Weekly Update

Capital District Conditions

Across the region the hot dry weather is having an effect on many crops. Farms that have heavier soils or that have received one of the isolated showers are still doing okay with natural moisture levels, but some lighter soils and drier areas are seeing signs of stress in unirrigated crops. Even irrigated crops are showing stress from the heat and bright sun, with increased incidence of blossom end rot, fruit drop and sunscald. The good news is that heat is really moving everything along—first plantings of sweet corn are nearly done, field tomatoes are starting to ripen, and cucumbers and zucchini are producing well.

In addition to physical disorders, some diseases and insects are also being seen more frequently. Two-spotted spider mite has been spotted on eggplant throughout the region, corn earworm second flights are ramping up, powdery mildew is spreading, and downy mildew is surrounding us! Make sure you are scouting your fields so that you know what issues have reached the farm, particularly now that there is plenty to look for out there. As always, if you see a disease that we are not yet reporting on in the Capital District, such as downy mildew or late blight, please let us know so we can confirm and share the information with other growers. –CLS

Blossom end rot— the detailed explanation

With all the questions about blossom end rot in the last week, it seemed worth while to spend a little time explaining why this disorder happens and what growers can do about it. Eliminating blossom end rot can be tough, but reducing incidence is a manageable goal for most growers. This article from Illinois gives a detailed explanation of why BER occurs and steps you can take to manage it. –CLS With recent dry-wet-dry-wet fluctuations in soil moisture, we have noticed a higher than usual number of fruits damaged by blossom-end rot. In one of our trials at the University of Illinois nearly 100% of the fruits developed this disorder. Blossom-end rot is not caused by insects or pathogens but by a combination of physiological and environmental factors. The disorder is easy to control but hard to predict. In 1914 Brooks described blossom-end rot in tomato in the Journal of Phytopathology but did not explain its exact causes. The disorder appears as a water-soaked lesion, often chlorotic, on the blossom end of large fruited varieties of tomato, pepper, eggplant, watermelon, and zucchini grown either in the field or in greenhouses. Symptoms of blossom-end rot usually occur within two weeks after fruit set. Blossom-end rot symptoms usually occur on the earliest fruits but can also occur on later fruits if conditions are favorable. Long-fruited varieties (Roma type) are more vulnerable to blossom-end rot than round fruits, but it can also occur on round fruits as the picture shows. However, no blossom-end rot symptoms have been seen on wild tomatoes, and they rarely occur on small fruited varieties like cherry tomatoes. The disorder can also occur on the inside of the fruit in the tissue surrounding the seed where it is called “black seeds”. The incidence of blossom-end rot is infrequent in most properly managed fields, but it can be very serious under certain conditions.

Since 1942, most experts have agreed that the disorder is likely caused by calcium

(Continued on page 2)
deficiency in the distal end of the affected fruits. However, there are other factors that have also been linked to blossom end rot incidence, including low tissue phosphorous and manganese, high tissue nitrogen, magnesium, and potassium, high soil salinity, drought stress, too much water, high temperature, high light intensity, location of the fruit on the plant, root damage, and cultivar. Most of these factors, however, appear to affect plant growth and so their effect maybe indirectly related to the incidence of the disorder compared to calcium. Calcium controls the process of cell expansion and serves as a messenger for cell to cell communication. Calcium is delivered into the fruit via the xylem (water conducting) vessels. There are fewer and narrower xylem vessels at the blossom end of the fruit where the rot is likely to occur. Also the xylem-to-phloem ratio is low and there are fewer vessels in the seed cavity in the blossom end of affected fruits. Combined, these factors are believed to be the reason why the rot develops on the blossom end of the fruit.

Before you jump on your tractor and start spraying, you need to be aware that blossom end rot is not a simple disorder that can be cured with calcium. Studies have shown that there is no critical level for calcium that can induce the rot, other elements beside calcium can also contribute to the rot development, and some hormones and high temperature have also been shown to induce the rot. Even when assuming that calcium is the main reason for the rot, some fruits like tomato are not likely to respond to calcium treatment. Tomato fruits do not have openings (stomates or lenticels) on their skin and so it is difficult for calcium to move through the skin and into the fruit, especially during the critical times at the early stages of development. Here are a few tips on how to prevent blossom end rot from developing in your tomatoes, peppers or other fruits. **Number 10 may occur later in the sequence of management steps in this list, but it is extremely important.**

1. Check soil pH the previous fall before planting and add non dolomitic lime to correct low pH.
2. Check the soil organic matter. Subtract the amount of nitrogen in the soil from the total amount of nitrogen that the plants need for optimum growth.
3. Avoid adding too much Mg, K, or other cation nutrients that compete with calcium, unless the plants show visible signs of deficiency.
4. Do not use ammonia type fertilizers, use nitrate forms instead. Ammonia fertilizers compete with calcium uptake.
5. Choose cultivars that grow slowly, produce less foliage, and produce medium size fruits. Cherry tomatoes and cayenne peppers rarely develop blossom end rot.
6. Avoid planting too early in the season.
7. Do not severely prune the plants.
8. Avoid damaging the root system by cultivating away from the plants.
9. Adding too much nitrogen, especially early in the season will likely lead to blossom end rot development.
10. Maintain adequate soil moisture. It is better to irrigate frequently at low rate than to irrigate a few times at high rate.
11. Install drainage tiles or do not plant in areas where soil flooding is likely to happen.
12. Use of cover crops may reduce soil moisture fluctuation and blossom end rot.
13. No-till methods also may be beneficial.
14. Blossom end rot is irreversible and so remove damaged fruits as soon as you see the symptom.
15. Blossom end rot does not happen after harvest, although in apples bitter pit, which is similar to blossom end rot, occurs mostly in storage.

Spraying calcium, regardless of its form, will not eliminate blossom end rot on affected fruits. The three most important factors that will likely minimize blossom end rot development in your tomatoes, peppers or eggplants are monitoring the level of nitrogen carefully (divided the rate into smaller doses and use nitrate nitrogen), prevent fluctuation in soil moisture, and keep the soil pH at 6.5 to 6.8. If you can manage these three factors you can manage blossom end rot.

**Sunburn of bell peppers:** Blossom-end rot sometimes is confused with sunburn. In almost all cases, sunburn occurs on the outside of the fruit surface facing the sun, while blossom-end is less likely to occur on the outside fruits facing the sun. Also, unlike blossom-end rot, sunburn is not limited to the calyx end of the fruit but can extend to the petiole end, as the picture below shows.

(Source: Mosbah Kushad, Illinois Fruit and Vegetable News, Vol. 17, No. 10, August 1, 2011)
Vine Crops Update

No surprise, more and more Powdery Mildew is showing up. The hot dry conditions last week combined with fruit setting and in many cases, fruit sizing all benefit pathogen establishment. **Now is the time to start spraying:**

**PM in pumpkins and winter squash:** start with Quintec at 4 – 6 oz/acre. Remember to add a protectant like chlorothalonil (Bravo, Initiate, etc.). Another material that both organic and conventional growers can use is sulfur. Sulfur is unique in that it not only acts as a protectant, but has some vapor action as well that can help reduce PM from getting a good start. I would recommend Microthiol Disperss (OMRI listed) at 2 – 10 lbs per acre, but I would lean towards the 3 – 5 lb rate. However, **do not use sulfurs when temperatures are above 90°F**, especially when humidity levels are going to be high. The label also recommends that you avoid applying it under intense sunshine, so evening applications may be required. If you start with Quintec, the following week you should rotate to Procure (8 oz/acre) or Rally (5.0 oz/acre) mixed again with a protectant. Then in week 3 go back to Quintec plus a protectant and continue to rotate these materials.

For edible skinned cucurbits like summer squash, do **NOT use Quintec**. Instead, go with Procure at the highest labeled rate (8 fl oz). As with other products, resistance management is important, so make sure to alternate products with a different mode of action and tank mix a protectant into formulations that don’t include one already.

The first Cucurbit Downy Mildew was found on Long Island this week in cucumbers and I was alerted by a text message Tuesday morning from the Cucurbit Downy Mildew Forecasting Program. The website gives you the ability to set up a radius around your location (mine is 200 hundred miles) and if DM is reported within that radius, it sends you a text message!

This also reminds me of something I wanted to say last week—if you have finished with early plantings of cucumbers, summer squash etc., please mow them off or disk them under or burn them off with a non-selective herbicide like paraquat, glyphosate or Aim. If you don’t do anything with them and just let them hang around, they are great places for DM to get a start and become the source of inoculum for the rest of the area. If there is just no way you can get rid of them, continue to cover them with fungicides.

Even though we have not found any DM in the Capital District, I suspect that there might be some out there somewhere—it just doesn’t seem possible for it to be all around us and not here. I am especially concerned with some of the thunderstorms and rain showers that occurred late last week that could have deposited some spores in the area, but conditions may not have been favorable to get it started. I’m also concerned about a couple of fronts coming in this week from Canada and across the Great Lakes where DM has already been found. **According to the DM Forecasting website:** “HIGH Risk for cucurbits in northeast PA. Moderate Risk near the sources in the Southeast, large parts of OH and PA, and sections of WV, MD, southeast NY, and western CT. Low Risk for parts of southern New England, the upper mid-Atlantic, and eastern WI. Minimal Risk to cucurbits most other areas. “

So for now they are telling us we are still at minimal risk, but I would continue to scout frequently and call one of us if you suspect DM in your vine crops and continue to apply protectant fungicides (Bravo, copper, mancozeb), especially to cucumbers at all stages of growth. –CDB and CLS

Sweet corn update

The newest development this week with sweet corn is the discovery of Corn Leaf Aphids. As a general rule they like to ride up the tassel and remain in the upper parts of the plants. However, they will eventually fall down onto the leaves and ears and third feeding, especially under high populations can cause distortion on husk leaves. Although they may not cause a lot of damage, they can be responsible for vectoring a virus called Maize Dwarf Mosaic virus. Not only that, but some wholesale buyers have a very low tolerance for aphids and have been known to reject loads if aphids are found on the ears. Usually, the materials such as Warrior and Lannate used for worm control also do a good job in controlling aphids. However, under hot, dry conditions, aphid populations can get out of hand and if our worm sprays are stretched, aphids can become a problem.

We also continue to catch relatively high numbers of European Corn borer E-race moths, indicating that the second flight is continuing, but winding down. Most growers are sticking to a 5 – 7 day spray schedule which is being driven mostly by counts of Corn Earworm moth trap catches. –CDB
Earlier this week we found and identified Basil Downy Mildew at a farm in the Capital District. This can be a very destructive disease of basil and there are a limited number of fungicides labeled. According to vegetable pathologist Meg McGrath, the fungicides currently labeled include Quadris and phosphoric acid fungicides (ProPhyt, Fosphite and K-Phite have downy mildew under herbs on the label). OMRI-listed fungicides include Actinovate AG, Trilogy, and OxiDate. For more information and pictures, visit the following websites:

http://www.longislandhort.cornell.edu/vegpath/photos/downymildew_basil.htm
http://vegetablemdonline.vegpath.cornell.edu/NewsArticles/BasilDowny.html

Basil Downy Mildew is here

Cover crop update

As I scout around the area, I see much of the early sweet corn is done. There is also a good population of weeds also growing in those fields! Why not try some cover cropping to help keep some of those weeds under control while possibly helping improve your soil health? At this time of the season there are a couple logical ones you could try. First, have you ever tried oats? Right now there is plenty of oat seed out there as the harvest season for oats just finished up. Oats usually establish quickly and will continue to grow until we get a hard frost and will winter kill. And, if you’re planting your early sweet corn in those same fields every year, because oats winter kills, they make a great option for that early ground because you can get in earlier compared to planting rye which does not winter kill and can get very rank in the spring if you’re not on top of it. Another option which we saw at our Valatie Field Day this week is Buckwheat. This cover crop also establishes itself very quickly and was doing a pretty good job of shading out crabgrass and some other annual grasses in our cover crop trial. Using buckwheat now would also give you an opportunity to seed the field with something like rye after the buckwheat has reached maturity (35—40 days). And trust me, you want to make sure you mow or disk the buckwheat before it has the opportunity to set seeds and possibly become a weed problem in itself in the future. Below are some other options from Thomas Bjorkman of Cornell:

“...In many areas, conditions have been too dry for success with cover crop seeding. For cover crops to work well, they need to establish faster than the weeds and produce substantial bio-mass before they are incorporated. The go-to cover crops for mid-summer, buckwheat and sorghum-sudangrass, can normally be sown through the end of July. This year it is so dry in many places that they will establish too slowly or too unevenly to do their jobs.

This situation presents a dilemma: do you wait for rain, or change the plan? If it is too dry now to establish buck- Some prime choices in August include annual ryegrass, for a fast sod, ahead of next year’s mid-season crops; all the crucifers—radish, rapeseed, turnip, and mustard—for scavenging nitrogen and variable amounts of soilborne disease suppression, and hairy vetch with a small grain for nitrogen fixation and winter cover. Note that some of the crucifers can overwinter and will pro-duce seed in the spring. Also, they should be used cautiously by cabbage, etc. crop growers, if they’re used at all. Detailed information for these cover crops in New York vegetable systems are at covercrop.net.” —Thomas Bjorkman
There have been several new reports of late blight this past week including Anne Arundel Co., Maryland (potatoes), New Brunswick and Prince Edward Island (also potatoes), and most recently Chittenden Co., VT. To get an idea of the outbreaks and where they are in proximity to us, take a look at the map on the following website:  http://www.usabligh.org

Updating outbreaks earlier in the season from Long Island, Meg McGrath reports: “Since mid-July late blight has been detected in additional locations on the North and South Forks of Long Island as well as on Shelter Island (located between the forks). Two locations were community gardens on preserved farm land shared with organic growers. Both gardening groups decided to remove all their tomato and potato plants to avoid impacting the growers. Despite the generally unfavorable conditions (sunny, unusually hot days, with limited rain), symptoms are being found in new fields. On 7/29 late blight was found at a conventionally-managed potato farm being monitored by the IPM program (stem lesion). Symptoms observed at the farm on Shelter Island more closely resembled drought stress than late blight, perhaps reflecting the unfavorable conditions for disease development. Images plus additional information have been posted at http://www.hort.cornell.edu/lateblight under ‘Symptoms seen during heat wave’ near the bottom of the page. During the two July days with conditions most favorable for long distance movement of the pathogen (overcast all day followed by evening rain), the forecast wind trajectory went in a northwest spiral putting southwest CT most at risk.”

Small Fruit Update: Late summer weed control options

Late Summer Weed Control Options for Berry Crops
If you are an organic grower or trying to reduce your herbicide usage, late summer is a good time to consider going through the berry plantings with a crew to hand weed or use a flamethrower in plantings. Cultivation is an option for strawberries and materials like vinegar could also be very helpful for weed control. Cleaning up a patch, then applying mulch where it is appropriate will save time next season. Do not ignore late season weed control because you don’t use herbicides.

Strawberry Weed Control: Controlling fall germinating winter annuals such as chickweed and shepherds purse is critical at this time of year. Devrinol (napropamide) is a preemergent herbicide that can cause problems with rooting of daughter plants so this material should be used after early forming daughter plants have rooted. Because daughter plants that form after late August don’t usually contribute as much to the yield, Devrinol can be applied without much effect at that time, but BEFORE winter annuals emerge. Devrinol must be moved into the soil by cultivation or water after application.

Sinbar (terbacil) is a preemergent herbicide with some postemergence activity. Usually Sinbar is applied after renovation or after the berries have gone dormant in the fall. If leaves are present during application, immediately apply 0.5-1 inch of water to wash the chemical off the strawberry foliage. Otherwise severe injury many result. Do not use Sinbar on soils with less than 2% organic matter and do not use on ‘Guardian’, ‘Darrow’, ‘Micmac’, ‘Tribute’, or ‘Tristar’ as these cultivars have shown extreme sensitivity. Some growers have reported sensitivity in ‘Honeoye’ and less vigorous cultivars and an increase in root rot following use has been reported. Sinbar is limited to 8 oz/A per growing season.

Poast (sethoxydim) is a postemergent, grass herbicide. This material works well applied in late summer or early fall to actively growing grasses. Don’t waste your time and the product on summer annual grasses like foxtails and crabgrass that will be killed by frost. Poast can be used in the fall to suppress perennial grasses such as quackgrass; control early emerging small grains, and kill winter annual grasses such as wild oats. Poast must be applied with a crop oil.

Highbush Blueberry weed control

Poast must be applied in late summer or early fall to actively growing annual grasses such as wild oats. Poast can be used in the fall to suppress perennial grasses such as quackgrass; control early emerging small grains, and kill winter annual grasses such as wild oats. Poast must be applied with a crop oil.

Tomato and Potato Update

August is an excellent time to focus on problem weeds, especially woody perennial plants that frequently gain a foothold in blueberry rows. As these weeds begin to move carbon stores to their roots for the winter, they will also move systemic herbicide to the root zone very efficiently. The key thing to remember is, so will blueberry plants! Be very careful with your application. A shielded sprayer is a must, better yet would be a wick applicator. A 2% Round-Up solution – 41% a.i./gallon will kill most of your problem herbaceous weeds, but if you have large woody material, you might want to use a higher solution. The Round-Up Pro label gives mixing instructions for many concentrations up to a 50% solution. The cut-stem application method is also listed for problem woody plants. Using a 50-100% solution of Round-Up, apply the material directly to the woody stem using a wick applicator immediately after cutting. Many growers use a roller/wiper application to the edges of their mulched row to keep grass from encroaching. Be sure that your mulch is nice and thick and that no blueberry roots are obvious. Again, great care should be made to prevent any drift onto the blueberry plants during these applications.

For pre-emergent control of fall annuals there are several choices. Sinbar can be used after harvest in all but 1-year old plantings. Devrinol should be cultivated or watered in within 24 hours of application. Solcim is also a good choice at this time of year, IF you did not apply this material in the spring.

Bramble Weed Control

Late summer and fall is an excellent time to control troublesome perennial weeds like thistle, dock, smartweed, and morning glory by spot spraying with Round-Up, but take EXTREME caution to avoid getting herbicide on bramble canes. Be EXTREMELY CAREFUL when spot treating to avoid any contact with desirable plants. For grass control, now is the time to apply the second Poast application. This should be done soon, while grasses are actively growing. The further you get in August, the poorer the control. To suppress winter annual germination, both Sinbar and Devrinol can be used. Solcim, if not applied in spring, is a good choice unless you have a new planting or light soils. Also, certain varieties are sensitive to Solcim. Surflan and Princep can also be used in early September, but make sure that you read the label as these herbicides have caveats re: soil organic matter content and rates. -LGM
**Weekly and Seasonal Weather Information**

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NA—The Granville weather station was established this year (2011) so there will be no 2010 data reported because we have no records.

**Upcoming Meetings and Notices**

**Thursday, August 25 - Raspberry High Tunnel Open House**, 2 to 6 PM
NYSAES Geneva, Lucy-Robbins Farm. Tour a primocane fruiting raspberry trial in a multi-bay high tunnel system. Dr. Courtney Weber will host the event and be on hand to answer questions and offer insights into growing raspberries under high tunnels.

The Lucy-Robbins farm of the NYSAES is located approximately 2 miles west of the Experiment Station at 3320 Sutton Rd. 0.9 mile south off County Rd. 4 (County Rd. 4 is North St. in Geneva on the North side of the Station). Sutton Rd. runs north and south between County Rd. 4 and NYS Routes 5&20. From Routes 5&20 turn north at the Time Warner Cable Offices approximately 1.5 miles west of the Geneva Walmart.

The Open House is free and open to the public. Registration is requested for logistics and planning. Please register with Lou Ann Rago at (315) 787-2394 or lar38@cornell.edu.

For questions or more information contact Dr. Courtney Weber at (315) 787-2395 or caw34@cornell.edu. If you are interested in attending this event, please contact Laura McDermott. If there is enough interest, we might be able to get a van and ride together.

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