Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Weekly Vegetable Update

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Regional Updates:

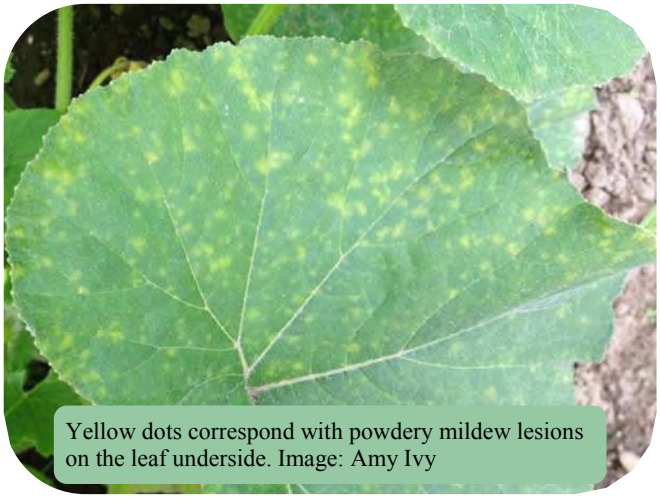
Crops are progressing nicely with the moderation in temperatures and well-timed showers over the weekend. We have seen an increase in aphid pressure in different crops but the good news is no new Late blight or Cucurbit Downy Mildew reports across the state.

Remember, crops being grown with plastic mulches and drip irrigation will still need to be irrigated regardless of how much rain we get and how often they get irrigated should increase as the plant increases in size and begin to set fruit.

Tomatoes: There are MANY more cases of Blossom End Rot on tomatoes than normal and, most unusually, there are several fruit on each plant displaying the problem. Fruit are slowly starting to ripen; certainly not as quickly as most growers would like. As we move into cooler night temperature this week you can expect heavy dew set on plants. Now is the time to begin watching for disease infections. Septoria and early blight are progressing in early tomato plantings. Look also for timber rot, and of course keep looking for late blight.

Hornworms seem to be more of a problem this year than usual. Normally Hornworms are not a big deal but you may want to take a look in the tomato field for these. They tend to feed toward the top of the plant and sometimes will feed on fruit as well. The Cornell Guidelines recommends consideration of treatment if more than one hornworm per plant is found. Tomato fruitworms, AKA corn earworm is another Lepidoptera pest to watch for in August.

Cucurbits: Squash bugs continue to hatch in very high numbers in all types of cucurbit plantings. The best option is a well-timed spray to kill the young nymphs. Monitor a few egg masses in the field and spray as soon as the nymphs emerge. Cucumber beetle populations are increasing again in many areas and are damaging cucumbers and winter squash and pumpkin fruit. Heavy enough feeding will cause young fruit to abort.



Yellow dots correspond with powdery mildew lesions on the leaf underside. Image: Amy Ivy

Diseases are a concern with cucurbits. Articles inside the *Update* detail control options.

Garlic harvest is nearly complete across the region. Most garlic has looked good coming out of the field, though size is a little small. Maintaining quality during curing and storage is the next big hurdle. Warm, mostly dry weather has helped. Questions? Call Crystal.

Cucurbit Update

The heat wave from a week ago really had vine crops growing quickly. We also saw some issues with Bacterial Wilt in pumpkins and Phytophthora blight (*Phytopthora capsici*) in several different fields that have had P-cap in the past. Although the symptoms of the diseases may look similar, they are very different.

Inter-venial necrosis of pumpkin leaves followed by the stunting, shortened internodes and growing points that look they have been burnt by something all symptoms of Bacterial Wilt.

Bacterial wilt clogs up the vascular tissue of the plant making it stunted. Under hot, dry conditions, the plant will wilt and the leaves will turn yellowish brown, but the main veins will remain green for a while. I think during the period with lots of natural rainfall, plants were able to survive with the disease. This stretch of hot, dry weather which is why we are seeing some plants go down.

The other difference between Bacterial wilt and P-cap is that bacterial wilt is vectored or transmitted by striped cucumber beetles when the plants are very small (less than 4 true leaves). Once the plant is older, they become fairly resistant to the bacteria. So, most of what you see exhibiting symptoms now should be all you see as no new bacterial wilt infections should happen, unless you replanted and have very young plants in the same field as infected ones. Control needed to occur when cucumber beetles were feeding earlier in the spring.

Phytophthora blight has also been identified on several farms, mostly in green and yellow summer squash and peppers. I'm not surprised with all the previous wet weather and saturated fields we saw during most of June. This one is much harder to deal with than Bacterial Wilt and will continue to spread throughout a field or farm if the conditions remain wet. Normally the first symptoms we note are wilting or collapsing of the plants and usually we can find a yeasty looking white growth on the crown or on the fruit. Many of the controls for this disease are cultural and as our crops are already planted and in some cases being harvested, our focus now turns to other management strategies. The short article below by Meg McGrath, Cornell University Pathologist from Long Island has some more information on what to do now if you are seeing symptoms of P-cap on your farm:

Keys to Successfully Managing Phytophthora Blight in Cucurbits

By Margaret Tuttle McGrath

An integrated, preventive, and aggressive management program with cultural practices and fungicides is key to successfully managing Phytophthora blight. Multiple tactics are needed started before symptoms are seen because this disease is so challenging to control especially after onset. The pathogen survives years in soil. Infection typically occurs under wet conditions. Avoid planting in poorly drained areas, subsoil to improve drainage between crop row and in driveways, and correct any in-field irrigation leaks that could lead to excess water around plants. Avoid water sources that may be contaminated by run-off from an infested field including on another farm. Clean equipment and tools between fields. Apply fungicides weekly, alternating among chemistry to manage resistance. See list below. Note that Previcur Flex is not effective against *Phytophthora capsici* although it is highly effective against other species of *Phytophthora*, such as *P. infestans*. Routinely inspect fields for symptoms. A common initial symptom on

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Cucurbit Update-Managing Phytophthora Blight, continued from page 2

young plants is wilt, due to infection of the crown and main root, that can be mistaken for bacterial wilt. Promptly destroy affected plants and fruit as the pathogen can produce an abundance of spores on infected plants, quickly resulting in widespread occurrence in a field, especially during a rainy period.

Additional information on management is posted at http://vegetablemdonline.ppath.cornell.edu.

Revus (40). Apply at 5.5 to 8 fluid ounces for a maximum of 32 fl oz/A with no more than 1 consecutive spray. Label specifies that it must be tank-mixed with copper fungicide. REI is 12 hr and PHI is 0 days.

Presidio (43). Apply at 3-4 fl oz/A for a maximum of 12 fl oz/A with no more than 2 consecutive sprays. The minimum interval is 7 days, REI is 12 hr, and PHI is 2 days. Restricted-use pesticide. The rotational restriction is 18 month for corn and other crops that are not labeled.

The early foliar symptoms of *Phytophthora capsici* followed by the white yeasty growth seen on this yellow squash fruit.

Targeted Fungicides for Phytophthora Blight (alternate among products with different codes)

Phosphorous acid fungicides (Agri-Fos, K-Phite, ProPhyt, Phostrol, Fosphite, etc.)(FRAC Code 33). They are thought to have greatest benefit when applied early in crop development and to the soil so that they can be taken up by roots. ProPhyt and Fosphite are labeled for use at planting and/or transplanting (specific directions differ). Phosphite ion, the active ingredient for these fungicides, affects fungal pathogens directly and promotes the plant's defense system. All fungicides in this group can be applied to foliage. There are also several phosphate fertilizer products that should not be confused with the fungicides as they do not have this active ingredient and it is illegal to use them for disease control as they are not registered as fungicides.

Ranman (21). Apply at 2.75 fl oz/A for a maximum of 6 applications. Use an organosilicone surfactant such as Silwet L-77. The minimum interval is 7 days, REI is 12 hr, and PHI is 0 days (may be applied day of harvest).

Forum (40). Apply at 6 oz/A for a maximum of 5 applications. Label specifies that it must be tank-mixed with another fungicide. Label also specifies no more than 2 consecutive applications before alternating with another fungicide. REI is 12 hr and PHI is 0 days.

Therefore only labeled crops can be grown in a field the year after Presidio was used. Many crops are now labeled. Label specifies that Presidio must be applied with another fungicide.

Tanos (FRAC Group 11 and 27). Apply at 8 oz/A for a maximum of 4 applications. It must be tank-mixed with a copper fungicide and a fungicide containing mancozeb. Follow a strict alternation with no consecutive applications of Tanos. REI is 12 hours and PHI is 3 days.

Gavel (Group M3 and 22). Apply at 1.5–2.0 lb/A every 7 to 10 days or when conditions are favorable for disease for a maximum of 8 applications. REI is 48 hr and PHI is 5 days. Restricted-use pesticide. Workers must be notified that a dermal sensitizer was applied both orally and by posting at entrance to treated area for 4 days.

Biofungicides (include Actinovate, Double Nickel, Regalia, RootShield, Serenade Soil, and Tenet) can be applied to soil pre-transplant, at planting, and via drip to manage the blight pathogen, *Phytophthora capsici*, in the root and crown zone and to induce resistance (Regalia). Most of these biopesticides can also be applied to foliage. Serenade Soil use directions for this application are

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Cucurbit Update-Targeted Fungicides for Phytophthora Blight, continued from page 3

through drip irrigation or as a directed spray (2.2-13.2 fl oz/1000 row ft) in the furrow just before the seeds are covered. Actinovate can be applied to seed as a spray or dry coating, or applied in-furrow or through drip at 1-12 oz/A. There are two RootShield formulations. The granular is labeled for use on pepper but not cucurbits. The WP can be applied as a drench to potting soil or field soil, or in furrow or broadcast. Regalia can be applied as a plant dip, soil drench, in-furrow or through drip irrigation. Regalia is the only product listed here that does not have biocontrol organism(s); its active ingredient is extract of the giant knotweed. These products are all approved for organic production.

Please Note: The specific directions on fungicide labels must be adhered to -- they supersede these recommendations if there is a conflict. Any reference to commercial products, trade or brand names is for information only; no endorsement is intended.

Cucurbit Downy Mildew Forecast: As you might have seen last week (July 22—23) most of our territory was at a high risk for having spores of Cucurbit Downy Mildew being moved into the area. For the most part, the rest of last week and this week we are in a "low risk" for CDM, however, if spores were deposited here during last week's "High Risk" period, we should expect to see some symptoms of CDM showing up, especially on cucumbers. It usually takes 7 –10 days for symptoms to show up. Remember that this strain of CDM that we have had here over the last 5 or 6 years is particularly aggressive on cucumbers, with the other cucurbits exhibiting different levels of susceptibility with winter squash and pumpkins being less susceptible. However, they still will get CDM and it can negatively impact the fruit quality. Here is the recommended conventional fungicide program. If you are an organic grower, copper used as a preventative will result in the best control, but needs to be applied before the disease starts and needs to be repeated every 5 –7 days.

To date CDM has not been found here in the region but it is all around us (Long Island, New Jersey, Delaware, Connecticut, etc.) For this reason, you could continue on a protectant fungicide program using Bravo or other chlorothalonil product or mancozeb until the disease is identified closer.

Week 1: Presidio (see note below—4 ozs/acre) or Ranman (2.1—2.75 ozs/acre) plus Bravo or other chlorothalonil product or mancozeb (please note the 5 day preharvest interval with any maneb/mancozeb containing product)

Week 2: Previcur Flex (1.2 pints per acre) plus Bravo or other chlorothalonil product or mancozeb (see above note).

Week 3: if you used Presidio Week 1, switch to Ranman or vice versa plus Bravo or other chlorothalonil product or mancozeb (see above note)

Week 4: Repeat above schedule

A few more notes: **Presidio** has some strict rotational restrictions that I am looking into. Currently on the label it says that the following crops may be planted immediately after Presidio has been applied: Brassica (Cole) leafy vegetables, Cucurbit vegetables, Bulb Vegetables, Fruiting vegetables, Grapes, Root and Tuber Vegetables, Leafy vegetables (except Brassicas). Wheat is 30 days and all other crops not listed above have an 18 month rotation restriction. Also, the maximum use rate Presidio is 12 fluid ounces per acre per season.

Powdery Mildew: Although Powdery Mildew has not been found yet in pumpkins or winter squash, it can be found in summer squash plantings all over the place. If you are done harvesting a planting, please disk it under, burn it off with an herbicide or continue to spray it with a fungicide program until you can destroy it. These plantings only serve as a reservoir or source of inoculum. We don't have a lot of choices for PM control in **pumpkins and winter squash** so the schedule we have is below. **Also, remember that the fungicides that control Downy Mildew will not control Powdery mildew and vice versa!** However, you can tank mix them together and you can also get double duty out of your chlorothalonil (Bravo) materials.

Week 1: If no Powdery mildew is found the best material to start with is Quintec at 4 –6 fl ozs per acre (please note that Quintec is not labeled for edible peel fruit such as cucumbers) plus Bravo (chlorothalonil) or copper or sulfur (do not use sulfur under hot (>95^{O}F), humid conditions or on watermelons). The sulfur that is easiest to work with and goes readily into solution is one called Microthiol. Be careful that you do not purchase a sulfur that is meant to be used as a dust—they do not mix nicely. If PM is already started in the field, you should start with Procure at the 5 oz rate per acre plus Bravo or sulfur.

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Cucurbit Update-Targeted Fungicides for Phytophthora Blight, continued from page 4

Week 2: If you used Quintec week 1, then switch to Procure plus Bravo or sulfur for this week.

Week 3: Pristine at 12.5—18.5 ozs per acre plus Bravo or sulfur

Week 4: Repeat schedule.

You can also use Rally in place of Procure (same chemical family), but research indicates that Procure works better then Rally, especially at the 5 ounce per acre rate.

For organic growers, the potassium bicarbonate materials (MilStop etc.), JMS Stylet Oil or sulfur products used early as a preventative before the disease gets started, with high water volume and spray pressures to optimize coverage will provide some control and improve fruit quality, especially in winter squash.

Tomato Leaf Roll

By Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Tomato leaf roll is a problem with a variety of causes that we have been seeing a lot of this year. Tomato leaf roll starts with upward cupping at the leaf margins followed by inward rolling of the leaves. Lower leaves are affected first, and can recover if environmental conditions and cultural factors are adjusted to reduce stress. Not all leaves on a plant roll, but eventually the rolling can involve most leaves on a plant and last through the season. In severe cases, whole plants can be affected. The margins of adjacent leaflets may touch or overlap. Rolled leaves become rough and leathery but are otherwise normal in size and appearance. There is no discoloration of leaf veins associated with this problem. The good news is that leaf roll rarely affects plant growth, fruit yield, or fruit quality.

Leaf roll is often seen just after plants are heavily pruned during dry soil conditions. If the tomato plant's top growth is more vigorous than root growth and we are hit with a dry hot period the foliage may transpire water faster than the root system can absorb it from the soil, and the plant will respond by rolling its leaves to reduce the transpiration surface area.

Another cause of this disorder is growing high-yielding cultivars under high nitrogen fertility programs. Oddly enough leaf roll disorder also has been found to be caused by excess soil moisture coupled with extended high temperatures. Leaf roll severity appears to be very cultivar dependent. Cultivars selected for high yield tend to be the most susceptible. Indeterminate cultivars seem to be more sensitive to this problem than determinate cultivars.

It has been found that sugar and starch accumulating in the lower leaves cause the leaf to roll; the more they accumulate the worse they roll. Leaf roll is usually something we see when we have hot dry conditions in June or July, when plants are most actively growing. Leaf roll seldom affects yield, therefore no corrective measures are needed. However, it is important to distinguish leaf roll from other problems that affect tomato leaf shape. Some viruses or herbicide injury can look similar to tomato leaf roll, but if the symptoms appear suddenly, involve many of the plants in a field, and largely affects the lower leaves, it is probably leaf roll. You can reduce symptoms by maintaining consistent, adequate soil moisture of about 1 inch per week during the growing season. This will also help with calcium up-take, reducing blossom end rot problems. Growers also should not prune heavily during hot dry conditions or over-fertilize with nitrogen.

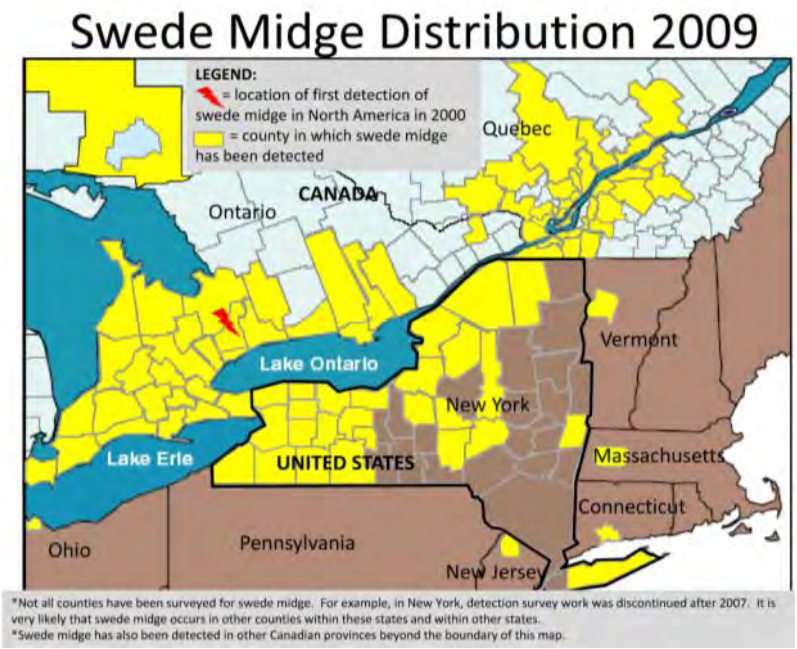
First Swede Midge on Broccoli and Brussels Sprouts in Our Region

Swede midge is a serious pest of cruciferous crops including broccoli, cabbage, cauliflower, Brussels sprouts and even kale. It was first found in the United States in 2004 in western NY. It is native to Europe and southwestern Asia and was first found in Ontario Canada in 2000.

Since 2004 it has spread throughout western New York and the western side of northern New York, as well as Burlington, Vermont. I visited the Intervale Community Farm in Burlington last fall and saw the damage it can do to all of these crops. One grower from central Vermont said that in addition to limiting his broccoli yield by almost half it had made about a third of his fall kale unmarketable as well.

A stunted, malformed head on this broccoli plant adjacent to plants with nicely formed heads ready for harvest. *Photo by A. Ivy*

I had not seen swede midge in either Clinton or Essex County until this week where it was well established in both a community garden and at a nearby vegetable farm. The adult is a small fly (midge) that lays its eggs on the growing points of the plant. The larvae then feed on that growing point causing distortion and stunting. In broccoli it causes blind heads (see photo). One characteristic is the outer leaves will usually look normal and healthy while the damage is focused mostly on the center growing point.



Because this pest has not been seen in our Eastern New York region except for this week's finding in Essex County, we are asking growers in our region to keep an eye out and let us know if you see anything suspicious in any of your crucifer/brassica crops. Based on the distribution map dated 2009 there is a strong likelihood this pest will move into our region if it hasn't already. There are several generations a year, making this pest a challenge to control, especially for organic growers.

For more information on swede midge including management options and excellent photographs of the damage it causes on various crops visit: http://web.entomology.cornell.edu/shelton/swede-midge/ *-ADI*

The Weekly Weed: Common Ragweed *(Ambroisia Artemisiifolia)*

By Justin O'Dea, CCE Ulster County

Common ragweed season is swiftly approaching. Aside from this weed's ability to establish and produce seed on most any disturbed soil (however nutrient poor it is), late-harvested vegetables (especially corn) are really where this weed commonly has the opportunity to persist and proliferate in crop fields. In early sweet corn plantings and other vegetable beds where production is finished, complete prevention of ragweed seed production is still possible. Buckwheat, sudangrass and sorghum-sudangrass **summer cover crops** (*see 7/11/13 newsletter*) are still an option for additional weed control in these areas. Annual Ryegrass is a later-summer cover crop option than the aforementioned crops. For more information on annual

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Weekly Weed: Common Ragweed, continued from page 6

ryegrass covers see: http://www.hort.cornell.edu/bjorkman/lab/covercrops/annual-ryegrass.php

- Common ragweed is a native summer annual broadleaf species in the Aster Family. Chilling periods of several weeks and alternating light and soil temperatures (50 to 80° F) breaks ragweed **seed** dormancy. **Seedlings** commonly emerge in from the top 1-2" of soils throughout spring (rarely below 2.5"); emergence can persist into early summer following tillage/cultivation, which encourages germination.
- Widely adaptable, ragweed plants are tolerant to drought and poor soil conditions, and are moderately shade tolerant and frost sensitive; it is also a strong competitor for accumulating trace soil nutrients.

Shallow, early season cultivation followed by delayed cultivation until seedbed preparation allows for prolonged germination periods to reduce seedbanks. Very young ragweed is very vulnerable to cultivation, but quickly becomes more difficult to kill during later seedling stages than many other annual weeds, due development of a long taproot. Tine weeding followed by inter-row cultivation that buries seedlings in the crop row is reported to effectively reduce dense ragweed stands. In intensive smaller-scale vegetable production, large ragweeds should be manually rogued out of plantings. Mulches are reported to be less effective for ragweed than most weeds; ragweed is highly competitive and can even establish in pastures under heavy competition from perennials, likely due to its moderate tolerance to shading, drought, and soil nutrient conditions. Note: Cornell has reported Triazine-resistant ragweeds in New York populations.

Ragweed seedling.
Photo: Cornell Weed Ecology & Management Lab

Ragweed foliage.
Photo: Justin O'Dea, CCE-Ulster

Ragweed flower buds.
Courtesy Frank Mayfield, Flickr.com

Ragweed and velvetleaf in sweet corn.
Photo: Justin O'Dea, CCE-Ulster

Ragweed **flowers/produces seed** later than most common summer annual weeds, typically starting in August and continuing through October. Single ragweed plants may typically produce 3,000-3,500 seeds, but are capable of producing tens of thousands of seeds. Seed persistence in soils is moderate and they can survive the digestive tracts of animals; seeds may rarely persist for decades, but ragweed seedbanks are reported to be reduced by ~50% after 1 year, ~99% after 10 years.

- **Diseases** Ragweed can host are aster yellows virus and onion thrips, along with *Rhizoctonia solani*, *Sclerotinia sclerotiorum*, and rusts of cereal crops.
- In addition to chemical **controls**, ragweed can be partially controlled with cultivation before late-planted crops, or more thoroughly after early-planted crops.

For more information see:

- http://weedecology.css.cornell.edu/weed/weed.php?id=5#
- http://www.msuweeds.com/worst-weeds/common-ragweed/
- http://www.nysipm.cornell.edu/factsheets/weeds/weedfs8.pdf

Herbicide charts for vegetables from Cornell Recommends: (select crop, weed management is the last section of each chapter, XX.7):

- http://www.nysaes.cals.cornell.edu/recommends/.

Meetings and Notices

Bejo Seeds Open House and Demonstration Trials August 27-28, 2013 10am to 6pm, Geneva, NY

Come join us to view a wide variety of quality vegetable crops at Bejo's Research and Development Farm!

- Home & Market Garden Exhibit
- Commercial Strip Trials
- Food Concept Sampling
- Organic Variety Exhibit
- Seed Dealer Displays
- Product & Equipment demonstrations
- Product Market Displays

Refreshments plus Light Lunch served on Tuesday, August 27. To RSVP please call (315) 789-4155.

Corn Trap Catch Numbers

Location	ECB-E	ECB-Z	Corn Earworm	Fall Armyworm	W. Bean Cutworm
N. Washington	11	1	2	0	0
C. Washington	5	0	0	0	0
N. Rensselaer	0	0	0	0	0
N. Columbia	0	0	2	0	3
Saratoga	1	0	0	0	0
Orange	5	12	1	0	2
S. Ulster	0	0	0	0	0
N.Ulster	25	0	9	0	0

Weekly and Seasonal Weather Information

	Growing Degree Information Base 50^{O} F			Rainfall Accumulations		
Site	2013 Weekly Total 7/24—7/30	2013 Season Total 3/1 - 7/30	2012 Total 3/1—7/30	2013 Weekly Rainfall 7/24—7/30 (inches)	2013 Season Rainfall 3/1—7/30 (inches)	2012 Total Rainfall 3/1—7/30(inches)
Albany	130.3	1536.6	1851.3	0.46	21.75	16.34
Castleton	109.1	1631.2	1830.5	0.18	19.89	15.87
Chazy	103.3	1439.6	1894.0	0.16	18.94	13.41
Clifton Park	116.7	1571.0	1729.8	0.12	20.40	19.53
Clintondale	137.5	1791.2	1423.3	NA	NA	15.20
Glens Falls	110.5	1451.7	1552.5	0.03	16.90	14.83
Granville	111.0	NA	1468.5	0.20	NA	17.60
Guilderland	121.0	1444.8	1576.0	0.14	5.56	5.57
Highland	137.0	1771.3	1902.2	0.65	15.30	17.54
Lake Placid	58.4	970.2	NA	0.55	19.95	NA
Montgomery	136.7	1681.6	1638.5	1.50	14.96	NA
Monticello	101.5	1220.7	1566.0	0.00	0.18	1.44
Redhook	133.3	1667.5	1759.5	0.35	14.63	12.81