# A Review of Cold Climate Grape Cultivars

## Introduction

There has been interest in growing grapes in the upper Midwest and other cold climate regions of North America. One of the problems growers face in these regions is selecting cultivars (cultivated varieties) that will withstand severe winters, mature in short growing seasons, and be productive. As grape acreage increases in cold climate regions, too often cultivar selections are being made based upon testimonial or anecdotal information. With the high costs of vineyard establishment there is an increasing need for a standard reference to assist growers in selecting best adapted cultivars. According to Dr. Gail Nonnecke at Iowa State University; "When selecting grape cultivars to grow, one must consider the characteristics of the fruit as well as the vine. The vines have to be adapted to local growing conditions and the fruit must meet our needs."

This project was undertaken to develop a reference that will be useful for selecting grape cultivars to plant in cold climates. Such a reference should document and standardize origin, viticulture characteristics, disease and pest resistance, cold hardiness, and wine quality characteristics.

Specific objectives of the project were to assemble information on:

**The origin of the cultivars including**: synonyms; pedigree; county or state of origin, breeder and institution; date of cross and release or introduction into the U.S.; and type.

**Viticultural and fruit characteristics including**: growth habit and vigor; time of bud break and productivity on secondary buds; days from bloom to harvest; specific cultural concerns; and cluster and berry characteristics.

**Pest concerns including**: a standardized ranking of susceptibility to disease; specific pest concerns, sensitivity to sulfur, copper and other pesticides; and sensitivity to grow regulator herbicide drift (2,4-D and dicamba).

**Wine quality and characteristics including**: suitability for wine making; styles of wine made from the cultivar; aroma, balance, body and taste characteristics; typical soluble solids, pH and titratable acidity (TA) at harvest; harvest notes and other specific concerns.

**Cold hardiness including**: a standardized hardiness rating, length of growing season and susceptibility to frost and winter injury.

## Methods and Procedures

The cultivars that have been included in this study were selected on the basis of their adaptability to the environmental limitations of cold climates. Cultivars were included because they have the potential, are currently being grown, or have a history of being grown in cold climates. Those selected have been recognized as important cultivars for their individual merit or for their value in breeding.

This publication was developed as a reference resource. For this reason, information was cited from the most original source obtainable, preferably a cultivar release article or patent. When that was not possible, literature published as close to the date of release or introduction was used, or was deferred to those having experience with the cultivar.

Every effort was made to cite literature from the most original source, such as cultivar release bulletins from universities; release to trade notices in industry journals; patents (when applicable); annual grower reports; personal communications with breeders, those with working knowledge of the cultivars or were familiar with its history. Some clarification of synonyms, pedigree and type was also obtained from the National Grape Registry. Other supporting information came from university research reports, educational handouts or resource guides prepared by Midwest and Easter U.S. viticulturists. Several viticulture books and websites were also used.

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HORT 3040 Revised May 2016

Some of the environmental limitations of cold climates are:

### Cold Tolerance: Winter

Cold hardiness is determined by the ability of the cultivar to withstand the lowest temperatures expected in an area. This can be influenced by the vine's suitability to the site during the growing season. The general health of the vine and factors such as crop load, pest and disease control will impact survivability.

### Late Frosts: Spring

Cultivars that have an early bud break are susceptible to late spring frosts. Although some cultivars are capable of producing a crop on secondary buds, they may prove to be unsuitable due to reduced productivity.

### Length of Season

Although a cultivar may be capable of surviving cold winters and tolerating a late spring frost, it is also important that the length and relative warmth of the season be considered. Unfortunately some desirable cultivars require more growing time than a short season growing area will allow.

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# Alden

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**Synonyms**: NY 13035 (1, 3).

**Pedigree**: 'Ontario' x 'Grosse Guillaume' (1, 3).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University. Developed by Richard Wellington (1, 3, 6).

**Cross/Selection/Test**: Cross made in 1925; selected in 1932; tested as NY 13035 (1, 3, 6)(6).

**Introduction**: 1952 (1, 3, 6).

**Type**: Interspecific hybrid (includes V. labrusca and V. vinifera) (3).

**Color**: Black

**Berry**: Large and ellipsoidal (1). Average berry weight is 4.8 g/berry (4). Slater et al. (6) described the berries as reddish-black in color with a heavy bloom, causing the fruit to appear nearly black. They also report that the skin is medium in thickness; moderately adherent and occasionally cracks (although not seriously). They added that the flesh is firm, meaty and tender with a pleasant flavor.

**Cluster**: Medium size (.48 lb/cluster average) (2); short, conical and shouldered; usually loose, but occasionally has medium compactness (6).

**Viticultural Characteristics**: Slater et al. (6) described the vine as strong and vigorous with a procumbent growth habit. They reported that the vines are productive, with a tendency to overbear and cautioned that overloaded vines may not mature their fruit, resulting in low sugar and quality. Also, overloaded vines may fail to recover normal vigor, so careful pruning is essential. Reisch et al. (4) recommend cluster thinning to increase cluster compactness and permit even ripening. One hundred days from bloom to harvest (2). It is adapted to a wide range of soils (1).

**Disease/Pests**: Reisch et al (4) reported 'Alden' as rated as moderately susceptible to Botrytis bunch rot, and powdery mildew; slightly susceptible to crown gall and downy mildew; and it is uncertain if it is susceptible to Eutypa dieback and Phomopsis cane and leaf spot. They added that it is not sensitive to injuries from sulfur applications.

**Wine Quality and Characteristics**: Not typically used as a wine grape.

**Season**: Midseason (2).

**Cold Hardiness**: Moderately hardy (-10° F to -20° F) (2, 4).

**Use**: Table, juice, wine and raisin. Recommended for home use and local markets (1).

**Notes**: Among the largest of American cultivar grapes. Comparatively low acid so it tastes sweet at lower sugar than other varieties (5).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Alpenglow

Bruce Smith

**Synonyms**: ES-2-8-1 (5).

**Pedigree**: ES 5-14 x 'Swenson Red' (6).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson and named by Peggy Backup circa 2001 (4).

**Introduction**: 1987 (3).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (6).

**Color**: Red (5).

**Berry**: Medium sized (6). Light red, only turning color when they receive sunlight (5).

**Cluster**: Long and loose (6).

**Viticultural Characteristics**: Moderately vigorous (1). Ripens extremely early; good fruit set and production; early wood ripening (5).

**Disease/Pests**: Unknown

**Wine Quality and Characteristics**: The white wine has been described as light and neutral with very low acid and low sugar (1). Suitable as a blending component to lower the acidity of high acid wines (1, 5).

**Season**: Early (by September 1 in Minnesota) (5).

**Cold Hardiness**: Hardy (to -20° F) (1).

**Use**: Wine

**Notes**: Elmer Swenson considered this the hardiest cross to come from the crossing of ES 5-1-4 x 'Swenson Red' (6).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Aurore

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**Synonyms**: Seibel 5279, Aurora, Feri Szoeloe, Financ Szoeloe, Redei (8).

**Pedigree**: Seibel 788 x Seibel 29 (2, 5)

**Origin**: Aubenas, Ardeche, France; bred by Albert Seibel (2).

**Cross/Selection/Test**: Cross made circa 1860.

**Introduction**: Introduced into the United States during the 1940's; into Canada in 1946 (2) .

**Type**: Interspecific hybrid (including V. lincecumii; V. rupestris; V. vinifera) (8).

**Color**: White

**Berry**: Brooks and Olmo (2) describe the berry as medium in size and spherical in shape; skin golden to light pink; pulp soft and juicy. Some say it has a foxy flavor in the East, but in the West it is quite neutral (10). The berries are thin skinned and prone to splitting when exposed to rainfall before full ripeness (7). They also tend to fall off at maturity (5).

**Cluster**: Long (20 cm); cylindrical (4) and loose (2, 5).

**Viticultural Characteristics**: Domoto (4) listed 'Aurore' as productive and vigorous with a procumbent growth habit. He indicated that bud break is early and cluster thinning is not required.

**Disease/Pests**: 'Aurore' is reported to be highly susceptible to powdery mildew, black rot, Botrytis bunch rot and Eutypa dieback; moderately susceptible to crown gall, downy mildew (1, 3, 4, 9) and powdery mildew (1, 3, 4); and slightly susceptible to anthracnose and Phomopsis cane and leaf spot (1, 3, 4, 9). However, Reisch et al (9) and Domoto (4) rated it as highly susceptible to powdery mildew. Is is also listed as not susceptible to injuries from sulfur applications (1, 3, 4, 9) ) but is moderately susceptible to injuries from copper applications when applied under cool, slow drying conditions (1, 3, 4). Reisch et al (9) noted that damage by birds is a concern.

**Wine Quality and Characteristics**: Wine quality is poor and it is being replaced by interspecific varieties of higher quality (9). Said to have a slight foxiness when very ripe (5).

**Season**: Early (late August and early September in New York), before most other varieties are ripe (9). Well suited to areas with a short growing season.

**Cold Hardiness**: Moderately hardy (-10° to -15° F) (4, 9).

**Use**: Major use has been for bulk wine production, frequently blended with V. labrusca varieties (9). Sometimes used for juice (10), but not good as a table grape as berries tend to fall off at maturity and it is a poor shipper (5).

**Notes**: Named after the goddess of dawn (11). In the mid 1970's this hybrid was more widely planted across the eastern U.S. and in Minnesota that it is today (6).

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HORT 3040-3 Revised May 2016

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Baco Noir

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**Synonyms**: Baco No. 1 (in 1910), Bacoi, Bago, Bakon, Bako Speiskii, Baco 24-23 (7).

**Pedigree**: 'Folle Blanche' (V. vinifera) x V. riparia (2, 5).

**Origin**: Bilus, Landes, France by Francois Baco (2, 5).

**Cross/Selection/Test**: Cross made in 1902; tested as Baco 24 -23 (2).

**Introduction**: Brought to United States in 1951; Canada in 1955 (2).

**Type**: Interspecific hybrid (includes V. vinifera; V. riparia) (7).

**Color**: Black

**Berry**: Small in size and round in shape; skin black; soft pulp and herbaceous taste (5). Berries are high in acids but low in tannins (8).

**Cluster**: Small to medium; cylindrical and compact (2, 5).

**Viticultural Characteristics**: Domoto (4) described the cultivar as being very vigorous and having a semi-procumbent growth habit. He stated that early bud break makes it susceptible to injury from late spring frost damage and that cluster thinning is usually not needed. Galet (5) added that long cane pruning may be needed in order to obtain a satisfactory yield since the clusters rarely weigh more than .33 lb. Domoto (4), Nonnecke (8), and Reisch et al. (9) report that 'Baco noir' does best on heavy soils, growing well even in poorly drained soils. Reisch et al. (9) also added that excessive vigor often occurs on light soils, increasing the risk of winter injury.

**Disease/Pests**: 'Baco noir' is rated as highly susceptible to black rot and crown gall (1, 3, 4, 9); moderately susceptible to Botrytis bunch rot (1, 3, 4), Eutypa dieback and powdery mildew (1, 3, 4, 9) and slightly susceptible to anthracnose (1, 3, 4) downy mildew and Phomopsis cane and leaf spot (1, 3, 4, 9). Reisch et al (9) and Domoto (4) rated it as slightly susceptible to Botrytis bunch rot. It is reported as not prone to injuries from sulfur (1, 3, 4, 9) and it's unknown whether it's prone to injuries from copper (1, 3, 4). It is sensitive to attack by soil-borne virus diseases (9) and is attractive to birds (8).

**Wine Quality and Characteristics**: Highly acid and deeply colored wine that is often low in tannin content (9); sometimes said to have a herbaceous taste (5). Light to medium bodied, it blends well with varieties of less color (10). Regarded by some as a good if rustic substitute for Cabernet Sauvignon, particularly if given a suitable finish (such as oak); it's also capable of aging and sometimes requires it (6).

**Season**: Midseason (4)

**Cold Hardiness**: Moderately hardy (-10° to -15° F) (4)

**Use**: Often used for wine, arbor-type plantings (2)

**Notes**: Considered for trial only in upper Midwest (8)

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Reviewed by Paul Domoto, Gail Nonnecke, Department of Horticulture and W. Wade Miller, Department of Agriculture Education and Studies. 2008

Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Baltica

Tom Plocher

**Synonyms**: 'Hasansky Sladky', 'Hasanski Sladki' 'Hasan (Xasan) Sweet' 'Varajane Sinine' (1, 2).

**Pedigree**: Dalnyvostochyni #60 x Vitis amurensis (1, 2).

**Origin**: Hasan (Xasan), Primorsky Krai, Russia (1, 2). Developed by amateur breeder, A. K. Bous. Jaan Kivistik at the Rapina Agricultural College in Estonia, evaluated it for many years (2).

**Release**: Circa late 1950's or early 1960's (1, 2).

**Type**: Interspecific hybrid (including V. amurensis, V. labrusca, V. riparia and V. vinifera) (1).

**Color**: Blue

**Berry**: Small to medium sized berries (1, 2). Average berry weight is 2 g (2).

**Cluster**: Medium in size, weighing an average of 90 g (range 70-120 g) (1); long and slightly loose (2).

**Viticultural Characteristics**: Hart (1) reported strong but not excessive vigor and a procumbent growth habit.

**Disease/Pests**: 'Baltica' is quite disease resistant (1, 2), except for a moderate susceptibility to late season (post-harvest) powdery mildew (2).

**Wine Quality and Characteristics**: Hart (1) stated that 'Baltica' makes a fruity red wine. Plocher and Parke (2) added that the juice is clear, not red and in hot summer climates such as Minnesota, has just a slight hint of foxiness. 'Baltica' is best suited to light red wines (1) or rosé (2). Carbonic maceration (1) or semi-carbonic maceration and a yeast which encourages fruitiness, helps to yield decent wines. (2) The end result, according to Plocher and Parke (2) is a brilliantly colored carmine red wine with light body and an aroma of cherries and cherry blossoms, with no foxiness. They noted that the wines produced from 'Baltica' in very cool climates differ from those produced in hot summer places such as Minnesota. The cool climate wines are darker, fuller, and more complex.

**Season**: Early (1, 2).

**Cold Hardiness**: Very hardy (below -20°) F) (1, 2).

**Use**: Wine. Best suited to areas with very short or very cool growing seasons. Hart (1) noted that commercial production is possible, but flavor will keep it from mimicking vinifera wine styles. He added that it has potential as a backyard grape in areas with limiting climate.

**Notes**: It is one of a very few grape varieties that ripens sufficiently for winemaking in the extremely short growing seasons of Latvia and Estonia, Norway and Sweden (2).

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Reviewed by Paul Domoto, Gail Nonnecke, Department of Horticulture and W. Wade Miller, Department of Agriculture Education and Studies. 2008

Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Beta

University of North Dakota

**Synonyms**: N/A

**Pedigree**: 'Concord' x 'Carver' (V. riparia).

**Origin**: Minnesota. Bred by Louis Suelter in 1881 (4, 5).

**Type**: Interspecific hybrid (V. riparia; V. labrusca; V. vinifera) (4).

**Color**: Black

**Berry**: Small to medium; slipskin; tangy taste of a wild grape (5).

**Cluster**: Fairly compact.

**Viticultural Characteristics**: Very vigorous; semi-procumbent growth habit (1, 2). Domoto (1) also stated that cluster thinning is not needed.

**Disease/Pests**: Susceptible to foliar phylloxera and slightly susceptible to powdery mildew (2).

**Wine Quality and Characteristics**: Berries are small and acidic, not suited for winemaking (1). Wine from 'Beta' tends to be quite poor, but the jelly is very flavorful (3).

**Season**: Midseason (1)

**Cold Hardiness**: Very hardy (below -20° F) (1)

**Use**: Table, juice or jelly. May also be used as an arbor vine as vines can grow 20 feet long (5).

**Notes**: For decades, this cultivar was the most widely grown grape in Minnesota (3). . This cross was named after Louis Suelter's wife and pronounced "Bett-uh", but pronunciation of "Beta" is accepted and has become standard (2).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Bluebell

University of Minnesota

**Synonyms**: Minn. 158 (6).

**Pedigree**: 'Beta' x unknown variety of Eastern U.S. (likely V. labrusca) (6).

**Origin**: Excelsier, Minnesota. Bred by A. Wilcox at the University of Minnesota Fruit Breeding Farm. Selected in 1923 (6).

**Introduction**: 1944 (1)

**Type**: Interspecific hybrid (including V. labrusca and V. riparia) (6).

**Color**: Blue

**Berry**: According to Hemstad (3), berries are medium in size and have a dark blue slipskin. He also described the flavor as juicy with a pleasant, fresh flavor. Both Hemstad (3) and Marshall (5) noted that cracking of berries in wet fall seasons can be a problem.

**Cluster**: Medium clusters, somewhat loose (3); with a pronounced shoulder (5).

**Viticultural Characteristics**: Vigorous, with a procumbent growth habit (2, 5). Domoto (2) also indicated that cluster thinning is not needed. May show iron chlorosis on some soils where pH is above 7.0 (7).

**Disease/Pests**: Only slight susceptibility to black rot, Botrytis bunch rot, downy mildew and powdery mildew (2). Marshall (5) noted that anthracnose has been seen in very wet fall seasons.

**Wine Quality and Characteristics**: Not typically used for wine, but wine made from it is typically has very labrusca–like qualities (5).

**Season**: Early Midseason (early to mid-September) (2, 5) and is capable of hanging on the vine longer (5).

**Cold Hardiness**: Very hardy (below -20° F) (2).

**Use**: Table, juice, jelly.

**Notes**: Currently being rediscovered by growers and nurseries (4). Hemstad (3) indicated that 'Bluebell' does not ship or store well, but makes excellent pink juice and can also be used for jelly.

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# Brianna

Iowa State University

**Synonyms**: 7-4-76 (2, 5)

**Pedigree**: 'Kay Gray' x E.S. 2-12-13 (2)

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (2, 5).

**Cross/Selection/Test**: Cross made in 1983; selected in 1989 as a table grape and 2001 as wine grape (2). Named by Ed Swanson, Cuthills Vineyards, Pierce, NE in 2002 (5).

**Introduction**: 2001; not patented (2).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (2).

**Color**: White

**Berry**: Medium-large in size (2, 3) and round in shape; thick-skinned greenish-gold berries which turn gold when fully ripened (2).

**Cluster**: Medium-small tight clusters (3). The average cluster weight taken at four Iowa State University research vineyards in 2007 was .24 lb (4).

**Viticultural Characteristics**: Domoto (3) described 'Brianna' as being vigorous and having a semi-procumbent growth habit. Read (6) noted it as being easily managed in the vineyard. He reported that it is productive on secondary buds and cluster thinning is not necessary. Domoto(3) cautioned it is somewhat susceptible to 2, 4-D, moderately susceptible to dicamba and sensitive to endosulfan.

**Disease/Pests**: 'Brianna' is reported to be highly susceptible to crown gall (1); moderately susceptible to black rot and Botrytis bunch rot (3); and slightly susceptible to downy (1, 3) and powdery mildews (3). It is not sensitive to injury from sulfur applications (1), and it is not known if it is sensitive to injury from copper (1, 3). The foliage is not normally affected by leaf phylloxera (8).

**Wine Quality and Characteristics**: According to Ed Swanson (7), who named the cultivar in 2002, 'Brianna' can be made into a semi-sweet white wine with pronounced pineapple nose and flavor when fully ripe. He also noted that for light table wines with more grapefruit, tropical, and slight floral characteristics, 'Brianna' is best harvested between 3.2-3.4 pH. He added that grapes are high in pectin, and need extra enzymes for good juice yield.

**Season**: Early Midseason (3) (mid to late August in Iowa) (4).

**Cold Hardiness**: Very hardy (below -20° F) (3). Foliage seems to withstand frost periods better than most other hybrids (7).

**Use**: White wine, seeded table grape (3).

**Notes**: Becoming very popular in the upper Midwest.

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# Buffalo

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**Synonyms**: NY 10830 and Early Steuben (5).

**Pedigree**: 'Herbert' x 'Watkins' (1, 5).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station. Bred by Richard Wellington (1, 5).

**Cross/Selection/Test**: Cross made in 1921; selected in 1928; tested as N.Y. 10830 (1).

**Introduction**: 1938 (1, 5).

**Type**: Interspecific hybrid (includes V. labrusca; V. vinifera) (5).

**Color**: Black

**Berry**: According to Slater et al. (7) 'Buffalo' has medium sized berries (but can vary in size), which are spherical to slightly ellipsoidal in shape and reddish-black in color with heavy bloom. They also described the medium thick, tough slipskin as having a slight acidic flavor; and the flesh as greenish, translucent, tender and juicy with a sweet and spicy labrusca flavor. Sugar content can be high, with 23.4° Brix having been recorded.

**Cluster**: Medium to large in size; conical and shouldered; frequently long and usually loose but occasionally well filled (7). Average cluster weight as reported by Reisch et al. (5) was .31 lb.

**Viticultural Characteristics**: Slater et al. (7) described 'Buffalo' as vigorous and having a procumbent growth habit. They noted it is productive with a tendency to overbear. Brittleness of cluster rachises can be a problem (6). Eighty five days from bloom to harvest (2).

**Disease/Pests**: Reported to be highly susceptible to powdery mildew; moderately susceptible to downy mildew and Botrytis bunch rot; and slightly susceptible to crown gall (3, 6) Reisch et al. noted it has considerable resistance to black rot (6), but Double A Vineyards (4) rates it as moderately susceptible. Not sensitive to injuries from sulfur applications (3, 5) and unknown for copper (3).

**Wine Quality and Characteristics**: Not typically used for wine.

**Season**: Early Midseason (2).

**Cold Hardiness**: Hardy (-15° to -20° F) (3).

**Use**: Table, juice and jelly.

**Notes**: Fruit is of excellent quality, retaining its flavor even when harvesting is delayed, and keeps well in storage (6).

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# Cascade

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**Synonyms**: Seibel 13053 (1, 3, 6).

**Pedigree**: Seibel 7042 x Seibel 5409 (1).

**Origin**: Aubenas, Ardeche, France by Albert Seibel (1).

**Introduction**: 1938. Named by the Finger Lakes Wine Growers Association in 1970 (4).

**Type**: Interspecific hybrid (possibly V. rupestris and V. lincecumii) (8)

**Color**: Blue

**Berry**: Small, round and black (5).

**Cluster**: Medium to large; loose (6).

**Viticultural Characteristics**: Vines are vigorous, have a procumbent growth habit (1, 4) and are very productive (1). Cluster thinning may be needed (3).

**Disease/Pests**: 'Cascade' is rated moderately susceptible to Eutypa dieback, powdery mildew and Phomopsis cane and leaf spot; and slightly susceptible to black rot, Botrytis bunch rot, crown gall and powdery mildew (2, 3, 6). It is not sensitive to injuries from sulfur and it is uncertain if there is a sensitivity to copper or is susceptible to anthracnose (2, 3, 6). It is vulnerable to soil borne viruses and bird damage is often a problem (6).

**Wine Quality and Characteristics**: Wines are light red in color and body with low acidity (6). According to Whealy (8), 'Cascade' is not usually used as a varietal, but is capable of making a nice rosé or blush wine. He added that it blends well with other red hybrids, such as 'Baco noir' or 'Maréchal Foch'. It is heavily perfumed but agreeable (5).

**Season**: Early (August 15th in Virginia) (5). Ripens along with 'Maréchal Foch'(1).

**Cold Hardiness**: Moderately hardy (-10° to -15° F) (3).

**Use**: Wine, juice.

**Notes**: Because of its susceptibility to soil borne virus diseases and generally low wine quality, acreage has declined dramatically since 1975 (6).

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# Catawba

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**Synonyms**: 'Arkansas', 'Catawba Rosa', 'Cherokee', 'Fancher', 'Lincoln', 'Merceron', 'Michigan', 'Munipale Red', 'Omega', 'Red Muncy', 'Rose of Tennessee', 'Saratoga', 'Singleton', 'Tekomah', 'Tokay' (7).

**Pedigree**: Uncertain

**Origin**: The origin of 'Catawba' is not completely known, but it's been documented that John Adlum from the District of Columbia took cuttings in 1819 from the vineyard of Mrs. Scholl of Clarksburgh, MD (6).

**Introduction**: circa 1823 (6).

**Type**: Interspecific hybrid (including V. labrusca; V. vinifera) (7).

**Color**: Red

**Berry**: Hedrick et al. (6) consider the berries intermediate in size with an oval to roundish shape. They describe the color as a dull purplish-red, covered with moderate amount of lilac bloom; and the skin as rather thick and adhering to the pulp slightly with no pigment and having a slightly astringent taste. They add that the flesh is green, translucent and slightly tough to soft. Reisch et al. (8) noted the spicy flavored slipskin has a pronounced labrusca flavor.

**Cluster**: Hedrick et al. (6) describe the clusters as being medium to large in size; rather long and usually broad. They added that the clusters are nearly cylindrical to tapering; single shouldered to sometimes double shouldered; and rather loose to compact. Average cluster weight .26 lb (2).

**Viticultural Characteristics**: According to Domoto (3), 'Catawba' vines are moderately vigorous and have a procumbent growth habit. He added the vines are quite productive and recommends cluster thinning. 'Catawba' requires favorable sites with long growing seasons and may ripen too late for many areas (8), as it requires One hundred twenty days from bloom to harvest (2).

**Disease/Pests**: 'Catawba' is rated as highly susceptible to black rot, downy mildew and Phomopsis cane and leaf spot; moderately susceptible to powdery mildew and slightly susceptible to Botrytis bunch rot, crown gall and Eutypa die back (1, 2, 3, 8). It is also reported to be not sensitive to sulfur but somewhat sensitive to injury from copper when applied under cool, slow drying conditions (1, 2, 3, 8). Bordelon et al (1) reports that it is moderately susceptible to anthracnose. Reisch et al. (8) noted that it experiences foliar injury in areas where ozone pollution occurs.

**Wine Quality and Characteristics**: Tends to make somewhat "foxy" sweet white, red, rosé and dessert wines (5). Many Eastern wineries also make sparkling and ice style wines. High acidity may be a problem in some years (8), but this can be modified by blending with other wines (5). Early harvesting helps lessen the labrusca flavor.

**Season**: Late (3).

**Cold Hardiness**: Hardy (-15° to -20° F) (3).

**Use**: Wine, jam, jelly, juice production, fresh market sales.

**Notes**: It's been said that if 'Catawba' had not come along when it did, it's quite probable that Eastern grape growing would have lagged many years (4). Keeps well after harvest, often until late December (9).

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# Cayuga White

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**Synonyms**: NY 33403, GW3 and

**Geneva White 3 (6).**

**Pedigree**: 'Seyve-Villard' (also known as 'Seyval blanc') x 'Schulyer' (2, 6, 7).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University. Developed by John Einset and W.B. Robinson (2, 6).

**Cross/Selection/Test**: Cross made in 1945; selected in 1952 tested as New York 33403 or GW 3 (2)

**Released**: 1972 (2, 6).

**Type**: Interspecific hybrid (includes V. labrusca; V. lincecumii; V. rupestris; V. vinifera) (9).

**Color**: White

**Berry**: Einset and Robinson (6) described the berry as slightly larger than medium in size and roundish to ellipsoidal in shape. They added that the skin is resistant to cracking; the flesh is meaty and somewhat astringent. Berry weight averages 2.64 g (8).

**Cluster**: Medium to large; medium compactness; long and slightly tapering (6). Average cluster weight .45 lb (6).

**Viticultural Characteristics**: Einset and Robinson (6) describe the vine as vigorous and productive. Domoto (4), reports an upright growth habit. He also stated that bud break is late and 'Cayuga White' is not productive on secondary buds. He suggested that cluster thinning may be needed. Dami et al. (3) report one hundred days from bloom to harvest.

**Disease/Pests**: 'Cayuga White' is reported to be moderately susceptible to crown gall and downy mildew; and slightly susceptible to black rot, Botrytis bunch rot and powdery mildew (1, 3, 4, 8). Bordelon et al (1) and Domoto (4) add that it is highly susceptible to anthracnose. Reisch (8) and Domoto (4) rate it as slightly susceptible to Phomopsis cane and leaf spot. This cultivar is listed as being not sensitive to sulfur (1, 3, 4, 8), and Dami et al (3) and Domoto (4) add that it is somewhat sensitive to injury from copper when applied under cool, slow drying conditions. Domoto (4) added it is somewhat susceptible to injuries from 2,4-D and dicamba.

**Wine Quality and Characteristics**: Reisch et al. (8) describe 'Cayuga White' wines as having medium body, good balance and capable of being made into a semi-sweet style or finished into a dry, less fruity wine with oak aging. They added that if harvested early, it may produce an attractive sparkling wine with good acidity, good structure and pleasant aromas. However, when over ripe, it can develop strong hybrid aromas with slight American overtones. Einset and Robinson (6) report that the fruit hangs very well, with fruit conditions remaining excellent for two or more weeks after a normal harvest. So, if higher soluble solids are desired, a later harvest should be possible (7), yet hybrid and American overtones will increase (8).

**Season**: Midseason (early September in Iowa) (5).

**Cold Hardiness**: Rated as moderately hardy (-10° to -15°F) (4, 6). Domoto (4) also cautioned that it is not adapted to colder, shorter growing season sites. Reisch (9) reported the predicted temperature of 50% bud kill (LTF50 ) is -11.7° F. He added that New York growers manage trunk damage by using a two trunk training system.

**Use**: Wine, juice.

**Notes**: Very widely grown in the eastern United States. Can be made into a variety of wine styles.

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# Chambourcin

Iowa State University

**Synonyms**: Chambourcin Noir, J.S. 26-205, Johanes Seyve 26.205, Joannes Seyve 26.205 (4).

**Pedigree**: The parentage of this variety is uncertain. However, the National Grape Registry has parentage listed as Seyve-Villard 12-417 x Seibel 7053 (5).

**Origin**: French Rhone origins. It has been commercially available since 1963 (4).

**Type**: Interspecific hybrid (5).

**Color**: Black

**Berry**: Medium sized, oval and pulpy (4).

**Cluster**: Large and moderately loose (6). Often has shot berries (4).

**Viticultural Characteristics**: Domoto (3) reports 'Chambourcin' as moderately vigorous and with a semi-upright growth habit. He adds that bud break is very late and it is productive on secondary buds. He recommends cluster thinning to avoid over cropping. Reisch et al. (6) reported that it requires a long growing season (often ripening in mid-October), and a site less susceptible to low winter temperatures. It is sensitive to lime and should not be planted in droughty conditions (4). It has good tolerance to 2,4-D and dicamba (3). One hundred fifteen days from bloom to harvest (2).

**Disease/Pests**: 'Chambourcin' is rated as highly susceptible to black rot; moderately susceptible to Botrytis bunch rot and downy mildew; and slightly susceptible to powdery mildew (1, 2, 3, 6). Bordelon et al (1), Dami et al (2), and Reisch et al (6) rate it as moderately susceptible to crown gall, however Domoto (3) considers it highly susceptible, stating that it is more prevalent in colder conditions. Bordelon et al (1) and Domoto (3) also note that it is slightly susceptible to anthracnose. It is reported to be sensitive to injuries from sulfur (1, 2, 3, 6) and Domoto (3) adds that it is not sensitive to injuries from copper.

**Wine Quality and Characteristics**: Used to produce a dry, deep colored wine with full aromatic flavor and no unpleasant hybrid flavors (6). It has high tannins and is used to produce quality varietals and blends (3).

**Season**: Late (3).

**Cold Hardiness**: Cold tender (0° F to -5° F). Not recommended for the upper Midwest (3).

**Use**: Wine

**Notes**: Not recommended for the upper Midwest due to length of growing season and relatively cold tenderness (3).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Chancellor

Iowa State University

**Synonyms**: Seibel 7053 (2, 7).

**Pedigree**: Seibel 5163 x Seibel 880 (2, 7).

**Origin**: Aubenas, Ardeche, France by Albert Seibel (2).

**Introduction**: Introduced in United States in 1940's; and Canada in 1946 (2).

**Release**: Named in 1970 by the Finger Lakes Wine Growers Association (5).

**Type**: Interspecific hybrid (7).

**Color**: Black

**Berry**: Round or slightly oval; skin jet black and very firm; flesh not juicy (2).

**Cluster**: Medium in size; cylindrical in shape; fairly compact and winged (2, 5).

**Viticultural Characteristics**: Domoto (4) described 'Chancellor' as being moderately vigorous and having a semi-procumbent growth habit. He adds that it requires cluster thinning as it often develops three to four clusters per shoot. Early bud break makes it vulnerable to late frosts, but it is capable of producing a crop off secondary buds (5). One hundred days from bloom to harvest (3).

**Disease/Pests**: 'Chancellor' is rated as highly susceptible to crown gall, downy mildew (including the clusters), Phomopsis cane and leaf spot and powdery mildew; and is slightly susceptible to black rot and Botrytis bunch rot (1, 3, 4, 8). Bordelon et al (1), Dami et al (3) and Domoto (4) consider it highly susceptible to crown gall, however Reisch et al (8) rates it as moderately susceptible. Moderately susceptible to anthracnose (1, 4) It is sensitive to injuries from sulfur (1, 3, 4, 8) and copper applied under cool, slow drying conditions will likely cause injury (1, 3).

**Wine Quality and Characteristics**: In terms of wine quality, 'Chancellor' is considered among the better French-American varieties (8). It produces a medium bodied red wine which is capable of aging well (9). It tends to be very colored and care should be taken not to extract too much color from the skins (6).

**Season**: Early Midseason (3, 9).

**Cold Hardiness**: Hardy (-15° to -20° F) (3, 4).

**Use**: Wine

**Notes**: Reisch et al. (8) noted that planting might be more widespread if the clusters were less susceptible to downy mildew and the foliage less susceptible to powdery mildew.

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# Chardonel

www.nysaes.cornell.edu

**Synonyms**: New York 45010 and GW 9 (6, 7).

**Pedigree**: 'Seyval' x 'Chardonnay' (6, 7, 8, 9).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University. Developed by B.I. Reisch, R.M. Pool, and J. Einset (7) .

**Released**: 1990 by the New York State Agricultural Experiment Station (8, 9).

**Cross/ Selection/Test**: Cross made in 1953; in 1960 it was tested as New York 45010; In later testing it was re-named GW 9 (7).

**Patent**: Plant Patent 7860 issued in 1992; and assigned to Cornell Research Foundation, Ithaca, New York (5, 6, 7).

**Type**: Interspecific hybrid (including V. vinifera; V. lincecumii; V. rupestris) (6).

**Color**: White

**Berry**: Reisch et al. (7) describe the berry as medium sized (average berry weighing 2.29 g); spherical in shape. They add that the skin is medium-tough, moderately crack resistant and yellow-green with a light waxy bloom.

**Cluster**: Medium large (200g); and shouldered (7).

**Viticultural Characteristics**: According to Reisch et al. (7), the vine is moderately vigorous with a semi-upright growth habit. They added that bloom is medium-late (following a late bud break); and very little crop is borne on lateral shoots. Cluster thinning is required only infrequently, though with the large cluster size, may be a requirement in cool or short growing seasons (10). Trunks are susceptible to damage from low temperatures, which may cause trunk splitting or provoke crown gall (7, 8). Dami et al. (1) reported one hundred ten days from bloom to harvest.

**Disease/Pests**: 'Chardonel' is considered highly susceptible to Phomopsis cane and leaf spot (1, 2) and powdery mildew (1, 2, 3, 9). It is considered moderately susceptible to black rot (1, 2, 3), Botrytis bunch rot (1, 2, 3, 9), crown gall (1, 9), downy mildew (1, 2, 3, 9). Domoto (2) considers it highly susceptible to crown gall and moderately susceptible to anthracnose, while Dami (1) considers it slightly susceptible to anthracnose. It is not sensitive to injuries from sulfur applications and it is uncertain whether it is sensitive to injuries from copper (1, 2, 3, 9).

**Wine Quality and Characteristics**: Reisch et al. (7, 8) describe the wine as pleasant and delicate with light fruitiness, good body and very little of the flavor characteristics of interspecific hybrid grapes. When fully ripened, 'Chardonel' has fruit aromas characteristic of 'Chardonnay' and 'Seyval' and in some years the wine is slightly grassy. Wine quality has been more highly rated in Missouri, Michigan, and Arkansas than in New York (9). When harvested at the appropriate stage, it may have potential for sparkling wine production as it retains a good acid balance during ripening (7, 8).

**Season**: Late (Early to mid-October in New York and Michigan) (7)

**Cold Hardiness**: Moderately hardy (-10 to -15° F) (2, 4). Predicted temperature of 50% primary bud kill (LTF50) is -11° F (10)

**Use**: Wine

**Notes**: The fourth wine grape cultivar to be named by the New York State Agricultural Experiment Station (7). Probably

too cold tender for upper Midwest. 'Chardonel' is recommended for locations with long growing seasons and moderate temperatures, which are required to fully ripen the fruit (7, 8).

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# Chelois

www.nysaes.cornell.edu

**Synonyms: 8-Seibel 10868, Seibel 10878 (8).**

**Pedigree: Seibel 5163 x Seibel 5593 (7, 87).**

**Origin: Abuenas, Ardeche, France by Albert Seibel (2).**

**Introduction: 1946 in Canada; 1948 in the United States (2).**

**Type: Interspecific hybrid (8).**

**Color: Blue**

**Berry: Small and round; slightly pulpy and acidic (7). Berry splitting and subsequent bunch rots may occur in some years (9).**

**Cluster**: Medium sized; long, narrow and compact (7).

**Viticultural Characteristics**: Double A Vinyards (6) list 'Chelois' with an upright growth habit. However, Bordelon (1) has observed that with a crop, the shoots assume a more procumbent position without catchwires. Galet (7) described the vine as vigorous and productive. He reported a late bud break, which reduces danger of late frost and says it is capable of producing a small crop off of secondary buds. Also, cluster thinning may be needed to prevent over cropping. It is sometimes injured by drought (2) and prone to winter trunk injury (5).

**Disease/Pests**: 'Chelois' is rated as highly susceptible to Botrytis bunch rot (4, 5) Eutypa die back (4, 5, 9) Phomopsis stem and leaf spot (4, 5, 9) and powdery mildew (4, 5, 6, 9) moderately susceptible to crown gall (4) and slightly sensitive to black rot (4, 5, 6, 9), downy mildew (4, 5, 6, 9) and anthracnose (5). It is not considered sensitive to sulfur (4, 5, 6, 9) but may be sensitive to copper when applied under cool, slow drying conditions (4, 5).

**Wine Quality and Characteristics**: 'Chelois' is suitable for blending with other red hybrids ('Baco noir', 'Chambourcin' or 'Chancellor') or V. vinifera varieties (9). Occasionally used on its own, it tends to make a red wine of almost neutral character (2) and it has been described as slightly acidic, tannic and highly colored (3).

**Season**: Midseason (2, 5).

**Cold Hardiness**: Moderately hardy (-10 to -15° F) (5)

**Use**: Wine

**Notes**: Because of its susceptibility to winter damage, may not be suitable for the upper Midwest.

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Chontay

John Marshall

**Pedigree**: 'Massasoit' x 'Beta' (1, 3).

**Origin**: Brookings, SD by N. E. Hansen, South Dakota Agricultural Experiment Station (1).

**Introduction**: 1925 (1).

**Type**: Interspecific hybrid (includes V. riparia and V. labrusca) (3).

**Color**: Black (3).

**Berry**: Medium sized and slightly oblong; skin bluish-purple; spicy and fruity (2) Seeds separate easily from flesh (1).

**Cluster**: Medium sized, slightly loose and conical in shape (2).

**Viticultural Characteristics**: Vigorous and procumbent growth habit (2).

**Disease/Pests**: Quite disease resistant; some susceptibility to anthracnose (2)

**Wine Quality and Characteristics**: According to Marshall (2), 'Chontay' is not regarded as a wine grape as the wine flavor is very strong and unpleasant. He added that even when made as a rosé, it tends to have a strong, unpleasant flavor and is rather pale and orangish in color.

**Season**: Early to mid-September in southeastern Minnesota (2).

**Cold Hardiness**: Very cold hardy (below -20° F) (2).

**Use**: Table grape with flavor comparable to Steuben. Flavor may become too strong if left to over ripen (2).

**Notes**: Said to be hardier than 'Bluebell' (2).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016





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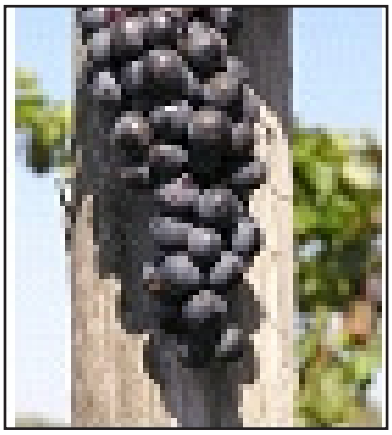
HORT 3040-17 Revised May 2016

# Clinton



John Marshall

**Synonyms**: 'Plant des Carmes', 'Plant Pouzin' and 'Worthington' (4).

**Pedigree**: Unknown

**Origin**: Whitesboro, New York. Bred by Hugh White (a professor at New York State University) in 1819 (2).

**Introduction**: According to Hedrick et al. (2), 'Clinton' was introduced circa 1835 in Rochester, New York, and placed on the grape list of the American Pomological Society Fruit Catalog in 1862.

**Color**: Black (4).

**Type**: Interspecific hybrid (including V. riparia and V. labrusca) (1, 4). Usually considered a V. riparia, however occasional canes with continuous tendrils are characteristic of V. labrusca (2).

**Berry**: According to Hedrick et al. (2), berries are small to medium, roundish to slightly oval with a thin but tough skin. They describe the flesh as darkish green and very juicy but almost pulp free and somewhat astringent with large seeds. They added that fruit colors early to a purplish-black, but not edible until after mid-season.

**Cluster**: Small to medium in size; slender and cylindrical; usually single shouldered and compact (2, 3).

**Viticultural Characteristics**: Hedrick et al. (2) reported 'Clinton' as vigorous and productive with a procumbent growth habit. They note that early bloom makes it vulnerable to frost and also caution that it is sensitive to lime soils.

**Disease/Pests**: Very disease resistant even without a regular spray schedule (3). Anthracnose and phylloxera are quite uncommon (1, 3).

**Wine Quality and Characteristics**: Makes a very colored, somewhat foxy, low quality wine (1). The berries tend to ripen with high acid (3).

**Season**: Late (although colors early in season) (2).

**Cold Hardiness**: Very hardy (below -20° F) (3).

**Use**: Hedrick et al. (2) informed that 'Clinton' has often been used in grape breeding as the offspring are usually very hardy, making it a good starting point for breeding grapes for Northern latitudes. They noted that it is unsuitable as a table grape because it has a V. riparia flavor, too spicy and tart for dessert use.

**Notes**: Hedrick et al. (2) noted that 'Clinton' played an important part in the beginning of American viticulture.

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HORT 3040-18 Revised May 2016

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# Concord

Double A Vineyards, Inc. & ST Photography

**Synonyms**: 'Bergerac', 'Dalmadin', 'Feherhatu', 'Fekete Noah', 'Furmin noir', 'Gorin', 'Kek Olasz', 'Nyarlevelue', 'Olasz Kek' (8).

**Pedigree**: OP V. labrusca seedling (a 'Catawba' vine was located nearby) (8)

**Origin**: Concord, MA. Ephraim Bull planted the seeds of a wild grape in the fall of 1843. The plants first fruited in 1849 and he called one 'Concord' (2, 6).

**Introduction**: In 1853, 'Concord' was exhibited before the Massachusetts Horticultural Society on Boston Commons and in 1854, it was introduced by Hovey and Company in Boston (2).

**Type**: Interspecific hybrid (includes V. labrusca, with some V. vinifera) (6, 8).

**Color**: Blue

**Berry**: Hedrick et al. (6) described the 'Concord' berry as being medium to large, roundish, and slightly glossy covered with an abundant blue bloom. They also wrote that the skin was of average thickness, moderately tough and slightly adherent to pulp and containing a small amount of wine colored pigment, somewhat astringent. The flesh was described as pale green, translucent, juicy, rather fine grained, somewhat tough and solid and the flavor described as slightly foxy, sweet at skin, tart next to seeds. Reisch et al. (9) noted that the berries are prone to skin cracking and excessive post-harvest shelling.

**Cluster**: Hedrick et al. (6) described the cluster as rather uniform, medium to large, somewhat compact, wide and broadly tapering. They noted the cluster is usually single shouldered, but sometimes double shouldered. Average weight is .30 lb (3).

**Viticultural Characteristics**: Domoto (4) reported the vine as being vigorous and with a procumbent growth habit. He adds that bud break is early and that cluster thinning is not needed. He warned that 'Concord' is very sensitive to injury from 2,4-D. One hundred fifteen days from bloom to harvest (3).

**Disease/Pests**: 'Concord' is rated as being highly susceptible to black rot, Eutypa die back and Phomopsis cane and leaf spot (1, 2, 4, 9); moderately susceptible to powdery mildew (1, 2, 4, 9); and slightly susceptible to Botrytis bunch rot (1, 2, 4, 9), downy mildew (1, 2, 4, 9), anthracnose (1, 2, 4) and crown gall (1, 2, 9). Domoto (4) however rates it as moderately susceptible to crown gall, stating that it is more prevalent in colder conditions. It is sensitive to injury from sulfur (1, 2, 4, 9) and slightly sensitive to injuries from copper when applied under cool, slow-drying conditions (1, 2, 4).

**Wine Quality and Characteristics**: Has a "foxy" flavor typical of labrusca wines.

**Season**: Late Midseason (early to mid October in New York) (9).

**Cold Hardiness**: Hardy (-15 to -20° F) (4).

**Use**: Canning, Juice, Table, Wine.

**Notes**: The most widely grown grape in the United States (2).

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# Corot Noir

www.nysaes.cornell.edu

**Synonyms**: NY 70.0809.10 (6, 7).

**Pedigree**: Seyve Villard 18-307 x 'Steuben' (5, 6, 7).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University (5, 6, 7) Bred by Bruce Reisch (5).

**Cross/Selection/Test**: Cross made in 1970; transplanted to a seedling vineyard in 1975 and tested for wine characteristics in 1978 (6).

**Release**: 2006 (5, 6, 7).

**Type**: Interspecific hybrid (including V. vinifera, V. labrusca, V. rupestris, V. lincecumii, V. riparia) (6, 8).

**Color**: Black (6).

**Berry**: Medium size (2.09 g average berry weight during a ten year test period in Geneva, NY) (6).

**Cluster**: Large (.41 lb average weight during a ten year test period at Geneva, NY) (6).

**Viticultural Characteristics**: Reisch et al. (6) describe the 'Corot noir'™ vine as having a semi-upright to semi-trailing growth habit. Bud break is usually late, so spring frosts are typically not a problem and it is moderately productive on secondary buds. On deep, fertile soils, they say the vine may be excessively vegetative, leading to the production of abundant secondary and tertiary clusters so cluster thinning is needed in most years. In Geneva, New York, they report some trunks have been killed or have shown symptoms of crown gall after very cold winters, but most trunks have not been damaged. It has good resistance to 2,4-D and dicamba (2).

**Disease/Pests**: 'Corot noir'™ is rated as to be highly susceptible to downy mildew (1, 2, 4) (under strong pressure, it may cause severe defoliation) (6); slightly susceptible to anthracnose, Botrytis bunch rot, crown gall, Eutypa die back and Phomopsis cane and leaf spot(1, 2, 4). Domoto (2) and Double A Vineyards rate it as moderately susceptible to black rot, but Dami (1) considers it slightly susceptible. Sensitivity to sulfur has not been observed, but it is recommended that sulfur sprays be alternated with other materials and avoided in hot weather (6). It's uncertain if it is susceptible to copper (1, 2).

**Wine Quality and Characteristics**: According to Reisch et al (6), 'Corot noir'™ has a deep red color and attractive cherry and berry fruit aromas. They note that it may be used for either varietal wine production or for blending and is free of many of the hybrid aromas typical of many red hybrid grapes. Regardless of location, the pH and titratable acidity tends to be lower than many commonly grown red hybrids (6).

**Season**: Mid to late season. Early September in Southwest Indiana (5); mid-September in west central Indiana (6) and Iowa, (3); and early to mid-October in New York (6).

**Cold Hardiness**: Reisch et al. (6) reported 'Corot noir'™ as being moderately winter hardy (-10 to -15° F). It is considered hardier than some interspecific hybrids, but not as hardy as riparia based cultivars such as 'Maréchal Foch' and 'Frontenac'. They add that the predicted temperature of 50% primary bud kill (LTF50) for 'Corot noir'™ was -15.1° F.

**Use**: Wine

**Notes**: For trial only in northern Iowa.

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# Cynthiana


Iowa State University

**Synonyms**: 'Arkansas', 'Norton', 'Norton Virginia', 'Norton's Seedling', 'Norton's Virginia Seedling', 'Red River', 'Vitis Nortoni'(8)

**Pedigree**: Bland (labrusca-vinifera) OP x V. aestivalis 19 (probably not 'Bland' x 'Miller's Burgundy') (8)

**Introduction**: Placed in the American Pomological Society Fruit Catalog grape list in 1881(5).

**Type**: Interspecific hybrid (including V. aestivalis; V. labrusca) (8).

**Cluster**: According to Hedrick et al. (5), the cluster is small to medium sized; rather long, tapering to cylindrical; not very uniform, often single shouldered and compact. Average cluster weight is .16 lb (2).

**Origin**: The history of 'Cynthiana'/ 'Norton' (hereafter called 'Cynthiana') has long been debated. Reisch et al. (9) indicated it is possible that 'Norton' and 'Cynthiana' originated from a single seedling vine, and that the cultivar was given different names, 'Norton' in Virginia and 'Cynthiana' in Arkansas. They reported that the 'Norton' grape was originally distributed by Prince Nursery of Flushing, New York, in the early 1800's and was grown in Missouri in 1848. In addition, the 'Cynthiana' grape originated in the neighboring state of Arkansas sometime in the 1850s. They indicated it is possible that the 'Cynthiana' vine from Arkansas was actually a misnamed 'Norton' which was already well-known in the neighboring state of Missouri. Also possible according to Reisch et al. (9), the cultural differences noted in the early literature may indicate that 'Cynthiana' was a sport of 'Norton'.

**Berry**: Hedrick et al. (5) described the berries as small and round; blue-black and covered with a moderate amount of blue bloom. They reported the skin as astringent; tough and rather adherent to pulp, and containing a small amount of purple pigment. They noted that the flesh was dark green, translucent, juicy; tough and solid and describe the flavor as spicy and rather tart.

**Viticultural Characteristics**: According to Domoto (3), the vine is vigorous and has a procumbent growth habit. He added that it blooms late and that cluster thinning is not needed. Main (6) reported the vine prefers well drained sandy or gravelly loam soils and is not tolerant of wet soils. A week of soggy soil will turn the leaves yellow and stunt growth. Main also stated that the roots are very efficient in removing potassium from the soil, and therefore, potassium fertilizer should not be used unless potassium deficiency is seen in the vine. Morris et al. (7) found the combination of potassium fertilizer and cluster thinning on 'Cynthiana' resulted in increased juice pH and potassium. Main (6) indicated that severe magnesium deficiency has been seen in 'Cynthiana' and recommends pre-bloom foliar sprays as well as two or more additional sprays during the season. He added the vine is quite sensitive to 2, 4-D and may be sensitive to other commonly used fungicides and sprays should be used with caution. One hundred twenty five days from bloom to harvest (2).

**Disease/Pests**: 'Cynthiana' is rated as moderately susceptible to downy mildew; and slightly susceptible to black rot, Botrytis bunch rot, crown gall, Phomopsis cane and leaf spot, and powdery mildew (1, 2, 3). Bordelon et al (1) and Domoto (3) also rate it as slightly susceptible to anthracnose. It is sensitive to injury from sulfur and Domoto (3) noted that it is not sensitive to injuries from copper. It is attractive to birds (4).

**Wine Quality and Characteristics**: Produces a medium to full bodied dry red wine, with some fruity overtones. Main (6) reported that it tends to be high in titratable acidity (up to 15 g/liter); malate (up to 6 g/liter); and potassium (up to 6 g/liter); and has a high pH (> 3.5). Soluble solids can run somewhat high around 24°-26° Brix. He noted that it often has

poor color in warm years along with aggressive seed tannin, small clusters, small berry size and low juice yields. Despite these features, and with proper management, Main confirms that an excellent wine can be made from 'Cynthiana' grapes. He said the primary focus of 'Cynthiana' wine production is to keep pH below 3.6 and improve wine structure.

**Season**: Late (only adapted to long frost-free sites of 180 or more days) (2).

**Cold Hardiness**: Moderately hardy (-10° to -15° F) (3).

**Use**: Wine

**Notes**: It won the "Best Wine of All Nations" at the Vienna World Exposition in 1873 and is often considered the "Cabernet of the Ozarks" (4).

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# DeChaunac


Iowa State University

**Synonyms**: 'Cameo', 'Dechaunac', Seibel 9549 (10).

**Pedigree**: Seibel 5163 x Seibel 793 (2, 10).

**Origin**: Aubenas, Ardeche, France by Albert Seibel. (2) Named for Canadian enologist, Adhemar deChaunac in 1972 (3).

**Introduction**: 1947 into Canada when cuttings were received by the Horticulture Experiment Station, Vineland Station, Ontario (3). It's assumed 'DeChaunac' came into the United States circa 1950s.

**Type**: Interspecific hybrid (V. labrusca; V. lincecumii; V. riparia; V. rupestris; V. vinifera) (10).

**Color**: Black

**Berry**: Round, small, blue-black and pulpy (8).

**Cluster**: Medium to large; cylindrical and sometimes winged; somewhat loose (8). However, cluster weight in Iowa trials averaged .16 lb in 2007 (6).

**Viticultural Characteristics**: Domoto (5) described the 'DeChaunac' vine as vigorous and productive with a semi-upright growth habit. He also reported that it tends to break bud early, putting it at risk of late spring frost. He recommended cluster thinning to avoid over cropping as it typically produces 3-4 clusters per shoot. One hundred five days from bloom to harvest (4).

**Disease/Pests**: 'DeChaunac' is rated as highly susceptible to Eutypa dieback (1, 4, 5, 12); moderately susceptible to crown gall, downy mildew (1, 4, 5, 7, 12); and slightly sensitive to black rot and Botrytis bunch rot (1, 4, 5, 7, 12). Domoto (5), Double A Vineyards (7) and Reisch et al. (12) rated it highly susceptible to powdery mildew, but Bordelon et al. (1) considered it moderately susceptible to powdery mildew. Bordelon et al. (1) and Domoto (5) rate it as moderately susceptible to anthracnose. Reisch et al. (12) and Domoto (5) considered it moderately susceptible to Phomopsis cane and leaf spot, but Bordelon et al. (1) rated it as highly susceptible. It is sensitive to injury from sulfur and copper applied under cool, slow-drying conditions may cause injury (1, 4, 5, 12).

**Wine Quality and Characteristics**: Hawkins (9) described the wine as fruity and balanced; usually possessing low to mild tannic content and being only of fair quality. He also said that having low popularity as a varietal, it is commonly used as a tannin diluting blending component in tannin-rich bulk wines. Wine quality varies with region; ranging from fair to excellent.

**Season**: Midseason (early September in Iowa) (5, 6).

**Cold Hardiness**: Moderately hardy (-10 to 15° F) (5).

**Use**: Wine, juice.

**Notes**: Cahoon (3) commented that in the early days of eastern viticulture, 'DeChaunac' was used largely in the making of two types of wine; a sparkling juice and a dry, red wine. Pool et al. (11) said that in 1979, 'DeChaunac' was the most widely planted blue French hybrid in New York. Hardier and more resistant to disease than many other French hybrids (1).

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# Delaware

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**Pedigree**: Differences of opinion. Some consider it a hybrid between V. vinifera, V. labrusca, V. cinerea and V. aestivalis (7). Others believe it is of V. labrusca x V. bourquiniana origin with a slight mix of V. vinifera (7).

**Origin**: Frenchtown, New Jersey. Taken from the garden of Paul Provost (7).

**Cross/Select/Test**: It was propagated and disseminated from Delaware, OH beginning in 1849 (6); introduced in 1851 (2); and placed in the American Pomological Society Grape List Fruit Catalog in 1856 (7).

**Type**: V. labrusca hybrid (see pedigree).

**Color**: Red

**Berry**: Hedrick et al. (7) describe the 'Delaware' berry as small and round; light red and firm. They noted the skin is thin and moderately tough, adhering somewhat to the pulp. Also, there is no pigment and is slightly astringent. Pulpy and fragrant (6). Rain during harvest can cause the tender skins to crack (10).

**Cluster**: Small to medium size; cylindrical-conical, usually shouldered and compact (7). Average cluster weight is .16 lb (11).

**Viticultural Characteristics**: Domoto (4) described the vine as having low to medium vigor and a procumbent growth habit. He indicated that cluster thinning is not required. It does best on fertile, well drained soils (11). One hundred days from bloom to harvest (3).

**Disease/Pests**: 'Delaware' is rated as being highly susceptible to downy mildew and Phomopsis cane and leaf spot(1, 3, 4, 11) moderately susceptible to black rot, powdery mildew (1, 3, 4, 11) and Botrytis bunch rot ( 3, 4, 5, 11) ; and slightly susceptible to crown gall and Eutypa dieback (1, 3, 4, 11). Bordelon et al. (1) and Domoto (4) also consider it moderately susceptible to anthracnose. Double A Vineyards (5) considers it moderately susceptible to downy mildew and highly susceptible to powdery mildew. Bordelon et al. (1) rated it as slightly susceptible to Botrytis bunch rot. It is not sensitive to sulfur but copper applied under cool, slow-drying conditions may cause injury (1, 3, 4). Galet (6) noted that is very prone to phylloxera. Hedrick et al. (7) say it is attractive to birds. Domoto (4) warned it is very sensitive to 2, 4-D drift.

**Wine Quality and Characteristics**: May be used to make dry, sweet and sparkling wines. Also used for ice wines and for blending. According to Bradt et al. (2), wine made from 'Delaware' is pale green yellow and useful in the production of sparkling wines. As a skin fermentation it has an orange color and makes an interesting rosé. Less foxy than many other labrusca varieties. Based on 2006 harvest data from the University of Minnesota research vineyards, soluble solids for Delaware tend to be moderate while pH and titratable acidity run somewhat low (8).

**Season**: Midseason (September 20th in Minnesota) (8)

**Cold Hardiness**: Hardy (-15 to -20° F) (3)

**Use**: Table, juice, wine (including dry, sweet, sparking and ice wine) (4)

**Notes**: Once prized for champagne production in New York, it is now being replaced by several of the interspecific hybrid and V. vinifera varieties. However, 'Delaware' remains one of the highest quality American varieties for white wine (10). It has been compared to some V. vinifera grapes in its more delicate aroma (9).

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# Edelweiss


Iowa State University

**Synonyms**: Elmer Swenson, E.S. 40 (6, 8).

**Pedigree**: MN #78 ('Beta' x 'Witt') x 'Ontario' (1, 6, 8).

**Origin**: Osceola, Wisconsin. Developed by Elmer Swenson, P. Pierquet, C. Stushnoff (1, 6, 8).

**Introduction/Selection/Test**: Selected in 1955; tested as E.S. 40 (1, 6, 8).

**Berry**: Swenson et al. (8) report the berry as medium sized and round; slipskin as green with a white bloom. He described the flesh as tender and melting; and the flavor as fruity-labrusca, becoming strongly foxy at late maturity.

**Release**: 1978 by Elmer Swenson and the University of Minnesota (6, 8).

**Type**: Interspecific hybrid (including V. riparia and V. labrusca) (5, 8).

**Color**: White

**Cluster**: Medium; very loose to moderately compact; often double shouldered (8); conical in shape (1). Average cluster weight at four Iowa State University research sites in 2007 was .32 lb (3, 4).

**Viticultural Characteristics**: Vines are vigorous (1, 2, 8) and productive (1, 8) with a procumbent growth habit (2). Domoto (2) added that young shoots tend to be easily damaged in strong winds. Also, bud break is very early, making it vulnerable to late frosts and is not productive on secondary buds. He noted that cluster thinning may be needed.

**Disease/Pests**: 'Edelweiss' is reported as moderately susceptible to anthracnose (2), Botrytis bunch rot (2, 7) and powdery mildew (2, 7), and slightly susceptible to downy mildew (2, 7) and crown gall (2, 7). Domoto (2) considers it slightly susceptible to black rot. It is uncertain if it is susceptible to Eutypa dieback and Phomopsis cane and leaf spot (2, 7). Domoto (2) noted that it is moderately susceptible to injury from 2, 4-D and dicamba. He added that it is not sensitive to injuries from sulfur and copper applications.

**Wine Quality and Characteristics**: According to Swenson et al. (8), the white wine from 'Edelweiss' is pleasant if fruit is picked at an "early mature" stage and wine is finished semi-sweet. It should be harvested early if is to be used for wine; Swenson suggested between 14-16° Brix. When completely ripe, its labrusca flavor becomes very strong (1).

**Season**: Early (mid-August in Iowa) (3, 4).

**Cold Hardiness**: Rated as hardy to -15° F, but Swenson (8) noted it has survived a winter low of -32° F and fruited well without winter protection.

**Use**: Table, juice, wine.

**Notes**: Fruit does not handle or store well (8).

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# Elvira

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**Pedigree**: 'Taylor' (V. riparia x V. labrusca hybrid) x 'Martha' (1, 6).

**Origin**: According to Hedrick et al. (5), Jacob Rommel of Morrison, Missouri propagated 'Elvira' from seeds of 'Taylor', which some say were pollinated by 'Martha'. It was first planted in 1863 and fruited for the first time in 1869.

**Introduction**: 1874 by Bush and Son and Meissner; and placed on the grape list of the American Pomological Society fruit catalog in 1881 (5).

**Type**: Interspecific hybrid (including V. riparia; V. labrusca; V. vinifera) (1, 6).

**Color**: White

**Berry**: Hedrick et al. (5), describe the berry as medium sized; roundish to slightly oblate; and often misshapen on account of compactness. They add that the thin skin adheres slightly to the pulp, contains no pigment and is slightly astringent. The skin is vulnerable to cracking at harvest time.

**Cluster**: Small to medium; cylindrical, usually single shouldered and compact (5).

**Viticultural Characteristics**: Very vigorous, with a semi-procumbent growth habit (3). The vine produces very heavy crops (5) and if young vines are allowed to overbear in their 3rd or 4th year, severe injury can occur (1). Cluster thinning is required (3).

**Disease/Pests**: 'Elvira' is rated as highly susceptible to Botrytis bunch rot; moderately susceptible to crown gall, downy mildew and powdery mildew; and slightly susceptible to black rot, Eutypa dieback and Phompsis cane and leaf spot (2, 3, 7). It is not sensitive to injuries from sulfur but is moderately sensitive to injuries from copper when applied under cool, slow drying conditions (2, 3).

**Wine Quality and Characteristics**: Hedrick et al. (5) describe the wines as light (containing comparatively little alcohol) and somewhat foxy. They noted that the wines do improve with age and are well suited to blending with more highly flavored wines. Reisch et al. (7) comment that as grapes are usually harvested before maturity (due to cracking), and the must is typically high in acidity. Bradt et al. (1), report that when grapes are fully mature, wine is interesting with practically no labrusca present.

**Season**: Late Midseason (3).

**Cold Hardiness**: Very hardy (20°F) (5, 7).

**Use**: Juice and bulk wine production.

**Notes**: The Ontario Horticultural Research Institute in Ontario released an 'Elvira' offspring named 'Ventura' in 1974, which upgraded the older cultivar in its resistance to fruit cracking (4).

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# Espirit


Iowa State University

**Synonyms**: E.S. 422 (4, 5).

**Pedigree**: 'Villard blanc' x 'Edelweiss' (4, 5).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (4, 5).

**Release**: 1984. Plant Patent 5716 obtained April 15, 1986; assigned to Swenson Smith Vines (4, 5).

**Type**: Interspecific hybrid (includes V. vinifera; V. labrusca) (4).

**Color**: White

**Berry**: Large and round; skin white (1, 5).

**Cluster**: According to Swenson (5), clusters are large, conical and moderately tight. He added that clusters are capable of reaching one pound with sixty to ninety berries per cluster.

**Viticultural Characteristics**: Swenson (5) described the vine as moderately vigorous and productive with a very open semi-procumbent growth habit. Domoto (2) added there are few tendrils, making it easy to shoot position. He noted a midseason bud break with moderate productivity on secondary buds and that cluster thinning is needed. He cautioned that the vine is moderately susceptible to injury from 2, 4-D and dicamba. Fruit holds well on the vine with no shattering (5).

**Disease/Pests**: 'Esprit' is highly susceptible to powdery mildew; and moderately susceptible to Botrytis bunch rot and downy mildew (2).

**Wine Quality and Characteristics**: Swenson (5) described wines made from 'Esprit' as being excellent and absent of labrusca flavor and aroma which is typical of such hardy varieties. He felt the wine was superior to many of the German white wines.

**Season**: Midseason (late August-early September in Iowa) (3).

**Cold Hardiness**: Hardy (-15 to -20° F) (2, 5).

**Use**: Wine, table, juice.

**Notes**: A blend of 80% 'Seyval' and 20% 'Esprit' won first place at the 1983 International Home Winemakers Event in Sacramento, CA (5).

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# Fredonia

www.nysaes.cornell.edu

**Synonyms**: 'Early Concord' (7).

**Pedigree**: 'Champion' x 'Lucille' (3, 7).

**Origin**: Fredonia, NY. Bred by F.F. Gladwin; New York State Agricultural Experiment Station. Cross made in 1915 (7).

**Introduction**: 1927 (3).

**Type**: Interspecific hybrid (includes V. labrusca; V. vinifera) (7).

**Berry**: Brooks and Olmo (2) report the berries as being large with a tough thick skin. They cautioned that berries are inclined to shatter at full maturity.

**Color**: Black (2, 7).

**Cluster**: Medium to large; cylindrical and compact (2). Thick skin resists bunch rot and attacks by bees (9).

**Viticultural Characteristics**: Domoto (5) described the vine as being moderately vigorous and having procumbent growth habit. He also stated that cluster thinning is not needed.

**Disease/Pests**: 'Fredonia' is rated as highly susceptible to anthracnose (1, 5) downy mildew (on foliage and clusters) (1, 2, 4, 5, 6, 8) and Phomopsis cane and leaf spot (1, 5); moderately susceptible to powdery mildew (1, 4, 5, 6, 8); and slightly susceptible to Botrytis bunch rot (1, 4, 5, 6, 8) and crown gall (1, 4, 5, 8). Bordelon et al. (8) however, rated it as slightly susceptible to black rot. It is uncertain if it is susceptible to Eutypa dieback. It is not sensitive to injuries from sulfur (1, 4, 5, 6, 8) and it's unknown whether it is sensitive to injuries from copper (1, 4, 5).

**Wine Quality and Characteristics**: Makes a rosé style wine, with a labrusca flavor (5).

**Season**: Early (2).

**Cold Hardiness**: Hardy (-15 to -20° F) (2, 5).

**Use**: Primarily used for table and juice production. Berries are firm; a good shipper. Also used for jelly and wine (8).

**Notes**: Entire cluster ripens at once (8).

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# Frontenac

Iowa State University

**Synonyms**: MN 1047 (4, 7).

**Pedigree**: 'Landot 4511' x University of Minnesota 89 (4, 7).

**Origin**: Excelsior, Minnesota by P.R. Hemstad, J.J. Luby and P.R. Pierquet (7).

**Cross/Selection/Test**: Cross made in 1978; selected in 1983 and tested as MN 1047 (7).

**Berry**: The 'Frontenac' berry is described by the University of Minnesota (5) as small to medium in size and bluish-black. They add that the berries have high skin to pulp ratios and colored pulp (these traits result in intense juice color).

**Type**: Interspecific hybrid (includes V. vinifera; V. riparia) (7).

**Color**: Blue

**Cluster**: Clusters are medium sized; conical in shape and have a small shoulder. The University of Minnesota (4) reported that clusters are loose and berry splitting and bunch rot are rare, even in wet years. They add the typical cluster averages 152 g (.34 lb) in weight and 18 cm (7 in) in length.

**Viticultural Characteristics**: The 'Frontenac' vine is described as having moderately high vigor; a slightly upright growth habit and arching canes (4). Several training systems have been used by growers including high bilateral cordon, vertical shoot positioning (VSP) and Geneva Double Curtain (GDC). Bud break occurs early midseason and cluster thinning and shoot thinning may be needed in some years (3). It is advised that the grapes be allowed to hang as long as possible to help reduce the rather high acid (5). 100 days from bloom to harvest (1).

**Disease/Pests**: 'Frontenac' is rated as moderately susceptible to black rot, Botrytis bunch rot and powdery mildew (1, 2, 3, 8); slightly susceptible to downy mildew (1, 2, 3, 8) and Phomopsis cane and leaf spot (1, 2, 3). Bordelon et al (1) and Domoto (3) also rate it as slightly susceptible to anthracnose. It is not sensitive to injuries from sulfur applications (1, 2, 3) and Domoto (3) notes it is not sensitive to injuries from copper applications. It is susceptible to foliar phylloxera. Domoto (3) reported that leaves are relatively tolerant of 2,4-D, but berries are susceptible. He also found it is susceptible to injuries from dicamba.

**Wine Quality and Characteristics**: The University of Minnesota (5), reported that in addition to high color, 'Frontenac' carries the riparia traits for high sugar and high acid. Soluble solids at harvest normally range from 24-28° Brix, though measurements as high as 30° Brix have been reported in some Minnesota vineyards. In University of Minnesota trials from 2003-2005, pH and titratable acids (TA) averaged 2.9 and 15.4 g/liter respectively. However, in 2006 they were able to harvest at 23.8° Brix, 3.24 pH and TA at 7.4 g/liter (6). Because of its high sugars, they recommended harvesting 'Frontenac' based upon TA and not harvesting until the level of acids dropped below 15.0 g/liter for any style of wine (5). In addition, they indicated that 'Frontenac' wines will often require malolactic fermentation to produce a well balanced wine in northern climates (4).

As a general rule, aroma and flavor characteristics in 'Frontenac' are dominated by a bold cherry note with lesser hints of black current and general red fruit (5). Trained sensory panels have also identified notes of grass, green bean, evergreen and in some cases chocolate (5).

When made in a rosé style, the nose and palate showcase a bright, Bing cherry note that is enhanced by an off-dry finish and moderate acidity (5).

As a red wine, the University of Minnesota (5) described a deep garnet color, sometimes tinted with purple. Cherry notes predominate but are typical of black or sweet cherry rather than the brighter note of the rosé. Earthy and slight herbaceous notes round the palate, supported by a moderate acid backbone (5).

Frontenac has also been used to produce port-style wines of outstanding quality. The University of Minnesota (5) found the higher acid levels balance the increased sugar beautifully, deepening the typical fruit notes into lush shades of cherry, raspberry, black currant, and stewed fruits. Some 'Frontenac' ports exhibit pronounced chocolate notes, which seems dependent on vineyard microclimate (5).

**Season**: Midseason (around September 20th in Excelsior, Minnesota) (5).

**Cold Hardiness**: Very hardy (below -20° F) (3).

**Use**: Rosé, red or port style wines (5).

**Notes**: The most widely planted red wine grape in Minnesota (5).

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# Frontenac Gris


Iowa State University

**Synonyms**: MN 1187 (2, 4).

**Pedigree**: According to the University of Minnesota (1, 4), 'Frontenac gris' was originally identified as a single bud sport cane found growing on a 'Frontenac' vine at the University of Minnesota Horticultural Research Center. 'Frontenac' was originally derived from a cross between the French hybrid cultivar 'Landot 4511' and the University of Minnesota Vitis riparia selection #89, found growing wild near Jordan, Minnesota (1).

**Origin**: The single sport cane of 'Frontenac' was first observed by Peter Hemstad at the University of Minnesota in 1992; plants were propagated from this cane and have all produced gray rather than black fruit (2).

**Introduction**: 2003 (2).

**Type**: Interspecific hybrid (including V. vinifera and V. riparia) (5).

**Color**: Gray

**Berry**: The berries have been described as round; small to medium (average berry weight is 1.13 g/berry); grayish amber with a waxy bloom and clear juice. Berry shelling and splitting have not been problems (4).

**Cluster**: The clusters of 'Frontenac gris' are loose and medium in size (averaging 131 g/cluster and 18 cm (7 in) in length); and are conical with a small shoulder (4).

**Viticultural Characteristics**: 'Frontenac gris' vines are considered to have moderately high vigor with a slightly upright and open growth habit (4). Several training systems have been used for 'Frontenac', including high bilateral cordon, vertical shoot positioning (VSP), and Geneva Double Curtain (GDC) and the University of Minnesota (4) feels 'Frontenac gris' should perform similarly in these systems. They also report that bud break and bloom occur early to midseason and as it is typical for shoots to produce three clusters, cluster thinning may be needed, especially on young vines.

**Disease/Pests**: As observed at the University of Minnesota (2, 4) research vineyards, 'Frontenac gris' is found to be moderately susceptible to powdery mildew and foliar phylloxera; has low to moderate susceptibility to black rot and very low susceptibility to downy mildew and bunch rot (including Botrytis). Crown gall has not been reported and 'Frontenac gris' seems to be quite tolerant of the adverse effects of 2,4-d drift (4).

**Wine Quality and Characteristics**: 'Frontenac gris' wines have been reported to have good body and pleasant aromas, with very little of the herbaceous qualities associated with V. riparia and many interspecific grape hybrids. "Foxy" aromas characteristic of V. labrusca have not been detected either (3).

The University of Minnesota (3) indicted that 'Frontenac gris' has shown the potential to be produced in a variety of styles. Its bronze skin lends color to the juice, resulting in wines typically ranging from pale gold to rich amber. They describe the wines as intensely fruity, exhibiting dominant peach and tropical fruit flavors, especially pineapple, and hints of honey. They add that the fruity palate and high acidity make 'Frontenac gris' an excellent candidate for semi-sweet to dessert wines; it has also shown well as a dry to off-dry table wine.

Average harvest chemistry data from the University of Minnesota's Horticultural Research Vineyard (2003-2005) (3), shows sugar levels have been high, averaging 26.0° Brix (but can reach 28° Brix), acid levels have been high at 14g/liter and pH has been low at 3.0. They state that due to these high levels of in both sugar and acidity,

'Frontenac gris' wines often require leaving residual sugar in order to produce a well balanced wine in northern climates.

**Season**: 'Frontenac gris' ripens in Midseason (average harvest date Sept. 27 in east central Minnesota) (2, 4).

**Cold Hardiness**: Very hardy to at least -35° F (4).

**Use**: Wine

**Notes**: 'Frontenac gris' should be a useful variety in other cold climate viticulture areas (USDA plant hardiness zones 4 and 5) of the eastern U.S. and Canada where 'Frontenac' has already become established (2).

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# GR 7

Iowa State University

**Synonyms**: Geneva Red 7, NY 34791 (7).

**Pedigree**: 'Buffalo' x 'Baco noir' (5, 6).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University (5, 6).

**Cross/Selection/Test**: The cross was made in 1947 and fruit were first observed in 1953; vines were tested under the name NY 34791 and in later testing, it was re-named 'GR 7' (Geneva Red 7) for ease of identification (6).

**Release**: 2003 (5, 6).

**Type**: Interspecific hybrid (includes V. labrusca; V. riparia; V. vinifera) (5).

**Color**: Black (5).

**Berry**: During the observation of a two vine planting at Geneva from 1996-2002, a mean berry weight of 1.56 g. was recorded (6).

**Cluster**: Medium, tight clusters; .31 lb average cluster weight (taken during the observation of a two vine planting at Geneva from 1996-2002) (6).

**Viticultural Characteristics**: Domoto (3) described a very vigorous; semi-procumbent growth habit. Basal shoot thinning and lateral shoot removal is recommended. He noted that bud break is early leaving it vulnerable to late frosts but it is moderately productive on secondary buds. Domoto (3) also reported that it has good tolerance to 2, 4-D but is susceptible to injury from dicamba drift.

Commercial experience has shown that 'GR 7' is well adapted to mechanized production systems and hedge and minimal pruned 'GR 7' vines have sustained productivity and achieved satisfactory fruit maturity over several years. One hundred days from bloom to harvest (2).

**Disease/Pests**: 'GR 7' is rated as moderately susceptible to Botrytis bunch rot, downy mildew, and powdery mildew; slightly susceptible to anthracnose, black rot, Eutypa dieback and Phomopsis cane and leaf spot (1, 3). While Bordelon et al (1) rates it as slightly susceptible to crown gall, Domoto (3) considers it moderately susceptible, stating that it is more prevalent in colder conditions. It is not sensitive to injuries from sulfur and it's unknown whether it is sensitive to copper (1, 3).

**Wine Quality and Characteristics**: According to Reisch et al. (6), depending on maturity and cropping level, 'GR 7' makes medium to dark red wines. In warm years, wines may have cherry or red berry aromas with some labrusca notes and in cool years, wines tend to have some vegetative or herbaceous notes. They mentioned that wines often have a high acidity and moderately high pH and use of malolactic fermentation combined with limited bicarbonate acidity adjustment may be desirable. Alternatively, they say the wine acid balance can be adjusted by blending and/or sugar adjustment. The sugar accumulation is very satisfactory, ranging from a low of 19.2° Brix to a high of 22° Brix in a warm year.

It's been reported that successful commercial 'GR 7' wines have been made as light wines but 'GR 7' appears to be most suited to the production of standard quality table wine when combined with highly productive hybrid or vinifera wine varieties (6). Commercial wine makers have found 'GR 7' wines to be a valuable blending component in both hot and cool years.

**Season**: Early Midseason (usually between mid-September and early October at Geneva, NY) (6), and early to mid-September at four Iowa State University research sites (4).

**Cold Hardiness**: Very hardy (below -20° F) (3) The predicted temperature of 50% primary bud kill (LTF50) in New York is -16.5° F (7).

**Use**: Wine

**Notes**: The sixth wine grape to be developed by the New York State Agricultural Experiment Station of Cornell University (6).

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# Jupiter

Iowa State University

**Synonyms**: Ark. 1985 (2, 3).

**Pedigree**: Clark and Moore (2) report that 'Jupiter' is a cross of Arkansas Selection 1258 (non-patented) x Arkansas Selection 1762 (non-patented). They said the source of the Muscat flavor of 'Jupiter' was the Vitis vinifera cultivar, 'Gold', and the source of seedlessness was 'Glenora'.

**Origin**: Clarksville, Arkansas. Arkansas Agricultural Experiment Station Fruit Substation (2, 3).

**Cross/Selection/Test**: Cross made in 1981; selected in 1984; tested as Ark.1985 (3, 9).

**Type**: Interspecific hybrid (including V. labrusca and V. vinifera) (3).

**Release**: 1998 from the University of Arkansas (8). Patent #13,309 given December 3, 2002 (3, 9).

**Color**: Blue (2, 4).

**Berry**: Clark and Moore (2, 4) report the 'Jupiter' berry as large (5.5 g/berry average weight over a 12 year study at University of Arkansas test sites), oval to slightly oblong; and with a mild Muscat flavor. They note that it is firm, semi-crisp; and has a medium thick non-slipskin (2, 3, 4). Skin thickness less than many Eastern table grapes; cracking has not been observed (10). Clark and Moore (2) add the berry is seedless, with small soft seed traces occasionally observed but usually considered negligible because of the size, softness and non-slipskin texture of the berry. They describe the color as reddish blue at early maturity, becoming completely blue when fully mature blue (2, 4).

**Cluster**: Clark and Moore (2, 4) describe the 'Jupiter' clusters as medium sized, (averaging .57 lb) over the 12 year study period at University of Arkansas test sites); well-filled but not overly tight. They note the clusters are conical and occasionally have a shoulder. Shatter (shelling) of berries from the clusters at maturity has not been observed, and the clusters hang well on the vines after achieving full maturity (2, 4).

**Viticultural Characteristics**: Clark and Moore (2, 3, 4) describe the 'Jupiter' vine as having medium vigor and a procumbent growth habit. They add that shoot positioning tends to be easy due to the lower vigor and less tendril interference. Cluster thinning may be needed at bloom to improve berry size (6). Eighty five days from bloom to harvest (5) . 'Jupiter' is moderately sensitive to phenoxy-herbicides (2, 4).

**Disease/Pests**: 'Jupiter' is rated as highly susceptible to downy mildew (1, 6) and powdery mildew (1, 5, 6); moderately susceptible to black rot (1, 5, 6); and slightly susceptible to anthracnose (1, 6), Botrytis bunch rot (1, 5, 6), and Phomopsis cane and leaf spot (1, 5, 6). They are uncertain if it is susceptible to crown gall and Domoto (6) states that it is not sensitive to injury from sulfur or copper applications.

**Wine Quality and Characteristics**: Used primarily as a table grape. Soluble solids concentration of 'Jupiter' averaged 19.8% over 12 years of study at University of Arkansas test sites (3).

**Season**: Early Midseason (2) Early to mid-August in Iowa (7, 8).

**Cold Hardiness**: Moderately hardy (-10 to -15° F). Some vine death occurred after exposure to -26° F in the West Lafayette, Indiana planting (4). Domoto (3) indicated that the vines are slow to harden off in the fall.

**Use**: Seedless table, juice.

**Notes**: Clark and Moore (4) report that 'Jupiter' is the fifth cultivar is a series of seedless table grapes released from the University of Arkansas and add the release of this cultivar will expand the options for eastern table grape growers, specifically providing a Muscat-flavored seedless table grape.

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# Kay Gray

www.nysaes.cornell.edu

**Synonyms**: Elmer Swenson 1-63, E.S. 1-63 (1, 3).

**Pedigree**: E.S. 217 (Minn. 78 x 'Golden Muscat') x open pollination; ('Onaka' is probable pollen parent, which is an old South Dakota cultivar. 'Onaka' was growing next to E.S. 217) (1, 3, 7).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (1, 7).

**Released**: 1981 (1, 3); Plant Patent 4493 assigned to Swenson Smith Vines on November 16, 1982 (1, 7).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (5, 7).

**Color**: White

**Berry**: Medium to large berries (3.5 g) (4). Juicy, slightly crisp and tender (7). Relatively non-fragile slipskin is white to golden with a mild and fruity labrusca flavor (1).

**Cluster**: Swenson (7) described the 'Kay Gray' cluster as small and compact; cylindrical and uniform, usually with one small shoulder. Also according to Swenson, ripening begins unevenly, but is full at maturity. Cluster weight averages .21 lb (5).

**Viticultural Characteristics**: Domoto (2) described 'Kay Gray' as very vigorous and having a procumbent growth habit. He also indicated that cluster thinning is not needed.

**Disease/Pests**: 'Kay Gray' is rated as being slightly susceptible to black rot, Botrytis bunch rot, crown gall, downy mildew and powdery mildew (2, 5). It is uncertain if it is susceptible to Eutypa dieback or Phomopsis cane and leaf spot. It is also uncertain if it is sensitive to injuries from sulfur applications (2, 5) or copper (2).

**Wine Quality and Characteristics**: Plocher and Parke (4) report that a neutral wine for table use or blending purposes can be produced from 'Kay Gray', and in exceptional years, it can have a flowery nose and stand on its own as a varietal wine. Also according to Plocher and Parke, it is best to harvest 'Kay Gray' at 16° to 18° Brix, prior to full maturity (if allowed to ripen fully, it develops some objectionable aromatics for winemaking). They also stress the importance of avoiding oxidation while processing the fruit into wine.

**Season**: Early Midseason (late August to mid-September in northern Wisconsin) (7)

**Cold Hardiness**: Plocher and Parke (4) report 'Kay Gray' as being very hardy, usually suffering little injury with mid-winter temperatures down to -35° F. They note that at extremes, such as -40° F, 'Kay Gray' has been injured at some sites but not others.

**Use**: Table grape, wine and juice.

**Notes**: Named after the wife of Elmer Swenson's friend, Dick Gray (former director of the Minnesota Freshwater Biological Institute) (4). Elmer Swenson used this grape as a parent for 'Brianna' and 'Louise Swenson'.

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# King of the North

John Marshall

**Pedigree**: Unknown, V. labrusca x V. riparia hybrid (4).

**Origin**: Unknown.

**Introduction**: Unknown.

**Type**: Interspecific hybrid (V. labrusca x V. riparia) (3, 4).

**Color**: Blue.

**Berry**: Medium to large; round and dark in color. The berry has a slipskin and is juicy and tart (1, 2).

**Cluster**: Medium sized (1); conical and somewhat loose (2).

**Viticultural Characteristics**: Very vigorous trailing growth habit which requires wide spacing (1, 2). Very productive (2).

**Disease/Pests**: Susceptible to downy mildew and foliar phylloxera (1, 2) anthracnose, black rot and powdery mildew are not commonly seen (2).

**Wine Quality and Characteristics**: Not typically used as a wine grape as it is acidic (1, 2) and makes a very "grapey and aromatic labrusca style wine (2). Marshall (2) also noted that wine typically needs to be finished a bit sweet to balance the acidity.

**Season**: Midseason (mid-late September) (2).

**Cold Hardiness**: Very hardy to -35° F (2).

**Use**: Most suitable for juice or jelly. Fairly high-acids, so use as a table grape is limited, although the juice is delicious (1, 4).

**Notes**: Said to be a slight improvement over 'Beta' (1).

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IOWA STATE UNIVERSITY
Extension and Outreach

HORT 3040-33 Revised May 2016

# La Crescent

University of Minnesota

**Synonyms**: MN 1166 (7).

**Pedigree**: 'St. Pepin' x E.S. 6-8-25 (V. riparia x 'Muscat Hamburg') (2, 7).

**Origin**: Excelsior, Minnesota. University of Minnesota Horticultural Research Center. Developed by Peter Hemstad and James Luby (2, 8).

**Cross/Selection/Test**: Cross made in 1988; selected in 1992; tested as MN 1166 (7).

**Introduction**: 2002 (6).

**Type**: Interspecific hybrid (including 45% V. vinifera, 28% V. riparia, and less than 10% each of V. rupestris, V. labrusca, and V. aestivalis) (6).

**Color**: White

**Berry**: Round; yellow-amber with a waxy bloom when ripe; and fairly small, averaging 1.3 g (7). Flavor fruity but not foxy (2). Berries have not been observed to split even in wet years, but in some years a small percentage of the berries have been observed dropping from the cluster before or during harvest (6).

**Cluster**: Medium sized; slightly loose to loose and conical with a shoulder; average weight of 144 g (.32 lb); and length of 15 cm (7).

**Viticultural Characteristics**: Sprawling growth habit, high vigor and medium productivity with vines setting a light to moderate crop load that varies from year to year (6). As observed at four Iowa State University research sites, bud break is early (similar to 'Maréchal Foch') and secondary buds are moderately productive (5). Domoto (3, 4) also reported that 'La Crescent' is somewhat susceptible to injury from 2,4-D and very susceptible to injury from dicamba.

**Disease/Pests**: 'La Crescent' is reported to have moderate susceptibility to black rot and powdery mildew; low susceptibility to Botrytis bunch rot, crown gall, Eutypa dieback and Phomopsis cane and leaf spot (1, 3). Domoto (3) rates it as highly susceptible to anthracnose, while Bordelon et al (1) rates it as slightly susceptible. It is susceptible to foliar phylloxera (6). It is uncertain if it is sensitive to injuries from sulfur or copper applications (1, 3).

**Wine Quality and Characteristics**: According to the University of Minnesota (6), 'La Crescent's' intense nose of apricot, peach and citrus lends itself to superior quality off-dry or sweet white wine. They added that it lacks "foxy" aromas associated with V. labrusca and herbaceous aromas associated with V. riparia.

'La Crescent' fruit at harvest are usually relatively high in sugar (averaging 24.5%); moderate to high in acidity at 1.19% titratable acidity (11.9g/liter); and a pH averaging 3.00 (6). The University of Minnesota (6) also suggested that the grape's high acidity provides good structure for excellent dessert or late harvest wines and it may also be used as a blending wine to add good aromatics to more neutral white wines.

**Crescent's intense nose of apricot, peach, and**

**Season**: Early (average harvest date September 26th in Excelsior, MN) (2).

**Cold Hardiness**: Very hardy (-20° to -35° F). Trunks have survived -36° F with only minor bud loss (2).

**Use**: Wine

**Notes**: Said to be reminiscent of 'Vignoles' or 'Riesling' (2).

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# LaCrosse

Iowa State University

**Synonyms**: E.S. 294 (6).

**Pedigree**: (Minn. #78 x Seibel 1000) x 'Seyval blanc' (6).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (6, 9).

**Introduction**: 1983 (6, 9).

**Type**: Interspecific hybrid (includes V. labrusca; V. lincecumii; V. riparia; V. rupestris; V. vinifera) (6).

**Berry**: Medium; yellow-green, spherical with tender and juicy pulp (9). Thin skinned and subject to leaking (3).

**Color**: White

**Cluster**: More cylindrical than cone shaped; tight, medium-small (average cluster weight is .25 lb) (9).

**Viticultural Characteristics**: Vigorous; somewhat open and semi-upright growth habit (9). Domoto (3) indicated that it has mid-season bud break and the secondary buds are productive. He found that with few tendrils it has a tendency to lay down in a VSP training system and shoots may need to be secured. He reported that it seems to have good tolerance to 2,4-D, but is susceptible to injury from dicamba (3, 4). One hundred four days from bloom to harvest (2).

**Disease/Pests**: 'LaCrosse' is rated as highly susceptible to black rot (1, 2, 3), and Botrytis bunch rot (1, 2, 3, 8), moderately susceptible to downy mildew (1, 2, 3), and powdery mildew (1, 2, 3, 8); and slightly susceptible to anthracnose (1, 3). Reisch et al (8) considers it slightly susceptible to downy mildew. Bordelon et al (1) rates it as moderately susceptible to Phomopsis cane and leaf spot, but Domoto (3) and Reisch (8) are uncertain. It's uncertain if it is susceptible to crown gall or Eutypa dieback (1, 2, 3, 8). It is not sensitive to injuries to applications from sulfur or copper (3).

**Wine Quality and Characteristics**: Plocher and Parke (7) report that depending on wine style, descriptions of aromatics in 'LaCrosse' wines range from pear, apricot and slightly Muscat to citrus and floral. They state that 'LaCrosse' wines have proven to be good as varietals and also have been valuable as blending components for lighter wines, as it adds body and finish. They feel the best wines from 'LaCrosse' have been dry whites fermented in oak, with the acidity softened by malolactic fermentation and that some excellent, fruity, semi-dry wines have also been made.

**Season**: Early Midseason. Early September to Mid-September in Minnesota (9). At four Iowa State University research sites in 2007, 'LaCrosse' was harvested during the last week of August (4, 5).

**Cold Hardiness**: Hardy (-15° to -20° F) (3).

**Use**: Wine, juice.

**Notes**: Plocher and Parke (7) note that 'LaCrosse' is a sister to 'St. Pepin' and were named after the Wisconsin city on the Mississippi river.

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# Landot Noir


Iowa State University

**Synonyms**: Landot 4511 (4, 6).

**Pedigree**: Landot 244 x Seyve Villard 12.375 (4, 6).

**Origin**: France, bred by Pierre Landot (1).

**Introduction**: Introduced into Canada in 1954. Early 1960s for the United States (1).

**Type**: Interspecific hybrid (including V. aestivalis; V. berlandieri; V. cinerea; V. labrusca; V. lincecumii; V. riparia; V. rupestris; V. vinifera) (6).

**Color**: Black

**Berry**: Large (7).

**Cluster**: Loose (7); small to medium in size (.19 lb average weight taken from four Iowa State University research sites in 2007) (3).

**Viticultural Characteristics**: Galet (4) described the 'Landot noir' vine as vigorous; has an upright growth habit and is a heavy producer. He reported that bud break is late, maturity is early and it may be subject to poor fruit set.

**Disease/Pests**: 'Landot noir' is rated as moderately susceptible to Botrytis bunch rot and downy mildew; and slightly susceptible to black rot and powdery mildew (2) Galet (4) considers it somewhat susceptible to anthracnose.

**Wine Quality and Characteristics**: Reported to make a mild, fruity red wine (5); and some think it may do well as part of a big red blend, adding fruit, size and spice to the mix (8). Oldak (7) described the wine as medium to full bodied with soft tannins, and spicy with hints of red fruit, leather and tobacco.

**Season**: Midseason (early September in Iowa) (3).

**Cold Hardiness**: Moderately hardy (-10 to -15° F) (5).

**Use**: Wine

**Notes**: Parent of Frontenac. The Wine Spectator has rated a wine made from 'Landot noir' at 96 points (from the Hudson River Valley) (5).

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# Léon Millot


Iowa State University

**Synonyms**: Kuhlmann 194-2, 'Millot' (8, 10).

**Pedigree**: 101-14 Mgt. x 'Goldriesling' (same cross as 'Maréchal Foch') (8, 10).

**Origin**: France. Bred by Eugene Kuhlmann (10).

**Introduction**: Circa early 1950's when Philip Wagner brought back cuttings of 'Léon Millot' that he had obtained from Gerard Marot's vineyard in France (2). It should be noted that viticulture historian George Gale (7) indicates that the 'Léon Millot' being distributed by nurseries is not the one introduced by Wagner, and prefers to identify it as 'Léon Millot Rouge'. (Characteristics described below are for commonly available type.)

**Type**: Interspecific hybrid (including V. riparia; V. rupestris; V. vinifera) (10).

**Color**: Black

**Berry**: Small, round and juicy (8).

**Cluster**: Small, winged, cylindrical and loose (8); average cluster weight taken from four Iowa State University research sites in 2007 was .15 lb (5).

**Viticultural Characteristics**: Domoto (4) described 'Léon Millot' as being very vigorous and with a procumbent growth habit. He indicated that cluster thinning is not needed, but lateral shoot thinning is. He also reported a midseason bud break and that it is productive on secondary buds. Eighty five days from bloom to harvest (3). Very similar to 'Maréchal Foch', but 'Léon Millot' tends to be more vigorous and productive (8).

**Disease/Pests**: 'Léon Millot' is rated as highly susceptible to Botrytis bunch rot (1, 4, 6, 12); moderately susceptible to powdery mildew (1, 4, 6, 12) and downy mildew (1, 3, 4, 6); and slightly susceptible to anthracnose (1, 4), black rot (1, 3, 4), crown gall (1, 12) Eutypa dieback (1, 3, 4), and Phomopsis cane and leaf spot (1, 3, 4). Reisch et al (11) considers it slightly susceptible to downy mildew, moderately susceptible to powdery mildew, and is uncertain of its susceptibility to black rot or Phomopsis. Domoto (4) rated it as moderately susceptible to crown gall under Iowa conditions. Bordelon et al (1) and Dami et al (3) consider it slightly sensitive to injuries from sulfur applications, but Domoto (4), Double A Vineyards (6) and Reisch et al (12) were uncertain.

It is also uncertain if it is sensitive to injuries from copper applications (1, 3, 4). Domoto (4) also cautioned that it is susceptible to injury from 2,4-D and dicamba.

**Wine Quality and Characteristics**: 'Léon Millot's' very early maturity enables it to obtain ample sugar content for winemaking in areas with short growing seasons (8). Plocher and Parke (11) report that the fruit can achieve an excellent balance of sugar and acid for wine production. While often compared to 'Maréchal Foch', some consider 'Léon Millot' a superior wine because of more distinct berry aromas (9).

**Season**: Early maturing (5-7 days earlier than 'Maréchal Foch') (4)

**Cold Hardiness**: Hardy (-15 to -20° F) (4)

**Use**: Wine or juice

**Notes**: Sibling of 'Maréchal Foch'. Extensively grown in the Alsace region of France where it is known as "le medicindu vin" (or "wine doctor") for its ability to increase the color intensity of a red wine without perceptibility altering the quality (9). Also widely grown in Denmark (11).

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# Lemberger

www.nysaes.cornell.edu

**Pedigree**: 'Gouais Blanc' x an unknown variety (possibly 'Blauer Zierfandler') (7).

**Origin**: Austria (8). According to Ciocco (4), it probably originated in vineyards on the lower stretches of the Danube River. He stated the grape was documented in Austria in the second half of the 18th century and in the 19th century, a "wine improvement society" advocated replacing high-yielding varieties with high-quality grapes (such as 'Lemberger') in the Kingdom of Württemberg, Germany.

**Introduction**: N/A

**Type**: V. vinifera (8).

**Synonyms**: 'Lemberger' is known by many names: 'Limberger' in Germany, Blaufränkisch' in Austria, 'Franconia' in Friuli and 'Kekfrankos' in Hungary (1).

Other names include: 'Blanc Doux', 'Blauer Lemberger', 'Blauer Limberger', 'Blue French', 'Burgund Kekfrankos', 'Burgund Mare', 'Cerne', 'Cerne Skalicke', 'Cerny Muskatel', 'Chirokolistny', 'Crna Moravka', 'Fernon', 'Fraenkische', 'Fraenkische Schwarz', 'Frankovka', 'Frankovka Cerna', 'Frankovka Modra', 'Fruehschwarze', 'Game', 'Kekfrank', 'Lampart', 'Maehrische', 'Modra Frankija', 'Modry Hyblink', 'Moravka', 'Moravske', 'Muskateller Schwar', 'Nagyburgundi', 'Neskorak', 'Neskore', 'Neskore Cierne', 'Noir de Franconie', 'Oporto', 'Orna Frankovka', 'Portugais Lerouse', 'Portugais Leroux', 'Portugais Rouge', 'Pozdni', 'Pozdni Skalicke Cerne', 'Schwarzgrobe', 'Serina', 'Shirokolistnyi', 'Sshwarze Fraenkische', 'Starosvetske', 'Starovetsky Hrozen', 'Szeleslevelue', 'Teltfuertue Kekfrankos', 'Teltfurtu Kekfrankos', 'Velke Bugundske' (8).

**Color**: Blue (5).

**Berry**: Medium sized (5).

**Cluster**: Large and long (9). Average cluster weight is .30 lb (5).

**Viticultural Characteristics**: Fiola (6) described the vine as having medium-high vigor and upright growth habit. He added it has early bud break and ripens late, leaving it susceptible to frosts at both ends of the season. One hundred ten days from bloom to harvest (5).

**Disease/Pests**: 'Lemberger' is rated as being highly susceptible to black rot, crown gall, downy mildew, Eutypa dieback and powdery mildew; and slightly susceptible to Botrytis bunch rot (1, 5, 10). It is not sensitive to injury from sulfur applications and it's uncertain if it is sensitive to injury from copper applications (1, 5, 10).

**Wine Quality and Characteristics**: Fiola (6) reported that wine has been described as balanced and has been done in a rosé style as well as used for medium bodied reds having soft tannins and black pepper overtones. Coccio (4) reported that the olfactory descriptors most often assigned to these wines are notes of black cherry, loamy earth, and ground spices. He noted that on the palate, the wine is decidedly more acidic than tannic, and has medium to full body with a noticeably "fruity" character.

In a three year study involving testing of experimental wine grapes in Washington, Carter et al. (3) reported that 'Lemberger' averaged moderate soluble solids at 23.7° Brix; moderate pH at 3.4; and was somewhat high in titratable acidity at 8.1 g/liter.

**Season**: Late Midseason (5)

**Cold Hardiness**: Slightly hardy at 0° F to -10° F (4). Vines have survived -13° F (6). Read (9) reports that 'Lemberger'

has withstood winters at three eastern Nebraska research sites with good vine vigor and fruit set.

**Use**: Wine

**Notes**: According to Hawkins (7), wines made from this grape reportedly have low levels of histamines. It is the normally higher amounts of this compound found in many other red wines that can cause allergy headaches in some people. Coccio (4) added that 'Blaufrankisch' and 'Kekfrankos' mean "French Blue" in their respective native languages.

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# Louise Swenson


Tom Plocher

**Synonyms**: E.S. 4-8-33 (4).

**Pedigree**: E.S. 2-3-17 x 'Kay Gray' (1, 4, 6).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (1, 4, 6).

**Cross/Selection/Introduction**: Cross made in 1980; selected in 1984; introduced in 2001 (1).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (7).

**Berry**: Medium sized (average berry weight is around 3 g); and round (1, 6). Yellow-gold when fully ripe (1). Soluble solids rarely exceed 20° Brix, even if left to hang past midseason (1, 6).

**Color**: White (4)

**Cluster**: Small to medium in size (average cluster weight is .23 lb) (1, 6); slightly loose with no shoulder (1); conical and compact; with clusters hanging free of tendrils (6).

**Viticultural Characteristics**: 'Louise Swenson' has a trailing to semi-upright growth habit which does well on a bilateral cordon (1). Plocher and Parke (6) report it has moderate vigor with a relatively late bud break. They also note that it has shown some sensitivity to droughty conditions and may benefit from irrigation in dry, sandy soils in dry years. Cluster thinning not needed (2). Some consider it a smaller vine, that closer spacing is ok, and that it's somewhat slow to become established (3).

**Disease/Pests**: Disease resistance generally very good; some susceptibility to anthracnose (6). At the University of Minnesota Horticultural Research Center vineyard, 'Louise Swenson' showed very good resistance to black rot, downy mildew and phylloxera and had moderate resistance to powdery mildew (3).

**Wine Quality and Characteristics**: Said to be reminiscent of a white burgundy (1). Plocher and Parke (6) report that in trials, wine is described as light bodied and with a delicate "floral and honey" aroma. They added that it tends to have moderate acidity usually needing no reduction.

Plocher (5) mentions that he typically picks 'Louise Swenson' at 19° to 20° Brix, but in 2007, it ripened to 21.8° Brix by September 6th. He said the wine had pear, banana, honey and pollen aromas and also had more body than usual, so he needed to add tartaric acid back in, as it finished too low after cold stabilization.

**Season**: Early midseason (5)

**Cold Hardiness**: Very hardy (has survived -27.4° F when observed at sites in southern Minnesota and western Wisconsin and has suffered little winter injury at -40°F) (1).

**Use**: Wine and table.

**Notes**: Named for Elmer Swenson's wife, Louise (1).

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# Maréchal Foch


Iowa State University

**Synonyms**: Kuhlmann 188.2; 'Foch' (9).

**Pedigree**: 101-14 Mgt. x 'Goldriesling' (although some argue it is derived from Oberlin 595 x 'Pinot Noir') (9).

**Origin**: Alsace, France. Bred by Eugene Kuhlmann; Oberlin Institute, Colmer (9).

**Introduction**: 1920 in France; to the United States in 1951. Philip Wagner brought it in from Brights Wines in Ontario (2).

**Type**: Interspecific hybrid (includes V. riparia; V. rupestris; V. vinifera) (9).

**Color**: Black

**Berry**: Small, blue-black, round (7)

**luster**: Short (7 to 10 cm); winged; cylindrical (7); and tight (4)

**Viticultural Characteristics**: Domoto (4) described 'Maréchal Foch' as having low vigor and a procumbent growth habit. He reported a very early bud break making it prone to frosts (4). According to Domoto (4), cluster thinning is not needed but basal shoot thinning is. Because of its small clusters and berries, Galet (7) recommended pruning it long in order to get sufficient yields. A significant amount of heat is needed to fully mature fruit and central Minnesota is on the fringes of that area, with full ripening possible only in the best years (10).

**Disease/Pests**: 'Maréchal Foch' is rated as highly susceptible to Eutypa dieback; moderately susceptible to anthracnose (1, 4), black rot (1, 3, 4) and powdery mildew (1, 3, 4, 11); slightly susceptible to Botrytis bunch rot (1, 3, 4, 11) and downy mildew (1, 3, 4, 11). Bordelon et al (1) rates it as slightly susceptible to crown gall, but Domoto (4) considers it moderately susceptible, stating that it is more prevalent in colder conditions. It is reported to be sensitive to injury from sulfur applications (1, 3, 4) and Domoto (4) added that it is not prone to injuries from copper applications. He found the cultivar to be moderately susceptible to injury from 2, 4-D and susceptible to injury from dicamba. He noted the small black berries are attractive to birds.

**Wine Quality and Characteristics**: Very good quality red wines have been made from 'Maréchal Foch'. This variety is versatile, and capable of producing fruity light reds to full bodied wines. Wines are said to have a 'Burgundy' character while having a somewhat herbaceous flavor and purplish color (7). May require carbonic maceration or hot-pressing to enhance quality (8).

**Season**: Very Early (late August in Iowa) (5, 6)

**Cold Hardiness**: Hardy (-15 to 20° F) (4)

**Use**: Wine, juice

**Notes**: Often referred to as 'Foch' and is a sibling of 'Léon Millot'. Named after Marshal Ferdinand Foch (1851-1929) who served as Allied Supreme Commander of the British, French and American armies in France during World War I. Foch isn't known for any direct involvement in wine, but in a burst of patriotic fervor after the war, the French grape scientists who bred the new variety, named it after the aging general (12).

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# Marquette

University of Minnesota

**Synonyms**: MN 1211 (2, 3).

**Pedigree**: MN 1094 (complex hybrid of V. riparia, V. vinifera, and other Vitis species) x Ravat 262 (offspring of 'Pinot noir') (4, 6).

**Origin**: Excelsior, Minnesota. University of Minnesota Horticultural Research Center; bred by Peter Hemstad and Jim Luby (3).

**Cross/Selection/Test**: Cross originally made in 1989; selected in 1994 and tested as MN 1211 (3).

**Release**: 2006 (7) Patent applied for in 2005 (3).

**Color**: Black

**Type**: Interspecific hybrid including: (V. riparia, V. vinifera and other Vitis species) (6).

**Berry**: The University of Minnesota (3) describe berry as roundish in shape and small to medium in size (average berry weight is 1.14 g); black skin with a bluish bloom and light pink pulp. They report that neither berry shelling nor splitting have been problems.

**Cluster**: Clusters are reported to be small to medium (average cluster weighs .20 lb and is 4.2 inches long); slightly conical; and sometimes with one shoulder (3).

**Viticultural Characteristics**: The 'Marquette' vine is described by Hemstad and Luby (3) as having moderate vigor with an open, somewhat upright and orderly growth habit, which is desirable for efficient vineyard management and fruit exposure to the sun conducive to maximizing wine quality. Shoots typically have two small to medium clusters per shoot, avoiding the need for cluster thinning.

According to Domoto (1), bud break is somewhat early, leaving it vulnerable to frost, however it is moderately productive on secondary buds. He also reported that it is moderately susceptible to injury from 2,4-D and dicamba.

**Disease/Pests**: Based on observations compiled over four years (2002-2005) at the University of Minnesota Horticultural Research Center, 'Marquette' has a low susceptibility to black rot, bunch rots (Botrytis, etc), downy mildew and powdery mildew. They report that it is moderately susceptible to foliar phylloxera and crown gall has not been observed (3).

**Wine Quality and Characteristics**: As described by the University of Minnesota (5), 'Marquette' exhibits cherry and black currant flavors and aromas typical of many hybrids, but can be much more complex with integrated notes of blackberries, pepper, plum, tobacco, leather, and spice. 'Marquette' is best when utilized as a medium-bodied red table wine. Based upon harvest data from 2003 -2005 at the University of Minnesota Horticultural Research Center, 'Marquette' grapes averaged 26.1° Brix, 12.1 g/liter titratable acidity, and 2.95 pH (5). The University of Minnesota further indicated that this level of acidity has been found to be quite manageable by experienced winemakers.

**Season**: Early Midseason (mid-September in east Central Minnesota) (3).

**Cold Hardiness**: Very hardy (-20° F to -30° F). It's been reported to have withstood temperatures as low as -36° F without serious injury (2, 4).

**Use**: Wine

**Notes**: Named after Pere Marquette, a Jesuit missionary and explorer in America in the second half of the 17th century (1). Cousin of 'Frontenac' and grandson of 'Pinot noir' (4).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Marquis


Iowa State University

**Synonyms**: NY 64.029.01 (6, 7, 8 9).

**Pedigree**: 'Athens' x 'Emerald Seedless' (6, 7, 8, 9).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University. Developed by B.I Reisch, R.M. Pool, G. Remaily and J. Einset (7, 9).

**Cross/Selection/Test**: Cross was made in 1964 by George Remaily and selected in 1980 for further testing as NY 64.029.01 (7, 9).

**Release**: 1996. Plant Patent #11,012 received on July 20, 1999 (8).

**Type**: Interspecific Cross (V. labrusca; V. vinifera) (6, 7, 8, 9).

**Color**: White

**Berry**: Reisch et al. (7, 8, 9) describe the 'Marquis' berry as large (3.5 to 5.0 g) and spherical in shape, with medium sized, soft seed remnants (8). Also according to Reisch et al. (8), the skin is medium tough, slightly susceptible to cracking when wet (at distal end of berry) and yellow green with a light waxy bloom. They reported that as the fruit continues to ripen on the vine, they may take on tones of amber and the skin softens. Reisch et al. (7, 8, 9) describe the flesh as melting and very juicy, and the flavor is very mild labrusca. It develops a richer American flavor if left to ripen another 5 to 10 days.

**Cluster**: Reisch, et al. (7, 8, 9) state the 'Marquis' clusters are large, shouldered, medium-large and moderately loose. They reported that studies in Benton Harbor, MI, have shown that pre-bloom cluster thinning to one cluster per shoot resulted in increases in fruit cluster weight and berry weight. They also cautioned that clusters are highly sensitive to gibberellic acid application which causes berry drop and distorted, thickened rachises.

**Viticultural Characteristics**: Reisch et al. (7, 8, 9) describe the 'Marquis' vine as moderately vigorous with an upright to slightly procumbent growth habit (7, 9). They report a midseason bud break with very little crop borne on secondary, tertiary and base buds, yet cluster thinning is required due to the large cluster size (7, 8, 9). Domoto (3) noted that it hardens off slowly in the fall. He added that it is moderately susceptible to injuries from 2,4-D and dicamba. One hundred five days from bloom to harvest (2).

**Disease/Pests**: 'Marquis' is rated as highly susceptible to downy mildew and Phomopsis cane and leaf spot (1, 2, 3). Bordelon et al. (1) and Domoto (3) also consider it highly susceptible to anthracnose. It is slightly susceptible to black rot (1, 2), Botrytis bunch rot (1, 2, 3) and powdery mildew (1, 2), however Domoto (3) rated it as highly susceptible to powdery mildew and moderately susceptible to black rot. It is uncertain whether it is susceptible to crown gall or Eutypa dieback (1, 2, 3). It is not sensitive to injury from sulfur or copper applications (3).

**Wine Quality and Characteristics**: Not considered a wine grape.

**Season**: Midseason (late August in Iowa), (4, 5) mid to late September in Geneva, NY (7, 8, 9).

**Cold Hardiness**: Moderately hardy (-10° to -15° F) (3)

**Use**: Seedless table grape. Makes excellent raisins; skin is not as tough as 'Reliance' when dried (10).

**Notes**: Best suited for home gardens and u-pick commercial operations (9).

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# Mars


Iowa State University

**Synonyms**: Arkansas 1508, 'Mars Seedless' (9).

**Pedigree**: 'Island Belle' x Arkansas 1339 (8, 9).

**Origin**: Clarksville, Arkansas. University of Arkansas Breeding Program. Developed by James N. Moore (9).

**Cross/Selection/Test**: Cross made in 1972. One seedling was selected in 1975 and named Ark.1508 (7).

**Type**: Interspecific hybrid (includes V. labrusca and V. vinifera) 'Mars' is derived from 'Buffalo', 'Alden', 'Ontario', 'Ribier', 'Russian Seedless', 'Vergennes', 'Zinfandel' (9).

**Release**: 1984. Plant patent PP5680 given in 1986 (8).

**Color**: Begins crimson and turns deep blue at maturity (11).

**Berry**: Moore (8) described the berry as round, medium-large and uniform in size (3 g/berry average). There is a medium thick slipskin (typical of eastern table grapes) (6) which are resistant to cracking and do not shatter (shell) from the clusters, maintaining well on the vine after maturity. Moore (7) indicated a sweet, juicy melting flesh which has a labrusca flavor and that it is seedless, having very small vestigial seeds which are unnoticeable when eaten.

**Cluster**: Short and cylindrical, medium in size; compact and well filled with a slight taper, rarely with shoulder (9). Average cluster weight at four Iowa State University research sites in 2007 was .40 lb (4, 5).

**Viticultural Characteristics**: 'Mars' is very vigorous (3) and with a procumbent growth habit (3). Bud break is midseason, it is productive on secondary buds and cluster thinning is needed as vines are very productive (3, 9). Moore (9) added that the canes mature their wood early and enter winter in a well-hardened condition. Eighty days from bloom to harvest (2). Moderately susceptible to injury from 2,4-D and dicamba (3).

**Disease/Pests**: 'Mars' is rated as being slightly susceptible to anthracnose (1, 3), black rot (1, 3, 11), Botrytis bunch rot (1, 3, 11) crown gall (1, 3, 11), downy mildew (1, 3, 4, 11), Phomopsis cane and leaf spot (1, 3, 4) and powdery mildew (1, 3, 11). Domoto (3) reported that it is not sensitive to injuries from sulfur or copper applications.

**Wine Quality and Characteristics**: Not typically used as a wine grape.

**Season**: Early (between mid-August to early September at four Iowa State University test sites in 2007) (4, 5).

**Cold Hardiness**: Moderately hardy (-10° F to -15° F) (3). At Fayetteville, Arkansas, 'Mars' has not been damaged by temperatures of -14.8° F (7).

**Use**: Wine, table, juice, jelly.

**Notes**: Among the most cold hardy of the seedless grapes.

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# Niagara

www.nysaes.cornell.edu

**Synonyms**: 'Niagara White' (7) also known as 'White Concord' (10).

**Pedigree**: 'Concord' x 'Cassady' (2, 6, 7).

**Origin**: New York, USA.

**Introduction**: 1882 by the Niagara Grape Company of Lockport, Niagara County, New York. (1) Originated by C. L. Hoag and B.W. Clark and placed on the grape list of the American Pomological Society in 1885 (6).

**Type**: Includes V. labrusca and V. vinifera (7).

**Cluster**: Medium to large; tapering to cylindrical and often single shouldered and moderately compact (6). 0.35 lb average cluster weight (3).

**Color**: White

**Berry**: Hedrick et al. (6) describe the 'Niagara' berry as medium to large; slightly oval; light green changing to a pale yellowish-green as it ripens and covered with a thin gray bloom. They indicate the skin is thin and tender, adhering somewhat to the pulp, contains no pigment, and is slightly astringent. Also according to Hedrick et al. (6), the flesh is light green, translucent, juicy, moderately tender, foxy sweet next to the skin and tart at the center.

**Viticultural Characteristics**: Procumbent growth habit (3); moderately to highly vigorous and productive (5). One hundred ten days from bloom to harvest (3).

**Disease/Pests**: 'Niagara' is rated as highly susceptible to black rot, downy mildew and Phomopsis cane and leaf spot (1, 3, 4, 8); moderately susceptible to crown gall (1, 3, 8) and powdery mildew (1, 3, 4, 8); and mildly susceptible to Botrytis bunch rot and Eutypa dieback (1, 3, 4, 8). Bordelon et al (1) however, considers it slightly susceptible to crown gall. They and Domoto (4) rate it as moderately susceptible to anthracnose, while Dami et al (3) considers it slightly susceptible to anthracnose. It is not sensitive to injuries from sulfur applications (1, 3, 4, 8) but copper applied under cool, slow drying conditions may cause injury (1, 3, 4).

**Wine Quality and Characteristics**: Used to create fruity white wines with strong "grapey" flavor, at its best when blended with a neutral white wine (5). Acidity is lower than for most other American varieties (8).

Hedrick et al. (6) note that the foxiness is highest just after fruit is picked and is usually better flavored after having been stored for a few days. They indicate that the flavor is not at its best unless grapes are fully ripe.

**Season**: Late Midseason (just ahead of Concord) (6).

**Cold Hardiness**: Moderately hardy (-10° F to -15°F) (8). Hedrick et al. (6) indicated that 'Niagara' cannot be relied upon (without winter protection) where it falls much below 0° F.

**Use**: Juice, table, wine. Because of its excessive vigor, it's often used for arbors (9).

**Notes**: Some consider it the foxiest of all native grown varieties (6).

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# Noiret

www.nysaes.cornell.edu

**Synonyms**: NY 73.0136.17 (5, 6¬).

**Pedigree**: NY65.0467.08 (NY33277 x 'Chancellor') and 'Steuben' (4, 5, 6).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University. Developed by B.I. Reisch, R.S. Luce, B. Bordelon, and T. Henick-King (5).

**Cross/Selection/Test**: Cross made in 1973. The original seedling vine was germinated in 1974 and planted to a permanent site in 1975; tested for wine characteristics in 1980; and identified as test selection NY73.0136.17 (5).

**Release**: 2006 (4, 5, 6).

**Release**: 2006 (4, 5, 6).

**Type**: Interspecific hybrid (including V. vinifera, V. labrusca, V. rupestris, V. riparia and V. lincecumii) (6).

**Color**: Black (4).

**Berry**: Moderately large sized berries (3.25 g/berry average) (5).

**Cluster**: Large and loose clusters (.35 lb/cluster average) (5).

**Viticultural Characteristics**: 'Noiret'™ is described as having a vigorous semi-upright to semi-trailing growth habit (5). Bud break is late, so spring frost damage is usually not a concern (2). Reisch et al. (5) add that cluster thinning is not usually necessary, but may be helpful in some years. They report that fruit turn color early in September, yet are harvested between late September and early October. Also, some fruit are occasionally lost due to the brittleness of the rachis, but the amount of loss is not usually significant. They note that older vines occasionally show a slow decline in vigor which may be indicative of a need for grafting.

**Disease/Pests**: According to Reisch et al. (5), 'Noiret'™ is rated as slightly susceptible to powdery mildew, black rot and Botrytis bunch rot (rare) and moderately susceptible to downy mildew of the fruit and leaves, which can occasionally be a serious problem. Additional sprays for downy mildew may be necessary if conditions warrant. They add that powdery mildew is only a problem when conditions are highly conducive to disease development and sulfur can be used for control, but it should be alternated with other materials. Some sulfur phytotoxicity has been observed, though not usually severe and applications should be avoided in hot weather (5). It is uncertain if it is susceptible to injuries from copper applications (1, 2). However, in the Midwest, Bordelon et al (1) and Domoto (2) considered 'Noiret'™ as moderately susceptible to black rot, downy mildew and powdery mildew; and slightly susceptible to Botrytis bunch rot and Phomopsis cane and leaf spot. Domoto (2) considered it moderately susceptible to crown gall, as it's more prevalent in colder conditions. In addition, Domoto (2) rated it moderately susceptible to anthracnose while Bordelon et al (1) rated it slightly susceptible. It is not known if it is susceptible to Eutypa dieback. Domoto (2) has observed it to have good tolerance to 2,4-D and dicamba.

**Wine Quality and Characteristics**: Reisch et al. (5), report that "Noiret'™ wines consistently have a very good, deep rich color with notes of green and black pepper along with raspberry, blackberry, and some mint aromas. The wines have a very attractive, fine tannin texture and are free of the hybrid aromas typical of many other red hybrid grapes. They note that high acidity and high pH are typically not problems (titratable acidity levels at harvest about 2 g/liter less than other red hybrids); and that the acidity usually balances itself very easily after malolactic fermentation.

**Season**: Late Midseason. October 1st at Geneva, New York (7), mid-late September in Iowa (3)

**Cold Hardiness**: Moderately hardy (-5º F to -15º F); some trunks have been lost after very cold winters and the predicted temperature of 50% bud loss (LTF50) was -14.3° F (5).

**Use**: Wine

**Notes**: For trial only in northern parts of Iowa; late maturity makes it questionable for much of the upper Midwest (2).

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# Petite Amie


Ed Swanson

**Synonyms**: DM 8313.1 (1, 2).

**Pedigree**: ES 2-11-4 [ES 5-14 x Swenson Red] x DM P2-54 [Suelter x Morio Muscat] (1).

**Origin**: South Haven, Minnesota. Bred by David MacGregor (1, 2, 3).

**Cross/Selection/Test**: Cross made in 1983; selected in 1987 and tested as DM 8313.1 (2).

**Introduced**: 'Petite Amie' was named in late 2004 or early 2005 by Ed Swanson, with the permission of David MacGregor (1). U.S. Plant Patent PP17,773 received on May 29, 2007 (2).

**Type**: Interspecific hybrid (includes V. vinifera, V. riparia) (2).

**Color**: White

**Berry**: According to MacGregor (2), the berry is small (2 g/berry); round and yellowish green. The skin is thin and the flesh is soft and juicy. MacGregor added that the berries do not split following rains and adhere well to the fruit peduncle and do not shatter during harvest.

**Cluster**: Swanson (3) described the cluster size as small to medium (10 inches long and 0.44 lb/cluster); and MacGregor (2) described the shape as cylindrical to conical; and moderately well-filled, but not compact. He added the clusters are capable of hanging in good condition for late harvest.

**Viticultural Characteristics**: Low to moderate vigor and a procumbent growth habit (1, 3). Swanson (3) recommended grafting or planting on high vigor sites to produce commercial size crops. MacGregor (2) reported that bud break occurs midseason.

**Disease/Pests**: Good disease resistance. Swanson (3) noted that under normal spray schedules, good disease control can be expected. 'Petite Amie' may be slightly susceptible to black rot in wet years (1, 3) and Hart (1) has seen anthracnose occasionally, but reported that neither has been severe. Swanson (3) has reported seeing "Muscat speckle" occasionally on the leaves.

**Wine Quality and Characteristics**: MacGregor (2) reported that 'Petite Amie' has produced excellent wines and describes the wine as having a fine Muscat flavor similar to 'Muscat blanc'. Swanson (3) reported the wines have a wonderful smell of fresh roses and tend to develop tropical taste and nose over time. He added that in Nebraska, 'Petite Amie' is usually harvested the end of August or beginning of September before the pH gets above 3.4. He noted that this will vary with soils and climate. According to Swanson (3), average harvest parameters in Nebraska would include soluble solids near 18° Brix; pH of 3.4; and titratable acidity close to 9 g/liter.

**Season**: Early Midseason. Late August to early September in Nebraska (3); mid-September in Minnesota (2).

**Cold Hardiness**: Very hardy (-25° F) (1).

**Use**: Wine

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# Petite Jewel

Mark Hart

**Synonyms**: E.S. 3-20-36 (6).

**Pedigree**: MN #78 x 'Canadice' (1, 6).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (1, 6)

**Selected**: 1984 (1, 6).

**Introduced**: 2000 (1).

**Type**: Interspecific hybrid (including V. labrusca, V. riparia, V. vinifera) (4, 7, 8).

**Color**: Red

**Berry**: Small and round; seedless (1); flavor is rich and spicy (1, 6); soluble solids average around 21° Brix (1).

**Cluster**: Small to medium in size; conical in shape and with a shoulder (1).

**Viticultural Characteristics**: Moderately vigorous (1, 2). Domoto (2) described the growth habit as procumbent and added that cluster thinning is needed at bloom to help improve berry size.

**Disease/Pests**: Swanson (5) considered 'Petite Jewel' quite disease resistant. Domoto (2) reported slight susceptibility to black rot and downy mildew. He noted that it is not known if 'Petite Jewel' is sensitive to injuries from sulfur or copper applications.

**Wine Quality and Characteristics**: Swanson (5) reported that it is primarily used as a table grape, but is capable of making a very nice white wine with no labrusca characteristics. He added that it typically has low acid and medium soluble solids and would be a good blender with higher acid types and it also adds spiciness. Some report Muscat flavors (3) and suggest it may be used as a blush wine (1).

**Season**: Ripens very early (late July-early August in Nebraska), and birds can be a problem unless it is covered (5). It will hang in good condition until late in season, developing high sugar (6).

**Cold Hardiness**: Very hardy (-20 F) (2, 3).

**Use**: Seedless table grape, wine.

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# Prairie Star


Iowa State University

**Synonyms**: E.S. 3-24-7 (1, 3, 5).

**Pedigree**: E.S. 2-7-13 x E.S. 2-8-1 (1, 3, 5).

**Origin**: Osceola, Wisconsin. Developed by Elmer Swenson (1, 3, 5).

**Cross/Selection/Test**: Cross made in 1980; selected in 1984, tested as E.S. 3-24-7 (1). Named by Tom Plocher and Bob Parke in 2000 (6).

**Introduction**: 2000 (1).

**Type**: Interspecific hybrid (including V. vinifera, V. rupestris, V. labrusca, V. aestivalis) (1).

**Color**: White

**Berry**: Medium sized and round; yellow, and thick skinned (1). Average weight is 2.5 g/berry (5).

**Cluster**: According to Plocher and Parke (5), the clusters are long, slightly loose and have a very characteristic "C" curve. They reported the average cluster weight is 177 g (or 0.39 lb) on heavy soils and on lighter or less fertile soils, weight will be less (5).

**Viticultural Characteristics**: Domoto (2) described 'Prairie Star' as vigorous and having a semi-upright growth habit. He added that bud break is mid-season and that secondary buds are moderately productive. Cluster thinning is not necessary. Plocher and Parke (5) stated that early in the season, young shoots may have a tendency to break off in strong winds and high cordon training systems should be avoided. They also reported that poor fruit set has been seen in some seasons and this may be due to that fact that 'Prairie Star' tends to have rampant shoot growth during flowering and fruit set. They suggest one method to counter this is to pinch off the ends of the apical shoots just prior to flowering.

**Disease/Pests**: Domoto (2) reported that 'Prairie Star' is moderately susceptible to black rot and anthracnose; and slightly susceptible to downy mildew and powdery mildew. It is not known if it is prone to Botrytis bunch rot and crown gall (2). Also, Domoto reported it to be moderately susceptible to injuries from 2,4-D and dicamba, and it is not known if it is sensitive to injuries from sulfur. Some growers have reported using copper without problems (6).

**Wine Quality and Characteristics**: Plocher and Parke (5) described the wine as being neutral, non-foxy and having a fullness in the mouth and finish uncommon among hybrid grape varieties. They further stated that in some years it can have a delicate floral nose and capable of standing alone as a varietal wine, but in most years it is an ideal blending component to add body and finish to thin white wines. They noted that the fruit matures to excellent sugar and acidity for winemaking. Sugar content typically runs 21° to 22° Brix.

**Season**: Early [mid-September in St. Paul, MN (5); mid- to late-August in Iowa (3)].

**Cold Hardiness**: Very hardy (-20° F to -35° F). (1, 2, 4) The original seedling had more than 50% bud survival after a mid-winter low of -40° F (1)

**Use**: Wine, fresh eating

**Notes**: Plocher (6) shared that 'Prairie Star' was named at the same time as 'Louise Swenson' because the two go well together as blending partners. He added that 'Louise Swenson' has the delicate aromatics and 'Prairie Star' has the body and finish that 'Louise Swenson' lacks. Together they are better than either one alone.

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# Ravat 34

www.nysaes.cornell.edu

**Pedigree**: V. vinifera x unknown American species (4).

**Origin**: France; J.F. Ravat.

**Introduction**: N/A

**Type**: Interspecific hybrid (includes V. vinifera) (4).

**Color**: White

**Berry**: Galet (2) described the berries as small, round and pinkish-white colored. He added they have a foxy taste.

**Cluster**: Small (10 cm) (2); and loose (1).

**Viticultural Characteristics**: Moderately vigorous; semi-upright growth habit (3).

**Disease/Pests**: Highly susceptible to downy mildew on clusters and leaves and moderately susceptible to powdery mildew (3).

**Wine Quality and Characteristics**: Galet (3) described the wine as having low acidity and being thin. He added that it may be used for blending.

**Season**: Early (1)

**Cold Hardiness**: Predicted temperature of 50% primary bud kill (LTF50) was -17.3° F (5).

**Use**: Wine and table .

**Notes**: There is limited commercial experience with this variety in New York (5).

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# Reliance

Iowa State University

**Synonyms**: Arkansas 1163, Reliance Seedless (10).

**Pedigree**: 'Ontario' x 'Suffolk Red' (8, 9, 10).

**Origin**: Fayetteville, Arkansas. University of Arkansas Breeding Program, developed by James N. Moore (10).

**Cross/Selection/Test**: Cross made in 1964; selected in 1967; tested as Ark. 1163 (2, 8, 9).

**Release**: 1983. Plant patent 5174 given on January 10, 1984 (8, 10).

**Type**: Interspecific hybrid (includes V. labrusca, V. vinifera) (2, 9).

**Color**: Pink to red when fully mature (2).

**Berry**: According to Moore (8), the berries are spherical and medium sized (2.7 g average weight); and the skin is tender and non-adhering to flesh. He describes a very sweet melting texture, with a delicate labrusca aroma and flavor. Berries are seedless, with no noticeable seed traces found. Moore (2, 8, 9) noted that berries are susceptible to cracking if rain occurs near maturity. Berries are also subject to shelling (4). Soluble solids can reach 25° Brix (2).

**Cluster**: Medium large (average weight is 300 g); conical and occasionally with shoulder; well-filled but not excessively compact (2, 8, 9).

**Viticultural Characteristics**: Moderately vigorous with a procumbent growth habit (8). Cluster thinning may be needed at bloom to increase berry size (4). Fitzgerald and Patterson (7) report that development of full color can be a limitation in some years (especially with heavy crops), this can be enhanced with fruit thinning. Ninety days from bloom to harvest (3).

**Disease/Pests**: 'Reliance' is rated as highly susceptible to anthracnose (1, 4), black rot (1, 3, 4, 11) and downy mildew (1, 3, 4); moderately susceptible to powdery mildew (1, 3, 4, 11) and Phomopsis cane and leaf spot (1, 3, 4); and slightly susceptible to Botrytis bunch rot (1, 3, 4). Reisch et al (11) considers it slightly susceptible to crown gall, moderately susceptible to downy mildew and highly susceptible to Botrytis bunch rot. Domoto (4) reported that it is not sensitive to injury from sulfur or copper applications.

**Wine Quality and Characteristics**: Not used for wine.

**Season**: Early (mid-August in Iowa) (5, 6).

**Cold Hardiness**: Moderately winter hardy (-10° F to -15° F) (4). Has survived (and fruited well) after temperatures of -29.2° F in Sturgeon Bay, WI (9).

**Use**: Seedless table grape and raisins (8).

**Notes**: Moore often referred to 'Reliance' as a "Will Rogers" grape, in that he never met anyone who did not like the flavor and quality of 'Reliance' (2). The name 'Reliance' was chosen due to its hardiness. It is capable of storing for three months (9).

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# Rosette

Andy Reynolds, CCOVI

**Synonyms**: Seibel 1000 (4).

**Pedigree**: derived from an unknown V. rupestris x 'Jaeger 70' cross (5).

**Origin**: France, bred by Albert Seibel (1).

**Introduction**: Introduced into the United States from France in 1927 (1). Named by the Finger Lakes Wine Growers Association in 1970 (4).

**Type**: Interspecific hybrid (includes V. vinifera, V. rupestris, V. lincecumii) (4).

**Color**: Black

**Cluster**: Small to medium; compact and cylindrical (4).

**Berry**: Galet (4) described the vine as medium sized and spherical; blue-black with bloom; pulpy flesh and clear juice (4).

**Viticultural Characteristics**: Galet (4) described the vine as very vigorous. He added that it is capricious about setting fruit and known as a small producer.

**Disease/Pests**: According to Dami et al. (2), 'Rosette' is highly susceptible to powdery mildew; moderately susceptible to black rot, downy mildew, Phomopsis cane and leaf spot and crown gall and slightly susceptible to Botrytis bunch rot. They added that it is not sensitive to injuries caused by sulfur applications, but cautioned that it is highly sensitive to injuries from copper when applied under cool, slow drying conditions.

**Wine Quality and Characteristics**: Galet (3) described the wine as acidic (but without a bad taste) and "hybrid-like". The fruit lacks the intense color of some other red wine varieties and is used for rosé wines (6), red wines and often for blending (7).

**Season**: Mid-late Season (7).

**Cold Hardiness**: Hardy to -15° F (7).

**Use**: Due to its high vigor, it's often used in an arbor (4).

**Notes**: The first French hybrid import to be introduced into Canada and also the first French hybrid introduced into Ohio in 1941 (1).

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IOWA STATE UNIVERSITY
Extension and Outreach

HORT 3040-51 Revised May 2016

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# Sabrevois


Tom Plocher

**Synonyms**: ES 2-1-9 (3, 6).

**Pedigree**: E.S. 283 x E.S. 193 (3, 6).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (3, 6). Gilles Benoit named the cultivar after the village of Sabrevois near the Richelieu River south of Montreal (1).

**Introduction**: Has been grown in Minnesota for a long time as ES 2-1-9. Grown in Quebec as 'Sabrevois' since circa 2000 (7).

**Type**: Interspecific hybrid (includes V. labrusca, V. riparia) (3), sister cross of St. Croix (8).

**Color**: Black

**Berry**: Small to medium in size (Average berry weight is 1.5 g) (6).

**Cluster**: Plocher and Parke (6) described the cluster as small to medium sized and somewhat loose but well filled. They report that clusters range in weight from 60 to 120 g (.13 to .26 lb).

**Viticultural Characteristics**: Mostly upright growth habit (5). Plocher and Parke (6) reported the vine as vigorous but not overly productive. They add that good production and balanced growth have been achieved using a divided trellis system. Breault (1) noted that 'Sabrevois' is not tolerant to drought (maturity is postponed). He also said that wood hardens very early. It has been injured in Minnesota only in the most severe winters (6).

**Disease/Pests**: Good disease resistance. Based on observations at the University of Minnesota in 2006, 'Sabrevois' was said to have only slight susceptibility to black rot, downy mildew and powdery mildew. Phylloxera can be a problem (2).

**Wine Quality and Characteristics**: Plocher and Parke (6) stated that 'Sabrevois' juice is not deeply pigmented, but wine can be very dark in color. Also according to Plocher and Parke, sugar content rarely exceeds 20° Brix (even in very ripe fruit) and wines can have a pleasant berry like fruitiness in the nose and mouth but tend to lack body and tannin. Breault (1) described the wine as well balanced, low in alcohol and very vinifera-like (similar to Cabernet franc) He further stated that 'Sabrevois' can make a highly aromatic rosé if pressed very early, and that as a dry red varietal, 'Sabrevois' should age well and improve after two years in the bottle. He also suggested that it is probably best as part of a blend with other red hybrid varieties known for higher sugars (such as 'Frontenac' or 'Landot noir'). Parke (4) said off-flavors can develop from over ripe fruit and suggests stripping mushy berries from the clusters to avoid these off flavors.

Based on the 2006 harvest data from the University of Minnesota Horticultural Research Center vineyards, 'Sabrevois' was low in soluble solids at 19.3° Brix; was low in pH at 3.19; and high in titratable acidity at 13.99 g/liter (2).

**Season**: Early Midseason (late August in Minnesota) (2).

**Cold Hardiness**: Reported to be hardy to -31° F (7).

**Use**: Wine

**Notes**: Lesser known sister of 'St. Croix', but considerably hardier and more reliable (6). Plocher (7) noted that winemakers needs to manage skin extraction very carefully or they will get the infamous "bacon taint" in the aroma.

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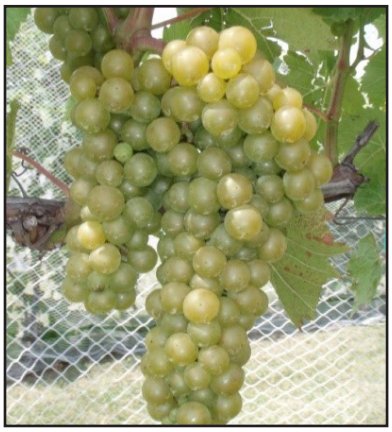
Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Seyval Blanc



Iowa State University

**Synonyms**: 'Seival', 'Seyval', Seyve-Villard 5276, SV 5276 (12).

**Pedigree**: 8- Seibel 5656 x Seibel 4986 ('Rayon d'Or') a second parental alternative is Seibel 4995 x Seibel 4986 (12).

**Origin**: Saint Vallier, Drome, France by Seyve-Villard (1).

**Introduction**: Circa 1930 in France; in the United States circa 1940's (5). Planted in 1951 at the Horticultural Research Institute of Ontario (4).

**Type**: Interspecific hybrid (V. lincecumii; V. rupestris; V. vinifera) (12).

**Color**: White

**Berry**: Small and round; golden yellow with a dull bloom; firm (11).

**Cluster**: Large and compact (10).

**Viticultural Characteristics**: Nonnecke (13) described 'Seyval blanc' as having a moderately vigorous, semi-upright growth habit. Galet (11) reported that it buds out early and matures early. He added that production is usually good, but can vary depending on soil and climate conditions. He stated that it is capricious and subject to poor fruit set if pruned too short and over cropping if pruned too long. Bordelon (3) reported that since vines have a tendency to overbear, cluster thinning and shoot thinning are needed to ensure proper ripening and to maintain vine size. One hundred days from bloom to harvest (6). Good tolerance to 2, 4-D, but susceptible to dicamba (7).

**Disease/Pests**: 'Seyval blanc' is rated as highly susceptible to Botrytis bunch rot, powdery mildew; (1, 6, 7, 10, 15) and black rot (6, 7, 10, 15); moderately susceptible to downy mildew (1, 6, 7, 10, 15), Phomopsis cane and leaf spot (1, 6, 7); and slightly susceptible to anthracnose (1, 7) and Eutypa dieback (1, 6, 7, 14) Domoto (7) and Reisch et al (15) consider it highly susceptible to crown gall while Bordelon et al (1) and Dami et al (6) rate it as moderately susceptible. Bordelon et al (1) also rates it moderately susceptible to black rot. It is not sensitive to injuries from sulfur (1, 6, 7, 15) but may be sensitive to injuries from copper when applied under cool, slow drying conditions (1, 6, 7).

**Wine Quality and Characteristics**: Wine quality has been described as good with attractive aroma but body is somewhat thin (13). Bordelon (3) reported that when grapes are harvested at optimal maturity, wines have attractive aromas of grass, hay and melon. He added that either malolactic fermentation or barrel fermentation followed by oak aging will enhance quality. In cooler climates, such as Quebec, it can produce outstanding sparkling wines (14).

**Season**: Midseason (late-August to early September in Iowa) (8, 9).

**Cold Hardiness**: Moderately hardy (-10° F to -15° F).

**Use**: Wine

**Notes**: Most popular white wine grape in eastern United States (2).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Sipaska

J. Marshall

**Synonyms**: 'Siposka' (4).

**Pedigree**: 'Lady' x a North Dakota wild grape (4).

**Origin**: Brookings, South Dakota. South Dakota Agricultural Experiment Station. Bred by Niels Hansen (4).

**Introduction**: Circa 1925 (3).

**Type**: Interspecific hybrid ( V. labrusca; unknown wild grape) (4).

**Color**: Red

**Berry**: Small

**Cluster**: Small, somewhat loose and conical in shape (2).

**Viticultural Characteristics**: Marshall (1) reported the 'Sipaska' vine as being extremely vigorous and having a procumbent growth habit.

**Disease/Pests**: Highly susceptible to anthracnose; good resistance to other diseases (2).

**Wine Quality and Characteristics**: Extremely dark red and full bodied. Pronounced clay-like, earthy taste (5). It is not considered very good as a standard wine grape, but has made some quality port style wine (2). Ripens with soluble solids over 20° Brix early in September (1).

**Season**: Early Midseason (early September in Minnesota) (2)

**Cold Hardiness**: Very cold hardy (able to withstand temperatures -40° F) (5).

**Use**: Jelly, wine.

**Notes**: May not be suitable as a commercial wine grape, but it's extreme hardiness, early ripening and great vigor suggest it may be suitable for test in extreme northern sites (1).

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HORT 3040-54 Revised May 2016

# Skujinsh

Tom Plocher

**Synonyms**: 'Moskovski Ustoitshivõi' 'Moskow Ustoichovy' 'Moskovskiy Ustoichiviy', Skujins 675, Skujina 675, 'Baltic Amber' (1, 2, 3).

**Pedigree**: ('Perle von Csaba' x 'Amurskiy') x 'Alpha' (2, 3).

**Origin**: Moscow, Russia. Tymiryazev Academy of Agriculture (TCXA). Bred by Kaspars Skujins, a Latvian grape breeder. In Russia it is called 'Moskovski Ustoitshivõi', and in Latvia, it is called 'Skujins 675' (3).

**Release**: Circa 1970 (1).

**Type**: Interspecific hybrid. (including V. vinifera, V. amurensis, V. labrusca and V. riparia) (3).

**Color**: White

**Berry**: Plocher and Parke (3) described the berry as amber colored and small-medium in size (average berry weight is 1.5 g). They noted that the flavor as reminiscent of tropical fruit, others say it has a Muscat/pineapple taste (2).

**Cluster**: Moderately loose, ranging in size from .20 to .26 lb (3).

**Viticultural Characteristics**: Plocher and Parke (3) described the vine as having moderate vigor and an open growth habit. They add that it is productive, buds out and blooms relatively late in the spring and is capable of producing a substantial crop on secondary buds (3).

**Disease/Pests**: Plocher and Parke (3) noted good disease resistance (3).

**Wine Quality and Characteristics**: Plocher and Parke (3) reported that wines from this cultivar are still highly experimental. They added that wines with the best aromatics have been produced from grapes grown in cool summer areas and harvested before full ripeness at about 18° Brix. Aroma of the wine ranges from "pineapple" and "lychee" in the best samples to "bubblegum" in wines produced from overripe grapes. They also noted that the juice is prone to oxidation, so careful measures are required to prevent this during processing.

**Season**: Early. End of August in Minnesota (3).

**Cold Hardiness**: Very hardy. Has survived and been productive following -32° F (1, 3).

**Use**: Table grape. Wines from 'Skujinsh' have been experimental (3).

**Notes**: Successfully grown in Latvia, Belarus and regions near Moscow without winter protection. Great for short, cooler growing season areas such as northern Minnesota (3).

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IOWA STATE UNIVERSITY
Extension and Outreach

HORT 3040-55 Revised May 2016

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# Somerset Seedless

Tom Plocher

**Synonyms**: 12-7-98 (4).

**Pedigree**: E.S. 5-3-64 X 'Petit Jewel' (3, 4).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (3, 4).

**Release**: 2002 (2).

**Type**: Interspecific hybrid (including V. labrusca; V. riparia; and V. vinifera and other small amounts of American Vitis species) (1).

**Color**: Red (2, 3).

**Cluster**: Small to medium sized (.22 to .44 lb) (3); compact (2).

**Berry**: Medium sized (1.5 g to 2 g); seedless; adherent skin and great strawberry like flavor (4). Berries are edible at pink stage in August, but are much sweeter and more flavorful if left to ripen to full red (2).

**Viticultural Characteristics**: Moderately vigorous with a procumbent growth habit (4).

**Disease/Pests**: Quite disease resistant, susceptible to downy mildew if left unsprayed (2).

**Wine Quality and Characteristics**: Not typically used for wine.

**Season**: Early (August and early September in Minnesota) (2, 4).

**Cold Hardiness**: Hardy to about -30° F (2, 4).

**Use**: Seedless table grape.

**Notes**: Earliest high quality seedless grape available. Grown all over Baltic Sea region, as its one of the very few grapes that ripens reliably under their conditions. The seedless character follows this progression: 'Thompson Seedless' 'Himrod' 'Canadice' ' Petite Jewel' 'Somerset' (1).

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IOWA STATE UNIVERSITY
Extension and Outreach

HORT 3040-56 Revised May 2016

# St. Croix


Iowa State University

**Synonyms**: E.S. 2-3-21 (7, 10).

**Pedigree**: E.S. 283 (Minn. 78 x Seibel 1000) x E.S. 193 (Minn. #78 x 'Seneca') (10).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (7, 10).

**Introduction**: 1981 (7, 10).

**Release**: Plant patent 4928 assigned to Elmer Swenson in 1982 (10).

**Type**: Interspecific hybrid (includes V. labrusca, V. riparia) (10).

**Color**: Blue

**Berry**: Medium sized; spherical; tender and juicy (10). Very thin skinned and subject to leaking (4).

**Cluster**: Slightly cylindrical to conical; usually single shouldered and compact (8). clusters are medium in size (2). Average cluster weight in ISU trials in 2007 was .22 lb. (5, 6). Domoto indicated that berry set can be light (4).

**Viticultural Characteristics**: Vigorous and semi-procumbent growth habit (11). Domoto (4) reported that bud break occurs midseason. Also, it is prone to multiple bud breaks on nodes. It requires shoot thinning and removal of lateral shoots. He cautioned that it is slightly susceptible to injury from 2,4-D and moderately susceptible to injury from dicamba. Ninety nine days from bloom to harvest (3).

**Disease/Pests**: 'St. Croix' is considered moderately susceptible to Botrytis bunch rot, downy mildew and powdery mildew (1, 3, 4, 9); and slightly susceptible to anthracnose (1, 3). It is uncertain whether it is susceptible to black rot, crown gall and Phomopsis cane and leaf spot. It is not sensitive to injuries from sulfur and copper applications (4).

**Wine Quality and Characteristics**: According to Swenson (10), wines made by 'St. Croix' been compared to a light to medium burgundy with no foxy or labrusca flavor. Plocher and Parke (8) reported that acidity tends to be moderate, but grapes struggle to make 20° Brix. They noted that juice is a pale rosé but the wines can be quite dark in color. Plocher and Parke also mentioned that it's not uncommon for it to lack tannins (which can be addressed by blending); be somewhat neutral or have a tobacco-like nose.

**Season**: Early Midseason (late August to mid-September in Wisconsin and Iowa) (5, 6, 11).

**Cold Hardiness**: Very hardy (below -20° F) (4). 'St. Croix' has survived -39° F on trellises with no winter covering with no apparent injury to trunks or buds (10), but according to Plocher and Parke (8), vines will typically survive mid-winter cold down to -25° F to -27° F without injury. They noted that the roots are a bit less hardy and need snow cover in really cold winters.

**Use**: Juice, table, wine.

**Notes**: Sister seedling to 'Sabrevois' and main red wine variety at many wineries in Quebec (8).

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# St. Pepin

Mark Hart

**Synonyms**: Elmer Swenson 282, E.S 282 (5).

**Pedigree**: (Minnesota #78 x Seibel 1000) x 'Seyval blanc' (5, 6, 8).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (1, 5, 6).

**Introduction**: 1983 (1) Plant patent 5771 assigned in 1986 to Swenson Smith Vines (7).

**Type**: Interspecific hybrid (includes V. labrusca; V. lincecumii; V. riparia; V. rupestris; V. vinifera) (5).

**Color**: White

**Berry**: Spherical and small to medium in size; ripens evenly (8). Has a slipskin and tender flesh; pink juice (1).

**Cluster**: Medium to large in size and conical in shape; moderately loose (8).

**Viticultural Characteristics**: Swenson (8) described the 'St. Pepin' vine as vigorous with an upright growth habit and somewhat open canopy. He also stated that 'St. Pepin' is productive and fruit holds well on the vine with no shattering (shelling). The flowers are imperfect flowers (pistillate) and not self-pollinated so it needs to be planted near perfect flowering vines for cross-pollination to occur (8). Fruit set and low yields can be an issue (2).

**Disease/Pests**: 'St. Pepin' is rated as highly susceptible to powdery mildew; moderately susceptible to Botrytis bunch rot; and slightly susceptible to downy mildew (2, 7). Hart (3) reported that 'St. Pepin' is moderately susceptible to downy mildew, powdery mildew; and a low susceptibility to anthracnose and black rot. He has not seen Botrytis bunch rot (but does not typically see it on any cultivars at his location in northern Wisconsin) and stated that crown gall has not been a concern. Also, Hart has not observed injuries from sulfur or copper spray applications.

**Wine Quality and Characteristics**: Very fruity, comparable to many German style white wines and often has a mild labrusca flavor (8). Some northern growers are also making quality ice wine from it. Swenson also reported that 'St. Pepin' typically has low acidity and that average sugar content ranges from 17.6° to 21.0° Brix (depending upon the location).

The 2006 harvest data from the University of Minnesota's horticultural research vineyard show 'St. Pepin' had somewhat high soluble solids at 21.8° Brix; moderate pH at 3.26; and had low titratable acidity at 6.28 g/liter (4).

**Season**: Early Midseason. Mid to late September at Excelsior, Minnesota (8).

**Cold Hardiness**: Swenson (8) reported 'St. Pepin' as hardy (-15° F to -20° F). The predicted temperature of 50% primary bud kill (LTF50) was -32° F., with no apparent injury to the trunks (8). Some bud injury can be expected at temperatures below 25° F (6).

**Use**: Wine, table and juice.

**Notes**: Sister seedling of 'LaCrosse' (but not as hardy) (1).

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# St. Vincent

Iowa State University

**Pedigree**: Uncertain, but may be a chance seedling resulting from a cross between 'Pinot Noir' and 'Chambourcin', both of which were growing next to each other in the vineyard (7).

**Origin**: Augusta, Missouri. Discovered in 1973 by Scott Toedesbusch, who was managing a vineyard owned by Lucian Dressel. Cuttings were sent to Philip Wagner, who propagated them and was the first to sell the vines commercially (7, 8).

**Introduction**: Added to the list of approved grape variety names in 2006 (8).

**Color**: Blue

**Berry**: Large (3) and deep purple in color (2).

**Type**: Assumed to be an interspecific hybrid, but the species are unknown. However, Wagner (7) reported that several tests confirmed the presence of monoglucoside pigments (exclusive to vinifera); so 'St. Vincent' does consist of V. vinifera, the other species are unknown.

**Cluster**: Moderate size; loose (7) and conical (2). Based on average of four Iowa State University research sites in 2007, cluster weight was .41 lb (5).

**Viticultural Characteristics**: Domoto (4) described the 'St. Vincent' vine as moderately vigorous and having an upright growth habit. He indicated that cluster thinning may be needed in some years and added that it has good tolerance to 2,4-D, but is susceptible to dicamba.

**Disease/Pests**: Domoto (4) reported 'St. Vincent' as being moderately susceptible to black rot, Botrytis bunch rot, downy mildew and powdery mildew. Bordelon et al (1) rated it as being moderately susceptible to downy mildew; and slightly susceptible to black rot, Botrytis bunch rot, crown gall, Eutypa dieback, Phomopsis cane and leaf spot and powdery mildew. He also indicated that it is not sensitive to applications from sulfur applications and its unknown if it is sensitive to copper. In Missouri, slight Phomopsis infections are seen in years with cool, wet springs (3).

**Wine Quality and Characteristics**: Burry and Pugliese (2) described the overall characteristics of wine made by 'St. Vincent' as similar to a young Italian Chianti. The color is bright red to brick red and the nose is complex but light with cherry, nutty and smoky overtones. They added that the taste of the finished wine is strongest in cherry and citrus, with melon and toasted nut overtones and that the aftertaste is surprisingly long and complex. These characteristics are different from the heavier tannins found in many red grapes grown in the Eastern United States. According to Burry and Pugliese (2), a common problem with 'St. Vincent' in central Ohio is that of higher acid levels and they suggest trying different styles of vinification. It is said to be capable of making an excellent rosé sparkling wine, also (6).

Based on mean harvest data collected over ten years at Southwest Missouri State University, 'St. Vincent' tended to have low soluble solids at 18.6° Brix, low pH at 3.09; and had high titratable acidity at 10.3g/L (3).

**Season**: Late Mid-season (late September-early October in Iowa) (5). Average date of harvest based on a ten-year study at Missouri State University is September 20th (3).

**Cold Hardiness**: Moderately hardy (-10° F to -15° F) (3). The temperature of 50% primary bud kill (LTF50) for 'St. Vincent' was -3.6° F (3).

**Use**: Wine

**Notes**: Named after the patron saint of the Côte d´Or in the Burgundy region of France and also because that name would reflect the fact that the wine had a resemblance to 'Pinot noir' (8). The leaves also turn bright red in the fall (similar to 'Pinot noir') (6).

May not properly mature in areas with shorter growing seasons (upper Midwest) (4).

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# Steuben

www.nysaes.cornell.edu

**Synonyms**: New York 12696 (6).

**Pedigree**: 'Wayne' x 'Sheridan' (2, 6).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station. Developed by Richard Wellington and George D. Oberle (2, 6).

**Cross/Selection/Tested**: Cross made in 1925; selected in 1931 (9).

**Introduction**: Named and introduced in 1947 (2, 9).

**Type**: Interspecific hybrid (includes V. labrusca) (6).

**Color**: Black (2, 6).

**Berry**: According to Slater et al. (8), the 'Steuben' berry is medium sized, spherical and slightly elongated by pressure in cluster. They described the color as jet black with heavy lilac bloom and said the slipskin is slightly astringent and acidic. They added the flesh is slightly tough, juicy, greenish and translucent and that the flavor is sweet with a spicy tang and is not aromatic. Average berry weight is 3.1 g (7).

**Cluster**: Medium to large (.22 to .67 lb); cylindrical, small shouldered (often not shouldered); compact (9).

**Viticultural Characteristics**: Slater et al. (9) described the 'Steuben' vine as very vigorous; productive; and having a trailing growth habit. They added that it will overbear if not carefully pruned and fruit will not ripen well, so cluster thinning is usually required. One hundred days from bloom to harvest (3).

**Disease/Pests**: 'Steuben' is moderately susceptible to black rot (1, 3, 4, 7); and slightly susceptible to Anthracnose (1, 4) Botrytis bunch rot (1, 3, 4, 7) crown gall (1, 3, 4), downy mildew (1, 3, 4, 7), Phomopsis cane and leaf spot (3) and powdery mildew (1, 3, 4, 7) It is not sensitive to injuries from sulfur applications (1, 3, 4, 7) and it is uncertain if it is sensitive to injuries from copper applications.

**Wine Quality and Characteristics**: Makes an aromatic white, blush or rosé wine (2). Based on 2006 harvest data from the University of Minnesota, 'Steuben' tended to run low in soluble solids at 19.8° Brix; somewhat low in pH at 3.21; and had low titratable acidity at 5.0 g/liter (5).

**Season**: Midseason (4) Early to mid-October in Minnesota (5).

**Cold Hardiness**: Hardy (-15° F to -20° F) (4).

**Use**: Wine, table, juice. Also sometimes used as an arbor vine (red fall foliage) (8).

**Notes**: High dessert quality and high flavor is retained until December in cold storage. Likely not hardy where winters are more severe than Geneva, New York (9).

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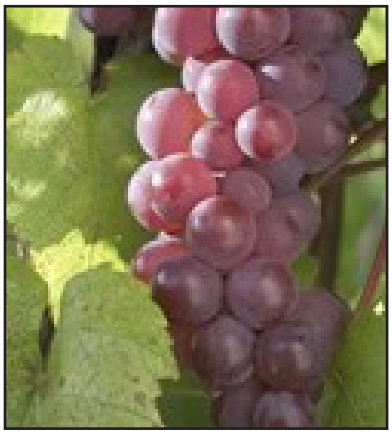
Reviewed by Paul Domoto, Gail Nonnecke, Department of Horticulture and W. Wade Miller, Department of Agriculture Education and Studies. 2008

Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Swenson Red



University of Minnesota

**Synonyms**: Elmer Swenson 439 (4).

**Pedigree**: Minnesota #78 ('Beta' x 'Witt') x Seibel 11803 (4, 7).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (4)

**Cross/Selection/Introduction**: Crossed in 1962; selected in 1967 (4, 8).

**Release**: Released jointly by Elmer Swenson and the University of Minnesota in 1978 (3).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (4, 8, 9, 10).

**Color**: Red (6).

**Berry**: Swenson (7) described the berry as large; round to slightly ovate; dark red to lavender with a light bloom. Reisch (6) added that it may turn reddish-blue if allowed to remain on the vine. Swenson noted the flavor is rich, fruity but non-labrusca in character. He considered the flesh very firm and meaty and the non-slipskin thin and edible. According to Swenson (8), this cultivar is reminiscent of a European table grape. It is capable of reaching high sugar levels (2, 8).

**Cluster**: Medium in size; conical; slightly loose to very compact, with a single shoulder (7).

**Viticultural Characteristics**: Vigorous (1, 5, 7, 8) and with a procumbent growth habit (1). Tends to be overly productive; cluster thinning may improve fruit maturity (7).

**Disease/Pests**: 'Swenson Red' is rated as highly susceptible to downy mildew; moderately susceptible to Botrytis bunch rot and powdery mildew; and slightly susceptible to black rot (1) and crown gall (6). It's uncertain whether it is susceptible to anthracnose, crown gall, Eutypa dieback or if it is sensitive to injury from sulfur or copper applications (1, 6).

**Wine Quality and Characteristics**: Can make a fair to good quality, very distinctive white wine. Fermentation on the skins is not recommended (8).

**Season**: Midseason (Early to mid-September) (5).

**Cold Hardiness**: Hardy (-15° F) (1, 5) but less hardy than the other Swenson cultivars (5). Vines have survived -25 to -30° F, without protection in the upper Midwest, but are not considered hardy enough to fruit well without cover (8).

**Use**: Table, wine.

**Notes**: Primarily a seeded table grape, but suitable for wine (5). Keeps well in cold storage (7).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Swenson White

Iowa State University

**Synonyms**: E.S. 6-1-43 (5, 6).

**Pedigree**: ('Edelweiss' x E.S. 442 [MN #78 x S.11803]) (7).

**Origin**: Osceola, Wisconsin. Bred by Elmer Swenson (6, 7, 8).

**Selected**: 1988 (8).

**Release**: 1994 (3).

**Type**: Interspecific hybrid (including V. labrusca and V. riparia) (7, 8).

**Color**: White

**Berry**: Plocher and Parke (5) described the berries as yellowish in color and large (average berry weight is 4 g). They added that the skin is thick and the berries are able to hang on the vine well into the fall season, without insects being a problem. The fruit has a pronounced floral aroma, remindful of St. Pepin. Swenson noted that it has firmer flesh than its parent, 'Edelweiss' and does not develop the strong foxiness of 'Edelweiss' (7).

**Cluster**: Medium to large (4); somewhat loose (7). Average cluster weight taken at four Iowa State research sites in 2007 was .32 lb (2).

**Viticultural Characteristics**: Swenson (7) described the vine as vigorous and Domoto (1) noted that it has a procumbent growth habit. He reported that bud break occurs midseason; that there is low productivity on secondary buds and cluster thinning may be needed. He cautioned that it is very susceptible to damage from 2,4-D and dicamba and added that it's unknown if the vine is sensitive to injuries from sulfur or copper applications.

**Disease/Pests**: 'Swenson White' is rated as moderately susceptible to downy mildew (1, 3), powdery mildew (1, 3) and anthracnose (1) ; slightly susceptible to black rot and Botrytis bunch rot (1, 3); and it's uncertain if it's susceptible to crown gall, Eutypa dieback or Phomopsis cane and leaf spot. The Minnesota Grape Growers' Association (4) considers it slightly susceptible to anthracnose. It's uncertain if sensitive to injuries from sulfur (1, 3) or copper applications (1).

**Wine Quality and Characteristics**: Plocher and Parke (5) report that wines have a pronounced flowery nose and there may be a slight labrusca flavor if wine is made from very ripe fruit. They added that due to its ability to hang well on the vine and good aromatics, this selection may be a good candidate for late harvest or ice wine.

**Season**: Late. Struggles to make 22° Brix by October 1st in east central Minnesota (5). However, the 2007 harvest dates for the four Iowa State University research vineyards, ranged from mid-August at the southern sites to mid-September at the most northern site (2).

**Cold Hardiness**: Very hardy (below -20° F) (1).

**Use**: Table, wine.

**Notes**: Lon Rombough wrote, "I sent cuttings of a selection of grapes to a friend in Colorado for testing. He took a job at a nursery in Boulder and took some cuttings with him. A garden writer, visiting the nursery, tasted a grape from a vine and fell in love with it. She saw it tagged as 'Swenson White' and wrote it up in Horticulture magazine that way. She didn't know the tag was shorthand for "A white grape from Swenson". Once the name was in print in a national magazine that made it an "official release" (6).

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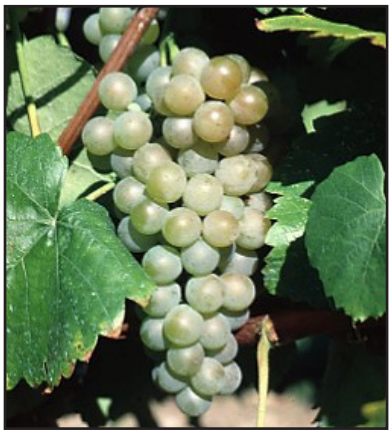
# Traminette



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**Synonyms**: NY65.533.13 (6, 7, 8, 9).

**Pedigree**: Joannes Seyve 23.416 x 'Gewürztraminer' (6, 7, 8, 9).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station. Developed by B.I Reisch, R.M. Pool, W. B. Robinson, T. Henick-Kling, B. K. Gabitt, J. P. Watson, M. H. Martens, R. S. Luce and H.C. Barrett (8).

**Cross/Selection/Test**: According to Reisch et al. (7, 8), the 'Traminette' cross was made by H.C. Barett, then of University of Illinois. Seeds from cross were sent to Cornell's grape breeding program and planted there in 1968. Fruit were first observed in 1971, original vine was propagated in 1974 under number

**NY 65.533.13**: Not patented.

**Release**: 1996 (6, 7, 8).

**Type**: Interspecific hybrid (including V. lincecumii; V. rupestris; V. vinifera; V. labrusca; V. riparia) (10).

**Color**: White

**Berry**: Amber colored, medium sized (1.52 g/berry average) and spherical (7, 8, 9).

**Cluster**: Medium sized (cluster size ranges from .24 lb to .29 lb), shouldered and moderately loose (7, 8).

**Viticultural Characteristics**: 'Traminette' vines have been described as moderately vigorous and productive (8) with a semi-upright growth habit (3). Reisch et al. (7, 8) report that bloom is at midseason, following a late bud break. They stated that very little crop is borne on lateral shoots and cluster thinning is rarely necessary. Reisch et al. (7, 8) consider it moderately winter hardy at Geneva, New York and while bud hardiness is good, trunk injury and crown gall are occasionally problems, especially in heavier soils. Domoto (3) noted that periderm formation occurs very late so it is not adapted to shorter growing seasons. He stated that it is moderately susceptible to injuries from 2, 4-D and somewhat susceptible to dicamba. One hundred ten days from bloom to harvest (2).

**Disease/Pests**: 'Traminette' is rated as highly susceptible to Phomopsis cane and leaf spot (1, 2) moderately susceptible to downy mildew (1, 2, 3, 11), and crown gall (2, 11) slightly susceptible to anthracnose (1, 3), black rot, (1, 2, 3, 11) Botrytis bunch rot (1, 2, 3, 11) and powdery mildew. It is not sensitive to injuries from sulfur or copper (1, 3).

**Wine Quality and Characteristics**: According to Reisch et al. (7, 8) 'Traminette' wines have described as distinctively spicy and fragrant, much like the 'Gewurztraminer' parent. Wines may be finished dry or semi-dry depending on preferred style. The wine has good body and no noticeable flavors characteristic of interspecific hybrid grapes. They reported that skin contact for the first 12 to 48 hours (40° to 50° F) of fermentation helps to enhance the spicy flavors and floral aromas. They added that there is a very good balance between sugars, acid and pH. (7, 8, 9).

Based on harvest data reports at Geneva, New York from 1972-1995, soluble solids averaged 20.1°; total acidity 10.1 g/liter; and pH averaged 2.96 (7, 8).

**Season**: Late midseason (early to mid October in New York) (7, 8) mid-September in Iowa (4, 5).

**Cold Hardiness**: Moderately hardy (-10° F to -15° F). (2, 3) Predicted temperature of 50% primary bud kill (LTF50) is -15.3° F (7, 8, 9).

**Use**: Wine

**Notes**: Reisch et al. (7, 8) reported that 'Traminette' is the fifth wine grape cultivar to be named by the New York State Agricultural Experiment Station. They suggested that it is best suited to sites with average length growing seasons and little to moderate cold stress.

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# Trollhaugen

T. J. Zabadal

**Synonyms**: E.S 3-24-7 (1).

**Pedigree**: MN #78 x 'Venus' (1).

**Origin**: Osceola, Wisconsin. Developed by Elmer Swenson, (1, 7) and named by David McGregor (4).

**Selected**: 1985 (1).

**Release**: 2000 (1).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (3, 5, 6).

**Color**: Blue

**NY 65.533.13**: Not patented.

**Berry**: Small to medium in size and round in shape (1); thin slipskin; seedless with soft seed remnants (occasionally woody) (8). Sugar content averages 22° Brix, and the flavor is sweet and mild Concord-like flavor (1). Berries are somewhat susceptible to cracking (8).

**Cluster**: Small; cylindrical and compact (8).

**Viticultural Characteristics**: Moderately vigorous (8). Domoto (2) reported a procumbent growth habit. The fruit ripens early, but is capable of hanging in good condition until a hard frost (4).

**Disease/Pests**: Good disease resistance. May be slightly susceptible to black rot and downy mildew (2).

**Wine Quality and Characteristics**: Not typically used as a wine grape.

**Season**: Early (September 10th in central Minnesota) (1).

**Cold Hardiness**: Very hardy to -22° F (1, 2) Elmer considered it hardy in southern part of Minnesota (7).

**Use**: Seedless table.

**Notes**: Sister seedling of Swenson Red and named by David McGregor (4).

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# Valiant

South Dakota St. University

**Synonyms**: SD7121, S.D.72S15 (5).

**Pedigree**: 'Fredonia' x S.D. 9-39 (V. riparia from NE Montana) (1).

**Origin**: Brookings, South Dakota. Bred by R.M. Peterson; South Dakota State University.

**Cross/Selection/Introduction**: Cross made in 1967; selected in 1972; tested as SD7121 or S.D.72S15 (1) 1982 (1, 5).

**Type**: Interspecific hybrid (includes V. labrusca and V. riparia) (3, 5).

**Color**: Black

**Berry**: Small and round; blue slipskin (1). Sweet and tangy flavor without a trace of tartness (7). Typically has low acid levels and high soluble solids (3).

**Cluster**: Small and compact. Average cluster length is 4 inches (1).

**Viticultural Characteristics**: Vigorous and productive. Letting it over-crop when young may retard its maturity (3). Daylight sensitive, it typically goes dormant around September 1st in Minnesota (3).

**Disease/Pests**: Susceptible to mildews (4).

**Wine Quality and Characteristics**: Sometimes made in a light rosé style with minimum skin contact (2); or in blends, but used primarily for jams and jellies.

**Season**: Early (late August or early September) (7).

**Cold Hardiness**: Very hardy. Has withstood -50° F in Manitoba, Canada and was not harmed (4).

**Use**: Jam, jelly, juice.

**Notes**: Does best in a dry climate. In moist climates, 'Valiant' is more susceptible to diseases (6).

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HORT 3040-65 Revised May 2016

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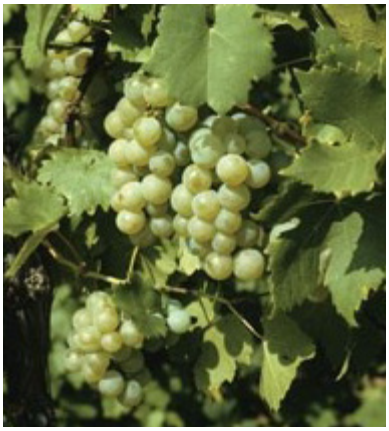
# Valvin Muscat



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**Synonyms**: NY62.0122.01 (3, 4).

**Pedigree**: Couderc 299-35 ('Muscat du Moulin') x 'Muscat Ottonel' (2, 3, 4).

**Origin**: Geneva, New York. New York State Agricultural Experiment Station, Cornell University. Bred by Bruce Reisch (2).

**Cross/Selection/Test**: Cross made in 1962. Original seedling was planted in 1964 and identified as test selection NY62.0122.01 when it was propagated in 1969 (2).

**Release**: 2006 (2, 3, 4).

**Type**: Interspecific hybrid (including V. vinifera and V. rupestris) (3).

**Color**: White

**Berry**: Moderately large (2.0 - 2.7 g/berry); highly flavored and juicy (3).

**Cluster**: The 'Valvin Muscat'™ cluster is moderately small and compact with an average cluster weight of .20 lb/cluster (3).

**Viticultural Characteristics**: Reisch et al. (3) describe the vine as moderately vigorous with an upright growth habit. Own rooted vines are small, so they recommend grafting to improve vine size or planting at somewhat closer than normal spacing (approximately 6 ft within rows) to help improve vineyard productivity. They report that spring frost damage has been observed only occasionally and 'Valvin Muscat'™ is not particularly sensitive to damage from exposure to phenoxy herbicides.

**Disease/Pests**: During test years at Geneva, Reisch et al. (3) observed only moderate susceptibility to downy and powdery mildew of leaves and fruit. However, black rot with up to 25% fruit infestation has been observed when disease pressure is severe, so measures to control black rot when conditions warrant are recommended. Bordelon et al (1) also rated it moderately susceptible to black rot and powdery mildew and considered it slightly susceptible to Botrytis bunch rot, downy mildew and Phomopsis cane and leaf spot. It is uncertain if it is susceptible to anthracnose, crown gall or Eutypa dieback. Reisch et al (3) noted that symptoms of "rupestris speckle", an apparent physiological disorder associated with grapevines related to Vitis rupestris, are commonly seen on 'Valvin Muscat'™. This disorder sometimes known as "Muscat Spot" is characterized by circular to angular necrotic spots, under 2mm diameter, found especially on older leaves, but the effects of this disorder are apparently not significant.

Due to crown gall development following cold winters, trunks on own rooted vines may need to be renewed periodically.

**Wine Quality and Characteristics**: Reisch et al. (3), report that 'Valvin Muscat'™ provides consistently high quality wines with spicy, floral aromas and no objectionable bitterness; and is suitable for the production of desirably highly aromatic varietal wines or for blending purposes. They added that both growers and researchers agree fruit should be harvested when a full muscat flavor is detected by direct tasting of berries in the field rather than using a set of criteria based on sugar, pH and acidity. In cool years with less ripe fruit, they say the aromas tend toward floral "Gewürztraminer" with some orange spice aromas. During a study from 1999-2005, soluble solids were generally moderate, between 16° and 22° Brix, depending on the crop load. The grape must pH was moderate, between 3.0 and 3.3; and titratable acidity was high between 10 and 13 g/liter (3).

**Season**: Midseason (late September-early October) in Geneva, NY and late August (West Lafayette) to late September (Vincennes) in Indiana (3).

**Cold Hardiness**: Listed as moderately hardy (-5° to -15° F). Predicted temperature of 50% primary bud kill (LTF50) is -14.6° F (3).

**Use**: Wine

**Notes**: Recommended for producing high quality Muscat wines and blending (3).

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# Van Buren

www.nysaes.cornell.edu

**Synonyms**: Gladwin 3000 (3, 5).

**Pedigree**: 'Fredonia' x 'Worden' (1, 3, 5).

**Origin**: Fredonia, New York. Developed by F.E. Gladwin at the Vineland Laboratory of the New York State Agricultural Experiment Station (1, 7).

**Cross/Selection/Tested**: The date this cross was made is not known, but Gladwin noted that in 1936 'Van Buren' had just borne its fifth consecutive crop. Introduced in 1935 (7).

**Type**: Interspecific hybrid (includes V. labrusca and V. vinifera) (3).

**Color**: Black

**Berry**: Slater et al. (7) describe the 'Van Buren' berry as medium sized; spherical and uniform; deep purplish-black with heavy bloom. They added the slipskin was thick and tender and the flesh was foxy, slightly tough, juicy, greenish, translucent and sweet. They also noted that it tends to shatter when ripe.

**Cluster**: Small to medium (.22 to .67 lb); compact and cylindrical; shouldered and well-filled (7).

**Viticultural Characteristics**: Vigorous and with a procumbent growth habit (1, 2, 4, 7). Whealy (8) reported that it grows well even on poor soil. He added that growth starts late in the spring, so it is seldom injured by spring frosts. It has a tendency to overbear without proper pruning (7).

**Disease/Pests**: Highly susceptible to downy mildew on foliage and clusters (1, 2, 4, 5, 6, 7, 8); It's also reported to be slightly susceptible to Botrytis bunch rot, crown gall and powdery mildew and it's uncertain whether it is susceptible to anthracnose, black rot, Eutypa dieback, and Phomopsis cane and leaf spot (2, 6). It is sensitive to injuries from sulfur applications and it's uncertain whether it is sensitive to injuries from copper (2, 6. Earliness of maturity makes it attractive to birds (7).

**Wine Quality and Characteristics**: Mainly a table grape as acid is too low for best processing (8).

**Season**: Early (end of August at Geneva, New York) (7).

**Cold Hardiness**: Hardy (-15° F to -20° F) (2, 4).

**Use**: Wine, table.

**Notes**: Does not keep well, so crop should be harvested and used as soon as it matures (7).

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# Vanessa


Iowa State University

**Synonyms**: GF 136, 'Vanessa Seedless', Vineland 65164 (8).

**Pedigree**: 'Seneca' x New York 45910 ('Bath' x 'Interlaken Seedless') (7, 8).

**Origin**: Canada. Horticultural Research Institute of Ontario (Vineland Station); developed by O.A. Bradt and K.H. Fisher (7, 8).

**Cross/Selection/Test**: Cross made in 1965; selected in 1972 and tested as Vineland 65164 (7).

**Release**: 1983 (7).

**Type**: Interspecific hybrid (includes V. labrusca and V. vinifera) (7, 8).

**Color**: Red (7).

**Berry**: Fisher and Bradt (7) described the 'Vanessa' berry as medium sized and spherical; bright deep red and with a moderate bloom and seedless. They noted that the flesh is firm; the skin is adherent and the flavor of the berries can be described as mildly aromatic, but generally not of labrusca type. Fisher and Bradt (7) also reported that there are small vestigial seeds in the berry, but these have rarely shown signs of lignification (4% of seeds were hard). They added that berry splitting is usually not a concern.

According to the University of Minnesota (11), the characteristic that separates 'Vanessa' from other eastern seedless introductions is it's crisp texture; and Reisch et al. (9) reported that it's fruit quality is among the best of the red seedless types.

Rombaugh (10) noted that if the weather is dry all season long, the fruit can have astringent skin. However, if one good rain occurs after the fruit ripens, the astringency disappears. He added that this is likely connected to its place of origin.

**Cluster**: Medium sized (average cluster weight is .24 lb) (3); loose to well-filled (12); and with a small shoulder. Clusters do not shed readily and berries adhere tightly to pedicels during handling (7).

**Viticultural Characteristics**: Moderately vigorous and with a procumbent growth habit (4). Bordelon (2) reported that vigorous vines have shown poor fruit set and loosely filled clusters; but cane girdling, gibberellic acid treatments, or thinning may be used to increase cluster compactness and improve berry size. Domoto (4) noted that cluster thinning may be needed at bloom to improve berry size. He also reported that it is not productive on secondary buds. It also hardens off slowly in the fall (4).

Reisch et al. (9) suggest that grafting may be desirable on many sites to increase vine size. They caution however, that vines grafted on Teleki 5C at trials in Fredonia, NY have shown poor fruit set with very small berries.

**Disease/Pests**: 'Vanessa' is rated as highly susceptible to black rot (1, 3, 4, 9) moderately susceptible to downy and powdery mildews (1, 3, 4, 9); and slightly susceptible to Botrytis bunch rot (1, 3, 4, 9), crown gall (3, 4, 9) and Phomopsis cane and leaf spot (1, 3, 4, 9). It is uncertain if it is susceptible to anthracnose or Eutypa dieback. Domoto (4) noted that it is not sensitive to injury from sulfur, but is slightly sensitive to injuries from copper applications. Fisher and Bradt (7) noted it was moderately resistant to phylloxera. Domoto (4) noted that it seems to be attractive to grasshoppers and is sensitive to injuries from 2, 4-D and dicamba drift.

**Wine Quality and Characteristics**: Typically used as a table grape. At the Horticultural Research Institute of Ontario,

analyses carried out on whole berries showed an average of 16.5° Brix; 5.8 g/L titratable acidity; and pH at 3.59. They added that the sugar/acid ratio is 30.4, indicating a sweet taste (7).

**Season**: Early (early to mid-August in Iowa) (5, 6)

**Cold Hardiness**: Moderately hardy (-10° F to -15° F) (4). 'Vanessa' vines at Vineland Station in Ontario have survived -17.8° F with only 15% primary bud kill and no trunk damage (7).

**Use**: Seedless table

**Notes**: Like other seedless types, it does require winter protection in the upper Midwest states, such as Minnesota (11). Storage potential is good (7, 9).

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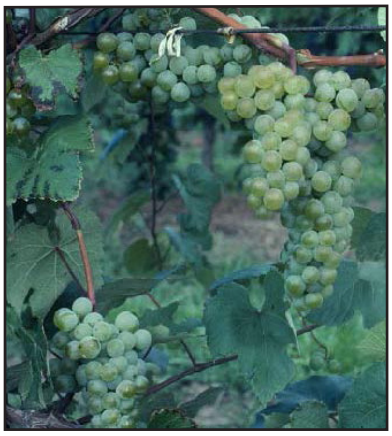
# Veeblanc



Dr. Helen Fisher

**Synonyms**: Vineland 53263, V 53263 (1, 2, 3).

**Pedigree**: 'Cascade' x Seyve Villard 14-287 (1, 2, 3, 4).

**Origin**: Vineland, Canada. University of Guelph and Horticultural Research Institute of Ontario. Bred by O.A. Bradt (1, 3).

**Cross/Selection/Introduction**: Cross made in 1953; selected in 1961; and introduced in 1977 (1, 3).

**Type**: Interspecific hybrid (includes V. vinifera and possibly V. rupestris and V. lincecumii) (6).

**Color**: White (2).

**Berry**: Medium-large; round; soft and juicy pulp (3); berries may crack with rain during late ripening period (5).

**Cluster**: Medium-large and long; somewhat compact; and not usually shouldered (2, 3).

**Viticultural Characteristics**: Moderate vigor and productivity; semi-upright, open growth habit (1, 5).

**Disease/Pests**: It has shown some resistance to downy and powdery mildews when given the recommended spray programs (1).

**Wine Quality and Characteristics**: Used to make dry white table wine that is free of labrusca type flavors (1). Wines have also been described as having a lemon-yellow color, clean, fruity and well-balanced (2). The fourteen year average of harvest data from the Horticultural Research Institute of Ontario shows soluble solids low at 18.1° Brix; moderate titratable acidity at .81% (or 8.1 g/liter); and a low pH of 3.10 (1).

**Season**: Early Midseason (5) Average maturity date is September 29 at the Horticultural Research Institute of Ontario (2).

**Cold Hardiness**: Said to be similar to 'DeChaunac' in hardiness, which is rated as moderately hardy to -10° F.

**Use**: Wine, table.

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HORT 3040-69 Revised May 2016

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# Ventura


www.nysaes.cornell.edu

**Synonyms**: Vineland 51061 (4, 8).

**Pedigree**: 'Chelois' (Seibel 10878) x 'Elvira' (3, 4, 8).

**Origin**: Vineland,Canada. Horticultural Research Institute of Ontario (3, 4, 8).

**Cross/Selection/Test**: Cross made in 1951; selected in 1959; tested as Vineland 51061 (3).

**Introduction**: 1974 (3, 8).

**Type**: Interspecific hybrid (includes V. labrusca; V. riparia; V. vinifera) (6).

**Color**: White

**Berry**: Small and round; white skin which is resistant to cracking; flesh somewhat astringent (4). Berries are high in sugar and acidity (2).

**Cluster**: Medium sized; somewhat compact; usually shouldered (4).

**Viticultural Characteristics**: Vigorous and very productive (4); semi-procumbent growth habit (6). Some resistance to spring frost (3). Cluster thinning may be needed some years (6).

**Disease/Pests**: 'Ventura' is rated as moderately susceptible to black rot (1, 5, 6, 9), downy mildew (1, 5, 6, 9) and powdery mildew (1, 5, 6). Reisch et al (9) considers it highly susceptible to powdery mildew. It's rated slightly susceptible to anthracnose (1, 6), Botrytis bunch rot (1, 5, 6, 9) crown gall (5, 6, 9) and Phomopsis cane and leaf spot (1, 5, 6) Its susceptible to Eutypa dieback is uncertain. It is not sensitive to injuries from sulfur applications (1, 5, 6, 9) and it's uncertain if it is sensitive to injuries from copper applications. Bordelon (1) reported that the vine is susceptible to tomato ringspot virus and may require grafting on virus infected sites.

**Wine Quality and Characteristics**: Suitable for making crisp labrusca flavored wine or juice production (7). Soluble solids tend to run low at 18.1° Brix and titratable acidity runs high at 12.2 g/liter (3).

**Season**: Midseason (6). September 30 in Ontario, Canada (3). Berries are high in sugar and acid content if left pass maturity (7).

**Cold Hardiness**: Very hardy (below -20° F) (6).

**Use**: Wine, juice.

**Notes**: Said to be a cold-hardy, crack-resistant replacement for 'Elvira' (2).

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# Vignoles


Iowa State University

**Synonyms**: Ravat 51 (3, 9, 12).

**Pedigree**: 8-Seibel 6905 x 'Pinot de Corton' (3, 12).

**Origin**: France; bred by J. F. Ravat (3, 12).

**Introduction**: Cross made circa 1930 (2). Introduced into the United States as P17857 and 181481 in 1949 (3). Named by the Finger Lakes Wine Growers Association in 1970 (4, 9).

**Release**: 1949 (12).

**Type**: Interspecific hybrid (includes V. vinifera, V. lincecumii and V. rupestris) (12).

**Color**: White

**Berry**: According to Brooks and Olmo (3), the 'Vignoles' berries are small and oblate (often contorted due to compactness) (1). The flesh is juicy and the skin is thick and light green with a pinkish tinge. The berries are prone to cracking. The berries can develop high sugars while retaining high acidity (2, 6).

**Cluster**: Small (3); 0.19 lb average cluster size (average taken at four Iowa State University research sites in 2007) (7, 8); occasionally has a small wing (3). Very compact and highly susceptible to Botrytis bunch rot (2).

**Viticultural Characteristics**: The 'Vignoles' vine is moderately vigorous, upright and has an open growth habit (3, 6). It is only moderately productive; however late season bud break reduces the risk from late frosts (2, 6). Cluster thinning is not needed (6) and Hoover and Hemstad (11) suggest leaving extra buds while pruning to compensate for the small cluster size. Domoto (6) noted that the vine has good tolerance to dicamba and 2, 4-D. He also cautioned that it is fall frost tender. One hundred five days from bloom to harvest (4).

**Disease/Pests**: 'Vignoles' is rated as highly susceptible to Botrytis bunch rot (1, 5, 6, 13) , powdery mildew (1, 5, 6, 13) and Anthracnose (1, 6); moderately susceptible to crown gall ( 1, 5, 6), downy mildew (1, 5, 6, 13), Eutypa dieback (1, 5, 6, 13) and Phomopsis cane and leaf spot (1, 5, 6, 13); and slightly susceptible to black rot (1, 5, 6, 13). Reisch et al (13) however considers it highly susceptible to crown gall. It is not sensitive to injuries from sulfur (1, 5, 6, 13) or copper applications (3).

**Wine Quality and Characteristics**: According to Bordelon (2) 'Vignoles' produces excellent wines of many different styles and is favored for dessert wines, especially when picked late in the season(10). It retains its fruitiness, high acid and good balance making it suitable for late-harvest and ice wines (10). Galet (9) noted that the wine has a distinct bouquet. It's said to be clean and crisp with a tropical fruit nose.

**Season**: Midseason (late-August to mid-September in Iowa) (7, 8).

**Cold Hardiness**: Moderately hardy (-10° F to -15° F) (6).

**Use**: Wine

**Notes**: Has Chardonnay in its ancestry.

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# Worden

Double A Vineyards, Inc. & ST Photography

**Pedigree**: 'Concord' Open pollinated seedling (2)

**Origin**: According to Hedrick et al. (2), 'Worden' was originated by Schuyler Worden in Oswego County, New York from a seed of Concord planted about 1863. It was given its name by J.A. Place of Oswego, New York who was a local horticulturist and friend of Worden.

**Introduction**: It was placed on grape list of the American Pomological Society Catalog in 1881 (2).

**Type**: Interspecific hybrid (includes V. labrusca and some V. vinifera) (2).

**Color**: Black

**Berry**: Hedrick et al. (2) describe the berries as large, roundish to oval; dark purplish black to black, covered with heavy blue bloom. They reported an average skin thickness which is tender and subject to fruit cracking in wet years. They noted that the skin adheres tightly to pulp, contains dark red pigment and is astringent. The flesh is greenish in color and translucent; juicy and slightly foxy with a sweetness at the skin to tartness at the center. Some growers describe the flavor as very labrusca (3).

**Cluster**: Hedrick et al. (2) reported the clusters as large and broad in size and tapering to cylindrical in shape. They also note the clusters are usually single shouldered and somewhat compact (2).

**Viticultural Characteristics**: Marshall (3) described 'Worden' as being vigorous and having a procumbent growth habit. Marshall also reported there are often four clusters to a shoot and it will over bear if allowed too many fruiting buds, so cluster thinning is needed.

**Disease/Pests**: Quite disease resistant, but has a high susceptibility to anthracnose (5). Sensitive to some strobilurin fungicides (Flint, Pristine) (1).

**Wine Quality and Characteristics**: N/A

**Season**: Early Midseason (3).

**Cold Hardiness**: Reported to have survived -40° F (2).

**Use**: Wine, table, ornamental (3) Suitable for cool, wet, frost-prone climates (2).

**Notes**: The name 'Zilga' in Latvian is quite poetic, meaning something like "deep, dark-blue waters". It is the only blue selection ever released by Latvian breeder, Pauls Sukatnieks (2).

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Revised by Diana Cochran, assistant professor and extension fruit specialist at Iowa State University. 2016

# Zilga

Mark Hart & ST Photography

**Synonyms**: Dvietes 4-2-108 (1, 2).

**Pedigree**: 'Smuglyanka' x (pollen mix of 'Dvietes Zila' and 'Yubileinyi Novgoroda') (1).

**Origin**: Latvia. Bred by Paul Sukatniek (1, 3).

**Introduction**: Cross made in 1964 (1, 2).

**Type**: Interspecific hybrid. Reported to be a complex (V. amurensis x V. labrusca x V. vinifera) cross (1).

**Color**: Blue

**Berry**: Medium large (3 g), with sky-blue shading (2).

**Cluster**: Small to medium in size (.35 lb); compact and with a wing (2).

**Viticultural Characteristics**: Very vigorous and productive (2).

**Disease/Pests**: Good disease resistance (3). Decent tolerance to most fungal diseases; requires moderate spray program (1).

**Wine Quality and Characteristics**: Plocher and Parke (2) report that the wines are still experimental. They stated that the juice is prone to oxidation and needs careful measures to prevent this. Plocher and Parke (2) described wines produced by semi-carbonic maceration as typically purple-red, with a nose described as "cranberry" with "mineral" overtones and a hint of foxiness. They added that rosé style wines made from 'Zilga' are remindful of fruit wines with strawberry being the predominant aroma. They suggested that 'Zilga' wines are improved in mouth feel and aromatics by addition of dense aromatic red wines such as 'Maréchal Foch'.

**Season**: Early (2).

**Cold Hardiness**: Reported to have survived -40° F (2).

**Use**: Wine, table, ornamental (3) Suitable for cool, wet, frost-prone climates (2).

**Notes**: The name 'Zilga' in Latvian is quite poetic, meaning something like "deep, dark-blue waters". It is the only blue selection ever released by Latvian breeder, Pauls Sukatnieks (2).

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