Oregon Wine Advisory Board
Research Progress Report

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Pinot Noir Processing Effects on Wine Color and Phenolics

Barney Watson, Department of Food Science and Technology
Steve Price, Department of Horticulture

INTRODUCTION AND OBJECTIVES

Different fermentation practices are generally believed to affect wine composition and wine quality of Pinot noir. Oregon winemakers, for example, commonly attribute differences in color and phenolic extraction to differences in processing. There is, however, little information from replicated trials with controls demonstrating the cause and affect of these perceived differences.

A processing trial was established to evaluate several fermentation regimes currently in practice in Oregon for Pinot noir production in order to evaluate their effects on color extraction, phenolic extraction, color stability, and aroma and flavor. The fermentation treatments include the addition of SO, at crushing vs. no-SO2 added before fermentation, the addition of VR Super enzyme before fermentation, and pre-fennentation cold maceration vs. post-ferrnentation cold maceration.

RESULTS AND DISCUSSION

Replicated wines were produced with the following fermentation variables: a control with 50 ppm SO, added at crush, no-SO, added at crush, VR Super enzyme added at crushing at the rate of 50 mL/ton, cold maceration before fen-nentation at 7'C for one week, and cold maceration after fermentation before pressing at 7'C for one week. All treatments with the exception of the no S02 treatments had 50 PPM S02 added at crushing before fermentation (Table 1).

Preliminary analysis shows differences in total anthocyanins, total phenolics and in color intensity in the new wines. The wines with the highest concentration of anthocyanins included the control and the VR Super enzyme treated sample. The wines with the lowest concentration of anthocyanins included the no-SO2 treatment, and both the pre- and post- fermentation cold maceration treatments. Interestingly, the wines with the greatest color intensity (420 + 520 manometers) included the control, the enzyme treatment, and the pre- fermentation cold maceration (even though the anthocyanin concentration was lower than the other two treatments). The new wines with the lowest color intensity were the no-SO2 and the post-fermentation cold maceration treatments.

The wine with the highest concentration of total phenols was the pre-fermentation cold maceration treatment (I I percent greater than the controls). The total phenolic content in wines from the other treatments varied little from the control (4 percent or less).

The new wines will be analyzed by high pressure liquid chromatography (HPLC) to obtain detailed phenolic profiles in order to better assess the qualitative and quantitative differences among the

treatments. The wines will also be evaluated by a sensory panel for differences in aroma and flavor. During processing and aging the color intensity, color stability, and development of polymeric pigment will be monitored.

Table 1. 1992 Pinot Noir Processing Trials, Lewis Brown Farm, Corvallis, Oregon

Treatment	Anthocyanin[1] mg/L	Total[1] Phenols mg/L	A/P	Color Intensity[2] 420 + 520 nm
Control[3]	191	2293	.083	4.27
Cold Mac. Pre Ferm.[4]	176	2546	.069	4.27
VR super[5]	206	2343	.088	4.48
Cold Mac. Post Ferm.[6]	155	2227	.070	3.42
No SO_2	173	2199	.079	3.92

1 New wines
2 Optical density 420 + 420 nm, 1 mm cuvette (wine pH) X 10
3 +50ppm SO_2, fermentation on skins 10 days, 25-30°C
4 Cold maceration, prefermentation, 7 days, 7°C
5 + VR Super enzyme, 50 mL/Ton
6 Cold maceration, post fermentation, 7 days, 7°C