C. S. OUGH and M. A. AMERINE

Study of wines by Controlled Fermentations in specially designed equipment

Controlled fermentations in wine are under study using special equipment designed to control the temperature, pressure, type and rate of gas or gases sparged into fermenters, and rate and duration of stirring or pumping-over, and allow the submerging of red grape skins for color extraction. For critical work with various yeasts, the equipment can be sterilized under steam pressure. Control instruments record gas flows, pressures, temperatures, and carbon dioxide and oxygen content of gases. Two of these fully controlled fermenters of 25-gallon capacity have been in use for several years. Ten smaller units, each of 7-gallon capacity, are being assembled and will be fully equipped and available to enlarge the area of study within a few years.

Studies with white wines have aimed at speeding or controlling the rate of fermentation without quality decrease. These studies covered the effects of pressure, temperature, stirring and sparging with gases on rates and quality. They have disclosed that temperature control is the most successful method of controlling rate of fermentation; that pressure can be used to control fermentation rates, but will result in lower-quality wine; and that sparging with gases and stirring are not practical methods of increasing fermentation rates when used to the extent that no alcohol is lost in these treatments.

Studies with red wines have investigated the effects of various treatments on extraction of color pigments and tannins from the grape skins during fermentation. Treatments included varying temperature of fermentation or pressure, pumping juice over the skins, stirring, submerging the skins below the liquid, and preheating the juice and skins before fermentation. Mixing the juice and skins twice daily with a wooden plunger is used as a standard method for comparison of color extractions.

Color extraction has been shown to increase with increasing temperature. Pressure treatments with carbon dioxide up to 100 pounds per square inch have little effect. Stirring causes more color extraction; but, if excessive stirring is used, turbidity in the final product results and is difficult to remove. Pumping over or submerging the skins causes slightly more color extraction than the standard method. Preheating the grapes increases color extraction decidedly but decreases wine quality; and the color extracted is not stable. In general, tannin extraction closely follows the color extraction.

Further studies will explore the effects of various mixed-yeast cultures on quality, effects of different gas and pressure treatments on red color extraction, and effects of massive yeast inoculations to increase fermentation rates.

C. S. Ough is Assistant Specialist in Viticulture, University of California, Davis.

M. A. Amerine is Professor of Enology, University of California, Davis.

Study on

MOSQUITO FLIGHT

A study of mosquito flight habits has been initiated at Davis. The research is aimed particularly at the principal mosquito vector of encephalitis in California. Rice fields are major sources of these mosquitoes during the summer, and evidence will be obtained on the travel of marked specimens from rice fields to large centers of population. It has been commonly supposed that the mosquitoes in question do not fly far in terms of miles, that they follow wind currents, that flight is favored by periods of high humidity, and that males have a very restricted flight range. These ideas need to be verified or disproved, and a program has been planned to accomplish this. Wind, temperature and humidity will be measured continuously after dye-marked mosquitoes, reared in rice-field areas, are liberated. Light-traps, shelter-traps, and bait-traps will be used in recovery of the insects.—*Richard M. Bohart, Dept. of Entomology, Davis.*

AZALEA ROOT ROT

Continued from preceding page

growth too advanced for proper shaping. Most of the rejected plants were large, vigorous, and deep green, but their ragged, open appearance made them unsuited for market. They were considered to have no dollar value. Hexe, being more compact, was only lightly pruned, and any subsequent development was not affected.

In the first year, only the growth curves of Sweetheart produced at Los Angeles and growing in methyl bromide-treated media diverged pronouncedly from the controls. By February 7, 1958, the Sweetheart plants in the methyl bromide plots were nearly twice the size of those in the control plots. Unfortunately, they were pruned to almost the same size as the untreated series. On May 15 the plants in two series were nearly the same size, yet the Los Angeles Sweetheart plants should have been much larger. Later Los Angeles Sweetheart again became larger, but not so much larger as in the first season. Hexe and the grower-produced Sweetheart were not affected by the pruning. If the Los Angeles Sweetheart plants had been handled in accordance with their tremendously increased initial growth rate, there seems little doubt that the dollar value at harvest time would have been commensurate with that obtained from the Los Angeles stock of Hexe.

Azalea root rot, most weeds, and the parasitic nematodes are controlled by planting pathogen-free stock in soil treated with methyl bromide gas—one pound per 100 square feet. To obtain maximum benefits, however, the increase in growth obtained may necessitate a change in cultural practices.

D. E. Munnecke is Associate Professor of Plant Pathology, University of California, Los Angeles.

P. A. Chandler is Laboratory Technician in Plant Pathology, University of California, Los Angeles.

J. L. Bivins is Farm Advisor, Santa Barbara County, University of California.

S. A. Sher, Department of Plant Nematology, University of California, Riverside, made the examinations of soil samples for the presence of nematodes.

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