

# Progress Report of Table Grapes in the Northern Willamette Valley



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### **Abstract**

Because of interest in table or dessert grapes in Oregon, tests were started in 1968 to evaluate cultivars adapted to the northern Willamette Valley. Cultivars collected from different sources were planted on a site having a deep, fertile soil and an elevation of 98 feet. Grapes of *Vitis vinifera*, *Vitis labrusca*, and hybrids of these and other species were tested. Cultivar characteristics and percent soluble solids are listed.

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### **Disclaimer**

For clarification, trade names of pesticides have been used in this report. This does not imply endorsement of products named or criticism of those not included.

# Progress Report of Table Grapes in the Northern Willamette Valley

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Table or dessert grapes have been popular for years but interest in them has increased dramatically in the last ten years, primarily centered in fruit consumed out-of-hand or processed into juice and jelly.

Because of the increased activity in food preservation by drying, varieties that can be made into raisins are becoming popular, too, particularly among homeowners, other backyard gardeners, and "U-pick" operators.

Oregon State University does not have a grape breeding project so the cultivars (varieties) under test at the North Willamette Experiment Station are a collection from other areas with grape breeding and testing programs.

The major objective of this publication is to identify cultivars which have produced acceptable-quality fruit when grown in the Northern Willamette Valley. Included are cultivars of *Vitis vinifera*, *Vitis labrusca*, and hybrids of these and other species.

## Establishment Procedure

The first cultivars were planted in 1968 with stock rooted from dormant hardwood cuttings. Subsequent plantings have been from rooted hardwood cuttings or field grown plants.

Plants were established 5 feet apart in rows 10 feet apart. The number of plants per cultivar varied from one to three. Table 1 lists all cultivars, either tested or under test as of January 1, 1976.

## Site

The planting is on level ground 98 feet above sea level. The soil is a Willamette sandy shot loam

with about 3 percent organic matter and a pH of 5.8.

## Insect and Disease Control

Insects were not a problem, hence, no control measures were used. Powdery mildew (*Uncinula necator*) and gray mold (*Botrytis cinerea*) caused some damage in most years, particularly on cultivars of *V. vinifera*. Cultivars most susceptible to mildew were Cardinal, Early Muscat, July Muscat, and Perlette. Cultivars of *V. labrusca* and most of the hybrids were resistant to mildew.

Generally, for disease control only one or two sprays of wettable sulfur and/or Benlate were applied during the growing season.

## Weed Control

Chemical herbicides such as simazine (Princep), diuron (Karmex), and dichlobenil (Casoron) were used to control all weeds in a four-foot wide strip beneath the trellis. After good weed control was established, a single annual application of any one of the above herbicides in March at the registered rate was adequate for maintenance.

A six-foot strip of fine fescue lawn grass was maintained between the rows by regular mowing.

## Irrigation

The planting was sprinkler irrigated pre-bloom (early June) followed by two or three irrigations in July. To avoid interference with berry set, water was not applied during the bloom period. No water was applied after August 1. The turf was competitive for water and showed moisture stress after about 10 days from last irrigation. This competition for available moisture was very advantageous in hastening maturation of the grapes.

**Table 1. Origin, parentage, and characteristics of table grapes planted at the North Willamette Experiment Station.**

Cultivar	Origin-Parentage	Type <sup>1</sup>	Season <sup>2</sup>	Year planted	Color	Slip skin	Seeds	Remarks
Agawam	MA - Carter X Black Hamburg	L.	M	1968	Red	Yes	Yes	Large; tough skin; foxy <sup>*</sup> ; vigorous; light production. Discarded.
Athens	NYES - Hubbard X Portland	L.	L	1968	Blue	Yes	Yes	Med-large, foxy, large cluster, vigorous, fruit cracks.
Alden	NYES - Ontario X Grosse Guillaume	V.	VL	1969	Blue	No	Yes	Large; productive, slight muscat flavor, too late. Discarded.
Alwood	VPI - Fredonia X Athens	L.	M	1970	Blue	Yes	Yes	Good Concord type.
Aurora (S. 5279)	France - complex hybrid	V.	----	1975	White	----	----	Not thoroughly tested.
Black Rose	CA - (Damas Rose X Black Monukka) X Ribier	V.	VL	1973	Black	No	Yes	Not thoroughly tested.
Blue Star	USDA - Fredonia X Niagara	L.	ML	1969	Blue	Yes	Yes	Good Concord type.
Buffalo	NYES - Herbert X Watkins	L.	E	1970	Blue	Yes	Yes	Not foxy, vigorous, sweet, good quality.
Caco	NJ - Catawba X Concord	L.	M	1968	Red	Yes	Yes	Tough skin, foxy, productive, no bird damage, fair quality.
Captivator	TX - Bou. Lab. X Vin. Hybrid	L.	E	1968	Red	Yes	Yes	Tough skin, foxy, short bunch, fair quality.
Cardinal	CA - Flame Tokay X Ribier	L.	VL	1968	Red	No	Yes	Tokay type, large grape, large loose bunch (poor berry set), mildew.
Century I	VPI - (complex ancestry)	L.	----	1974	Blue	No	Yes	Not thoroughly tested.
Concord	MA - (E. W. Bull)	L.	L	1971	Blue	Yes	Yes	Heavy bloom, too late for consistent maturity.
Delaware	NJ - (P. H. Provost)	L.	E	1968	Red	Yes	Yes	Light production, small grape, small bunch, not foxy. Discarded.
Diamond	NY - Jacob Moore	L.	M	1973	Yellow	Yes	Yes	Tough skin, loose cluster, sweet, foxy, good.
Early Muscat	CA - Muscat Hamburg X Scolokerteck hiralynoje	V.	M	1968	White	No	Yes	Productive, crisp, susceptible to powdery mildew and bee damage.
Early Niabell	CA - Campbell Early X Niagara	L.	M	1968	Black	Yes	Yes	Large grape, watery, low quality. Discarded.
Elizabeth	Unknown	L.	M	1973	Blue	Yes	Yes	Not thoroughly tested. Concord type.
Fredonia	NYES - Champion X Lucile	L.	E	1969	Blue	Yes	Yes	Concord type, moderate production, big leaves, vigorous, tough skin, good.
Golden Muscat	NYES - Muscat Hamburg X Diamond	V.	VL	1968	White	No	Yes	Large well formed bunch, strong muscat flavor.
Himrod	NYES - Ontario X sultanina	V.	VE	1970	White	No	No	Small grape, large long bunch, very good. Suitable for raisins. Not foxy.
Interlaken	NYES - Ontario X Sultanina	V.	VE	1968	White	No	No	Small grape, small bunch, very good. Suitable for raisins. Not foxy.
July Muscat	CA - complex parentage	V.	VL	1969	White	No	Yes	Tough skin, long loose bunch, mildew susceptible.
Kendaia	NYES - Portland X Hubbard	L.	E	1968	Blue	Yes	Yes	Concord type, good bunches, heavy bloom, moderately foxy.
Keuka	NYES - Chass. Rose X Mills	V.	L	1970	Red	No	Yes	Very tight bunch, tough skin, acid, productive.

Cultivar	Origin-Parentage	Type <sup>1</sup>	Season <sup>2</sup>	Year planted	Color	Slip skin	Seeds	Remarks
Lady Patricia	IL - Complex French hybrid	V.	----	1975	White	No	----	Not thoroughly tested.
Lakemont	NYES - Ontario X Sultanina	V.	E	1968	White	No	No	Long well formed bunch, acid, tough skin, productive.
Monticello	VPI - complex parentage	L.	----	1974	Blue	Yes	Yes	Not thoroughly tested.
Moored	VPI - Fredonia X Athens	L.	L	1970	Red	Yes	Yes	Tough pulpy skin, foxy, productive, medium sized bunch. Good quality.
Niagara	NY - Concord X Cassidy	L.	VL	1968	White	Yes	Yes	Excellent bunch, tough skin, good production, foxy. Too late.
NY - 30454	NYES - SV 5-276 X NY 13911	V.	VE	1972	White	No	Yes	Medium sized bunch and fruit, sweet, slight muscat flavor. Good quality.
NY - 45625	NYES - Bath X Himrod	----	----	1974	Red		No	Not thoroughly tested.
Pearl of Csaba	Europe	V.	E	1972	White		Yes	Berries and bunches small, muscat flavor, mildew susceptible. Good muscat type.
Perlette	CA - Scolokerteck hiralynojc X Sultanina marble	V.	L	1969	White	No	No	Small grape, crisp, large bunch, mildew susceptible, serious bee damage.
Portland	NYES	L.	M	1968	White	Yes	Yes	Medium sized fruit, good quality, vigorous, productive, foxy.
Price	VPI - Complex ancestry	L.	----	1974	Black	Yes	Yes	Not thoroughly tested.
Ribier	France -	V.	----	1973	Black	No	Yes	Not thoroughly tested.
Rish Baba	Persia -	V.	----	1975	Yellow	No	----	Not thoroughly tested.
Romulus	NYES - Ontario X Sultanina	V.	VL	1968	White	No	No	Small berries, high acid, too late. Discarded.
Rosea Belle	USDA - Fredonia X Niagara	L.	M	1969	Red	Yes	Yes	Med-large, foxy, compact cluster, med-vigor, good quality.
Schuyler	NYES - Zinfandel X Ontario	V.	M	1968	Blue	Yes	Yes	Productive, sweet, not foxy.
Seedless Beauty	CA - Scolokerteck hiralynojc X Black Kishmish	V.	M	1972	Black	No	No	Small berries, very sweet, long bunches, good for raisins.
Seedless Concord	Seedling	L.	M	1972	Blue	Yes	No	Bunches and grapes small, good quality.
Seneca	NYES - Lignan Blanc X Ontario	V.	E	1968	Yellow	No	Yes	Berry oval; clusters medium, loose; sweet, spicy flavor.
Steuben	NYES - Wayne X Sheridan	L.	L	1970	Blue	Yes	Yes	Too late. Discarded.
Suffolk Red	NYES - Fredonia X Russian seedless	----	----	1975	Red	----	No	Not thoroughly tested.
Telegraph	Unknown	L.	E	1970	Red	Yes	Yes	Low quality, tough skin. Discarded.
Tetra	MO - Herbert X Worden	L.	VL	1968	Blue	Yes	Yes	Low production, fair quality. Discarded.
Utah Giant	UT - Tokay seedling	V.	M	1973	Red	No	Yes	Not thoroughly tested, promising.
Van Buren	NYES - Fredonia X Worden	L.	L	1968	Blue	Yes	Yes	Early, Concord type, good.
Worden	NY - Seedling of Concord	L.	L	1969	Blue	Yes	Yes	Concord type, tough pulpy skin, productive.

\* Foxy refers to Concord-like flavor characteristic of most *labrusca* grapes.

<sup>1</sup> V. = *vinifera* or European type; L = *labrusca* or American type. Many are hybrids and tend to resemble one species (V. or L.) closer than the other.

<sup>2</sup> VE = Very Early - minimum soluble solids of 16 by August 25.

E = Early - minimum soluble solids of 16 by September 5.

M = Medium - minimum soluble solids of 16 by September 15.

L = Late - minimum soluble solids of 16 by September 25.

VL = Very Late - minimum soluble solids of 16 or less after October 5.

### Fertilizer

Two broadcast applications of fertilizer were applied: 500 pounds per acre of 10-20-10 in early March and 100 pounds per acre of ammonium nitrate in early May. This type of application was adequate for both grapes and the grass sod.

### Pruning and Training

The basic trellis consisted of 7-foot posts, 20 feet apart. Heavy (No. 9) galvanized wires were attached to the top of the posts, 60 inches above ground, and at the 42-inch level.

A single shoot was vertically trained to a 1 inch x 1 inch x 48-inch stake the first and second years. By the end of the second growing season, a single cane was long enough to be secured to the top wire. Side shoots near the trellis wires were secured by tying loosely with string. During pruning the second winter, these side shoots were stubbed back leaving two or three buds which were used to develop the four-cane Kniffen system of training. Dormant pruning of older vines consisted of cutting back to leave four one-year-old canes of moderate vigor each having about 10 buds. Also, four short spurs each with one or two buds (renewal spurs) were left near the base of each cane. Shoots that developed from these renewal spurs were used as the 10-bud canes the following year (Figure 1). This system was "standard" for all cultivars although some undoubtedly would respond to variations, ie., more or fewer buds per cane.

### Evaluation of Soluble Solids

An indication of maturity are the soluble solids (the percent of the juice which is principally sugar).

These were determined weekly starting in late August or early September depending on the relative "earliness" of the season (Table 2). Single grapes from the apex of five randomly selected bunches were picked for analysis. A composite sample of juice from the five grapes was placed on a direct-reading refractometer and the percent soluble solids recorded.

No attempt was made to determine acidity although pH and the acid-sugar ratio is important in the "sweetness" to taste. (Lakemont develops relatively high sugar early in September but because of high acid, the fruit never tastes sweet, conversely, Van Buren is slow to develop sugar but apparently is low in acid because the fruit tastes sweet before mid-September, hence could be classified as "early.")

### Characteristics of Cultivars

The major characteristics which include color, seeds, flavor, vigor, relative maturity, etc., are recorded in Table 1. Also included are the origin and parentage of most cultivars.

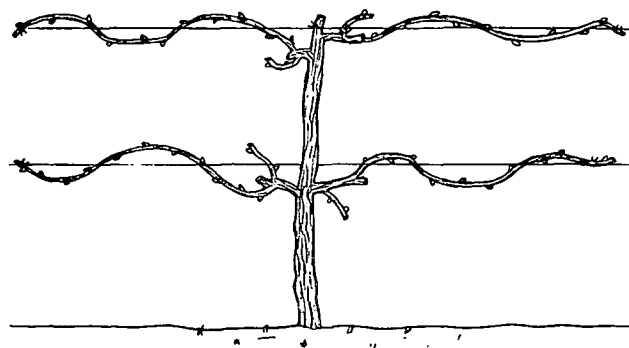


Figure 1. Four-cane Kniffen training system.

**Table 2. Refractometer values of table grape cultivars at the North Willamette Experiment Station, Aurora, Oregon, 1971-75.**

	Total Soluble Solids ( %) at various dates <sup>1</sup>						
	9-4	9-9	9-17	9-25	9-30	10-7	10-14
<i>Blue Type</i>							
Schuyler	-----	15.2	16.3	17.9	18.3	18.9	-----
Early Niabelle	-----	13.9	16.1	17.9	18.1	18.2	-----
Van Buren	12.4	14.6	14.7	16.1	17.7	17.3	-----
Seedless Beauty	15.2	15.0	16.9	16.8	17.5	-----	-----
Seedless Concord	-----	-----	17.5	19.9	21.8	24.2	-----
Buffalo	-----	16.2	17.0	20.1	20.3	20.2	-----
Fredonia	-----	16.8	17.9	18.3	18.4	18.2	-----
Kendaia	16.3	17.9	18.8	20.7	21.2	22.2	-----
Elizabeth*	-----	-----	16.0	20.4	20.2	20.2	-----
Worden	-----	14.7	15.6	17.5	18.2	18.6	-----
Blue Star	13.2	14.6	15.8	18.7	19.1	-----	-----
Alwood	-----	14.5	16.3	17.7	17.8	18.2	-----
Athens	-----	15.8	14.6	16.3	17.6	-----	-----
Alden	-----	11.9	12.6	14.5	15.0	15.0	-----
Ribier*	-----	-----	10.4	11.8	12.4	12.8	15.2
Black Rose*	-----	-----	-----	7.1	9.5	10.2	10.4
Concord	-----	14.0	14.7	16.3	17.2	17.8	18.4
<i>Red Type</i>							
Delaware	16.3	18.2	19.3	20.9	22.1	-----	-----
Captivator	16.4	17.3	19.0	20.3	21.2	-----	-----
Rosea Belle	-----	15.7	17.2	19.1	20.3	21.8	-----
Caco	14.0	16.0	16.9	18.7	19.0	-----	-----
Moored	-----	14.4	14.7	16.5	16.9	18.5	-----
Utah Giant	13.4	16.2	17.0	17.9	19.0	-----	-----
Cardinal	-----	-----	14.1	14.1	14.7	17.4	-----
Cardinal (HT)* <sup>2</sup>	-----	-----	13.6	14.8	15.5	16.2	-----
Keuka	-----	-----	16.1	16.3	16.7	-----	17.0
<i>White or Yellow</i>							
NY-30454	19.0	21.1	23.8	25.7	26.2	-----	-----
Pearl of Csaba	16.1	16.5	19.8	21.5	22.3	-----	-----
Interlaken	19.4	20.2	21.7	22.1	22.5	-----	-----
Seneca	17.9	19.8	21.6	23.0	23.1	-----	-----
Diamond*	-----	15.0	17.0	18.5	19.5	-----	-----
Portland	-----	15.4	17.1	18.5	20.1	-----	-----
Himrod	17.2	18.0	19.2	21.3	22.4	-----	-----
Perlette	14.0	14.2	15.6	17.1	19.0	-----	-----
Lakemont	-----	17.3	18.0	18.8	19.6	19.9	-----
July Muscat	-----	-----	13.0	13.5	15.3	17.5	-----
Early Musat	13.9	14.9	16.2	17.6	19.1	-----	-----
Niagara	12.4	13.5	14.9	15.0	16.1	17.4	-----
Golden Muscat	-----	-----	14.2	14.6	15.6	16.6	-----
S-9110	-----	-----	13.8	14.8	15.4	16.0	-----

<sup>1</sup> Average for 2 or more years except those noted by \* which represent only 1 year's data.

<sup>2</sup> Heat-treated stock.