Welcome to Veraison to Harvest

Since 2007, Veraison to Harvest has provided New York growers and winemakers with basic fruit composition information and regional updates from vineyards across New York. The newsletter is a joint project of the Lake Erie, Finger Lakes, Eastern New York, Long Island and Statewide grape extension programs and the Cornell Enology Extension program. This year we welcome Jim Meyers, new grape specialist with the Eastern NY Commercial Horticulture Program as the newest member of the team.

Our thanks to the New York Wine and Grape Foundation and the Lake Erie Regional Grape Program, Inc. – a group of juice and wine processors that funds projects through a voluntary tonnage-based contribution. We couldn’t produce this newsletter or do the fruit sampling without financial support from these organizations.

-Chris Gerling and Tim Martinson, Co-editors

Around New York...

Statewide (Tim Martinson)

This year we got a one-week later start on our fruit sampling, which took place on Tuesday September 5 (Table pp. 6-10). Our first full picture of grape composition across New York shows total soluble solids about 1-2 °Brix lower than last year’s September 6 sample. Titratable acidity, however is consistently higher by 2-9 g/liter than in 2016. Berry size is much larger in many cases (particularly hybrids) than last year. The Lake Erie Team’s Concord berry curve (see p. 3) shows larger berries with higher soluble solids – not a typical combination for Concords.

This initial difference in fruit composition reflects weather conditions that were, in the Finger Lakes at least, the opposite of last year’s early and extended drought. Last year, we reported that soluble solids were running 0.5 to 1.0 °Brix ahead of average, while acids were 1-3 g lower. Berry size was small.

While I haven’t run the numbers yet, we’ve had consistent rainfall (particularly in July) and a cooler August, which has left me with the impression that veraison started a week late in the Finger Lakes.

YAN numbers look higher than in previous years to me as well. Some extremely high numbers (700 ppm for Marquette in Lake Erie, 400 ppm for Baco noir in Hudson valley) seem more prevalent in the Hudson Valley and on Long Island (see Cabernet Franc numbers) than in the Finger Lakes or Lake Erie.

While its too early to predict how the rest of September and October will come out, to me it looks like harvest season will be ‘cool and extended’ rather than ‘hot and compressed’.

If you are wondering how to use the data we have in our fruit composition table, Check out Chris Gerling’s article on fruit composition metrics (p. 4-5).
Lake Erie (Tim Weigle)

Harvest has begun in the Lake Erie region with “green Concords” heading to Constellation Brands in Canandaigua and some early season Seyval being harvested here at CLEREL for Walker’s Fruit Basket.

Estimates are for the Concord and Niagara crops to be average to above average which does not bode well for those growers affected by recent contract reductions or cancellations as processors leave the area or find that supply is much greater than current consumer demands.

Weather has been as unpredictable as ever, with cooler than average temperatures common in our region over the past couple of weeks. While we enjoyed an 80-degree day on Labor Day, the area paid for the warmth when a strong storm moved through the area during that night. Winds of up to 60 mph uprooted large trees, flattened vineyard rows, and destroyed at least one barn and concrete block building in the Port-land/Westfield area. Initial reports are for straight-line winds coming over Lake Erie being the cause of the damage, but the National Weather Service is still trying to determine if a tornado was involved.

Finger Lakes (Gillian Trimber).

Harvest is underway in the Finger Lakes. Most Aurora and Elvira grapes already off the vines, and plenty of Niagara and Cayuga White blocks coming in this week or next. Several growers have picked Pinot Noir for sparkling production, and early table grapes like Canadice, Marquis, and Jupiter are being harvested as well.

The 2017 growing season has been rainy and wet in our region, particularly in comparison to the drought of 2016. Precipitation has been above the monthly average in Geneva every month since April, with July receiving over 4” more rain than average—an accumulation of 7.42” compared with the long-term average 3.36”. On August 19th, our rainfall total for season reached the mean rainfall amount we normally see in an entire year, 22.95”, and as of September 6th we had accumulated 24.98” in precipitation. With heavy storms in June and July, we witnessed accelerated erosion in many Finger Lakes vineyards, and hail caused damage in a few isolated locations as well.

The good news is, all of the rain has led to plenty of big, healthy vines, and many growers in the area are looking forward to large crops. Mild, steady temperatures over the winter for the first time in three years also allowed for great bud survivorship, further helping to keep canopies full. Temperatures have been fairly average this spring and summer, with growing degree days (GDDs) tracking near to the long-term mean. As of September 6th, growing degree day base 50 F accumulation in Geneva was at 2073.7 GDD, compared to the 30 year average of 2126.38 GDD. If all goes well with September weather, we should be on track to get most varieties ripe.

The trick this fall will be keeping the fruit clean. We’ve seen botrytis infections earlier than usual, with some showing up pre-veraison this year. Bird pressure has likewise been heavy in places, with peck holes creating potential entry points for fungi and bacteria. However, from what we’ve been seeing in the field, botrytis, downy mildew, and sour rot are all present, but seem mostly under control. A long, dry fall would be great, but for many growers this year the strategy of getting the fruit off the vine sooner rather than later may be the way to go, as dry weather around here is never guaranteed. For now, though, the harvest season seems to be off to a great, if somewhat soggy, start.

Long Island (Alice Wise)

Harvest season arrived on Long Island this week with the picking of grapes for sparkling wine. We harvested a few hybrids in the research vineyard, Aromella (19.3 Brix, pH 2.87, TA 13.4) and Marquette (24.5, 3.07, 12.0). Trained on the high wire, Aromella displayed a lot of variability in ripening with golden hued clusters that were exposed and green clusters in the interior of the canopy. Because there was an increase in shelling, we opted to pick in order to capture the harvest data.

We picked Marquette due to the high Brix and developing cluster rot in the face of a rainy period. Marquette is also trained to a high wire system primarily because of declining yields in VSP trained vines. Though this was just the first year the vines were fully converted to high wire, we did see an increase in cluster number and, anecdotally, cluster weight.
Otherwise, we know it is harvest time as the local bird and wildlife populations are enjoying the fruits of our labor. Damage varies from vineyard to vineyard but all are seeing some pressure. It is frustrating to have a crop decimated just before harvest and equally frustrating to have damaged fruit that is now highly susceptible to cluster rot.

While there are methods to exclude wildlife (nets, electric fences) and scare them away (various types of noisemaking), nothing is full-proof. In the Cornell research vineyard in Riverhead, we use fine mesh side nets that are well-secured top and bottom. This is easy to do in a small scale vineyard but hard to implement on large properties. Fine mesh nets are effective but expensive and adapted primarily to VSP training. We also have a two wire electric fence around the perimeter of the vineyard to discourage raccoons and other critters. Though these methods definitely help, determined birds and wildlife still occasionally access fruit.

Hudson Valley and Champlain (Jim Meyers)

Spotted wing drosophila (SWD) has been present in several fruit farms throughout eastern New York, and was recently found in a vineyard in the Champlain Valley region. During site visits, I have seen some small pockets of sour rot but at the time of this writing, have not seen or heard of any grape damage that is clearly linked to fruit flies. However, many growers have preemptively sprayed for fruit flies, so lack of obvious damage does not indicate lack of risk. Statewide pressure this year is high and in 2016 some sites in eastern New York experienced severe sour rot due to SWD damage, so growers should be aware of the potential for infestation as harvest approaches.

Although SWD gets a lot of attention for its potential to lay eggs directly into soft skinned berries, other types of fruit flies can also cause damage. Bird damage, or other mechanical injury, creates opportunities for fruit flies to lay eggs directly into berries. Furthermore, eggs laid outside of berries can hatch into burrowing larvae.

Recent research has suggested that preemptive sprays for fruit flies can be effective in reducing sour rot. Malathion and Mustang Max are commonly used to treat drosophila and both have short pre-harvest intervals, but the odor of malathion precludes its use near harvest.

2017 Lake Erie Concord Update:
Terry Bates
September 7, 2017. The 2017 Concord fresh berry weight (top figure) has been tracking above the long-term mean all season. In stage I berry growth, the berry weight was tracking similar to 2015 but the relatively dry conditions in the Lake Erie region during stage II caused the fresh berry weight to taper. In the post-veraison stage III, berry weight has increased as expected and is currently averaging 3.0 grams in the CLEREL phenology vines.

Juice soluble solids (bottom) are also tracking higher than average, already at 15 °Brix just two-weeks after véraison. Since juice soluble solids are a concentration measurement, we typically record higher than average Brix when the fresh berry weight is low (2016) and lower Brix when the fresh berry weight is high (2015).

The 2017 season is interesting in that we are recording both high berry weight and high Brix. Concord juice pH and titratable acidity are around 2.9 and 17 g/L, respectively.
Welcome to another season of *Veraison to Harvest*. Years, contributors and topics may change, but the constant feature (not including the awesome grape-related puns) is the fruit maturity table containing the measurements we perform on each sample, each week.

In case you’re new to the newsletter- or grape sampling in general- I will take you through the analyses, how we run them in the lab and what we hope to learn. For those of you who have been around since long before *Veraison to Harvest* even existed, I’ll add some tips or new thinking to keep you on your toes.

We have posted entire articles on many of these analyses, so check the link at the end for more information. The New York weather switch has flipped from summer to fall (exact time: 2:38 am, Friday, Sep. 1), so let’s get to it.

**Berry weight (Ber.Wt. g.)**

**The number is:** The mass of 100 berries divided by 100.

**How:** We tare our scale with an empty bag and then weigh the full bags. Sometimes it’s just as boring as you imagine.

**What we can learn:** While generally expected to rapidly increase around veraison and then level off as the grapes mature, berry weight can be an indicator of seasonal weather variations, especially relating to water. For much more information about this topic, see the excellent berry growth curve produced by Terry Bates of the Lake Erie Regional Grape Program for V to H.

**Pro Tip:** To make these numbers work for you, look at Veraison to Harvest (or your own sampling data) from previous years. The weights, along with the accompanying acid and sugar measurements, can give context to what you’re seeing this year.

**Soluble solids (%Brix)**

**The number is:** The grams of soluble solids per 100 grams of solution.

**How:** A reading from a digital refractometer. A hydrometer could also be used.

**What we can learn:** Degrees brix is roughly equivalent to percentage of fermentable sugars. This measurement is the sugar analysis, and is often the most closely watched of all of the sampling data. It is also the measure most frequently found to be much higher in sampling than in the actual wine lot, possibly because it’s easy to squeeze one choice berry on to a refractometer and then run through the winery screaming “they’re already at 22!”

**Pro tip:** Don’t squeeze one choice berry on to a refractometer and then run through the winery screaming “they’re already at 22!” Even though you only need a drop, treat the refractometer like it’s a hydrometer, using the juice from the whole sample.

**pH (pH)**

**The number is:** The negative logarithm of the molar concentration of dissolved hydronium ions.

**How:** A reading from a pH meter.

**What we can learn:** pH scale is a measurement of acidity or alkalinity and runs from 0-14, but juice and wine are generally found from pH 2.8-4.5. pH is the “strength” of the acid and a barometer for what chemical reactions or species are favored as well as the microbes than survive and grow in the wine. In New York regions not called Long Island, keeping the pH at or below pH 3.5 means that spoilage is less likely and less SO2 will be required to manage the microbes that can survive. Actually, this concept means the very same thing on Long Island, but recent seasons have been so warm that average harvest pH values may be much higher.

**Pro tip:** Calibrate your meter and probe every day they are in use. Also, if you are seeing pH values close to 3, it’s a good idea to include a pH 3 buffer (people often just use 4 and 7). If your meter can use three buffers, it’s a good idea to include pH 3 anyway.
**Titratable Acidity (TA g/L)**

**The number is:** The grams of acid per Liter of solution, quantified as tartaric acid.

**How:** A titration is performed to determine the volume of sodium hydroxide needed to make a 5 ml sample reach pH 8.2.

**What we can learn:** This analysis gives us the amount of acid as opposed to the strength (that’s pH), and this number correlates much more closely with the perception of sourness in a wine. While it’s generally good to have a lower pH for production reasons, there’s not a lot of sensory information to be gained when you see pH 3.4 or 3.6. The change in TA over the sampling season is a useful predictive tool for winemakers. Finally, while pH and TA are both measures of acidity, both analyses must still be performed - you can’t calculate one from the other.

**Pro tip:** Make sure to use good water (e.g., distilled and/or deionized) when preparing solutions and samples for TA analysis. Bad tap water can change your number by as much as a gram per Liter.

**Yeast Assimilable Nitrogen (YAN ppm)**

**The number is:** The combination of the nitrogenous portion of ammonia and the primary amino acids, recorded in parts per million or milligrams per Liter, which are equivalent.

**How:** Enzyme assays are run on a spectrophotometer, one to measure ammonia and one for primary amino nitrogen (PAN). An ion-selective probe attached to a pH meter (that’s built to handle other probes) can also be used to measure ammonia. We then subtract the parts of ammonia that aren’t nitrogen and add the two numbers together.

**What we can learn:** Besides sugar, nitrogen is the most important nutrient for the yeast. There is no way to smell or taste how much YAN might be in the juice (like one might attempt for sugar and acid). We have struggled mightily to find ways to predict YAN, but the main lesson we have learned is that it’s very difficult to predict YAN. Last year’s YAN is not a good predictor of this year’s YAN, and neither is the vineyard next door or the other block of the same variety down the road. Measurement is really the only way to know how much food is available for the yeast and how much should be added.

**Pro tip:** If you still refuse to either measure in-house or have your samples analyzed at a commercial lab, the extension enology lab does have some models for some Finger Lakes cultivars. We also feel that an analysis approximately two weeks before harvest can give you a pretty good indication of your YAN and relieve the stress of trying to do it after there is already liquid in a tank.

**Note on sampling:** Any chemical analysis is only as good as the sample being analyzed. We receive 100 berry samples from each site (probably a good minimum), but you may choose to use more berries or even clusters. We (“we” being the brave regional extension personnel who actually take the samples) have an established protocol that we follow, including how to move through the vineyard and how many berries to take from each part of the cluster. Keeping sampling practices as consistent as possible provides the best chance of capturing changes over time.

**The New York Wine Analytical Lab.** Those are the analyses for *Veraison to Harvest*. You are probably doing some or all of them in your facility this year, but if you are unwilling or unable to perform any of these tests, the NY Wine Analytical Lab can help (see links below or Google Cornell Wine Lab). Check below for links to more information about these topics.

Remember also that the meanings of each measure will vary by cultivar. 20 °Brix could mean, respectively:

- Riesling is ready.
- Cab is getting closer.
- Cayuga White is overcooked
- Marquette needs more time and
- That’s probably not actually Concord.

For now, may your disease pressure be low, may your samples be accurate, and may all of your grapes be above average.

**Past articles:** [http://fruit.cornell.edu/enology/](http://fruit.cornell.edu/enology/)

**Wine Lab:** [https://grapesandwine.cals.cornell.edu/extension/new-york-state-wine-analytical-laboratory](https://grapesandwine.cals.cornell.edu/extension/new-york-state-wine-analytical-laboratory)
Samples reported here were collected on Tuesday, September 5. Where appropriate, sample data from 2014, averaged over all sites is included. Tables from 2016 are archived at [http://grapesandwine.cals.cornell.edu/newsletters/veraison-harvest](http://grapesandwine.cals.cornell.edu/newsletters/veraison-harvest). Next samples will be collected on **Monday, September 11**.

### Aromella

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<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
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### Catawba

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<th>pH</th>
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### Cayuga White

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<th>YAN (ppm)</th>
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<th>YAN (ppm)</th>
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| '16 Sample   | 8/31/2015    | Dresden-Teaching | 2.12       | 14.5   | 3.01| 12.3   |           |

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## La Crescent

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| Prev. Average |          |             |             |        |     |        |           |
| **'16 Sample** | 9/6/2016    |             | **1.39**    | **21.0** | **3.03** | **15.7** |
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<th>pH</th>
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## Noiret

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<td>3.00</td>
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</tr>
<tr>
<td>Long Island</td>
<td>9/5/2017</td>
<td>LI-01</td>
<td>1.31</td>
<td>16.6</td>
<td>3.05</td>
<td>13.6</td>
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<tr>
<td><strong>Average</strong></td>
<td><strong>9/5/2017</strong></td>
<td></td>
<td><strong>1.36</strong></td>
<td><strong>14.4</strong></td>
<td><strong>2.81</strong></td>
<td><strong>18.3</strong></td>
<td><strong>165</strong></td>
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| '16 Sample      | 9/6/2016     |             | 1.21        | 17.4   | 2.89  | 13.0   |             |

## Sauvignon Blanc

<table>
<thead>
<tr>
<th>Region</th>
<th>Harvest Date</th>
<th>Description</th>
<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Island</td>
<td>9/5/2017</td>
<td>LI-02</td>
<td>1.49</td>
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<td>3.14</td>
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<td>LI-02</td>
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## Seyval Blanc

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<th>Harvest Date</th>
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<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
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</thead>
<tbody>
<tr>
<td>Finger Lakes</td>
<td>9/5/2017</td>
<td>Cayuga</td>
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<td>18.4</td>
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<td>158</td>
</tr>
<tr>
<td><strong>Average</strong></td>
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<td><strong>1.74</strong></td>
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<td><strong>3.05</strong></td>
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<tr>
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## St Croix

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<th>Harvest Date</th>
<th>Description</th>
<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger Lakes</td>
<td>9/5/2017</td>
<td>Geneva thinned</td>
<td>2.34</td>
<td>17.3</td>
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<td>Geneva unthinned</td>
<td>2.41</td>
<td>17.2</td>
<td>2.99</td>
<td>14.1</td>
<td>165</td>
</tr>
<tr>
<td><strong>Average</strong></td>
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<td><strong>2.37</strong></td>
<td><strong>17.3</strong></td>
<td><strong>3.01</strong></td>
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## Traminette

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<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
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<tbody>
<tr>
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<td>Geneva thinned</td>
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### Valvin Muscat

<table>
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<th>Description</th>
<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger Lakes</td>
<td>9/5/2017</td>
<td>Geneva thinned</td>
<td>2.34</td>
<td>17.3</td>
<td>3.02</td>
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</tr>
<tr>
<td>Finger Lakes</td>
<td>9/5/2017</td>
<td>Geneva unthinned</td>
<td>2.41</td>
<td>17.2</td>
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<td>Average</td>
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### Vidal Blanc

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<th>Harvest Date</th>
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<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger Lakes</td>
<td>9/5/2017</td>
<td>Dresden</td>
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<td>14.5</td>
<td>2.79</td>
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<td>9/6/2016</td>
<td>Dresden</td>
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### Vignoles

<table>
<thead>
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<th>Region</th>
<th>Harvest Date</th>
<th>Description</th>
<th>Ber. Wt. g.</th>
<th>% Brix</th>
<th>pH</th>
<th>TA g/L</th>
<th>YAN (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger Lakes</td>
<td>9/5/2017</td>
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</tr>
</tbody>
</table>

*Bruce Reisch with NY98.0228.02 on September 6. This table grape is a seedless Concord-type, with enormous clusters and berries.*

*Photos by Tim Martinson*
Help us build our new website!

The Network for Environment and Weather Applications (NEWA) wants you to take our online survey — it’ll only take about 10 minutes of your time.

Click on this link to take the survey now:

https://cornell.qualtrics.com/jfe/form/SV_0GRlhOIDI5HwbR3

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NEWA is an online agricultural decision support system that uses real time weather data, streamed over the internet from 573 weather stations throughout the Northeast, Midwest and mid-Atlantic. NEWA provides insect and plant disease pest management tools, degree days, and weather information for growers, consultants, Extension educators, faculty, and others.

NEWA models and resources are available free of charge, and are used to make informed localized crop management decisions. The NEWA website will be upgraded soon and we want to know what users’, new and old, want and need out of the new website.

All responses are anonymous and confidential and will not be shared with any outside group.

Thank you for participating!

For more information:
Dan Olmstead
315.787.2207
dlo6@cornell.edu

NEWA is a Partnership of the New York State Integrated Pest Management Program and the Northeast Regional Climate Center.