Vintage 2009: Umpqua Valley Reference Vineyard Report

Summary:
The 2009 vintage was largely compressed into a five month growing season with a relatively cool April and a much cooler than normal October. The cool winter and spring, along with continued region-wide drought conditions, resulted from a sustained colder than normal North Pacific Ocean coupled with La Niña conditions in the tropical Pacific. However, the overall vintage was 0.9°F above normal with 27% less precipitation than average during the growing season. In terms of temperature extremes during 2009, mild frost events occurred in both April and October while heat spikes over 100°F were more numerous than normal. The result was a highly variable vintage with swings between cool and hot periods during the summer that was more pronounced than in years past. Rainfall events during bloom were minor while moderate rain did occur during ripening. Growing degree-day totals averaged 2387 for the reference vineyards, which was 8% higher than 2008, near the six year average, and had a range of over 800 degree-days driven mostly by variations in elevation over the nine sites. Phenological timing of the observed varieties started off delayed by 5-10 days for bud break but ended up a few days delayed to near average for bloom and véraison, while harvest dates were average. Fruit composition in mid-September was lower than average for °Brix, with slightly higher acidity, substantially higher pH, and average berry weights compared to past years. Harvest composition levels also showed slightly lower than average °Brix and TA, while near average pH and yields were achieved.

Project Overview:
The goals of the project were to set up a suite of reference vineyards that monitor temperature, phenology, and composition of important varieties grown in the Umpqua Valley AVA. The purpose of the research is to provide an in depth look at spatial variations in important weather, plant, and yield parameters in the region.

During 2003-04 nine reference vineyards were established across a north-south transect throughout the Umpqua Valley AVA at elevations ranging from 335 ft to 1154 ft (642 ft average). The spatial and elevation makeup of the reference vineyards is intended to capture a range of site variability typically found in the Umpqua Valley.

The initial varieties chosen for the trial plantings (in 2003-04) were Tempranillo clone 01, Tempranillo clone 02, Syrah clone 01, Grenache clone 04, Malbec clone 04, and Viognier clone 01. During 2004-05, Pinot Noir (Pommard clone), Pinot Gris (clone 2), and Riesling (Wente clone) where added to the trial. These trial plantings are in various stages of development with four locations contributing observations from the fourth leaf of the plantings. However, due to the time needed for growth, the project participants decided to monitor phenology and composition of five existing varieties: Pinot Noir, Pinot Gris, Syrah, Tempranillo, and Merlot. While not all of the reference vineyards have every interim variety, those chosen provide a reasonable suite of variety/site combinations that can be monitored as the trial plants become more established.

To measure temperature at each site, HOBO® H8 Pro-Temperature Loggers were installed at each of the reference vineyards. The sensors record at 15 minute intervals and the data is collected from each site just after the growing season is over (after Oct 31). The temperature data is then aggregated to hourly and daily average, maximum, and minimum values and finally summarized by site for the dormant (Nov 1 – Mar 31) and growing season (Apr 1 – Oct 31).

Phenological observations for bud break, flowering, véraison, and harvest for the interim varieties are submitted by each reference vineyard. The phenological data is then examined for average dates and intervals between dates for the entire region and by variety.

For composition information, varietal samples are taken on September 13th each year from the interim varieties observed (this year was the third year the trial varieties were also sampled in the same manner). The date was chosen as it represents a "snapshot" of fruit maturity that is not dependent on the subjective determination of ripeness for a given wine style. This date also represents an estimated mid-point of the véraison to harvest period leaving roughly 2-4 weeks before picking. One hundred berry samples are collected and then analyzed for °Brix, titratable acidity, pH, and berry weights using standard industry methods. From the sampling, a report is sent out during the last week of September to all members of the Umpqua Valley Winegrowers Association. In addition, the reference vineyards submit harvest composition at the end of the season (°Brix, titratable acidity, pH, and yields). In most cases the data came from the wineries where the fruit was processed, while in other cases the values came from field observations. Therefore, the harvest composition data is not as consistent in terms of measuring techniques or devices. The composition data are then summarized by region and variety.

Results:

Regional Climate

The winter of 2008-09 (November 1 through March 31) was characterized by slightly cooler than normal conditions throughout the region that resulted from a colder than normal North Pacific Ocean coupled with La Niña conditions in the tropical Pacific. However, the winter was slightly warmer than the prior winter in terms of average conditions, but did experience much lower absolute minimum temperatures (Table 1). For Roseburg, the winter was 1.1 degrees cooler than average with the coldest conditions occurring in the second and third weeks in December and late January into early February (Figure 1). The region experienced a relatively cold late winter early spring with temperatures from mid-February through the first half of April 1.9 degrees cooler than average. The first half April also saw mild frost events in the region, and while not a cold as the Rogue Valley, the nighttime temperatures reached into the upper 20s. The first sustained warm up occurred in the second and third weeks of April followed by a cool down and moderate rainfall during early May (Figure 1). Heat spikes of 10-20 degrees above normal during the 2009 growing season occurred in mid to late May, late July, mid-August, and mid-September. The highest temperatures came during July 25 through August 3 when temperatures in Roseburg were over 100°F each day. A brief cool down was seen in early September, which is very common during this period, and came with a near half inch rainfall at Roseburg (Figure 1).

A delayed bud break started in the third week of April, followed by a slightly later than normal date for bloom (second to third week in June). The period leading up to véraison was moderately warm, resulting in an average to slightly delayed véraison date (see more in the phenology section that follows). Véraison was followed by a warmer than normal period during most of September. A promising October and harvest period saw the near ideal conditions come to a screeching halt with temperatures that dropped 8 to 15 degrees below normal from the last few days in September through the first week in October. While some recovery to near normal conditions in the middle of the month occurred, October ended up 2.3 degrees below normal. The growing season ended up with April and October the only months below normal, with May through September 1.9 degrees above normal. Of the four main wine growing regions in Oregon (Willamette, Rogue, and Umpqua valleys and eastern Oregon), the Umpqua Valley was the second warmest for average temperatures for the 2009 vintage (the Rogue Valley was warmer).

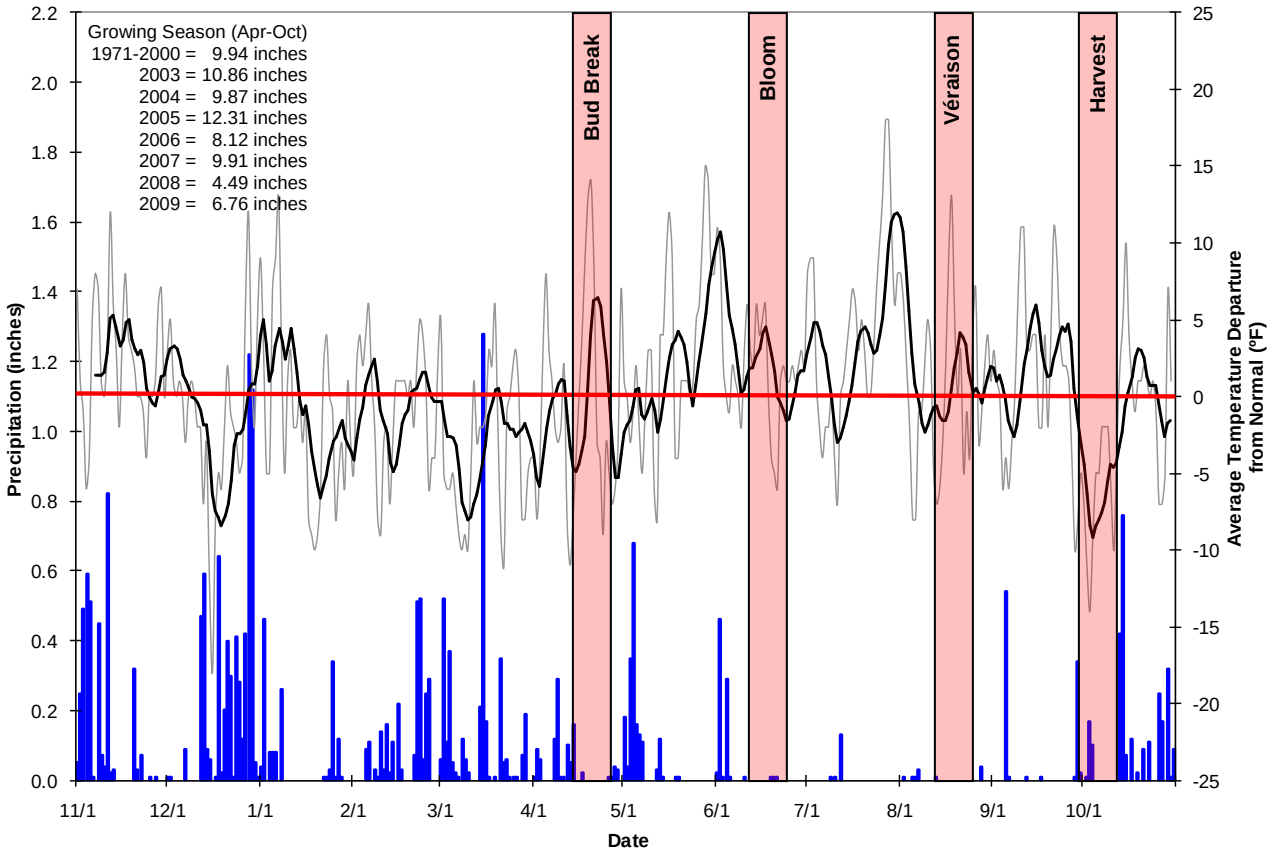

Figure 1 – Daily average temperature departures from normal and precipitation for November 1, 2008 to October 31, 2009 from the Roseburg weather station. The vertical red bars represent the variation in region-wide average phenology (see text for more details). The long-term average is derived from the 1971-2000 climate normals.

Rainfall from November through March was 23% lower than the long term average for Roseburg, with two periods in December and March that saw days with precipitation amounts greater than one inch. The growing season (April-October) saw rainfall amounts that were 27% below normal at 6.76 inches for the Roseburg weather station (Figure 1) and continues a 30 month trend toward moderately dry conditions. For the first time in many years there was very little rainfall in the bloom period and it was followed by a relatively dry period through véraison. The abrupt late September and early October cool down brought with it moderate rainfall, but the bulk of the October rains came after the 15th of the month (Figure 1).

From a degree-day standpoint the spring started off slightly delayed, but similar to previous springs (1998-2009 time period average, Figure 2). Roseburg reached the 100 degree-day accumulation by the end of April, two weeks earlier than 2008, but still two weeks later than normal. The warm May brought heat accumulation above average with the remainder of the summer tracking the highest accumulation values observed during 1998-2009. The cool down in late September and early October brought a halt to significant heat accumulation. The 2009 vintage resulted in 2985 degree-days at the Roseburg weather station (8% higher than 2008), which is the second highest during the 1998-2009 time period (2003 was the highest). The main differences between the 2003 and 2009 vintages are that 2003 had a warmer spring, 2009 a warmer summer, and 2003 continued accumulating through the end of October.

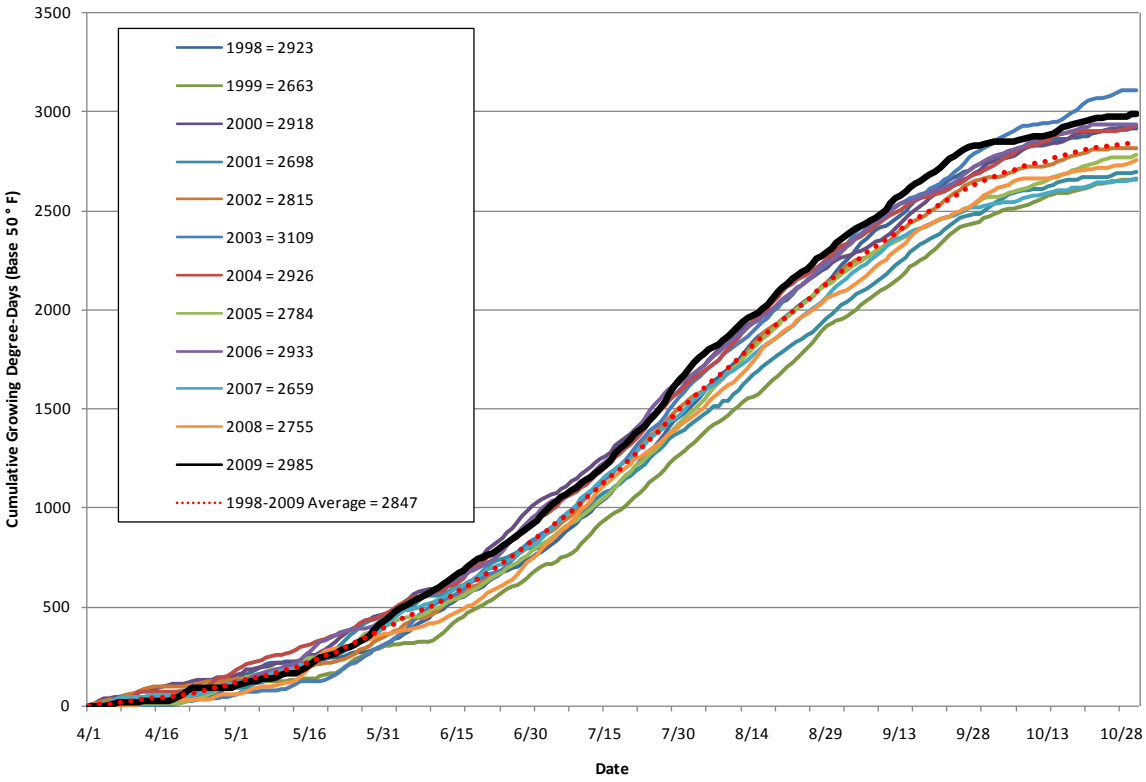

Figure 2 – Growing degree-day accumulation during April-October 2009 from the Roseburg weather station (base 50°F). The long-term average (2897) is derived from the 1989-2009 time period. Data calculated from daily Tmax and Tmin observations for April 1st through October 31st using a base of 50°F with no upper cut-off.

Reference Vineyard Climate Observations:

Dormant Period

The winter conditions of 2008-09 (Nov 1 through Mar 31) observed at the nine references were similar to those observed at Roseburg (see above) with variations coming from site characteristics and relative locations. Overall, the winter was slightly cooler than normal but 1.3 degrees warmer than the prior winter, which was driven mostly by warmer minimum temperatures (Table 1). As has been consistent during the study period, the nine sites observed in the Umpqua also varied nearly three times more in terms of maximum temperatures than minimum temperatures during the winter. The absolute low temperatures for the reference vineyards during the winter reached into the mid teens to lower 20s during the second and third weeks of December with the lowest observation being 14.0°F. The number of days below 32°F, averaged across all reference vineyards was 40 with a range of 29 to 53 due largely to differences in elevation.

Table 1 – Reference vineyard dormant period (November 1-March 31) climate characteristics for 2008-09.

Variable	*Mean*	*Standard Deviation*	*Maximum*	*Minimum*
Average Temperature (°F)	42.2	0.6	42.9	41.1
Average Maximum Temperature (°F)	50.9	1.2	52.4	49.2
Average Minimum Temperature (°F)	36.1	0.6	36.9	35.2
# of Days < 32°F	40	8.4	53	29

Growing Season

The 2009 growing season average degree-day accumulation from the nine sites was 2387 with a standard deviation of 245 units (Table 2). Maximum accumulation was 2702 degree-days while the minimum was 1904 degree-days. Average growing season temperatures ranged from 57.9 to 62.5°F, while average maximum temperatures ranged from 73.1 to 79.6°F and average minimum temperatures from 46.4 to 47.8°F. The variation in site maximum temperatures was four times greater than that for minimum temperatures (standard deviation of 0.5 vs. 2.0°F), which is similar to past years. Growing season temperature extremes summarized from the reference vineyards saw a normal number of summertime heat spikes (but with higher maximums) occurring during four main periods (mid to late May, late July, mid-August, and mid-September). The absolute maximum temperature observed of 113.7°F occurred on July 28th during a 10 day heat spell where every site was above 100°F for multiple days. The number of days over 95°F averaged 23, but ranged from 11 to 37 (note that in a normal year, the Roseburg weather station observes 27).

Table 2 – Reference vineyard growing season temperature characteristics (April-October 2009).

Variable	*Mean-Median*	*Standard Deviation*	*Maximum*	*Minimum*
Growing Degree Days (base 50°F with no upper cut-off)	2387	245	2702	1904
Average Temperature (°F)	60.5	1.4	62.5	57.9
Average Maximum Temperature (°F)	77.7	2.0	79.6	73.1
# of Days > 95°F	23	9	37	11
Average Minimum Temperature (°F)	47.1	0.5	47.8	46.4
# of Days < 32°F	5	2.3	7	0
Last Spring Frost	Apr-16	7 days	Apr-24	Mar-30
First Fall Frost	Oct-11	2 days	> Nov-1	Oct-11

Frost dates are given as the median date.

In terms of minimum temperatures and frost frequency, the 2009 growing season in the Umpqua Valley saw relatively warm absolute minimum temperatures compared to the Rogue Valley. Temperatures dipped into the upper 20s in the first week of April at the majority of the sites, with the absolute lowest temperature during the growing season at 28.0°F in the first week of April. While late September and most of October were cooler than normal, there were no fall frost events comparable to those observed in October 2008. Overall the average number of days during the growing season below 32°F was 5, with a range from 0 to 7, but note that these events were mild ranging from 28-32°F (Table 2). During the periods of the coolest nighttime temperatures in April and October, the range between the reference vineyards was just less than 2.0°F. The median last spring frost date was April 16th for the reference vineyards with the earliest occurring on March 30th (one location) and the latest on April 24th at two locations (Table 2). The first fall frosts for most locations came within a two day period during October 11-12; however two sites still had not experienced nighttime temperatures below 32°F as of November 1st when the sensors were downloaded.

Comparison to Previous Years

Comparing the five dormant seasons during the study period shows that 2008-09 had near average temperatures and number of days below 32°F (Table 3). However the region did see its lowest absolute minimum temperatures during the study period. For the growing season, 2009 was 141 heat units higher than 2008, and slightly above the six year average of 2361 growing degree-days observed over

the locations (Table 3). For 2009 the degree-day accumulation values, while near average, occurred mostly over a five month period (May through September) due to the cooler than normal April and October. The range in degree-day values between reference vineyards was 798 units, which has ranged from 700-900 over the period of study. During the 2009 growing season, the reference vineyards experienced above average absolute maximum temperatures and a slightly higher number of days above 95°F compared to the prior vintages. The 2009 vintage also saw near average frost potential with a higher absolute minimum, but slightly more days below 32°F than average. The average and absolute last spring frosts in 2009 were both later than the six year average (10 days), while the first fall frost date average and absolute date were 13 days earlier (Table 3).

Table 3 – Reference vineyard climate comparisons across the dormant (November 1–March 31) and growing seasons (April 1-October 31) for each year of the project.

Season/Variable	*Year or Period*						
Dormant Season	***2003-04***	***2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***Average***
Average Temperature (°F)	NA	43.7	42.3	42.7	40.9	42.2	42.4
Minimum Temperature (°F)	NA	23.3	16.0	15.9	16.4	14.1	17.1
# of Days < 32°F	NA	34	32	52	52	40	42
Growing Season	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***Average***
Growing Degree-Days	2636	2302	2458	2144	2243	2384	2361
Maximum Temperature (°F)	107.7	106.7	110.2	103.7	107.2	113.7	108.2
# of Days > 95°F	17	10	24	11	19	23	17
Minimum Temperature (°F)	33.9	30.1	23.3	28.5	24.2	28.1	28.0
# of Days < 32°F	0	2	4	2	7	5	3
Last Spring Frost	Apr-1*	Apr-14	Mar-27	Apr-20	May-9	Apr-24	Apr-15
First Fall Frost	Nov-5	Nov-4	Oct-26	Oct-27	Oct-11	Oct-12	Oct-24

The maximum and minimum temperatures are the absolute values recorded for the entire region for that year. Frost dates are the absolute latest and earliest observed over the entire region for that year. Note that the last spring frost in 2004 is from the Roseburg KQEN station observation, which correlates reasonably well with the reference vineyard sites in other years.

Phenology

Summarizing phenological observations across all varieties (including both the interim and trial varieties) the region experienced a median bud break of April 21st with 18 day range between the earliest (April 10th) and latest (April 28th) sites/varieties (Table 4). Bloom averaged June 16th with a range from June 14th to June 28th across the reference vineyards and all varieties. Véraison averaged August 19th occurring over a month long window from August 4th to September 7th, again indicating the high site/variety differences. Harvest dates occurred from September 26th to October 29th, with a median of October 8th (Table 4). Across the interim varieties, the phenological observations reveal minor to moderate differences in bud break, flowering, véraison, and harvest dates. The median bud break dates were very similar across the varieties, with a range of three days (April 20-22) with Syrah the latest at April 22nd and Tempranillo the earliest at April 20th. Median flowering dates ranged June 12-18 across the varieties being earliest for Merlot and Pinot Gris (June 12th) and latest for Tempranillo (June 18th). The median véraison dates occurred between August 10-21 with Pinot Gris the earliest (August 10th) and Syrah the latest (August 21st). Compared to 2008 when the freeze caused most to bring the fruit in a compressed period, this year's harvest dates varied more by variety due to grower or winemaker flavor, composition, or style characteristics. For the interim varieties harvest dates averaged September 27th for Pinot Gris to October 16th for Merlot.

Table 4 – Umpqua Valley reference vineyard phenological dates for 2009. The data come from 35-45 observations for each event; however note that some of the varieties are only observed at a few sites.

Variety	*Bud Break*	*Flowering*	*Véraison*	*Harvest*
Average for all Varieties				
Median	4/21	6/16	8/19	10/8
Standard Deviation	5 days	6 days	7 days	8 days
Maximum	4/28	6/28	9/7	10/29
Minimum	4/10	6/14	8/4	9/26
Interim Varieties				
Merlot				
Median	4/21	6/12	8/15	10/16
Standard Deviation	3 days	8 days	7 days	8 days
Pinot Gris				
Median	4/21	6/12	8/10	9/27
Standard Deviation	3 days	4 days	7 days	7 days
Pinot Noir				
Median	4/21	6/16	8/20	10/7
Standard Deviation	6 days	7 days	7 days	7 days
Syrah				
Median	4/22	6/17	8/21	10/9
Standard Deviation	3 days	4 days	6 days	7 days
Tempranillo				
Median	4/20	6/18	8/16	10/5
Standard Deviation	5 days	6 days	5 days	6 days
Trial Varieties				
Grenache Clone 4				
Median	4/20	6/22	8/25	10/10
Standard Deviation	5 days	8 days	10 days	3 days
Malbec Clone 4				
Median	4/18	6/16	8/19	10/2
Standard Deviation	5 days	5 days	7 days	9 days
Pinot Gris 3				
Median	4/21	6/14	8/6	9/27
Standard Deviation	3 days	5 days	8 days	3 days
Pinot Noir Pommard				
Median	4/19	6/15	8/20	9/29
Standard Deviation	5 days	7 days	9 days	7 days
Riesling Wente				
Median	4/21	6/16	8/25	10/6
Standard Deviation	3 days	6 days	10 days	10 days
Syrah Clone 1				
Median	4/21	6/20	8/25	10/8
Standard Deviation	3 days	4 days	5 days	3 days
Tempranillo Clone 1				
Median	4/21	6/19	8/17	10/1
Standard Deviation	6 days	5 days	7 days	5 days
Tempranillo Clone 2				
Median	4/21	6/20	8/17	10/7
Standard Deviation	5 days	6 days	4 days	7 days
Viognier 1				
Median	4/21	6/18	8/25	10/8
Standard Deviation	3 days	6 days	6 days	8 days

For the trial varieties fourth year of phenological data, bud break events varied by 4 days with Malbec the earliest (April 18th) and numerous varieties all occurring on April 21st (Table 4). By site bud break had a 3-6 day standard deviation, indicating fairly low site differences in 2009. Bloom for the trial varieties occurred over a nine day window from June 14th for Pinot Gris to June 22nd for Grenache with a 4-8 day standard deviation (site variation). Observations for véraison varied by 20 days with Pinot Gris the earliest (August 6th) while Grenache, Riesling, and Viognier were the latest (August 25th). Harvest dates for the trial varieties come from fewer observations due to the low volume of the crop (some sites did not harvest the fruit), however the numbers indicate a window of 14 days between varieties with Pinot Gris and Pinot Noir the earliest (September 27th and 29th, respectively), while Grenache was the latest (October 10th). Malbec, Riesling, and Viognier also showed greater site variation with standard deviations of 8-10 days (Table 4).

Interval lengths between phenological events (an important measure of vine and berry development timing) show that during 2009 bud break to flowering was 56 days on average; that flowering to véraison was 63 days on average; and that véraison to harvest was 51 days on average (Table 5). The intervals had a 7-9 day variation across both sites and varieties. The overall median bud break to harvest period was 171 days with some sites requiring as few as 156 days to other needing as much as 194 days.

Table 5 – Umpqua Valley reference vineyard average intervals between phenological dates for 2009.

Interval	*Median*	*Standard Deviation*	*Maximum*	*Minimum*
Bud Break to Flowering	56 days	7 days	73 days	47 days
Flowering to Véraison	63 days	6 days	77 days	51 days
Véraison to Harvest	51 days	9 days	79 days	34 days
Bud Break to Harvest	171 days	9 days	194 days	156 days

Comparison to Previous Years

During the six years of the project bud break has averaged April 12th with a seven day variation across the vintages, sites, and varieties (Table 6). The 2009 growing season experienced a bud break that was later than average and similar to that observed during the 2006 and 2008 vintages. Bloom has averaged June 13th over the time period with +/- six day variation. The 2009 vintage experienced its median bloom eight days earlier than 2008, but three days later than average. While véraison has exhibited a relatively large variation across vintages, varieties and sites (9 days), the average dates have been reasonably consistent for the six years of the project (August 15th). However, both 2008 and 2009 were three days later than average (Table 6). Harvest dates also show large vintage, site, and variety variation (8-12 days) but have occurred on average within the first ten days of October each year. The 2009 vintage harvest date was right at the six year average.

The average bud break to flowering interval has ranged from 54 to 76 days during the last six years, with a median of 63 days and varying eight days across sites and varieties (Table 6). The length of time between flowering and véraison averaged 63 days in 2009, which matches the period average. While the véraison to harvest period has varied 9-15 days across sites and varieties, on average it has been 53 days with little variation (51-56 days) over the six vintages. The median bud break to harvest period in the Umpqua Valley has averaged 178 days, varying by +/- 11 days due to site or variety differences, although vintage differences have been as much as 20 days (2008 vs. 2005; Table 6).

Table 6 – Reference vineyard average phenology comparisons for each year of the project.

Region	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Bud Break							
Median	4/1	4/2	4/22	4/9	4/22	4/21	4/12
Standard Deviation	7 days	11 days	4 days	7 days	8 days	5 days	7 days
Flowering							
Median	6/5	6/13	6/14	6/9	6/23	6/16	6/13
Standard Deviation	5 days	7 days	5 days	7 days	6 days	6 days	6 days
Véraison							
Median	8/13	8/14	8/14	8/12	8/19	8/19	8/15
Standard Deviation	7 days	10 days	9 days	9 days	9 days	7 days	9 days
Harvest							
Median	10/5	10/10	10/8	10/7	10/15	10/8	10/8
Standard Deviation	9 days	12 days	9 days	10 days	9 days	8 days	10 days
Bud Break to Flowering							
Median	65 days	76 days	54 days	61 days	64 days	56 days	63 days
Standard Deviation	7 days	14 days	6 days	8 days	6 days	7 days	8 days
Flowering to Véraison							
Median	68 days	61 days	62 days	63 days	59 days	63 days	63 days
Standard Deviation	6 days	8 days	8 days	8 days	6 days	6 days	7 days
Véraison to Harvest							
Median	55 days	51 days	51 days	56 days	55 days	51 days	53 days
Standard Deviation	11 days	15 days	10 days	11 days	10 days	9 days	11 days
Bud Break to Harvest							
Median	185 days	194 days	168 days	175 days	174 days	171 days	178 days
Standard Deviation	13 days	13 days	8 days	13 days	11 days	9 days	11 days

Composition

Fruit sampling on September 13, 2009 resulted in a "snapshot" of ripening parameters commonly observed by growers and winemakers. A total of 63 samples across all interim and trial varieties were collected and analyzed. °Brix levels averaged 18.7 across all of the samples with the highest °Brix values observed in Pinot Gris and Pinot Noir and the lowest in Grenache (Table 7). Titratable acidity averaged 8.7 g/L with the highest values seen for Grenache, Riesling, and Syrah (9.9-11.6 g/L) while Pinot Noir, Pinot Gris, and Tempranillo (both clones) levels where the lowest (6.3-7.5 g/L). Average sample pH values were 3.21 with the highest values for Tempranillo (clone 1; 3.41) to low values for Grenache, Riesling, Merlot, and Malbec (3.03-3.17). Varietal berry weights (per 100 berries) averaged 134.5 grams with Riesling, Pinot Gris, Merlot, Viognier, and Pinot Noir having the lowest weights (98.2-118.7 g) and Tempranillo (clone 1=164.8 and clone 2=182.6 g) the highest weights. Across the varieties, Grenache and Riesling were clearly physiologically behind the other varieties (Table 7).

Harvest composition data submitted by growers or wineries (45-48 observations depending on the variable) indicate an average °Brix of 23.5 with a range of 1.9 °Brix over all of the varieties observed (Table 7). Riesling was the lowest at 21.0 °Brix while Pinot Noir, Pinot Gris and Tempranillo clone 1 were the highest (24.1-24.4). For the 2009 vintage titratable acidity averaged 6.4 g/L with a low of 5.5 g/L for Tempranillo clone 1 to a high of 8.7 g/L for Riesling. Harvest pH numbers averaged 3.41 with a spread of 0.63 from Riesling (2.97) to Merlot, Pinot Noir, and Tempranillo clone 1 (3.60). Harvest yields averaged 2.4 tons per acre across all reference vineyards and all varieties. Lowest average yields were reported for Malbec (1.1 tons/acre), while highest average yields were observed in Pinot Gris, Pinot Noir, and Grenache (3.0-3.3 tons/acre).

Table 7 – Umpqua Valley reference vineyard °Brix, titratable acidity (TA, g/L), pH, and 100 berry weights (g) statistics from the sampling conducted on September 13, 2009 and from harvest numbers submitted. Note that in some cases the values come from small samples and should be considered carefully.

Variety(Clone)	*September 13th Sample*				*Harvest Numbers*			
	°Brix	*TA*	*pH*	*Weight*[1]	*°Brix*	*TA*	*pH*	*Yield*[2]
Average	**18.7**	**8.7**	**3.21**	**134.5**	**23.5**	**6.4**	**3.41**	**2.4**
Interim Varieties								
Merlot	20.0	7.4	3.17	116.8	22.3	6.8	3.60	2.3
Pinot Noir	19.1	8.0	3.29	124.6	24.0	7.2	3.49	3.3
Trial Varieties								
Grenache (4)	15.0	11.6	3.03	127.6	23.5	6.9	3.15	3.3
Malbec (4)	19.8	9.0	3.14	146.0	23.2	5.6	3.54	1.1
Pinot Gris (3)	21.2	6.6	3.24	104.4	24.4	6.1	3.34	3.0
Pinot Noir (P)	20.4	6.3	3.34	118.7	24.4	7.3	3.60	3.3
Riesling (W)	17.7	11.2	3.03	98.2	21.0	8.7	2.97	1.8
Syrah (1)	18.4	9.9	3.30	143.7	23.4	6.6	3.47	2.7
Tempranillo (1)	19.5	8.1	3.41	164.8	24.1	5.5	3.60	1.9
Tempranillo (2)	19.1	7.5	3.26	182.6	23.2	6.2	3.44	2.2
Viognier (1)	18.1	7.3	3.26	114.8	23.6	5.8	3.36	1.7

[1] Weight of 100 berries, [2] Tons per acre (however yields not applicable for trial varieties)
Note that the number of vineyards with viable trial vine fruit is only three and that the samples come from the 5th leaf.

Comparison to Previous Years

Composition differences between years have consistently been significantly higher for the sampling than harvest values, indicating the potential for growers to achieve similar composition at harvest across a range of sites (Tables 8 and 9). For the sampling conducted on September 13th, the 2009 vintage exhibited lower than average °Brix, near average TA, and higher than average pH values (Table 8). °Brix has averaged 19.7 over the six years, with 2009 slightly more than the 2008 vintage on average. TA values from the sampling have averaged 8.4 g/L with the 2009 vintage substantially lower in TA compared to the 2008 vintage. For pH levels, the six years have averaged of 3.08 over the time period, with 2009 showing the highest average pH seen during the study. Average 2009 berry weights where very close to the study period average of 139.4 g and varying by roughly 10 grams per 100 berries during the six years (Table 8).

Table 8 – Comparison of the overall ripening sample values (interim and trial varieties) for the six years of the project.

Parameter	*Ripening Sample*						
	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
°Brix	20.2	20.0	20.6	20.6	18.2	18.7	19.7
TA (g/L)	7.1	7.9	7.1	8.8	10.8	8.7	8.4
pH	3.05	3.06	3.09	3.08	3.01	3.21	3.08
Weight (g and t/a)	142.2	136.4	144.0	143.6	135.6	134.5	139.4

Compared to the sampling values above, harvest numbers appear to have reached near normal values from the last six years (Table 9). While the six years were different in terms of heat accumulation (Table 3) and phenological timing (Table 6), composition levels appeared to have reached similar values over the time period. Harvest °Brix and TA levels were slightly less than average overall, while pH and yields matched their respective six year averages. Some of the differences in the harvest numbers could also be attributed to more of the younger plants contributing fruit.

Table 9 - Comparison of the overall harvest composition values (interim and trial varieties) for the six years of the project.

Parameter	*Harvest Numbers*						
	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
°Brix	24.1	24.0	24.4	23.5	23.7	23.5	23.9
TA (g/L)	6.6	6.9	6.5	7.1	6.8	6.4	6.7
pH	3.50	3.38	3.46	3.33	3.42	3.41	3.42
Weight (g and t/a)	1.7	2.4	2.8	2.8	2.5	2.4	2.4

Conclusions and Future Issues

The 2009 vintage will be remembered as one that was compressed into five months with a relatively cool April and slightly delayed bud break and a very cool October. Continuing a trend over the last couple of vintages, 2009 also exhibited greater day-to-day and week-to-week variability in temperatures with higher swings between cool and hot periods. Precipitation amounts during 2008-09 also continued a trend to overall slight to moderate drought conditions for the region. Overall the vine phenology started off 5-10 days late, slowing catching up over the season to near normal late season events. With a compressed growing season and erratic weather during the vintage, fruit composition in mid-September was slightly less developed than that observed over the six years, but it was still ahead of the 2008 vintage. Harvest composition values and yields also approached the six year average, with the exception of slightly lower °Brix and acidity.

The sixth year of the project has added to a longitudinal set of climate, phenology, and compositional information for the Umpqua Valley AVA. This is the third year that the initial varieties chosen for the trial plantings have contributed to the information in terms of phenology and composition. These varieties include Tempranillo clone 01, Tempranillo clone 02, Syrah clone 01, Grenache clone 04, Malbec clone 04, and Viognier clone 01. Furthermore fifth leaf data from Pinot Noir (Pommard clone), Pinot Gris (clone 2), and Riesling (Wente clone) are being accumulated as well.

Funding for the 2010 vintage (seventh year and final year of the project) has already been obtained. Once the final year is completed (winter 2010) a synthesis report with further in-depth analyses of the seven years of the study will be compiled and made available. In the meantime, the following items are being addressed and/or planned:

- An overview presentation will be given at an Umpqua Valley Winegrowers Association meeting soon after the first of the year (see email announcements from the association for further details).
- The results will also be used to provide a Southern Oregon component to the Oregon Wine Industry Symposium's "Vintage Overview" February 21-23, 2010 in Eugene.

The first six years of this project have provided seasonal and spatial overviews of climate for the Umpqua Valley AVA. In addition, observations of phenology and composition have helped establish and document the regional and site similarities and differences for the area. The project is intended to be a long-term collaborative effort that better documents and develops a sound understanding of some of

the most important factors that influence high quality grape and wine production. As time unfolds the information will provide more insights into the potential and character that are Southern Oregon wines.

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Gregory V. Jones, Ph.D.
Department of Environmental Studies
Southern Oregon University
1250 Siskiyou Blvd
Ashland, OR 97520
TEL: 541-552-6758
FAX: 541-552-6439
EMAIL: gjones@sou.edu