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. Bunch grapes are best suited to western sections of the state because the relatively low humidity helps prevent disease problems. Muscadines are not well adapted to the northern portion of the state, where it gets relatively cold in the winter.

The number of grapevines to plant depends on your objectives and what type of grape you are planting. For example, two muscadine vines will provide almost any family with all the fresh grapes they need. However, home winemakers may wish to plant 20 or more bunch grapevines to supply them with enough juice. Generally, muscadine grapes will produce about 35 pounds of fruit per vine, and 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 muscadines may yield more than 60 pounds per vine.

Before deciding to grow grapes, consider: 1) plant selection, 2) site selection, 3) site preparation, 4) planting and propagation, 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 that are 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 does not all ripen at one time under Oklahoma conditions. Concord seedless, although listed in Table 1, is relatively untried in Oklahoma and may ripen unevenly.

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 that you like. Some people like “foxy” grapes (with flavor similar to that of Concord), while others do not. Some people like dry wines, while others prefer sweet wines. Several varieties are seedless or almost seedless. Generally, sweet, seedless grapes with no distinctive flavors are best for raisins.

Most grapes will produce good crops if only one variety is planted. Scuppernong and some other muscadine varieties are exceptions. These types need another variety planted within 25 feet for pollination. The fruiting season can be extended by planting varieties that ripen at different times. Ripening dates may vary by as much as two weeks, 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 of the humid conditions which encourage disease growth. Some grapes, especially French hybrids, should not be planted on their own roots because of their susceptibility to grape phylloxera, a root-injuring insect. These varieties should be purchased as grafted plants on phylloxera-resistant rootstocks.

Purchase plants from an established nursery and place orders as early as the nurseries will take them. Tell them when you want the plants delivered. Accept only healthy-looking vines which are certified as virus-free. Also check the plants with a magnifying glass for evidence of disease and insects.

Site Selection

Grapes require full sunlight. 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

Table 1. Grape Varieties for Oklahoma.

Variety	Ripening Season	Color	Principal Use	Winter Hardiness
Baco Noir	middle	blue	wine	fair
Cabernet Sauvignon	late	black	wine	good
Canadice	early	red	table	good
Catawba	late	red	wine	good
Cayuga White	middle	white	wine	good
Challenger	middle	red	table	fair
Chambourcin	late	blue	wine	poor
Chancellor	early middle	red	wine	good
Chardonnay	middle	white	wine	good
Chenin Blanc	late	green	wine	fair
Concord Seedless	late middle	blue	table, juice	good
Cynthiana	very late	blue	wine	good
De Chaunac	middle	blue	wine	good
Einset	middle	red	table	fair
Marechal Foch	very early	blue	wine	very good
Mars	early	blue	table	medium
Niagara	late middle	white	wine, juice	good
Riesling	middle	white	wine	fair
Reliance	early	red	table	good
Sauvignon Blanc	middle	green	wine	fair
Saturn	middle	red	table	fair
Vanessa	middle	red	table	good
Venus	very early	blue	table	fair
Villard Noir	late middle	blue	wine	fair
Vidal Blanc	late	white	wine	good
Vignoles	late	white	wine	good
Carlos*	middle	bronze	table, wine	fair
Cowart*	late	blue	wine, table	fair
Dixie Red*	middle	red	table, wine	fair
Scuppernong*(‡)	late	bronze	table, wine	fair

*Muscadine grapes.
‡ = has female flowers only. The other varieties listed have both male and female flowers.

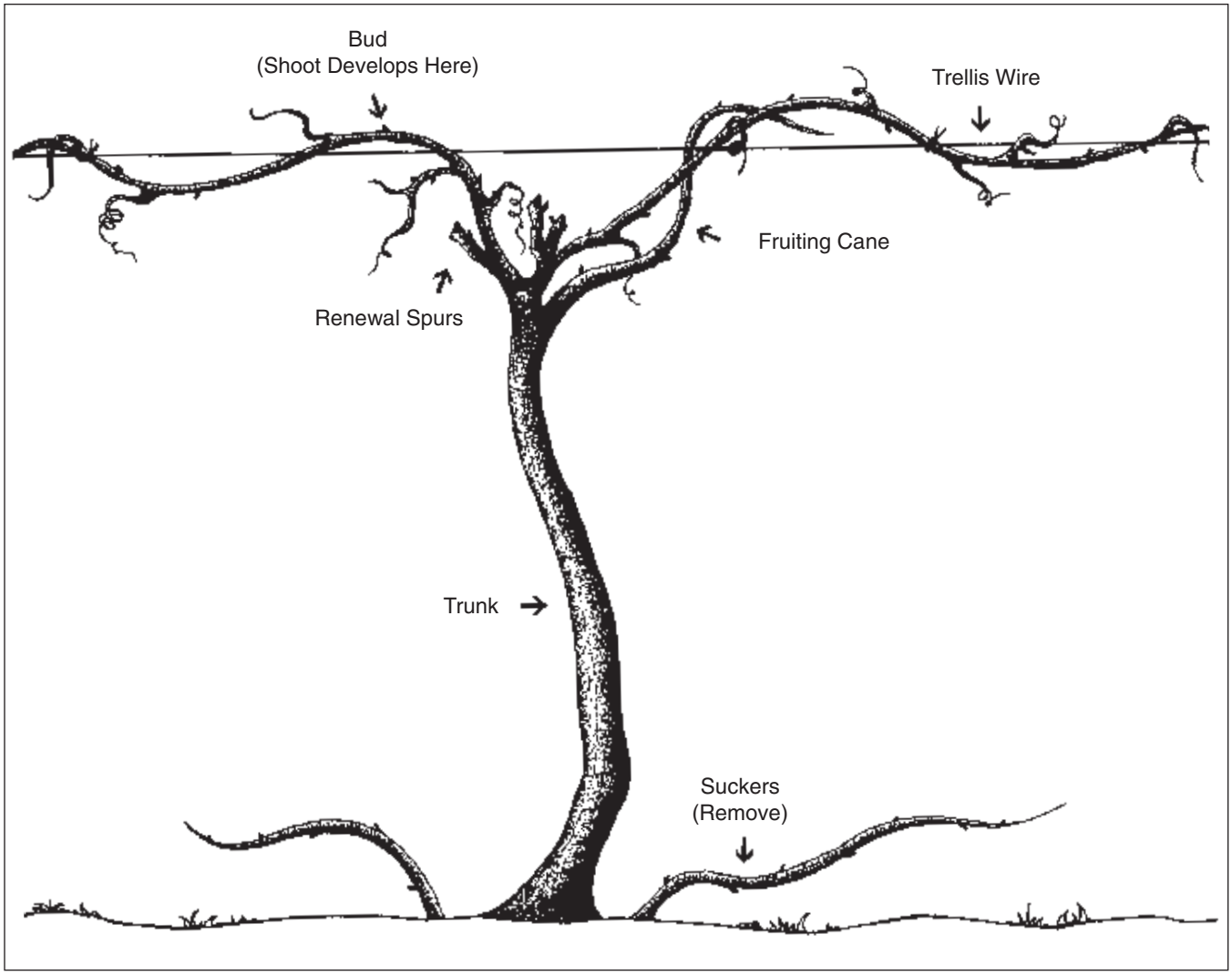

Figure 1. Parts of the grape plant.

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 gather the most sunlight. North-south rows are also less susceptible to wind damage than rows that cross the direction of the prevailing wind. Additional wind protection, such as windbreaks near the vineyard, may be necessary to prevent tangling and breaking of canes. Rows should be run on the contour if the site is very steep. This helps prevent gullies from forming.

Soil Preparation

The Year Before Planting

Kill spreading perennial grasses, such as johnsongrass and bermudagrass. Build beds to provide extra drainage, if needed. The beds should be about four feet wide and six to 10 inches tall, with 10 or 12 feet from the center of one bed to the center of the next. The beds should extend the full length of the planned grape row. It is wise to cover the beds with straw mulch to keep them from eroding.

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 this grass the spring before you will establish the grapes.

Have the soil tested several months before planting grapes. A soil sample can be collected and taken to the local OSU County Extension Office. See OSU Extension Fact Sheet PSS-2207 “How to Get a Good Soil Sample” for further information.

The Year of Planting

If weeds have come up in the beds, till the soil to give a weed-free planting area. 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, even if you do not plan to train the grapes onto it until the second year.

Two to three weeks prior to planting, mix in the recommended fertilizer and lime. Allow rainfall to settle the beds, or use sprinklers.

Planting and Propagation

February 1 to March 20 is the recommended time for planting grapes in Oklahoma gardens. In the southeastern third of the state, plants may be set in the fall (October to mid-November). Fall planted grapes should establish a good root system over the winter, giving them an advantage over spring-planted grapes. Adequate soil moisture must be present during the winter months for good root development. Plants should not be set during dry windy conditions or if extremely cold weather is predicted during the following few days. Vines set in the fall in the northern part of the state may not survive the winter.

Plant bunch grapes six to eight feet apart, depending on the vigor of the plants. Ask your nursery representative for recommendations on plant spacing for the varieties you choose. Muscadine grapes should be set 20 to 24 feet apart. Muscadines may also be grown on an X-trellis (Figure 4).

Soak bare-root plants in water for two to three hours before planting. Plant the grapes at the same depth at which they grew in the nursery. This is very important because plants set too deeply may rot, and plants set too shallowly may dry out and die. 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, but not so firmly as to crush the plants. Prune the tops to a single healthy cane.

Do not allow plants to become dry during the planting operation. As each bundle of plants is opened, place the plants in a container with enough water to keep the roots wet. Planting may be easier if the roots are trimmed slightly with scissors or a sharp knife. Unless rain is likely, water the newly set plants.

An irrigation system, such as “leaky pipe” or other drip irrigation, is recommended in order to lessen disease problems associated with wet foliage. These systems also conserve water that can be lost through evaporation and runoff.

Grapes are usually propagated by tip layering or making cuttings. Tip layering is the easier method (Figure 2). It begins in September or October. Place the tip end of the cane into the soil or into a pot of media about two inches deep. Cover the tip with soil. Roots will develop during the late fall and winter. In late February or early March, cut the tip from the original canes, leaving a three- or four-inch section of the cane attached to it. If the cane has rooted into a pot, remove the pot from the root ball and set the plant into its new location. If the plant has rooted into soil, dig the rooted tips, keeping the root ball as intact as possible, and plant it in its new location. One established plant may produce several tip-layered plants each year. It is illegal to propagate patented varieties for any reason without a license to do so.

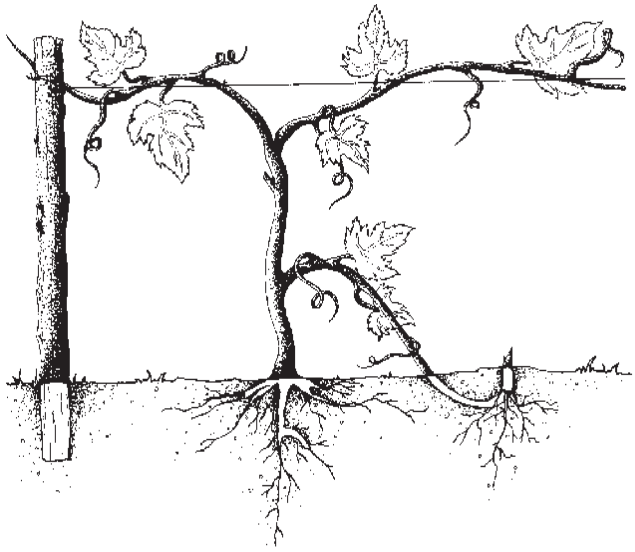

Figure 2. Tip layering of grapevine.

To make cuttings, use dormant, hard wood. Collect cuttings in the winter from the newest wood of vigorous, healthy plants. Cuttings should be one-third to one-half inch in diameter and 14 to 18 inches long. Store them in the refrigerator with moist (not sopping) paper in plastic bags until spring. In March, plant the cuttings deep enough to cover all but one bud in a nursery bed. Be sure the cuttings are planted with the buds pointing up, not down. The nursery bed should be well drained, lightly shaded, enriched with organic matter, free of weeds, and fertilized lightly. After one year in the nursery bed, the new vines will be ready to transplant into the vineyard.

General Care

If it doesn’t rain enough to adequately water the vines during any two weeks of the growing season, then enough 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 six to 10 inches. Excess watering can cause the roots of the grapes to die.

Before growth begins in the spring, the soil should be tested. Grapevines need about 65 pounds per acre of phosphate and 150 pounds per acre of potash. One-year-old vines require 15 pounds of nitrogen per acre per year, two-year-old vines require 30 pounds, and vines older than three years require 60 pounds. The rate of application you use will depend on the results of your soil test, the formulation of the fertilizer you choose, and the spacing of your vines. Ask your extension agent for help in calculating how much fertilizer should be applied near each vine.

Fertilizer should be broadcast in a circle from about six 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 you apply the fertilizer, and brush

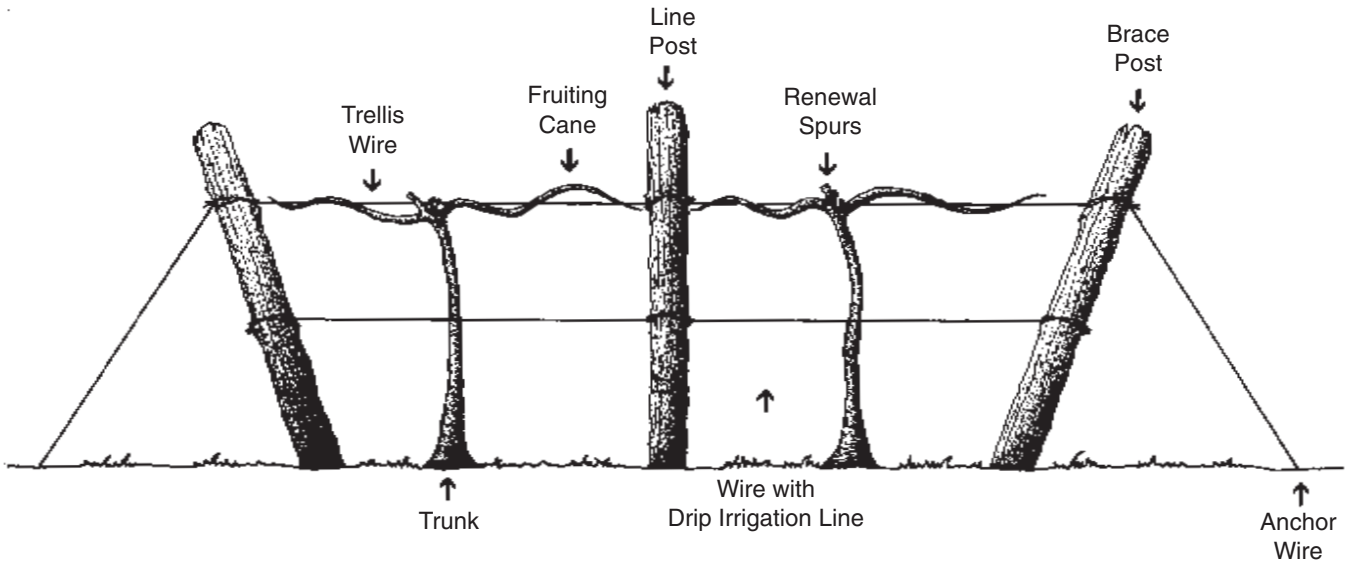

Figure 3. Cordon trellis and properly winter-pruned mature bunch grape vines. This illustration shows the system of planting used for muscadines, with one plant between each post. Up to three plants can be grown between posts with other varieties.

all fertilizer off the leaves immediately afterward. Apply about one inch of water if rain is not expected within a day or two.

Remove all flowers throughout the first three springs after the vines are planted. The flowers will be small, green structures, borne in clusters in bunch grapes and as singles in muscadines. 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.

Home garden grape flowers may be partially protected from spring frosts by covering the vines with large commercial row covers, blankets, or plastic sheeting.

Pruning and Training

When pruning grapes, keep in mind that they produce fruit on the current season's growth from one-year-old spurs. The number of buds you leave will determine the fruiting potential of the vine during the next growing season.

Bunch Grapes

Summer pruning is not usually done, except to remove low growth before spraying for weeds. Grapes are pruned and trained during their dormant period, with February being the best month. If the plant bleeds (has excessive sap flow) during pruning, do not be concerned. There is no evidence that this harms the plant in any way. The fluid is mostly water which is being pulled from the soil by the root system.

First Year

Build a simple, strong trellis with one or two wires between posts (Figure 3). This is called a cordon trellis. During training, the trunk(s) and fruiting canes will be attached to the trellis wire with a loop of small rope. If only one wire of the trellis is used to support the fruiting canes, the lower wire may be used to hold a drip irrigation line. Be sure to brace the end posts so that the trellis can bear the weight of fully mature vines loaded with fruit and buffeted by wind. 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, and then twisting the wire around itself it in the center. During the first growing season, the vines should be allowed to produce as much growth as they can without being trained to the trellis.

Second Year

The first winter after planting, cut the vine back to one or two healthy canes which arise below (for non-grafted vines) or slightly above (for grafted vines) the ground. If two canes are left and one dies, then the entire plant is not lost. These canes will become the trunks. Cut them back to three or four buds. Hang a durable string from the top wire of the cordon down toward the plant. Use two strings about six inches apart, if you are going to train two trunks. As new growth begins, it will be trained up these strings to the wire. All canes which are pruned off need to be removed from the vineyard to help prevent disease and insect problems.

During the following growing season, allow only the strongest shoot from each trunk to grow. Remove other shoots about once a month. Also remove any flowers or fruit so that the young vine will not be weakened. Train the trunks up the strings until they reach the top wire. If there are two trunks, train one in each direction along the wire, tying them loosely with cotton or hemp string. If there is only one trunk, pinch the end of the shoot and allow it to form two branches to train onto the wire. The shoots trained on the wire are called the fruiting canes.

Third Year

During the winter, remove all the lateral growth from the trunk and the fruiting canes with hand pruners. The next

growing season, allow the vine to grow as much as it can. The vines may be allowed to bear a small amount of fruit this year, if they are strong enough. If you plan to grow fruit this year, you should leave some renewal spurs at pruning time, as described below.

Fourth Year

During the winter, cut off all the canes except the fruiting canes and two others which originate very near where the trunk meets the wire. These two canes, or renewal spurs, will form the new fruiting canes during the following year. Cut them back to three or four buds each. During the summer, train the main shoot from each of these along the trellis wire and tie them loosely in place. The vines should be in full production this summer.

Fifth and Following Years

During the winter, remove the old fruiting canes. Cut back all the lateral growth on the new fruiting canes to two or three buds. These spurs will bear fruit the following year. Also remove all the other canes, except for two new renewal spurs. 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.

Muscadines

Muscadines may be trained in the same way as bunch grapes. However, homeowners may prefer to train muscadines on an X-trellis (Figure 4). The X-trellis consists of five posts, with one in the center and the other four set at the corners of a square around it. Be sure to anchor the corner posts of the X-trellis well, or they will fall toward the center as the vine grows and weighs down the trellis. A bracing method such as that shown for the end posts of the cordon may be used.

The first summer, train a trunk up the center of the trellis. Drive a large nail near the top of the center post, and another in line with it near the bottom. Stretch a string between the nails. As the trunk grows, twine it around the string, and remove all the lateral growth once a month until the trunk reaches the top wire. At this time, pinch the end of the trunk off about four inches below the wire. This will cause it to form several shoots near this point. Train one of these new shoots along each wire by wrapping it along the wire and tying it loosely. These will be the fruiting canes. Continue to remove lateral shoots from the trunk about once every two weeks for the rest of the growing season. Do not remove leaves growing directly on the main trunk, and do not remove any side shoots from the fruiting canes. If the vine is trained on a cordon, the shoots should be allowed to grow until they meet between vines. Then, the ends should be pinched off so that the vines do not become intertwined. Continue the training of fruiting canes and removal of lateral shoots from the trunk through the second growing season.

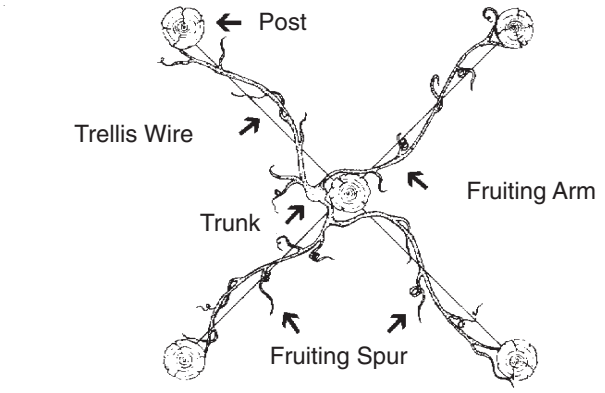

Figure 4. Top view of X-trellis with properly winter pruned muscadine.

In February of the first and second winters, cut back all the new lateral shoots on the fruiting canes to two or three buds. These shoots will become the fruiting spurs. This will set the permanent framework for the vine. A few fruit may be allowed to mature during the third growing season. The muscadines may be allowed to bear a full crop in following years.

After the third growing season, prune only during the winter. Remove excess growth that is not needed for spurs or fruiting canes. Cut back all the new growth to two or three buds. If the spurs become too thick at one point, the shoots will be weak and will fruit poorly. Remove the whole cluster of spurs and allow a new spur to grow in their place. During dormant season pruning, always remove any tendrils that encircle the trunk or fruiting canes, and any strings used to tie up the vine the year before. This will prevent loss of the canes by girdling.

Harvesting

The first harvest of grapes is usually after two or three years of growth, 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 to 22 percent. If the grapes are to be used for wine, they should be picked whenever they reach the sugar content the grower wants. 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 refractometer costs about $125.

Harvest fruit during the cooler part of the day by cutting the bunches from the vine with pruners or hand shears. Muscadine grapes are picked individually like other berries. Plan to refrigerate the grapes soon after harvest. They will usually remain in good condition for three to 10 days.

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 for most garden plantings their use is not recommended because the grape plants are easily damaged. For more information on weed control in grapes, see OSU Extension Fact Sheet HLA-6239, “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 the mice from feeding on the bark of the vines, pull the mulch back about six inches from the vine trunks.

Grapes are susceptible to many diseases and insects. The most notable animal pests are phylloxera, grape leafroller, climbing cutworm, and nematodes. Borers, flea beetles, grape berry moth, various caterpillars, gall-making insects, 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, pheromone ties for grape berry moth, and planting marigolds the year before grapes for nematode control. For specific information, see OSU Current Report CR-6221, "Grape, Blackberry, Strawberry, and Blueberry Insect and Disease Control."

There are several diseases of importance to grape growers. Most of the diseases can be treated with fungicides labelled for that purpose. Important fungal grapevine diseases in Oklahoma include powdery mildew, downy mildew, and black rot. These diseases usually require several sprays to get adequate control. Oklahoma grapevines often acquire crown gall disease—a bacterial infection which causes an enlarged area at a wound site or near the base of the trunk, sometimes girdling the vine. This disease is sometimes treatable by pruning out the infected area. 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 your county extension agent. Samples of unknown diseases may be sent to the plant disease diagnostic laboratory on the OSU campus. The cost is usually about $15. See OSU Current Report CR-6221 for further information.

The most important consideration is to obtain healthy and disease-free plants. 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.

A very common disease of grape plants is herbicide injury. Although weed control is important in grape beds, herbicides must be used with care to prevent injury to the grape plants. Hand weeding, where practical, is a good idea.

Additional Fact Sheets

BAE-1511	Trickle irrigation for lawns, gardens, and small orchards
BAE-1655	Lawn, garden, and small plot irrigation
PSS-2207	How to get a good soil sample
PSS-2236	Knowing when to fertilize
PSS-2750	Guide to effective weed control
HLA-6005	Mulching garden soils
HLA-6006	Commercial fertilizer use in home gardens
HLA-6007	Improving garden soil fertility
CR-6221	Grape, blackberry, strawberry, and blueberry insect and disease control
HLA-6222	Home fruit planting guide
HLA-6229	Pollination requirements for fruits and nuts
HLA-6243	Weed management in small fruit crops
EPP-7450	Safe use of pesticides in the home and garden
EPP-7612	Plant disease diagnostic services

Books

Galletta, G. J., and D. G. Himelrick (Eds). 1990. Small fruit crop management. Prentice-Hall, Inc. New Jersey.

Whealy, K. (Ed.) 1989. Fruit, berry, and nut inventory. Seed Saver Publications, Decorah, Iowa.

Pearson, R. C., and A. C. Goheen, (Eds.) 1988. Compendium of Grape Diseases. APS Press, St. Paul, Minn.

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