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Cooperative Extension

Eastern NY Commercial Horticulture Program

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Weekly Vegetable Update

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

This time of year is when you can really see the difference between the northern and southern ends of our region. In northern NY spring is arriving slowly. Below freezing temperatures most nights, blustery conditions and cloudy days have not been conducive for soil warming or drying. Short term forecast is for rain and temperatures in the 30's and 40's. Keep heavy equipment off wet fields to avoid compacting the soil. A few days of sun will make a big difference and things should begin popping soon.

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

We are benefitting from finally having a couple of days of warm weather. Upland and light fields are being worked up across the region. The first early sweet corn and peas are being planted, as are the first early cabbage transplants. Garlic is poking through in many locations, which means it's time to apply the first shot of nitrogen (see last week's *Update*).

We have seen some ethylene injury on tomato starts in greenhouses using unvented heaters at night. Kerosene heaters are the worst culprit but even a propane heater that isn't fully burning all its gas can cause problems. Tomatoes are about the most sensitive plant in the greenhouse, so look for signs on them first. The leaves will curl downward with light exposure, and will begin to brown and die with more moderate exposure.

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

Muck-Onion planting is in full swing as well as that for greens and other 40° crops. Soil temperatures remain low and risk of losses of any crop planted exist.

On upland fields, Growers have put in several acres of corn under plastic. Peas, beans and brassicas are in.

Greenhouse tomatoes are doing well with 3rd or 4th clusters of flowers starting to appear. Watch for aphids and thrips as both have been seen in high and low numbers, respectively. Foliar diseases are also starting to be seen. See the article on Septoria and Leaf Mold for more info. On lettuces, Sclerotinia has been an ongoing problem at one operation where the grower will try to lower inoculum before the next crop by replacing soil in the beds in conjunction with incorporation of the biological fungicide Contans into the upper two inches. I will keep you updated on how this works out.

In high tunnels, greens and lettuces are being harvested and more plantings are going in.

Calibrate your Planter for Fertilizer Application

While we are waiting for the ground to dry out and warm up, why not take advantage of a nice day by calibrating your planter's fertilizer application? If it's been a while (or never in many cases) now is a good time to do it. Over time, many different parts can get wore out including the augers in the bottom of your fertilizer hoppers. Fertilizers are very corrosive and every year more and more of the auger is chipped away changing the amount of fertilizer being delivered.

I found that an easy way to determine how much fertilizer you're putting out is to determine how far you need to drive to equal 1/50th of an acre using your row spacing. For example—if you're between row spacing is 30" then you need to travel 349 feet to equal 1/50th of an acre. The way you can figure out the distance you need to use is by dividing 43,560 (the square feet in one acre) by your spacing in feet. Multiply that number by 0.02 (which is the decimal equivalent for 1/50th) and that is the distance you need to travel.

After you have determined how far to travel, the next step is to disconnect the drop tubes from your fertilizer hoppers and attach a bag or bucket underneath to catch the fertilizer. Make sure the hoppers are at least half full of fertilizer when you start. Also be sure that the auger's are "primed" by dropping the planter Using flags or some kind of stakes, drive the required distance, remove the bucket or bag and weigh it. If you're using something that's heavier than a plastic bag, be sure to subtract this weight from your sample. Once you have the weight multiply it by 50 and that is the approximate amount of fertilizer you're applying in pounds per acre.

For example, if the amount you weigh from one tube equals 6 pounds, then you are applying 300 pounds of fertilizer per acre. **Do not add** the fertilizer amounts from the hopper together. The value you get per row should be similar. If they are not, you may need to exam your augers to see if they are worn differently etc. If the rates are similar, but not what you thought you were putting out, you need to review your manual (if you have one) to check your sprocket settings. I would also recommend you do this 2 or 3 times and average the values together per row. I would recommend you do this every time you change a sprocket combination as well.

The tables in your planter's manuals should be close but I have seen where they don't match at all. After looking at the manual for a bit, we concluded that sometimes planters have the ability to use different augers. You could have a "normal output" auger or a "high output" auger and

depending on which type you have you need to read the right table in the manual (trust me, that's from personal experience). If you're replacing one auger, it's better to just replace all of them at the same time that way you know everything will be more of the same when you head out to plant your crop.

Also be sure to check your fertilizer disk openers and make sure they are not worn out. The rule of thumb for fertilizer placement is 2 x 2 or 2" below the seed and 2" to the side of the seed. Anything closer than this can result in fertilizer burn on your crop. Many times when we see fertilizer injury it's not because the rates were to high or the coulter was mounted wrong, it's because the disks were worn and instead of being the 2" below the seed, it was right even in the bottom of the seed furrow. Also, make sure your drive chains are all in good shape and none of the links are seized – even if you stored them in oil, be sure to check them and make sure they roll smoothly.

When's the last time you checked your seed tube to make sure it wasn't worn out? It is all too common to find seed tubes that are worn on the very ends and feels like a sharp lip. This can cause problems because it kind of flips the seed instead of allowing it to fall into the bottom of the seed furrow resulting in seed that may not be at the depth you want and uneven emergence! Even before you get that far, make sure your meters and fingers are working properly. If you suspect a problem you can usually take them to your local dealer (call first) to have them checked or there are some private companies that will also test your meters to see if there is a problem. Don't forget to bring some of your seed to in order for them to run an accurate test. If you have more questions on this, give me a call and I can get you to someone that can help.

Lastly, when is the last time you checked your closing wheels to make sure they were closing your seed furrow properly? Hopefully they are aligned over the center of your seed furrow, but how do you know? One way I have seen it done is to take all the pressure off your seed units and find a hard piece of ground like a dirt driveway. Drop your planter (with seed in the hoppers) and drive 10 feet or so. Then get off and check to see where the seed dropped and where your closing wheel marks are (keep in mind that sometimes seed will bounce around a little bit on that hard ground). It helps if you have someone else with you walking behind the planter to observe where the seed is actually dropping and how the closing wheels line up. Then, you can make the adjustments you need to and do it again until it's right.

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One piece of additional equipment that I highly recommend attaching to your planter is something called a Keeton Seed Firmer made by Precision Planting, Inc. It's difficult for me to really describe what they are and how they attach, but they really help make sure that your seed is placed correctly in the seed furrow. It is a hardened piece of plastic in the shape of a fin that attaches to your gauge wheels and slides in the bottom of the furrow. As your seed drops out of the seed tube, the Keeton seed firmer keeps it from bouncing all



A Keeton Seed Firmer as seen attached to a planter.
Image from Precision Planting, Inc.

around and can help improve evenness of stands and germination. Go to <http://www.precisionplanting.com/> and search under "Products" for Keeton Seed Firmers. For around \$40 per row, they are well worth the money in my opinion.

You can also use the same formula and techniques to determine how much fertilizer you're using if you are sidedressing with a Cole or other type of unit. If you have questions please feel free to call Chuck at 518-859-6213. —CDB

Watch for Pythium and Rhizoctonia on Seedlings

By Ray Range, CCE Orange County

Damping-off is a common problem that kills seedlings in the field and the greenhouse. Damping-off can kill both germinating seeds and young seedlings. Several fungi can be involved in damping off but the most common and damaging are Pythium and Rhizoctonia. Practically all species of plants can be affected and without rigorous sanitation and cultural best practices, especially in greenhouses, it can be difficult to manage.

These diseases are favored by cool, moist conditions and are rarely seen in seedlings started in the heat of the season but it can be common to find damage in overcast, cool, rainy springs.

Symptoms:

- Damping-off can kill the seedling before it has a chance to emerge (often confused with poor seed germination) and displays as dead patches in flats or fields.
- Plants are stunted, possibly yellow and wilted from poor root activity.
- Root tips are brown and dead.
- Plants may wilt at mid-day and may recover at night.
- Brown tissue on the outer portion of the root appears water soaked and easily pulls off leaving a strand of vascular tissue exposed.
- Seedlings may develop a girdling and darkening of the stem rot near the soil surface which will cause them to fall over and die as the rotted area shrivels.

Management for Greenhouses:

- Manage soil moisture by using properly draining media & reduce opportunities for overwatering.
- Sanitation – Clean and disinfect all tools, trays, containers and equipment. Use sterile media. Keep watering wand off the floor and reduce opportunities for "outside" soil to get in.
- Manage soil temperatures by providing adequate heat and/or using heat mats under trays.
- Reduce standing/ponding water which encourages shore flies and fungus gnats who feed on roots providing opportunity for infection.
- Manage fertility so as not to "burn" roots.
- Remove any symptomatic plant material immediately.

Management for Fields:

- Avoid planting in low spots or anywhere water has a history of standing.
- Avoid planting until soil temperatures are adequate for the variety of plant to germinate and thrive.

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Control Measures:

Several fungicides are available as seed treatments, potting mix additions or at-planting applications for conventional producers. For organic producers or those looking for a biological control, *Trichoderma harzianum*, known as T-22 is a good choice. It is available as seed treatment or soil mix addition. Cultural best practices which prevent damping off are the first and best line of defense.



Courtesy of University of California Statewide IPM Project

Summary of SARE Study of Overwintering Corn Pests in Reduced Tillage Systems

Reduced tillage has been adopted with much success on many acres of sweet corn; however, some growers suspect reduced tillage increases populations of Lepidoptera pests such as European Corn Borer (ECB) and Black Cut Worm (BCW). There is reason for concern as reduced tillage growers are not completely turning under crop residue by deep disking or moldboard plowing fields, which may lead to Lepidoptera pests successfully overwintering in those fields. If reduced tillage systems are adversely influencing pest populations, growers may be required to make additional compulsory insecticide applications to maintain economically viable yield. This would reduce the savings and environmental benefits usually gained from reduced tillage systems.

This project investigated and compared four Lepidoptera populations (ECB E & Z, BCW and Corn Ear Worm (CEW) among three geographically diverse farms employing various reduced and conventional tillage techniques to determine the influence of tillage on the pest complex.

In order to test for moth emergence from the field, between April 11 and May 14, 2012, low tunnels and pheromone traps were erected on conventionally







and reduced-tilled fields at three farms. Each field had a set of 3 (6'x25') low tunnels with pheromone traps placed inside, as well as directly outside of the tunnel, and in the weedy field edges. Traps were monitored weekly.

Data and observations from all three sites suggest that ECB E, ECB Z, CEW, & BCW, do not overwinter in the field in significant numbers. No Lepidoptera moths were caught in traps inside the low tunnels. Moths were trapped just outside the netted cages at low numbers and higher numbers at field edges at all sites.

Further investigation will be taking place this season to understand the cause of large and damaging populations of ECB Z at one farm using reduced tillage. -TR

Septoria or Leaf Mold – Which is it?

Septoria Leaf Spot is a common disease in field and in the greenhouse while Leaf Mold is almost exclusively seen on greenhouses. However they can look quite similar on the leaf. Let's compare them:

Causal Organism	Septoria (<i>Septoria lycopersici</i>)	Leaf Mold (<i>Fulvia fulva</i>)
Symptoms	Small, water-soaked circular spots 1/16 to 1/8 in. in diameter first appear on the undersides of older leaves. The centers of the spots are gray or tan and spots have a dark brown/black margin. As the spots mature, they enlarge to about 1/4 in. in diameter and may coalesce to create large areas of disease.	Initial symptoms are pale green to yellowish spots on the upper surface. The spots on the upper surface turn to a distinct yellow color and on the under surface, an olive green to gray mold can be seen. Lesions are larger than Septoria; at least the size of a pencil eraser up to a dime.
Photo upper leaf surface <i>Photo Credits:</i> <i>Septoria: LI HREC, Cornell</i> <i>Leaf Mold: Purdue Plant & Pest Diagnostic Lab</i>		
Photo lower leaf surface <i>Photo Credits:</i> <i>Septoria: LI HREC, Cornell</i> <i>Leaf Mold: Purdue Plant & Pest Diagnostic Lab</i>		
Conditions that Favor	Moist conditions favor with a temperature range for sporulation from 59° to 80.5°F with 77°F being optimal.	Humid conditions and temperatures between 72°F and 75° F
Cultural Management	<ol style="list-style-type: none"> 1. Because seed has been implicated as a source, make sure seed is acquired from disease-free seed-producing areas. 2. Make sure greenhouse production areas are free of susceptible weeds and the previous season's tomato crop debris. Practice good sanitation. 3. If infected plants are found, rogue the seedlings before transplanting them to the field. 4. Resistance to Septoria leaf spot has been identified and is being included in breeding programs. Currently, Iron Lady is the only tomato variety with resistance. 	<ol style="list-style-type: none"> 1. Practice good sanitation and remove tomato debris between crops. 2. Space plants appropriately and prune lower leaves to improve air circulation. 3. Reduce humidity in greenhouses by venting before the humidity increase that comes with evening hours. 4. Tomato plants with resistance to leaf mold are available. However, the fungus is variable and may overcome resistance.

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Meetings and Notices

Vegetable Transplant and Ornamentals Clinic

Are your pepper transplants yellow?
Are the petunia baskets not looking so hot?
Problems in the greenhouse?

Bring in your water and container samples to our free clinic on Wed April 17 at the Hudson Valley Lab located 3357 Rt. 9W, Highland, NY 12528. Between 5-6pm Professor Neil Mattson from Cornell University and your local Cornell Cooperative Extension Agents will be on hand to help you diagnose your problem plants.

We can check your water alkalinity, pH and EC (overall fertility level). Bring a cup or two of water for testing with and without fertilizer. Bring as many samples of plants with soil as you wish, the more the better! Call Teresa Rusinek at 845 389-3562 with any questions.

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Causal Organism	Septoria (<i>Septoria lycopersici</i>)	Leaf Mold (<i>Fulvia fulva</i>)
Chemical Management	Be sure to read labels for greenhouse use but many conventional fungicides are available for control such as maneb, mancozeb, chlorothalonil, azoxystrobin, ziram etc. For organic production copper compounds are recommended.	Again, check labels for greenhouse use but several conventional chemicals control <i>Fulvia</i> . Organic producers can also use copper compounds for control.

See the Cornell Guidelines for Vegetable Production at: <http://www.nysaes.cals.cornell.edu/recommends/>

For a complete list of fungicides cross-referenced with diseases see the *Cornell 2013 Tomato, Eggplant, Pepper Fungicides NYS* developed by Dr. Tom Zitter at: <http://vegetablemdonline.ppath.cornell.edu/NewsArticles/TEP%20Labeled%20Rates.pdf>

Learn more about tomato disease resistance at: <http://vegetablemdonline.ppath.cornell.edu/NewsArticles/tomato%20growers%20need%20to%20know%20Apr%202013.pdf>

Use caution when researching Leaf Mold on the internet. Another disease that is particularly prevalent on tomatoes in greenhouses is *Botrytis* or “Grey Mold”, often called “Gray Leaf Mold” so the diseases get jumbled together, especially on websites that are more how-to and less academic or focused on commercial production. *Botrytis cinerea* is a disease of opportunity, infecting damaged, dead and dying tissue, regularly seen at soil level on debris in humid conditions. Its velvety grey appearance is diagnostic.

Sources for this article:

Vegetable MD Online: http://vegetablemdonline.ppath.cornell.edu/factsheets/Tomato_Septoria.htm

Purdue Plant & Pest Diagnostic Lab: <http://www.ppdil.purdue.edu/PPDL/weektypics/4-2-12.html> - MRU

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