NebGuide

Nebraska Extension

Research-Based Information That You Can Use

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Grape Growing for the Home Garden

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This NebGuide provides the basic information to establish a grape vineyard or planting grapes for home use. A detailed table provides the names of potentially suitable grape cultivars and their characteristics.

Grapevines are among the most easily grown fruits in Nebraska. In recent years there has been a resurgence of grape growing as a commercial crop, especially in the eastern part of the state because of the adapted soil and climatic conditions. However, grapes can also be grown in the home garden for personal use.

Grape production for home use is not difficult if attention is given to necessary planting and maintenance practices. Reasons for wanting to grow grapes in the home garden vary from person to person, but the most common are for home winemaking; making juice, jams, jellies, and even pies; and producing grapes for fresh eating (table grapes). Some homeowners also grow grapes for shade, ornamental, and landscape enhancements. *Table I, Features of Grape Cultivars for Home Gardens*, lists some of the most common grapes recommended for home fruit plantings in Nebraska and their potential uses.

General Considerations for Planting

Soils—Grapevines do best on well-drained, loose soils such as sandy loams, silty clay loams, and loamy sands. Higher amounts of clay in a soil are not detrimental if internal soil drainage is adequate; grapevines cannot tolerate "wet feet," that is, soils from which water does not drain freely. The soil depth is important. Although grapevine roots have been demonstrated to reach a depth of 25 feet in the loess soils near the Missouri River, such great depths of the soil profile are not necessary. Generally, an effective depth of 3 feet will be adequate if well-drained.

Soil fertility is not as important as might be imagined; in fact, moderate to low fertility is preferred to highly fertile soils. The latter can contribute to excessive vegetative growth at the expense of fruit production. A balance between vegetative growth and fruit growth is desirable; enough photosynthetic leaf area is necessary to sustain normal growth and development of the desired level of fruit production. A **soil test** should be conducted to determine if basic fertility needs will be met. If soil pH is below the desired range of 5.5 to 6.5, application of lime (ground dolomitic limestone is best) may be necessary. Most Nebraska soils have adequate levels of potassium, calcium, and magnesium, but phosphorous (P) is often lacking (below 40 pounds per acre is considered low). It is important to add phosphorous before planting since phosphorous is mostly insoluble and will not move in the soil profile. Other nutrient amounts to consider when evaluating soil test results (and their desirable ranges) are zinc (8 to 10 pounds per acre) and boron (1.5 to 2 pounds per acre). A good range for organic matter is 1 to 3 percent. High organic matter levels can provide excess nitrogen, leading to soft growth that is vulnerable to winter injury and unbalanced vines.

Sites—Special attention should also be paid to the site of the grape plantings. Since grapes are full-sun plants, they should not be planted in shade or partial shade. Air drainage is also important, since one of the most important challenges to growing grapes in a continental climate such as Nebraska is damage to newly developing shoots by cold temperature events (frost and freezes) in the spring. It is imperative that grapes not be planted in low areas that may become frost pockets (see *Figure 1*). Planting on a slight slope may help solve this problem. Choice of grape cultivar ("variety") may also help in combating this problem.

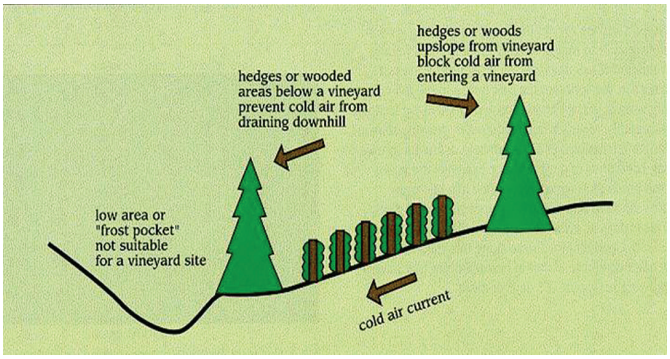


Figure 1. Topography and adjacent vegetation influence the susceptibility of a vineyard site to spring and fall freeze damage.

Figure 2. Compound Bud—the large bud in the center is the primary bud, the secondary bud is at the right, and the tertiary bud is the small one at the left.

Compound Buds—Grapevines have compound buds; that is, each bud found at a node on a grapevine stem will usually contain three buds—a **primary bud**, a **secondary bud**, and a **tertiary bud** (*Figure 2*). The coming season's growth—shoot, leaves, tendrils, and flower clusters—are contained in the primary bud. If damage from cold, insects, or physical injury occurs to the primary bud, then the secondary bud will grow, but this shoot will usually be less fruitful than a shoot developed from a primary bud. In extreme cases, both the primary and secondary buds may be killed and the tertiary bud will grow. This shoot will probably have no flower clusters, thus resulting in little to no yield. However, the foliage produced will sustain the plant and help it grow, which provides for survival of the vine—sort of nature's "insurance policy" (see *Figure 2*).

Cultivars ("Varieties")—Several thousand cultivars exist worldwide, with many more being developed every year by both private and public grape breeders. The University of Nebraska Viticulture Program has tested and evaluated nearly 100 such cultivars in a continuing effort to identify genotypes suitable for both commercial and home plantings in Nebraska. *Table I*, "Features of Grape Cultivars for Home Gardens," combined with the map designating cultivar zones of adaptability (*Figure 6*), provides insight into what cultivar(s) may be best adapted for specific home plantings. This information is advisory only but does represent the best estimates based on approximately 20 years of research.

Pests and Diseases—Pests of grape plants include vertebrates, insects, and diseases, especially fungal diseases such as Black Rot, Downy Mildew, Phomopsis, and Powdery Mildew. Some of the other important pests of grapes include birds, rabbits, and deer. Grapevines should be closely monitored for insects, and if Japanese beetles, climbing cutworms, or flea beetles are found, insecticides may need to be applied. It is recognized that application of fungicides is usually necessary, especially in the more humid regions of eastern Nebraska.

Recommendations and the legal limits of chemicals to treat pests and disease change often, so specifics are not included in this NebGuide. Please see the *Midwest Spray Guide for Grapes and Small Fruits* for assistance in determining what pesticide to employ. When applying pesticides, **always read and follow the label's instructions**. As noted in *Table I*, some grapevine cultivars are sensitive to sulfur, so don't apply sulfur fungicides to those noted as sulfur sensitive. Additional assistance can be obtained by contacting your Nebraska Extension educator or extension specialists.

Pruning and Training—Grapevines produce shoots from buds on the previous season's growth; each shoot will produce the leaves, flower clusters, and tendrils for the current season's growth (see *Figure 2*). Most healthy mature grapevines will have 300 or more buds that are capable of producing fruit. If all buds are left to grow, the number of fruit clusters would be excessive. Hence, pruning is necessary to create a **balanced vine** that has neither too heavy a crop nor excessive vegetative growth. A well-pruned vine allows for adequate light interception; good air movement through the vine, which helps minimize disease problems; and facilitates ease of management, including spraying, tying, and harvesting. Generally, pruning should take place in the dormant season, preferably in late winter. When pruning in late winter, sap may "bleed" from the cut surfaces, but this loss of sap will not harm the vines.

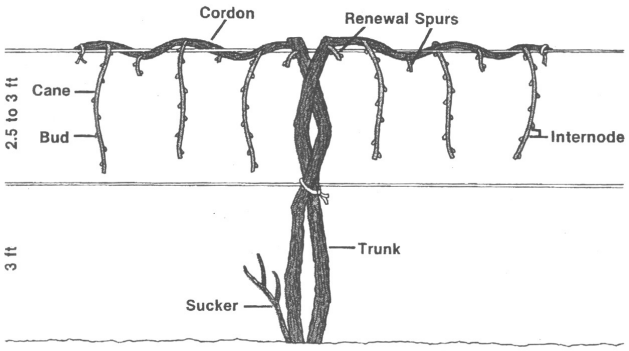
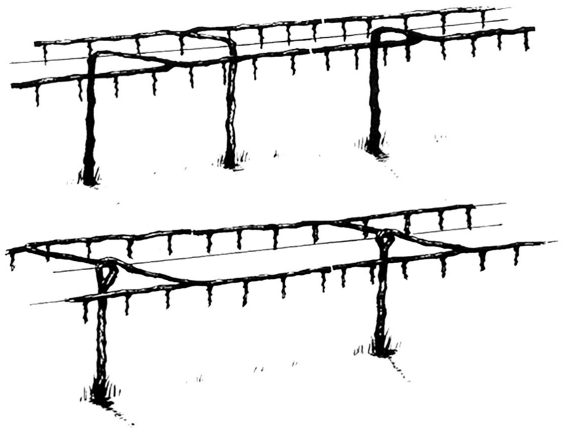
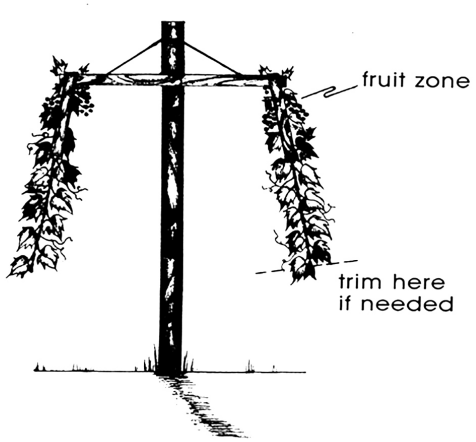


Figure 3. High Cordon or Two-Arm Kniffin: Vine trunks are trained up to a fruiting wire about 5 to 6 feet high. Cordons are trained along the wires, with shoots hanging downward.



Vine training for the GDC. Note how arms are trained around the central wire to give flexibility. Vines can be trained to one or both sides, but cordons must fill the wire. Prune to downward pointing spurs, from 2 nodes to 6 nodes long.

Figure 4a



End section appearance of a GDC vineyard. Shoots can be trimmed but this is generally not needed.

Figure 4b

Figures 4a and 4b. Geneva Double Curtain: This is a horizontally divided training system; cordons are trained along parallel fruiting wires about 5 feet high and 4 feet apart. Shoots are positioned downward.

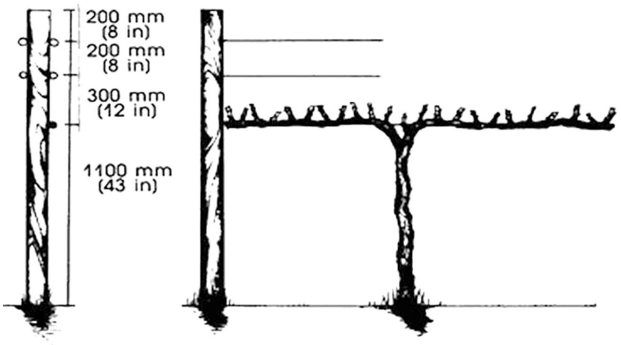


Figure 5a

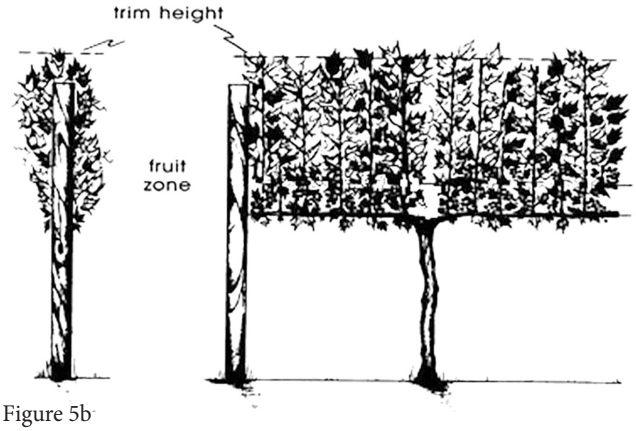


Figure 5b

Figures 5a and 5b. Vertical Shoot Positioning: Cordons are trained along fruiting wires about 3 feet high, with shoots trained upward.

How much to prune? Most home gardeners do not prune adequately, fearing that they will injure the vine. However, severe pruning will encourage robust growth and help achieve the goal of a balanced vine. The extent of pruning is dictated by vine vigor. One approach is to base how many buds to leave on a mature vine by the weight of the pruned wood. For example, the weight of prunings will determine the number of buds to leave; one formula is "30 plus 10." If the prunings weigh two pounds, 30 buds are left for the first pound and 10 more for each additional pound, resulting in a goal of leaving 40 buds for that vine. Using this approach, if the prunings weigh three pounds, then 50 buds would be left (30+10+10).

Trellis Systems—Although many trellis or training systems are used in home gardens and commercial vineyards, three that are easily used are depicted in *Figures 3*, *4*, and *5*. Components of the grapevine are illustrated in

Figure 3, including the perennial parts (trunk and cordons), canes, nodes, internodes, and buds. The High Cordon and Geneva Double Curtain systems work well for vines that have a pendulous (downward) growth pattern; whereas, vines that tend to grow vertically are best suited to the Vertical Shoot Positioning (VSP) System. See *Table I* for recommended systems for specific grapevine cultivars. For information on cultivars not listed, contact your extension educator or the University of Nebraska Viticulture Program.

Figures 3–5 illustrate three easily used trellis systems. The Midwire Cordon, which is not shown, is similar to High Cordon, but the wire is typically lower, around 3 feet.

Table I. Some of the most common grapes recommended for home fruit plantings in Nebraska.

Features of Grape Cultivars for Home Gardens						
Cultivar	Skin Color#	Uses	Range of Adaptability¥	Disease Tolerance°	Suggested Trellising Style•	Special notes
Arandell*	B	Wine	A-C	G	TWC	Developed from Cornell University's "No Spray" program
Baco Noir	B	Wine	A-B	F	TWC	Wines are fruity and deeply colored
Beta	B	Juice, Jams, Jellies	A-E	G	TWC	One of the most cold-hardy grapes, poor wine quality
Bluebell*	B	Juice, Jams, Jellies	A-E	G	TWC, GDC	Similar to Concord, smaller berries, more cold hardy
Brianna*	W	Wine	A-C	F-G	TWC, GDC	Fruity white wines, increasingly popular in the Midwest
Cabernet Franc**	B	Wine	A	P	VSP	One of the most cold-hardy Vinifera
Canadice*	P-R	Table	A-B	F	MWC	Seedless, deep pink if exposed to sunlight
Cayuga White	W	Wine	A-C	G	TWC	Large open bunches
Chambourcin*	B	Wine	A	F	TWC	Hardy only in the best sites
Concord & Concord Seedless*	B	Juice, Jams, Jellies, Pies	A-C	F-P	TWC, GDC	Standard for commercial juice, jams and jellies
deChaunac*	B	Wine	A-E	F	MWC	Can become bushy in growth habit
Delaware	P-R	Wine	A-C	F	TWC	Pink color develops if exposed to sunlight
Edelweiss*	W	Wine, Table	A-D	G	TWC, GDC	Introduced as a table grape
Elvira	W	Wine	A-E	F	TWC	Very cold hardy, performs best in western Nebraska
Frontenac	B	Wine	A-E	G	TWC, GDC	Wines highly acidic, makes excellent port-style wines
Frontenac Blanc	W	Wine	A-E	G	TWC, GDC	Better for white wine than Frontenac Gris
Frontenac Gris	G	Wine	A-E	G	TWC, GDC	Frontenac mutation
Geneva Red	B	Wine	A-C	F	TWC, GDC	Was known as GR7
Himrod	W	Table	A-B	F-P	MWC	Seedless
King of the North	B	Juice, Jams, Jellies	A-E	G	TWC	Very cold hardy
La Crescent	W	Wine	A-C	F	TWC	Fruity wines; clusters may shatter
Lacrosse	W	Wine	A-E	F-P	TWC	Very susceptible to Black Rot

Cultivar	Skin Color#	Uses	Range of Adaptability¥	Disease Tolerance°	Suggested Trellising Style•	Special notes
Leon Millot*	B	Wine	A-E	F	TWC	Maréchal Foch sibling
Maréchal Foch*	B	Wine	A-E	F	TWC	Leon Millot sibling, more widely planted
Marquette*	B	Wine	A-E	G	TWC	Excellent wine grape from University of Minnesota breeding program
Marquis*	W	Table	A-B	F	MWC	Seedless
Mars	B	Table	A-C	G	MWC	Clusters hold well for extended harvest season
Niagara	W	Juice, Jams, Jellies	A-C	F	TWC, GDC	Most common white juice grape grown in the USA
Noiret	B	Wine	A-C	F-G	TWC, GDC	Deeply colored full bodied wines
Norton*	B	Wine	A	G	TWC, GDC	"State Grape" of Missouri, also known as Cynthiana
Prairie Star	W	Wine	A-E	G	TWC	Excellent blending grape for white wine
Reliance	R	Table	A-C	P	TWC	Seedless
Riesling**	W	Wine	A	P	VSP	One of the most cold-hardy vinifera grapes
Saint Croix	B	Wine	A-E	F	TWC, GDC	Wine may exhibit green, vegetal flavors
Seyval Blanc	W	Wine	A-C	P	TWC	Produces large compact clusters
Somerset Seedless	R	Table	A-E	F	TWC	Seedless, very cold-hardy
Swenson Red	R	Table	A-D	F	TWC	Has few small seeds, outstanding flavor
Traminette	W	Wine	A-B	F	TWC	Gewurztraminer is one of Traminette's parents
Valiant*	B	Juice, Jams, Jellies, Wine	A-E	F	TWC	South Dakota State University introduction
Vanessa	R	Table	A-B	P	MWC	High quality, seedless
Vignoles	W	Wine	A-C	F-P	VSP	Tight bunches prone to bunch rot

B = Blue/Black, R = Red, W = White, G = Gray or Bronze, P = Pink
¥ Locations where cultivars noted are likely to do well. See *Figure 6*
° G = Good Tolerance, F = Fair Tolerance, P = Poor Tolerance
• TWC = Top-wire cordon; GDC = Geneva Double Curtain; MWC = Mid-wire cordon; VSP = Vertical Shoot Positioned
* Sulfur sensitive; do not use sulfur sprays
** Vinifera; plant only grafted vines; protect graft union over winter

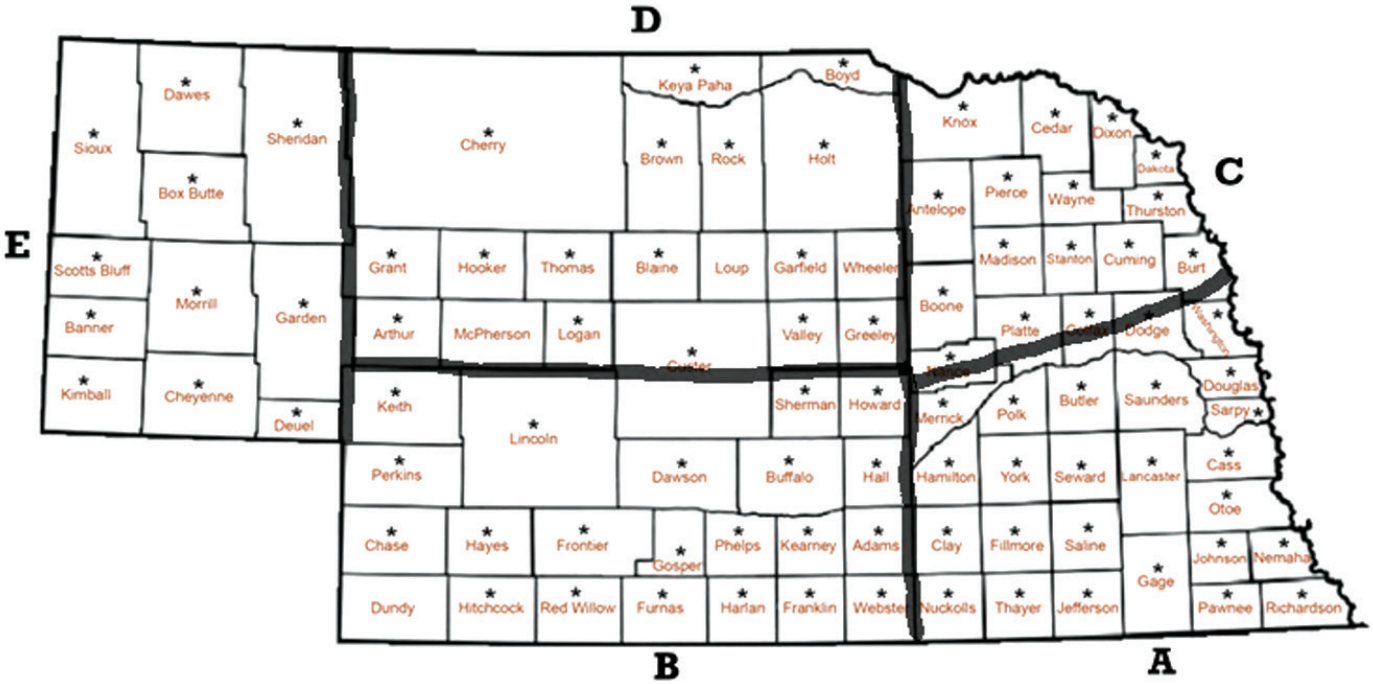


Figure 6. Range of grape cultivar adaptability in Nebraska (see *Table I*, "Features of Grape Cultivars for Home Gardens").

This publication has been peer reviewed.

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