Pre-fermentation alcohol adjustments impact the flavor of Cabernet Sauvignon

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Poster Abstract

Wine grape varieties requiring moderate to long growing seasons to mature their fruit may fail to achieve desired sugar levels for specific wine style targets when grown in cool climates. Under these conditions, winemakers may chose to increase the final alcohol content of the wine by adding grape juice concentrate or neutral grape spirits prior to primary fermentation, or by the addition of neutral grape spirits following fermentation. The purpose of this study was to determine the impact of these practices on wine composition and sensory characteristics. Cabernet Sauvignon grapes harvested at 24.0°Brix were crushed and evenly divided into the following treatments prior to primary fermentation: (Control - no sugar added, grape concentrate added to 25.5°Brix, and neutral grape spirits to attain 15%v/v alcohol in final wine). The musts were then inoculated with yeast and allowed to ferment to dryness. Each treatment was replicated 3 times using 50L replicates. In addition, neutral grape spirits were added post-fermentation to the controls to attain 15%v/v alcohol. Wines were assessed for colour and phenolic and aroma compound concentrations. The results revealed that the addition of grape juice concentrate and neutral grape spirits prior to primary fermentation increased color and fruity aroma compounds and decreased flavan-3-ol concentrations relative to the control, though the magnitude of these changes was greater for the grape concentrate. Neutral grape spirits added post-fermentation yielded few significant differences in wine chemistries when compared to the control. Sensory analyses indicated that the pre-fermentation treatments were moderately fruitier and had increased mouthfeel compared to the post-fermentation addition of neutral grape spirits. The results suggest that pre-fermentation alcohol adjustment with either grape concentrate or neutral grape spirits is preferable to post-fermentation addition of neutral grape spirits.