

TECHNICAL NOTES

For Oregon Wine Growers and Wine Makers

Oregon State University

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Cooperative Extension Service

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Boron deficiency, boron toxicity, low potash, and low copper are some problems showing up in grape plantings. OSU extension now offers a leaf analysis of grape plants as part of its diagnostic service. Details of how to take a sample and sample kits are available at your county extension office.

A complete analysis costs \$10.00 and includes analyses of nitrogen, phosphorous, calcium, potassium, magnesium, boron, manganese, iron, copper, zinc, and aluminum.

Boron toxicity is evidenced by a downward puckering, wrinkling and cupping of leaves accompanied by necrotic black or brown specks near the leaf margins. These often coalesce and become continuous from the margins inward.

A deficiency of boron affects terminal leaves of primary shoots and causes: death of the primary shoot tip followed by numerous laterals that may appear normal; abnormally short internodes near the tips of primary shoots; a chlorosis in some varieties (almost white) later turning to red. Necrotic areas in the tendrils and swollen areas resembling lesions in terminal areas of primary shoots are symptoms that may appear in vegetative plant parts. A light fruit set, flower clusters drying up, numerous "shot" berries or seemingly normal set that shatters badly in midsummer or with moisture stress are symptoms affecting fruiting.

Potassium deficiency appears in early summer and shows up on leaves in the middle part of shoots. The first symptom is a fading of color at the leaf margin. This progresses into the area between veins. Leaves become pale green with margin burning and upward or downward curling of the margins. Plants with heavy crops may defoliate prematurely and berries may fail to ripen or ripen unevenly. Corrections of K deficiencies may require as

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long as two years to be effective, thus it is of some importance to detect the problem early.

Copper deficiencies are rare because of copper containing fungicides that are used however we have had some samples showing as little as 6 parts per million of copper in leaves. Deficiency levels are reported at 4 parts per million. Symptoms are poor root development, small pale-green leaves short internodes, reduced yield and rough bark. Correction may require two years.

Growers should be on the alert for thrips. Several species may attack grapes, and there is evidence that there are plenty of the insects around on grasses and weeds as well as crops. The pest is small, ranging from 1/50 to 1/25 of an inch in length. Damage is done by both sucking and rasping of grapes and tender vegetative tissue. Symptoms include flowers that fail to set, grape tissue that deforms, dries up and cracks and silvering, russetting and bleaching of surfaces of grape stems and leaves. Eggs deposited in grapes cause a "halo spot" type of injury. Tender growing points and young leaves may remain small, cupped and burned at margins and between veins when attacked by thrips.

There may be several generations of thrips each year with a recycling of the population at 25 to 30 day intervals. Chemicals for control are Diazinon or Malathion.

Wine deacidification project is expanded. The studies that Dr. Hoya Yang has been conducting on use of acid-reducing yeast (*Schizosaccharomyces*) are being intensified and expanded as a result of a grant received from the Pacific Northwest Regional Commission. Now helping Yang is Chuck Jones, Research Assistant, who has a BS degree in fermentation science from University of California at Davis. Prior to coming here, he was for the past two vintages staff enologist at the Robert Mondavi Winery in Oakville, California.

The project is under the guidance of the Wine Research Advisory Council made up of three members from Oregon wine industry (Bill Fuller, Dave Lett, and Dick Sommer), one member from Washington wine industry (Mike Wallace), one member from Washington State University (Dr. Charles Nagel, and two members from Oregon State University (Dr. Hoya Yang and Dr. Paul Kifer).

Wine from whey, a by-product of cheese manufacturing, is another funded research project at OSU. About half of the whey produced in this country--some 12 billion pounds--is at present simply discharged as a waste. To investigate the wine way of whey utilization, the U.S. Environmental Protection Agency granted Dr. Hoya Yang and Dairy Extension Specialist Floyd Bodyfelt, \$39,000.

About 90% of the milk used in cheese manufacture ends up as a thin, pale yellow liquid known as whey, which has many of the constituents of the original milk beverage, but lacks an easily fermentable carbohydrate. Proper addition of a fermentable carbohydrate, wine yeast, and a week's time result in a raw, sharp-edge wine, which mellows on ageing for several months to a new type of table wine. Whey wine may also be used as a base for flavored wines.

Hoya Yang's Report No. 4 on Wine Testing accompanies this issue of Technical Notes. The ten samples tested were young wines of 1974 vintage, which was a good year here in Oregon. The tasters were divided into two classes: 6 winemakers and 73-81 other tasters (not every taster tasted all ten samples). One tentative conclusion is that use of acid-reducing yeast produces no significant objectional taste.

It is also of interest to note the wide range in scores for each wine--an average spread of 9 points for the winemakers and 16 points for the other testers using the California 20 point scoring system.

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