

# VERAISON TO HARVEST

STATEWIDE VINEYARD CROP DEVELOPMENT UPDATE #9

NOVEMBER 8, 2019

EDITED BY TIM MARTINSON AND CHRIS GERLING



*Wake me up when September ends.*

*-Green Day*

## THE SEPTEMBER FACTOR

*Chris Gerling*

*Enology Extension Associate  
Cornell Enology Extension Program*

## CLIMATE CHARTS AND FIGURES BY

*Hans Walter-Peterson, Jim Meyers  
and Tim Martinson*

## HARVEST IMPRESSIONS BY

*Cornell Advisory Council for Enology  
and Robin Ross, V to H collaborator*

Baseball analysts talk about the Leverage Index of situations. The idea is relatively simple: when it comes to determining the final outcome of a game, some plays are more important than others. If Team A is ahead by 10 runs, then no matter what occurs during the next play, Team A will still be winning afterward. Therefore, that play is not a high leverage situation. If the score is tied, the next play could decide the game, so this scenario has a higher leverage index.

They have a complex formula for quantifying these situations, but you can also get a pretty good idea just watching to see if the fans are a.) yelling so loudly they risk throat damage (high leverage), b.) checking the number of likes from the selfie with the bat boy (normal), or c.) off in line for a \$25 hot dog (2019 Detroit Tigers). A big factor is how late it is in the game. As each team runs out of chances, those chances become more important. Which brings me to September.

September is generally a high leverage point in our growing year. The outcome of the season is often very much still in doubt when we reach Labor Day, and September goes a long way toward determining the quality of the grapes. Like 2018 before it, 2019 was no exception- the difference being that while we needed September 2018 to come through for us, it basically tied our leftfielder's shoelaces together and tackled the mascot.



*Chris Gerling*



*Hans Walter-Peterson*

If September of 2018 was a baseball player on our team, we would have traded it to Pawtucket for two dented water coolers and a catcher's mitt. September 2019 was an entirely different story. I would nominate September 2019 for MVM (most valuable month). The big question, depending on where folks were located in the state, was whether September was enough to overcome the deficits they faced. Let's go to the replay.

### 2019 Seasons: Winter

For most of New York, I would describe the winter as medium-plus. There were not particularly long stretches of cold, nor were there particularly extreme lows, and most vineyards in most places escaped significant damage. The exception was the Hudson Valley, where the polar vortex visited in late January and caused as much as 90% primary bud kill in some vineyards (see Figure 1).

The lowest low does not necessarily tell the entire story

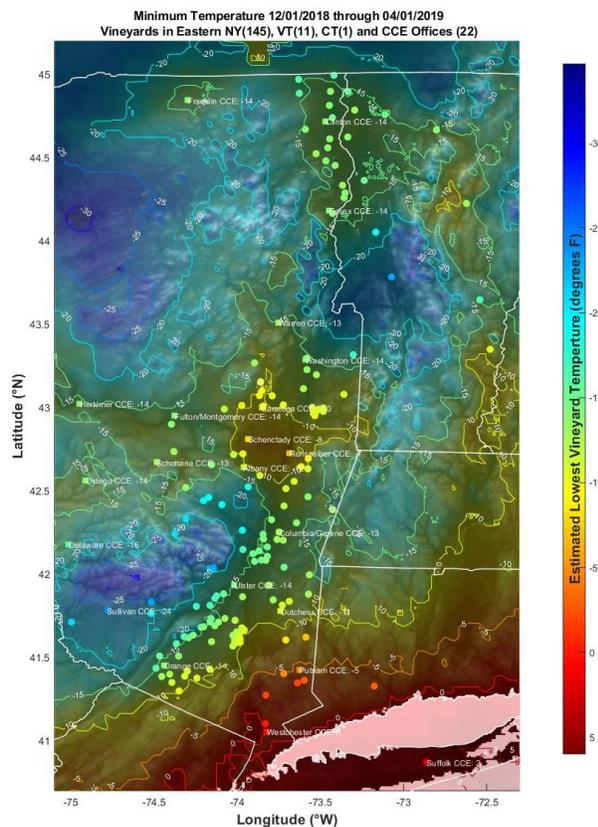


Figure 1. Minimum recorded temperatures (Fahrenheit) across eastern New York from January 1 - April 1, 2019.

Figure by Jim Meyers

of a winter, or at least shouldn't, but when I look at Figure 2, it seems to do a pretty good job. As Tim Martinson points out, the coldest point of a winter is all that matters when we're talking about buds anyway. Four

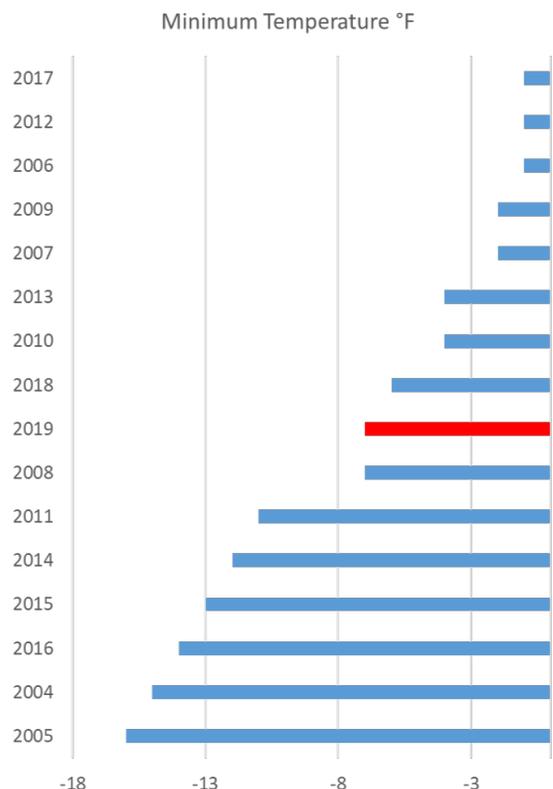


Figure 2. Minimum recorded temperature (F) at Geneva, 2004-2019.

Figure by Tim Martinson

of the five winters with the lowest minimums were the four coldest, bitterest, most-destructive-to-buds-and-sometimes-entire-vines winters in recent history. (2016 was a relatively mild winter with the exception of the Valentine's Day Massacre, and so may or may not deserve its "ranking" here.) Figure 2 shows the Geneva minimum recorded temperature of -7 F sitting in the middle of the lowest lows of the past 15 years, and that feels about right.

### Spring

I tend to be hard on spring in my yearly summary, but I think I need to apologize. All these years I've been picking on spring for not doing its job, but I now have a different theory: I think spring is missing. Spring is gone. We need to put spring on a milk carton and organize a search party. When I think about it like this, I can't particularly blame spring. Mid-March is about the time when I generally am most tempted to peer at Zillow listings in Charleston or San Diego. Spring just had the same idea and acted on it.

From an agricultural perspective, the uninterrupted cool to downright cold keeps any kind of early bud-break (and associated freeze damage) in check, however, so I suppose there is at least one silver lining. In the Hudson Valley, some buds did break early and were

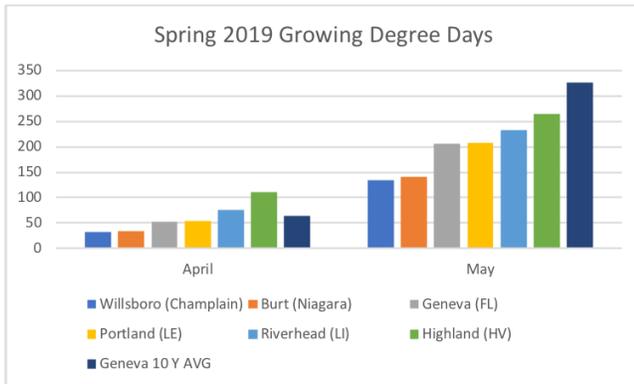


Figure 3. Growing degree days (base 50F) for locations across New York for April and May.

Figure by Chris Gerling

hit with an April 30 freeze, which only compounded the problems from winter. On Long Island, even as growing degree days (GDDs) spin up like a pinball scoreboard these days, it's not because of April and May. Every year Rich Olsen-Harbach describes a "cool, wet spring," and wait, now that you mention it, I wonder if he's copying and pasting...no, I believe him. We all know the description fits. As an assistant 3rd and 4th grade girls lacrosse coach, I can confidently report that there was plenty of rain in May. This year spring

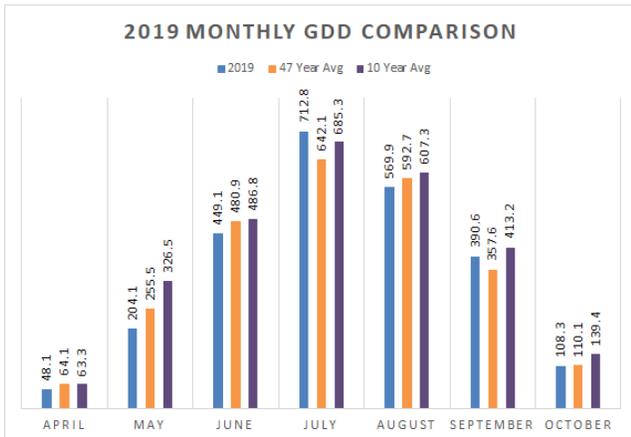


Figure 4. 2019 Monthly GDD totals for Geneva vs. the 47-year average and an average of just the past 10 years.

Figure by Hans Walter-Peterson

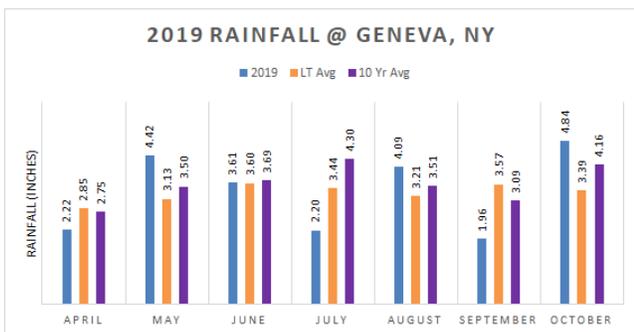


Figure 5. 2019 Monthly Rainfall at Geneva..

Figure by Hans Walter-Peterson

was once again AWOL heading into June (see figure 3), and budbreak and bloom were as late as they've been in recent memory. The grapes would be playing catch-up for the rest of the season.

### Summer

Summer was nice. It wasn't particularly hot or particularly cool; not particularly dry nor particularly wet (See Figures 4 & 5). June brought rain events that set some vineyards on a path to downy mildew problems later. There was a lot of sunshine after that.

One aspect of grape growing that was apparent even to cellar dwellers like me this season is the somewhat rigid nature of the bloom to veraison period. If bloom is late, even a warm sunny stretch like we experienced will not significantly change the time it takes to reach veraison. As a result, veraison was late and the first samples in the Veraison to Harvest newsletter were alarming (see Tim's summary graphs later in this issue). As Labor Day approached, most grapes in New York were still behind. Nowhere was this condition more extreme than in the Champlain Valley, where growers found themselves hundreds of GDDs down.

### Fall

To those wondering why we live here, I offer September 2019 as Exhibit 1A into evidence. September was spectacular, offering sunshine, warmth and dryness. The V to H samples got progressively less scary with each passing week.

On Long Island, where things were in fairly decent shape already, September was enough to propel the year from good to great. In the lower Hudson Valley, the yield was low but the quality was high.

In the Finger Lakes, the real heat accumulation came in the latter two-thirds of the month, bringing the GDD numbers up and anxiety down (See figure 6). The great thing for most areas was that the lack of rain and

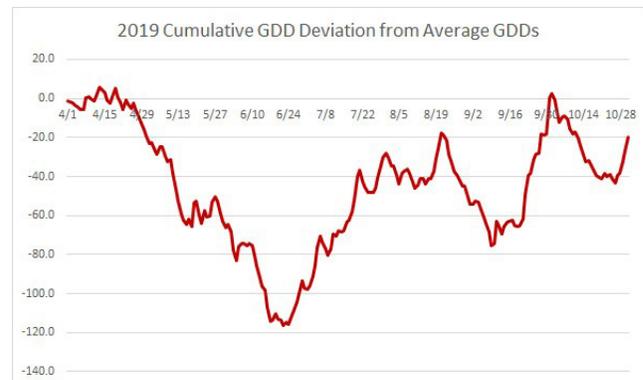
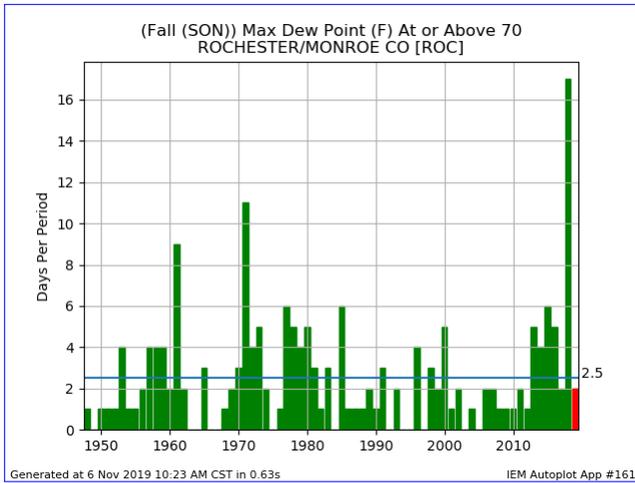
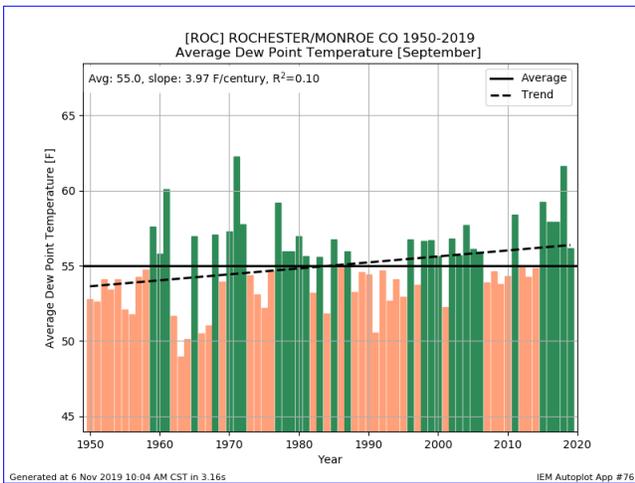


Figure 6. 2019 GDD Deviation from average (zero point on graph) at Geneva.

Figure by Hans Walter-Peterson



**Figure 7. Fall days with dew point above 70F in Rochester.**  
Figure created by Hans Walter-Peterson using the Iowa State Mesonet tool



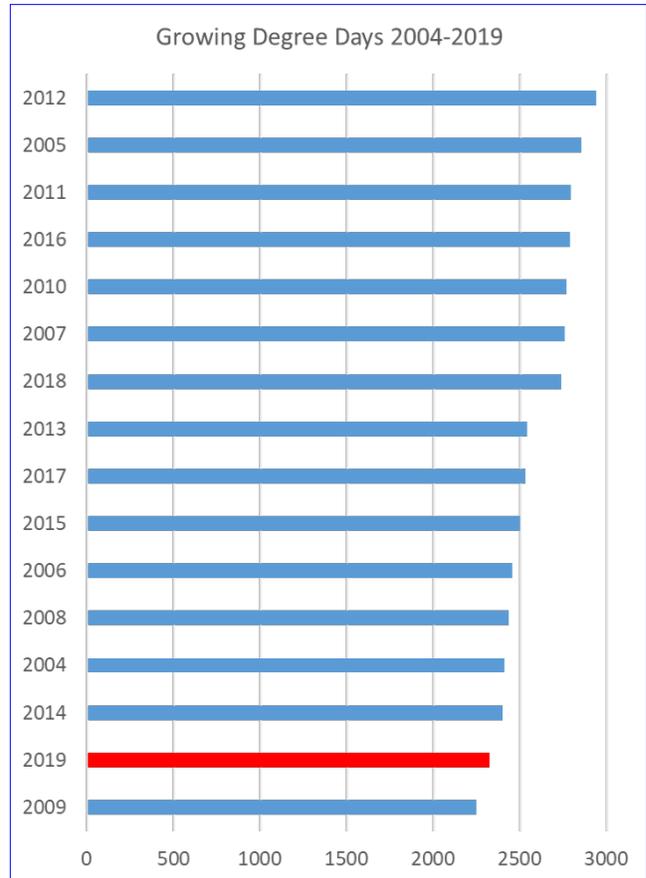
**Figure 8. Average dew point temperature for September 2019 in Rochester.**  
Figure created by Hans Walter-Peterson using the Iowa State Mesonet tool

humidity kept disease pressure low (see Figures 7 & 8), allowing growers to dare to imagine we might actually get there, albeit not tomorrow. The side effect was that I could walk through Wegmans in early October and see lots of bemused winemakers who weren't quite sure how to deal with free time in early October.

Not everyone was able to breathe a sigh of relief, however. In the Niagara region there were a few rain events that didn't come south of the thruway, so they were not able to enjoy a dry September. Up in the Champlain region, there was just too big of a heat accumulation hill to climb. Overall, however, most New York vineyards benefited greatly from a September to remember.

### The Old Normal and the Graduation/Third Week of School Heatwaves

First, the disclaimer: growing degree days are an imperfect measure. Of course, pretty much every measure we use is imperfect, but that doesn't mean they



**Figure 9. Total GDDs at Geneva 2004-2019.**  
Figure by Tim Martinson

can't be useful. Looking at Figure 9, we can declare this to be a cool growing season, in fact the second coolest of the past 15 years. While 2019 was undoubtedly cool by recent standards, it was pretty darn close to the longer term average.

Over the past 47 years in Geneva, seasons have averaged about 2500 GDDs, and 2019 was just under, making it a cool year only by 21st century standards. Finally, it's interesting to look at Figures 4 and 6 together, because it shows how monthly totals don't tell the whole story. June and September both have GDD totals (Figure 4) that aren't particularly striking. However, Figure 6 shows just how different conditions were in the beginning vs. the end of the month, as cool starts gave way to warm finishes.

### Winemaker Impressions

The lateness, followed by the warm dry weather, brought into play that most elusive and controversial (at least in New York) factor: hang time.

In Niagara, Robin Ross says, "waiting for (the grapes) to ripen has proven worthwhile so far – we are getting decent sugar levels and the acids are lowering." Of course, you had to stay on your game. Jonathan Oakes

adds, “if you did your homework and planned for a late season and continued spraying two weeks beyond where you normally would’ve stopped, you were certainly rewarded.”

Rich Olsen-Harbich reports that the weather “allowed later ripening varieties to glide into the end zone in beautiful condition.” (I didn’t tell Rich I was going with a baseball theme this year, so it’s not his fault.)

Near Lake Erie, when sample TAs were too high, “we were again able to let things just hang and with the continued sunshine they dropped,” says Kris Kane. The clusters that did make it in the Hudson Valley provided what Michael Migliore calls “mature, clean, balanced fruit from a low disease pressure season.”

Still, Matthew Schrader from Constellation describes 2019 as “an overall higher acid year,” and very few people upstate will argue with that description. Dave Breeden agrees, calling it “the third of three challenging vintages in a row (2017: all the grapes; 2018: all the rain; 2019: all the acid).” While acknowledging the acid, Finger Lakes compatriot Kelby Russell is more bullish on 2019, “especially after the disaster of 2018. I’ve been describing it as feeling like a cross between the late/long ripening and higher TAs of 2014, with the positive botrytis influence of 2015.” Reports of high yields came from many regions of the state.

Experiences definitely varied across the state, ranging from “one of the best ever” (Long Island) to “I will not weep when it’s over” (not Long Island). Even within regions, some people were pleasantly surprised and others were fairly disappointed.

Two things I’ve learned over the years:

1. Snap judgments are for talking heads and twitterati, two groups I am loathe to join even if they would return my phone calls, and

## WINTER CONFERENCES SAVE THE DATES

### B.E.V. New York 2020

February 26-28, 2020

RIT Inn & Conference Center, Henrietta NY

### Long Island Horticultural Forum

Jan. 8 and 9, 2020

Viticulture session, Suffolk Comm. College, Riverhead

### Lake Erie Grape Grower Conference

March 19, 2020

Fredonia State University, Fredonia, NY

### Eastern NY Fruit & Veg Conference

Grape Program - February 25, 2020

Albany, New York

2. Wines have a way of surprising me. I think I have a year pegged, along with the appropriate vinous expectations, when I am caught off-guard by some subtle (or not so subtle) feature of the season I had ignored in my rush to neatly summarize it.

I have definitely been hard on 2018, and justifiably so I think, but the truth is that I’ve already tasted a lot of shockingly great 2018 wines. New York vineyard managers and winemakers are just that good, and this year they actually have some decent material to work with. With that skill—and a decent September, of course—I think we’ll be just fine.

*The Vinification and Brewing Laboratory at Cornell AgriTech in Geneva produces over 300 lots of research wines that help NY producers learn processing techniques to produce high quality wines. The New York State Wine Analytical Laboratory tests wines submitted by producers to diagnose and provide solutions to quality issues that arise during processing.*

Photo by Tim Martinson



## LAKE ERIE REGION UPDATE

### BRIX ACCUMULATION, RAIN AND YIELD: MEASURING THE IMPACT

*Kevin Martin, Extension Farm Business Management Associate*

*Lake Erie Regional Grape Program, Cornell and Penn State Cooperative Extension*



*Kevin Martin*

Overall weather from veraison to harvest was significantly better than average. Wind, rain and disease did contribute to shelling and crop losses but the impacted acreage was significantly less than last year. Balanced crops and good nutritional programs may have mitigated some shelling as it seemed to vary by block. Brix accumulation mirrored weather events as above average crops ripened to maturity despite our late spring.

**Soluble Solids.** Average brix for the region has been 16.6 in the juice grape market. With most plants taking in similar brix, National's North East plant has been somewhat higher than average at 16.8 brix. This is up slightly from last year.

**Quality.** Quality of Concord and Niagara was extremely high. Desirable acids held on, ripeness occurred without significant dehydration and very few loads were rejected to rot and decay. Virtually no growers had issues meeting minimum brix standards. Growers were occasionally caught with low soluble loads in the range of 14.5 – 15.5 but delaying harvest in certain blocks was enough to ensure nearly all deliveries between 15.5 and 17.5.

**Crop levels.** While last year appeared to be a great year, a below average fall was a reminder of the risks associated with pushing crop load. By 2019 all was forgotten. Most growers pushed crop load and the late spring led to significant production risk. The challenges early in the season were erased by excellent fall weather in 2019. In the end, harvest was relatively easy for most growers.

**Juice grape markets.** Good market news of last year has mostly improved, particularly on the juice side. Volume of sales is up significantly for National Grape and Refresco (formally Cott). Pace of sales and price is on a modest rise for Growers Cooperative.

Most importantly for some, Agri-America has processed over 7,000 tons in their newly acquired processing plant in Fredonia, NY (Formally part of Cott/Star). Finding demand for raw product, Agri-America purchased directly from processors that were running out of tank space and waiting for concentrators. These collaborative efforts improved 2019 payments to farmers already.

**Wine grape markets.** The wine market, particularly large scale, has softened. We have seen high productivity in recent years from other regions. The market to supply small wineries is becoming increasingly competitive. Even National Grape has entered the space.

Continuing on the theme of last year, wine demand is pointing toward another evolution in consumer taste and behavior. There has been some upheaval in major labels. With the sale of kosher brands from Constellation to Royal, Concord marketing agreements will shift. The rest of production for Constellation is business as usual until there is some finality with the tentative agreement between Constellation and Gallo. We don't know what ingredients (grape varieties) will emerge in new product lines.

Depending on the severity of shift in consumer behavior, we actually do not know that new product lines will fully replace the old ones. This is similar to the challenges three years ago in juice. There is a good chance some growers will benefit, while others need to adjust their businesses and acreage.

The market for smaller wineries is similar. Freeze damage in the Midwest has not impacted demand yet, which exceeded supply. Lake Erie tank space and Midwestern tank space for hybrids exceeded annual demand. Growers expect to see some varieties pick up in price and demand by 2020. Toward the end of harvest, as quantities became known, it appears that supply and demand were closer to equilibrium than last year.

In all, most growers will find this to be their most successful year out of the last five. All major factors that drive profitability were average to above average. Continued growth in price would have the potential to revitalize the industry. In the meantime, the continued search for increasing efficiency will help compensate for stagnation in price.

# GRAPES OF THE FUTURE

Rebecca Wiepz and Tim Martinson

Since early 1900s, Cornell grape breeders have been germinating seeds resulting from experimental cross-breeding, growing them in a plant nursery during the first year, then digging them up for replanting in experimental vineyards the following year.

This annual ritual changed little over the past century until about seven years ago, when Bruce Reisch's program started using DNA markers to select which seedlings from experimental crosses to retain for plantings. Before DNA markers, Bruce would plant the seedlings in the 'no-spray' nursery, and rely on visual ratings to weed out the powdery and downy mildew-susceptible ones.

Now, the program can extract DNA from leaf tissue in the greenhouse and determine which seedlings have one or more DNA markers for powdery and downy mildew resistance – then discard the rest.

Many of the markers were identified through the USDA-supported *VitisGen2* project, led by Bruce and USDA plant pathologist Lance Cadle-Davidson.

Here are the stats:

- This season the Reisch breeding program planted 852 seedlings, selected from the original 3,534 seeds germinated in the greenhouse and tested for several DNA markers.
- 563 seedlings were selected and dug from the nursery for cold storage and planting out in the field next spring.
- All have at least one powdery mildew and/or downy mildew disease resistance DNA marker, and several have multiple markers.
- Without the DNA markers, the first-year field nursery would have been five times as large.

This past Monday, the Cornell AgriTech and USDA ARS crew, under the direction of Mike Colizzi, harvested first-year vines from Bruce Reisch's breeding program:



1. **Each plant is tagged for identification.** Disease markers are designated by a three letter code and number. For example one vine (lower left) has two powdery mildew resistance markers (designated RUN1 and REN2) and one downy mildew resistance marker (RPV3). The other vine (below) has one powdery (RUN1) and one downy mildew (RPV3) gene.



2. **This Monday**, a crew of six harvested this year's crop of vines. As the tractor moves along loosening the soil, crew members remove and separate the vines.



3. **Each of the selected 563 vines** are sorted and banded into 25-vine groups.



4. They are then placed in bins for transportation to cold storage for the winter. Next spring they will be planted at standard vineyard spacing for further evaluation.

# FRUIT COMPOSITION TRENDS:

2015-2019

*Timothy E Martinson  
Cornell AgriTech*



Tim Martinson

Those of you who recall the 2018 harvest probably don't remember it fondly. Vineyards were soggy, fruit rots were everywhere (even on Concord), and sugar accumulation leveled off in late September (see yellow bars in figures). And yet it was also warm, so it ended up being what I characterized in last year's

article as a 'low brix, low acid' year. This year looks better.

Our five year average includes warmer-than-average 2015 and 2016 seasons, the heavy-yielding 2017 season, and the warm but soggy and humid 2018 season. The very delayed 2014 season (low brix, high acid) dropped out of our 5 year average. This year ripening started late, but favorable October weather allowed maturity levels to end up in the right place. With a few exceptions.

**Sugars.** Soluble solids started low in week 1 (~2° Brix below last year), but accumulated steadily until the end in most varieties – ending up ~1 to 2° Brix higher than 2018 (or 4° Brix higher for Merlot).

**Acids.** Titratable acidity curves show a ~1 wk lag in dropping compared to 2018 – starting out very high in the first week (~low 20s vs ~13-15 g/l in '18) but ended up within 1 to 2 g/l of averages. Juice pH (related but not identical) also lagged behind last year.

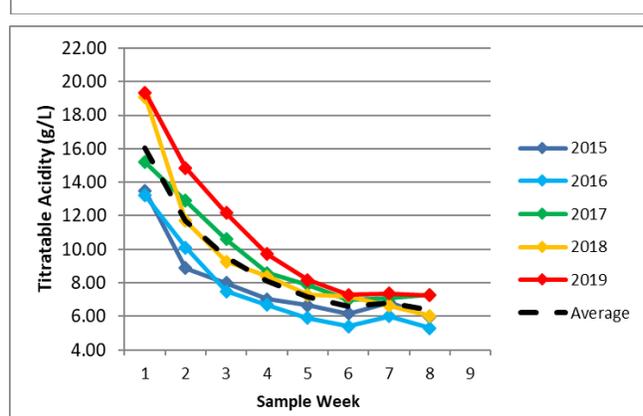
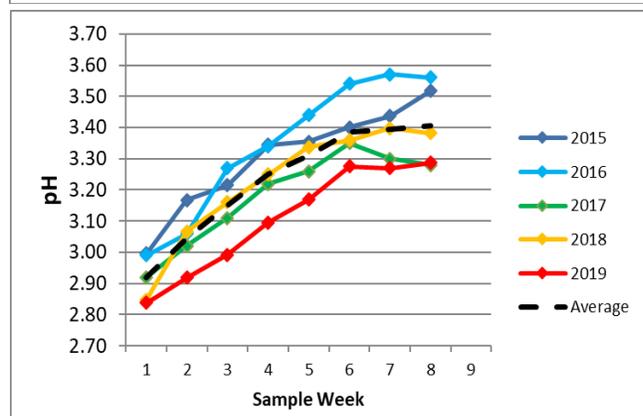
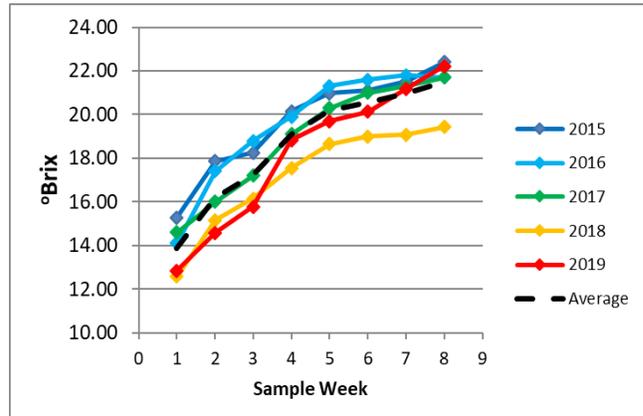
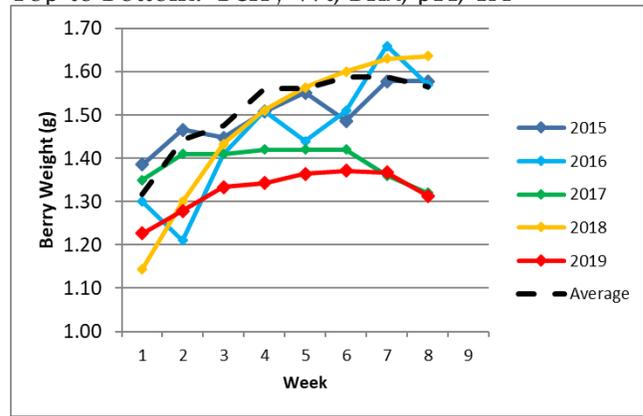
**Exceptions.** There were two exceptions to the trend of a "delayed start but average finish."

Long Island (and the lower Hudson Valley) had an exceptional year. Soluble solids were on the high end and TAs were on target early. This is most evident in the Merlot graphs – but we also saw a distinct difference in Cab Franc, Riesling, and Chardonnay samples collected both in the Finger Lakes and Long Island, where upstate samples had 2-4° Brix lower soluble solids and 3-4 g/l higher acids than Long Island samples.

North country (especially Champlain) vineyards had a cool season (lagging by ~300-400 growing degree days) and harvest of Minnesota varieties (Marquette, Frontenac, and La Crescent) took place 2-4 weeks later than usual. I suspect that North Country growers were waiting for acids to drop. But they didn't drop fast. For example, last year on Oct 1, Frontenac TAs were at 12.6 g/l. This year – 3 wk later – they finished the season at 17.6 g/l.

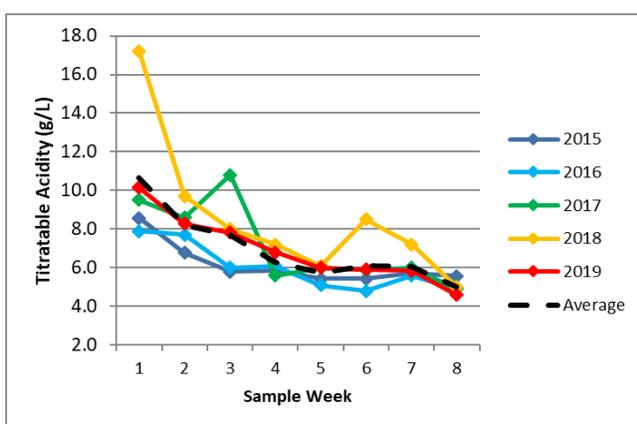
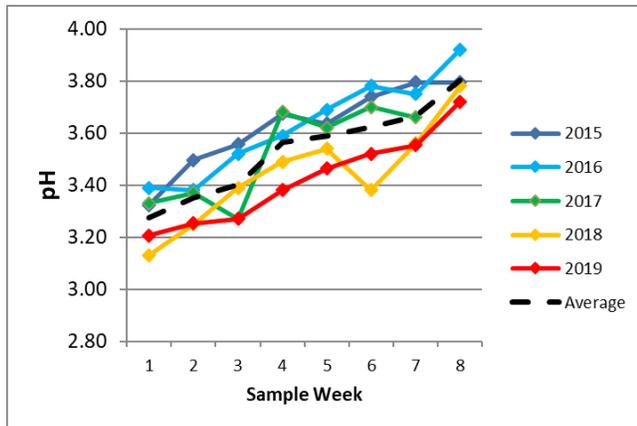
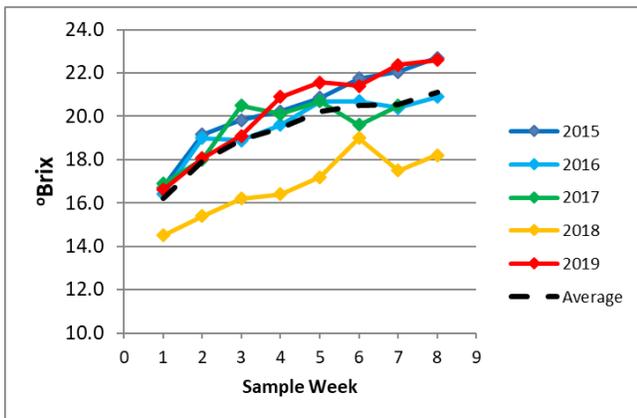
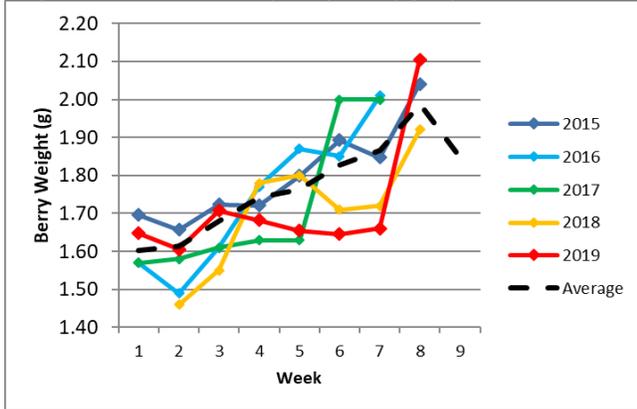
## Cabernet Franc

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



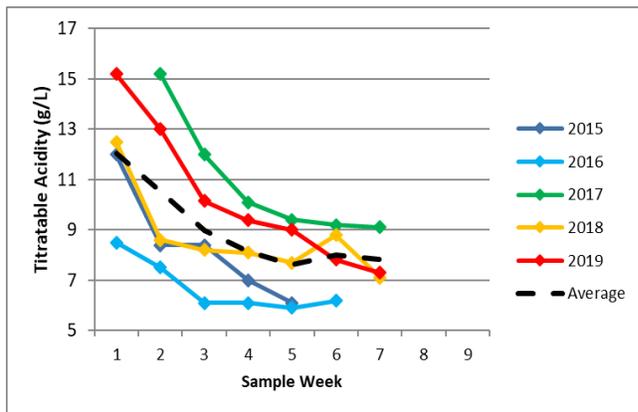
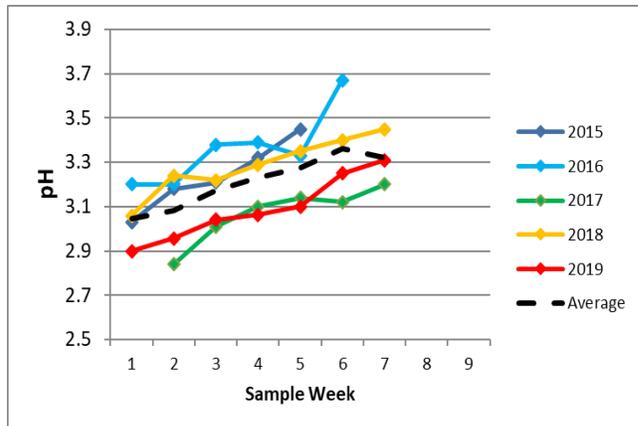
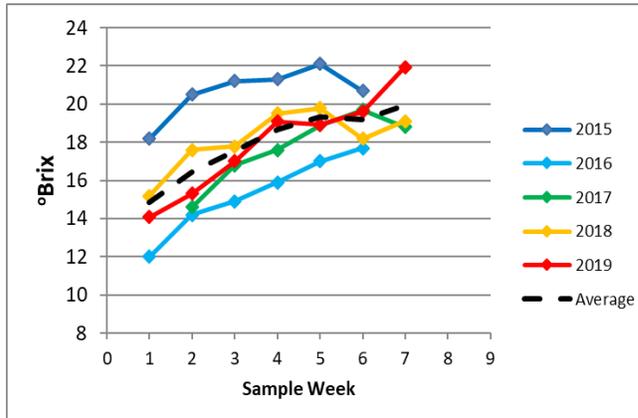
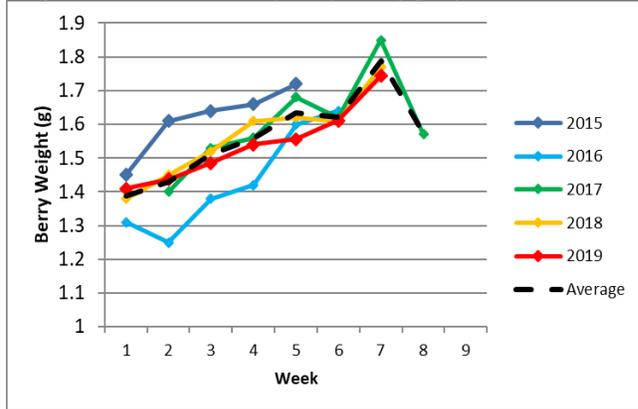
### Merlot

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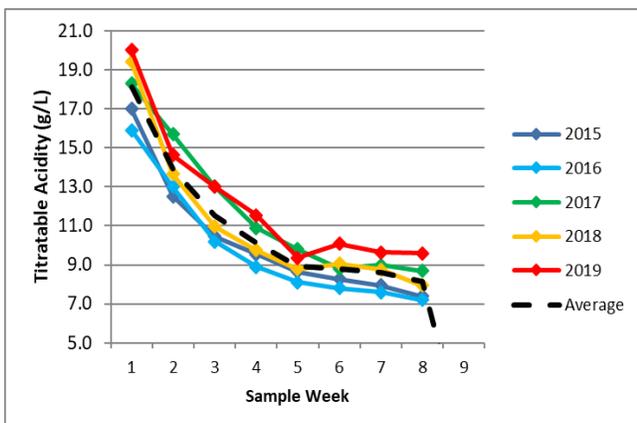
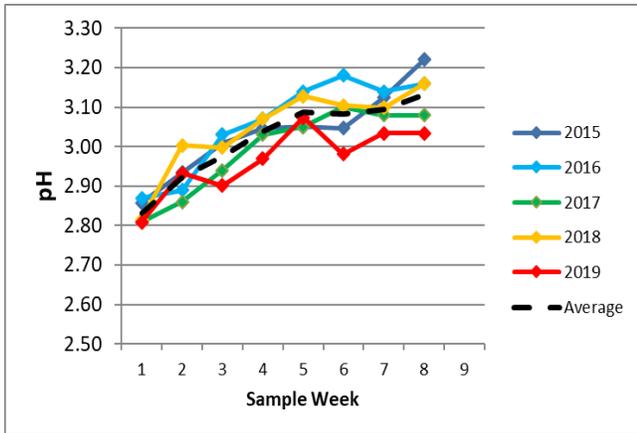
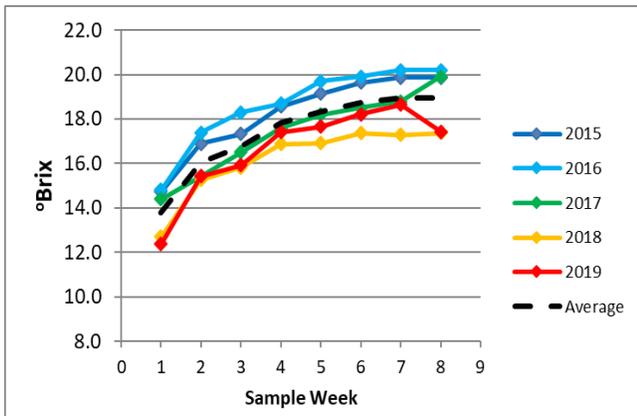
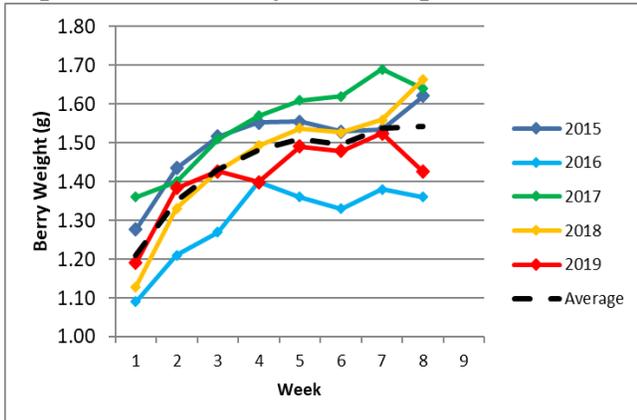
### Chardonnay

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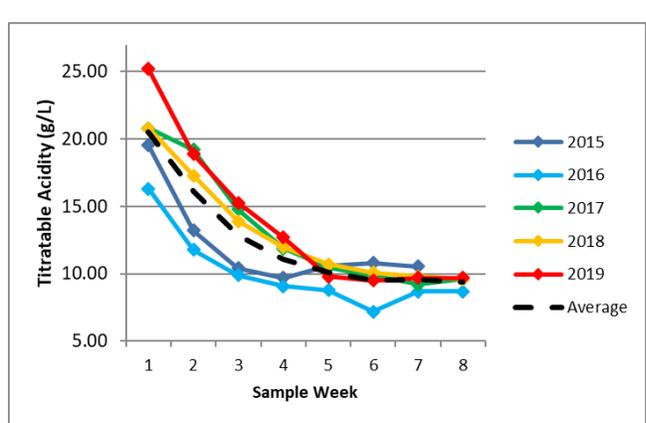
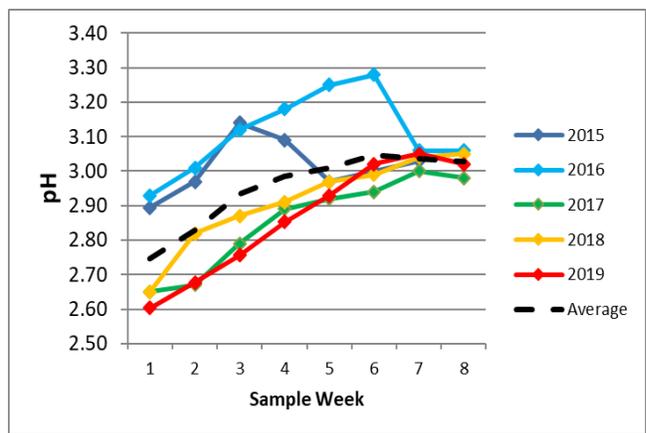
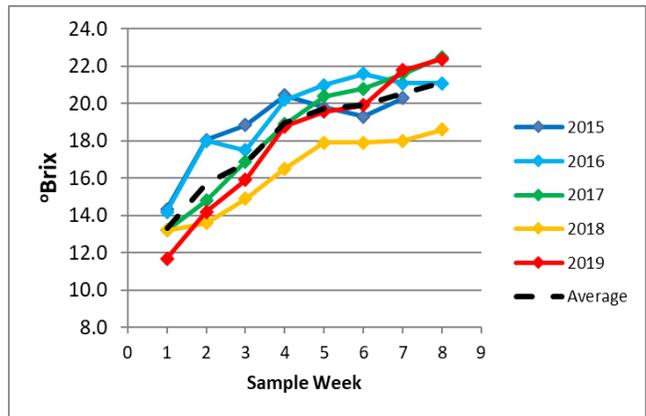
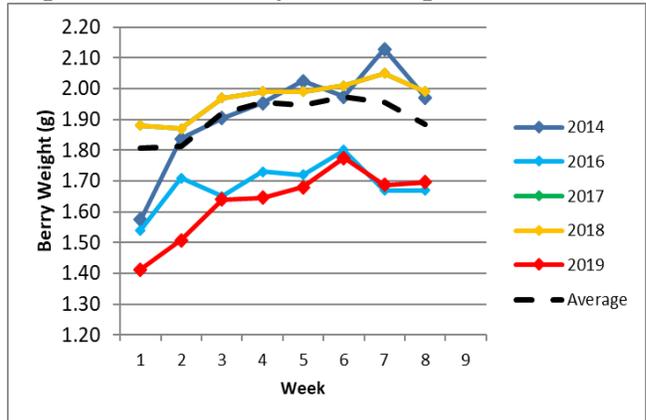
### Riesling

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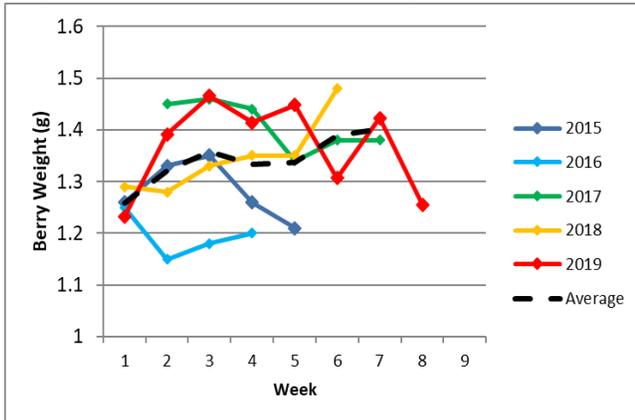
### Traminette

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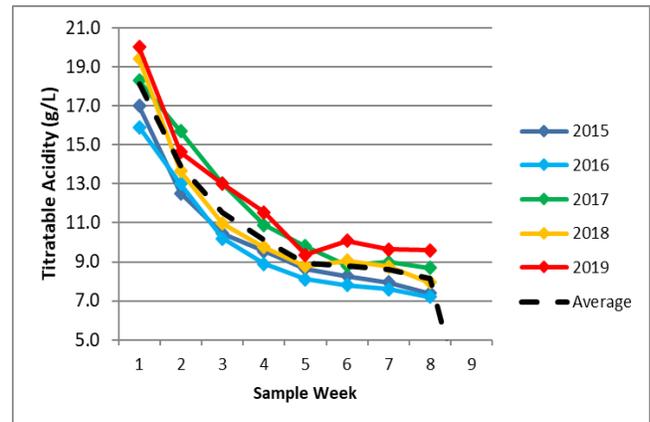
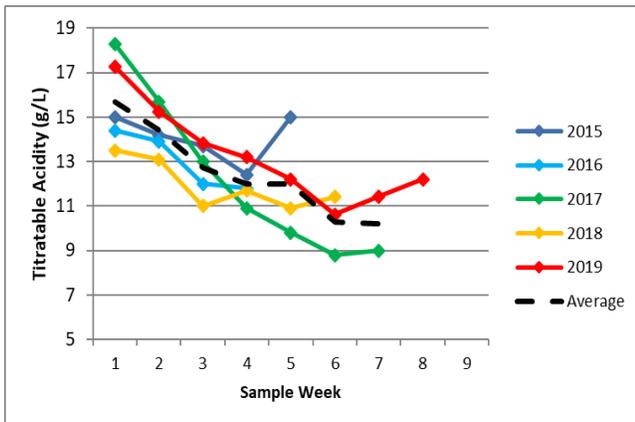
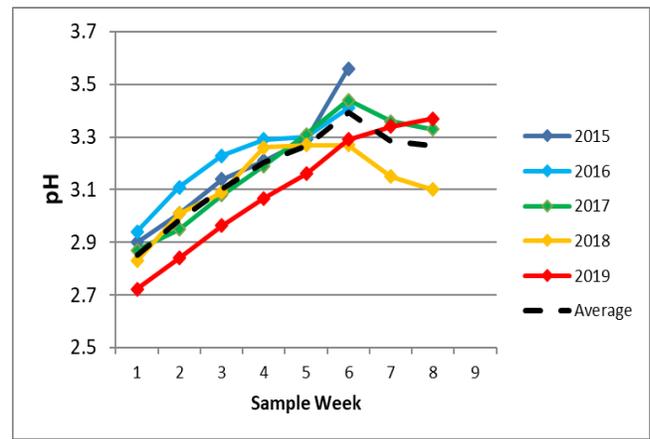
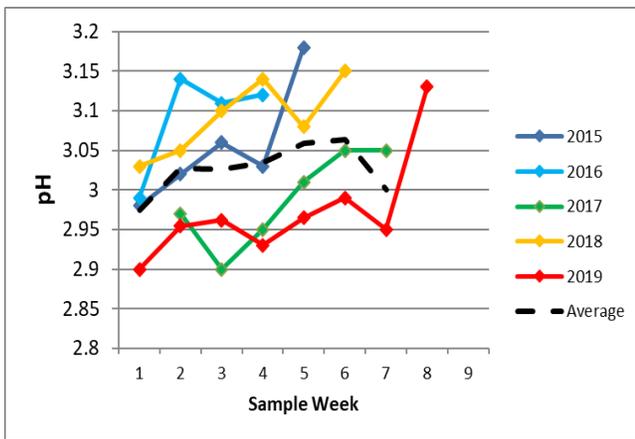
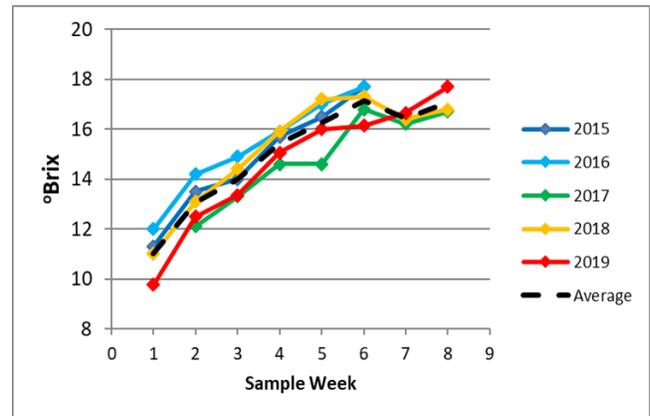
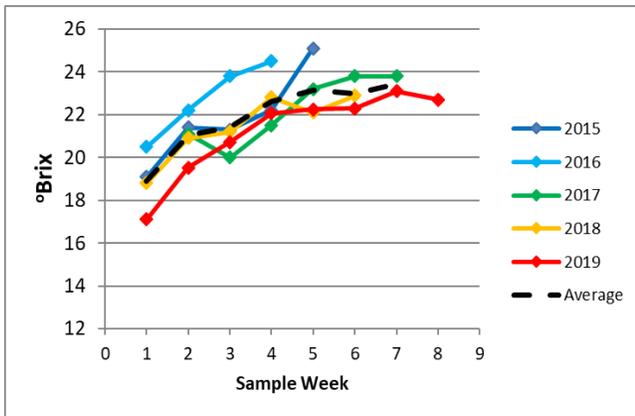
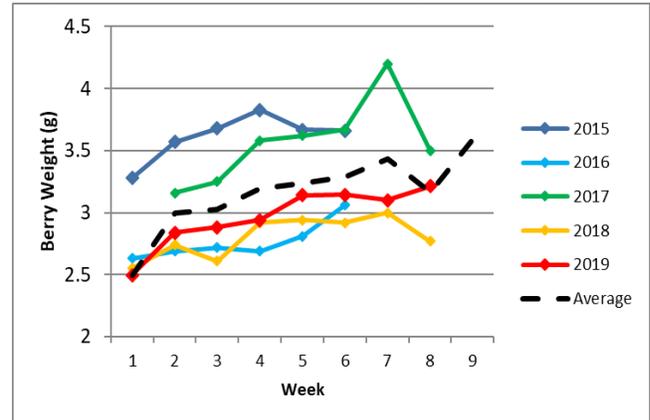
## Marquette

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



## Concord

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





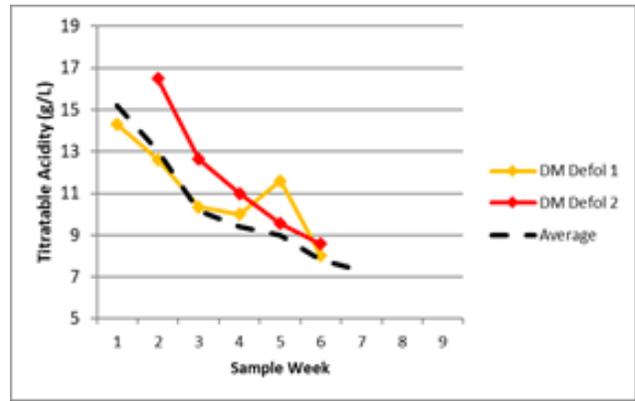
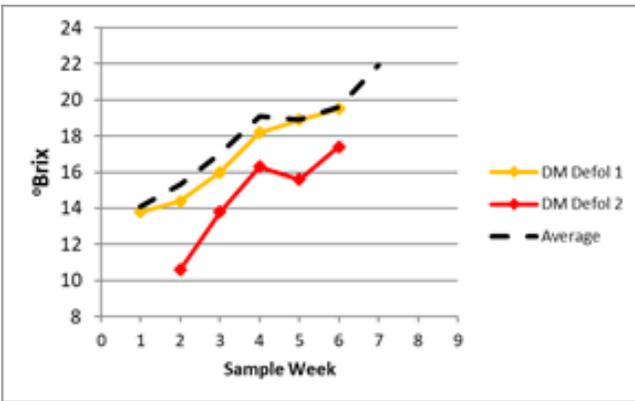
# DOWNY MILDEW DEFOLIATION DELAYS RIPENING

*Tim Martinson*

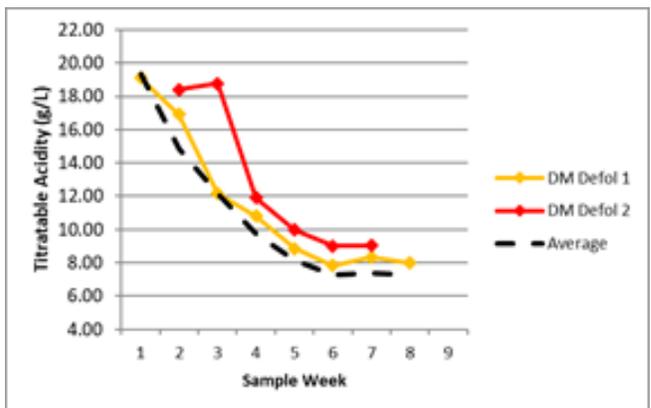
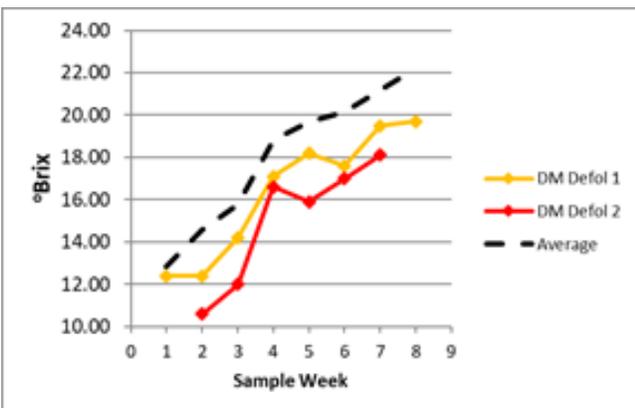
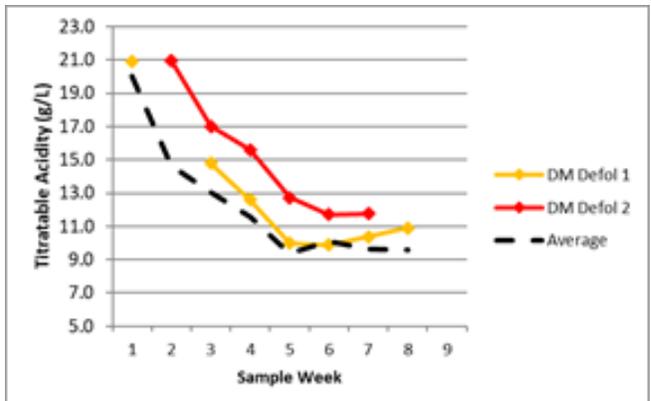
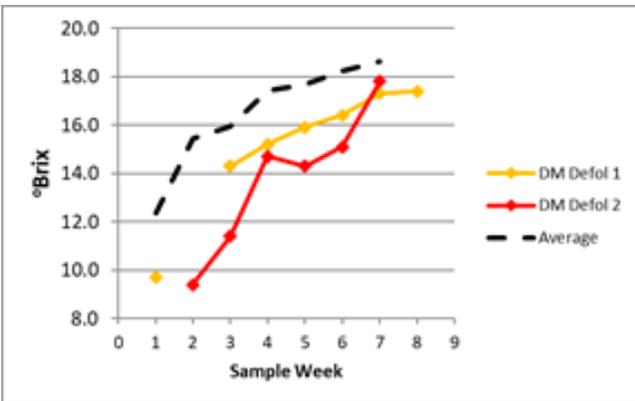
I've pulled out two individual vineyards that, for various reasons had significant amounts of downy mildew that moderately (denoted DM Defol 1, yellow lines) or more severely (DM Defol 2, red lines) were defoliated by downy mildew. The dotted line is the average across 5 (Chardonnay), 12 (Riesling and Cabernet Franc) vineyards in 2019 – including the two partially defoliated vineyards.

Here's how downy mildew (starting around veraison) affected Brix and Titratable acidity in the two locations:

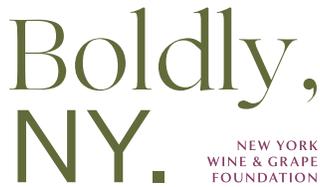
## Chardonnay



## Riesling



## THANKS TO OUR SUPPORTERS



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## Niagara County Wineries

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- [Long Island Grape Program - Suffolk CCE](#)
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