

Wednesday & Thursday National Conference Poster Abstracts (Research Reports)

2010 NATIONAL CONFERENCE TECHNICAL ABSTRACTS CONTINUED

Enology

Quantifying Dissolved Carbon Dioxide Concentrations in Fermenting Red Musts

David M. Goldfarb, Steven D. Colomé, Marci Norkin, and Geraldine S.P. Ritchie*
*Food Science & Nutrition, Cal Poly State University, San Luis Obispo, CA 93405
(gsritchi@calpoly.edu)

The concentration of dissolved carbon dioxide (DCO₂) is recognized as being high during alcoholic fermentation, but there is little data to indicate the actual concentrations and how they vary with extent of the fermentation or winemaking operations. The presence of the inert gas is important in protecting the juice or must from oxidation. In addition, carbon dioxide (CO₂) is a recognized greenhouse gas, and the contribution of fermenting juice and musts to atmospheric CO₂ cannot be put in perspective or modeled unless one has a better idea of DCO₂ and whether supersaturation is occurring throughout fermentation or for part of the time. This study monitored DCO₂ concentrations on a daily basis in four red musts during alcoholic fermentation in a commercial winery. Dissolved carbon dioxide concentrations generally peaked at around 2000 mg/L, but the maximum was not associated with a particular stage of fermentation. Musts tended to be supersaturated with DCO₂ when the rate of fermentation was high and/or the temperature increased rapidly and after a rack and return. Upon completion of alcoholic fermentation, DCO₂ concentrations generally decreased to between 400 and 1000 mg/L. During malolactic fermentation, DCO₂ concentrations varied between 1000 and 1500 mg/L.