

The Effect of LalVigne Foliar Spray on Cabernet Franc
Tarara Winery
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Summary

This study examines the impact of LalVigne Foliar Spray (ScottLabs) on ripeness and the chemical and sensory qualities of Cabernet Franc. Every other row of a block of Cabernet Franc was sprayed at 5% veraison and 10 days later following the LalVigne spray protocol with a tunnel recycle sprayer, allowing for a treatment of sprayed Cabernet Franc and a treatment of unsprayed Cabernet Franc. Both treatments were harvested and processed identically and on the same day, but kept separate. All other treatments between projects were identical. The LalVigne spray slightly increased phenolics in the grape berries, but lowered cluster weight (although not berry weight). The LalVigne spray also increased YAN in juice. No chemical or phenolic parameters were very different in the wine. For the triangle test, of 20 people who answered, 12 people chose the correct wine (60%), showing a statistically significant difference between wines ($p < 0.05$). These wines were voted to have an average degree difference of 4.2 (out of 10) among those who correctly identified it, suggesting that the wines were moderately different. In general, people who answered correctly had no preference for one treatment over another. There were no strong trends with regard to the descriptors used in this study.

Introduction

LalVigne Mature Foliar Spray (ScottLabs) is a yeast-derived organic foliar spray which is marketed to concentrate aroma precursors and mature phenolic attributes in berries. It is intended to help produce grapes of higher quality in shorter growing/ripening seasons (Scott Laboratories 2016). Several studies have shown tasters who prefer wine produced with LalVigne Foliar Spray. It has been said to increase mouthfeel and volume in Merlot and Syrah, and to increase aromatic intensity in Merlot. It also appears to reduce IBMP, depending on the base levels of this compound (Lallemant 2015). This study examines the impact of LalVigne Foliar Spray on Cabernet Franc.

Results and Discussion

From in-house analysis, the wine produced from Lalvigne-treated grapes appeared to be slightly darker, more aromatically intense, and had more flavor depth and structure. This was in spite of letting the clusters hang through the rain. The LalVigne spray slightly increased phenolics in the grape berries, but lowered cluster weight (although not berry weight). The LalVigne spray also increased YAN in juice. No chemical or phenolic parameters were very different in the wine. For the triangle test, of 20 people who answered, 12 people chose the correct wine (60%), showing a statistically significant difference between wines ($p < 0.05$). These wines were voted to have an average degree difference of 4.2 (out of 10) among those who correctly identified it, suggesting that the wines were moderately different. In general, people who answered correctly had no preference for one treatment over another. There were no strong trends with regard to the descriptors used in this study.

Grape Parameters at Harvest

	Berry Weight (g/berry)	Cluster Weight (g/cluster)	Harvest Yield (tons)	TA (g/L)
Control	1.56	190.35	1.99	3.4
Spray	1.57	167.00	1.86	3.3
% Change	1%	-12%	-7%	-3%

Grape Phenolics

	Catechin (mg/L)	Catechin: Tannin	Polymeric Anthocyanins (mg/L)	Polymeric Anthocyanins: Tannin	Tannin (mg/L)	Quercetin Glycosides (mg/L)	Total Anthocyanins (mg/L)
Control	34	0.064	22	0.041	534	96	848
Spray	41	0.070	24	0.041	582	103	894
% Change	21%	9%	9%	0%	9%	7%	5%

Lab Results from ETS

Juice Chemistry

	Brix	pH	TA (g/L)	Volatile Acidity (g/L)	YAN (mg N/L)
Control	22.8	3.88	4.65	0.2	94
Spray	22.7	3.90	4.65	0.2	110
% Change	0%	1%	0%	0%	17%

Chemistry after Primary Fermentation

	Ethanol (%vol/vol)	Residual Sugar (g/L)	pH	TA (g/L)	Volatile Acidity (g/L)	Malic Acid (g/L)
Control	13.2	0	3.69	6.9	0.36	0.76
Spray	13.2	0	3.76	6.9	0.30	0.80

Wine Chemistry

	Ethanol (%vol/vol)	Residual Sugar (g/L)	pH	TA (g/L)	Volatile Acidity (g/L)	Tartaric Acid (g/L)	Malic Acid (g/L)	Lactic Acid (g/L)	IBMP (ng/L)	Total SO ₂ (ppm)	Free SO ₂ (ppm)
Control	13.0	1.0	3.70	5.1	0.65	2.1	0.0	1.4	<1.0	46.8	22.5
Spray	13.0	0.9	3.74	4.9	0.61	1.7	0.0	1.3	<1.0	91.3	39.6

Lab Results from Enology Analytics from Late January, 2017 (Tartaric Acid and IBMP from ETS)

Phenolic Profile

	Caffeic Acid (mg/L)	Caftaric Acid (mg/L)	Catechin (mg/L)	Epicatechin (mg/L)	Catechin: Epicatechin	Catechin: Tannin	Gallic Acid (mg/L)
Control	2	3	26	33	0.79	0.06	67
Spray	2	3	26	32	0.81	0.06	63
% Change	0%	0%	0%	-3%	3%	0%	-6%

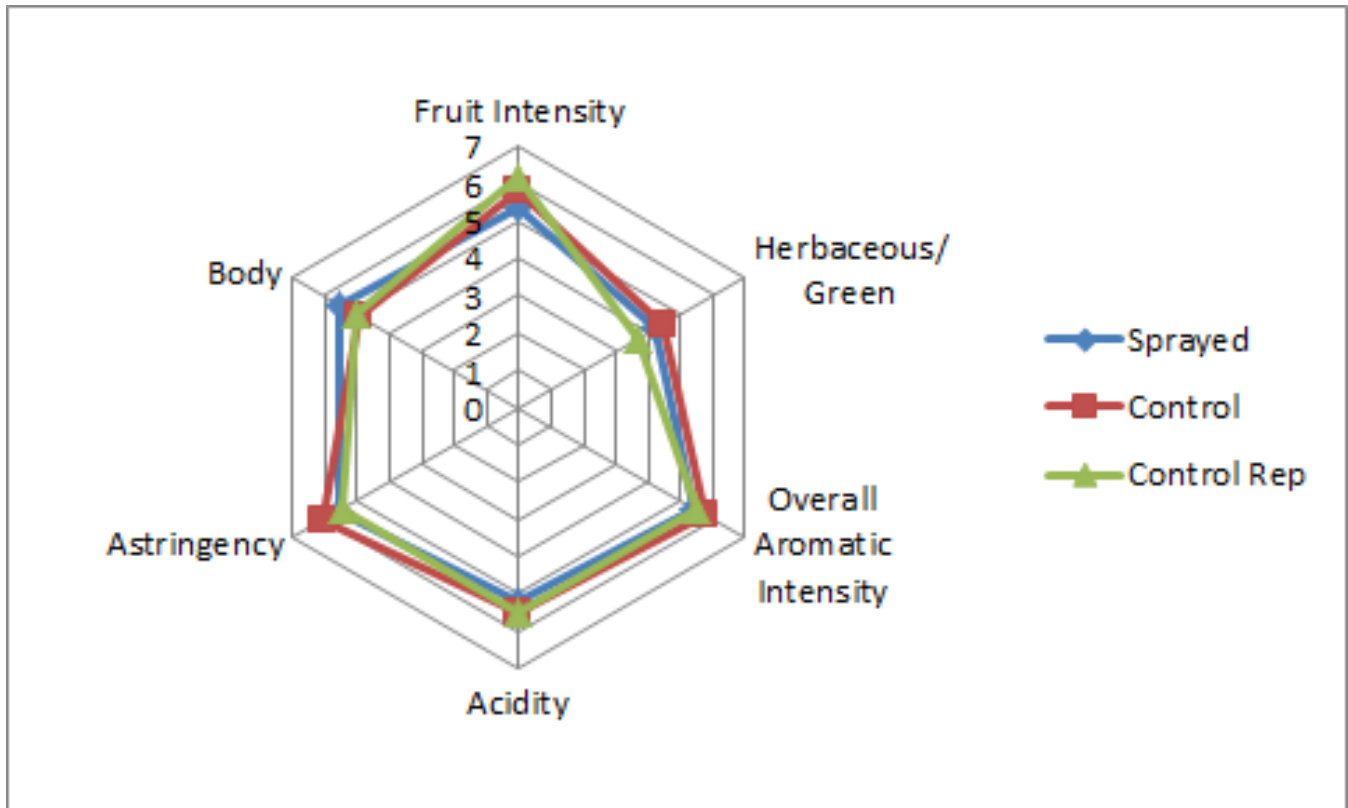
Lab Results from ETS from Late January, 2017

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 (mg/L)
Control	89	139	19	<1	16	426	158	<0.2
Spray	93	143	21	<1	15	432	164	<0.2
% Change	4%	3%	11%		-6%	1%	4%	

Lab Results from ETS from Late January, 2017

	Control	Sprayed	Total Votes
Preferred	55%	45%	11



Methods

Every other row of a 2.19 acre block of Cabernet Franc planted on Silt Loam and Limestone Soil with a moderate south facing slope (14 rows total) was sprayed following the LalVigne spray protocol (at 5% veraison and again 10 days after at around 15% veraison). A tunnel recycle sprayer (GSG-A1.N Cross Flow Recycling Spray) was used, which allowed for the ability to spray with zero drift and thus creating a control with every other row. The result split the blocks essentially into equal geography, ensuring control and more accurate results. Because it was performed on every other row as opposed to separation by larger blocks it is geographically almost identical.

The Cabernet Franc was harvested on the same day (October 6) keeping control and treatment rows separate. Both lots were chilled overnight prior to destemming into matching two ton (519 gallon) stainless steel tanks. Both lots had saignée performed in order to achieve an equal skin:juice ratio between lots based on a desired berry weight of 1.35g/berry. As a result, the control lot had a 14% saignée, and the treatment lot had an 11.8% saignée. Both lots underwent a 4 day cold soak, and were then inoculated on 10/11 with CSM at 20g/hL and Go Ferm at 25 g/hL. On 10/13 300g/hL tartaric acid was added to each must. On 10/13 YAN was corrected in both lots to achieve 220ppm using 25g/hL Fermaid K and 60g/hL DAP over the following three days. During cold soak there was one pulse air treatment per day (3 minutes), during fermentation there were twice daily pulse air treatments at 15 minutes each, and during extended maceration (beginning October 22) there were once daily 3-minute pulse air treatments. Both lots were pressed on November 4 for a total of 28 days of maceration and only the free run wine was used for this project.

The wine was pressed directly into barrel where they were both inoculated with O-Mega malolactic culture (1 g/hL) prior to barreling in identical cooperage (both treatments were put in their own new

Francois Freres VTG M Troncais, their own new Taransaud Ref 102 M+TH Nevers barrels, and their own third fill 2013 Magrenan Jupilles M barrels). Both treatments completed malolactic conversion and were stabilized with 8g/hL KMBS on November 22, 2016.

This wine was tasted on April 12, 2017. For the triangle test and preference analysis for the tasting, anybody who did not answer the form were removed from consideration for both triangle, degree of difference, and preference. Additionally, anybody who answered the triangle test incorrectly were removed from consideration for degree of difference and preference. Additionally, any data points for preference which did not make sense (such as a person ranking a wine and its replicate at most and least preferred, when they correctly guessed the odd wine) were removed.

In order to balance the data set to perform statistical analysis for descriptive analysis on the April 12 tasting, any judge who had not fully completed the descriptive analysis ratings were removed. In order to then make the number of judges between groups equivalent, two judges from group 2 were transferred to group 1, and two more were eliminated from group 2. This resulted in a final data set of 3 groups, each with 5 judges (considered as replications within groups, and groups were considered as assessors). Data was analyzed using Panel Check V1.4.2. Because this is not a truly statistical set-up, any results which are found to be statistically significant ($p < 0.05$) will be denoted as a “strong trend” or a “strong tendency,” as opposed to general trends or tendencies. The statistical significance here will ignore any other significant effects or interactions which may confound the results (such as a statistically significant interaction of Judge x Wine confounding a significant result from Wine alone). The descriptors used in this study were Fruit Intensity, Herbaceous/Green, Overall Aromatic Intensity, Acidity, Astringency, and Body.

References

- Scott Laboratories. 2016. Lalvigne Foliar Spray: Organic yeast derivative foliar spray. <http://www.scottlab.com/products-164.aspx>. Accessed 5/8/2016.
- Lallemand. 2015. LalVigne MATURE & LalVigne AROMA: New, innovative tools for viticulturists and enologists. <http://www.lallemandwine.com/north-america/lalvigne-mature-lalvigne-aroma-new-innovative-tools-for-viticulturists-and-enologists/>. Accessed 5/8/2016.