

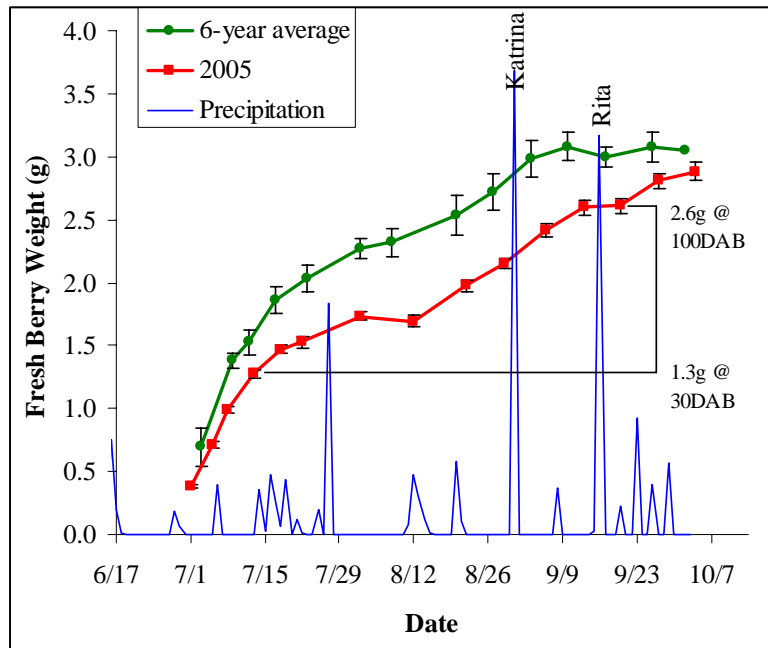
For All You Berry Weight Enthusiasts!!

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I went back and looked at the berry weight data and did a more detailed analysis to see what happened in 2005 and to figure out why we were a bit off on our crop estimation. The following chart again shows the 2005 berry curve in relation to the 6-year average. However, this time I added precipitation to the chart to indicate when the rain fell.



- Warm and dry spring and early summer weather gave us smaller than average berries during the cell division phase.
- At 30 days-after-bloom, Concord average berry weight was approximately 1.3 grams on 120-node own rooted vines at the Fredonia vineyard lab.
- Continued below average precipitation and above average temperatures gave a distinctive plateau (lag phase) to the berry curve just prior to veraison.
- 3.5 inches of rain from the remains of hurricane Katrina two-weeks after veraison fueled berry water weight gain. However, the rate of berry weight increase during this period was not atypical from the long-term average (i.e. the slope of the red and green lines post-veraison are similar).
- From 90 to 100 days-after-bloom, berry weight flattened out at 2.6 grams with juice soluble solids between 16.0 and 17.0 °brix. We consider 100 days-after-bloom as the typical harvest time for Concord in the Lake Erie region. Therefore, if we stop right there, the berry curve was again a reliable tool in predicting crop size at 30 days-after-bloom. The fresh berry weight at 100 DAB (2.6g) was double what it was at 30 DAB (1.3g).
- Continued above average temperature with plenty of soil moisture (thanks to hurricane Rita) gave an additional boost to both berry weight and juice soluble solids. Typically as we get past 100 DAB, the fruit has reached full maturity for the juice grape market – the berry weight is at maximum, the rate of sugar accumulation has slowed, and the reduction in total juice acidity has stopped. As the berry structure starts to break down, further hang-time with Concord can lead to

some dehydration with resultant decrease in berry weight and increase in juice soluble solids. However, the weather this year has been anything but typical. The weather charts show how 2005 was warmer than 1998. 2005 was also dryer than 1998 until Katrina and Rita passed through. After 100 DAB in 2005 the berry weight jumped up again to about 2.88g on average, a 10% increase over the predicted crop estimate.

So what does this tell us about the 30DAB crop prediction technique?

It still appears that the Crop Estimation and Thinning Table is a decent tool in predicting final crop size up to the point of what I would call “Concord fruit maturity” at around 90 to 100 DAB. After 100 DAB, variables such as environmental conditions, the physical condition of the fruit, and the timing (early or late) of the ripening season, can cause additional hydration (as in 2005) or dehydration (as in 2003) of the fruit. Unfortunately, this late season water flux in the berries cannot be predicted for at 30 DAB and adds error to our technique.

