Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Weekly Vegetable Update

ENYCH Program Educators:

Vegetables
Chuck Bornt
Cell: 518-859-6213
Email: cdb13@cornell.edu

Amy Ivy
Phone: 518-561-7450
Email: adi2@cornell.edu

Teresa Rusinek
Phone: 845-691-7117
Email: tr28@cornell.edu

Crystal Stewart
Cell: 518-775-0018
Email: cls263@cornell.edu

Maire Ullrich
Phone: 845-344-1234
Email: mru2@cornell.edu

Fruit
Laura McDermott
Cell: 518-791-5038
Email: lgm4@cornell.edu
Berries

James O'Connell
Phone: 845-691-7117
Email: jmo98@cornell.edu
Berries & Grapes

Dan Donahue
Phone: 845-691-7117
Email: djd13@cornell.edu
Tree Fruit

Business and Marketing
Bob Weybright
Phone: 845-797-8878
Email: rw74@cornell.edu

Layout:
Carrie Anne Doyle

Content Editor:
Teresa Rusinek

** Late Blight Alert! **

Late blight on tomato leaves.

On Wednesday afternoon Chuck Bornt found late blight (LB) in a potato field in Columbia County. A sample has been sent off to Dr. Fry at Cornell University for confirmation and isolate identification. The outbreaks in Erie County and Long Island, both in potato, are the US 23 strain which is sensitive to Ridomil. The US 23 strain of LB is equally aggressive on tomato as it is on potato.

Growers will need to evaluate the threat to their crops based on scouting, weather, proximity to known outbreaks, spray materials (protective vs. systemic) and spray intervals. At this time, for most growers, it is likely protection from LB is adequate using protective materials such as chlorothalonil (Bravo Weather Stik or OLF) or mancozeb (Dithane DF or OLP), and for organic growers copper compounds such as Champ. Keep in mind that new growth needs to be covered and that rain over an inch and in particular a hard pounding rain is considered a wash off for many of these materials. LB may first appear in areas of the field with poor air circulation by wooded edges and low areas. Infected tissue is initially water soaked (olive green color) then becomes brown or black. The lesion is often surrounded by a light green halo. Under humid conditions, sporulation (white fuzz) may be seen on the underside of the leaf surrounding the lesion.

Late blight on tomato fruit.

Once you see LB on your farm, or if you are downwind of a farm in your area that has LB, you will want to use the systemic or translaminar products such as Curzate + protectant, or Revus Top. Because of resistance issues Ridomil should only be used if LB is present at a low level in the field but not if there is a raging infestation. Catching LB early and timely fungicide applications are key in controlling this very destructive disease which under overcast and moist conditions will progress very rapidly. If you have questions or think you may have LB, please let one of the ENYCHP educators know. Stay tuned…we will keep you updated on this outbreak. *-TR*

Eastern NY Commercial Horticulture Website

The Eastern NY Commercial Horticulture Team is proud to announce that their updated website is up and running. For on-line class registrations, announcements, older issues of our newsletters, and more, please visit http://enych.cce.cornell.edu/. We hope you bookmark it on your computer and begin using it as your 'go to' website for production and marketing information. Email or call any of the educators with questions or comments on the website – we want to make it work for YOU!

Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

Regional Updates:

North Country—Clinton, Essex, northern Warren and Washington counties

The warm temperatures and occasional rain has created near perfect growing conditions for the northern region. Sweet corn is tasseling, tomatoes are ripening, and weeds are flourishing! Staying ahead of weeds, even where plastic mulch has been laid, has become most growers' greatest challenge so far. But summer is young and diseases will likely be showing up before too long.

Brassicas in Essex County. *Photo by ADI*

Capital District—Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington counties

The weather has been pushing crops along nicely in the Capital District. Tomato picking in high tunnels is in full swing and field tomatoes are getting close in a few places. Summer squash plantings are at least a few weeks into picking, and the first signs of powdery mildew are showing up on the oldest ones. Pumpkins and winter squash are running off the plastic (where there is plastic). Annual weeds, particularly nutsedge and crabgrass, are coming on extremely strong. Early corn is being picked, and later plantings are looking really good. Corn pest numbers are still very low.

Early brassicas have been beautiful, with some of the nicest cauliflower I've ever seen in NY picked this week. Alliums look pretty good, with low disease pressure and generally low thrips, though they are still present. Spider mites have been showing up in tunnels and even a bit in the field, so be on the lookout for yellow stippling and leaf distortion.

Mid-Hudson Valley—Columbia, Dutchess, Greene, Orange and Ulster counties

The majority of the problems seen this past week have been due to excessive rainfall. Many areas in the region received over 5" in 7-10 days and that has been problematic. From nutrient deficiencies to increased soil and foliar diseases, the excessive moisture has been a significant factor in many of the problems noted.

Phytophthora Blight Showing up in Peppers

We don't see it much but, because it's so devastating, once every few years is too much. We suspect the number of sightings in the past couple of weeks is due to the extremely wet soil conditions we have had.

Phytophthora capsici is a fungus-like pathogen that survives in and is transmitted by soil. It can be seed-born as well but usually the parts of the plants that are attacked are where they come in contact with the soil. Its host range is fairly large with the most concerning commonly seen infections happening on peppers and cucurbits (summer/winter squash and melons can be infected). Some beans, tomatoes and eggplant can be infected as well.

For peppers, symptoms are seen as the plants quickly decline from healthy to wilty to losing leaves, to dead.

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Peppers tolerant and susceptible to root and crown rot caused by *Phytophthora capsici.*

Phytophthora Blight in Peppers, continued from previous page

Within a few days an infected spot in the field can go from green to completely desiccated and brown. Removing these plants from the soil you will likely see white spots on the stem of the plant at and below soil level. At the very least, the crown will have a brown lesion on it. Leaf spots can occur but the most telling is the rapidity at which the leaves fall off and the plant withers. This usually happens in a "spot" in the field and then progresses. Progression and extent of damage depends on factors from time of infection to past and current weather conditions.

On cucurbits the disease is mostly seen as a white yeast-like growth on the fruit, typically on the underside in contact with the soil. The same growth can happen in the fruits of other plants as well. Before the yeast-like growth (especially on tomatoes and eggplant) you may see a large lesion made up of light and dark rings.

Some varieties are less susceptible than others so investigate tolerance when selecting. Sanitation is the key to preventing infection and limiting spread. Clean seed, transplants produced in sanitized environment, planted in a field with no recent (3+ years) history of a host crop is the best way to decrease likelihood of infection in the current crop. If you have a field that has had *Phytophthora capsici* identified in it, you must take every care NOT to move soil from it to other fields. *P. capsici* can actually "swim" (it has a little whip-like tail it uses to be motile) and when fields are wet or saturated they can move quite effectively from plant to plant to find a new host.

Biofumigation with mustard cover crop has shown suppression of P. capsici. This entails growing a biofumigant mustard in the spring or fall, chopping into small pieces 4-6 weeks after onset of flowering, and immediately incorporating the mustard then sealing the soil surface with a culti-packer and irrigation. Plant after at least 10-14 days.

A preventative fungicide application schedule is needed to ensure effective control. Alternate among targeted fungicides to manage resistance. Read and follow the label instructions, product labels can be found at the PIMS Products Database (**pims.psur.cornell.edu/**) which contains information for pesticide products **currently** or **previously** registered in New York State with NYSDEC. There are a number of products labeled for foliar applications in cucurbits and peppers such as Revus (FRAC group 40) Ranman 400SC (FRAC group 21), Phostrol (FRAC group 33) and Presidio (FRAC group 43). Presidio may be injected into irrigation water at the defined application rates or as a soil or foliar application when conditions are favorable for disease development and prior to disease onset. See the 2014 Cornell Pest Management Guidelines for more information. For organic producers, there are a few products such as Serenade Soil (biological /OMRI Listed) and Actinovate AG (also a biological/OMRI Listed) that can be applied at planting or through irrigation, see the label for chemigation requirements.

Tomatoes infected with *Phytophthora capsici.*

Phytophthora blight lesion on zucchini.

From Margaret McGrath (L.I. Fruit & Veg Update 7/3/14): Presidio is no longer effective for downy mildew presumably because of resistance, thus it is a good choice now for Phytophthora blight while the downy mildew risk is not great and only a concern for cucumber. Presidio must be applied with another fungicide (label restriction), which could be a broad-spectrum such as chlorothalonil, which will provide sufficient protection for downy mildew in cucumber. Revus is not effective for downy mildew in cucumber.

The pictures on the previous page and at left are from Cornell University/Professor Christine Smart's Phytopthora Capsici website that contains very useful information on this disease and contains high-resolution images of P.cap on various crops to help with identification. Please visit http://phytophthora.pppmb.cals.cornell.edu/photos9.html

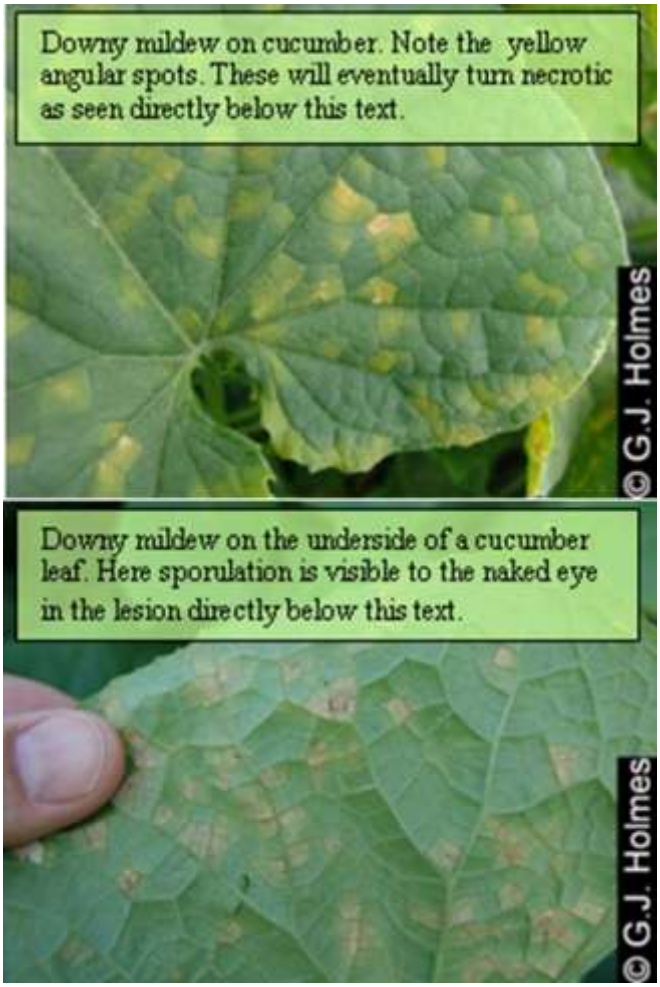
-MRU and TR

Downy Mildew Update

The good news is that we have yet to find Cucurbit Downy Mildew in any of the counties in eastern NY. The bad news is it's starting to close in around us! This week there were confirmed reports of DM on cucumbers in Maryland and Michigan and the DM forecasting system for July 15, 2014 is forecasting a "HIGH Risk for eastern sections of NC / VA / MD, DE, southeast PA, NJ, southeast NY, Long Island, and CT. Moderate Risk for cucurbits in eastern LA / southwest MS, and central and southern FL. Low risk for northwest PA, western NY, and part of southern ON. Minimal Risk to cucurbits elsewhere. OUTLOOK: Epidemic spread likely along the East Coast and in MI / ON. Transport events track to the east or northeast early this week. Slightly favorable to mixed conditions for all events on Monday will give way to favorable conditions for Tuesday's events, as the front draws closer to the known sources."

What's all this forecasting mean? It means that at the minimum you should have a protectant (chlorothalonil, mancozeb, copper) applied to your cucurbits, in particular cucumbers! Even though we have confirmed reports in states to the north, south and west of us (none in NY yet) which pretty much means we are surrounded by potential sources of spores, In conversations with one of our Vegetable Pathologists Meg McGrath, she felt that a protectant schedule is fine for now as the confirmed reports of DM are still far away and have been small, isolated plots so there isn't a lot of inoculum to spread—yet. Be sure to pay attention to the pre-harvest and re-entry intervals when using these or any other fungicides. Pay particular attention to cucumbers (all stages of growth can be affected) as they tend to be the most sensitive to the disease followed by zucchini/summer squash, melons, pumpkins followed by winter squash.

As a refresher, DM starts off as small yellowish angular spots which enlarge and eventually turn tannish brown. If you flip the leaves over, especially in the mornings, you might be able find gray fluffy tuffs of spores (see pictures above). The disease can be confused with Angular Leaf Spot (ALS) which we have seen a lot of this season so far (see photos below). For more pictures of DM infections on various cucurbit crops please visit Cornell Vegetable Pathologists Meg McGraths phot album at http://www.longislandhort.cornell.edu/vegpath/photos/downymildew_cucurbit.htm



Images of zucchini with ALS: From left to right, you can see early symptoms on lower, older leaves, then more advanced symptoms. *Images by CDB*

Organic fungicides. Downy mildew is challenging to manage in organically-produced crops due to current lack of adequately effective resistant varieties, cultural practices and approved products. However, some suppression of downy mildew was obtained with all of the products tested in evaluations conducted with cucumber on long island in 2008 and 2009. Actinovate, sporatec, and copper (nucop hb) were numerically more effective than organocide, regalia, serenade max, and sonata. Other omri-listed products include milstop, oxidate,

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Downy Mildew Update, continued from previous page

and trilogy. All organic products, in particular regalia which functions by activating plant defenses, need to be used on a preventive schedule to obtain maximum control potential.

I would also highly recommend going to the Cucurbit Downy Mildew Forecasting site for more information on outbreaks, our local risks for DM spore deposition and pictures. The site is also allowing you to sign-up for alerts to be emailed, texted, called etc, when a DM outbreak is near (you get to choose a radius of 50 – 100 miles). Once a outbreak is reported within that radius an immediate alert will be sent to you. The website is: http://cdm.ipmpipe.org/

Or you can search for "Cucurbit Downy Mildew forecasts". I would also be happy to walk you through how to read the forecast and interpret the results. **And as always, if you suspect DM contact one of vegetable educators on the sidebar on page 1 of this newsletter for correct diagnosis.** *-CDB*

Rhizoctonia and Blackleg on Potato

We have been seeing some isolated issues with potato stands over the last week, leading growers to fear late blight. So far we haven't seen late blight, but we are finding a few other diseases which typically show up during periods of wet weather. Both blackleg and rhizoctonia can affect large swatches of a field (especially low or heavy spots), but we often see them in a plant here and a plant there, which was the case over the last week.

Rhizoctonia comes in on potato seed as black scurf, the hard, black, crusty bits you can scrape off with your fingernail. In this stage the disease is dormant but when seed is planted into cold, wet soil, it will germinate and can infect the growing plant throughout the season. At this point in the season symptoms of rhizoctonia include stem lodging and wilting due to cankers, and cankers on stolons and forming tubers. As the fungus reaches the end of its life cycle it may also create a fluffy white fungal growth which covers the stems, particularly at ground level.

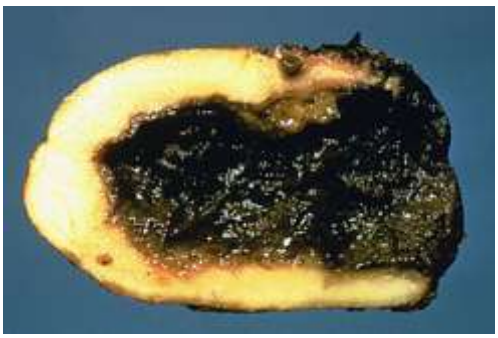
This disease is controlled by planting clean seed into warmer ground; there are no chemical measures to control it during the growing season. Unlike late blight, rhizoctonia will not spread by air and does not move quickly from plant to plant in the field. It can persist in the soil, so crop rotation along with selection of clean seed is important to break the disease cycle.

Blackleg turns the stems of individual plants black and causes them to quickly wilt. Blackleg is a bacterial disease carried on potato seed. It can infect tubers, stolons, and stems. Under favorable disease conditions, it can reduce potatoes on affected plants to mushy, stinking masses (which are often solid on the outside, except where you decide to grab the potato of course).

Potatoes can develop bacterial rots besides blackleg if damaged during hilling. If plants become mushy and collapse but the symptoms do not extend underground to the potato seed, you are probably dealing with a secondary infection, not blackleg. This is good news because your seed was not infected, though you might still lose those damaged plants.

None of the bacterial diseases will ever develop fuzzy growth on the lesions, which is a sign of fungal growth. *-CLS*

Rhizoctonia on potato tubers as black scurf.



Blackleg symptoms on potato stems and tubers. *Source: apsnet.org*

Look Before You Strike!

Everyone recognizes the classic ladybug but we actually have about 10-12 native species plus the non-native Asian one that likes to overwinter indoors. One species common to the northeast US is the pink spotted ladybug. Because she has a different shape from the classic round ladybug, and because she's usually found at the scene of the crime, she is often falsely accused! There she is, amidst the damaged puckered leaves, chomping away at the bad pests (aphids, mites, various eggs, etc) and it's easy to assume she must be the problem, rather than the solution that she really is.

Potato and eggplant growers know to hunt for the bright orange eggs of Colorado potato beetles (CPB aka, potato bugs) on the undersides of the leaves and to crush them on sight. But if you find orange eggs on other crops you might want to look twice because ladybug eggs are very similar. One identification tip is to note which plants you're finding them on. Leaf-feeding insects like CPBs lay their eggs on the host plants for their soon to be hatching larvae. So if you find clusters of orange eggs on eggplant or potato, chances are good it is those. But predators like ladybugs lay their eggs on a variety of plants where their prey is likely to be nearby. Also, side by side, ladybug eggs are smaller and laid in a more orderly fashion while CPB eggs are larger and tend to be more jumbled. But when in doubt, use the host as the key. *-ADI*

Pink spotted ladybug or just spotted ladybug (*Coleomegilla maculate)*, feeding on an aphid. *Photo credit www.ent.iastate.edu*

Here she is, feeding on the eggs of CPB (Colorado potato beetle).

Photo credit: http://ipm.missouri.edu/

At left, CPB eggs in a characteristic, jumbled arrangement.
Photo credit: http://ag.umass.edu/.

Above: Smaller and tidier ladybug eggs. *Photo credit http://entomology.tamu.edu/*

UPCOMING WORKSHOP:

What Does the Price Crystal Ball Say? July 31 at 6:30 pm

Holmquest Farm, 516 Spook Rock Rd, Hudson, NY 12534 (see map at https://goo.gl/maps/xbPpc)

Steve Hadcock Extension Educator with Capital Area Ag and Horticultural Program and Bob Weybright, Business Development Specialist with ENYCHP will provide an overview of historical pricing for a variety of vegetables and fruits. They will also share retail pricing data to date, and discuss strategies for pricing for the rest of the 2014 season. Light supper at 6:15 pm; cost is $5 per person.

To help with meal plans, please register by July 29. You may also send payment (check payable to CCE ENYCHP) to the following address, and include the following info: Name, Address, Phone, Email and number of people attending. Mail to: Marcie Vohnoutka, CCE Rensselaer Co., 61 State St., Troy, NY 12180.

Questions? Contact Marcie Vohnoutka at 518-272-4210 or email at mmp74@cornell.edu.

This workshop co-sponsored by Hudson Valley Agricultural Development Corporation.

Sweet Corn Pest Trap Catches for the week ending July 13					
Location	ECB-E	ECB-Z	Corn Earworm	Fall Armyworm	W. Bean Cutworm
Albany	1	1	N/A	N/A	N/A
N. Clinton	0	2	0	0	0
C. Clinton	0	0	0	0	0
Columbia	2	0	N/A	N/A	N/A
Dutchess	2	0	2	N/A	N/A
Fulton	0	0	N/A	N/A	N/A
Orange	2	0	0	2	0
Saratoga	0	0	N/A	N/A	N/A
Schoharie	0	0	N/A	N/A	N/A
C. Ulster	0	0	0	0	0
N. Ulster	0	0	2	N/A	N/A
C. Washington	1	1	N/A	N/A	N/A
N. Washington	0	0	N/A	N/A	N/A

2014 Weather Table—This chart is compiled using the data collected by Northeast Weather Association (NEWA) weather stations. For more information on NEWA and a list of sites, visit http://newa.cornell.edu/ This site has information not only on weather, but insect and disease forecasting tools that are free to use.

2014 Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50^{O} F			Rainfall Accumulations		
Site	2014 Weekly Total 7/7 - 7/13	2014 Season Total 3/1 - 7/13	2013 Season Total 3/1 - 7/13	2014 Weekly Rainfall 7/7 - 7/13 (inches)	2014 Season Rainfall 3/1 - 7/13 (inches)	2013 Total Rainfall 3/1 - 7/13 (inches)
Albany	**163.5**	**1262.1**	**1222.0**	**1.65**	**7.39**	**23.05**
Castleton	**154.5**	**1195.7**	**1255.6**	**1.45**	**8.61**	**17.80**
Clifton Park	**144.0**	**1136.0**	**1174.8**	**1.52**	**9.26**	**23.71**
Glens Falls	**139.1**	**1142.7**	**1053.5**	**1.36**	**10.94**	**17.39**
Guilderland	**143.5**	**1148.0**	**1163.0**	**N/A**	**N/A**	**N/A**
Highland	**165.6**	**1285.0**	**1335.5**	**1.99**	**11.61**	**17.24**
Hudson	**165.3**	**1284.1**	**1297.4**	**0.85**	**9.83**	**15.57**
Marlboro	**167.4**	**1225.9**	**1276.3**	**0.84**	**12.78**	**18.24**
Montgomery	**169.6**	**1251.7**	**1235.0**	**0.74**	**14.46**	**16.92**
Monticello	**164.3**	**980.4**	**976.5**	**N/A**	**N/A**	**N/A**
Peru	**135.3**	**1074.4**	**947.3**	**0.57**	**10.13**	**17.02**
Shoreham, VT	**146.9**	**1114.3**	**1151.4**	**0.33**	**9.22**	**17.79**
Wilsboro	**137.9**	**1035.1**	**1054.2**	**N/A**	**N/A**	**19.18**