Identification and Management of Grape Sour Rot in British Columbia

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Sour rot is an important disease of wine grapes that destroyed thousands of dollars of grapes during the 2004 growing season. It is characterized by browning of the grape berry, breakdown of the internal tissues and a strong vinegary odor. The presence of fruit flies is also a distinctive feature of this rot. The etiology of this disease has not been studied in Canada. The objectives of our research was to study the cause of sour rot, develop molecular techniques for identification of the pathogens involved in this disease, and test possible control strategies.

In 2004, grape clusters were sampled from 'Gewurztraminer', 'Chardonnay' and 'Sauvignon Blanc' blocks that contained sour rot. Along with diseased clusters, clusters that appeared to be healthy were also sampled to compare micro flora between infected and control berries. In the laboratory, berries were surface sterilized and internal tissue was plated onto Nutrient and Potato Dextrose agars to promote growth of possible causal agents of the disease. A mixture of yeast and fungi were isolated from berries that showed sour rot symptoms. No organisms grew on media associated with clean berries. Species-specific DNA from the yeast that were collected was sequenced and identified as *Saccharomycopsis crataegensis*, *Pichia sp.*, *Aureobasidium pullulans*, *Cryptococcus sp.*, and *Rhodosporidioum sp.* In Italy, *Saccharomycopsis crataegensis*, and *Pichia mimbranaefaciens* were found to be associated with sour rot.

During the 2005 growing season, an efficacy trial for control of sour rot was set up with Vincor International Inc. in a vineyard near Oliver, BC. The test block was in a 'Sauvignon Blanc' block with a history of sour rot. Captan, Vangard, Fixed Copper, Calcium, Potassium metabisulfite, and Gibberellic acid were sprayed on replicated vine panels and compared to the unsprayed control vines. In three rows away from each spray treatment, leaves were removed to open the canopy and three rows remained untouched. This cultural practice which changes the microclimate to allow for faster drying and lower relative humidity could be a possible control for sour rot that develops under wet conditions. Samples were collected on four different dates, June 23, July 14, July 26, and August 18, 2005. Five clusters from each row were taken to the laboratory at PARC, Summerland to identify and count the microflora on the grape berries. Data will be tabulated to determine the effect of the different treatments on microflora during the growing season. No sour rot was recorded in the vineyard in 2005.

In 2006, the efficacy trial at Vincor International Inc. will be repeated. If environmental conditions are not conducive for sour rot development, conditions for disease will be created artificially at PARC, Summerland in the research centre grape plot. This will require the use of overhead irrigation to simulate rain that is thought to promote sour rot. Molecular work will be performed on any additional yeast that are collected to determine their identification. Suspected yeast, fungi, and bacteria causal organisms will be tested in the laboratory on grapes and also in the test plot at PARC, Summerland to see if they cause sour rot symptoms.