You are currently reading the fourth version of an opening paragraph for this article. I started early and didn’t get very far. I will probably finish after our target date. In between the less than promising start and the late finish (which I will celebrate as much for just being done as for the actual product) has been a steady slog where nothing came easily.

Some days it felt like I would be in this place doing this thing forever. I will admit—and I hope you won’t judge me for saying so—but nothing sounds so appealing as a beer right about now.

While the struggles have been real and the early returns have been frustrating, I firmly believe something worthwhile will come out of this process.

And then it hit me: maybe I’m finally getting a grasp on 2021.
**Winter**

Winter was fine, I guess? It was cold sometimes, but not most of the time. There was snow sometimes, but not most of the time. Besides the north country and about one day in the Hudson Valley (see Figure 1), temperatures stayed well above 0 °F.

We remained in a weather pattern with above average temperatures and the occasional wild-card storm that might drop four feet of snow pretty much anywhere in the state—This past year it happened in the southern tier and south central New York.

Overall, winter low temperatures did not threaten grapes anywhere in the state, though, which is the main thing.

**Spring**

Looking at Figure 2, April was actually only slightly warmer than the long-term average. But two factors probably explain why spring felt so much “spring-ier” than usual: first, late March was far warmer than usual; and second, the last few Aprils have been so cold.

By my math, Geneva has averaged roughly 23 growing degree days (GDDs) over the past three Aprils, and the 50 in 2019 is doing a lot of work in that average. March had more than 23 GDDs this year, and April’s 72 felt downright tropical. What’s the catch?

The catch in vineyards is this: Warm early temperatures bring the potential for early growth and increase the risk of frost damage from late freezes.

For the second year in a row, labrusca growers got bit in parts of the Lake Erie and the Finger Lakes regions. It’s disturbing that the grapes struggling most with the current climate are the ones that have evolved to grow right here. For everyone who avoided the freeze, a common trend was the potential for much more fruit than last year.

**Summer**

Summer is where things went sideways.

It’s tempting to call it hot and wet and be done, but Figures 3 & 4 suggest the story is not that simple. There were significant periods where we trailed long-term averages for rainfall. The GDD trend is a not just a straight line pointing up and right either, especially when compared to the 10-year average.

**Figure 1.** Low Temperature Exotherm data for Cabernet Franc in the Hudson Valley. Temperatures dropped below 0 briefly in mid-February.

**Figure 2.** Growing Degree Days (base 50°F) by month in 2021 compared with 48-year and 10-year averages at Geneva, New York.

**Figure 3.** 2021 Rainfall deviation from 48-year average (dotted blue line).

**Figure 4.** 2021 Growing Degree Day deviation from the 10 and 48-year averages. Note that 2021 actually dropped below the 10-year average in early June and August.
The new thing the meteorologists are talking about (confirmed by Kelby Russell—winemaker by day, Weather Twitter Appreciator by night) is night heat.

The number of days that nighttime minimum temperatures exceed 50° F (at both ends of the season) (Figure 5) is consistently above the long-term (56 yr) average. But this year, the number of nights above 60° F from June through October amounts to 3 to 6 more days per month than the long term average (Figure 5).

While the average daily high temperature is now about half a degree warmer than historical averages, the average daily low is one degree warmer than average. The high temperature is generally the number that gets the most attention, but it’s not where the most significant warming is taking place. In our world, we might attribute the overall low sugar/low acid situation to these warm nights and relatively cloudy days.

And how to think about the “wet summer?” I was on an extension call and trying to argue that it was “wet but dry,” and they weren’t buying it.

My point is that if you look at Figure 3, we were below the long-term average for a lot of the year. It rained a lot, and it was wet a lot, but most of these were “dry car footprint” rains, where if you moved your car it was still dry underneath. These showers were mostly good for keeping disease pressure high and spray efficacy low.

I still attest to the fact that I saw mildewed leaves and brown grass AT THE SAME TIME. There were some rainstorms that were much more intense, of course, and the jagged red lines tell the tale, but it wasn’t until this past week—when everyone got a free basement swimming pool—that Geneva actually caught and passed the annual average (Fig. 3).

**Fall**

Have you ever gone to one of those water parks where the huge bucket fills up and then it tips and soaks everyone in the general vicinity every 12 minutes or so?

While the fall of 2020 felt like a celebration, the fall of 2021 has been more of a somber march punctuated by deluges. We actually started Veraison to Harvest earlier this year, assuming that since it had been relatively warm we might be looking at an early harvest. We got the first week’s data and quickly realized we had not missed much.

And then progress…stalled (see Tim’s article on page XX). From the basic numbers in Figures 2 & 6, September looks great, with plenty of heat (Fig.2) and not much rain (Fig.5). It wasn’t enough, though. Some vineyards were already experiencing splitting from late August rain. Some still had standing water from late August rain. Some vineyards had much higher cropping levels than 2020 and needed more heat than the 10-year average of GDDs could provide.

Whatever the reasons, the sugars were low and did not catch up. Late September brought another monsoon, and even though early October was stunning in terms of heat and sunshine, it seemed like once again that period was used for recovery as opposed to progress.
Winemaker Impressions

Julia Hoyle, winemaker at Hosmer in the Finger Lakes, can start it off. “2021 has been a harvest of rain and fruit. A lot of it. Wet harvests require quick reactions and multiple game plans.”

Bruce Tripp, (Milea Estate Vineyard) keeps it going: “Here in the Hudson River Region the season was consistent with the rest of the State...Wet.”

Matt Schrader of E. & J. Gallo can summarize. “This was one of the hottest and rainiest seasons on record for the Finger Lakes which led to very large berry sizes, delayed ripening, and the high potential for splitting and rot.”

I think Matt has nailed it, and there’s not a lot left to...but wait, I see Matt has more: “However, as challenging as all of that was, we are seeing some good quality.” Oh, that’s helpful. I now see Bruce had more to say as well. “For those diligent, persistent growers quality fruit did prevail.” Hey, I’m feeling better.

Perhaps Kelly Koch of TerraVite Winery & Vineyard, Long Island can continue the trend: “Sugar levels are low this year but the fruit is ripe and has great flavors. Color is beautiful and the fruit has nice maturity and flavor.” We’re on a roll. Actually, Julia had more too: “Many good wines will come out of this vintage; I look forward to seeing the finished products!” This is great.

Kris Kane from 21 Brix in Lake Erie, bring it home. “Abundance was the word of the year. An abundance of joy for the start, an abundance of rain, an abundance of grapes, and an abundance of jubilation this harvest is wrapping up! With all that being said, I am pleasantly surprised at the potential the wines are already showing in the cellar.” Amen.

Much like every other aspect of the year, the 2021 growing season was occasionally very challenging, often frustrating and almost always inconvenient. On the other hand, grapes have been cared for, harvested and vinified by people who know challenges and have learned a thing or two over the years.

Frustration is certainly a valid response to the curve balls thrown your way, but I hope everyone involved with this harvest also takes some measure of satisfaction and even a touch of pride when they look back. You did a hard job well, and the wines will be a record of that effort. Now how about that beer?

Addendum

If you have appreciated Veraison to Harvest over these past 14 years, then Tim Martinson is the person to thank. First, because this was all his idea. Beyond that, Tim organized everything from the funding to the layout (and took on many roles in between). He allowed each of us to do our preferred part while he cleaned up the messes and made sure we had the resources we needed.

Tim is retiring in early 2022, so this marks the last issue that he will be wrangling. Over these years and newsletters, Tim has been a model for what cooperative extension should be about. He cares deeply about good research and how it can be practically applied in the vineyard. That is pretty much all he cares about. Tim is not worried about recognition or accolades; he freely takes the blame and shares the credit. He never puts his picture on the back of the last issue of V to H.

But from the Research Focus in Appellation Cornell to bud freezing data in winter, the information is out there because Tim believes in the power and purpose of applied science and he really wanted you to have all the data you need to do your job.

We are planning to continue this newsletter. It will be a lot harder without him, but Tim has set an example that needs to be followed. Please join the Cornell Cooperative Extension team as we thank Tim Martinson for his dedication, support and teamwork. Thanks again, congratulations, and best wishes for a happy and well-deserved retirement.
For Conords, an early spring frost set off alarm bells. With many varieties in short supply, Concord included, nothing could be worse than having a shifting demand curve with a lack of supply. Whether it was bud count, fruit set, or large berries most frost damaged vineyards saw smaller crops than their neighbors but still above average. Then there was the hail, it initially appeared to impact a fairly significant number of acres. Some appeared to have visual damage, but it did not seem to significantly impact yield.

Weather issues. Unfortunately, for a small percentage of growers it was a complete disaster. It was significant enough to cause some issues with the local pinot noir market. The surprise here is that these disasters initially appeared to be widespread events that might have lasting market consequences. As we wrap up the season it appears that all but those who had the most severe frost damage had above average yields and did not struggle with brix accumulation.

Record yields. For some, gross revenue will set records this year. Natives produced at volume for juice and wine and were harvested timely, resulted in a rare combination of both high yields and high prices. No doubt this publication covered the general theme rain-induced berry swelling and dilution. A few growers did struggle with brix accumulation to make timely cash market deliveries.

Minimum soluble solids. Concord processors all report receiving either a record amount of fruit or close to it on a per acre basis. Average soluble solids for juice grapes are around 15.7° Brix across all processors in the Lake Erie Region. This is significantly lower than average. It is also difficult to imagine having a year with a lower average unless changes in minimum standards across all processors were implemented.

As far as Cooperatives are concerned the theme is similar. Brix accumulation was a larger concern and is likely to impact revenue for some cooperative growers – who get paid over a few years as the Coop sells juice made from the 2021 crop. These growers cannot know for sure how gross revenue will shake out.

Market Outlook. Most signs point toward a healthy market. Growers certainly expect some carry-over of high prices and retail conditions seem extremely healthy. Rising business costs, particularly related to the containment of such large crops, may impact payments somewhat. Overall these markets seem competitive with the bulk cash market. They’re also in better shape than smaller markets right now.

There is some potential here to see some record breaking revenue for growers that reached minimum brix standards. Around 15% of the market continues to struggle through harvest. Until harvest is complete, the verdict is out. Many individual growers that have completed harvest report some of the highest yields they’ve ever had.

Products that indirectly compete with grapes have seen significant increases in price. This is most apparent in the juice grape market as corn, processing apples and other commodities have increased in price. This provides us with some expectations that prices going forward will be reasonably healthy for the next 11 months.

The longest harvest ever? Containment of this crop and brix accumulation issues have delayed the conclusion of harvest. Processing facilities in the Lake Erie Region Update: Record Crop, Higher Prices, Lengthy Harvest and Upcoming Challenges

Kevin Martin, Extension Farm Business Management Associate
Lake Erie Regional Grape Program, Cornell and Penn State Cooperative Extension

It’s Not Over Yet. Concord harvest continues, with processors projecting to wrap up as late as November 17. The combination of large crops meeting brix standards and prices well above $300/ton, many growers are poised for their ‘most successful year ever’. Photo by Jennifer Phillips Russo
Region closed or plan to close between October 29 and November 17th. As of this writing, just one facility has concluded harvest. This will easily break records for the longest overall harvest at 10 weeks for Concor ds with other varieties harvested before and during that period. Crop containment has led to increased concentrate volume, trucking and even unharvested fruit.

Lower priced wine grapes, particularly natives and older hybrids have had a tough year. These prices have come down over the last few years and many markets are still not paying a premium for these varieties. Now the market looks particularly bad as Concord prices rise. I would expect the acreage of these varieties to be reduced if market conditions do not change quickly. Of course, that is likely to create a shortage in a few years. The cycle continues.

Challenges ahead. In the midst of the whirlwind of harvest, it is difficult to think outside of the box of yield, price and gross revenue. Market issues and challenges outside of these areas will continue to challenge growers going forward. The success most growers have had this year with yield, price and revenue will put them in a position to sustain and even invest to reduce the impact of other challenges. Some of these challenges are immediate and cannot be avoided. Going forward, grape prices will need to average more than they did 5 – 20 years ago to remain sustainable.

Rising fertilizer prices have been the most dramatic change in input costs. Labor availability is easily the most expensive challenge. This has been a long-term issue that is less surprising, but has been worsening rapidly. Most surprising has been the bottlenecks in the supply chains, as this impacts growers just as it does other industry. It is not just toilet paper anymore.

Seemingly random supplies become more expensive, unavailable or delayed. Imports are one source of this challenge but it has not been limited to imported goods. In addition to paying more, going forward growers will need to plan more. As real-time inventory is failing the system, it is becoming clear that inventory is the responsibility of the end user. This is not the most efficient allocation of resources, but for the time being it is what we have to deal with.

The best year ever? For many growers this may well be the most successful year ever. Of course in the midst of that success we must acknowledge the issues and disasters of other growers as well as the future challenges that the industry will inevitably face. In some ways it is rather exciting as the success of today creates the resources to respond, to change and to grow. With many future challenges mostly knowable the success of the industry and individual growers will depend on the decisions and allocation of resources that were created by 2021. Best of luck with the remainder of harvest.

**Sour Rot Control with UV Light Treatments?**

*Tim Martinson, Sr. Extension Associate*

*David Gadoury, Sr. Research Associate*

*David Combs, Research Support Specialist*

*Lance Cadle-Davidson, USDA ARS Plant Pathologist*

---

Ultraviolet Light (UV-3) applied at night has shown promise in controlling fungal pathogens such as powdery mildew. This year, researchers David Gadoury, Lance Cadle-Davidson, and research support specialist have tried it out on sour rot in a USDA research planting of the most rot-prone variety known to mankind: Vignoles. At left is the robotic UV light unit, named “Thorvald” (SAGA robotics LLC) that drives autonomously through the vineyard. Applications twice weekly throughout the growing season (targeted at other diseases) produced significant reductions in sour rot incidence (proportion of clusters on a vine with any disease) and severity (% of the cluster infected). Looks promising, research will continue next year.
Since 1948, Canandaigua Wine Company (more recently Constellation Brands) has been a major customer for New York grape growers. This year, Constellation’s facilities and many products have been transferred to E&J Gallo, based in Modesto, California, following completion of a process that started in 2018. It represents a major change for Finger Lakes and Western Lake Erie growers in New York and Pennsylvania, who deliver 12-20,000 tons of grapes to E&J Gallo.

We asked Grower Relations Rep. Luke Haggerty, Sr. Manager of Winemaking Matt Schrader and Sr. Director of Production and Operations Joe Majewski to provide insight into Gallo’s first East Coast harvest, and what’s ahead in coming years for E&J Gallo’s presence in New York:

This is Gallo’s first harvest season in New York. How did harvest go in 2021?

Overall, the Canandaigua Winery had a good 2021 Crush. We kicked off harvest on August 23rd with Aurore a few days after 2–4 inches of rain drenched most of the Finger Lakes area. The plan was to start out slow and steadily increase out tonnage.

As a result of the rain, berries skins began to split. In order to maximize quality we quickly altered our plans and started on day one bringing in fruit at full capacity. Our maintenance crew had the equipment operating successfully and the crop was heavy, so we were able to keep this fast pace throughout season until we filled out all of our tanks on October 14th.

This year has been notable for steady and above average rainfall, and lower brix levels. How has that affected quality and quantity?

With all of the rain this year we saw delayed ripening and higher acids than were expected. We were able to bring in most of our varieties before we saw any noticeable sour rot issues so we avoided much of the volatile acid risk. We saw a higher than average yield which allows us more flexibility in blending and we will utilize amelioration to maintain blend consistency this year.

What were some notable challenges associated with the change in ownership?

The most notable challenge was from the systems side of operations. Systems that track wine tanks, grower tonnages, grape deliveries and payments were all different. The time spent training and data entry paid off and all systems were up and running before we started harvest.

Antitrust concerns led to some Constellation products (sparkling wines) previously produced at the Canandaigua facility not being included in the sale. How did this affect the tonnage and variety mix needed and contracted with NY and PA growers?

We cannot speak to the antitrust concerns referenced. We supported the local agriculture community by establishing contracts and purchasing grapes from our valued growers. We remain committed to Canandaigua Winery and its growth. Our tonnage was comparable to previous years.

With one season under its belt, what are Gallo’s plans for the future with Eastern products and facilities? What can growers expect in the coming years?

Gallo desires to make new friends for wine in the category. Canandaigua Winery is uniquely set up to make numerous wine styles that are offered in the popular segment. We expect to see more new and unique wines coming to Canandaigua to build these brands and meet customer demand.
Although the field lay cut in swaths.
Grass at the edge survived the crop:
Stiff stems with lateral blades of leaf.
Dense cattail flower-spikes at the top.

If there was breeze and open sky.
We raked each swath into a row;
If not, we took the hay to dry
To the barn’s golden-showering mow.

The hay forked from our pick-up truck
Was thatched resilience where it fell.
And I took pleasure in the thought
The fresh hay’s name was mine as well.

Work was a soothing, rhythmic ache;
Hay stuck where skin or clothes were damp.
At length, the truck would rock and shake
Its last stack up the barn’s wood ramp.

Pumping a handpump’s iron arm,
I washed myself as best I could.
Then watched the acres of the farm
Draw lengthening shadows from the wood

Across the grass, which seemed a thing
In which the lonely and concealed
Had risen from its sorrowing
And fruitfully possessed the field.

-- Timothy Steele, ‘Timothy’

The four figures at the right show a comparison of GDDs and daily high temperatures vs. 15-year history at four Cornell Cooperative Extension Offices in eastern New York - spanning the Champlain and Hudson Valley regions from north (Clinton County) to south (Orange county).

The green line indicates the cumulate GDDs for 2021. The brown dashed line indicates the 15-year average of cumulative GDDs. The red line indicates the daily high temperature in 2021. The vertical dashed lines indicate the range of daily high temperature over the past 15 years. The blue shaded area indicates the middle 50th percentile of daily high temperatures. The shaded red areas indicate 2021 daily high temperatures that are in the top 25th percentile over the past 15 years. The shaded yellow areas indicate 2021 daily high temperatures that are in the bottom 25th percentile over the past 15 years.

Data source: Cornell Northeast Regional Climate Center
Fruit Composition Trends:

2017-2021

Timothy E Martinson
Cornell AgriTech

Last year, we reported a slow start, but later above-average temperatures throughout the summer, and an increasingly dry growing season. Harvest was compressed (we only managed seven weekly samples in 2020), and ended early, with high soluble solids and moderate acids. This year was different.

Our five-year average includes the heavy-yielding year 2017, soggy and humid 2018, and dry-ish 2019 and 2020.

Berry weights. Ample and steady moisture (and warm nights) resulted in big berries, with lots of juice. Some processors reported significantly higher juice yield (up to 190+ gal/ton).

Sugars. Across the board, soluble solid levels were ~2 to 3 °Brix lower than average. Meeting processor standards was a struggle for some Concord producers, who had huge crops this year. Most Riesling blocks topped out at 18° Brix. For some varieties, this seemed similar to Brix levels seen in 2018.

Acids. Unlike other ‘low brix years’, titratable acidity and juice pH levels tracked the five-year average – and were similar to 2020s levels.

Exceptions. Merlot (average of three vineyards, two on Long Island) berry weight was close to average, and soluble solids reached a respectable 21 °Brix. Traminer berry weight tracked 5 year average. Chardonnay harvest, normally done by late September, was extended this year to 8 weeks. Marquette acidity was markedly lower than the five-year average.

Concord harvest dragged on through the end of October, but soluble solids seemed to catch up by our final sample period.

As September and October again brought saturated soils and standing water to some vineyards, a big question was “Is this 2018 all over again?” There were some similarities to 2018, with extended harvest, big berries, and soluble solids well below average. But cluster rots didn’t seem to be as prevalent as they were in 2018. They seemed to be limited to a select group of white varieties, and levels of rot varied a lot. Thank goodness.

Meanwhile, canopies are still green, and no frost events have happened yet (but will tonight 11/3, with temperatures in the low 20s). That should set the stage for a good start to the 2022 growing season.
Merlot
Top to Bottom: Berry Wt, Brix, pH, TA

Chardonnay
Top to Bottom: Berry Wt, Brix, pH, TA
Marquette
Top to Bottom: Berry Wt, Brix, pH, TA

Concord
Top to Bottom: Berry Wt, Brix, pH, TA
Thanks to Our Supporters

Major support for Veraison to Harvest was provided through the Lake Erie Regional Grape Research and Extension Program, Inc., and the New York Wine and Grape Foundation. This is the 12th season of Veraison to Harvest, and we thank these organizations for their consistent support since the 2007 growing season.

Thanks to Our Crew:

This newsletter was made possible with support from the New York Wine and Grape Foundation and the Lake Erie Regional Grape Research and Extension Program, Inc.

Veraison to Harvest is a joint publication of:

Cornell Enology Extension Program
Statewide Viticulture Extension Program
Long Island Grape Program - Suffolk CCE
Finger Lakes Grape Program
Lake Erie Regional Grape Program
Eastern NY Commercial Horticulture Program

Copyright 2021© Cornell University

The information, including any advice or recommendations, contained herein is based upon the research and experience of Cornell Cooperative Extension personnel. While this information constitutes the best judgement/opinion of such personnel at the time issued, neither Cornell Cooperative Extension nor any representative thereof makes any representation or warranty, express or implied, of any particular result or application of such information, or regarding any product. Users of any product are encouraged to read and follow product-labeling instructions and check with the manufacturer or supplier for updated information. Nothing contained in this information should be interpreted as an endorsement expressed or implied of any particular product.