Growing Grapes in the Home Garden

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Grapes are popular for home plantings because they can be used in so many ways. Properly managed grapevines also add an attractive landscape feature to home plantings during the growing season.

Grapes can be grown throughout Oklahoma, but because of the diverse climatic conditions across the state, varieties should be selected that are the most adapted to the particular region. Many varieties of grapes are cold sensitive and should only be used in the warmer region south of I-40. Other varieties that are very susceptible to disease should be planted in the drier areas west of I-35. Muscadine grapes and their culture is described in a separate fact sheet HLA-6254, *Growing Muscadine Grapes in Oklahoma*. The number of grapevines to plant depends on objectives and what type of grape being planted. For example, two or three table grapevines will provide almost any family with all the fresh grapes they need. However, home winemakers may wish to plant 20 or more grapevines to supply them with enough juice. Generally, bunch grapes will produce about eight pounds per vine. The amount of fruit produced is dependent on variety and management. Some bunch grapes may yield as little as one pound per vine, while some may produce up to 25 pounds per vine.

Before deciding to grow grapes, consider: 1) plant selection, 2) site selection, 3) site preparation, 4) planting, 5) general care, 6) pruning and training, 7) harvesting and 8) pest management.

Plant Selection

While there are many varieties of grapes available (Table 1), the performance of any one variety is greatly influenced by local growing conditions and climate. When choosing grape varieties, it is important to select from those adapted to your region. All of the varieties listed in this fact sheet are recommended for Oklahoma. The Concord variety is not recommended because the fruit within the clusters do not all ripen at one time with Oklahoma conditions.

Another important factor in choosing grape varieties is how the fruit will be used. Grapes may be used for fresh eating, raisins, wine, juice, jams, jelly, pies and other cooked products. When choosing grapes, select varieties you like, but that will grow well in your area. Just because you like Chardonnay wine does not mean that you should plant Chardonnay grapes. They break bud early in the spring and frequently are damaged by late freezes. Some people like "foxy" grapes (with flavor similar to that of Concord), while others do not. Several table grape varieties are seedless or almost seedless and some have slipskins (the pulp does not adhere to the skins) or non-slipskins. Bunch grapes can be labeled as wine or table grapes, but that doesn't mean that a wine grape can't be eaten fresh or a table grape can't be made into juice or wine. Normally, wine grapes have smaller berries with many seeds and high sugar contents. Table grapes are usually larger seedless berries with lower sugar levels.

The University of Arkansas has developed many table grape varieties that are well adapted to Oklahoma. Table 1 gives a list of some commonly grown table grapes and wine grapes in Oklahoma.

When choosing wine grapes for home use, important things to consider are the adaptation to climate and disease resistance. Many of the familiar wine grapes are European varieties (*Vitis vinifera*) and can be more susceptible to cold damage and diseases. French American hybrids may be more adapted to Oklahoma, especially in the northern half of the state. American varieties will be the most adapted and easiest to grow.

Most table and wine grapes will produce good crops if only one variety is planted. They are self-fertile and wind pollinated. The fruiting season can be extended by planting varieties that ripen at different times. Ripening dates may vary by as much as two weeks each year, depending on the weather. Grapes will ripen one to two weeks later in northern Oklahoma than in southern Oklahoma.

Consider the disease and insect resistance of the variety. Disease resistance is particularly important in eastern Oklahoma, because humid conditions encourage disease growth, but can be a problem in all areas of the state unless a proper fungicide schedule is followed. Vines grafted to rootstocks will improve growth, increase production and give protection against certain insect or soil problems. If vines die back to the ground, a grafted vine will need to be replaced. Own-rooted vines are less vigorous, but if they die back, root suckers can be trained into a new vine. For more information, HLA-6253, *Rootstocks for Grape Production* is available online.

Purchase plants from an established nursery and place orders as early as the nurseries will take them. Request a specific delivery date. Accept only healthy-looking vines, which

Table 1. Grape Varieties for Oklahoma.

Table Grapes	*Ripening Season*	*Color*	*Type*	*Winter Hardiness*	*Disease Susceptibility*	*Notes*
Canadice	early	red	hybrid	good	highly	slipskin, labrusca flavor, medium clusters
Einset	middle	red	hybrid	fair	highly	slipskin, seedless, tough skin
Faith	early	blue	hybrid	good	slightly	non-slipskin, slight fruity flavor
Gratitude	middle	white	hybrid	fair	slightly	non-slipskin, crisp texture, tight clusters
Hope	middle	white	hybrid	good	slightly	non-slipskin, soft fruit, fruity flavor, tight clusters
Joy	early	blue	hybrid	good	slightly	non-slipskin, thin skin, soft fruit
Jupiter	early	red	hybrid	good	slightly	non-slipskin, muscat flavor
Mars	early	blue	hybrid	good	slightly	slipskin, similar flavor to concord
Neptune	middle	white	hybrid	fair	slightly	non-slipskin, fruity flavor, large clusters
Reliance	early	red	hybrid	good	moderate	slipskin, delicate fruity flavor, some skin splitting
Saturn	middle	red	hybrid	fair	moderate	non-slipskin, fruity flavor, stores well
Sunbelt	middle	blue	American	good	slightly	slipskin, seeded, juice, concord replacement
Vanessa	middle	red	hybrid	good	highly	non-slipskin, seedless, fruity flavor
Venus	very early	blue	hybrid	fair	slightly	slipskin, muscat & labrusca flavors

Wine Grapes	*Ripening Season*	*Color*	*Type*	*Winter Hardiness*	*Disease Susceptibility*	*Notes*
Baco Noir	middle	blue	hybrid	fair	highly	vigorous, semi-trailing, high acids
Cabernet Sauvignon	late	black	vinifera	fair	highly	vigorous, late budbreak
Catawba	late	red	American	good	highly	table grape, slipskin, spicy flavor, slightly foxy
Cayuga White	middle	white	hybrid	good	slightly	productive, versatile
Chambourcin	late	blue/black	hybrid	fair	highly	large loose clusters
Chardonel	late	white	hybrid	good	moderate	productive, loose clusters, Seyval x Chardonnay cross
Chenin Blanc	late	green	vinifera	fair	highly	tight clusters, vigorous, early budbreak
Corot Noir	late	blue	hybrid	good	moderate	vigorous, productive, cluster thinning needed
Cynthiana	very late	blue/black	American	good	low	small cluster & berries, sensitive to sulfur
Frontenac	very early	blue	hybrid	good	moderate	high sugar and high acid, needs bird protection
Frontenac Gris	very early	white	hybrid	good	moderate	bud sport of Frontenac, used for white wine
Marechal Foch	very early	blue	hybrid	good	moderate	small berry, medium vigor
Merlot	late	blue	vinifera	poor	moderate	large yields, medium fruit size
Niagara	late middle	white	American	good	highly	juice, table, labrusca flavor, large slipskin
Noiret	mid-late	blue	hybrid	good	slightly	very vigorous, productive
Petit Verdot	late	blue	vinifera	poor	moderate	medium vigor, small berries
Riesling	middle	white	vinifera	fair	highly	most cold hardy vinifera, moderate vigor, high quality
Rubaiyat	middle	red	hybrid	good	slightly	medium vigor, medium clusters, Oklahoma grape, tintner
Ruby Cabernet	late	blue	vinifera	fair	moderate	late budbreak, small clusters
Sangiovese	late	blue	vinifera	poor	highly	vigorous,
Sauvignon Blanc	middle	green	vinifera	fair	highly	vigorous, mid budbreak
Seyval Blanc	middle	white	hybrid	fair	highly	vigorous, heavy crops, large compact clusters
Traminette	late	white	hybrid	fair	moderate	productive, vigorous
Valvin Muscat	middle	white	hybrid	fair	moderate	small vines, soft fruit, low vigor
Vidal Blanc	late	white	hybrid	good	slightly	large compact clusters, small berries, late budbreak
Vignoles	late	white	hybrid	good	slightly	compact small clusters, late budbreak
Villard Blanc	late	white	hybrid	good	moderate	table, large loose clusters, resistant to Pierce's disease
Villard Noir	late middle	blue	hybrid	fair	moderate	productive, low vigor

are certified as virus-free. Also check the plants for evidence of disease and insects. Taking cuttings from a neighbor's plants may transfer diseases or insects into your garden. It is best to order plants to ensure good quality nursery material.

Site Selection

Grapes require full sunlight and well-drained soils. They can be grown on a wide range of soil types, as long as there is adequate drainage and moisture retention. Raised beds will help overcome slight soil drainage problems. The best soils are loams or sandy loams with added organic matter.

Plants stressed by drought often have more disease problems and lower yield than plants that have received adequate water. Irrigation water should be available to help the plants mature their fruit and survive dry periods. However, vines that grow so vigorously that their fruit production is poor should receive gradually decreasing amounts of water after fruit set and during fruit maturation. This will decrease shoot growth and allow the plant to develop fruit as it should.

Grapes grow best in soil with a pH range of 5.5 to 6.5. Areas which are often prone to late-spring frost (frost pockets) should be avoided. The north side of a gently sloping hill is a good planting site, because the plants are protected against spring frost injury and from some of the impact of southwest winds in summer.

Rows should usually run north to south. This allows the plants to gather the most sunlight. North-south rows are also less susceptible to wind damage than rows that cross the direction of the prevailing wind. Good wind flow through the vineyard helps to dry foliage and reduce disease pressure.

Soil Preparation

The Year Before Planting

Have the soil tested before beds are built or area is worked. A soil sample can be collected and taken to the local county Extension office. See Extension Fact Sheet PSS-2207, *How to Get a Good Soil Sample* for further information. If pH, phosphorus or potassium needs to be amended, incorporate in the soil. Eliminate perennial grasses, such as Johnsongrass and Bermudagrass. Next, establish a non-spreading grass, such as tall fescue in eastern Oklahoma, or buffalograss in western Oklahoma. This grass should be planted between the rows, leaving about four feet of bare ground in the rows where the grapes will be planted. It is usually best to plant grass the spring before establishing the grapes.

The Year of Planting

Eliminate weeds that have germinated in the planting rows. Organic matter such as straw, manure, peat moss or compost can be added by plowing or tilling it into the soil several weeks before plants are set. This is a good time to install the trellis and irrigation.

Planting

February 1 to March 20 is the recommended time for planting grapes in Oklahoma gardens. Plants should not be set during dry, windy conditions or if extremely cold weather is predicted during the following few days.

Plant grapes six feet to eight feet apart. Spacing depends on the vigor of plants and the site. Ask a nursery representative for recommendations on plant spacing for the varieties chosen. If more than one row is planted, rows should be spaced to accommodate equipment that will be used for mowing or driving between rows, but a minimum of about 8 feet.

Carry bare-root plants to planting site in a bucket of water to keep roots from drying out. Plant the grapes at the same depth as they were grown in the nursery. This is very important because plants set too deeply may rot, and plants set too shallowly may dry out and die. If planting a grafted vine, be sure the graft union is above the soil line. Spread the roots out somewhat in the planting hole. Pack the soil firmly enough to hold the vine in the ground if it is tugged on lightly. Prune the tops to a single healthy cane with two buds. Unless rain is likely, water well to settle soil.

A drip irrigation system is recommended to lessen disease problems associated with wet foliage. These systems also conserve water that can be lost through evaporation and runoff.

General Care

If it doesn't rain enough to adequately water the vines during any two weeks of the growing season, water should be applied to wet the soil to a depth of 12 inches without soaking the ground. This will usually require about one inch of applied water. For first year plantings, wet the soil to a depth of about 6 inches to 10 inches. Excess watering can cause the roots of the grapes to die.

Every two years to three years, the soil should be sampled to check the nutrient levels. If phosphorus or potassium levels are low, apply as directed. Grapevines should be fertilized in the spring with 2 ounces of actual nitrogen per plant. Depending on the nitrogen source used, the amount needed could range from 4 ounces to more than a pound of fertilizer. HLA-6259, *Small Fruit Fertilization and Maintenance Schedule* details the types and amounts of nitrogen fertilizer needed.

Fertilizer should be broadcast in a circle from about 6 inches to 18 inches from the trunk. Be careful not to get fertilizer against the trunk because this will damage the vine. Make sure the leaves are dry when applying the fertilizer, and brush all fertilizer off the leaves immediately afterward. Apply about 1 inch of water if rain is not expected within a day or two.

Remove all flowers throughout the first two springs after the vines are planted. The flowers will be small, green structures, borne in clusters. If fruit is allowed to develop, it will reduce the growth and vigor of the vines. If the vines have all reached the top wire of the trellis and have been trained into their final form after the second growing season, they may be allowed to set a light crop the following spring. About half of the flower clusters should be removed to make sure the vines are not weakened by the fruit load.

Pruning and Training

A sturdy trellis is important to support the heavy vine and fruit load and withstand strong winds. Be sure to brace the end posts. A good brace may be made by placing a strong loop of wire around the post and through a post anchor installed in the ground, then twisting the wire around itself in the center. Vines are trained on a high bilateral cordon. The top wire should be between 5 feet and 6 feet high between the posts. A lower wire can be used to attach a drip irrigation line.

Pruning is an important activity to keep grapes fruiting properly. Keep in mind that grapes produce fruit on the current season's growth from one-year-old spurs. The number of buds left will determine the fruiting potential of the vine during the next growing season. Prune back the previous year's shoots on the cordons, leaving 3-inch shoots or spurs with 4 buds to 5 buds to form new growth in the spring. These shoots will produce the wood for the fruit produced. If the vine is weak, leave fewer buds. If the vine is vigorous and produced a good crop, more buds may be left. This part of the art of pruning comes with experience. Summer pruning is not usually done, except to remove suckers from the trunk or root system or low growth before spraying for weeds. Grapes are pruned and trained during their dormant period, with late February or early March being the best times. If the plant bleeds (has excessive sap flow) during pruning, do not be concerned. There is no evidence this harms the plant in any way. The fluid is mostly water, which is being pulled from the soil by the root system.

The first two years of training are the most important in establishing the vines. During these first years, the trunk and cordons (fruiting arms) will be established. For a single high curtain system, when the first shoots are about 1 foot long, select the most vigorous shoot and remove the others. Use a training stake to help position the vine. Make sure the stake is inserted in the ground close to the vine and is attached to the top wire. As the vine grows, it is tied loosely to the stake with string or budding tape so it will not girdle the shoot. Another option is using a string tied to a small stake positioned next to the vine and the other end to the trellis wire. Use the stake or string to train the vine upward to form the permanent trunk, removing side shoots as the trunk grows to reach the trellis wire (Figure 1). Once the vine reaches the wire, pinch off the shoot. Allow the top buds to form shoots that will eventually be the cordons or fruiting arms that will grow on the wires. When the cordons have grown to fill the trellis, usually the second year, they can then be fruited. During the third year, if the vine is weak, fruit can be removed to allow cordons to fill wires.

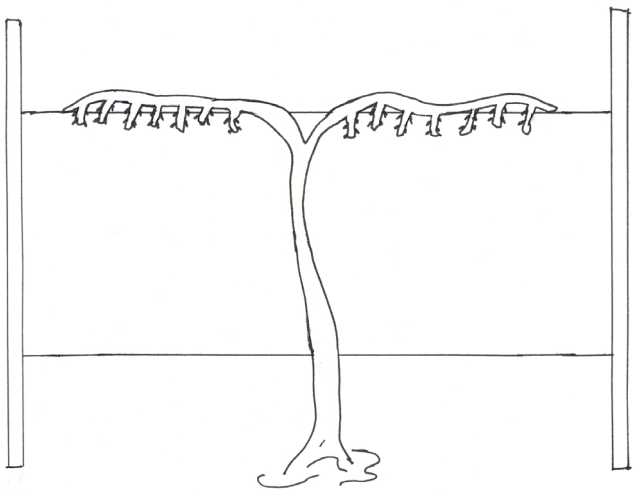

Figure 1. Grapevine after pruning that has been trained to the high cordon system with trunk, cordons (arms) and four buds per spur.

Harvesting

The first harvest of grapes is usually during the third season, depending on the vigor of the vines. Pick fruit when they are fully ripe, but not falling off the vine. Varieties vary in their color development at ripeness. They may be green, pink, red, bronze, purple or black when ripe. Maturing grape berries enlarge, soften and develop a sugar content of 13 percent to 22 percent. If the grapes are to be used for wine, they should be picked whenever they reach the sugar content the winemaker desires. Table grapes are usually picked when they taste sweet. In either case, a "taste test" is the best indicator of when to pick. Serious wine makers (enologists) may wish to purchase a refractometer, which gives a measure of the sugar content of fruit. A handheld refractometer costs about $175.

Harvest fruit during the cooler part of the day by cutting the clusters from the vine with pruners or hand shears. Plan to refrigerate the grapes soon after harvest. They will usually remain in good condition for 3 days to 10 days. Some varieties ripen clusters over a span of a few days to a few weeks and can be harvested as needed, while others will all ripen at the same time.

Pest Management

Hoeing aids in weed and grass control, which is very important in grape care. Chemical herbicides may be used as an aid in weed management, but growers must remember that grape plants can be easily damaged. Herbicide injury is a very common problem seen in grapevines. Sometimes the injury is caused in the garden, but many times, the damage drifts from great distances. For more information on weed control in grapes, see Extension Fact Sheet HLA-6243, *Weed Management in Small Fruit Crops*. Mulching the grape rows with about four inches of straw, sawdust or pine bark helps control weeds and conserves water. However, mulch may become a home for mice and voles in the winter. To help discourage mice from feeding on the bark of the vines, pull the mulch back about six inches from the vine trunks. Plastic mulches or woven fabric mulches may be an option for some homeowners. These mulches must be installed before planting.

Grapes are susceptible to many diseases and insects. Pests include leaf phylloxera, grape leafroller, grape berry moth, green June beetle, climbing cutworm and nematodes. Borers, flea beetles, various caterpillars, aphids, mealybugs and Japanese beetles may be occasional pests. Mites, thrips, leafhoppers and treehoppers may be important pests because they can transmit diseases, especially viruses, from one vine to another.

Phylloxera, a root louse, is managed by grafting susceptible varieties of grapes onto resistant rootstocks, or by planting resistant varieties. There are many chemical control options for other insect pests. However, homeowners may want to use alternative methods of pest control, including the planting of resistant varieties (where available), using soaps for aphid and spider mite control, specific *Bacillus thuringiensis* preparations for caterpillars, sticky traps for beetles and pheromone ties for grape berry moth. For specific information, see Extension Current Report CR-6252, *Grape Insect and Disease Control or the Mid-west Small Fruit and Grape Spray Guide*.

There are several diseases of importance to grape growers. Proper spacing and pruning will keep good airflow

in the vineyard to dry the leaves, helping with disease control. European varieties will be more susceptible to fungal pathogens, while American varieties will be more resistant. Important fungal grapevine diseases in Oklahoma include black rot, powdery mildew, downy mildew and anthracnose. Most of the diseases can be treated with fungicides labeled for that purpose. These diseases usually require several sprays to get adequate control. Depending on the susceptibility of varieties, fungicide schedules may need to begin at budbreak and continue through the season to protect the fruit. Oklahoma grapevines often acquire crown gall disease—a bacterial infection that causes an enlarged area at a wound site or near the base of the trunk, sometimes girdling the vine. Crown gall often appears after cold injury or drought stress. Good sanitation practices during pruning help prevent its spread, but will not stop it. Infected plants may need to be completely removed from the vineyard, if their production becomes too poor. Diseases may be identified by the local county Extension educator. Samples of unknown insects and diseases may be sent to the diagnostic laboratory on the OSU campus. See Extension brochure L-221, *Plant Insect and Disease Diagnostic Laboratory* for further information on how to collect and submit samples.

Starting off the planting with healthy and disease-free plants is important. Grapevines often show very few visible symptoms of virus disease, but infected plants do poorly and produce little fruit. Therefore, it is important to obtain certified plants from virus-free stock. Choosing virus-resistant varieties also may help. Most nurseries have certified disease-free plants available.

Additional Fact Sheets

BAE-1511	Drip Irrigation Systems
PSS-2207	How to get a good soil sample
HLA-6259	Small Fruit Fertilization and Maintenance Schedule
HLA-6243	Weed Management in Small Fruit Crops
HLA-6005	Mulching garden soils
HLA-6007	Improving garden soil fertility
HLA-6222	Home fruit planting guide
CR-6252	Grape insect and disease control
HLA-6253	Rootstocks for Grape Production
HLA-6254	Growing Muscadine Grapes in Oklahoma
EPP-7450	Safe use of pesticides in the home and garden
L-220	Plant Insect and Disease Diagnostic Laboratory

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