

# What the Sun Giveth the Rain Taketh Away

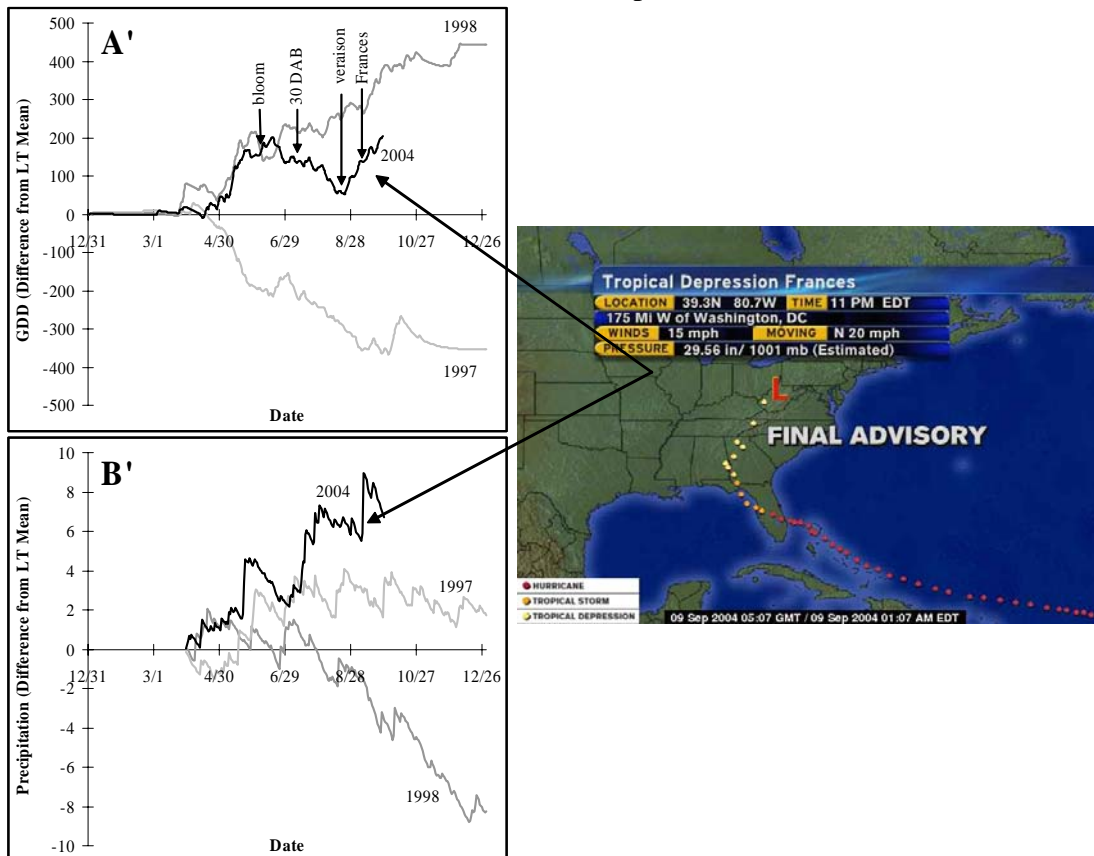
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## Weather Recap of the 2004 Growing Season

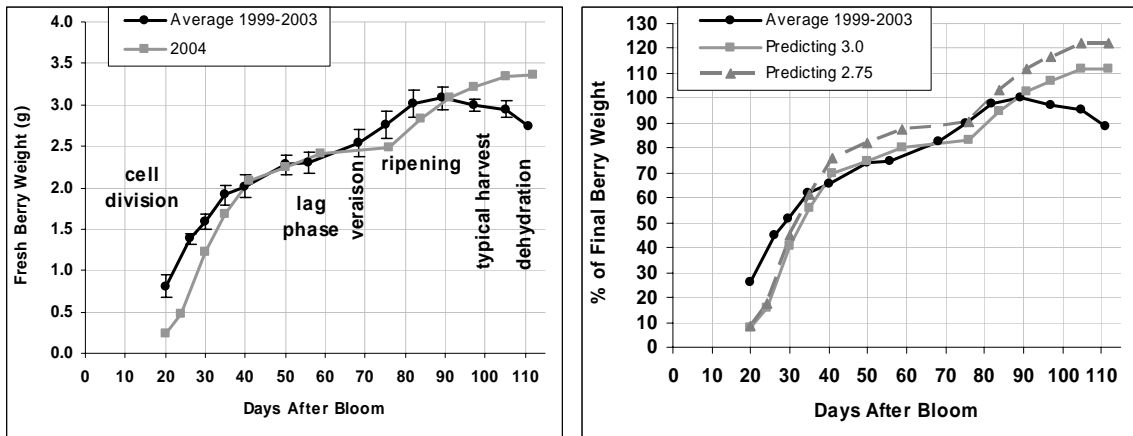
We often characterize a growing season based on the weather conditions. So how will 2004 be remembered? By now everyone should be familiar with the way I report growing degree day and precipitation information (first figure). The data are presented not as an accumulation but a departure from the long term average. If the line goes up, then we had a period of above average temperature or rain for that time of year. If the line goes down, then we had a period of below average temperature or rain for that time of year. In 2004, we had a warm and somewhat wet spring leading to an early bloom (thank goodness) – the GDD line goes up prior to bloom and is very close to the pre-bloom period in 1998. From bloom to veraison, we experienced the summer that never happened with below average temperatures and sunlight and above average precipitation. The slope of the GDD line in 2004 was similar to 1997. Although this delayed the start of veraison by only a few days, the bigger impact of the poor summer weather appeared to be on the lack of uniformity in the fruit at veraison. Fortunately, the sunny and warm conditions after veraison appears to have improved fruit uniformity – no thanks to the remains of hurricane Frances around the 9<sup>th</sup> of September.



**The question has been raised several times at the lab. . .With all this sunny weather, why don't my grapes have higher sugar?**

The answer. . .Hurricane Frances.

First we will take a look at the Concord berry curve for the entire season and then look and berry weight and brix from veraison to harvest.

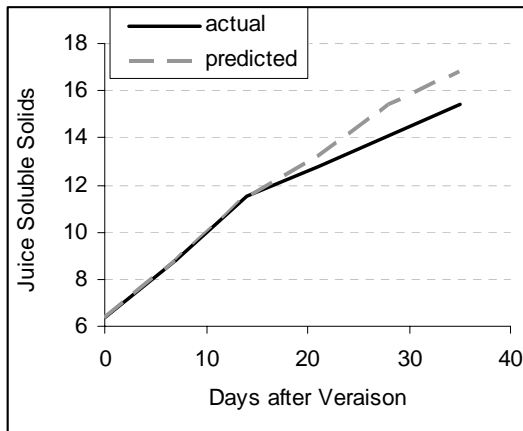
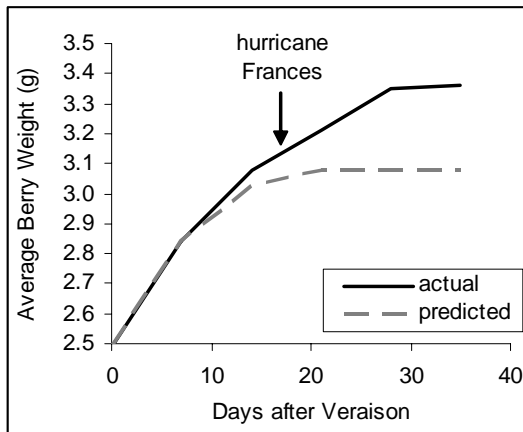


In 2004, berry weight was below average at 20 days after bloom but quickly caught up to average. We often refer to the rapid change in berry weight between 20 and 40 days after bloom – which adds a layer of complexity to crop prediction during this period. This statement was exaggerated in 2004. As for the accuracy in the 30 day after bloom crop prediction. . . If it were not for the remains of hurricane Frances pumping up the berries after veraison, final average berry weight at the lab would have been around 3.0-3.2 grams (not unusual for a typically wet year). Berry weight would have hit the 50% mark right about 32-34 days after bloom. The berry curve also shows the sluggish transition through veraison in 2004. The berry weight sat at 2.5 grams from 60 to about 76 days after bloom.

**Now take a look at the post-veraison period.**

From the weather data, you can see that we had above average temperatures after veraison in 2004 (similar to 1998) – perfect for sugar accumulation in Concord – right? In the following berry weight and brix charts, I report the actual berry weight and brix of our samples but I also calculated what the sugar concentration would have been if the berry weight had leveled off as it does in most years (when a hurricane doesn't drop 3+ inches of rain 2 weeks into fruit ripening). Normally, berry weights flatten off between two and three weeks after veraison. In 2004, heavy rains caused the berry weight to increase to almost 3.4 grams which worked against sugar loading into the fruit and caused a dilution in the sugar concentration. By my calculations, the increase in water weight at this point has decreased brix by almost 1.4 (for example: if your vineyard is running at about 15 brix, it probably would be closer to 16.4 on a normal year). The upside to this discussion is that the increase in berry weight is going increase your yield

between 10-20% (post-veraison water weight gain or loss in the fruit continues to be the rogue bandit in the mid-season crop estimation procedure – ugh!). In addition, the berry weight has seemed to level off for good and the fair weather forecast will most likely get the brix up to desired levels despite the larger berry weight. The downside (or just something to think about) is the discussion between maturity and ripeness. Typically by this many weeks after veraison the berry weight has leveled off and the brix are close to 16. The fruit is both ripe and mature. This year, I would say that the fruit is “mature” or close to it right now. However, by the time we wait until the fruit reaches 16 brix, the fruit may be subjectively “past due.” As a Concord taste test panel once decreed it – it is the difference between “grape flavor” (a positive attribute) and “old-grapes flavor” (a negative attribute). Again, this maybe more of an issue for wine grapes than juice grapes but it is something to think about from a vine biology perspective.



### Leaf Discoloration

There have been some leaf discoloration issues popping up and they are both related to excess water.



**Magnesium Deficiency:** This yellowing and interveinal chlorosis is another consequence of excessive precipitation in 2004. Under wet conditions the high availability of Potassium out competes magnesium and can lead to Mg deficiency leaf symptoms. The solution: wait for the soil to dry out.



**Powdery Mildew:** Overall leaf blackness in a wet year is the result of Powdery Mildew infection, NOT “black leaf” from potassium deficiency. If anything, the vines should have excess potassium this year. Again, hope for a drier year in 2005 and do not apply potassium fertilizer unless soil and petiole tests confirm any real potassium deficiency.