

ScottLabs IONYS_{WF} Yeast Trial on Chardonnay
King Family Vineyards
 Submitted by Matthieu Finot

Summary

This study examines the impact of IONYS_{WF} yeast (Lallemand) on Chardonnay wine when compared to fermentation with CY3079. Chardonnay juice was settled and split into separate barrels, inoculated with either CY3079 or IONYS_{WF}. Although the IONYS_{WF} fermentation proceeded much slower, not many chemical differences could be seen between the different yeast strains, except that the pH and TA of the IONYS_{WF} – fermented wine was slightly higher. The lower level of free sulfur dioxide in CY3079 suggests a slightly higher production of sulfur dioxide-binding compounds. These results suggest that people are able to tell a difference between Chardonnay wine produced with IONYS_{WF} yeast and wine produced from CY3079. People often preferred wine produced with IONYS_{WF} yeast, likely due to its tendency to enhance Fruit Intensity, Overall Aromatic Intensity, Depth of Flavor, and Body. Although the yeast is marketed to increase acidity, this was not observed in this study. This yeast shows promise with regard to aromatic development in Chardonnay, but more studies are needed to confirm this.

Introduction

IONYS_{WF} yeast, developed by Lallemand, is a *Saccharomyces cerevisiae* yeast which is marketed to significantly acidify musts during fermentation, resulting in more balanced and fresh wines produced from high pH musts. This acidification is due in part to an increased level of succinic acid production during fermentation. IONYS_{WF} yeast can also result in higher glycerol production and lower alcohol content, suggesting wines with enhanced body may be produced with it. This reduction in ethanol production may be due in part to its higher production of glycerol and succinic acid. It is also a low volatile acidity producer (Lallemand 2016). This study was performed to examine the impact of IONYS_{WF} on Chardonnay wine.

Results and Discussion

Although the IONYS_{WF} fermentation proceeded much slower, not many chemical differences could be seen between the different yeast strains, except that the pH and TA of the IONYS_{WF} – fermented wine was slightly higher. The lower level of free sulfur dioxide in CY3079 suggests a slightly higher production of sulfur dioxide-binding compounds.

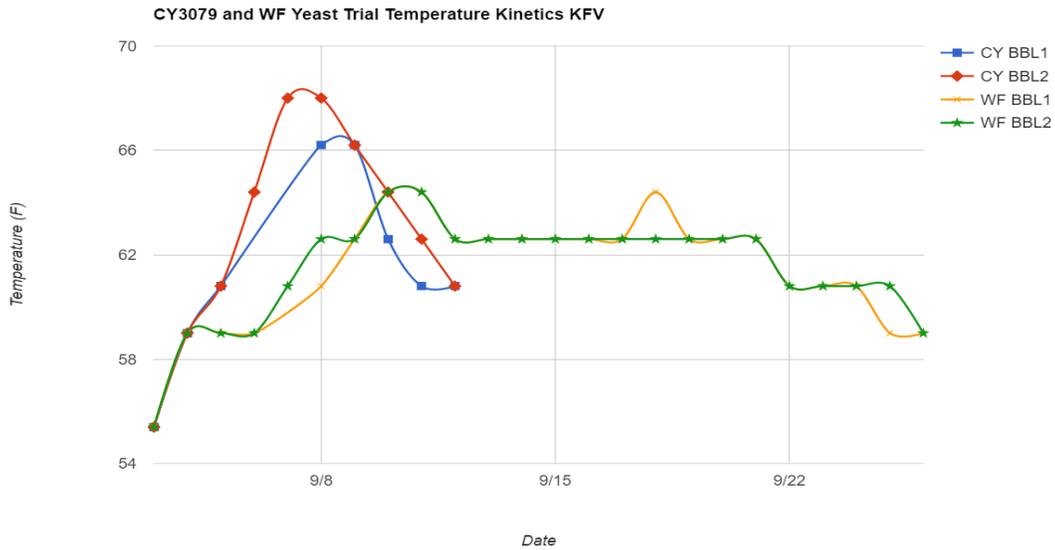
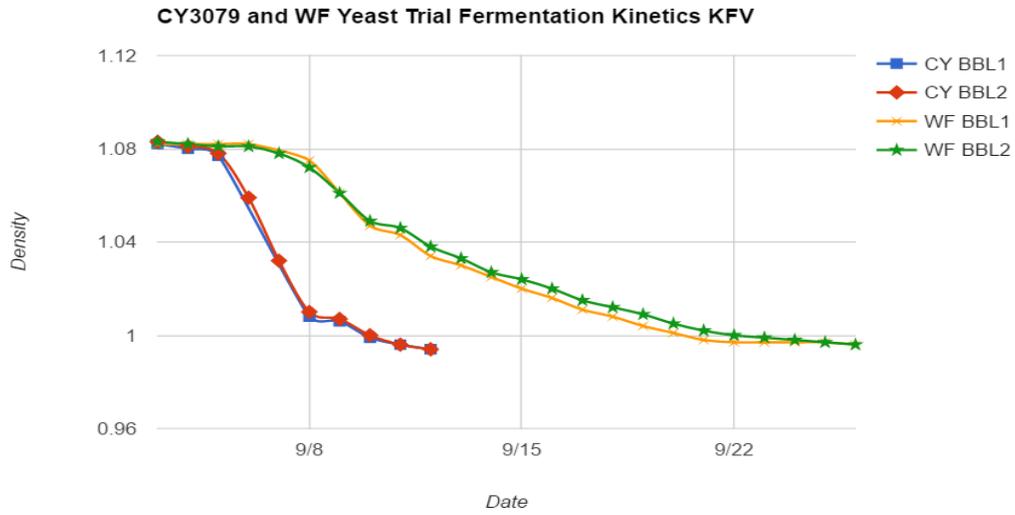
Juice Chemistry

	Brix	pH	TA (g/L)	Turbidity (NTU)
Juice Chemistry	19.6	3.47	4.5	349

Wine Chemistry

	Ethanol (%vol/vol)	Density (g/mL)	Residual Sugar (g/L)	pH	TA (g/L)	Volatile Acidity (g/L)	Malic Acid (g/L)	Lactic Acid (g/L)	Total SO ₂ (ppm)	Free SO ₂ (ppm)
CY3079	12.7	0.9881	0.0	3.50	5.0	0.45	0.0	2.2	64.3	26.9
IONYS _{WF}	12.7	0.9899	0.4	3.61	5.3	0.50	0.0	2.4	68.2	38.0

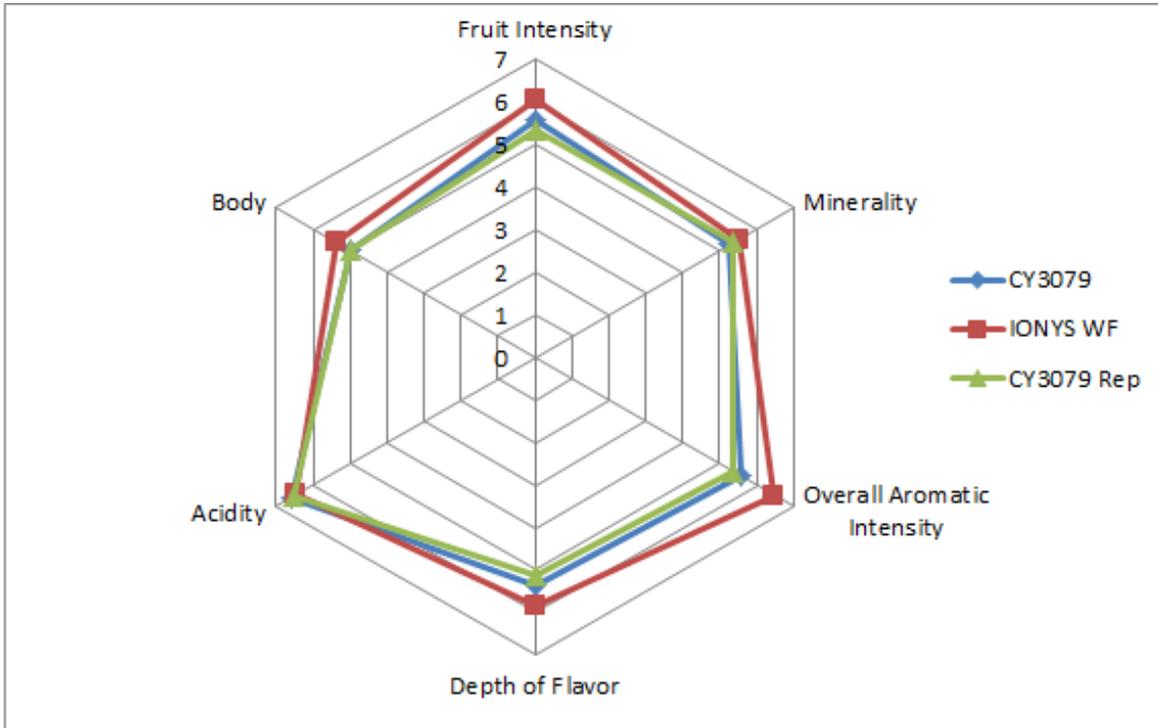
Lab Results from Enology Analytics from Early January, 2017



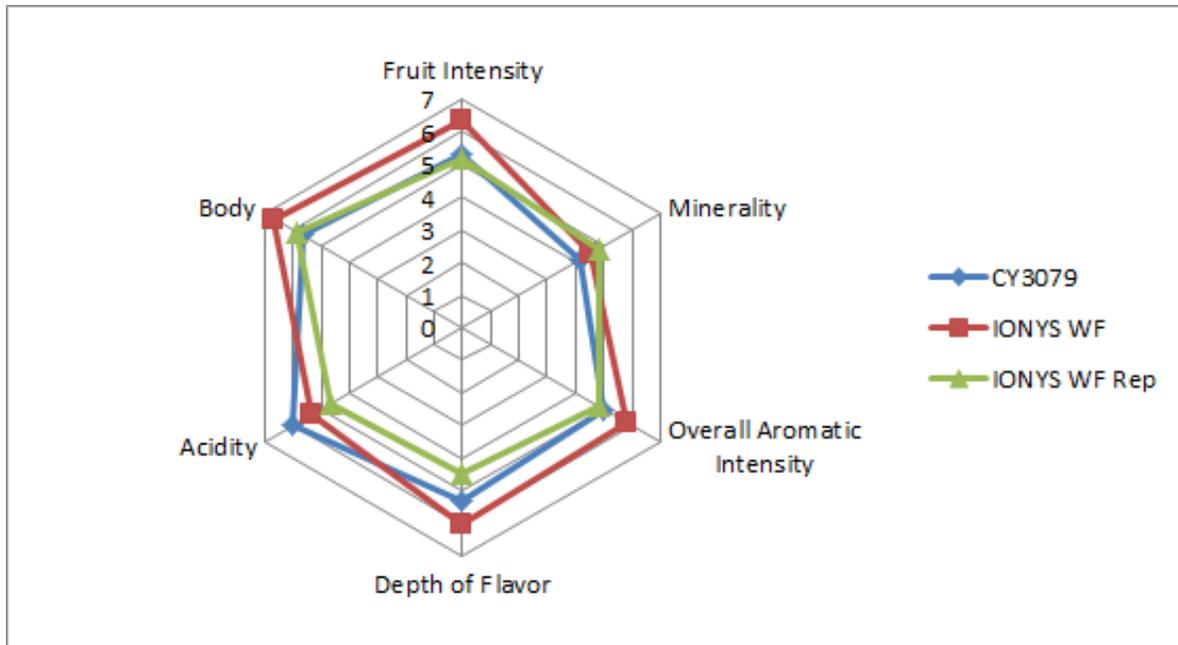
The wine was tasted at two different sensory sessions. At the January 25 session at Early Mountain Vineyards, of 38 people who answered 22 people chose the correct wine (58%), showing a statistically significant difference between wines ($p < 0.05$). These wines were voted to have an average degree difference of 4.3 (out of 10), suggesting that the wines were moderately different. In general, people who answered correctly preferred the wine made from IONYS_{WF} yeast over the wine made with CY3079 yeast. The wine produced with IONYS_{WF} was generally described as more aromatic, and a few judges mentioned differences in the quality of acidity (however, these wines were not very different in descriptive analysis of acidity).

	CY3079	IONYS _{WF}	Total Votes
Most Preferred	17%	83%	18
Least Preferred	67%	33%	15

There was a strong trend for wine produced with IONYS_{WF} to be higher with regard to Fruit Intensity and Body compared to wine produced with CY3079. Additionally, the wines made from IONYS_{WF} tended to have higher Overall Aromatic Intensity and Depth of Flavor, but this was a weaker trend.



In the February 15 session at Williamsburg Winery, only 3 out of 8 judges (37.5%) correctly identified the correct wine in triangle tests, suggesting that the wines were not significantly different. The number of judges who guessed the correct wine was too small to make any real preference conclusions. No significant differences were found with the descriptors used in this study. The descriptive analysis data for this study does not show any strong trends.



These results suggest that people are able to tell a difference between Chardonnay wine produced with IONYS_{WF} yeast and wine produced from CY3079. People often preferred wine produced with IONYS_{WF} yeast, likely due to its tendency to enhance Fruit Intensity, Overall Aromatic Intensity, Depth of Flavor, and Body. Although the yeast is marketed to increase acidity, this was not observed in this study, but this lack of evidence may be due in part to using fruit that was not overripe. The increase in body observed in this study seems to correspond to the increase in glycerol that the yeast is marketed to have (although glycerol was not measured in this study). However, glycerol is not always related to body and viscosity in wines, and it is likely that other mechanisms are at work to enhance the body (such as polysaccharide development). This yeast shows promise with regard to aromatic development in Chardonnay, but more studies are needed to confirm this. The slow fermentation kinetics of IONYS_{WF}, however, may result in problems from a production standpoint. In another study performed this year, a Viognier produced with IONYS_{WF} resulted in a stuck fermentation, and as such could not be poured at a tasting for evaluation. The sluggish nature of this yeast as a fermenter should always be born in mind by winemakers.

Methods

5.3 tons of Chardonnay were harvested and pressed on 9/1/2016 (yield of 2400L light pressings) into stainless steel tanks. 2g/hL sulfur dioxide was added upon pressing. The juice was settled overnight and split into 4 barrels on the next day, two of which were inoculated with CY3079 (ScottLabs) at 15g/hL and two of which were inoculated with IONYS_{WF} (ScottLabs) at 15g/hL. Yeast was rehydrated with 20g/hL Go Ferm Evolution. At this time, 1.5g/L tartaric acid and 0.5g/L malic acid was added to each barrel. On 9/8 20g/L sugar was added to the CY3079 fermentation, and the same amount was added to the IONYS_{WF} fermentation on 9/10. Fermentation was complete on 9/29, and the wine was stabilized with 6.6 g/hL sulfur dioxide on 12/08 after the completion of malolactic fermentation. Wine was collected in early January 2017.

For the triangle test 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 descriptive analysis on the January 25 tasting, any judge who had not fully completed the descriptive analysis ratings were removed and any judge that did not completely rank the wines were removed from the data set. Then, one judge was randomly removed from Group 3, and one judge was randomly transferred from Group 3 to Group 1, to balance the data set. All judges were divided into 3 groups, each with 11 judges. For statistical purposes, judges were considered replicates and groups were considered judges. Data was analyzed using PanelCheck software 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 were Fruit Intensity, Minerality, Overall Aromatic Intensity, Depth of Flavor, Acidity, and Body.

The procedures for analyzing sensory analysis were the same for the February 15 tasting. In order to balance the data set for the descriptive analysis, one judge had to be removed from both group 1 and group 3, resulting in 3 groups of 2 judges each.

References

Lallemand. 2016. IONYS_{WF} Brochure: More acidity, more balance!