



Growing Muscadine Grapes in Oklahoma

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Muscadine grapes (*Vitis rotundifolia*) are native to the Southeastern United States. They are characteristically sensitive to cold temperatures, grow well in slightly acidic soils and flourish in hot and humid regions. Muscadines have large berries, are heavy yielding, have good disease resistance, and are very flavorful. According to the 1999 Oklahoma Biological Survey, muscadine grapes are distributed in four of the southeastern counties of Oklahoma (Atoka, LeFlore, McCurtain and Pushmataha). Muscadines are not well adapted to the northern portion of the state, where it gets relatively cold in the winter. Vines should not be planted in areas where temperatures drop below 10 F. Oklahoma's rapidly changing temperatures are detrimental to the growth and survival of muscadine grapes. In Oklahoma, the most likely area for successful muscadine plantings would be south and east of McAlester.

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. Generally, muscadine grapes will produce about 35 pounds of fruit or more per vine, compared to bunch grapes that will produce about eight pounds per vine. The amount of fruit produced is dependent on cultivar and management. Some muscadines may yield more than 60 pounds per vine.

Oklahoma Cooperative Extension Fact Sheets
are also available on our website at:
<http://osufacts.okstate.edu>

Plant Selection

When choosing grape cultivars, it is important to select from those that are adapted to your region. All of the cultivars listed in this fact sheet are recommended for southeastern Oklahoma.

Another important factor in choosing grape cultivars is how the fruit will be used. Muscadines are very popular for making jellies, jams, and juices. Home and commercial wine makers also use muscadines for very fruity flavored wines. Some of the thinner skinned muscadines are also eaten fresh. Be sure to select cultivars with characteristics that you enjoy.

Most grapes will produce good crops if only one variety is planted. However, it is a good idea to plant more than one variety to ensure good pollination and fruit set. Scuppernongs and some other cultivars of muscadine have only female plants and require a second type of plant for pollination. These types need another cultivar planted within 25 feet for pollination.

Table 1 describes the characteristics and pollination requirements of some popular muscadine cultivars. The fruiting season can be extended by planting cultivars that ripen at

Table 1. Muscadine Cultivars for Oklahoma*

Variety	Ripening Season	Fruit Color	Principal Use	Cold Hardiness	Fruit Size
Black Beauty (‡)	late-mid	black	fresh, home	poor-fair	very large
Carlos	middle	bronze	wine, fresh, home	excellent	small-medium
Cowart	middle	black	wine, fresh, home	fair-good	medium
Doreen	very late	bronze	wine, juice	good	small
Fry (‡)	middle	bronze	fresh, home	poor-fair	very large
Granny Val	very late	bronze	wine, juice	good	large
Ison	early	black	fresh	poor-fair	medium-large
Lane	early	black	fresh	?	large
Nesbitt	mid-late	black	fresh, home	fair-good	large
Noble	middle	black	wine, juice	good	small
Southern Home	mid-late	black	wine, juice, home	fair-good	small
Summit (‡)	early-mid	pink-bronze	fresh, juice	fair	large
Supreme (‡)	middle	black	fresh, home	fair	very large
Tara	early-mid	bronze	fresh, juice	fair	very large

‡ = Has female flowers only. The other cultivars listed have both male and female flowers.

* Manjula Carter, with the University of Arkansas SWREC provided information for cultivar listings.

different times. Ripening dates may vary by as much as two weeks, depending on the weather.

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

Muscadines require full sunlight and well-drained soil. 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.

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. Rows set east to west are less susceptible to wind damage than rows that cross the direction of the prevailing wind which is normally from the west. A disadvantage of north to south rows is that you can frequently spray in one direction with the prevailing wind to stay out of the drift. 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 erosion from occurring.

Soil Preparation

The Year Before Planting

Have the soil tested the year before planting grapes, if possible. This will allow for the adjustment of soil pH and amendment with fertilizers if needed. 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 more information. First, it is imperative to kill spreading perennial grasses, such as Johnsongrass and Bermudagrass. Next, establish a non-spreading grass, such as tall fescue in eastern Oklahoma. It is usually best to plant this grass in late September or early October before you will establish the grapes. This grass should be planted between the rows, leaving about four feet of bare ground within the rows where the grapes will be planted. Another option is to plant the entire area with grass, then kill out the strips where the grapes will be planted.

The Year of Planting

Kill out existing vegetation in the 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, even if you do not plan to train the grapes onto it until the second year.

Planting and Propagation

February 1 to March 20 is the recommended time for planting grapes in Oklahoma. In the southeastern third of the

state, grapes may be planted 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. Grapes should not be planted during dry windy conditions or if extremely cold weather is predicted during the following few days.

Muscadine grapes should be planted 20 to 24 feet apart. 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. Unless rain is likely, water the plants.

Drip irrigation is recommended to lessen disease problems associated with wet foliage. These systems also conserve water that can be lost through evaporation and runoff. Muscadines generally do not need large amounts of water, but during the first years of establishment will benefit from extra irrigation.

Grapes are usually propagated by tip layering or making cuttings. It is illegal to propagate patented varieties for any reason without a license to do so. Muscadines are very difficult to root but can be propagated by tip layering 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 3- or 4-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.

General Care

If it does not rain enough to adequately water the vines during any two weeks of the growing season, enough water should be applied to wet the soil to a depth of 12 inches. 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.

Muscadines need approximately one pound of fertilizer per year of vine age up to a maximum of four pounds. In the first two years of establishment, vines respond well to split applications every two weeks beginning in April. On established vines a one-time application can be made in March.

Fertilizer should be broadcast in a circle from about 6 to 18 inches from the trunk. Be careful not to get fertilizer against the trunk because this will damage the vine. Apply about one inch of water if rain is not expected within a day or two to move the fertilizer into the soil for uptake by the plant.

Remove all flowers throughout the first two years after the vines are planted. The flowers will be small, green structures, borne as single berries in muscadines, unlike clusters in bunch grapes. 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

A sturdy trellis is a necessity when growing the heavy producing muscadines. Each plant will need about 20 feet of trellis, with a strong post between each vine. Muscadines can be trained similar to bunch grapes on a high bilateral cordon or using a Geneva double curtain system. The double curtain system will have the potential for higher production. The top wire should be between 5 feet to 6 feet high between the posts on the single wire system and with the double wire the same height with a 4-foot brace separating the two wires.

The first two years of training are the most important in establishing your vines. During these first years, the trunk and cordons (fruiting arms) will be established. For a single high curtain system in Figure 1, select the most vigorous shoot and remove the others when the first shoots are about 1 foot long. Tie a string to a small stake positioned next to the vine and the other end to the trellis wire. Use the string to train the vine upward to form the permanent trunk, removing side shoots as the trunk grows to reach the trellis wire. 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.

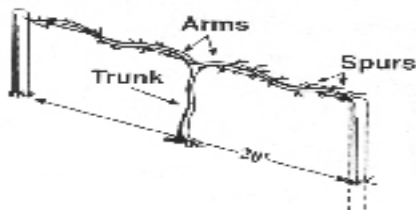


Figure 1. A common single curtain trellis system for muscadines is the simplest to construct and maintain.

For the double curtain system in Figure 2, tie a string between the two wires above the vine. Insert a stake next to the vine and tie a piece of string from the stake to the middle of the first string connecting the two wires. The strings should form a "Y" after tying. Train the shoot upward as in the single wire system. When the shoot reaches the connecting string, pinch out the top and form two new shoots that will grow toward the wires. When these shoots reach the trellis wires, again pinch off the shoot and form two cordons on each wire. When the cordons have grown to fill the trellis, usually the second year, they can then be fruited.

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 you leave will determine the fruiting potential of the vine during the next growing season. Prune back the previous year's shoots

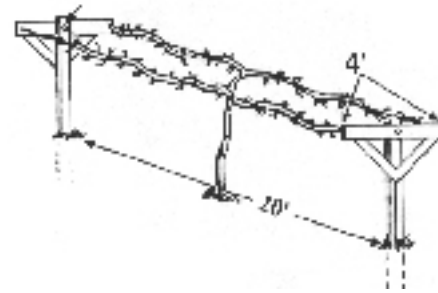


Figure 2. A double curtain trellis increases the number of cordons ('arms') thus increasing potential fruiting.

on the cordons leaving 3-inch shoots to form new growth in the spring. These shoots will produce the wood for the fruit to be produced. Prune in February or March.

Harvesting

Muscadines are harvested in late August through September. 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. cultivars 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 grower 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 may wish to purchase a refractometer, which gives a measure of the sugar content of the fruit.

Harvest fruit during the cooler part of the day, early mornings are usually best. Muscadine grapes are picked individually like other berries, not in clusters as with bunch grapes. Plan to refrigerate the grapes soon after harvest. They will usually remain in good condition for three to 10 days.

Pest Management

During the first year, weeds may be pulled or hoed around the vine. In the second year, kill weeds with glyphosate or glufosinate. Keep the chemical off of the leaves and trunk of the vine. Grow tubes are helpful in keeping spray drift off of the trunk surface. Cultivating the soil with a tiller damages shallow roots and may reduce vine vigor.

Unlike bunch grapes, muscadines are very resistant to most diseases and nematodes that plague other bunch grapes. Because of muscadines' tolerance they can be grown organically or with limited fungicide applications.

Muscadine grapes can also be grown with good success with little or no insecticide applications. Pest monitoring in the vineyard can keep the grower informed of any insect feeding activity to determine if an insecticide application is necessary. Consult your local County Extension office for more information on spray rates and schedules.

Overall, muscadines are very adapted to the southeastern Oklahoma climate and require minimal inputs to produce an abundant crop each year.

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