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Evaluation of Yeast Strains on Wine Composition and Sensory Character

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Riesling, Chardonnay, and Pinot noir wines from the 1992 vintage were fermented with several different commercial yeast strains. Differences were observed in fermentation rates, wine composition, and aroma and flavor. Preliminary results were reported on in the OSU Wine Grape Research Progress Reports, 1992-1993, Special Report 929, June 1993, OSU Agricultural Experiment Station.

During 1994 selected Riesling and Chardonnay wines were analyzed by gas chromatography and mass spectroscopy (GC-MS) and up to 39 different aroma compounds were detected. Some differences in aroma compounds were observed in the wines. For example, higher levels of ethyl hexanoate (fruity, apple, banana, wine-like, brandy), phenyl ethyl acetate (sweet, honey, fruity, rose), and gamma butyrolactone (sweet, caramel) were detected in Riesling wine fermented with Lalvin VL-1 compared to wine fermented with Lalvin CEG. In Chardonnay wine higher levels of 3-methyl-butanol (fusel oil, whiskey), 1-hexanol (ethereal, medicinal), B-phenyl ethanol (floral, rose, perfume), 3-phenyl propanol (sweet, balsamic, floral, hyacinth), ethyl hexanoate (fruity, wine-like, apple, banana, brandy), ethyl lactate (fruity, buttery, butterscotch), and ethyl decanoate (brandy, oily, fruit, grape) were detected in wine fermented with Lalvin EC- 1118 compared to Lalvin D47.

Sensory evaluation was done by experienced commercial winemakers when the wines were 7 and 20 months of age. In June of 1993 the second industry panel evaluations were done on all three varieties. Differences in aroma and flavor were observed in the wines at 7 months of age and also at 20 months of age. In many cases different but similar descriptors were used at 20 months compared to 7 months possibly reflecting developmental changes in aroma and flavor which occurred during aging of the wines.

The main aroma descriptors used for Riesling at 20 months of age seemed to fall into two groups depending on the yeast strain used. Wines fermented with Lalvin VL- 1, L 1, and CEG (Epernay 2) were all described as earthy, floral, honeysuckle, and tropical fruit. Wines fermented with Enoferm Simi White and Lalvin CS-2 were described as reduced, musty, and asparagus. Other primary descriptors used included orange peel, herbal, pine, and green tea for Simi White, CS-2, and VL-2 and apple, diesel, grassy, honey, and citrus for KI and CEG.

Descriptors used for Chardonnay wines included butter, tropical fruit, menthol, grapefruit, perfume, floral, citrus, herbal, pineapple, and apple for Lalvin EC- 1118 and Lal vin QA23; herbal, canned corn, peach, yeasty, pineapple, and citrus for Lalvin Montrachet. and musty, vanilla, steely, herbal, and pear for Lalvin D47.

Descriptors used for Pinot noir were berry, cherry, heat, vegetal, spice, fruity. and pepper for Lalvin

Assmanhausen, L2056, Bourgorouge RC 212, and Bourgorouge RA 17. Additional descriptors included cheesy, tobacco, menthol, and woody for Assmanhausen, and soy, green tea, prune, and herbal for RA 17. Lalvin Wadenswil and Enoferm BGY were described as dish rag, leather, herbal, cola, prune, and musty. Additional descriptors included soy, green tea, and spice for Wadesnwil and cheesy, black pepper, tobacco, menthol, cherry, cola, berry, vegetal, and woody for BGY.