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Weekly Vegetable Update

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Regional Updates:

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

We had a heavy rain last week, maybe a bit too much for some growers but at least it was slow and steady so it really soaked in. It had actually gotten rather dry in many locations so most growers welcomed the rain, especially since it was preceded and followed by several warm days. Crops and weeds are surging upwards! Bugs are showing up too. Not only vegetable pests but the grower pests: mosquitos and black flies. Some vegetable pests are appearing a little later, nicely in sync with the crops that were planted later than usual this year. Flea beetles and striped cucumber beetles are at their peak on young seedlings, Colorado potato beetles are on the move as well. Rose chafers are mostly a pest of cut flowers (especially white peonies and roses) but soon they will be followed by Japanese beetles so get ready.

We have a few new locations of the leek moth this year and the first place growers usually notice them is on their garlic scapes, which are just starting to emerge this week up here. The caterpillar of leek moths do characteristic damage and stay in the folds of leaves or inside the hollow leaves of onion and shallots. We are very interested to know where this new, invasive pest is appearing so please contact Amy Ivy if you see anything suspicious. We also have a new Leek Moth Pocket Guide, available for free to any grower.



Characteristic leek moth damage emerging garlic scapes. As the scapes grow the larvae tunnel into them and 'ride' them up as they elongate.

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

Precipitation has been extremely variable in the capital district, with some farms experiencing water stress and others dealing with extreme rain events measuring in the inches. Insects are arriving with pockets of intense flea beetle pressure, early emergence of striped cucumber beetles, and apparently slow emergence of Colorado potato beetle. Thrips are present on onions, but are often still below threshold. The take home message is that everyone should be scouting, as insects are here and when temperatures spike populations could too.

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

Last week was unseasonably cool and we had drizzle or rain every day. This was perfect weather for development of some diseases such as late blight, downy mildew (DM) and bacterial speck. On Sunday I found downy mildew on my impatiens at home and now I'm wondering about the yellowing on my basil plants particularly in light of the fact that DM has been found on basil plants being sold to gardeners at box stores in the northeast. Each of these DMs are host-specific, meaning the DM that infects basil will not go to cucurbits, but be aware that conditions have been conducive to the development of DM disease on various crops (more on this inside). Out in the commercial fields, I have seen more bacterial speck and canker on tomatoes. More on those diseases inside this issue. In sweet



White sporulation of Downy Mildew on undersides of impatiens leaves. This DM is host-specific to impatiens.

corn we have a few fields of earliest plantings coming into full tassel early this week. The ECB pressure has been moderate up to this point.

Pruning Tomatoes for 'The Strong Y'

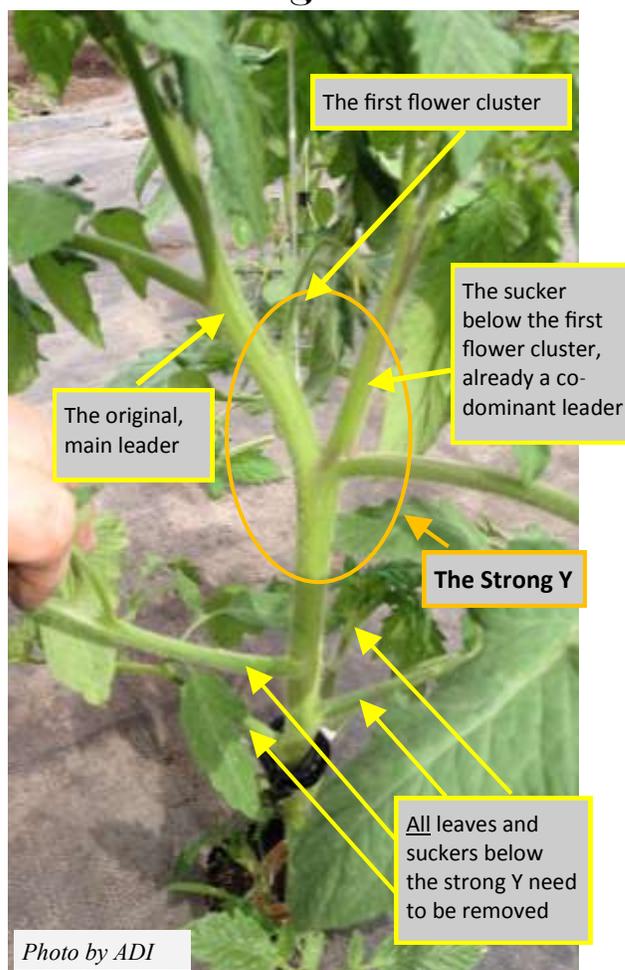
Tomatoes grown in the field or in tunnels do not need their lowest leaves. By removing them you increase air circulation and direct the plants' energies to the leaves and fruit that do matter. Detailed pruning is not practical in large field plantings but even a quick stripping of the lowest leaves can help.

In tunnels or in smaller field plantings, a little time spent on pruning will make the plants easier to work around with better air flow. For determinate types and indeterminates that will be trained to a double leader, the Strong Y method is a simple way to approach this task. See the notations in the photo. The earlier the suckers are removed, while they are still young and small, the better.

Determinate plants: remove all leaves and suckers below the Y then begin with basket weave support.

Indeterminate plants: same as above, then maintain only 2 leaders.

With indeterminate plants trained to a single leader do not follow this method. To train those plants remove every sucker that forms and remove all leaves up to the first fruit cluster, continuing as the plant grows and harvest progresses. *-ADI*



Damage to Onions at Field Edges

For whatever reason, this year has seen an increase in cutworm and muskrat damage to onions at the edge of the field. Cutworms (way back in my scouting years) used to do much more damage than they have in the last few years, but there were several complaints these past weeks.

Is it a Muskrat or a cutworm?

- Both leave little but the onion neck sticking out of the ground.
- Both leave it a bit ragged at the edges on the neck where they fed.
- Both consume mostly at the edges of fields and will pretty much go along one row.
- The big difference is that the muskrats eat what they kill (they eat all the leaves) while the cutworms leave the leaf as if they were timbering it like a tree.



Cutworm next to damaged onion seedling.

Photo by Whitney Cranshaw, Colorado State Univ. Courtesy of Bugwood.org.

- However, if the onions are small and you don't know the damage until late in the day the shriveled leaf may have blown away or disintegrated completely leaving you to think "muskrat!".

- At the ends of the damaged areas, dig around the base of the next healthy onion to see if you can find the cutworm. They hang out there waiting for night to feed. They are not fond of heat or sun.

- The plus is that usually cutworm damage only occurs for a couple of days and they move-on. Not so for muskrat feeding.

There are no effective controls for cutworms since they hide in the soil protected from pesticides during many hours of the day. *-MRU*

Hops Scouting Report

By Jason Townsend, Cornell Cooperative Extension of Madison Co.

I want to remind everyone that June is a great time to have hops tested for petiole nutrient analysis. We are trying to build a base of information. For details go to this month's newsletter on the Northeast Hop Alliance website (northeasthopalliance.org).

Downy mildew is showing up at low densities in many hop yards. A few yards are seeing more widespread outbreaks, so keep an eye on basal spikes. Some growers have begun pruning all basal shoots and leaves to prevent the disease from spreading up the bines.

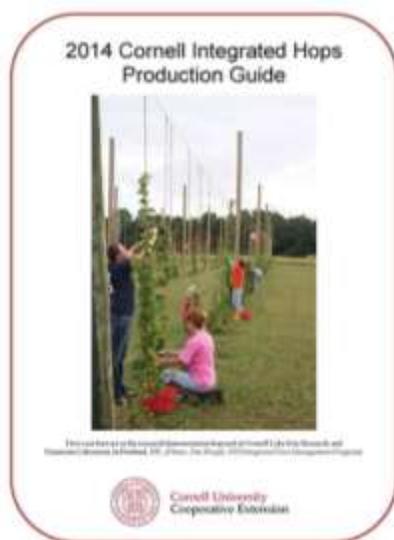
I observed more beneficial arthropods than pests, but did detect some slug and snail damage to lower leaves. Some lepidopteran larvae, including those of Eastern Comma, are showing up at VERY low levels in yards. Little to no leaf hopper pressure yet, and no sign of two-spotted spider mites or hop aphids to date.

Weeds are a major issue in many hop yards. Hops are a tough plant, but high weed pressure will rob bines of both nutrients and water, ultimately impacting yields. The dry, windy weather is leaving many yards very dry. It is important to have an irrigation plan in place for dry periods. Many hop yards are currently in need of irrigation.



Steve's Notes on Water & Nitrogen

We have noticed that growers seem to be irrigating only when things get extremely dry. Yes, hops will survive on low water, but keep in mind they require a good deal of nutrients. Low water means the plants will not be able to pull in the necessary amount of nitrogen and other nutrients. They need 1 1/2 inches of rain a week. You should be putting on the second or third shot of nitrogen before the end of June. A mature plant needs at least 150# of Nitrogen to the acre for the season so the second 75# needs to go on before burr formation. Side dress urea 46% or soluble fertilizer though the drip. Some growers foliar feed, but this requires some care and accuracy not to burn the plants.



2014 Cornell Integrated Hops Production Guide

Topics covered include site selection, nutrient management, use of cover crops, selecting varieties, and managing common hopyard pests. Also included is information on selecting, operating, and maintaining pesticide spray equipment.

The *2014 Cornell Integrated Hops Production Guide* can be obtained through some local Cornell Cooperative Extension offices or directly from the Cornell Store at Cornell University. To order from the Cornell Store, call 800-624-4080 or order online at <http://store.cornell.edu/p-187979-2014-cornell-integrated-hops-production-guide.aspx>. Cost for the *Guide* is \$28 plus shipping.

Bacterial Diseases of Tomato

I mentioned last week that we've already seen bacterial speck and probably bacterial canker in field grown tomatoes. Bacterial speck, spot and canker have been increasing in occurrence and severity in the northeastern United States. Bacterial canker is presently the most serious disease in production systems. Below are some tips on identification and management of these bacterial diseases.

Bacterial Speck (*Pseudomonas*)

- dark blisters on fruit
- development favored by cool moist conditions
- dark lesions on leaves with discrete yellow halo

Bacterial Spot (*Xanthomonas*)

- dark, scabby lesions on fruit
- can start on or spread to peppers
- favored by warm weather
- often misdiagnosed as speck

Bacterial Canker (*Clavibacter*)

- dark lesions on leaves starting at the edge
- light blisters on fruit cankering of branches.
- systemic infections can kill plants



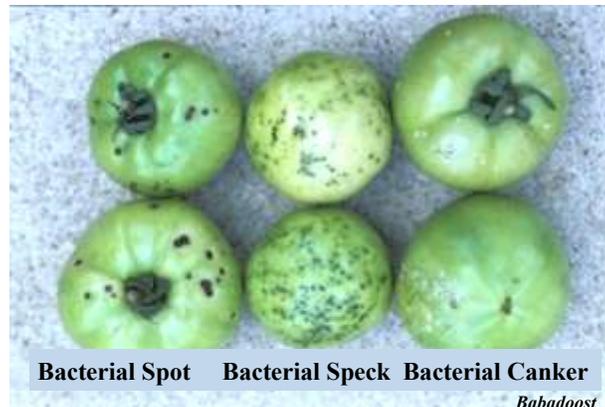
Bacterial Speck on tomato fruit and leaves. Photo by TR



Vascular discoloration caused by bacterial canker of tomato.

Image from Plant Health Progress article: [Evaluation of Foliar Sprays of Bacteriophages for the Management of Bacterial Canker in Greenhouse Tomatoes](#)

The first infection on the farm is typically introduced through infected seed or plants. Once introduced on the farm, it can recur when rotation or sanitation practices are not adequate OR through new infections on seed or plants. These organisms are very difficult to detect on seed at low levels and can still result in a field epidemic. Plants may have no symptoms for 6-8 weeks *or longer!* - TR



Bacterial Spot Bacterial Speck Bacterial Canker

Babadoost

Management of Tomato Bacterial Diseases: Speck, Spot and Canker

The first defense starts with seed and greenhouse sanitation, but we're way past that stage now. If you stake and tie your tomatoes, make sure any stakes you use are cleaned with a disinfectant. These include, Green-Shield, OxiDate, ZeroTol and sodium hypochlorite or common household bleach. Bleach is still one of the most inexpensive materials to use and is effective.

Whatever disinfectant you use, be sure to remove any dirt or debris first. Then, rinse the stakes followed by dunking them in a tank with the disinfectant material, then rinse them again. The problem with any of these disinfectants is that they are tied up by organic matter such as dirt and debris, so it's recommended that you change the water often in order to maximize its effectiveness. Also, try not to prune or send workers through the fields when they are wet as this will help spread the disease.

Tannos has some suppressive activity on Speck, Spot and Canker, but I think using copper plus mancozeb is just as effective. The reason for mixing the two together is the addition of the mancozeb increases the effectiveness of the copper by releasing more of the copper ions. Gavel is also labeled due to the mancozeb component of the material. In an organic system the grower is limited to OMRI approved copper compounds such as Champ or Cueva.

When affected plants are found throughout a field, not more than 100 plants per acre should be removed in an attempt to restrict spread. Pulling out more is of little benefit. No resistant varieties are available. A minimum of two-year rotation for speck and spot is recommended and three years for canker. -CDB edited by TR

Source: 2014 Cornell Integrated Guidelines for Vegetable Production

Basil Downy Mildew Threat

We've been notified that basil infected with the downy mildew disease has been identified in box stores in the Northeast. It is likely that infected plants have been purchased by gardeners and are now planted outdoors where spores can blow over to commercial plantings. The weather last week, overcast and rainy, was conducive to disease development. Now is the time to be proactive, scout your plantings and apply appropriate controls. Sweet Basil is one of the more susceptible varieties so if you are growing it, watch it! **If you see symptoms on your basil please let us know. Feel free to email me and send pictures to tr28@cornell.edu.** The following is an update from Margaret Tuttle McGrath of the Department of Plant Pathology and Plant-Microbe Biology, Cornell University Long Island Horticultural Research & Extension Center. - TR

Basil with Downy Mildew Being Sold to Gardeners

Reminiscent of the late blight outbreak of 2009, basil plants with Downy Mildew are being found at big chain garden centers (Long Island, CT, TN, WI, and several locations in Ontario). Reports of the disease are coming in from gardeners; in some cases associated with purchase of locally-produced plants at local nurseries rather than big chains (case here on LI). I've also gotten reports recently from FL, DE, VA, WV, KY, and NC, plus ME and NJ (later 2 were growers). Please be on the look out for this disease!



Symptoms on potted plants for sale to gardeners.

Photo by M. McGrath



Yellowing leaf is more typical than the first image with collapsed leaves. *Photo by M. McGrath*

More information about this disease and **management** at:

<http://vegetablemdonline.ppath.cornell.edu/NewsArticles/BasilDowny.html>



Like the late blight pathogen, this downy mildew pathogen produces an abundance of spores easily dispersed by wind. *Photo by M. McGrath*

WEBSITES OF INTEREST FOR VEGETABLE GROWERS:

- Diagnose pest and disease problems using color pictures: <http://vegetablemdonline.ppath.cornell.edu/>
- Cornell *Guidelines* for fruit and vegetables: <http://store.cornell.edu/c-875-guidelines.aspx>
- USDA Fruit and Vegetable Market News: <http://www.marketnews.usda.gov/>



Potato Leafhoppers Have Arrived

Early this week we found our first Potato Leafhoppers in a very early planting of potatoes, and I'm not surprised as this usually coincides with first cutting of hay, especially alfalfa fields. So, it's time to start scouting your potatoes (and beans) as the thresholds (especially susceptible varieties) is very low and if left unchecked can cause some serious damage. Potato leafhoppers survive on over 200 species of plants and migrate from the south. Once they are in the region, they often move from alfalfa onto potatoes and other plants such as beans after the field is cut. Keep in mind that there are 3–4 generations of leafhopper each season here so continued vigilance and scouting is key!

Key characteristics: Adult is wedge-shaped, iridescent green in color, and 1/8 inch long (Figure 1). The body is widest at the head. Eggs are laid singly on the underside of leaves. Both adults and nymphs are very active, running forward, backward, or sideways. The symptoms produced by feeding have been termed "hopperburn." Leafhopper damage is

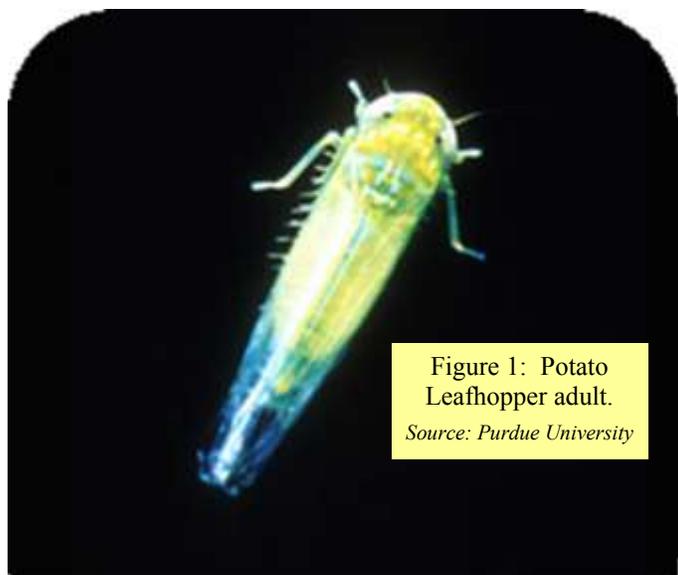


Figure 1: Potato Leafhopper adult.

Source: Purdue University

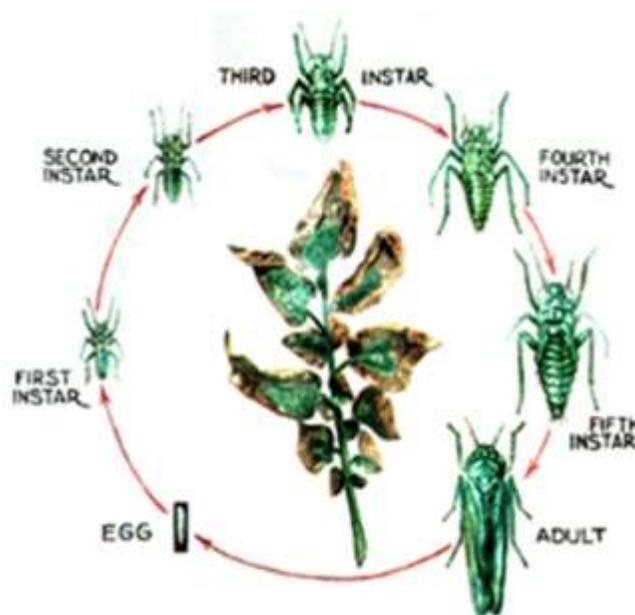


Figure 2: Leaf hopper life cycle.

Source: Kentucky State University

caused when the insect continually probes the leaf tissue, injecting a toxin via their saliva into the plant cells and then sucking the contents back out. The continual probing and saliva injection eventually causes blockages in the vascular tissues of the leaf. Most commonly, hopperburn will be found first on the leaf tips and margins; leaf tips will become wilted, usually turn yellow in color and eventually turn brown, and die (Figure 2). In beans, the leaf becomes distorted in shape. The entire process takes four to five days.

Scouting/thresholds: Examine tractor radiator and air intake screens for adult leafhoppers during cultivation and hilling operations or check for the presence of adults by using a sweep net or by placing yellow sticky traps near the field edges. Nymphs are best sampled by visual examination of the undersides of leaves on the lower half of the plant. **Threshold: treat when more than one adult is found per sweep or more than 15 nymphs are found on 50 leaves.** (Source: CU IPM Guidelines for Vegetables)

The most susceptible varieties tend to be the early ones such as Dark Red Norland, Superior and Yukon Gold. Also, russet varieties tend to be more susceptible and less tolerant of leafhopper damage. Scout all your potatoes, but spend extra time in those earlier maturing varieties. There are several varieties of potato that show higher tolerance or even resistance such as Elba, Prince Hairy and King Hairy. Cornell staff studied which varieties are more susceptible than others for hopper damage. That study can be found at: http://nysipm.cornell.edu/reports/ann_rpt/AR05/projects/seaman2.pdf. -CDB

Sweet Corn Pest Trap Catches		
Location	ECB-E	ECB-Z
Albany	0	4
Clinton	n/a	n/a
Columbia	2	8
Dutchess	5	0
Fulton	0	0
Orange	5	8
Saratoga	0	0
Schoharie	0	0
C. Ulster	5	8
N. Ulster	6	1
C. Washington	5	0
N. Washington	5	4

2014 Weather Table—This chart is compiled using the data collected by Northeast Weather Association (NEWA) weather stations. 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.

2014 Weekly and Seasonal Weather Information						
Site	Growing Degree Information Base 50 ^o F			Rainfall Accumulations		
	2014 Weekly Total 6/9 –6/15	2014 Season Total 3/1 - 6/15	2013 Season Total 3/1 - 6/15	2014 Weekly Rainfall 6/9 –6/15 (inches)	2014 Season Rainfall 3/1 - 6/15 (inches)	2013 Total Rainfall 3/1 - 6/15 (inches)
Albany	112.7	629.7	586.5	1.52	8.91	16.10
Castleton	106.9	601.0	589.6	1.74	10.35	12.67
Clifton Park	98.4	568.1	541.7	0.31	9.26	19.18
Glens Falls	106.1	595.1	502.5	2.45	10.94	13.90
Guilderland	101.5	584.0	529.0	0.31	1.62	3.44
Highland	107.9	666.3	660.6	1.41	11.61	11.23
Hudson	103.9	654.9	603.1	1.23	9.83	12.89
Marlboro	101.7	608.2	619.0	1.28	12.78	13.64
Montgomery	116.6	634.3	596.5	2.41	14.46	13.69
Monticello	86.4	446.4	445.0	N/A	N/A	N/A
Peru	106.4	533.7	534.2	2.17	10.13	9.20
Shoreham, VT	106.5	548.5	559.8	1.68	9.22	11.41
Wilsboro	101.5	499.4	506.0	0.12	4.26	12.25

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