

LOUISIANA HOME MUSCADINE PRODUCTION



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Cover photo: Stock photo of muscadines.



Above: Muscadine vines produce fewer fruit in each cluster as compared to table grapes. Inset: Table grapes produce more grapes per cluster as compared to muscadine vines. Photos by Kathryn Fontenot.

INTRODUCTION

Muscadine grapes (*Vitis rotundifolia*) are the perfect grape of the south. Native to the southeastern United States, these vines thrive in warm climates (U.S. Department of Agriculture hardiness zones 8 and 9). Wild muscadines can be found growing in forests from Delaware to Florida and west into Texas and Oklahoma. Muscadines are well adapted to the subtropical climate of the coastal south. Most wild muscadine vines found growing in native stands are dioecious with male and female flowers found on separate vines. Male wild muscadine vines produce only male flowers and can be considered weedy. Fruits from wild female muscadine vines are predominantly dark-skinned, in clusters of three to 10 berries and need up to 120 days to mature. Over the past 75 years, university and private breeding programs have bred many improved varieties of muscadines that represent a marked improvement over wild types with increased fruit production and eating quality, including seedless varieties. These improved muscadine varieties are available through local plant nurseries and online sources have either perfect (self-fertile) flowers or female flowers. The varieties that have only female flower parts will need to be planted near a variety with perfect flowers for pollination.

Muscadines are relatively disease free. When muscadine vines are properly fertilized and managed, vines grow

vigorously, so moderate insect and disease damage usually does not affect the plant. While commercial producers may need to use pesticides to achieve perfect market quality fruit, most home gardeners can grow muscadines year after year with little to no pesticide applications. This publication will attempt to answer some of the most common muscadine growing questions. So, grab a glass of muscadine wine or juice and get ready to grow your own crop!

MUSCADINE GRAPES VERSUS EUROPEAN GRAPES (TABLE AND WINE CULTIVARS)

The primary reason muscadines are the predominate grape in the southeastern U.S. is not because we dislike growing popular table grapes, such as Thompson seedless, or wine grapes, such as Cabernet type grapes. The reason is because muscadine grapes are resistant to a devastating grape disease called Pierce's disease. This disease is caused by a bacterium (*Xylella fastidiosa*) and is transmitted by insects called leaf hoppers. In the Deep South, we have both the bacteria and the insect. Most European type grapes inevitably succumb to this disease when grown in the southeastern U.S., and many times the disease kills the vines before they can even make grapes. While there are a few resistant wine and table grape varieties, muscadines are not usually bothered at all by this devastating disease.



Above: When pruned correctly, muscadine plantings will produce heavy fruit loads. Photo by Christine Coker. Top right: This bark is easily peeling from the main trunk indicating it is probably not a muscadine vine. Bottom right: This is an example of a table grape with a forked tendril. Photos by Kathryn Fontenot.



SOME DIFFERENCES BETWEEN MUSCADINE AND TABLE GRAPES

Muscadine grapes have a thicker, tougher skin than most table and wine grape cultivars. Muscadine vines have tendrils as do the European types, but tendrils of muscadines are straight whereas tendrils of table grapes end in a branched fork. Muscadines have trunks with smooth bark that does not flake off as other grape types. Unlike table and wine grapes, muscadine vines do not form large clusters of berries. Rather the fruit is produced as single berries or in small tight clusters of three to 10. Muscadines are a native plant with disease resistance and they taste great!



DO I NEED MORE THAN ONE VINE TO MAKE FRUIT?

The answer depends on the variety you select. Muscadine varieties that are self-fertile do not need pollen from a different variety to produce fruit. Planting only one self-fertile vine will give you fruit.

Muscadine varieties that produce only female flowers must have a self-fertile variety nearby to produce fruit. If you live near woody areas, you likely have wild muscadines in those woods that will produce enough pollen for any muscadine variety you choose. If you do not live near woods, pay attention to the types of muscadines you purchase.

EXAMPLES OF SELF-FERTILE MUSCADINES (YOU ONLY NEED TO PLANT ONE VINE OF THESE FOR FRUIT)

Alachua, Carlos, Cowart, Dixieland, Doreen, Ison, Janebell, Magnolia, Noble, Sterling and Triumph. See notes about all muscadine varieties in Table 1.



Example of a Carlos muscadine vine. Photo by Alessandro Holzapfel.

PLANTING MUSCADINES

Muscadine grapes are long-lived plants with life spans of fifty or more years. Selecting a site and trellis for the vine should be given careful consideration as to future planting in the vineyard area. Muscadines are adapted to a wide range of soil types but thrive best in sandy loam and silt loam soils that are well drained on the surface and have good subsurface drainage. Note: To check for subsurface drainage, dig a post hole about 18 inches deep. Fill the hole with water to the surface, and time how long it takes for the water to percolate through the soil. If the time it takes to

drain the hole of water is more than six hours, then this site is unsuitable for your muscadine.

Muscadine plants can be purchased as bare-root plants such as those that are bought from online sources and sent by mail or carrier. Bare-root plants are typically planted January through February. These usually do not have foliage and will leaf out in the spring when the weather warms. Local plant nurseries usually have recommended muscadine plants growing in one- or two-gallon containers with foliage on the vines. Vines grown in containers can be planted throughout the growing season.

SITE SELECTION AND SOIL PREPARATION

Muscadine vines can be planted directly into the ground or can be grown in large containers.

All soils and potting media used should have a slightly acidic pH (5.5 to 6.5). If the pH is higher than this, the foliage will start to look pale.

When planting in the ground, raise the rows to allow for drainage. Muscadines planted in clay or loam soils should be raised higher than those planted in sandy soils. Sandy soils drain quickly, and it is not as necessary to build a high row and may even dry out too quickly if raised too high.

Planting in a container is necessary when suitable soil conditions are not available. Research has shown that a 20-gallon or larger container is needed to provide adequate space for roots. Containers should be filled to the brim with a soilless mix (potting soil mix). The potting media will settle after it is watered. Do not use native soil to fill containers. Native soil is generally too heavy and may compact to the point that it does not allow for adequate drainage in a pot. Fill containers with a potting mix that consists of sand, bark and peat moss, plus fertilizers. Container-planted muscadines also require trellising, as do field-planted vines.



This is an example of commercial muscadine production where the irrigation is lifted above the ground to ease maintenance of weeds and grass in the row. Photo by Sara Shields.



Ensuring sunlight hits all parts of the vine coupled with proper pruning techniques will encourage excellent yields. Photo by Kathryn Fontenot.

Maximize grape (fruit) production by planting in locations that receive six to eight hours of direct sunlight per day. Yes, wild muscadines grow under trees. But the fruit is found at the tips of the vine, high in the canopy of the trees. To maximize fruit production, you need sunlight hitting the entire vine.

WHEN TO PLANT

Bare-root plants can be sourced from reputable nurseries online. In Louisiana, bare-root plants can be transplanted as early as possible from January to February. Be sure to place your order early in the fall to ensure the quantities of varieties you want to plant are in stock. The plants will be shipped directly from the nursery while still dormant. Once you receive them, unpack the plants and check for dryness of the roots. If you are not ready to transplant, put the plants in a pot with new potting soil to protect the roots. Remember, these bare-root plants are fragile, and the roots should not be allowed to dry out.

Many local nurseries have recommended muscadine varieties available fall through spring. These plants are

usually growing in one- or two-gallon pots. While container plants can technically be planted year-round, research has shown that planting early before growth starts will result in a bigger plant at the end of the first growing season. Regardless of which types of muscadine transplants you purchase, you will want to make sure to plant them in an area you have already prepared according to soil test results specific for your site.

TRANSPLANTING MUSCADINES

Recommended named muscadine varieties will produce more fruit with better eating quality than those found in the wild. Caution should be taken when attempting to transplant wild muscadine vines that you may encounter in the woods. The parentage of wild muscadines is unknown, meaning grape production could be erratic. Additionally, wild muscadine vines are dioecious, so you would need to find both a male muscadine vine and a female muscadine vine to transplant. These would need to be planted in close proximity in order for grapes to be produced.

SPACING PLANTS

If installed in a commercial setting, muscadine vines should be placed 15 to 20 feet apart in the row. The width between rows of muscadine plants in a commercial setting should be 12 to 14 feet which allows for a full-sized pickup truck to be driven between the rows.

It is much more difficult to set the posts after planting, so care should be taken to set the posts and finish the trellis before installing the muscadine vines. Place the vines next to your posts so you can train a central trunk up the lines of your trellises. Additionally, planting near the post will prove



This is a commercial muscadine planting at the Beaumont Horticulture Unit in Mississippi. Photo by Christine Coker.

beneficial in the long run as the post can help support the area of greatest weight. You may need to utilize staking or tying the vines to keep the central trunk growing upright during this training process. After the vines have reached the trellis wires, you will begin to train the cordons or lateral growth.

For home gardeners, planting muscadine vines is a bit more forgiving. As with the commercial muscadine plantings, be sure to provide plenty of room. Muscadines should be planted in close proximity to the frame onto which you intend to train the vines. Many things — even swing sets — can be used as a trellis for a single muscadine vine.



Muscadines can easily grow in smaller gardens. Here is a muscadine vine growing at St. Aloysius Catholic School in Baton Rouge, Louisiana. Photo by Kathryn Fontenot.

TRELLISING MUSCADINES

TRELLIS OPTIONS

Even with proper pruning, muscadine vines will become quite heavy later in the summer as they are laden with fruit. As such, a well-engineered and sturdy trellis system will greatly benefit those looking to grow muscadines, especially in a commercial setting. On the other hand, home gardeners have a bit more flexibility and can train a muscadine vine to just about anything that will hold the weight of the vine — fences, arbors and cattle panels to name a few.

Commercial producers rely mostly on single- or double-wire (Double Geneva Curtain) systems when establishing their vineyards. Most muscadine trellises have wire approximately 5 feet from the ground which allows for better air circulation when compared to shorter trellises. Refer to the previous section on plant spacing for more information on trellis post spacing and spacing between rows.

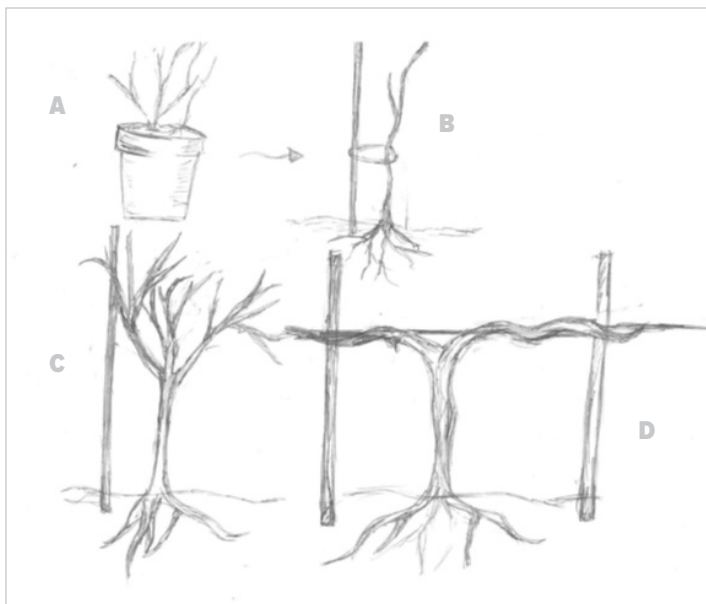
Trellis materials and construction are likely to be the most expensive aspects in establishing muscadines in a commercial setting. Trellises should be designed as permanent structures and constructed using materials

that will last for decades. Even with proper planning, it is possible for a muscadine vine to outlive the usable life span of the trellis system on which it has been trained.

For more information, the Southern Region Small Fruit Consortium outlines [trellis construction](#) in detail on their website.

HOW TO TRAIN MUSCADINE VINES

Muscadines grown in containers or as bare-root plants may be sold with multiple branches (A). Plant the muscadine vine so that the roots are firmly covered with soil. If starting with a container, make sure the root ball is even with the top of the ground. After planting and when these branches are young, small and tender (less than or about the width of a pencil), prune off all branches except one (B). This one remaining branch will grow and become the trunk of the vine. This single branch should be planted near a post on your trellis system. Eventually the trunk will grow in diameter and begin to sprout many branches again (C). Remove all but two of the branches. Wrap the remaining two branches on the wire of your trellis system to form the cordons (D). Foliage and fruit will sprout from these cordons annually.



Line drawings by Katie Goodlife, Baton Rouge artist.

FERTILIZE YOUR PLANTS

It is best to get the soil tested before planting. Muscadines prefer a soil pH of 6.0 to 6.5. Do not put fertilizer in the planting hole. Wait until the soil has been settled by rain before fertilizing. Remember adequate moisture is needed for fertilizer to be effective.

1. First year — Apply fertilizer soon after growth starts in the spring and continue to apply every four to six weeks until late July. Fertilize each vine with 4 ounces of 13-13-13 in a 2½ foot circle around the vine, keeping fertilizer 6 inches away from the vine trunk.

2. Second year — Follow the same method from year one but increase the fertilizer rate to 6 ounces of 13-13-13 per plant and widen the broadcast circle to 4 feet.

3. Third year — If the vines are in production, increase the fertilizer rate to 1.5 pounds of 13-13-13 per vine after growth begins in the spring, plus 14 ounces of 13-13-13 fertilizer per vine in May. Increase the broadcast circle to 6 feet.

4. Fourth year through death — For established vines, apply 2.5 to 4.5 pounds of 13-13-13 fertilizer per vine after growth begins in the spring. Apply 1 to 1.5 pounds of calcium nitrate fertilizer per vine after fruit set. Broadcast in a circle to 6 feet.

Adequate supplies of fertilizer are most important from bud break through flowering. The amount of fertilizer applied should be reduced after flowering to maintain the plant without stimulating excessive shoot growth which will decrease the fruit quality.

Soil pH should be tested every two years. Add dolomitic lime if necessary to supply magnesium. Muscadines have a high magnesium requirement, and yellowing between the veins of older leaves that progresses up the shoots is a symptom of magnesium deficiency. If lime is not needed, a soluble form of soil-applied magnesium sulfate can be applied at 4 ounces per 100 square feet.

Foliar samples of older vines can also be taken to test for nutrient deficiencies.

CONTROLLING WEEDS

Ground under the vines should not be tilled or cultivated. Use hand pulling, hoeing or herbicides to keep the ground underneath the vines clear of grass and weeds. Both glyphosate and glufosinate herbicides can be used under muscadine vines. Read labeled rates. Protect the trunks from drift, and be careful to avoid contact with green tissue. Consult the [Louisiana Suggested Chemical Weed Management Guide](#) pages 124-127 for other herbicide options. Mulches and overwinter groundcovers can also be used to control weeds around the vines.

PRUNING

Annual pruning is required for optimal fruit production. Muscadine vines should be pruned while dormant, between mid-January and early March. Fruit forms on new growth from buds on the previous season's growth. These are called fruiting spurs. Spurs grow from the lateral branches' (cordons') growth along the trellis wire.

When pruning, you want about a 6-inch spacing between the spurs along the cordon. The previous season's growth will be pruned back, leaving a spur with two to four buds. New growth from these buds will be the fruiting wood.

You will repeat this process of pruning back last season's growth to spurs with two to four buds each year. After three years the spurs will become clusters, and you will need to thin the spur cluster to reduce the amount of fruiting wood and make the vine more manageable. Prune about every third spur cluster back to the cordon each year, allowing new single spurs off the cordon to take their place.

Remove all spurs that grow straight down or any that grow from the main trunk or crotch of the vine. Each year, inspect cordons for disease or damage and prune part or all of it as needed, allowing a new shoot to take its place. Prune any tendrils that have wrapped around the cordons or spurs.

If a vine has been neglected for several years, rejuvenation pruning will be necessary. This may require pruning back to the trunk to allow new cordons to develop or severe pruning of spurs back to the cordons. Either will cause a fruitless season while vines are being rehabilitated.



This vine will produce many muscadine fruit due to proper pruning. Leaving unpruned branches in place will prevent fruit production.



Many people worry they are taking off too much wood when pruning. Do not worry about this.



Heavy pruning encourages more fruit production. Muscadines are very vigorous growers. If you do not prune heavily, you risk splitting the main trunk and branches and will reduce your yields. Photos by Kathryn Fontenot.

PEST MANAGEMENT

Muscadines are native to the southeastern U.S. Being well suited for our hot, humid climate, they normally do not require treatment for diseases and insect problems. Occasionally, disease and/or insect infestation may be severe enough to warrant spraying. If you find it necessary to spray, contact your local extension agent for recommendations. Common diseases seen are angular leaf spot, bitter rot, black rot, *Macrophoma* rot, powdery mildew and ripe rot. Aphids and grape root borers are the most common insect pests. Maintaining well pruned vines and cleanup of leaf litter in the fall will help reduce incidences of disease and insect damage. Samples can be submitted to the LSU Plant Diagnostic Center for disease and insect identification. For instructions on how to submit samples, visit the Plant Diagnostic Center [website](#) or contact your local extension agent.

HARVESTING MUSCADINE GRAPES

Muscadine fruit ripens in August and September. Some varieties are earlier than others. Some varieties ripen all at once and others ripen over an extended period. Muscadine fruit can vary in color from green to red, purple, black and bronze. Know what color your variety should be at maturity. The individual grape should also be fully colored, even toward the stem end. The fruit should give slightly when touched (slightly squeeze fruit to test) and not feel hard. The fruit will also pop when you bite into it. Be aware that individual grapes in the cluster do not always ripen at the exact same time. You may have to harvest individual berries (yes, believe it or not, muscadine grapes are classified botanically as berries).



When pruned correctly, muscadine plantings will produce heavy fruit loads.



Muscadine fruit are only beginning to ripen in this photo. Photos by Kathryn Fontenot.

THINKING OF GROWING MUSCADINES ON A COMMERCIAL SCALE? HAVE MORE TECHNICAL PRODUCTION QUESTIONS?

Check out the Southern Region Small Fruit Consortium production guides for growing muscadines. This consortium

is made up of several universities in the southeastern U.S. and has excellent information for professional producers.

<https://smallfruits.org/files/2020/07/muscadine-grape-production-guide-southeast.pdf>.

TABLE 1. EXAMPLES OF MUSCADINE VARIETIES THAT PERFORM WELL IN LOUISIANA

Variety	Fertility	Fruit Color/ Size	Ripening Period	Most Common Uses	Notes
Albemarle	Self-fertile	Black, medium	Mid-season	Home, fresh market, juice and jelly	Has a dry stem scar.
Southland	Self-fertile	Black, medium to large	Mid- to late-season	Home, commercial, fresh market, juice and jelly	Known for being disease resistant.
Cowart	Self-fertile	Black, medium	Early- to mid-season		Large clusters, wet stem scar, known for being disease resistant.
Scuppernong	Self-fertile	Bronze, medium	Mid- to late-season	Wine, fresh market, juice and jelly	Wet stem scar. The oldest cultivated variety of muscadines dating back to the 1500s.
Carlos	Self-fertile	Bronze, small to medium	Early- to mid-season	Wine and juice	Dry stem scar. Known for being cold hardy.

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