Welcome to the 2nd Sentinel Vineyards "state of the grape in the state" report!
30 September 2021
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Greetings, all! It sounds like everyone is up to their necks (or at least the tippy-tops of their muck boots) in grape pomace, so we will plunge right into our report.

WEATHER

Late season humidity and rainfall have affected most of the state this September, with pockets of clear weather. We had fairly warm temperatures last week and continued accumulating heat units. Most of the state saw significant rainfall over 22 & 23 of September. Check out Dr. Nita's block for late season disease management recommendations: http://grapepathology.blogspot.com/ . Short range forecasts include desirable conditions for drying out after the recent rainfall. The chance of rain increases next week.

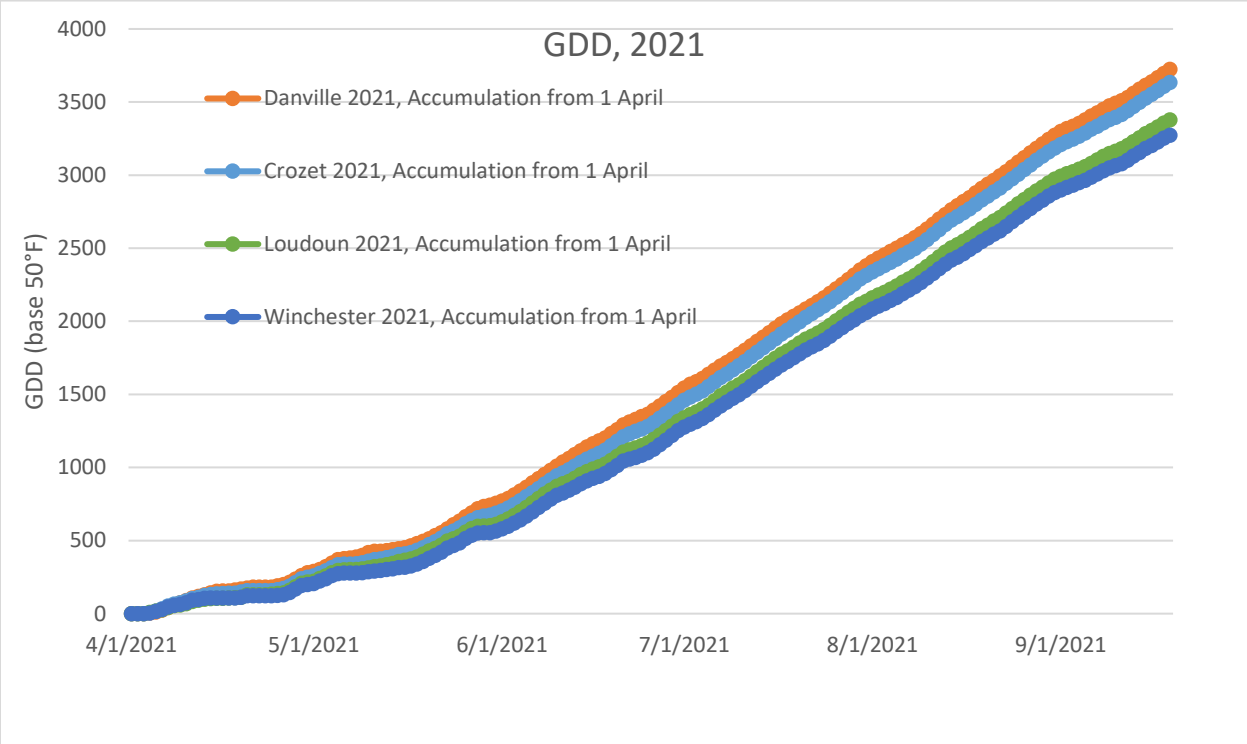

Figure 1: Heat Accumulation around Virginia

For comparison, here are the past three years' heat accumulation at the AREC in Winchester. We continue to run between the relatively warm 2019 season and cool 2020 season.

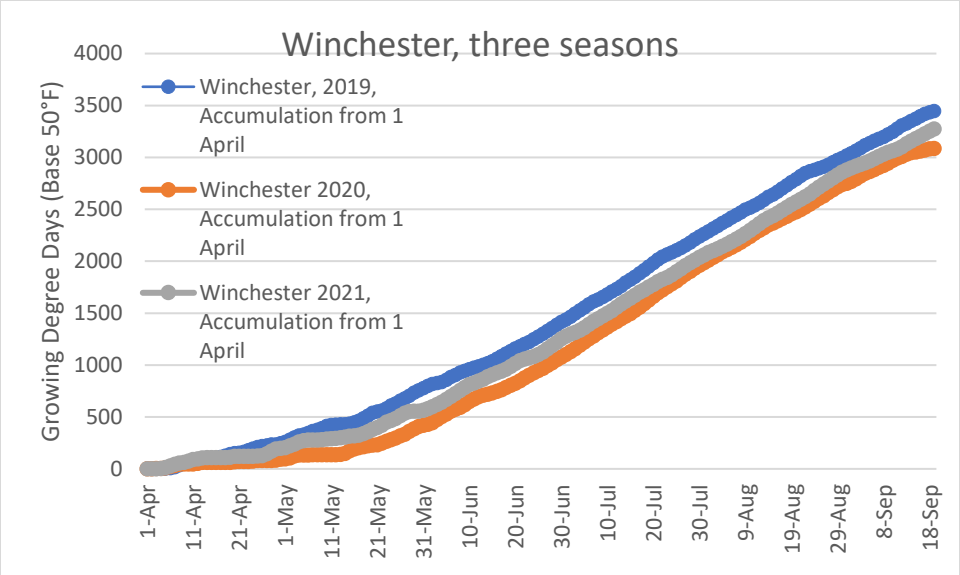

Figure 2: Heat accumulation 2021 compared to previous two years.

Figure 3: photo of shriveled Cabernet Franc (August 27, 2021)

VITICULTURE

A handful of unique vineyard situations have been reported around the state:

- Problems with stinging insects have been reported around central Virginia vineyards. Primarily yellow jackets and wasps.
- Shriveled fruit. Primarily on Bordeaux red cultivars in Northern Virginia. [see figure 3]. Ripe rot in has been isolated from some samples.
- Fall Armyworm around grape clusters. https://blogs.ext.vt.edu/ag-pest-advisory/fall-armyworm-outbreak-in-virginia-turf-sod-small-grains-late-sweet-corn-sorghum-and-other-crops-at-risk/ [see figure 4]
- Stalling sugar accumulation in grapes. Perhaps attributed to humid weather and frequent rainfall.

Figure 4: Fall Army Worm Adults on grape cluster

GRAPE FRUIT CHEMISTRY

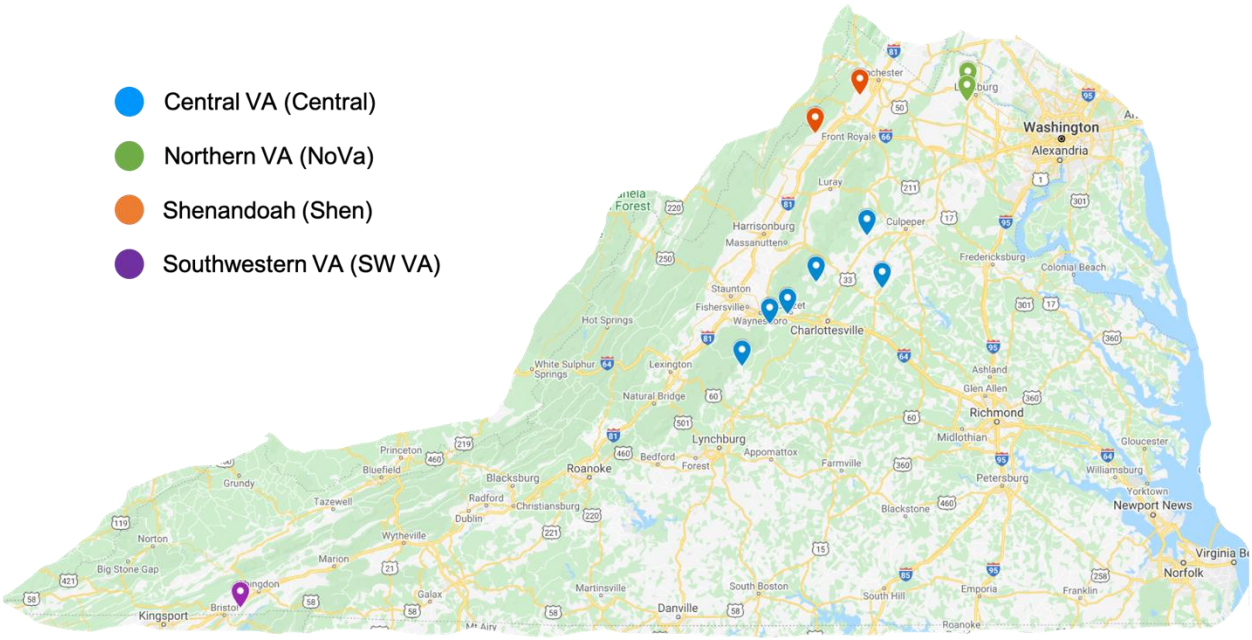

Figure 5: Sentinel Vineyard sampling sites

Samplings continues to accrue from industry partners around the Commonwealth; to date, we have compiled ~78 fruit chemistry time points from 11 different sites. The sites are approximated on the map above (Fig. 5) and are color-coded by region (coding abbreviation is shown in paratheses). As we dig into the data below, please note that Sample Week 1 corresponds to the 1st week of August, and we are currently in Sample Week 9.

Depending on anticipated wine style, region, and rainfall, **Chardonnay** has been harvested anywhere from mid-late August to the present day. As we can see in Figure 6, total soluble solids (TSS) are reaching 19 -- 21 °Brix, which is slightly higher (on average) than 2020, and slightly lower than 2019.

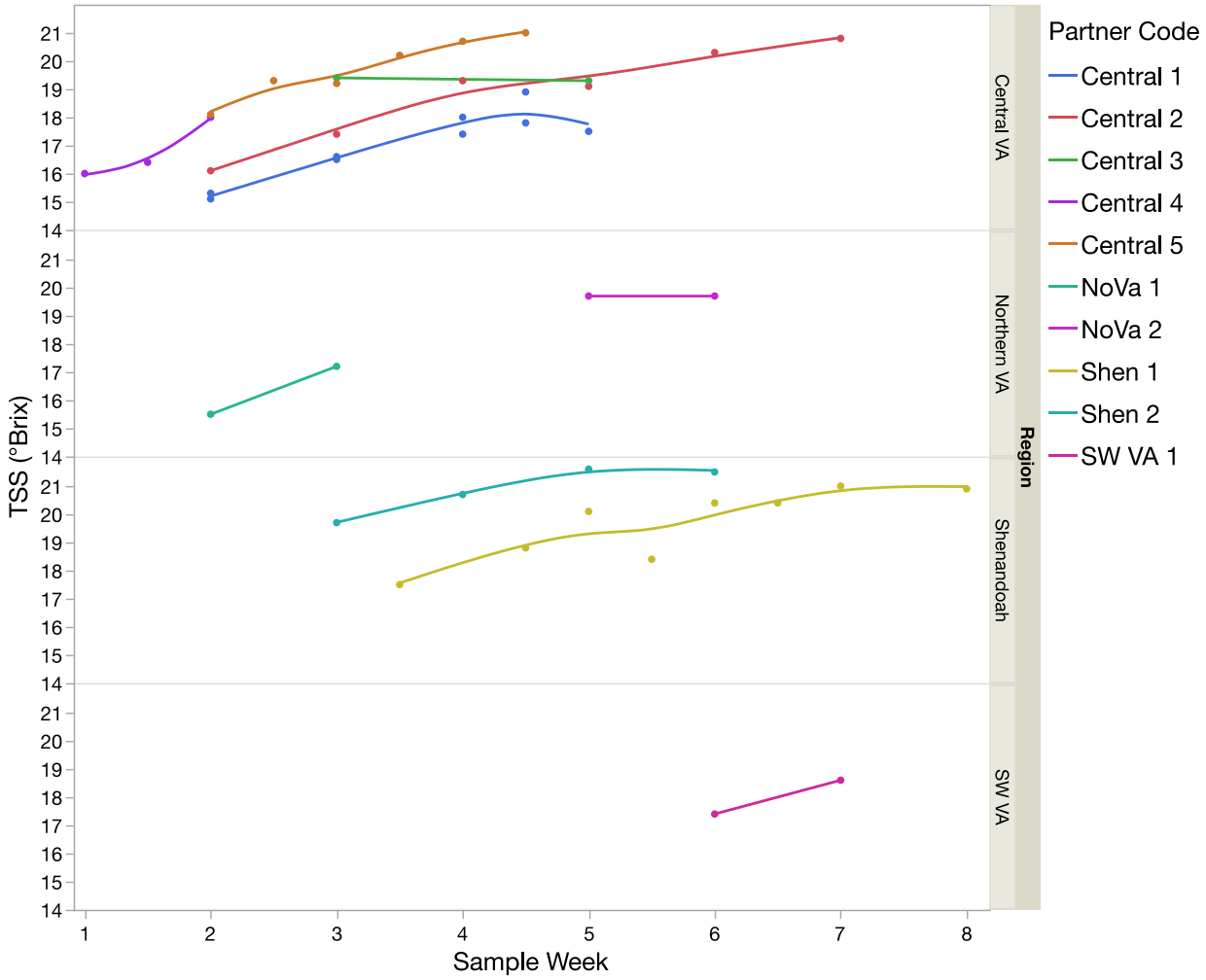

Figure 6: Total soluble solids (TSS; measured by °Brix) by sample week. Samplings are organized by region.

Looking at pH (Fig. 7), we see that most sites have stayed below 3.4, and several higher elevation/cooler sites have remained at ~3.2. Examining past data, these seem to be some of the lowest pHs that we've had in several years.

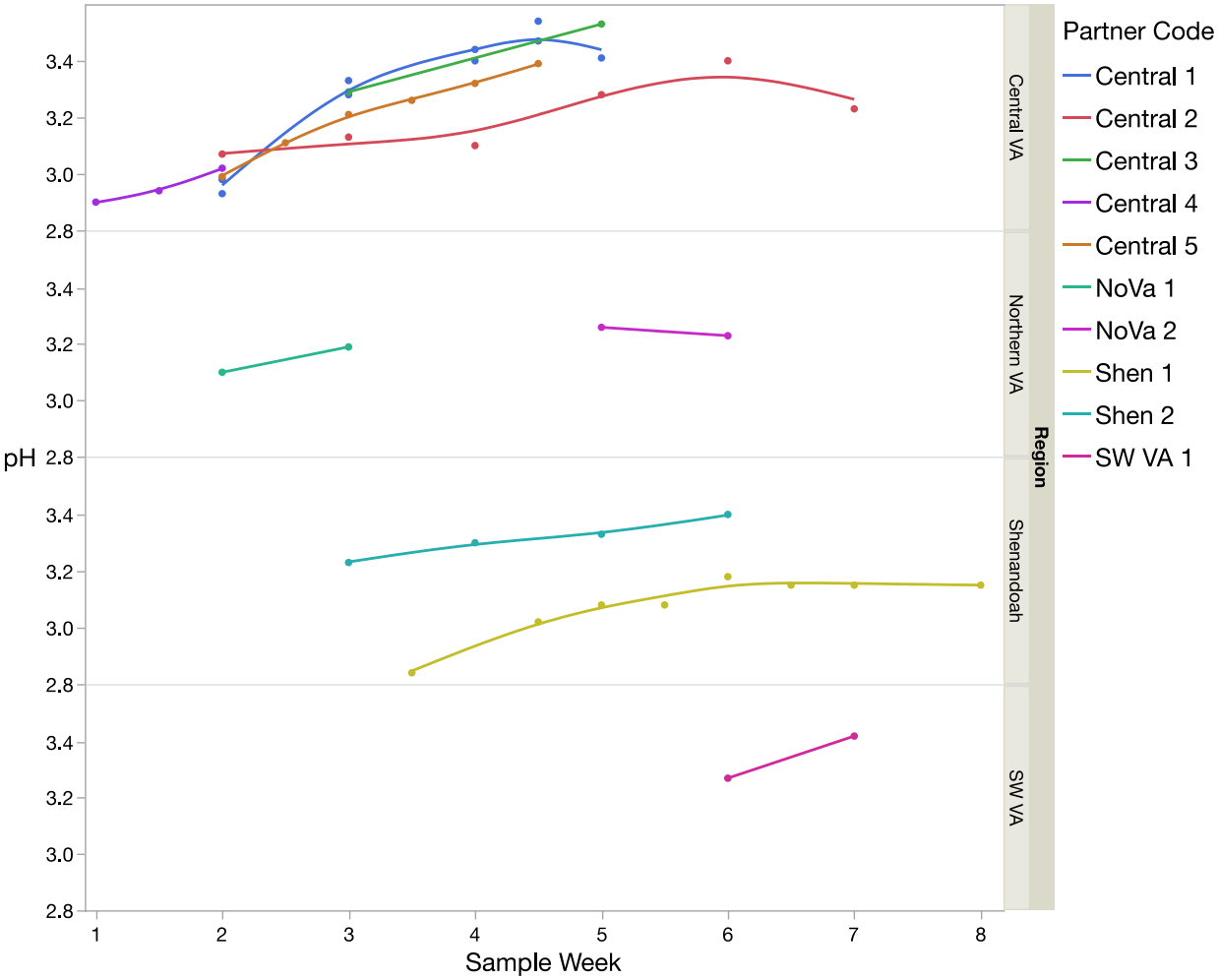

Figure 7: pH by sample week. Samplings are organized by region.

Comparing pH to berry sugar maturity (as measured by TSS) is frequently helpful for standardizing across different regions or years. The shallow slopes in Fig. 8 indicate slow degradation in malic acid in the grape berries (resulting in that gradual rise in pH) as TSS (sugars) continued to accumulate. This trend appears relatively consistent across regions for Chardonnay.

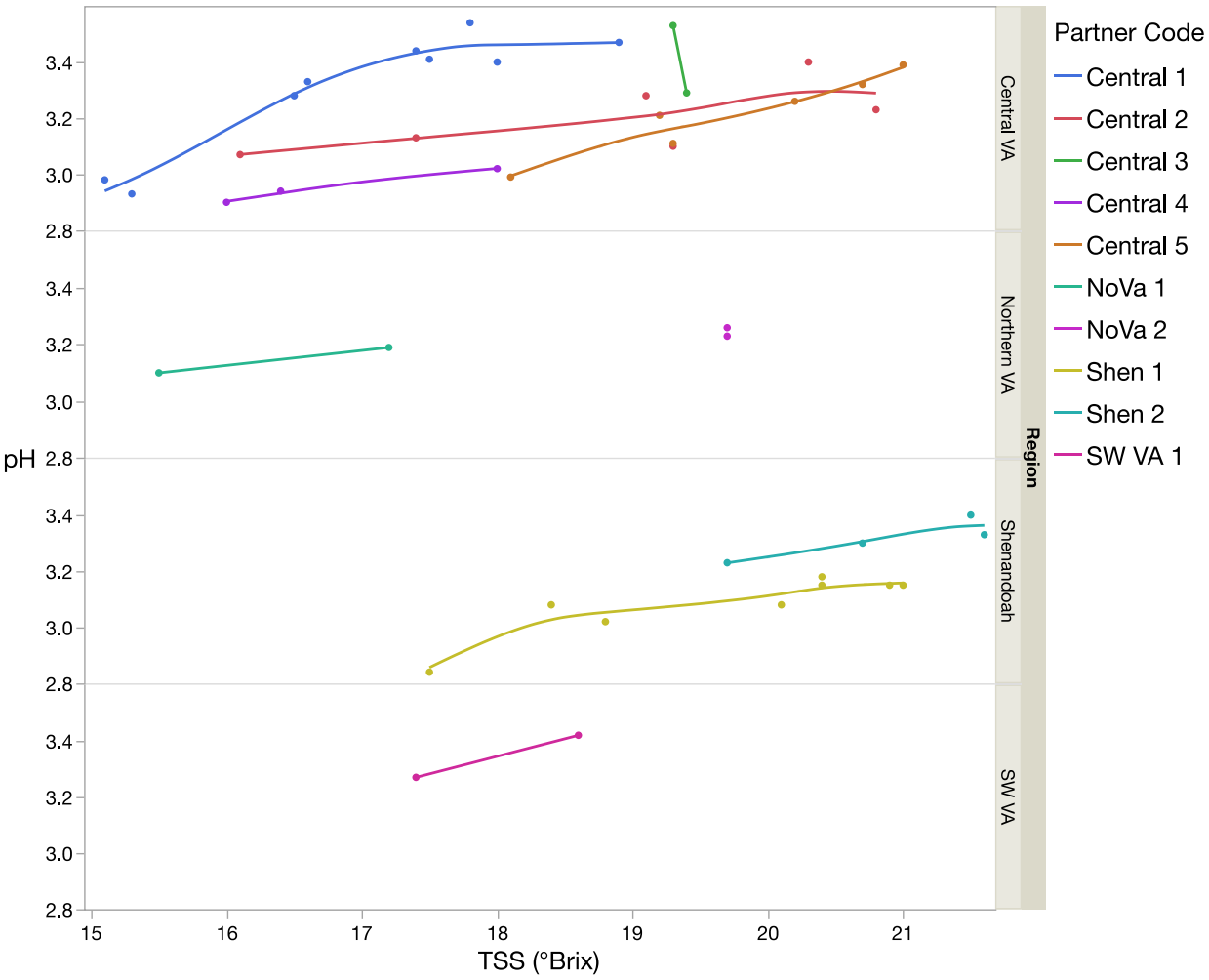

Figure 8: pH by TSS. Samplings are organized by region.

We don't have as many measurements for titratable acidity (TA) as we do for pH and TSS, but here is a snapshot (Fig. 9). Overall, we saw the usual increase of 0.1 pH units for every 1-2 g/L drop in TA. Final TAs are hovering around 5-6 g/L, though we can't draw broader conclusions based on the sample size.

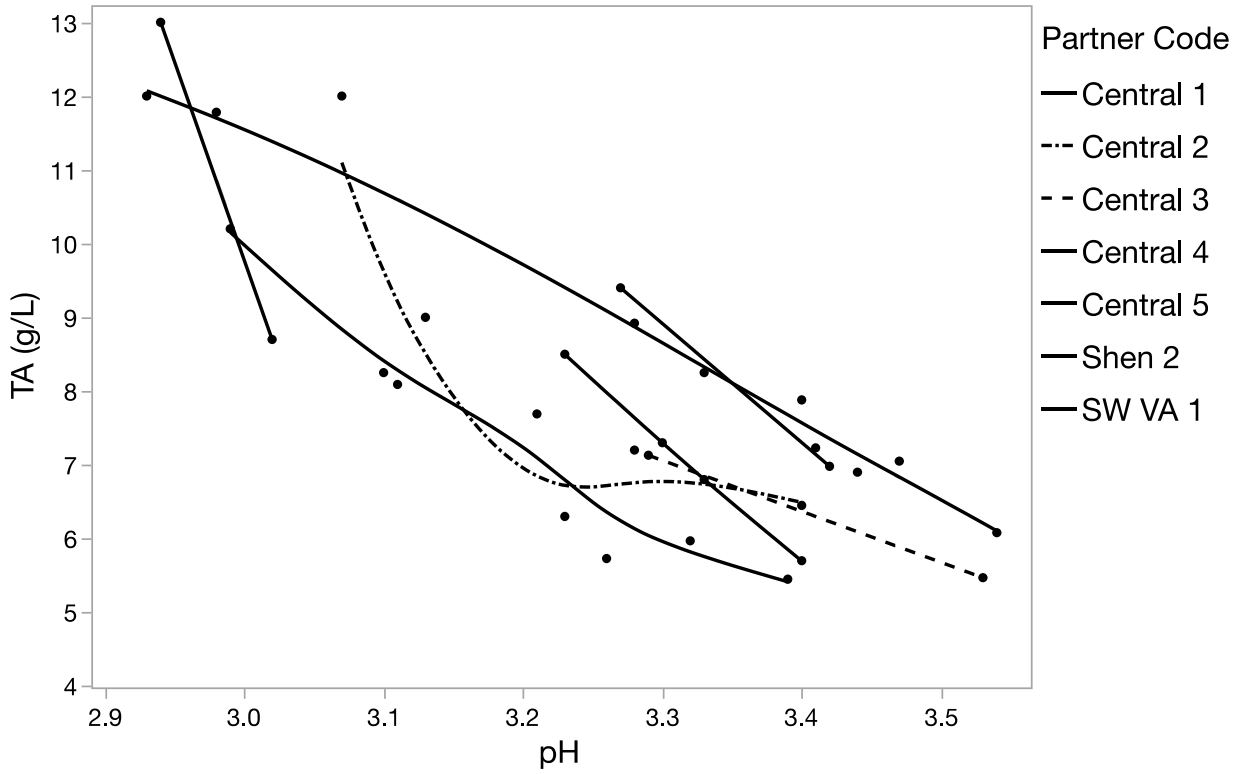

Figure 9: TA by pH.

Turning to **Cabernet Franc**, it sounds like there is a pretty even divide between those who brought it in before the rainstorm last week (or even earlier), versus those who are picking this week and in the next few weeks. As we can see in Fig. 10, TSS are hovering around 20 – 21 °Brix. Will those with fruit still hanging see a small bump prior to harvest? TBD; my fingers are crossed! At this point, it's premature to draw too many conclusions on the vintage, but we are again tracking "Goldilocks style" for sugars – a little ahead of 2020 and a little behind 2019.

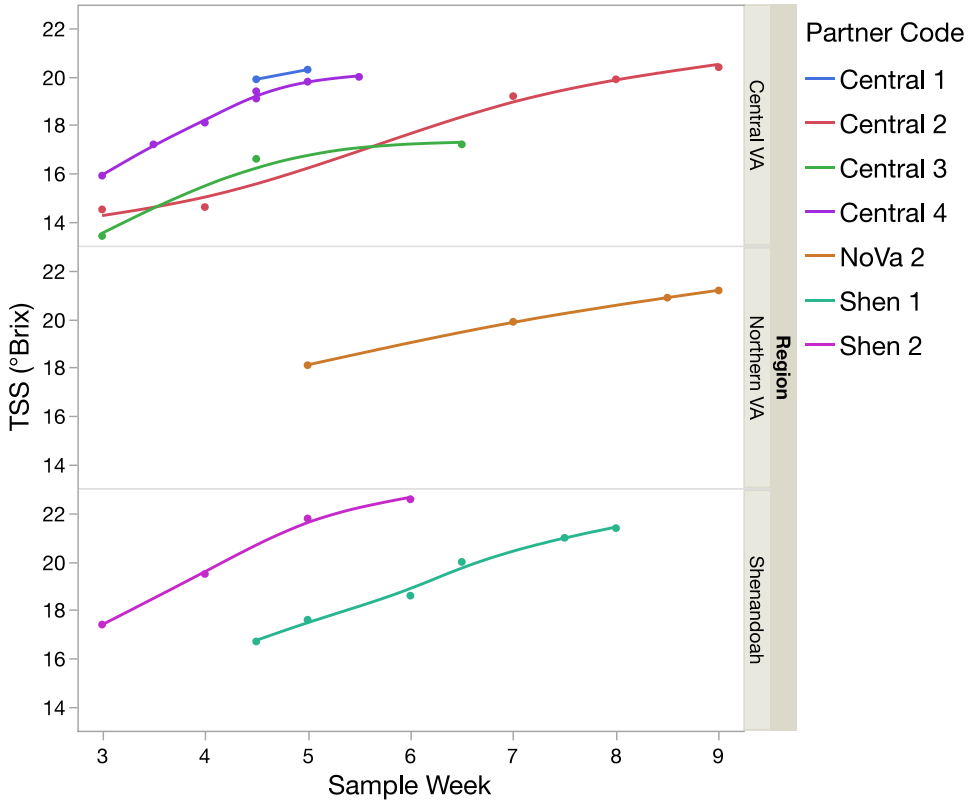

Figure 10: Total soluble solids (TSS; measured in °Brix) by sample week. Samplings are organized by region.

We speculate that those with fruit still on the vine are watching pH as closely – or perhaps more closely -- than TSS. Currently, as shown in Fig. 11, Cab Franc values are around 3.5 – 3.6 for Central and Northern VA. This is consistent both for those who already called the pick, and for those who are still sampling. Shenandoah pHs are a bit lower; currently ~3.3.

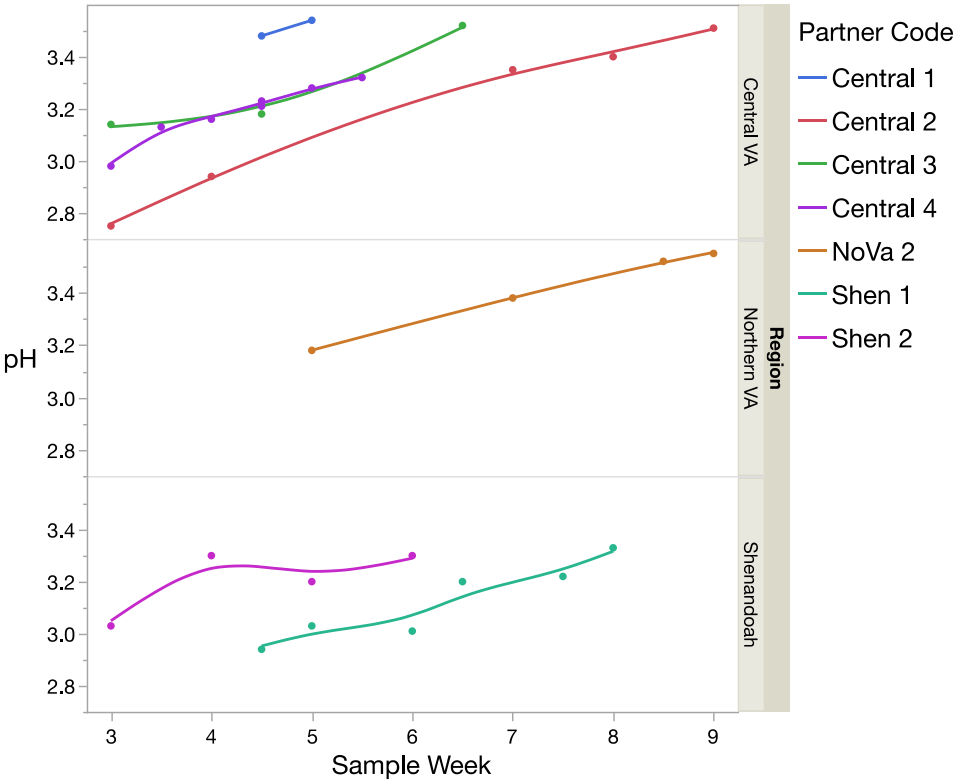

Figure 11: pH by sample week. Samplings are organized by region.

This regional differentiation is illustrated when comparing pH to TSS. In Fig. 12, the slopes for Central and Northern Fig. X are slightly steeper than for Shenandoah, and indicate an approximate 0.2 pH unit offset across the season, e.g. pHs of 3.2 at 17-18 °Brix for Central and Northern VA samples, versus 3.0 for Shenandoah ones. It's important to note that both Shenandoah sites are in the northern part of the region, so that may a secondary factor contributing to the slower acid degradation.

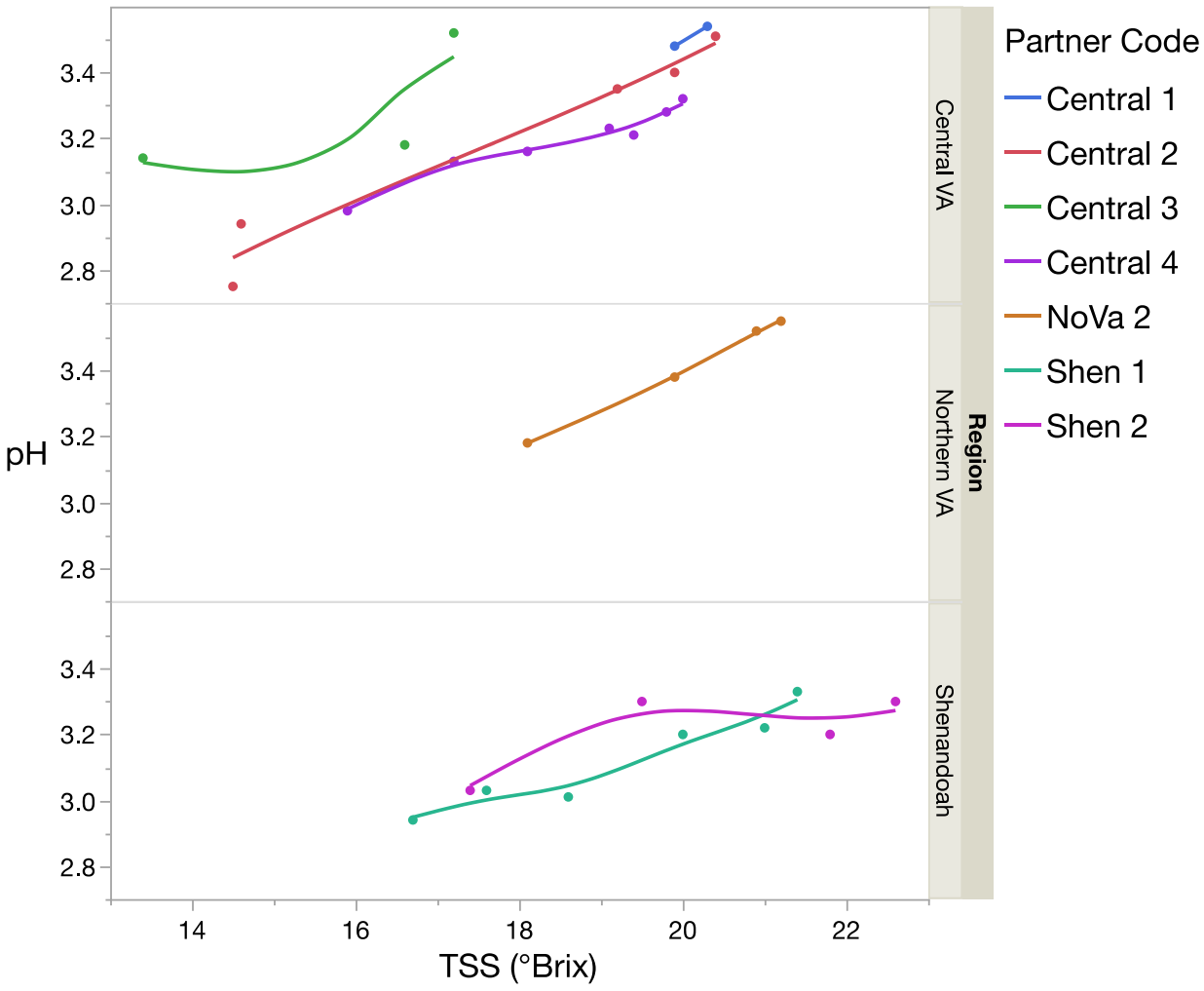

Figure 12: pH by TSS. Samplings are organized by region.

As with Chardonnay, we have a limited amount of data for Cabernet Franc's titratable acidity evolution throughout the season. Values to date are shown in Fig. 13.; average TA at harvest is ~5 g/L.

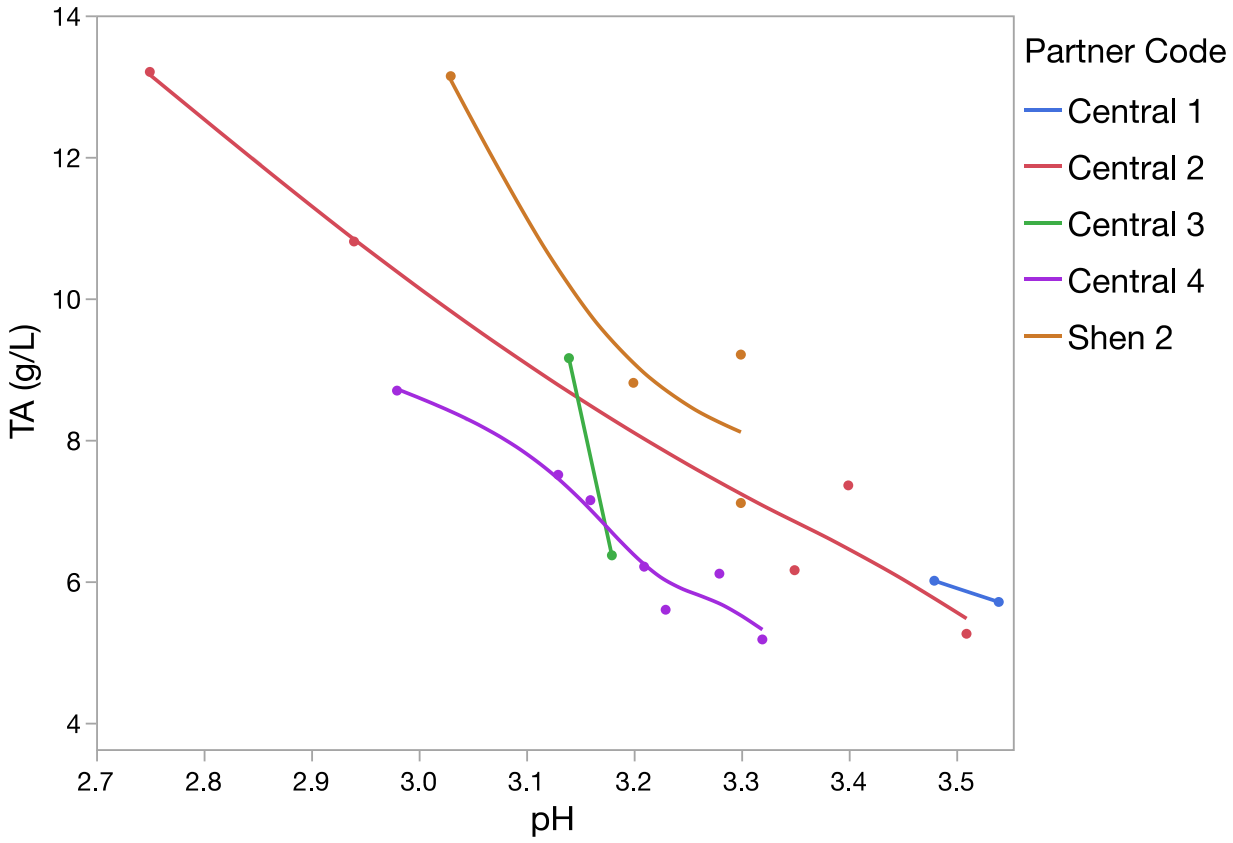

Figure 13: TA (g/L) by pH.

Finally, YAN (yeast assimilable nitrogen) levels in the grape berry (and resulting juice) show tremendous variation by site, cultivar, and viticultural practices. This well-established knowledge was further substantiated by analyses during the Sentinel Vineyards reports last season (see Report 7 and our 2020 Season Recap for details). Dr. Ken Hurley, of Virginia Tech's analytical services lab, has mentioned that YANs seem especially low this season, so it would be a good idea to check prior to fermentation to confirm whether yeast nutrient additions are needed.

Good luck as the crush continues!

UPCOMING EVENTS:

New Grower Workshop
4 November 2021
Winchester VA
Team taught session for new grape growers and those considering developing a wine grape vineyard in the Mid-Atlantic.
Registration required:
https://register.ext.vt.edu/search/publicCourseSearchDetails.do?method=load&courseId=1600122

Virginia Wineries Association Annual Meeting
November 15 & 16, 2021
Hybrid event: in-person (Richmond, VA) and remote virtual options
The technical session theme on Day 2 is "Wine Stabilization – Keeping Good Wine from Going Bad", and will feature several speakers and panel discussions surrounding best practices for bottling.
For more details and to register: https://vawine.site-ym.com/page/AnnualMtgHome

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