THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

Home Garden Bunch Grapes

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Georgia Grape Horticultural Areas

1. Mountain Area
2. Upper Piedmont Area
3. Lower Piedmont, Middle and South Georgia Area

Three primary species of bunch grapes are grown in the United States) the European bunch grape (*Vitis vinifera*), the American bunch grape (*Vitis labrusca*) and the Summer grape (*Vitis aestivalis*). Bunch grapes are often called "pod" grapes in rural Georgia since they produce large clusters of fruit. Georgia's climate is not well-suited to home garden production of European bunch grapes, but American bunch grapes and hybrids between the two species (French hybrids) grow well in Georgia. If grapes are well cared for and sprayed when diseases and insects threaten, you can expect yields of 20 to 30 pounds of fruit per vine. The Summer grape is also an American species and is represented by a few varieties good for wine production. If you want to grow European bunch grapes, consult **www.smallfruits.org** for the Mid-Atlantic Wine Grape Growers Guide. This is also a good source for more detailed information on growing French hybrid grapes. The spray program to produce good quality European bunch grapes is intensive and generally impractical for home gardeners.

Pierce's Disease is a bacterial disease spread by leaf-hopper insects that kills susceptible bunch grape varieties. It is very common in middle and south Georgia. Pierce's Disease has not been a significant problem in areas of Georgia above 1,300 feet elevation (high mountain area). Between 1,000 and 1,300 feet (upper Piedmont area), disease pressure varies greatly from site to site, but home garden plantings of Pierce's Disease susceptible bunch grapes are generally feasible. Between 700-1,000 feet in elevation, Pierce's Disease will often destroy the vines of susceptible cultivars within 5 years. Below 700 feet elevation, Pierce's Disease often destroys the vineyard within 3 years.

These boundaries can shift with climate variation from year to year. Below 1,000 feet elevation it is recommended that primarily Pierce's Disease resistant cultivars be planted.

Best Place to Plant

In the Mountain and Piedmont areas of Georgia, late spring frosts can reduce yields significantly, so plant bunch grapes on elevated sites if possible. In all areas, avoid low spots where cold air settles. The site should be in full sun most or all of the day. Well-drained, loamy sand, sandy loam, loam or clay loam soils are best for grape production. Avoid areas where water stands after heavy rains.

Rootstocks

American type bunch grapes and Summer grapes are usually grown on their own roots in North Georgia. European grapes and French hybrids are usually grafted on rootstocks such as SO4 or 3309 to provide increased *Phylloxera* resistance. On sandy sites (especially in South Georgia), test for the presence of root knot nematodes. If they are present, grapes should be grafted on nematode resistant rootstocks such as 'Tampa,' 'Florilush' or 'Dog Ridge.' Low vigor varieties are often grafted to improve their vigor, this noted in the tables.

Varieties

Many varieties of American type bunch grapes will perform well in Areas 1 and 2 in Georgia. Also, certain selections of French Hybrid grapes (wine grapes) are suggested for trial in these areas. Several hybrid bunch grapes are worthy of trial in Area 3 of Georgia. (See tables 1 and 2 on pages 3 and 4.)

Varieties Suggested for Home Garden Trials in Area 3 in Georgia

Several hybrid bunch grape varieties have been developed which are worthy of trial plantings in middle and south Georgia. All of these have good resistance to Pierce's Disease, the primary limiting factor to bunch grape culture in the middle and southern portion of Georgia. The table on page 3 lists suggested varieties for home plantings.

Purchasing Plants

Bunch grapes, unlike muscadines, do not require cross-pollination, so it is not necessary to buy two or more varieties for pollination. You may, however, want several varieties to extend the fruiting season.

Most bunch grapes are sold as 1-year-old or 2-year-old plants. Generally, the 2-year-old plants grow off better and are worth the small extra investment. Be sure to purchase them from a reliable source.

Planting the Vine and Plant Spacing

It is easiest to construct the trellis before planting, but it can be done after planting. Since most bunch grapes are somewhat less vigorous than the native muscadine grape, only 8 to 10 feet of row will be required for each vine. Lay off the rows at least 10 feet apart (12 feet on hilly land). Use straight rows for level or slightly rolling land and contour rows for hilly terrain. Prior to setting the vines, soil test and adjust the soil pH to 6.0 to 6.5 with dolomitic limestone. Most Georgia soils are low in magnesium, thus the need for dolomitic limestone.

To plant, prepare a hole large enough to accommodate the entire root system in its natural spread. Set the plant at or slightly below the level it grew in the nursery. Fill the hole with the natural topsoil and firm it. **Do not place fertilizer in the hole**. (See section on fertilization.) After firming the soil, water liberally.

Following planting, cut the vine back to a single stem with two to three good buds remaining. After growth begins, select the main trunk of the vine from the stronger of these shoots.

Trellis Systems and Trellis Construction

Normally number 9 wire is used for grape trellis construction. All posts should be pressure treated or made of termite/rot resistant wood such as heart of cedar.

American Type Bunch Grapes

American type bunch grapes are vigorous and have a trailing, downward growth habit. Three high trellis systems are commonly used to train home garden American type bunch grapes in the south: the double curtain (two wire horizontal system), the two wire vertical and the single wire. The top wire is typically 5 feet to 5½ feet above ground level in all three systems.

The Double Curtain Trellis — This trellis system is usually the most desirable of the three systems because of increased yields. The trellis system has two

Table 1. Varieties for the Upper Piedmont and Mountains in Approximate Order of Ripening

Variety	Type	Areas of Georgia	Red Wine	White Wine	Juice Jelly	Fresh Eating	Comments
Venus	A	1 & 2			X	X	seedless, blue-black fruit; seed traces present
Interlaken	F	1 & 2				X	seedless; suffers cold damage often
Foch (Kuhlman)	F	1	X				blue-black fruit
Aurora	F	1		X		X	good wine; fresh eating
Jupiter	A	1 & 2				X	seedless, blue fruit
Reliance	A	1 & 2				X	seedless, red fruit; fruit cracking problems
Cascade	F	1 & 2	X			X	performed well in Georgia test
Van Buren	A	1			X	X	black fruit
Alwood	A	1 & 2			X	X	blue fruit
Ontario	A	1				X	green to amber fruit
Fredonia*	A	1 & 2			X	X	blue fruit
Baco Noir (Baco #1)	F	1 & 2	X				blue-black fruit
Delaware* †	A	1 & 2	X		X	X	reddish fruit, small but sweet; good red wine
Chelois	F	1 & 2	X				blue-black fruit
Norton (Cythiana)*	A	1 & 2		X			*V. aestivalis* variety; good quality wine; probably has some Pierce's Disease resistance
Chambourcin	F	1 & 2	X				good quality red wine
Mars*	A	1 & 2				X	seedless, blue fruit
Saturn	A	1 & 2				X	seedless, red fruit
Chancellor	F	1 & 2	X				dark red fruit
Buffalo	A	1 & 2			X	X	good yields
Niagara* †	A	1 & 2			X	X	golden fruit
Cayuga White	A	1 & 2	X				vigorous vine
Concord	A	1	X		X	X	blue fruit, ripens unevenly; not recommended
Sunbelt*	A	1 & 2			X	X	Corcord type but ripens more evenly than Concord
Neptune	A	1 & 2				X	white seedless
Portland †	A	1 & 2			X	X	amber fruit
Stuben	A	1			X	X	blue fruit
Agawam	A	1	X		X	X	reddish fruit
Caco	A	1			X	X	reddish fruit
Champagne	A	1 & 2			X	X	reddish fruit
Catawba †	A	1 & 2	X		X	X	purplish red fruit, uneven ripening
Vidal	F	1 & 2	X				yellow fruit
Golden Muscat	F	1			X	X	greenish-amber fruit
Villard Blac*	F	1 & 2		X			greenish-yellow fruit; probably has some Pierce's Disease resistance
Seyval*	F	1 & 2		X			yellow-white fruit

* = Most outstanding varieties. **Type:** F = French hybrid (new shoots grow upward; use low trellis — 3 ft. — with catch wires); A = American type (new shoots grow down; use high trellis — 5 ft.)
† Should be grafted on Dog Ridge or similar rootstock for best results

Table 2. Bunch Grape Varieties for Middle and South Georgia in Approximate Order of Ripening (all are American types)

Variety	Red Wine	White Wine	Juice Jelly	Fresh Eating	Comments
Blanc Dubois		X		X	good white wine
Orlando seedless				X	small, greenish-yellow fruit
Suwanee*		X		X	good eaten fresh and as wine
Stover †		X		X	good, golden fruit
Blue Lake			X	X	purple fruit
Midsouth			X		sour, purple fruit
Miss Blue			X		sour, purple fruit
Conquistador* †	X		X	X	very good, similar to Concord
Lake Emerald		X		X	greenish fruit
Black Spanish (Lenoir)	X				dark purple fruit
Daytona †				X	low yield but good eating; pink fruit

* Most outstanding varieties
† Graft on Tampa, Lake Emerald, Florilush or Dog Ridge rootstock

wires 4 feet apart and 5½ feet above the ground. Figures 1 and 2 (page 5) show details of how to construct the double curtain trellis. A simple T-bar trellis constructed from treated 4" x 4" posts can also be used.

The Two Wire Vertical Trellis — The two wire vertical trellis used for the four-arm Kniffin training system is considerably less expensive to construct than the double curtain trellis. However, shading of the foliage on the lower fruiting canes by the upper canes reduces the quality and productivity of the grapes on the lower wire. Figure 3 (page 5) illustrates the construction of the two-wire vertical trellis. The primary use for this trellis is in situations where space is limited, but where there is good direct sun exposure. If direct sun exposure is limited, use the double curtain or single wire trellis.

Single Wire High Trellis — This trellis is recommended where diseases are a problem. The vines dry off more rapidly after a rain on the single wire. Space the vines 10 feet apart when using this trellis. Yields are lower than the other two systems, but construction is easy. Construct end supports as shown in Figure 3.

French Hybrid and European Bunch Grapes

Single Wire Low Trellis with Catch Wires (AKA Low Trellis Cordon System) — French hybrid and European bunch grapes have new shoots that naturally grow upward. Two removable catch wires above the cordons (arms) further encourage this growth habit and allow good exposure of the fruit to sunlight and fungicide sprays. The low-trellis cordon system establishes the cordons 3 to 3.5 feet above the ground and includes two removable catch wires positioned at 10 inch intervals above the cordon wire. This system promotes vertical growth, resulting in a narrow, upright vertical canopy. (Figure 4, page 5)

Training Young Vines

First Year — Regardless of the training system to be followed, your goal is the development and establishment of a well develop root system. It is recommended that after planting, the strongest cane be cut back to two or three strong buds. Remove any other canes present. Because it is sometimes difficult to determine the condition of a dormant vine, however, some growers prefer to leave five to six buds and then, when growth starts, only allow the most vigorous or desirable buds to develop into shoots.

If the trellis cannot be constructed the first growing season, then a stake 4 to 5 feet high should be driven in the soil near each vine and the new growth trained to it. Tie the shoots loosely, or with plastic tape, to avoid the possibility of girdling. In cool areas of the country, growth rates are slow and vines are often pruned back to near ground level the first winter to help develop a vigorous trunk the second year. In Georgia the growing season is long and vines often make impressive growth the first year.

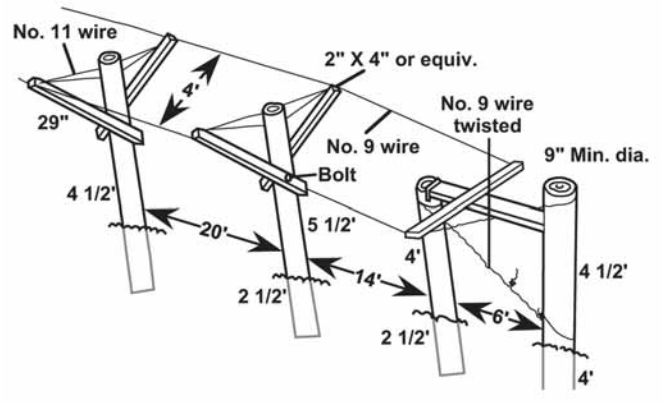

Figure 1. Details for the Double Curtain trellis.

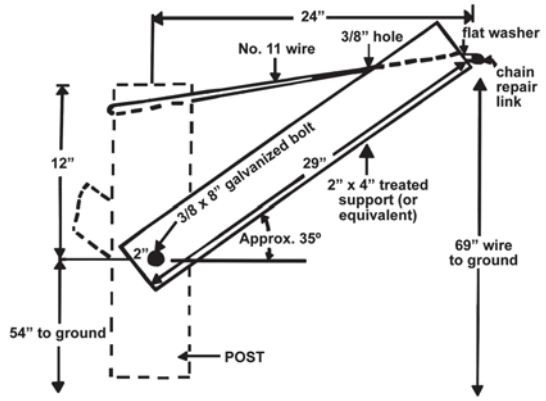

Figure 2. Details of the Double Curtain support system.

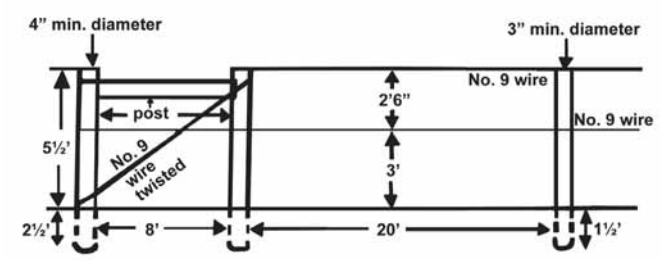

Figure 3. Dimensions of a Two Wire Vertical trellis (4-arm Kniffin), showing end braces.

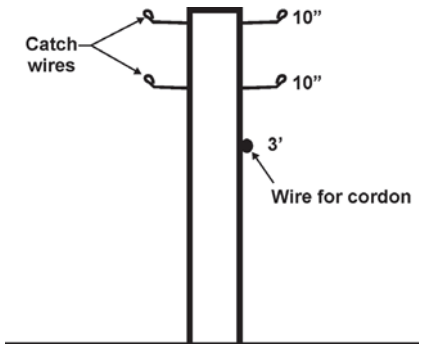

Figure 4. Detail for the Single Wire Low Trellis with Catch Wires. View looking down the row. Special nails or a bend nail can be used for the catch wires.

Double Curtain — Develop a double trunk (Y shape) for each vine approximately 30 inches above the ground. This is done by pinching out the growing point and forcing two shoots to develop. One trunk should be allowed to grow to one of the trellis wires and the other trunk to the other wire. Just below the wire, pinch out the tip of the growing shoots to encourage side branches. Under good conditions, the trunk system for the grape vine should be developed by the end of the first growing season.

Two Wire Vertical Trellis —Develop a single strong shoot arising from the young plant by removing competing shoots. Train this shoot to a string or stake running from the upper wire of the trellis to the ground. Just below each wire pinch out the tip to encourage two side arms to develop.

Single Wire Trellis High Trellis and Single Wire Low Trellis with Catch Wires — One shoot should be allowed to develop into the trunk. Train the trunk to a string or a training stake. When the tip reaches the wire, pinch it out and select two shoots growing about eight inches below the wire. Shoots positioned to grow on the trellis wire should be allowed to grow 12 to 18 inches long before they are tied down to the wires. Never tie the growing shoot tips to the wire because they will lose vigor. Always leave at least 6 inches of shoot tip free beyond the last tie so it can grow in an upward direction to maintain vigor.

Second Year — The second year should be devoted to training and developing a strong plant structure that can support some fruiting during the third season. Figure 5 (page 6) illustrates vines properly trained to the double curtain trellis, while Figure 8 (page 6) illustrates pruning and training to the two wire vertical trellis (Kniffin system)

Assuming normal growth has been obtained during the first growing season, all buds on the trunk remaining after pruning are capable of developing into shoots and producing fruit. Fruit production at this stage of vine development will reduce vegetative growth and, therefore, is not desirable. Removal of flower clusters when they occur is recommended. All shoots below the bottom trellis wire should be removed, including suckers from the base of the vine. Continue to develop the permanent cordons (arms). Pinch off developing flowers unless the vines have made tremendous growth the first year. Even then, leave no more than a cluster or two of fruit. Remember that your goal is training, not fruit production.

Pruning the Bearing Vine

Grapes require heavy annual pruning to maintain quality and productivity. Prune during the dormant season. Because of our mild climate, prune during February. Late winter or spring pruning will cause "bleeding" (flow of sap through the pruning wounds), but this should not cause alarm since it does not damage the plant.

Two Types of Pruning — Cane and Spur

Two very different types of pruning are used on bunch grapes. American-type bunch grapes can be pruned by either cane or spur pruning. French hybrid type bunch grapes are typically spur pruned. With cane pruning, only the trunk is permanent. The cordons (arms) are formed by leaving several of last year's canes. With spur pruning, the trunk and the cordons are permanent and the current season's growth is cut back to short shoots (spurs).

Cane Pruning (American type bunch grapes)

Do not over crop third year vines. Thin the fruit clusters to one per shoot. Most mature vines (typically 4 years and older) should be pruned to have between 30 and 60 buds. The more vigorous the vine, the more buds should be left. Balanced pruning, a method of pruning to balance production and vine vigor, is recommended for two wire systems. To balance prune, select four canes of last summer's growth, one for each direction on the two wires. See Figure 7.

These should be selected from canes arising from the head of the vine. Canes about the diameter of a pencil are most desirable. Cut each of these back to leave 15 to 20 buds per cane. Gather up all of last season's canes pruned from the vine and weigh them. **Note:** Do not weigh older wood. As a rule of thumb, 30 buds should be left on the vine for the first pound of prunings removed, and 10 buds for each additional pound. Vines producing less than ¾ pound of prunings should not be cropped. As an example, suppose a vine after pruning where 60 buds were left yielded 3½ pounds of prunings. Then the number of buds to be left would be about 55 (30 for the first pound and 25 for the other 2½ pounds). Each of the four canes left should be pruned back to have about 14 buds each. If balanced pruning is not to be done, then 30 to 60 buds should be left; the greater number being left on the most vigorous vines.

Leave renewal spurs to form canes for next year. These spurs are also canes of last season's growth pruned back to leave only two buds each. From these spurs will grow the fruiting canes for next year. Renew-

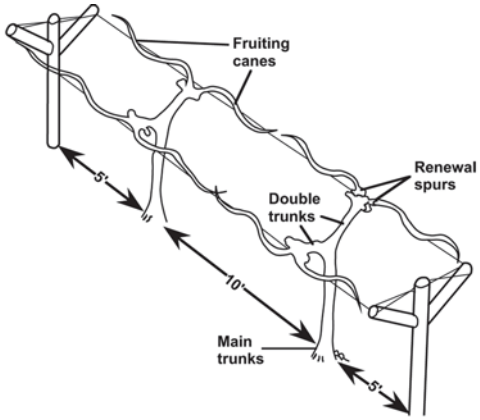

Figure 5. The Double Curtain trellis showing double trunks, fruiting canes and renewal spurs after pruning.

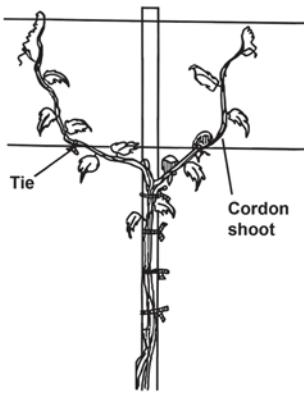

Figure 6. Single Wire Low Trellis with Catch Wires – Tie the cordon shoots to the cordon wire only after they are 1.5 to 2 feet long. [From S.C. Master Gardener Training Manual]

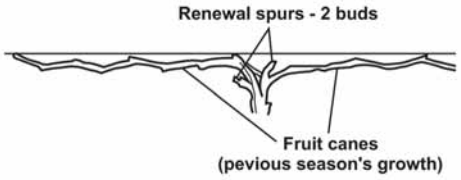

Figure 7. Grape vine properly pruned showing fruiting canes and renewal spurs. Prune each cane on the double curtain or two wire vertical trellis similarly to this.

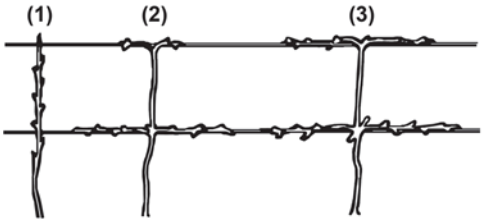

Figure 8. Training the young vine to the two wire vertical trellis (4 arm Kniffin) system. 1) Pruning after 1 year's growth, 2) after 2 years' growth, 3) after 3 years' growth.

al spurs should be located as near the trunk(s) as possible.

Spur Pruning (French hybrid bunch grapes)

Spur pruning is recommended for French hybrid grapes and can also be used for American type bunch grapes, however cane pruning of American bunch grapes may reduce disease pressure by removing almost all the old wood each winter.

Single wire low trellis with catch arms — In late winter cut back side shoots that grew the previous summer. This forms the "spurs." Leave two to three buds per spur for French hybrid grapes and four to six buds on American type bunch grapes. Select shoots that grew upward in a well-lighted environment to have the most fruitful spurs. Remove weak shoots. Thin the side shoots to about 6 inches apart.

The second step is to remove water sprouts, suckers and any tendrils attached to the trunk or cordons. Finally, prune back cordon growth beyond the 4-foot point or halfway to the next vine. In the spring allow four to six shoots per foot of cordon to develop, removing shoots where necessary. Also selectively remove leaves from around the fruit clusters to improve fruit quality and help reduce disease pressure. These leaves can be removed shortly after bloom but before the berries begin to change color and soften. Do not remove leaves after the berries begin to soften because sunburn may result. Thin fruit clusters to no more than two per shoot. As the new shoots become long enough, place them into the catch wires.

Fertilization

Establishment of the proper fertility level before planting helps get the young vines off to a good start. Contact your county cooperative extension agent for assistance with testing the soil prior to planting.

After the plants have been settled by a drenching rain and before growth starts, apply 2 ounces of 10-10-10 fertilizer around each plant. Keep the fertilizer at least 6 inches from the vine and scatter evenly in a circle 2 feet in diameter. Repeat at 6-week intervals until mid-July if at least 4 inches of rain or irrigation is received between applications.

On 2-year-old vines, double the first year rate and increase the diameter of the circle to 3 feet. Repeat at 6-week intervals until mid-July if at least 4 inches of rain or irrigation is received between applications. Bearing vines (3 years and older) will need about 2½ pounds of 10-10-10 per plant applied in March. Scatter this evenly under the vines in a band 4 feet wide. If growth is poor on producing vines, apply 1 pound of 10-10-10 per plant in May as well.

Because Georgia soils are inherently low in magnesium, foliar magnesium deficiency frequently becomes noticeable in mid-summer. This deficiency is characterized by a yellowing between the leaf veins on the older grape leaves (see Figure 11). If the soil pH is sufficiently low to warrant liming, use dolomitic lime to help prevent magnesium deficiency in future years. Otherwise, magnesium sulfate (epsom salts) should be applied and watered in. For young plants, apply 2 ounces around each vine, keeping the salts away from the trunk 6 or more inches. Apply 4 to 8 ounces per mature, bearing vine. It may require 2 to 3 years of magnesium application to bring the level up for the best plant performance.

Cultivation and Weed Control

Make every effort to establish a permanent sod between rows before planting the vineyards to reduce soil erosion. After the sod is established and the vines are planted, hand weeding and hoeing or careful herbicide application will be needed around the individual vines during the first two growing seasons. Keep the sod mowed during the summer months.

Once the vineyard is established and producing fruit (generally the third season), herbicides can be used to keep the strip along the rows free of weeds and grasses. Several herbicides cleared for use on grapes do an excellent job if properly used. They can be applied with tractor-mounted or hand-operated equipment. See your county extension agent for specific weed control recommendations. Mulching is also useful for improving soil temperature and soil moisture, and for reducing weed growth.

Insects and Diseases

Since bunch grapes are susceptible to a number of diseases and are attacked by several insect pests, a season-long spray program may be necessary to produce good fruit. Contact your county extension office for a copy of *Disease and Insect IPM in the Home Orchard.* The publication gives tips for a good spray program along with additional information and precautions. Read and understand the section on precautions first. Pesticides are dangerous when they are misused and mishandled. This and other Georgia Cooperative Extension publications are available from your county extension office.

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