Grape Growing and Cultivar Review of the Pacific Northwest

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The States of Washington, Oregon, Idaho and the Province of British Columbia in Canada comprise the Pacific Northwest. The Pacific Northwest is becoming an important grape growing region. The grape areas in this region have many similarities in soil, climate and varieties. Commercial grapes in these states are grown in the interior valleys. Low rainfall, plenty of sunshine and frost-free days during the growing season make this region ideal for growing grapes. However, low winter temperature dropping to −15°F makes grape growing hazardous in certain years.

In the coastal areas, climate is mild to moderate with high rainfall. Low temperatures due to cloudy weather and moderating influence of the ocean and low sunshine do not make these areas ideal for grape production. A limited acreage of grapes exists on the coast, with many small-scale and backyard grape plantings.

Washington

Washington holds a prominent position in the U. S. Grape industry. Currently, Washington and New York each produce 4.5% of the total tonnage of grapes in the U. S. Washington is a leading Concord grape producing state and in 1977 produced more grapes, especially Concord, than New York. (5)

The State of Washington is subject to a wide range of topographic and climatic conditions. The Cascade mountains divide the state and greatly modify the weather of the eastern part of the state. Central Washington is semi-arid and is irrigated mostly by the Columbia River Basin projects. The interior valleys have low rainfall (6″ to 8″) and abundant sunshine during the growing season (April-October). Most of the commercial grape acreage is located in Benton, Franklin and Yakima counties in Eastern Washington (2). According to the classification of areas of California on the basis of accumulated heat units (12), most grape areas in Yakima Valley could be classified as Region I (less than 2500) or Region II (2500 to 3000 accumulated heat units). Soil types range from well-drained, shallow, fine sandy loams to coarse, deep silt loams. The frost free period during the growing season ranges from 160 to 200 days. The winter temperatures in most years drop to 0°F and infrequently to −10 to −20°F. Southeastern slopes are preferred for less hardy wine grapes for good air drainage and exposure to sun late in the season. The valley floors are used for growing Concords.

The climate in western Washington, west of the Cascade Mountains is generally cool and moist. Because of the westerly winds from the Pacific Ocean a maritime climate exists. Temperature is the main limiting factor to grape production in coastal areas. Climate favors development of severe mildew and other fungus problems. Grapes are grown only to a limited extent in Western Washington

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because heat units are not sufficient for good maturity of most commercial varieties. Since accumulated heat units range from 1400 to 1700, southern and western slopes are preferred. Only the very early varieties are grown. Grape cultivars such as Island Belle (Campbell Early) have been grown commercially but because of lack of market and low quality wines produced from this variety, acreage is decreasing (2, 13).

There are 24,000 acres of grapes in Washington, 20,000 of these are Concord and approximately 4,000 acres are European grapes (*Vitis vinifera*). About 5% of the Concord grape acreage is nonbearing. Washington is the leading Concord grape producing state in the nation; 90% of its production and 84% of the acreage consists of this cultivar. On a relative basis, the European type grapes have expanded slightly over six-fold from 1967 to 1978, while other grapes have doubled in total acreage over the same time period (5).

There are 33 different cultivars of European types grown, but only 10 cultivars had over 100 acres (Table 2). All other European types had less than 50 acres. European hybrids are a minor type of grape produced in Washington. In total, they account for only 78 acres with a decreasing trend in acreage. Foch is the leading cultivar with 30 acres. The remaining European hybrid acreage is scattered among the various Seibels.

There are 12 bonded wineries in Washington with a production capacity of 2,700,000 gallons. The wine grapes grown in Washington are used by wineries in Oregon, Idaho and British columbia. Nearly 50-60% of the grapes crushed in Oregon wineries are grown in Washington.

Oregon

The European-type grape dominates the grape acreage in Oregon.

Table 1. Grape acreage in Oregon, Washington and British Columbia.

		Acres
Oregon		
	European Grapes	1,505
	Concords	100
	Total	1,605
Washington		
	Concords	19,800
	European Grapes	3,900
	American Hybrids	1,067
	European Hybrids	78
	Total	24,845
British Columbia		
	French Hybrids	2,600
	European Grapes	320
	Concord	60
	Total	2,900

Most of the grape acreage is in western Oregon. The area under grapes is expanding at a very rapid rate. In 1973 there were about 460 acres of which 60 acres were bearing (4). Currently it is estimated that there are 1,500 acres out of which 500 acres are bearing (11). The Concord acreage is less than 100 acres.

Almost all the grapes grown are without supplemental irrigation and on own roots. The root louse phylloxera is a potential hazard for Oregon's grape industry (10). There is need for research on phylloxera resistant rootstocks. The vineyards are generally small ranging from 5 to 40 acres. Yields are generally low, ranging from 2.5 to 4 tons per acre. Heat summation indexes range from less than 1,800 to 3,000 degree days (1, 3). The length of the growing season varies from 150 to 200 days or longer (1). Most Oregon vineyards are planted between 300 to 1,000 ft. above sea level. There are two major problems related to climate: 1) rains and cool weather occurring during bloom and fruit set, and 2) rain at harvest resulting in fruit

Table 2. Grape cultivars and acreages in Washington, Oregon and British Columbia.

Cultivar	Acreage
I. Washington	
Concord	19,800
American hybrids	
Niagara	801
Campbell Early	196
White Diamond	70
European hybrids	
Foch	30
Aurora	15
Baco	10
Others	23
European grapes	
Red or Black	
Cabernet Sauvignon	561
Grenache	280
Merlot	236
Gewurztraminer	220
Pinot noir	110
Pinot noir (Gamay Beaujolais)	28
White	
White Riesling	821
Chenin blanc	337
Chardonnay	316
Semillon	210
Muscat blanc	71
II. Oregon	
European grapes	
Red or Black	
Pinot noir	500
Cabernet Sauvignon	50
Merlot	50
White	
White Riesling	350
Chardonnay	270
Gewurztraminer	235
Others (Sauvignon blanc, Semillon, Sylvaner)	100
III. British Columbia	
American hybrids	
DeChaunac	560
Okanogan Riesling	610
Foch	605
White Diamond	186
Verdelet	149
Chelois	90
Rougeon	145
European grapes	
White Riesling (Johanesberg Riesling)	68
Ehrenfelser	39
Chenin blanc	24
Gewurztraminer	22
(Chardonnay, Semillon, Sauvignon blanc, Pinot noir, Merlot, Cabernet Sauvignon, Müller Thürgau, etc.)	
Concord	55

splitting and bunch rot. The best grape-growing areas are found west of the Cascade Mountains. The important grape growing areas are: Josephine-Jackson County, Douglas County, South Willamette Valley, North Willamette Valley, and Wasco County in the vicinity of The Dalles (1, 11). There are 25 wineries in the state.

Several wine cultivars are grown. Pinot Noir, Cabernet Sauvignon, Merlot (reds), White Riesling and Gewurztraminer (whites) are among the more important cultivars having an area of more than 100 acres. In addition Müller Thürgau, Early Muscat, Pinot Gris, Chardonnay, Cabernet Franc, Sauvignon blanc and Sylvaner are also grown.

British Columbia

The Okanagan Valley, located in the south central part of British Columbia is an important grape growing region for western Canada. It is located south of 50° 15′ latitude, extending from the United States border north above Kelowna to Vernon. The region is dominated in the north by Lake Okanagan, a large north-south oriented lake which provides a moderating influence on the climate dur-

ing the summer and winter when not frozen. The climate is warm and dry in the summer, cold and fairly dry in the winter. Precipitation ranges between 6 and 14 inches. Heat units are estimated between 1,600 and 2,800, with the valley being warmer and drier to the south. In the south, vineyard acreage is concentrated between Oliver and Osoyoos, and in the north between Westbank and Kelowna. Most vineyards in the south are on the east side of the valley with west and southwest exposures. Several are also located between Peachland and Kelowna on the northwest side with southeast exposure. Vineyards in the Kelowna-Westbank area are located on the north and south side of Okanagan Lake giving them a northern and southern exposure. Vineyards are usually elevated above the valley floor and on slopes, resulting in longer growing seasons avoiding frost pockets. There are limited plantings in coastal regions mostly supplying local needs (home garden and hobby).

There are about 3,000 acres under grapes in British Columbia, consisting mostly of French hybrids for wine (10). The grape acreage in British Columbia has been increasing at a slow rate during the last 5 years. The excellent markets for wines in Canada have been responsible for the rapid change of varieties in grape acreage. Foch (Kuhlman 188-2), DeChaunac (Seibel 9549) and a white, Okanagan Riesling (unknown origin but believed to be a true *Vinifera*), comprise most of the acreage, with limited acreages of Verdelet, Baco Noir, Rougeon and other direct producers. Okanagan Riesling accounts for about 30% of the total acreage, with Foch and DeChaunac making up the bulk of the remainder. European grapes, *Vitis vinifera*, total about 300 acres, most of which have been planted since 1976. The leading varieties are White Riesling, Ehrenfelser and Gewürztraminer with small plantings of Pinot Gris, Pinot Auxerrois, Scheurebe, Chenin blanc and others. Most plantings are 15-20 acres. Some new White Riesling plantings have been grafted on Phylloxera resistant rootstocks such as SO_4 and Teliki selections 5C, 5BB and 125AA (10).

British Columbia is also experimenting with several varieties and clones imported from Germany. There is a project to determine the potential for cultivation of white seedless table grapes. Interlaken Seedless and Himrod appear to be promising.

Idaho

Idaho has about 100 acres of wine grapes. Test plots established at Lewiston, Kimberly, Nampa, Twin Falls, and Slate Creek have shown that wine grapes can be successfully grown in certain areas of the state. The growing conditions in these areas (Snake River Valley) are similiar to the growing conditions in Washington. There is one winery in the state. There is a limited potential for increasing wine grape acreage in Idaho (6).

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Grape Variety Acreage in Arizona and California

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Arizona[2]

Grape production in Arizona is confined to early table grapes produced in a hot, dry desert climate. The total acreage has not varied much during the last decade. The acreages for 1978 are given in Table 5. Thompson Seedless is the leading variety, followed by Perlette. Maturity is somewhat later than in California's Coachella Valley and the threat of rain damage during harvest is more likely.

There are two growing regions, one near Yuma, the other near Glendale in Maricopa County, northwest of Phoenix. Value of the crop was about 13.5 million dollars in 1978.

California[3]

For statistical purposes, grape varieties in California are classified according to their traditional use; as wine, raisin, or table (fresh fruit). Of the total 645,510 acres, 327,132 acres are wine varieties (50.7 percent), raisin varieties occupy 250,734 acres (38.8 percent), and table varieties 66,000 acres (10.2 percent). Included in the total are 1,037 acres of field-planted rootstocks yet to be grafted (1.5 percent). In the tables presented, total acreage is given for 1969; the 1978 data is segregated as bearing or non-bearing. Non-bearing are the vines planted in 1976, 1977 and 1978 and reflect the most recent planting trends. The largest increase has been in the wine grape sector, where acreage has tripled in the last ten years.

By far the most important single variety is the multipurpose Thompson Seedless, which in 1978 occupied 36.6 percent of the total grape acreage. The annual diversion of this huge seedless grape crop from one use to another is the bane of all forecasters of grape economics. Traditionally classified as a raisin variety and averaging about 95 percent of California raisin production, it is also our most important table wine grape. In 1977, 22.8 percent of the wine crush was

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[2]Statistics on acreage from Arizona Fresh Fruit and Vegetable Standardization Service; April, 1978.
[3]Statistics on acreage from California Crop and Livestock Reporting Service, Sacramento, CA.