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Weekly Vegetable Update

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Regional Updates:

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

The northern region was fortunate to miss the worst of last Thursday's thunderstorm. The Adirondacks often provide some protection from storms that move in from the west, so we had a good soaking rain and some thunder while our neighbors just to the south were hammered. Temperatures were hot prior to the storm and corn grew at least a foot last week. Although most growers got off to a slow start this spring, most crops have caught up, or nearly so, by now. Vine crops are beginning to vine – last call to cultivate before the rows close in. Many growers are struggling with poor pollination in their summer squash while others are having no problems at all. Native bumblebees are a prime pollinator of these large-flowered crops.

High winds over the weekend really battered later transplants. Crops that still have rowcover were protected from the worst of the wind. Leave rowcover in place as long as possible to provide that protection from wind as well as bugs. Parthenocarpic varieties of cucumbers and squash don't need pollination and can stay under cover much longer.

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

Summer vegetables are in full swing across the region, and aside from isolated, severe weather outbreaks growers seem fairly satisfied with the weather. There is enough heat to push growth, and most places have received at least some rain and have been able to meet the deficit with irrigation. Storms have been more of the pop-up variety as opposed to being large systems, and are not moving late blight closer as far as we know.

Insects are also in full swing, with large populations of striped cucumber beetle appearing along with continuing high populations of leaf hoppers. Flea beetles have been steadily high in places and lower in others, and Colorado potato beetle populations have been the same. Corn pests have also stayed low this week.

Many growers are looking to harvest garlic at the end of this week or next week. Some garlic is just about ready, some is not there yet. Check the article in this newsletter for reminders of how to tell if garlic is really ready. Harvesting at the right time improves your crops storage ability and lets it fully size up as well.

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

Some localized storms with heavy rains and driving winds passed through the region this past week. For those with bacterial issues (speck and canker) in tomato plantings, this poses risk of spread. Keeping new plant tissue and fruitlets protected with copper sprays is critical in controlling spread and speckling on fruits. Unfortunately, I diagnosed canker at another farm this past week. Three lined potato beetle has been showing up on husk cherries and to a lesser extent on potatoes. Tomatillos are another crop to keep an eye out for as feeding may become severe. Both the larval and adult stage will cause feeding damage.

Three lined potato beetle adult and feeding damage on potato. Photo by TR



Tomato Leaf Mold

Leaf mold is starting to show up in high tunnel production. The first symptoms are yellow dots on the upper surface of leaves. Turn the leaves over and the undersides of the dots will be brown. Resistant varieties are the best defense; we have not found any sprays to be effective.

More information, including resistant varieties, is posted on our new website: <http://enych.cce.cornell.edu/> look for leaf mold under the tomato section. -ADI



Photo by ADI

Pollination Problems

If your zucchini or summer squash plants look fine but the developing fruit rots at the blossom end, chances are the problem is poor pollination. Although honeybee populations are struggling and numbers are down, it is the bumblebee that is the most effective pollinator of squash. Their buzzy action shakes off more pollen as they search for nectar and the pollen sticks to their larger bodies which they then carry from flower to flower. -ADI



Yellow squash with rot at the blossom end, probably due to lack of pollination. Photo credit: Univ. AR Extension

A quick review of the sex life of squash



Male flowers form first. They attach directly to the flower stalk. All squash flowers are open only in the early morning and close for most of the day, so the bees have a narrow window of time to pollinate each day. Photo by ADI



Female flowers begin to develop after male flowers. They have a very small fruit at their base. If they are not pollinated, the fruit will develop for a while, then begin to rot where the flower attached. If they are pollinated, the flower will drop off and the fruit will continue to grow. Photo by ADI

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/>

Harvesting Garlic - Timing is Key!

Everyone knows the balancing act that is garlic harvesting—too early and the cloves are small and don't store well, too late and the head pops, making it unmarketable and more susceptible to diseases. So, as we near harvest, how should a grower decide if the garlic is ready? The best answer we have is to pull a few plants, cut through the head sideways (so you cut through all the cloves), and see how well developed the cloves are. You can use the leaves as a guide to decide when to do this (lowest third or half of the leaves yellowing and dying is a good mark to start with), but looking at the cloves is the best way to know if the garlic is ready. Cloves should fill the wrappers—if they seem a little loose, the garlic has a little ways to grow. A little of the very outer wrapper may

To wash or not to wash? Generally, you want to clean your garlic in the most gentle way possible. Most of the time this can be done dry. You can gently rub most of the dirt off of the garlic while harvesting, then remove a little more as you transfer from the wagon to your drying area. The one exception to this rule might be if you have to harvest garlic from muddy soils. In that case, washing may be warranted, but do it right away while the dirt is still mud on the bulbs, not after it has dried on them. You want to avoid wetting and drying the garlic over and over. Regardless of method, do not bang heads to remove dirt, gently remove excess by hand. The more garlic is banged during the process, the more it will bruise and the worse it will store.



Knowing when to harvest garlic can be tricky. Use the leaves as a first indicator, but also feel and look at the bulb. You want the bulb to be very firm in its skins, and when you cut it in half perpendicular to the scape you want to see a small gap around the scape. The garlic on the left isn't quite ready; the garlic on the right is. *Photos by CLS*

have started to decay at this point. That is okay—it's a normal part of the maturation process. The key is to harvest before the bulbs pop, which can happen relatively quickly, especially if we have another wet year. If you don't think you will be able to get out and harvest for a period of time, it's better to harvest bulbs a little too early than a little too late.

Field grading: Hopefully you have been removing sick and damaged plants each time you weeded the garlic, so there won't be many left. Harvest is one last chance to clean up your crop before you bring it into tight quarters where disease can spread like wildfire. Remove any garlic that doesn't look great and set it aside rather than bringing it in and finding it later. You might also consider selecting your seed garlic at the same time. Save out the best garlic as your own seed to maximize next year's crop. You also don't need to clean your own seed of dirt or remove roots, which will save you labor if you set it aside now.

Move your garlic from the field into the drying area relatively quickly—most people harvest during the morning and have garlic in the barn, high-tunnel, or shed by mid-day. Garlic can be dried in a variety of ways, as long as a few fundamental ideas are followed. First, you want to have good airflow over the garlic to move moisture away. This means not having garlic packed too tightly into the drying area. Each layer of garlic should have good air movement, whether hanging in rafters or sitting on benches. If there are parts of the drying area that are stagnant and wet, you need to remove some top growth and throw it away, reduce density of plants in the area, or increase air movement. Next, you want to choose an area that gets hot, but not too hot. Garlic will dry well at 110 degrees, but we try not to go much above that because at 120 degrees waxy breakdown, a physiological disorder, starts to occur. This temperature can be reached in a barn, shed, or high tunnel. Make sure you have the temperature in your drying area well controlled, so that you do not overshoot that target. *-CLS*

Squash Bugs – Be on the Lookout and Act Quickly!

From “Squash bugs in home gardens” by Suzanne Burkness and Jeffrey Hahn, University of Minnesota 2007

<http://www.extension.umn.edu/garden/insects/find/squash-bugs/>. All photos by Jeff Hahn, University of Minnesota Extension.

Here is a photo essay on squash bugs. Try to catch them early before their population explodes, which is usually when the runners start to form. The first thing you’ll see is the characteristic damage their feeding causes. Turn the leaf over to confirm. Then hunt for eggs and time your spray for when the eggs just start to hatch. Insecticides listed on pg. 186 of the 2014 Vegetable Guidelines include: Assail 30SG, Sevin XLR Plus, *Asana XL, *Warrior II with Zeon Technology, *Endigo ZC, and *Pounce 25 WP or OLF. Check the guidelines for rates and comments. Thorough coverage is important for these secretive pests, target sprays at newly hatched nymphs. Organic options need to be directed to undersides of leaves.



First symptoms: feeding damage



Squash bug adult



Squash bug eggs



Hatching (note the color changes they go through from first hatched to adult)



Nymphs



Mature nymph

Late Blight Update

By Margaret McGrath, L.I. Hort. Research & Extension Center

Since last week there have been no new finds of late blight on LI. No new symptoms were found in the potato crop where this disease was first found this year, indicating excellent control achieved with the fungicides applied. There have been confirmed reports in potato and tomato crops in western NY (Erie Co), Lancaster PA, and in tomato plants being marketed to gardeners in New Brunswick, Canada. The second find of late blight on LI was determined to be caused by a new strain of the pathogen, which means we will not know for a few weeks if it is sensitive to Ridomil or the same mating type as the first strain found. Please continue to report suspect occurrences.

Fungicides For Late Blight: Chlorothalonil and mancozeb are equally good choices for a protectant fungicide to use until late blight is detected in a crop. There are seasonal limits on use. At the highest label rate, each of these products can be applied 7 times to a crop of tomato or potato (10 times for chlorothalonil applied to potato). More applications can be made if a lower rate is used. The Decision Support System is suggesting a 5 – 6 day spray schedule is needed now with these protectants for most locations.

See article on the next page for photos identifying Late Blight and differentiating it from some of its lookalikes.

When to Spray?

When rains come heavy and strong winds accompany them, the damage that can be caused often has growers wondering whether they should spray fungicides & bacteriostats before or after the events. Here are a few details and suggestions to help make that decision be more effective.

Fungicides come in 2 basic categories, preventative and curative. Preventatives are designed to control immediately on the leaf surface by either killing or prevent from infecting and reproducing. The fungicide acts as a protective barrier and prevents infection from occurring. This is preventative in that it does not cease any infection that may have already started in the plant it can only prevent new infections. Most preventative fungicides are contact as described above but some are some level of systemic in that they can prevent infections other than where the droplet of fungicide contacted the leaf surface. Systemic fungicides travel through the cells of the plant to provide protection elsewhere. It can be close, just neighboring cells, or it can spread through the whole plant. This depends on the specific chemical.

Curative fungicides are not REALLY curative. They can, unlike preventative fungicides, slow or stop if colonization has already started for a disease. However, the window for control is still fairly small, up to 72 hours after infection has started. These fungicides, too, are most effective if applied before the infection occurs. A curative fungicide tends to be more likely systemic and will have a longer efficacy time in the plant; some up to 2 weeks.

Then we have copper. Copper formulations are adequate as fungicides for some diseases but, usually, compared to conventional fungicides are not effective when used alone. However, because there are so few chemicals in the toolbox for bacteria control, they are often the “go-to” to add to a mix when bacterial infections are occurring/likely to

occur. For most crops and bacterial pathogens copper control can be ineffective also, but it is all we have. So for the section below, even though copper is used as a fungicide, I will refer to it separately, mostly with regard to bacterial disease control.

General Suggestions:

Fungicides should be applied BEFORE rain events, especially if it has exceeded the recommended spray interval for the chemical/crop/disease. Exception: you expect more than 1” of rain in the event. If possible, apply the fungicides immediately after the rain event. This is where the complex decision-making comes in to play only you know how 1”, 2”, 3” of rain will impact field conditions to actually be able to go out and spray following the predicted event. If you will not be able to spray within 24 hours of the event, go back to considering spraying BEFORE the event.

If more than 1” of rain has fallen, even if spreaders/stickers were used, consider fungicides “washed-off” and that the spray interval begins again.

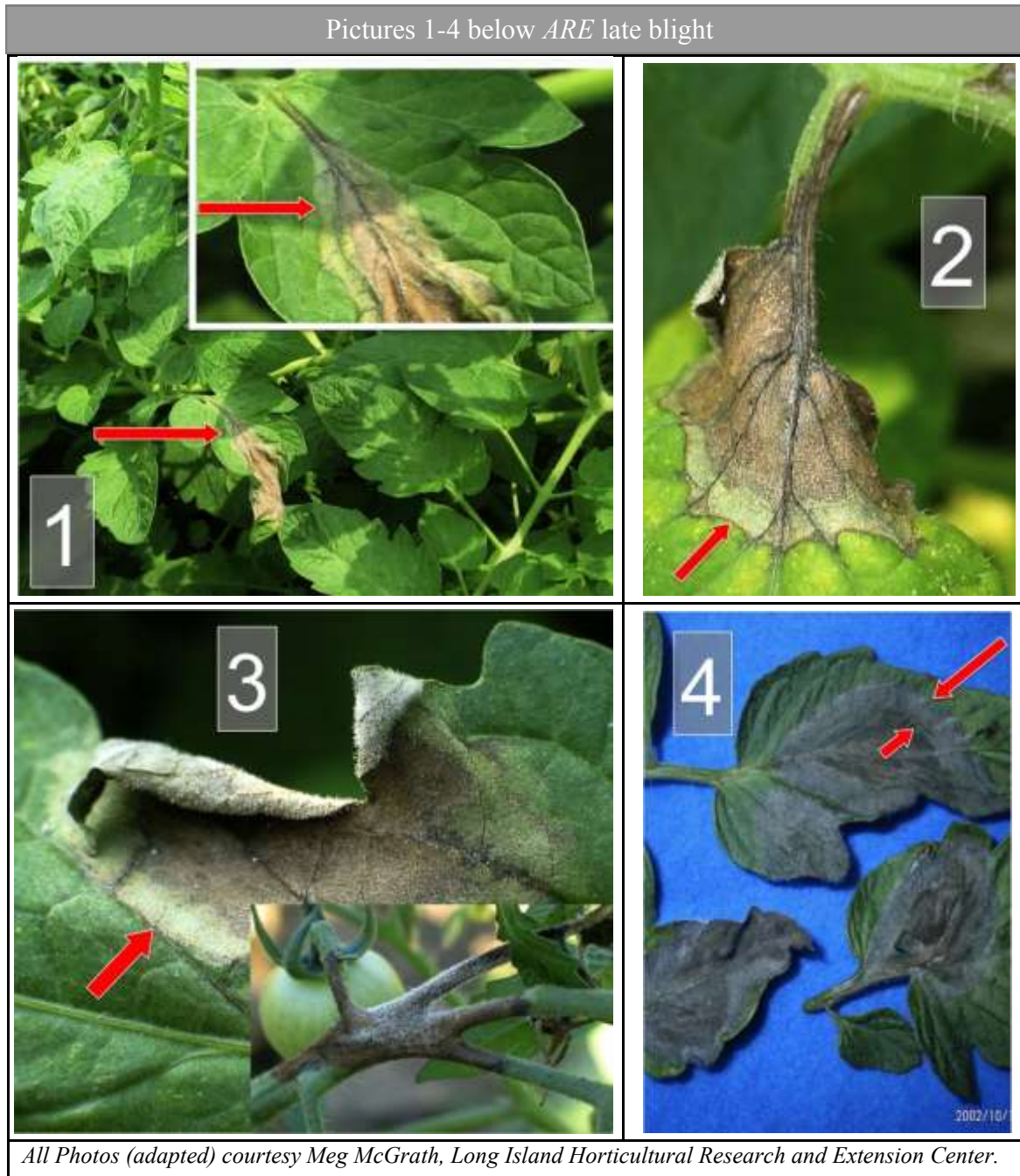
Copper should, when used as a bacteriostat, be applied before the rain event as well. The idea here is to decrease the bacterial load on the plant before the improved conditions for reproduction and spread/splashing occur with the moisture. Of course, not all times is this possible so, especially when wounding has happened such as during a hail event, it is critical to apply the copper as soon as possible to keep bacteria from gaining entry.

Of course the biggest factor in all of this is the weather immediately after the rain. If humidity and temperatures decline significantly after the event, “good drying weather”, it will decrease the ability of the disease to develop. -MRU

Know Late Blight Symptoms AND its Look-Alikes

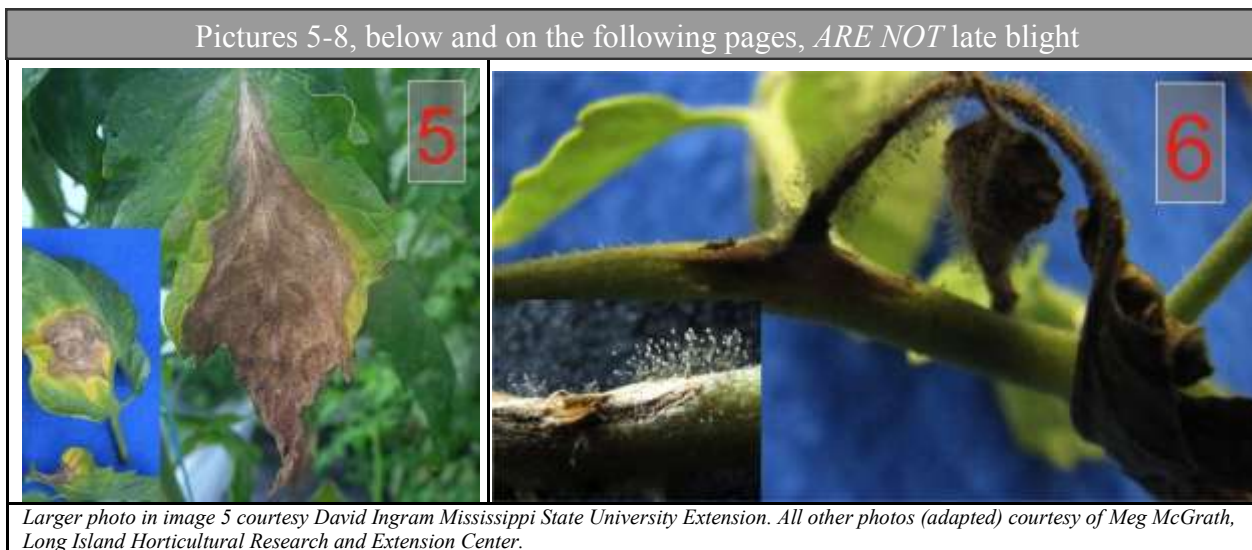
By Justin O'Dea, Vegetable Extension Educator, CCE Ulster County

Reports of late blight in the region can drum up anxiety that any wilted leaf or spot on found on your tomato or potato crops could be the beginning of the end. A lot of plant symptoms can look similar without a trained eye or a good reference. Reduce your anxiety by knowing what clear signs to look for, and what issues may look like late blight at first glance.



1. Early symptoms of single leaf showing late blight brownish wilted leaf lesion. Subset picture showing close-up with arrows pointing to light greenish-brown border area characteristic to late blight. Yellowing is *not* characteristic to late blight.
2. Close-up of leaf and stem lesions with arrow pointing to light greenish-brown border characteristic to late blight. Note the lesion gets darker towards the center, and veins are even darker. Lesions become darker grayish-brown as they progress.
3. Stem and leaf lesions showing fuzzy whitish fungal spores forming on infected areas.
4. Further progressed infection, showing darker sooty-grayish leaf lesions. The lighter colored outer border between arrows is also darkened, with spores concentrated in this area.

Late Blight Look-Alikes, continued from previous page



5. Botrytis gray mold on leaf. Note, *no* greenish-brown border, coloration is more uniformly brownish with concentric rippling and is *lacking* any grayish hues; diffuse yellowing on lesion borders is *not* characteristic to late blight.
6. Botrytis gray mold spores on tomato stem. Botrytis gray mold spores are much longer (“fuzzier”) than late blight spores, and are gray-brown, *not* white.



7. Drought stress in tomato leaf. Drought stress damage comes inward from leaf edges and does not spread to stems or fruit. Drought stress does *not* have a lighter greenish-brown lesion border area, *lacks* sooty-grayish hues, and *doesn't* develop fuzzy spores.
8. Lightning damage on tomato leaf, and stem (subset). Similar to drought stress, leaves look scorched from tips/edges inward, but also have yellowing, and stems (subset photo) characteristically collapse/pucker.

Note: Multiple symptoms of different afflictions may occur in tandem. Knowing symptoms characteristic to late blight specifically is your most important identification strategy!

For more information see:

- <http://www.longislandhort.cornell.edu/vegpath/photos/diagnose.htm>
- http://www.longislandhort.cornell.edu/vegpath/photos/lateblight_tomato.htm
- <http://onvegetables.com/2010/07/13/late-blight-look-alikes/>
- <http://www.rodale.com/tomato-problems?page=0,0>

Late Blight Look-Alikes, continued on next page

Late Blight Look-Alikes, continued from previous pagePictures 9-12 below *ARE NOT* late blight

All Photos (adapted) courtesy Meg McGrath, Long Island Horticultural Research and Extension Center. Image 11 upper two photos courtesy of Ontario IPM-Ontario Ministry of Agriculture, Food and Rural Affairs, lower photo U-California Cooperative Extension-Ventura County. Image 12 photo (adapted) courtesy Janice LeBoeuf, Ontario Ministry of Agriculture, Food and Rural Affairs.

9. Early blight (*Alternaria*) on tomato leaf. Smaller, roundish, rippled concentric rings and yellowing are characteristic of early blight. Numerous smaller lesions and yellowing are *not* characteristic of late blight, and sooty-grayish hues are *lacking* in early blight.
10. Septoria on tomato leaf. Similar symptoms to early blight, but septoria develops tan centers and small black specks in their lesions.
11. Powdery mildew on tomato leaf. Whitish-powdery spores develop, with mottled blackening on leaf undersides (subset). Diffuse yellow spotting is usually associated following whitish spore development, followed by necrotic lesions. Yellowing, and whitish spores *without* brownish or grayish lesions, are *not* characteristic of late blight.
12. Corky root/stem rot on tomato. Leaves and stems decline from the tips inward with complete necrosis. Stem yellowing behind necrotic areas is characteristic, and roots are corky with banded lesions. Leaf decline may resemble late blight, but leaf and stem yellowing and specific outward-in decline pattern is *not* characteristic to late blight.

Farm Food Safety: Irrigation Water Sampling

By Wes Kline and Meredith Melendez, article posted July 3, 2014 on Plant & Pest Advisory, Rutgers Cooperative Extension, available online at <http://plant-pest-advisory.rutgers.edu/farm-food-safety-irrigation-water-sampling/>

The current guidelines for irrigation water are 235 CFU or MPN generic *E. coli* per 100 ml water for one sample and 126 CFU or MPN generic *E. coli* per 100 ml water for a five sample average. Consider treating the irrigation water if the results are above the guidelines.

The Food Safety Modernization Act will most likely require greater frequency in sampling of well water and surface water sources. We will keep you updated as we learn more about the rule.

For more information on irrigation water testing visit the Cornell Good Agricultural Practices Agricultural Water page at http://www.gaps.cornell.edu/documents/decision_trees/Production%20Water-FINAL.pdf.

	Frequency	Timing	Corrective Actions
Municipal Water Source	Once per year	Obtain municipal water reports and keep on file (often available online)	N/A
Well Water Source	Once per year	Sample for generic <i>E. coli</i> , ideally at the beginning of the season	Water test reports indicating well contamination will need to be treated before utilizing the well as a water source.
Surface Water Source	Three times per year	Sample for generic <i>E. coli</i> at planting, at peak use and at or near the first harvest.	Surface water should not come in contact with harvestable product. In-line treatment systems can be used to reduce generic <i>E. coli</i> loads in the water.

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>)

“Is there any information on historical pricing?” “What, if any, changes has happened to prices this summer?”

“What should I charge for crops I still have to sell?”

Are these questions you wonder about? Steve Hadcock Extension Educator with Capital Area Agricultural and Horticultural Program (CAAHP) and Bob Weybright, Business Development Specialist with the Eastern NY Commercial Horticulture Program (ENYCHP) will provide an overview of historical pricing for a variety of vegetables and fruits. The two Extension Educators will also share retail pricing data to date, and will lead a discussion on strategies for pricing for the rest of the 2014 growing season.

Light supper will be available starting at 6:15 pm. The cost for the meeting is \$5 per person. To help with meal plans, please register by July 29. You may also complete the registration form below and mail to the following address, with check payable to CCE ENYCHP: Marcie Vohnoutka, CCE Rensselaer Co., 61 State St., Troy, NY 12180. If you have questions contact Marcie Vohnoutka at 518-272-4210 or email at mmp74@cornell.edu.

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

Name(s): _____

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Email: _____

I/we would like to attend this twilight meeting. Enclosed is (check/cash) for \$_____ to register _____ people.

GAPS Help?

Remember to call the Orange CCE office if you want help with writing your GAPS plan or need to get ready for your first inspection. We have a staff person that is prepared to help you take the next steps needed to get that inspection and to be GAPS certified.

This Fall, we plan on having more 2-day classes across the region for those who have yet to get started with their plans or investigating “what it takes”.

Please call 845-344-1234, and ask for Maire, if you have questions or want to book an appointment with our GAPS specialist.

Location	ECB-E	ECB-Z	CEW
Albany	0	0	N/A
C. Clinton	0	0	0
S. Clinton	0	0	0
Columbia	0	1	N/A
Dutchess	0	0	1
Fulton	0	0	N/A
Orange	0	2	0
Saratoga	0	0	N/A
Schoharie	0	0	N/A
C. Ulster	1	0	0
N. Ulster	0	0	0
C. Washington	0	0	N/A
N. Washington	0	2	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.

Site	Growing Degree Information Base 50 ^o F			Rainfall Accumulations		
	2014 Weekly Total 6/30 - 7/6	2014 Season Total 3/1 - 7/6	2013 Season Total 3/1 - 7/6	2014 Weekly Rainfall 6/30 - 7/6 (inches)	2014 Season Rainfall 3/1 - 7/6 (inches)	2013 Total Rainfall 3/1 - 7/6 (inches)
Albany	170.1	1098.6	1035.0	1.66	7.39	19.86
Castleton	162.0	1041.2	1074.7	1.73	8.61	16.68
Clifton Park	151.8	992.0	1002.5	2.96	9.26	22.06
Glens Falls	166.0	1003.6	883.5	2.18	10.94	16.79
Guilderland	155.5	1004.5	987.0	0.75	N/A	N/A
Highland	159.1	1119.4	1155.1	4.67	11.61	16.75
Hudson	165.7	1118.8	1113.7	1.75	9.83	14.84
Marlboro	157.2	1058.5	1093.7	3.92	12.78	18.13
Montgomery	163.3	1082.1	1052.0	1.49	14.46	16.51
Monticello	134.8	816.1	818.5	N/A	N/A	N/A
Peru	162.9	939.1	992.3	1.21	10.13	16.13
Shoreham, VT	169.7	967.4	992.3	1.22	9.22	16.73
Wilsboro	165.5	897.2	900.0	N/A	N/A	19.05

Cornell Cooperative Extension and the staff assume no liability for the effectiveness of results of any chemicals for pesticide use. No endorsement of any products is made or implied. Every effort has been made to provide correct, complete, and current pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly and human errors are still possible. These recommendations are not substitutes for pesticide labeling. Please read the label before applying any pesticide. Where trade names are used, no discrimination is intended and no endorsement is implied by Cornell Cooperative Extension.

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