Levulia Alcomeno Yeast Trial (AEB) (2017)

Rosemont of Virginia Winery
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Summary

This study examines the impact of Levulia Alcomeno yeast (AEB) on Cabernet Franc wine quality. Levulia Alcomeno is a non-*Saccharomyces* yeast strain (*K. thermotolerans*) which can promote acid formation and decrease acidity during early stages of fermentation. Cabernet Franc grapes were divided into two T Bins, one of which received Levulia Alcomeno and the other did not. Both T Bins underwent a 7 day cold soak. Afterwards, the control was inoculated with FX-10, and both T Bins were fermented identically. Roughly halfway through fermentation, the Levulia treatment received FX-10 as well in order to ensure complete fermentation. All other treatments between wines were identical. Chemistry was not altered during cold soak. Fermentation kinetics were very similar between treatments. Levulia Alcomeno wine saw increased TA, lactic acid, and volatile acidity. However, this wine also had higher pH. The Levulia Alcomeno wine had higher levels of ethyl acetate and isobutanol, and slightly lower levels of amyl alcohol and isoamyl alcohol. Color was not very different between treatments. The wines were not determined to be significantly different via triangle testing. Of those who answered the triangle test correctly, they preferred the control wine, and there may have been a nondescript off flavor in the Levulia wine. For the descriptive analysis, there were no strong trends for the descriptors used in this study. The descriptive data suggests that there may have been some glass-to-glass variation, possibly due to biases from tasting order. Drawing sensory results is thus difficult. Levulia Alcomeno is recommended to be used in conjunction with Fermol yeasts, which may have impacted results. In the future, more studies should be performed on this yeast in conjunction with AEB Fermol yeasts.

Introduction

Wines made in certain regions in Southern Virginia can have a tendency to develop very high alcohol and high pH. As a result, natural mechanisms for reducing the ethanol and the pH should be sought. One such natural possibility is the use of *Kluyveromyces thermotolerans* yeast strains for the first part of fermentation. These yeast strains often result in lower ethanol and higher lactic acid, thus increasing titratable acidity and decreasing pH (AEB 2018). This study examines the impact of a strain of this yeast, Levulia Alcomeno (AEB), on the finished wine. This trial was done in 2016 with some positive results but the last few weeks of harvest were wet in this season and thus the sugars were lower than average for Rosemont (22 brix). This study was repeated to see the results in a normal year when harvesting Cabernet Franc at 24.5 to 26 brix.

Results and Discussion

Chemistry was not altered during cold soak. Fermentation kinetics were very similar between treatments. Levulia Alcomeno wine saw increased TA, lactic acid, and volatile acidity. However, this wine also had higher pH. The Levulia Alcomeno wine had higher levels of ethyl acetate and isobutanol, and slightly lower levels of amyl alcohol and isoamyl alcohol. Color was not very different between treatments. For the triangle test, of 7 people who answered, 4 people chose the correct wine (57%), suggesting that the wines were not significantly different. These 4 people who answered correctly preferred the control wine, and there may have been a nondescript off flavor in the Levulia wine. For the descriptive analysis, there were no strong trends for the descriptors used in this study. The descriptive data suggests that there may have been some glass-to-glass variation, possibly due to biases from tasting order. Drawing sensory results is thus difficult. Levulia Alcomeno is recommended to be used in conjunction with Fermol yeasts, which may have impacted results. In the future, more studies should be performed on this yeast in conjunction with AEB Fermol yeasts.

Juice Chemistry			
	Brix	pH	TA (g/L)
Juice Chemistry	22.7	3.57	4.0

In House Data

Chemistry after Cold Soak				
	Brix	pH	TA (g/L)	YAN (mg N/L)
Control	23.7	3.89	3.9	141
Levulia Alcomeno	23.7	3.95	3.9	147
% Change	0%	2%	0%	4%

In House Data

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)
Control	14.22	<1	3.69	4.85	0.40	<0.15	1.66	52	17	0.34
Levulia Alcomeno	14.18	<1	3.79	5.36	0.72	<0.15	2.62	46	13	0.21
% Change	0%		3%	11%	80%		58%	-12%	-24%	-38%

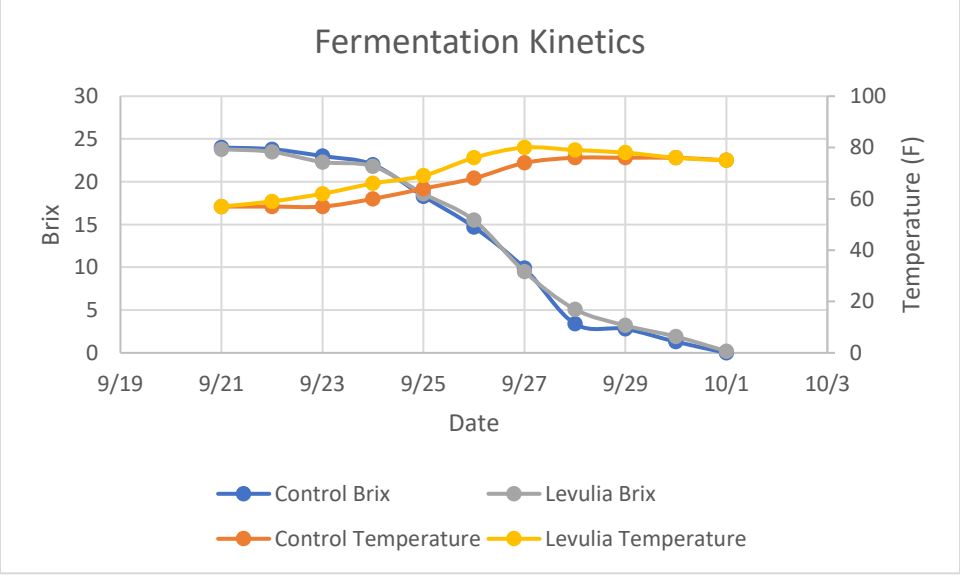
Results from ICV in Late March

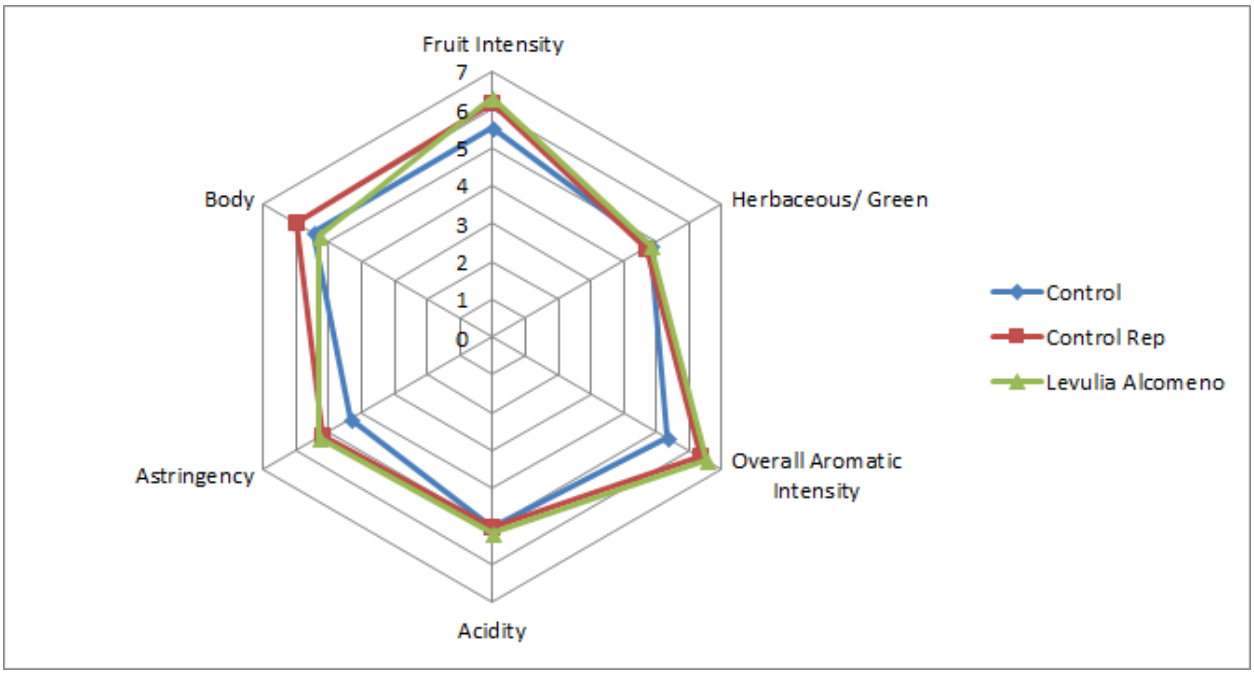
Higher Alcohols and Fusel Oils									
	Acetaldehyde (mg/L)	Ethyl Acetate (mg/L)	1-Propanol (mg/L)	Amyl alcohol (mg/L)	Isoamyl alcohol (mg/L)	Isobutanol (mg/L)	Methanol (mg/L)	Sec-Butanol (mg/L)	n-Butanol (mg/L)
Control	13	129	26	78	282	58	273	<5	<5
Levulia Alcomeno	14	224	29	56	213	106	274	<5	<5
% Change	8%	74%	12%	-28%	-24%	83%	0%		

Results from ETS in Late March

Color Profile					
	A420	A520	A620	Hue (420/520)	Intensity (420 + 520 + 620)
Control	0.249	0.366	0.080	0.680	0.695
Levulia Alcomeno	0.259	0.384	0.087	0.674	0.730
% Change	4%	5%	9%	-1%	5%

Results from ICV in Late March





Methods

Cabernet Franc Clone 214 (planted on 3309, 13-year-old vines) were harvested on September 12, 2017 and stored cold and destemmed on September 14 into two T Bins. During processing, both T Bins received 50ppm sulfur dioxide, 30g/hL Tannin VR Supra, and 40g/ton HE Grand Cru Enzyme. One T Bin received an addition of Levulia Alcomeno during crush, whereas the other did not. Both T Bins received a 7 day cold soak.

On September 21, the control must inoculated with FX-10 at 25g/hL and rehydrated with 30g/hL Dynastart. During fermentation, both bins received 30g/L Thiozote, 30g/hL Nutristart Org, 30g/L Opti-red, and 1g/L Tartaric Acid. The control bin received MLB on September 23, and the Levulia Bin received MLB on September 26. On September 26 (roughly halfway through fermentation) the Levulia T Bin was also inoculated with FX-10 to ensure a complete fermentation. Each bin received 2-3 pumpovers per day until fermentation slowed, after which they received 1 punchdown per day. Wines were pressed on October 10. Only free run wine was used.

These wines were tasted on May 9. For the triangle test, descriptive analysis, and preference analysis, 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 May 9 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, one judge from group 1 was transferred to group 3. This resulted in a final data set of 3 groups, each with 2 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

AEB. 2018. Levulia Alcomeno. Accessed May 15, 2018. https://www.sud-et-bio.com/sites/default/files/LEVULIA%20ALCOMENO_TS_FR_0240615_OENOLIA_France_0.pdf