Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Weekly Vegetable Update

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Regional Updates:

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

We had cold nights in the 30's earlier this week followed by this hot, muggy spell mid-week. Lake Placid had frost Sunday and Monday morning, only a few frost pockets had a very light frost in the Champlain Valley, not enough to cause damage.

Some pumpkin growers have experienced very poor fruit set, virus is widespread this year. The cool weather earlier this week and last have significantly slowed down ripening of tomatoes, and other warm season crops.

Cover crops are being planted as crops are coming out.

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

Roadside stands are quickly making the transition into fall, with mums, pumpkins, and apples coming on in full force. Winter squash are ripening a little slower than people would like to see, given the cool temperatures we have been having at night. But as they do come in they continue to look very nice.

A few very isolated areas of frost were reported in the western edge of our region but nothing seems to have been damaged.

Many of the tomatoes that are being picked now have significant stinkbug feeding. Keep controlling insect pests on crops that you plan to hold onto!

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

Fall weather has come in early in the Mid Hudson Valley. The season feels short this year and many plantings are well on the way to seeing a disc. Disease has really grabbed a hold in some tomato and cucurbit plantings. In tomatoes I see a lot of late blight which I believe is throughout the region now, so unprotected plantings and some organically managed plantings are infected to some degree. Downy mildew is showing up in a big way in cucumber plantings and powdery mildew in squash has been a battle to control. Spider mites are common now in eggplants and tomatoes. Brown marmorated stink bugs are in peppers more this year than in the past, watch your hot peppers too, I see lots of them in there.

On With the Next Crop!

One of the challenges in growing a succession of crops in high tunnels is having to remove the current crop to make room for the next, even if the current crop is still going strong. Tomatoes are a good example. In most high tunnel situations tomatoes continue to ripen through September, even into October. This is may be great if you have a strong market into the fall and can still get a good price for them. But in September, the price of tomatoes drops in many fresh markets as they become flooded with tomatoes.

Tunnel tomatoes are in full production by early fall. Removing them to make room for fall and winter greens can be a difficult decision. *Photo by ADI*

Some growers are turning to fall and winter crops to expand their product line and marketing season. To get those crops planted in time you need to remove your tomatoes while they are still in full production. This is hard for many growers to do! Try crunching some numbers to help you decide. Consider how much more you can expect to bring in from your remaining tomato plants, then compare that with what you could bring in from a fall crop of greens in that same space. The results will vary with your particular market options, prices you can charge, and your own preferences for growing.

Either way you go, there are still some steps you can take whenever your current high tunnel tomato crop is finished before either closing your tunnel for the season or planting a fall crop:

- Remove all plant debris from the tunnel.
- To reduce the volume of plant tissue you need to handle with tomatoes that are trained up a trellis or string, cut the plants off at the soil line and leave them hanging on the support for a week or more until they dry out. The withered vines are lighter and less bulky than fresh vines.
- Sanitation is critical to avoiding or reducing future problems. Remove any stakes and disinfect them in a 10% bleach solution. Remove all trellis material after stripping the plants from them.
- For more information about various sanitizing products, both conventional and organic visit: http://extension.umass.edu/floriculture/fact-sheets/cleaning-and-disinfecting-greenhouse
- If groundcloth was used, roll it back and remove any remaining weeds.
- This is an excellent time to send in a soil sample, to check for pH and nutrient levels. If test results indicate adjustments are needed, now is a good time to work them into the soil. Including a soluble salt test can provide useful information if you've been cropping and fertilizing in that soil for a while. *-ADI*

Garlic: Start with Great Seed and Don't Ruin it

Growers are looking towards the planting season, which means fine-tuning the fertility program, making sure the site is optimized, and keeping seed cool and dry until it's time to crack and plant. This sounds like a pretty easy plan, and one really short article! But, for the sake of fun, let's go through what each of these pieces of the puzzle might look like.

Garlic infested with wireworms. Wrapper leaves have been eaten off. *Photo by CLS*

Site Optimization: It is possible to grow garlic very well in a tremendous variety of soils, from heavy clay to coarse sand. One key is to provide enough water for ample growth but not so much that the roots are stressed and diseases are favored. On clay soils this might mean using raised beds, planting shallower and mulching, and using ample cover crops and compost to gradually improve the soil. On sandy soils it might be better to plant a little deeper, forego raised beds and focus on moisture retention (again, through the use of mulch, cover crops, and compost). Pay close attention to your soil types and your field characteristics, and plan accordingly. If you have questions about your site, feel free to call.

Think carefully about the history of a field before choosing your planting site. This year we had numerous accounts of very severe wireworm infestations. By the time I get a call about wireworms in garlic, it's far too late to do anything.

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Garlic: Start with Great Seed and Don't Ruin it, continued from p. 2

The time to deal with wireworms is before the garlic goes in the ground. Wireworms are the larval form of the click beetle, and persist in the soil for up to 6-7 years. Populations are highest in recently turned under sod and gradually decrease over time. I recommend waiting at least 2 years if possible before planting into ground that has been sod for an extended period of time. If you have to go in sooner, using multiple plantings of buckwheat and incorporating the green matter the summer before planting might help break up the wireworms and more quickly reduce populations. It probably won't completely solve the problem, if there is one. This is an issue better avoided than combatted.

A final consideration which can be addressed prior to planting is perennial weed control. Pay particular attention to quack grass, which can actually grow into the forming garlic heads. It will be harder to fully control perennial weeds organically this late in the season, since they already have some reserves built up, but you can at least set them back. Conventional growers can use a well-timed herbicide application (after the first frost is ideal) to take care of many perennial weeds. Look for a complete article on fall weed control in next week's newsletter.

Fall Fertility Recommendations:

Phosphorus and potassium should be optimized in the fall using a soil test. The guidelines are listed in the table below. The debate on nitrogen application rates and timing has continued. Results of this year's trials have not been fully analyzed yet, but based on what we know so far we can say that the crop doesn't need more nitrogen in the fall than is available in the actual clove. This doesn't mean that you can't apply a very slow-release nitrogen form such as alfalfa or peanut meal in the furrow at planting, with the expectation that nitrogen will be available in the spring. It simply means that synthetic and quick-release nitrogen fertilizers will be wasted in a fall application.

Seed Storage and Preparation

We might finally have some hurricanes moving our way, which can lead to just the sort of prolonged high-humidity conditions that cause increased fungal growth on garlic in exposed storage areas. In these last few weeks before harvest, make sure garlic is kept as close to 70 percent humidity and 70 degrees (or lower) as possible. Keep garlic heads intact to reduce weight loss and exposure of each clove to aerial fungal spores. Even beautiful, healthy garlic will break down if storage conditions are poor.

When it's time to crack the garlic and plant, consider a few more ideas:

1) **Cull bulbs or cloves with symptoms or damage when cracking:** Carefully feel and look at each clove during this process, and remove anything that looks suspect. Discard cloves with unhealthy looking basal plates, with dents or lesions on or under the wrapper leaf, and any cloves that feel unusually light. Do not compost these cloves---either bury them away from the field or throw them away.

2) **Treat all seed with a surface sterilizer:** Sterilizing the surface of the cloves will NOT control GBN! However, it will reduce issues with surface molds such as aspergillus and will kill surface penicillium. This is a best practice for all garlic. You can either use a 10% commercial bleach solution (1 part bleach and 9 parts water) or you can use an OxiDate dip (32 oz per 25 gallons water). Remember to test bleach and OxiDate dips for activity if treating large amounts of seed, and replace solution when activity decreases. Otherwise you are simply moving diseases around in water. Plant cloves immediately after dipping, not after they have dried back out. - *CLS*

Garlic	Nitrogen (N) Lbs/A	Phosphorus (P2O5) Lbs/A					Potassium (K2O) Lbs/A				
Soil Test Results		**Very low <3lbs/A**	**Low 3-6**	**Medium 7-13**	**High 14-40**	**Very High >40**	**Very low <50**	**Low 51-100**	**Medium 101-200**	**High 201-300**	**Very High >300**
Incorporate at planting	0	200	150	100	50	0	200	150	100	50	0
Sidedress before emergence	25-50	0	0	0	0	0	0	0	0	0	0
Sidedress 2-3 times, 3-4 weeks apart	25-50 divided among sidedressings	0	0	0	0	0	0	0	0	0	0
TOTAL	50-100	150	100	75	50	0	150	100	75	50	0

Black Rot in Crucifer Crops

It seems that Black Rot is showing up more often in cabbages, cauliflower, and broccoli. This past week I saw a particularly bad outbreak that made me think it would be a good time to review the source, spread and management of this disease. Black rot disease is caused by the bacteria *Xanthomonas campestris*. Infections can be systemic in seedlings or localized in more mature plants. Seed can be infested with the bacteria on and within the seed coat and a source for infecting young seedlings. Infected seedlings may not show symptoms for some time so it's easy to transplant seemingly healthy plants into the field and symptoms to show up later. Bacteria from infected plants (including cruciferous weeds such as wild radish and mustard) and other sources such as equipment, debris in soil can also enter plants through openings on the leaf margin. These localized infections produce the classic V shaped lesion. Insect feeding can be another route of entry for the bacteria which may produce a more irregularly shaped lesion. When you cut through the leaves or stems of infected tissue you may see the classic black discoloration the bacteria produce in the vascular tissue. Warm, wet conditions favor black rot development and expression of symptoms. Rain and heavy fogs or dews and day temperatures of 75° to 95°F are most favorable. Under cool, wet conditions infection can occur without development of symptoms. Consequently, transplants grown at low temperatures may be infected but symptomless. The bacteria do not spread below 50°F or during dry weather.

Classic "V" shaped lesion caused by black rot bacterial infection through openings in the leaf margin of this cauliflower plant. *Photo by TR*

Transplants with black rot symptoms are shown above. While these plants are clearly diseased, it is important to remember that bacteria can be invading plants even if no symptoms are observed. *Photo: Holly Lange, Cornell University*

Once plants are infected it is difficult to control this disease especially under wet conditions. Copper compounds sprays under dry conditions can provide some control. All crucifer crops are susceptible to this disease but kale and radish are less easily affected. Many cabbage varieties have some level of tolerance to black rot while most broccoli and cauliflower varieties tend to be susceptible. See Section 15.1 of the Cornell Vegetable Guidelines (http://veg-guidelines.cce.cornell.edu/15cabbage.html). Given limited chemical control options and the susceptibility of crucifers to black rot, "prevention is the best line of defense" according to Christine D. Smart & Holly W. Lange of Cornell University who coauthored the following piece excerpted from the July 18, 2013 eXtension article Managing Black Rot of Cabbage and other Crucifer Crops in Organic Farming Systems found at (http://www.extension.org/pages/29925/managing-black-rot-of-cabbage-and-other-crucifer-crops-in-organic-farming-systems#.Ui8pRsZQHpU)

There are three preventative measures that can reduce the risk of a black rot outbreak:

- **Start with clean seed** – It is known that the bacterium that causes black rot can survive on and in seed. Hot water treatment can be used to destroy the bacteria that may be infesting your seed. If you have purchased seed that NOT been hot water treated, you can treat the seed yourself, but it is critical to do it correctly. For cabbage and Brussels sprouts, soak seed for 25 minutes in 122°F water; for Chinese cabbage, broccoli, cauliflower, collard, kale, kohlrabi, rutabaga or turnip, soak for 20 minutes in 122°F water. Mustards, watercress and radish are more susceptible to heat damage, and should be soaked for 15 minutes in 122° F water. There is an excellent fact sheet on hot water treatment of seed at http://ohioline.osu.edu/hyg-fact/3000/pdf/3086.pdf . Treat a small number of seeds the first time to ensure that the treatment is not reducing seed germination. Seed can be tested by contacting the Georgia Dept. of Ag., Plant Industry Division http://agr.georgia.gov/seed-fertilizer-feed.aspx)

- **Use clean transplants** – If you are growing your own transplants, make sure that the greenhouse has been cleaned well prior to starting transplants—even if you had no disease last year! Bacteria have a remarkable way of surviving in weeds, organic matter, or nooks and crannies, so if possible, get rid of all weeds, use new or disinfected flats, and disinfect benches and tools prior to the start of a new season. Be sure to keep foliage as dry as possible, and do not brush or trim wet plants. Use pathogen-free growing media. Compost added to growing media can be a source of inoculum if diseased plant matter was added to the pile.

- **Rotate with non-crucifers** – Because the black rot bacterium can survive in debris in the soil, it is important to rotate away from crucifer crops for a minimum of three years. *-TR*

Other Sources: Black Rot of Crucifers Cornell University Fact Sheet Page: 730.40 Margaret Tuttle McGrath Department of Plant Pathology http://vegetablemdonline.ppath.cornell.edu/factsheets/Crucifers_BR.htm

Sweet Potato Harvesting

Those of you growing sweet potatoes have started to harvest and I thought it might be worth mentioning a few tips for harvesting, curing and storing your roots. The one thing that I have to continue to remind myself of is that sweet potatoes are nothing like your standard Irish potatoes. In fact, they have very little in common. Sweet potatoes are much more delicate and require more attention when harvesting and storing.

Sweet potatoes can be dug at any time roots reach a marketable size. You can start checking them any time and harvest as soon as you are ready and the crop looks like you want it to.

Curing sweet potatoes in a high tunnel improves flavor and seals any wounds.
Image UMass Vegetable Program

It is very important not to let the roots get exposed to cold temperatures (less than 50°F). I know that some areas have already gotten their first light frost and the nights have been into the 40's in some areas so it is time to get digging. 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.

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.

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.

If possible when picking up your sweet potatoes, use some kind of slotted crate or small bin (apple bins, milk crates etc.) 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.

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. Ideal curing conditions are a temperature of 85°F with 90% humidity for 5-7 days. The curing process allows any cuts, abrasions or bruises to heal which allowing for better storability of roots. 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 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 as possible.

Once your sweet potatoes are cured, store as close to 60°F as possible, but no lower, and maintain a high humidity. If done properly, sweet potatoes should easily store into January or even February. *–CDB*

Key postharvest differences between Irish and Sweet Potatoes

- Sweet potatoes are cured warm and moist: 85°F and 90% humidity for 5-7 days
- Sweet potatoes are stored warmer— at 55°F
- Sweet potato skins are very thin and do not "set" after vine kill

Grower Classifieds

Pumpkin Auction: The Mohawk Valley Produce Auction's annual pumpkin auction is Tuesday, September 17th. Bidding starts at 10 a.m. Buy or sell. 840 Fordsbush Road, Fort Plain, NY 13339. Call 518-568-3579.

Oat straw for sale: Washington County. Small square bales. Contact Albert Sheldon for more information at 518-796-6564.

Certified organic oats for sale, feed or seed: $220/ 1000 lb. tote bag. Pick-up, delivery available, add trucking. Contact Chris Cashen, 518-929-5782

Sweet Corn Trap Catches

Location	ECB-E	ECB-Z	Corn Earworm	Fall Armyworm	W. Bean Cutworm
N. Washington	8	7	0	0	0
C. Washington	0	0	0	0	0
N. Rensselaer	0	2	0	0	0
C. Fulton	0	0	0	0	0
Schoharie	0	0	0	0	0
N. Columbia	0	0	12	5	2
Saratoga	0	0	0	0	0

Weekly and Seasonal Weather Information

	Growing Degree Information Base 50^{O} F			Rainfall Accumulations		
Site	**2013 Weekly Total** 9/04—9/10	**2013 Season Total** 3/1 - 9/10	**2012 Total** 3/1—9/10	**2013 Weekly Rainfall** 9/04—9/10 (inches)	**2013 Season Rainfall** 3/1—9/10 (inches)	**2012 Total Rainfall** 3/1—9/10 (inches)
Albany	**89.0**	**2299.4**	**2652.8**	**0.45**	**22.02**	**19.73**
Castleton	**85.6**	**2204.6**	**2880.8**	**0.16**	**22.72**	**19.82**
Chazy	**56.6**	**2081.7**	**2863.2**	**0.59**	**21.30**	**17.58**
Clifton Park	**78.7**	**2285.1**	**2596.3**	**0.77**	**24.72**	**22.71**
Clintondale	**101.0**	**2577.1**	**2166.5**	**NA**	**NA**	**NA**
Glens Falls	**57.4**	**1991.3**	**2310.5**	**0.24**	**19.48**	**15.94**
Granville	**56.0**	**NA**	**2449.0**	**0.48**	**NA**	**20.68**
Guilderland	**81.5**	**2082.8**	**2437.5**	**0.01**	**6.97**	**7.35**
Highland	**78.8**	**2552.3**	**2811.7**	**0.10**	**21.98**	**24.62**
Lake Placid	**22.5**	**1340.2**	**NA**	**1.34**	**22.61**	**NA**
Montgomery	**95.2**	**2672.9**	**2545.0**	**0.02**	**23.83**	**NA**
Monticello	**68.4**	**1833.4**	**2393.0**	**0.00**	**0.28**	**1.85**