

# Cornell University ~ Cooperative Extension Eastern NY Commercial Horticulture Program

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## Weekly Vegetable Update

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## Seasonal Wrap Up

### North Country – Clinton, Essex, northern Warren and Washington Counties:

As I look back on this past season I am impressed with the resiliency of our growers who rode out the roller coaster of weather extremes and growing challenges. Early May was dry, too dry for many and we all hoped for a soaking rain. Irrigation can pull you through, but crops thrive best with rain as their source of moisture. But once the rain started it didn't stop! Plantings were delayed from mid-May through June, conditions were cold and wet, direct sown seeds often needed replanting, and the weeds were out of control. By late June it was pretty dismal and the best comfort I could give growers was that everyone else was behind too, and losing the battle with weeds. Usually June is a golden time for growers when their fields look their best with all that promise of the crops to come getting bigger every day. It was a tough time but our growers are resilient and they hung in there. High tunnel growers watched their field tomatoes languish and their tunnel tomatoes thrive under the protection from rain and cold winds.

And then July arrived. Cold and wet at first but once the sun came out, it stayed out the rest of the season. Late July and August were ideal conditions and the crops responded better than we had hoped. Their root systems were compromised from the soggy, cold soil but most were able to recover and grow with no more setbacks. Phew! Late blight loomed large in late July but those sunny, warm conditions slowed it down and the northern region was spared. Phew again!

By late August we were wishing for rain. What a summer, from one extreme to the next. Those with irrigation were grinning since the dry conditions helped slow down many foliar diseases and made field work and weed control a lot easier. Those without irrigation saw their crops slow down. They still got a harvest but it would have been greater with plenty of water. Our first light frost in the Champlain Valley was just this week, on October 6, but it wasn't widespread. We used to say September 15 was our average first frost date up here but it's been years since we've had a killing frost in September, except for those colder pockets and higher elevations.

Bravo to all you growers out there, you made it through the worst of it! I admire your determination and resiliency. Best wishes for the rest of the fall season.

### Capital District – Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington Counties:

I hope that the information that we have provided to you in these weekly updates has been useful and timely. If you have suggestion on how to improve them, please don't hesitate to contact me or any of the vegetable educators located on the front of this newsletter. The idea that there is no such thing as a typical year continues to echo through my head with one exception: Extremes! Mostly I'm referring to weather extremes that seem to somehow keep coming. Thinking back, 2014 was probably one of the more "typical"

*Continued on next page*

*Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties*

*Seasonal Wrap Up, continued from last page*

years that I can recall in a long time. And although 2015 wasn't the worse season I can think of, there were definitely some highs and lows.

**Springtime:** The first low that I recall is the very dry conditions of the springtime that resulted in pretty good planting conditions (unless you were trying to make raised plastic beds) but not so good for activating herbicide applications, especially in early sweet corn. In visiting farms and observing what was going on, I saw a lot of weedy corn fields this year that required post-emergent applications of herbicides which added another level of management we don't normally expect. Sweet corn wasn't the only crop that this happened to as I saw similar issues in pumpkins and winter squash plantings. All in all, from what I saw this summer with sweet corn and am seeing this fall with pumpkins, some pretty good yields and quality.

**Summertime:** For many of you there weren't enough hours in the day or in some cases, enough water in your ponds to get around to irrigating as much as you would have liked to, but more importantly, as much as you needed to. I saw more than my share of very short sweet corn plants, dry tips and overall small ears with August harvested corn. We also saw for the first time in a number of years some really high moth counts, especially Fall Armyworm and Corn Earworm. We have also seen Western Bean Cutworms moving into areas that have not seen this pest before.

I also saw what I thought to be a really nice tomato crop going into July until Bacterial Canker seemed to explode, and not just on farms that have had a history of it, but new farms as well. I cannot urge you enough to make sure you are giving your best effort to sanitize your greenhouse benches, tray inserts and bottoms (although I would rather see you use new inserts), trellising stakes (if you use them) and rotate your tomato fields as much as possible. Some good news was that other than a localized Late Blight outbreak, we've really had no more reports of LB in the region. And as usual, Septoria leaf spot was a common pest of all tomato plantings but Early blight showed up somewhat later than usual I thought this year. Downy mildew in cucumbers and other cucurbits seems to be the never ending story and seems to be getting harder to control as well.

**Fall:** Those of you that know me know that fall is my favorite time of the year and not because the season is coming to a close either. It's no secret that fall crops such as pumpkins and potatoes are my favorite crops to work with and this is their time to mature, after waiting 4-5 months. The drought in July and August really took a toll on these crops too, but regardless there is a lot of beautiful pumpkins

and potatoes out there. I think more than disease this summer, the drought resulted in some early vine decline or death and some smaller fruit. Although you don't have a lot of choices now for cover crops, it's not too late to get some rye seeded—the key is to remember to manage it in the spring!

**Mid-Hudson Valley- Columbia, Dutchess, Greene, Orange, Putnam, and Ulster Counties:**

Joining Cornell Cooperative Extension this year as a first-year educator, I did not know what to expect from the weather, pests, or even growers for that matter. I *do* know that in crop production there is very rarely a "normal season." So, as expected, the 2015 season started out like a roller coaster. Working of fields and planting was delayed following a historical winter that saw prolonged low temperatures and record snowfalls.

When the snow finally subsided we were greeted with record high temperatures and limited precipitation during the month of May; highs reached above 75 °F on 22 out of 31 days. This caused mild panic as some young seedlings and transplants were damaged. Some onion fields were disked due to poor stand establishment and seedling death, however, the majority of fields made it through the dry spell. Our hot and dry May was followed by a June in which we received over seven inches of rain, setting off a plethora of bacterial and fungal diseases on squash, brassicas, and other vegetable crops. Growers were quick to identify issues in their fields and act accordingly to limit disease progression and crop losses. Luckily, things dried out in a big way in July and August, causing a halt in disease progression but encouraging some insect pests such as leafminers and leafhoppers.

In the end, overall production and quality were good in the 2015 season and this is a testament to the growers' knowledge, resolve, and resiliency when dealing with the unpredictable and adverse conditions that sometimes seem to be the only constant in farming.

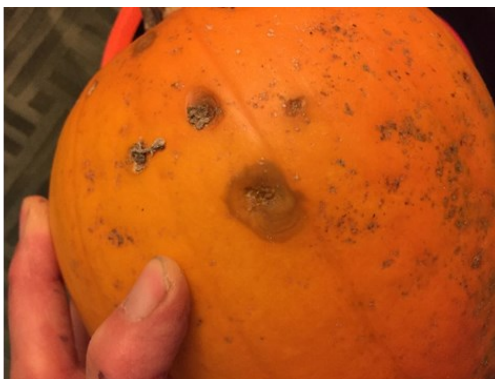
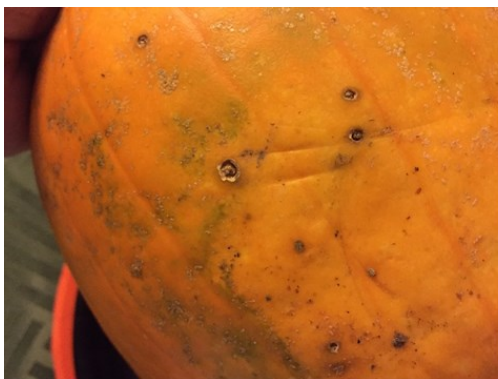
**From the editor:**

Dear Growers,

It's been a pleasure compiling and contributing to this newsletter this season. It seems like the business of farming is busier than ever. After all your hard work this season, I hope in the next few months you get to enjoy the fruits of your labor! All the very best—TR



## Fall Tidbits



Check pumpkins and squash for rot. The spots on the left are dry and firm, probably caused by squash bug feeding earlier in the season that then dried out. These are cosmetic but should not shorten the storage life. The spots on the right probably started from feeding injury but secondary pathogens have entered. Notice the softer tissue around the center, largest spot. This is active rot that will continue. The 2 spots above and to the left of the soft spot have some dried ooze coming from their centers. To check for possible bacterial disease, look at the fruit in the morning to see if anything fresh is exuding from these spots. If so, do not try to store these fruits. This grower reported noticing both cucumber beetles and squash bugs during the summer. These bugs feed not only on the leaves but on the fruit as well.

As your summer high tunnel crops wind down, take the time to prepare the soil well before planting a fall/winter crop. Remove all plant debris, test the soil and apply any amendments necessary to adjust pH and nutrient levels. In this tunnel the grower has built up high levels so they added peat moss to keep up their organic matter content without adding nutrients.

The beds are set for planting but they are going to wait 2 weeks, let any weeds emerge, and flame them off before



planting. With this method weeds are controlled without disturbing the soil. If the soil were to be tilled again, another batch of weed seeds would be brought up to the level for germination. This method of flaming just before (or just after) seeding won't prevent all weeds of course, but it will put a dent in the weeds and give the young crop a chance to get established without competition.

lished without competition.

Here is a beautifully managed crop of Rebelski tomatoes in Washington County in mid-September. The plants are well trained to a double leader, the drip irrigation system is applying water to the root zone and the rows are far enough apart to allow for good air circulation and ease of harvest and pruning.

A lot of growers struggle to keep up with pruning and training their high tunnel tomatoes, especially when August arrives. But when you're wondering if it's really worth the time and effort, think how much more enjoyable working in a tunnel like this could be!



## Determine Soil pH Before Adding Lime

Most agricultural soils have a tendency to become more acidic over time due to natural processes and the addition of acid-forming fertilizers. This can pose a problem for farmers as an overly acidic soil can disrupt the balance of available nutrients and lead to nutrient deficiencies and/or toxicities in plants. Growers typically apply lime to increase soil pH and correct this problem. Liming materials are those that contain calcium and/or magnesium compounds that are capable of neutralizing soil acidity.

Increasing soil pH through the application of lime is most efficient when lime is applied in the fall. This gives the calcium time to react and displace hydrogen ions from the soil particles and increases soil pH before the start of the next growing season. It is important to remember that while soils have a tendency to become acidic over time, the over-

application of liming materials can cause them to become too alkaline. Alkaline soils can also cause nutrient imbalances and result in plant growth problems. The ideal pH range for most vegetable crops is 6.2 to 6.8 for mineral soils and 5.2 to 5.8 for muck soils. Throughout the growing season I have seen several soils tests that showed a pH higher than the ideal range due to excess liming. A soil test should be conducted prior to liming to determine the current soil pH and the amount of lime needed to bring it to the optimum level.

Contact your local extension office for assistance in submitting a soil sample for testing, which includes a nutrient analysis, % organic matter, and pH. Recommendations to correct deficiencies and pH imbalances are provided along with the analysis. —KB

## Be careful with your cucumbers

Many fruit and vegetable farmers don't feel that food safety is a pressing issue because they've never made anyone sick. However, times are changing. Our food distribution and handling system is not what it once was. The baby boomer population is aging, and there is a greater percentage of the population with compromised immune systems. Food safety has never been more of an important issue than it is now.

On September 22<sup>nd</sup>, the CDC released an update about a recent foodborne illness outbreak related to cucumbers. The recent outbreak now has caused 3 deaths, 112 hospitalizations, and 558 confirmed illnesses in 33 states. The culprit is salmonella, which is a bacterial pathogen that is also often associated with outbreaks in tomatoes. The cucumbers came from Rancho Don Juanito, in Mexico and were being distributed by an American food distribution company. Their timely recall was made possible by their traceability pro-

gram, which enabled them to issue the recall and notify all customers who had purchased the product. Without a robust and functional traceability program, distributors like this one can get into serious trouble with liability when buying and distributing contaminated produce. Likewise, it is just as important for producers to have these traceability systems to make sure they are not blamed for outbreaks that they didn't cause. For example, what if Rancho Don Juanito had actually bought that lot of cucumbers from a neighboring farm to fill a supply gap, but they had no way to prove it?

Our food distribution is different now than it was even a few decades ago, and food safety is a critical element of success in modern farming. Get your food safety plan done as soon as possible with the help of our food safety coordinator. Please contact Erik Schellenberg [jk2642@cornell.edu](mailto:jk2642@cornell.edu) 845-344-1234

## Grow Your Farm Skills this Fall/Winter with Online Courses

The Cornell Small Farms Program through the Northeast Beginning Farmers Project are offering a menu of 16 online courses this fall and winter to help farmers develop their business and production skills. Courses are led by experienced educators and farmers. These are 5-7 week online courses and cost \$200 total for up to 4 members of the same farm to attend. Courses consist of a weekly real-time webinar followed by readings, discussion forums, and homework on your own time. Students successfully completing a course are eligible to receive a 0% interest loan of up to \$10,000 through Kiva Zip. Some upcoming courses include QuickBooks for Farmers, Holistic Financial Planning, Soil Health, Berry Production and Effective Marketing. To view the course menu and for more information on course descriptions, course logistics and FAQs, instructor bios and to register visit the website <http://www.nebeginningfarmers.org/online-courses/>

## Changes to EPA's Farm Worker Protection Standard

The Environmental Protection Agency has revised the 1992 Agricultural Worker Protection Standard regulation to increase protection from pesticide exposure for the nation's two million agricultural workers and their families. These changes will afford farmworkers similar health protections that are already afforded to workers in other industries while taking into account the unique working environment of many agricultural jobs.

The regulation seeks to protect and reduce the risks of injury or illness resulting from agricultural workers' (those who perform hand-labor tasks in pesticide-treated crops, such as harvesting, thinning, pruning) and pesticide handlers' (those who mix, load and apply pesticides) use and contact with pesticides on farms, forests, nurseries and greenhouses. The regulation does not cover persons working with livestock.

Major changes to the regulation:

- ◇ Annual mandatory training to inform farmworkers on the required protections. This increases the likelihood that protections will be followed. Currently, training is only once every 5 years.
- ◇ Expanded training includes instructions to reduce take-home exposure from pesticides on work clothing and other safety topics.
- ◇ First-time ever minimum age requirement: Children under 18 are prohibited from handling pesticides.
- ◇ Expanded mandatory posting of no-entry signs for the most hazardous pesticides. The signs prohibit entry into pesticide-treated fields until residues decline to a safe level.
- ◇ New no-entry application-exclusion zones up to 100

feet surrounding pesticide application equipment will protect workers and others from exposure to pesticide overspray.

- ◇ Requirement to provide more than one way for farmworkers and their representatives to gain access to pesticide application information and safety data sheets – centrally-posted, or by requesting records.
- ◇ Mandatory record-keeping to improve states' ability to follow up on pesticide violations and enforce compliance. Records of application-specific pesticide information, as well as farmworker training, must be kept for two years.
- ◇ Anti-retaliation provisions are comparable to Department of Labor's (DOL's).
- ◇ Changes in personal protective equipment will be consistent with the DOL's Occupational Safety & Health Administration standards for ensuring respirators are effective, including fit test, medical evaluation and training.
- ◇ Specific amounts of water to be used for routine washing, emergency eye flushing and other decontamination, including eye wash systems for handlers at pesticide mixing/loading sites.
- ◇ Continue the exemption for farm owners and their immediate family with an expanded definition of immediate family.

Additional information on the rule is available at:

[www2.epa.gov/pesticide-worker-safety/revisions-worker-protection-standard](http://www2.epa.gov/pesticide-worker-safety/revisions-worker-protection-standard)

From the US Environmental Protection Agency Office of Pesticide Programs

## Dispelling Common Misconceptions about Superweeds

Use of the term superweed has exploded in recent years and is frequently featured in news reports about herbicide-resistant weeds choking out crops. A few recent headline examples:

- **Superweeds Choke Farms** (*Des Moines Register*, June 22, 2014)
- **The Rise of the Super Weed Around the World** (*Wall Street Journal*, June 23, 2014)
- **U.S. Midwestern Farmers Fighting Explosion of "Superweeds"** (*Reuters*, July 23, 2014)

- **Superweed Spreading through Wall, Texas** (*KLST-TV*, July 29, 2014)

- **Super Weed Spreads Closer to Quad Cities** (*WQAD-TV*, August 4, 2014)

While there is no science-based definition for superweed, the term is often used to describe weeds believed to have special capabilities that are helping them outcompete other plants in ways never experienced before. Many associate superweed with glyphosate-tolerant crops and the suspected transfer of resistance genes from these

*Continued on next page*



*Superweeds, continued from last page*

crops to weeds. *The Oxford Dictionary*, for example, is one of many online resources to define superweed as “a weed which is extremely resistant to herbicides, especially one created by the transfer of genes from genetically modified crops into wild plants.”

But is that the truth? Are today’s weeds “supercharged” in some way? And if so, why is that the case?

As a nonprofit organization that promotes science-based information about weeds, their impact on the environment and how they can be managed, the **Weed Science Society of America (WSSA)** has compiled the information below to clarify two common misconceptions about superweeds.

**Misconception 1:** Rampant gene transfer between genetically modified crops and weeds is creating weeds able to resist treatment by herbicides.

**Reality:** There is no evidence that gene transfer is a major factor in the development of herbicide resistance. Instead, overreliance on herbicides with a single mechanism of action to control certain weeds has led to the selection of weeds resistant to that mechanism of action.

The transfer of resistance traits from genetically modified crops to weeds growing in the field is rare, and the occurrences observed and reported to date have had minimal impact. The only currently known mechanism for any crop trait to move into weeds (or vice versa) is through cross-pollination – a sexual crossing between the crop and the weed. Gene flow is more likely to happen if the crop and weed are sexually compatible, near relatives. Gene flow among more distantly related plant species is rare because they do not cross as readily. There are often physiological barriers, including pollen incompatibility, varying numbers of chromosomes and other factors that serve as impediments.

Even among sexually compatible crops and weeds, the opportunity for crop-weed gene flow depends on proximity of the crop plant to its wild weedy relatives. For example, there have been no reports of gene transfer in the more than 160 million annually planted acres of genetically modified corn, cotton and soybean crops where herbicide resistance weeds are such a significant issue today. Since these crops don’t have sexually compatible, near relatives in the U.S. and Canada, the risk of gene flow to other plants in the region is extremely low. Crops like sunflower, wheat and canola do have compatible weed relatives in their major production areas (e.g. wild sunflower, jointed goatgrass, and wild relatives of canola, respectively). As a result, the risk of gene flow between those crops and wild plants is greater. Where gene flow has occurred, the resulting plants are no more weedy than their parent plants.

**Misconception 2:** Herbicide use is creating a new breed of herbicide-resistant superweeds unlike anything we’ve ever seen before.

**Reality:** The costly issue of herbicide resistance isn’t new – and neither are the competitive characteristics of weeds. Although the number of acres affected by resistant weeds has increased over the last decade as more growers have come to rely solely on herbicides with a single mechanism of action for weed control, weeds have exhibited resistance to many types of herbicides over the past 40 years. Many weed populations have even evolved resistance to multiple herbicide mechanisms of action.

Herbicide resistance is an important, costly and escalating issue, especially as growers have come to rely more than ever on a single class of herbicides that targets weeds in the same way. It is more critical than ever for a variety of carefully integrated weed management strategies to be used so weeds resistant to one method can be controlled in other ways before they have an opportunity to spread. This includes nonchemical means of weed control, such as crop rotation, tillage, cultivation, hand hoeing, seed capture, etc. The WSSA has created a variety of free educational materials and recommendations concerning resistance and how to avoid it, available online at <http://wssa.net/weed/resistance>.

As to those super powers that many individuals ascribe to herbicide-resistant weeds? Under herbicide-free conditions, resistant weeds are no more competitive or ecologically fit than their susceptible partners. Both can crowd out crops and other desirable plants by outcompeting them for water, nutrients, sunlight and space. They grow incessantly and can be prolific seed producers. A single Palmer amaranth plant, for example, can produce hundreds of thousands of seeds, regardless of whether it is herbicide resistant or not. Weeds can be economically devastating if allowed to grow unchecked. As a result, we need to monitor vigilantly and use a variety of herbicide and non-herbicide strategies to control weed populations before they get out of hand.

**Note:**

*The WSSA thanks the following scientists for their special contributions to this document:*

- **Brad Hanson, Ph.D.**, Cooperative Extension Weed Specialist in the Department of Plant Sciences at the University of California - Davis.
- **Andrew Kniss, Ph.D.**, Associate Professor in the Department of Plant Sciences at the University of Wyoming and a WSSA board member.

**2015 Weather Table**—The weather information contained in this chart is compiled using the data collected by Network for Environment and Weather Applications (NEWA) weather stations and is available for free for all to use. For more information about NEWA and a list of sites, please visit <http://newa.cornell.edu/> This site has information not only on weather, but insect and disease forecasting tools that are free to use.

<b>2015 Weekly and Seasonal Weather Information</b>						
	<b>Growing Degree Information Base 50<sup>o</sup> F</b>			<b>Rainfall Accumulations</b>		
	<b>2015 Season Total 3/1 - 10/5</b>	<b>2014 Season Total 3/1 - 10/5</b>	<b>2015 Weekly Rainfall (inches) 9/21-10/5</b>	<b>2015 Total Rainfall (inches) 3/1 - 10/5</b>	<b>2014 Total Rainfall (inches) 3/1-10/5</b>	<b>2014 Total Rainfall 3/1 - 8/3(inches)</b>
<b>Albany</b>	<b>3071.6</b>	<b>2704.5</b>	<b>3.85</b>	<b>23.6</b>	<b>20.9</b>	<b>18.02</b>
<b>Castleton</b>	<b>3540.5</b>	<b>2554.5</b>	<b>4.85</b>	<b>25.73</b>	<b>21.86</b>	<b>17.76</b>
<b>Clifton Park</b>	<b>2964.8</b>	<b>2439.8</b>	<b>0.1</b>	<b>18.09</b>	<b>21.13</b>	<b>18.07</b>
<b>Fishkill</b>	<b>2936.6</b>	<b>Na</b>	<b>0.1</b>	<b>6.24</b>	<b>Na<sup>1</sup></b>	<b>Na<sup>1</sup></b>
<b>Glens Falls</b>	<b>2630.6</b>	<b>23830</b>	<b>2.59</b>	<b>17.27</b>	<b>25.96</b>	<b>20.99</b>
<b>Griffiss</b>	<b>2494.5</b>	<b>2263.5</b>	<b>2.57</b>	<b>27.17</b>	<b>30.52</b>	<b>22.5</b>
<b>Guilderland</b>	<b>2762.0</b>	<b>2482.5</b>	<b>2.56</b>	<b>26.94</b>	<b>Na<sup>2</sup></b>	<b>Na<sup>2</sup></b>
<b>Highland</b>	<b>3080.6</b>	<b>2759.7</b>	<b>7.25</b>	<b>27.96</b>	<b>24.42</b>	<b>21.89</b>
<b>Hudson</b>	<b>3060.1</b>	<b>2750.5</b>	<b>2.94</b>	<b>20.3</b>	<b>27.6</b>	<b>24.42</b>
<b>Marlboro</b>	<b>2968.3</b>	<b>2645.0</b>	<b>2.94</b>	<b>20.3</b>	<b>22.52</b>	<b>20.25</b>
<b>Montgomery</b>	<b>3008.0</b>	<b>2671.0</b>	<b>3.14</b>	<b>24.22</b>	<b>20.8</b>	<b>17.61</b>
<b>Monticello</b>	<b>2358.0</b>	<b>2086.0</b>	<b>0.18</b>	<b>1443</b>	<b>7.41</b>	<b>7.27</b>
<b>Peru</b>	<b>2506.3</b>	<b>2293.6</b>	<b>2.33</b>	<b>20.93</b>	<b>20.96</b>	<b>18.17</b>
<b>Red Hook</b>	<b>2920.4</b>	<b>2657.5</b>	<b>3.55</b>	<b>25.03</b>	<b>13.18<sup>3</sup></b>	<b>11.43<sup>3</sup></b>
<b>Willsboro</b>	<b>2460.6</b>	<b>2230.7</b>	<b>3.64</b>	<b>25.91</b>	<b>11.13</b>	<b>11.02</b>
<b>South Hero, VT</b>	<b>2653.5</b>	<b>2439.3</b>	<b>Na</b>	<b>Na</b>	<b>23.37</b>	<b>19.08</b>
<b>N. Adams, MA</b>	<b>2383.5</b>	<b>2152.0</b>	<b>3.29</b>	<b>24.45</b>	<b>21.93</b>	<b>18.72</b>
<b>Danbury, CT</b>	<b>2836.5</b>	<b>2493.0</b>	<b>2.38</b>	<b>22.23</b>	<b>25.3</b>	<b>19.54</b>

Na<sup>1</sup>: The Fishkill site is new for 2015 so there is no historical data to report.

Na<sup>2</sup>: The Guilderland weather station was not properly reporting precipitation data in 2014 so no data will be shown for this site.

\*: Precipitation data for this site did not began until May of 2014.

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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