
GROWING BULLETIN: SEPTEMBER 2014

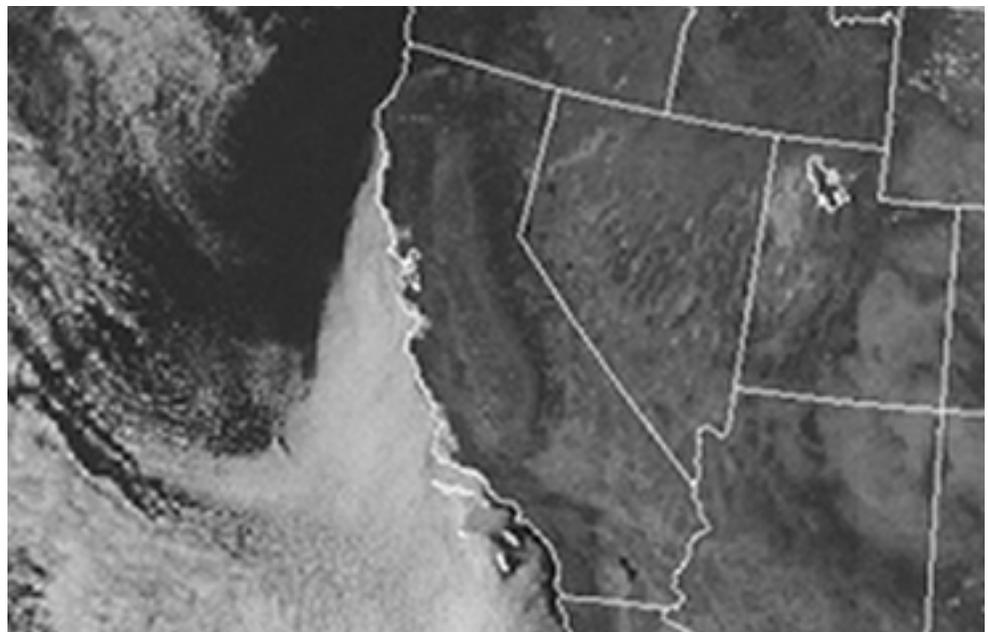
Monitoring Grape Maturity: Use Models and Chemistry

Use Days Veraison to Harvest to guide harvest date. Enologix advises using multiple models to predict harvest date in 2014. Growing season weather cooled slightly after the last heat spell in July. Growing Degree Days (GDD) for the season are still 8-10% above normal, but since July 1st, temperatures have been equal to the 10-year average. So what does this mean?

Enologix advises customers to use Days Veraison to Harvest (DVH) model to predict harvest date—September 4th for Pinot Noir and September 23rd for Cabernet Sauvignon in Napa Valley. Cooler post-veraison temperatures and physiological fruit assessments indicate that sugar is not corresponding to maturity, much like 2013. We believe that Days Bloom to Harvest (DBH) is a less accurate predictor of harvest date this season.

WEATHER REPORT: Cooling trend ahead as marine layer returns.

The tail end of a trough over the interior Pacific Northwest has deepened the marine layer further this morning (~2500ft.) and will maintain similar conditions to yesterday. Areas further inland should see clouds burn off slowly into the afternoon hours, while coastal areas and valley locations may remain socked in for most of the day. Tonight, there is



The Marine Layer Returns

no reason to expect conditions to vary much from last night. Low clouds should keep most of the county in mid 50s. Tomorrow, conditions shouldn't change much as the stubborn marine layer will most likely stay in place with a depth somewhere between 2000 and 2500 feet.

Extended Discussion: The tail end of this trough is expected to linger through the weekend, though gradually weakening, which may allow a few inland locations to warm up a few degrees by Saturday. Then on Sunday another trough moves through the Pacific Northwest keeping temperatures from warming any further. By the middle of next week, a ridge of high pressure appears to push northward into the area allowing for a moderate warming trend to begin.

Recommendation: Slow Brix accumulation through irrigation in advance of a warming trend this weekend. Increase irrigation if vines exhibit water stress this past week.

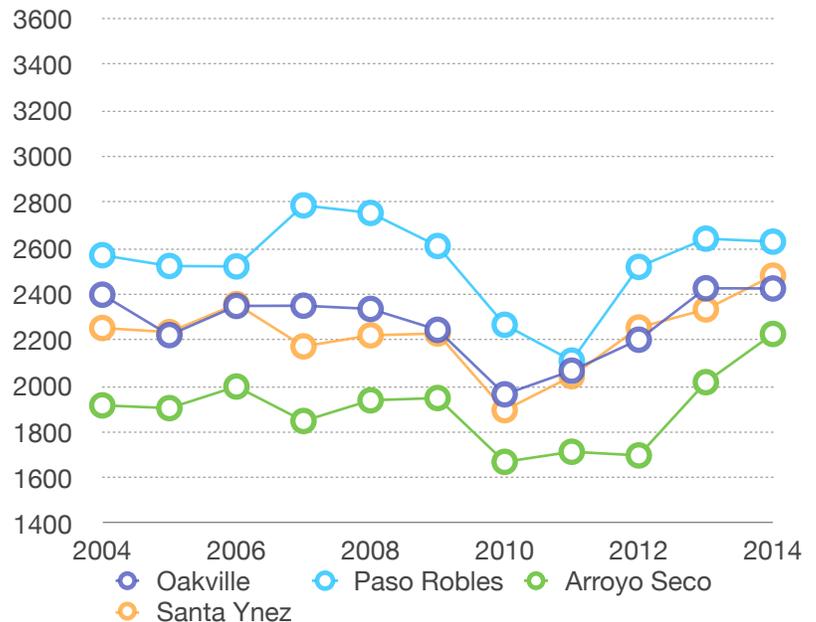
Field Report: Similar to 2013, physiological maturity is not corresponding to Brix and Anthocyanin chemistries for Pinot Noir, Merlot and Cabernet Sauvignon. We are seeing turgid high brix fruit with more than a smattering of green seeds in Pinot Noir. These observations are corroborated by higher than normal tannin levels in grapes. Plan now to modify your standard fermentation practice to deal with turgid fruit.

“Use Days Veraison to Harvest and grape chemistry to determine picking date”

Overall, the post veraison temperatures have remained rather mild, with little heat spikes. Warmer than normal overnight temperatures have slowed ripening in most North Coast vineyards.

The winegrowing challenge in 2014 is water availability so physiological ripeness catches up to sugar concentration. You should now be tracking accumulation of Free Anthocyanins in grapes and plan to profile fermenters one week ahead of your predicted harvest to fine tune extraction.

**Growing Degree Days through August 31
(2004-2014)**



Use DVH Models to Predict Harvest Date

Use the rule of thumb of 45-50 DVH for Burgundy and 55-65 for Bordeaux varieties. Our data shows the 10-year average DVH for Cabernet Sauvignon is 68 days in Napa Valley. For example, most Cabernet vineyards reached 50% veraison on July 20th in Oakville. The DVH model predicts September 23rd Harvest for Cabernet Sauvignon. The DBH Model on the other hand predicts a September 12th harvest date. Winemakers should use DVH to avoid picking too early.

Table 1. Days Bloom-to-Harvest for Three Northern California Maturity Groups

Varietal	105 Days	110 Days	115 Days	120 Days	125 Days
Burgundy	8/18 (DBH) 9/4 (DVH)				
Rhone	9/11 (DBH) 9/18 (DVH)				
Bordeaux	9/12 (DBH) 9/23 (DVH)				

Table 2. Days Bloom-to-Harvest for Three Central California Maturity Groups

Varietal	105 Days	110 Days	115 Days	120 Days	125 Days
Burgundy	8/18 (DBH) 8/30 (DVH)				
Rhone	9/3 (DBH) 9/27 (DVH)				
Bordeaux	9/11 (DBH) 9/30 (DVH)				

GROWING DEGREE DAY MODEL

Seasonal heat summations through August 31st predict that harvest is as much as 1-2 weeks ahead of normal. However, volatility in GDD post veraison (cooler than normal in Oakville and higher than normal in the Central Coast) shows that DVH is a better predictor of harvest date than DBH model adjusted for GDD.

Monitor water stress this month as the critical phase of ripening continues and groundwater stores are likely already depleted. We are recommending winegrowers increase water availability with irrigation and keep water stress to a minimum. This situation makes it vitally important to irrigate more aggressively than normal.

Table 3. 2014 Accumulated Growing Degree Days by Month

Month	Arroyo Seco	Oakville	Paso Robles	Santa Ynez
April	304	315	290	311
May	393	438	485	397
June	407	505	545	472
July	556	602	699	650
August	566	564	609	650
September	n/a	n/a	n/a	n/a
October	n/a	n/a	n/a	n/a
Total	2226	2424	2628	2480

Table 4. Average Growing Degree Days 2004-2013

Month	Arroyo Seco	Oakville	Paso Robles	Santa Ynez
April	247	265	279	256
May	321	384	366	359
June	388	607	590	429
July	458	442	661	580
August	457	557	633	577
September	417	494	523	493
October	366	350	371	399
Total	2656	3098	3443	3076

PART B: POST VERAISON FARMING PLAN

Veraison in 2014 varied depending on location, caused by variation in July temperatures. Ideal Days-Veraison-to-Harvest (DVH) is 45-to-65 depending on the yield and seasonality. In 2014, Cabernet Sauvignon will reach the 65 DVH mark the week of September 23th in Oakville for a lightly cropped vineyard. That date may be earlier or later depending on when Veraison occurred in your particular vineyard block.

Farm to Maximize Physiological Maturity.

Enologix predicts harvest for LMGG varieties will occur September 24th in Napa, which is near the Fall Equinox. The lower sun angle and cooler post-equinox temperatures could affect late ripening regions.

Enologix is recommending irrigation, tracking flavor chemistry and physiological assessments of grape tissue as your principle tools to maximize ripening. The goal is to create a two-week window before the fall Equinox where grape quality will rise more rapidly than normal.

Irrigate Your Vineyards

Low water availability from consecutive years of low rainfall and forecasted hot, dry weather makes it vitally important to irrigate more aggressively than usual. Pressure bomb readings will jump in September, so plan accordingly with growers to keep water stress in the -10 to -12 mbar range (morning measurement). Proper irrigation will maximize flavor accumulation and moderate the rate of sugar accumulation.

Track Vineyard Performance with Enologix

Observations that grape tissues appear to lag behind sugar measurements means it will be imperative to plan a modified fermentation practice this year. Track quality accumulation in the vineyard to precisely determine picking date and refine your fermentation practice well ahead of the harvest date.

PART C: HARVEST MODELS AND CHEMISTRY FOR SEPTEMBER

Grape Maturity Models

- GDD Model: The simplest, but least accurate model estimates that Pinot Noir requires 2,500 Degree Days and 3000-3500 are required for Cabernet Sauvignon and Syrah.
- DBH Model: It is 120-days from bloom to harvest for Cabernet Sauvignon, 116-days for Syrah and 109-days for Pinot Noir. DBH model is adjusted for seasonality with GDD: Effective August 31st, add 7-10 days to the DBH model for EMGG and LMGG grapes.
- DVH Model: It is 45-65 days, depending on variety, yield and seasonality. Consult with Enologix about your specific vineyard.

Enologix GrapeFAX Model

Use both Free Anthocyanin and Complex Anthocyanin to determine relative quality accumulation per °Brix. Assay vineyard blocks 2-times between 22 and 25 °Brix and to determine if Free Anthocyanin concentration is continuing to increase. Next, pick when the Complex Anthocyanin concentration is above the levels of past high quality bottled wines, assuming extraction in a “typical year” is 75%, Table 5.

Table 5. Picking by Enologix Grape Chemistry

	Tannin	Total Anthocyanin	Complex Anthocyanin
Burgundy	800 - 1000	>700	80-100
Rhone	<1300	>1000	>250
Bordeaux	<1400	>1200	>275