuck Bornt at 518-859-6213

Site	2016 Weekly Total 9/7-9/12	2016 Season Total 3/1-9/12	2015 Season Total 3/1-9/12	2016 Weekly Rainfall (inches) 9/7-9/12	2016 Total Rainfall (inches) 3/1-9/12	2015 Total Rainfall (inches) 3/1-9/12
Albany	139.7	2721.8	2800.5	0.80	18.3	20.32
Castleton	136.1	2631.1	3272.7	0.16	18.86	19.91
Glens Falls	115.0	2426.9	2422.5	0.62	23.22	17.79
Griffiss	124.1	2310.1	2266.0	1.45	29.05	26.97
Guilderland	130.0	2471.5	2535.5	0.01	18.11	24.40
Highland	144.7	2863.2	NA	0.15	19.42	NA
Hudson	144.4	2818.7	2791.1	0.22	26.84	24.27
Marlboro	140.1	2746.9	2701.4	0.09	18.8	18.37
Montgomery	144.0	2768.0	2747.5	0.2	17.8	20.56
Peru	123.2	2299.3	2292.0	0.1	11.42	20.22
Red Hook	135.7	2682.3	2667.9	0.07	16.64	20.87
Willsboro	119.2	2262.1	2249.5	0.18	15.78	23.61
N. Adams, MA	107.6	2189.2	2189.0	1.03	21.33	21.83

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 9/14)					
Location	CEW	ECBZ	ECBE	FAW	WBC
C. Clinton	22	0	0	25	0
S. Clinton	6	0	0	69	0
S. Washington	27	0	0	6	0
Albany	17	0	0	0	0
Rensselaer	NA	7	0	200	4
Saratoga	NA	0	0	NA	0
Schoharie	NA	0	0	NA	NA
Fulton	3	0	0	1	0
Greene	53	0	0	1	0
Orange	3	0	0	1	3
N. Ulster	0	6	2	0	0
S. Ulster	2	6	0	0	1

ENYCH Program Educators:

Fruit

Dan Donahue

Phone: 845-691-7117

Email: djd13@cornell.edu

Tree Fruit

Anna Wallis

Phone: 443-421-7970

Email: aew232@cornell.edu

Tree Fruit & Grapes

Laura McDermott

Cell: 518-791-5038

Email: lgm4@cornell.edu

Berries

James O'Connell

Phone: 845-691-7117

Email: jmo98@cornell.edu

Berries & Grapes

Vegetables

Chuck Bornt

Cell: 518-859-6213

Email: cdb13@cornell.edu

Amy Ivy

Phone: 518-561-7450

Email: adi2@cornell.edu

Teresa Rusinek

Phone: 845-340-3990 x315

Email: tr28@cornell.edu

Erik Schellenberg

Phone: 845-344-1234

Email: jk2642@cornell.edu

Crystal Stewart

Cell: 518-775-0018

Email: cls263@cornell.edu

Maire Ullrich

Phone: 845-344-1234

Email: mru2@cornell.edu

Ethan Grundberg

Phone: 617-455-1893

Email: eg572@cornell.edu

Business and Economics

Jesse Strzok

Phone: 518.429.1464

Email: js3234@cornell.edu



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