PLENTY OF VARIETY:

Grapes for wine, juice, jelly in Wyoming

There are more than 5,000 grape cultivars grown in the world, so how do you select ones that will perform best in your local conditions?

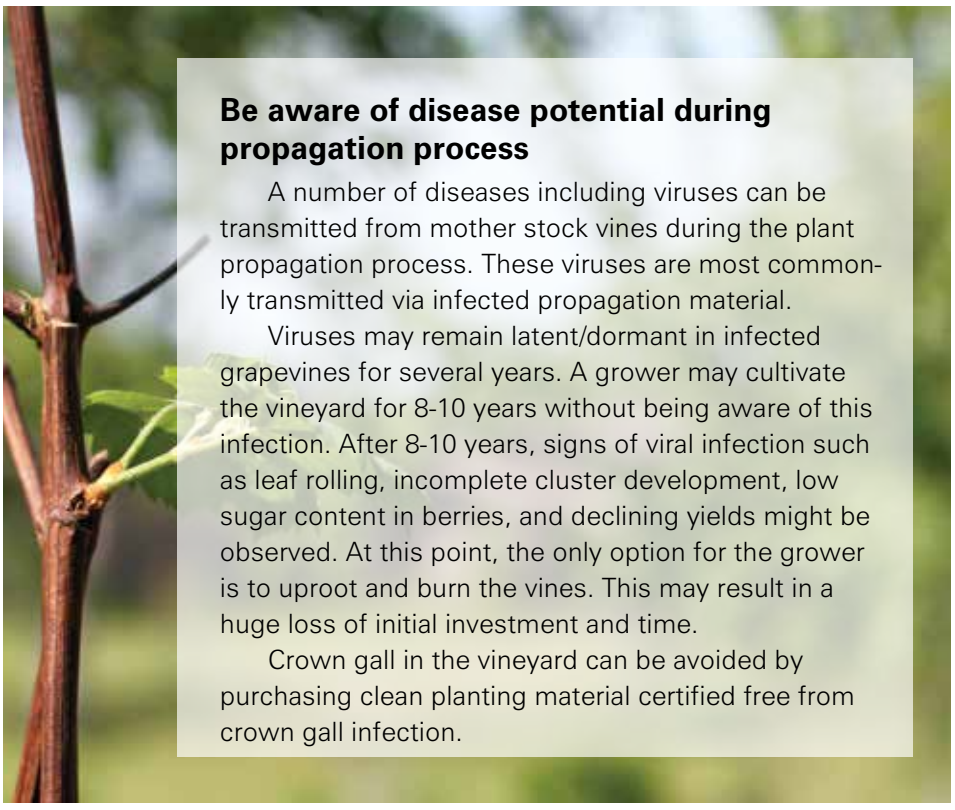
Since grapes are a perennial fruit crop (they can produce fruit for up to 20 years), purchasing the best quality planting material to begin with is essential. The right choice of cultivars is a critical factor in quickly establishing a vineyard, maximizing productivity, and getting quick returns on your investment.

Basic information helps cultivar selection

Having basic knowledge about grape genetics and taxonomy, their growing conditions, and growth patterns can go a long way in selecting the right cultivar.

The grapevine is a creeping vine that belongs to the *Vitaceae* plant family. Other notable plants in this family include the Virginia creeper and Boston ivy. Grape belongs to the genus *Vitis*, which contains more than 50 species, some of which are parents of the several thousand grape cultivars that occur worldwide. Different species of grapevines have specific characteristics such as high yield and fruit quality, disease resistance, or cold tolerance that make them particularly attractive parents for the development of new cultivars for specific production regions.

Grapes are classified based on their use for wine, table (fresh consumption), processing into raisins, juice, jam, jelly, or rootstocks. Many grape varieties are grown by grafting them onto rootstocks. These rootstocks are not valued for their fruit characteristics but impart protection against soil borne insects, disease, and other unfavorable growing conditions such as drought, salinity, and heavy soils.



Be aware of disease potential during propagation process

A number of diseases including viruses can be transmitted from mother stock vines during the plant propagation process. These viruses are most commonly transmitted via infected propagation material.

Viruses may remain latent/dormant in infected grapevines for several years. A grower may cultivate the vineyard for 8-10 years without being aware of this infection. After 8-10 years, signs of viral infection such as leaf rolling, incomplete cluster development, low sugar content in berries, and declining yields might be observed. At this point, the only option for the grower is to uproot and burn the vines. This may result in a huge loss of initial investment and time.

Crown gall in the vineyard can be avoided by purchasing clean planting material certified free from crown gall infection.

Production, Quality Factors

Grape production and quality is governed by the complex interaction of cultivars with prevailing soil and climatic conditions.

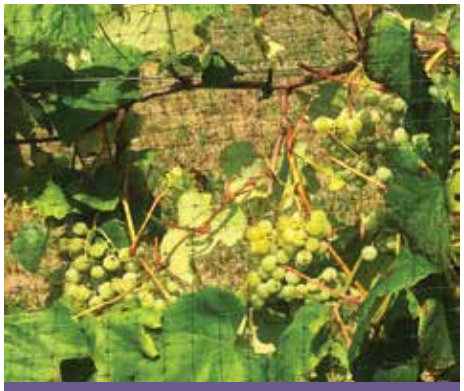
Wyoming soils vary widely with changes in topography, vegetation, and climate across the state. Most Wyoming soils are alkaline. This can affect the availability of certain nutrient elements to plants, which in turn greatly affects fruit quality. Wyoming has short growing seasons, hot summers in some locations, and very cold/freezing winters. Wide variations

Frontenac

Frontenac Gris

Marquette

Alpenglow



Edelweiss

Osceola Muscat

in topography and elevation make dividing the state into homogenous climatological zones difficult. Due to this variability, vine establishment, growth and development, flowering, berry development and ripening vary regionally. If the correct cultivars suitable for the particular region are selected, the dry weather experienced by many parts of the state during the growing season can provide optimum conditions for vigorous, disease-free growth of grapevines and production of high-quality fruit.

Grape cultivars suitable for Wyoming

Intensive breeding efforts in the past 50-plus years have led to development of several cold-hardy grape cultivars, some of which are suitable for production in Wyoming. In general, any grapevine varieties that can be grown in USDA cold hardiness zones of 4b or colder are suitable.

Brianna

Field trials began at test sites in Sheridan and Powell in 2013 to screen and identify grape cultivars suitable for Wyoming. A number of wine-, table- and juice-grape cultivars were planted and evaluated for cold-hardiness, yield, and quality parameters and ability to grow and ripen under our short growing season. Some of the cultivars that performed well are described here. Other important cold-hardy cultivars that may be suitable for Wyoming are on page 20 under the species descriptions.

Frontenac

Frontenac is a hybrid red grape cultivar developed by the University of Minnesota grape breeding program in 1996. It is extremely cold hardy and can survive to temperatures reaching -35F. It is vigorous, late maturing, and high yielding in Wyoming. Frontenac is used to make red wine. Trials at Sheridan indicate the cultivar can also be used to make jelly.

Frontenac Gris

Frontenac Gris originated as a mutation from Frontenac. The cultivar has a lighter skin than Frontenac but exhibits similar growth and cold hardiness to Frontenac. It is used to make white wine, which can have a characteristic peachy flavor (as described

Vineyard at the Sheridan Research and Extension Center

by the University of Minnesota grape program website).

Marquette

Marquette is one of the most popular red grape cultivars grown in the colder regions of the United States. The cultivar exhibits very early bud break in Sheridan and may be susceptible to the late spring freezes commonly experienced in the state. It is vigorous, disease resistant, and is used to make red wine.

Alpenglow

Alpenglow is a moderately cold hardy cultivar developed by a private breeding program in Wisconsin. The cultivar has medium vigor and produces light-red berries with low acidity. Severe winter injury may occur in extremely cold winters, which may require re-training of vines from the ground.

Edelweiss

Edelweiss is a cold-hardy, white grape cultivar with large berries that performs well in Sheridan. It is moderately vigorous and produces clusters with large berries, moderate sugars, and low acid. Edelweiss can be used for wine and juice as well as for fresh consumption.

Osceola Muscat

Osceola muscat is an extremely cold-hardy white grape cultivar that does well under Sheridan conditions. It is vigorous and fruitful and produces small clusters. Berries are typically sweet and characterized by a typical Muscat flavor. It is suitable for wine as well as making jelly.

Brianna

Brianna is a cold-hardy, white grape cultivar that exhibits moderate vigor under Sheridan conditions. The cultivar produces medium-sized, compact clusters. Brianna can be used to make white wine with floral aromas. The Double A vineyard website describes wines made from Brianna as having tropical and floral characteristics with a pineapple nose and flavor when fully ripe.

Some sources for purchasing grapevines are:

- Double A Vineyard, Fredonia NY
- Inland Desert Nursery, Benton City WA
- North Eastern Vine Supply, West Pawlet, VT
- St. Francois Vineyard, Park Hills MO
- Winterhaven Vineyard and Nursery, Janesville MN
- Seaway Cold Hardy grapevines, Evans Mills NY
- Grafted Grapevine Nursery

Note: The University of Wyoming does not endorse any particular supplier or product.

Important grape species provide foundation for Wyoming-tough grapes

European bunch grapes (*Vitis vinifera*)

Cultivars in this species are very susceptible to cold/freezing temperatures, which is why they cannot be grown for production in Wyoming. European bunch grapes are believed to have originated in the Caucasus Mountains from where they spread throughout the world. European bunch grapes are the most important grape in the world, and a majority of grape acreage and production worldwide is dominated by these cultivars. The cultivars are characterized by clusters with many berries (40-200), thin skin, a wide array of aroma and flavors, and high sugar content and are widely used for wine production, fresh consumption, and processed products such as juice and raisins. Common wine cultivars such as Chardonnay, Cabernet Sauvignon, Merlot, Pinot Noir, and Riesling are highly valued for their wines, while table grape cultivars such as Thompson Seedless, Flame Seedless, Perlette, and Superior Seedless are grown for fresh consumption and raisin production. Cultivars from this species exhibit some undesirable characteristics such as susceptibility to fungal and bacterial diseases.

River bank grape (*Vitis riparia*)

River bank grape is widely distributed throughout North America – its range extends from the Southwest to the Canadian prairies. *V. riparia* is an extremely cold-hardy species surviving to temperatures of -49F. Other desirable characteristics such as its ability to quickly acclimate/adjust to colder temperatures makes this an ideal species for the development of cold-hardy grape cultivars. *Vitis vinifera* and *Vitis riparia* have been frequently used as parents for the development of a number of cold-hardy grape cultivars. Popular cultivars such as 'Frontenac', 'Frontenac Gris', 'La Crescent', and 'Marquette' are widely grown for wine production in colder regions of the United States.

Fox grapes (*Vitis labrusca*)

This species is commonly known as the fox grape due to a unique flavor from ripe berries that are produced on large bunches. An easy way to identify the cultivars developed from this species is the "slip skin" characteristic of the berries where the skin easily separates from the pulp in fully ripe berries. The species exhibits moderate cold-hardiness and has been used as a parent along with *V. vinifera* for the development of hybrid cultivars valued for juice, jelly, and wine production. Although varieties developed from this species can be grown in Wyoming, they might exhibit nutrient deficiency problems in soils with high pH.

Muscadine grapes (*Vitis rotundifolia*)

There might be a temptation to purchase muscadine grapes based on their attractive fruit size, but these cultivars are extremely susceptible to low temperatures and cannot be grown well in Wyoming. This species is commonly known as the muscadine grape and is native to the southeastern United States. An easy way to identify this species is the large berries, sometimes reaching the size of a small plum. However, in contrast to other species, cluster size is small ranging from 2-10 berries. Cultivars developed from this species are extremely drought tolerant and disease resistant.

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