Harvest Decisions Based on Grape Phenolic Development (Enartis)(2017)

Rosemont Vineyards and Winery

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This study examines the ability to judge when grapes are harvest-ready by monitoring phenolic development over time. Cabernet Franc grapes began being samples weekly starting on September 1 for a number of chemical and phenolic parameters. The winemaker harvested based on when he would normally harvest the grapes, and harvested on September 23 (first pick). Based on the change in phenolic concentration over time, a harvest date recommendation was made by Enartis for September 27 (second pick). The grapes harvested on September 23 were refrigerated for 4 days so that they would be processed simultaneously with the second pick, based on Enartis; harvest recommendation. Both lots were treated identically, except that the first pick was processed into a 5 ton fermenter and the second pick was processed into T Bin. This was done due to logistical reasons. This necessitated the 5 ton fermenter to be pumped over twice per day, and the T bin to be punched down twice per day.. Both received a 7 day cold soak and were then inoculated with F-15 yeast after cold soak. Fermentations were pumped over twice daily only for 7 days so as to avoid overextracting tannin, after which they received one pumpover per day until pressing. There was a total maceration length of around 27 days (including cold soak). Tannin and anthocyanin slightly reduced towards the end of ripening. Yields were reduced in the second pick. Phenolics were initially higher in the second pick wine after fermentation, but in finished wine anthocyanins and many phenolic parameters had decreased, while only tannin, polymeric anthocyanin, and gallic acid showed slight increases in the second pick. Alcohol and acidity was higher in the second pick wine, although acid differences may be due to the presence of malic acid in the second pick wine.

Yields		
	Pound Per Plant	Yield (tons/acre)
First Pick	5.1	4.7
Second Pick	4.4	4.2
% Change	-14%	-11%

In House Data

Chemistry after Cold Soak				
	Brix	pH	TA (g/L)	YAN (mg N/L)
First Pick	24.8	4.03	3.9	231
Second Pick	24.9	3.96	4.1	213
% Change	0%	-2%	5%	-8%

In House Data

Phenolics Post-AF					
	Tannin	Pigment	Phenolics	Pigmented Tannin	Free Anthocyanins
First Pick	1.37	14.43	44.98	1.21	12.42
Second Pick	1.38	20.76	50.39	1.29	18.61
% Change	1%	44%	12%	7%	50%

Results from Enartis-Vinquiry in Late November

Wine Chemistry										
	Ethanol (%vol/vol)	Residual Sugar (g/L)	pH	TA (g/L)	Volatile Acidity (g/L)	Malic Acid (g/L)	Lactic Acid (g/L)	Total SO2 (ppm)	Free SO2 (ppm)	Molecular SO2 (ppm)
First Pick	14.46	<1	4.08	4.82	0.42	<0.15	1.80	56	18	0.16
Second Pick	15.21	<1	3.95	5.34	0.45	0.37	1.62	83	32	0.38
% Change	5%		-3%	11%	7%		-10%	48%	78%	138%

Results from ICV in Late March

Color Profile					
	A420	A520	A620	Hue (420/520)	Intensity (420 + 520 + 620)
First Pick	0.255	0.303	0.089	0.842	0.647
Second Pick	0.242	0.295	0.075	0.820	0.612

% Change	-5%	-3%	-16%	-3%	-5%

Results from ICV in Late March

Phenolic Profile

	Caffeic Acid (mg/L)	Caftaric Acid (mg/L)	Catechin (mg/L)	Epicatechin (mg/L)	Gallic Acid (mg/L)
First Pick	9	54	34	20	34
Second Pick	9	34	25	21	46
% Change	0%	-37%	-26%	5%	35%

Results from ETS in Late March

Phenolic Profile

	Malvidin glucoside (mg/L)	Monomeric Anthocyanins (mg/L)	Polymeric Anthocyanins (mg/L)	Quercetin (mg/L)	Quercetin Glycosides (mg/L)	Tannin (mg/L)	Total Anthocyanins (mg/L)	Resveratrol (cis and trans) (mg/L)
First Pick	205	324	20	<1	13	402	344	0.9
Second Pick	106	166	24	<1	12	430	190	0.3
% Change	-48%	-49%	20%		-8%	7%	-45%	-67%

Results from ETS in Late March

Brix

pH

TA (g/L)

Phenolics

Tannin

Total Anthocyanins

Water Content (%)