



Managing Acid in 2010 – Step 1: Forget 2009

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As each winemaking season throws the inevitable curve ball, we promise ourselves that we'll be ready for it next year. The only problem is that when next year turns into this year, we don't get the curve—we get a knuckleball. Last year we wanted the acid out. Here in Geneva, we cooked up all sorts of plans for trials in 2010 based on chemical deacidification, aiding malolactic fermentations and so forth. Now, here we sit with the most degree days since 1991. Acid is a concern, but not in the way we expected. Acting on last year's impulses is not going to help (thank goodness), and we need to think about a new challenge: high pH

First we need to consider the two primary measures of acidity and what they can tell us at this time of year.

pH: The concentration of free protons, or the “strength” of the acid/ base. pH is important in grapes and wine for a number of reasons. During ripening, the rising pH is an indicator of relative maturity or cation (read potassium) uptake. In tanks, pH becomes important for microbial and color stability and relative efficacy of SO₂.

TA: The titratable acidity is the total concentration of titratable protons, free or not, and for our purposes serves as the “amount” of acid. We express this in grams per liter or percent of the total, and use TA when adjusting acid for mouthfeel later in the winemaking process. TA will decrease as ripening proceeds, and we can get more information from TA at harvest time, also.



Why are we interested in both of these numbers?

They each are giving a measure relating to the level of acid, right? The problem is that there is more than one type of acid in grapes and wine, and they are not all equal. Tartaric and malic acids each contain two “acid protons” in each molecule, while the other acids (lactic, citric, acetic, succinic) all have one. Further, each acid has a different dissociation constant, or “strength.” Since wine contains different acids, and these acids have different characteristics, having more than one measurement gives us more insight into the juice or wine we're working with.

Back to harvest, and harvest in 2010 in particular. Across the board, pH levels are higher than we're used to seeing. Step one is to determine whether or not the pH is high and the TA is low, indicating an overall low acid situation, or the pH is high and the TA is high, indicating karma has caught you for stealing your neighbor's newspaper. Given the range of cultivars and growing conditions across New York, we will likely find both situations, but given the extreme amounts of heat we've experienced, we'll be expecting the former (high pH/ low TA) to be more common.

There are two primary modes of pH increase in grapes-malic acid degradation and cation (potassium) uptake. Malic acid degradation will lower the TA as well as raise the pH, while higher potassium levels will only move pH. Weather that is cool and wet will favor cation transport but not malic acid removal. In a warm season like 2010, malic acid should vamoose much more readily, while potassium levels are more likely to stay lower. We can't necessarily rule potassium out, however, because of both the variation in grapes and vineyards and also the more plentiful rainfalls this year when compared with the prototypical "hot and dry" year (whatever that is).

So what is a high pH and why do we care? A microbiologist from a cool place will say above 3.5. On Long Island and in the Hudson Valley, where the degree days have accumulated to stunning levels this year, we might say 3.7 or even 3.9. We have a few reasons for concern when we see high pH: 1) spoilage organisms are much happier above pH 3.5. Think *Brettanomyces* and *Acetobacter*. 2.) The amount of free SO₂ required to achieve 0.8 molecular SO₂ and successfully inhibit microbial growth increases as pH increases. 3.) Color stability and browning become concerns at higher pH. Another problem at pH 3.7 or above is that bitartrate removal (cold stabilization) will increase pH.

The simple answer to the problem of high pH is to add acid. Adding tartaric acid will get the pH down and help protect the wine from the above maladies

(Gavin Sacks also describes adding tartaric as "potassium fining"). Whether TA is high or low, the pH needs to be addressed at some point and, all things considered, sooner seems better than later. Fermentation, MLF, and cold stabilization will all most likely increase pH. When vineyard folks talk about spray protection from diseases and bugs, they talk about sprays having a persistent or residual effect. Low pH is residual, persistent, natural protection from spoilage organisms. In a year like 2010, high TA is unlikely to be a problem, or at least a big one. For the newspaper stealers (high pH/ high TA)- the added tartaric can be removed later, like a raincoat, once you've reached the dry shelter of filtration. There is also the whole area of ion exchange. This article is already too long as it is, however.

What does this mean for harvest decisions? That's a good question. My inclination would depend on the variety. I would want to make sure Bordeaux varieties got ripe, and if the pH crept up in the vineyard, so be it. This was an excellent year for methoxypyrazine accumulation, and there hasn't been much degradation time yet. On the other hand, I wouldn't want to see a Riesling TA drop down too low, even if that meant the brix wasn't stellar (whatever that is for Riesling). These are mostly my feelings however, and you may feel differently. For sparkling wine-oh, wait- sparkling wine is done. Now If you'll excuse me, I've got to go order five bags of tartaric acid and an electro dialysis machine- you know, so I can be ready for next year.

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