

## **Sulfur Dioxide-Free Winemaking with Merlot (2015)**

King Family Vineyards

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### **Summary:**

Identically harvested Merlot was stored overnight in cold room before being processed and divided into 2 identical lots. One lot was produced using a “traditional” protocol, the other using a sulfur free production protocol.

#### Traditional protocol:

Grapes are being sorted, destemmed not crushed into tBin while filling the Tbin SO<sub>2</sub> 4.5g/hl

Same day: Yeast FX10 12.5g/hl

No cold soak

At the end of maceration inoculation with bacteria Lactoenos 450 pre ac

Press (blend free run and press wine)

Clean racking after one day of settling in one new oak and one 3 year old barrels once MLF completed, SO<sub>2</sub> 15g/barrels

#### Sulfur Free Protocol:

Grapes are being sorted, destemmed not crushed into tBin while filling the Tbin zymaflore alpha (TD) 30g/hl

Same day: goferm 30g/hl and Yeast FX10 20g/hl

No cold soak

At the end of maceration inoculation with bacteria Lactoenos 450 pre ac

Press (blend free run and press wine)

Clean racking after one day of settling in one new oak and one 3 year old barrels (identical to lot 1)

once MLF completed, micro stab (chitosan) 4g/hl

**Lab Results:**

	pH	TA (g/L)	AA (g/L)	%EtOH	Gluc+Fru c	Malic c	TSO <sub>2</sub>	FSO <sub>2</sub>
<b>Traditional</b>	3.70	4.90	0.51	12.98	15	3	48	24
<b>Sulfur Free</b>	3.63	5.10	0.52	12.83	10	none	none	2

<b>PCR Panel (cells/mL)</b>		
	<b>Traditional</b>	<b>SO<sub>2</sub> Free</b>
Acetic Acid Bacteria	None	None
<i>Brettanomyces</i>	21	13
<i>Lactobacillaceae</i>	2.21E3	281
<i>Oenococcus</i>	2.04E8	1.48E7
<i>Pediococcus</i>	<10	none
<i>Saccharomyces</i>	5.73E6	3.03E5
<i>Zygosaccharomyces</i>	145	44
<b>Phenolic Fingerprint</b>		
	<b>Control</b>	<b>WC</b>
Tannin	0.97	0.93
Pigment	17.24	13.72
Phenolics	40.38	38.24
Pigmented Tannin	1.28	1.37
Free Anthocyanins	15.10	11.44

<b>Color</b>		
	<b>Control</b>	<b>WC</b>
<b>420</b>	0.299	0.343
<b>520</b>	0.372	0.427
<b>620</b>	0.092	0.106
<b>Intensity</b>	0.763	0.876
<b>Hue</b>	0.804	0.803

**Sensory Results:**

There were very little chemical differences between the control and low SO<sub>2</sub> treatments. The traditional method seemed to have a higher microbial presence. The traditional method seemed to result in higher phenolic extraction (probably due to increased extraction from sulfur dioxide), but higher color intensity was found in the SO<sub>2</sub>-free wine. This is likely due to less monomeric anthocyanin bleaching.

There was no significant sensory difference ( $p < 0.05$ ) between the Control (traditional) and Trial (low sulfur protocol). However, of those that responded correctly ( $n=13$ ) 69% preferred the control and 31% preferred the trial.