

UNIVERSITY OF FLORIDA
AGRICULTURAL EXPERIMENT STATIONS
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BLUE LAKE

A New Bunch Grape for Florida Home Gardens

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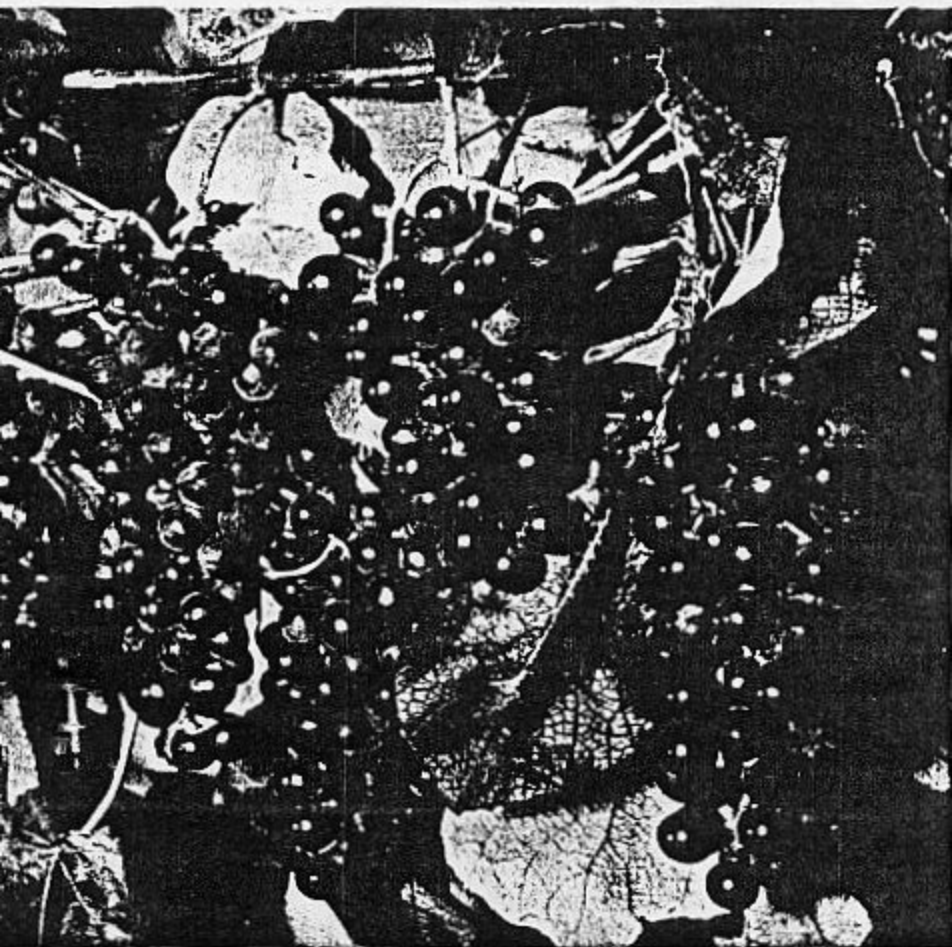


Fig. 1.—Blue Lake is a desirable new grape for home use.

Blue Lake is a dark-colored bunch grape that will live and fruit in Florida. It is resistant to Pierce's disease, a virus-induced decline of grape, but may not be immune.

Few adapted grape varieties are available to Florida growers and the distribution of Blue Lake is intended to supplement the present limited list.

HISTORY

Blue Lake was developed at the University of Florida Agricultural Experiment Stations' Watermelon and Grape Investigations Laboratory at Leesburg. The parents of Blue Lake are Florida No. 43-47 and Caco. The female parent, No. 43-47, is an open-pollinated selection of the native *Vitis smalliana* Bailey. It is extremely prolific and bears large clusters of blue-black berries about $\frac{3}{8}$ inch in diameter. The male parent Caco, an American bunch grape, is a red-fruited selection from a cross of Catawba (*Vitis labrusca* L. x *Vitis vinifera* L.) and Concord (*V. labrusca*). Caco is early, large, fairly sweet, and moderately productive. The strong fruit aroma of Caco was imparted to Blue Lake. The cross yielding this selection was made in 1950.

DESCRIPTION AND HORTICULTURAL FEATURES

Vine and Foliage.—Blue Lake was the best seedling of 12 in its progeny. The vine grew rapidly but retained a medium-sized trunk and cane framework, with tendencies to recumbent lateral growth. Internodes are long and at cane maturity the wood is clean, smooth and dark brown in color; dieback at the terminals is infrequent. Growing canes elongate rapidly, remain medium to small in diameter, and are short in comparison with many other varieties. Fast-growing shoots rarely become "bull cane" types. The roots of Blue Lake are dark and vigorous and are seldom attacked by borers or common soil organisms.

Blue Lake has large, dark green leaves, nearly round and frequently unserrated, with better than average resistance to leaf diseases. Fully sized leaves have thick, rigid blades affixed to sturdy petioles. The leaves form a dense cover for the fruit crop, thus affording more than usual protection from sunscald and bird damage. Normal leaf fall begins with cool weather in November, and dormancy usually lasts through February in central Florida.

Flowers.—This grape is self-fertile and normally requires no pollinators. In some seasons, however, the fruit set may be

improved if varieties with profuse and highly fertile pollen, such as Lake Emerald, flower in proximity. Normally the bloom period of Blue Lake is early to mid-season and fairly short in duration. This period is well defined, with little tendency to double blooming when summer rains begin; as a result berries mature evenly.

Fruit Characteristics.—Clusters of Blue Lake are about 20 percent compound, with rarely more than 1 shoulder, and the peduncles are sufficiently long to facilitate rapid harvest. Berries are attached to sturdy, medium-length pedicels that allow them to be fairly loose in the clusters. They adhere well to the pedicels and there is minimum berry shelling at maturity.

The fruits of Blue Lake enlarge rapidly after flower fertilization and begin to turn color early in June at Leesburg. Mature fruits range in diameter from 7/16 to 9/16 inch (similar to Delaware). Fully ripened berries frequently are slightly purple, but beneath heavy foliage they may be uniformly blue with a light surface bloom. Harvesting dates at Leesburg range from late June to the latter part of July.

The flavor of Blue Lake is spicy and slightly tart. The mean sugar rating of the juice (percentage of soluble solids as determined by a hand refractometer) was 16.1 for the 6-year period from 1954 to 1959 inclusive, which included several seasons when conditions were not favorable for development of fruit sugars.

Yields and Ripening Habit.—Replicated yield trials have not been made but fruit yields were determined from random vines of Blue Lake and Lake Emerald at Leesburg in 1958 and 1959, and these data are presented in Table 1. This and other observations indicate that fruit yields of Blue Lake will approximate those of Lake Emerald in most seasons. Blue Lake may out-yield Lake Emerald when grafted on a compatible rootstock.

TABLE 1.—FRUIT YIELDS FROM RANDOM VINES OF BLUE LAKE AND LAKE EMERALD AT LEESBURG, IN 1958 AND 1959.

Variety	No. vines	Age of vine or graft in 1958 (Years)	Rootstock	Mean Fruit Yields*	
				1958	1959
Blue Lake	4	4	380	16.6	16.0
Blue Lake	4	2	Lake Emerald	6.1	11.0
Lake Emerald ...	210	7	Own Roots	11.4	8.6

* Pounds per plant.

Usually the crop of Blue Lake comes to final maturity fairly slowly. Berries with a ripened appearance may remain highly

acid for several days, so that there is a possibility of harvesting prior to full maturity. A check of sugar ratings is helpful in determining the best harvest dates. Soluble solids content of 17.0 or higher may be expected to develop in favorable seasons.

Even though fruit of this variety comes to final maturity slowly, it remains at its best on the vine for only a short time and should be harvested without delay. The crop can usually be harvested in two pickings. Shallow containers should be used to avoid crushing the berries.

USES AND LIMITATIONS

When fully mature, Blue Lake is aromatic with a spicy flavor and is distinctive from the European dessert types. Blue Lake has a limited value for sale as a fresh fruit, but is an excellent home-garden variety. It may be sold from local stores and stands where the turnover is rapid, but the small size of berries and relatively short shelf life limit its use in this manner.

The grape is well adapted for making fresh juice, pasteurized juice, or other processed products such as jellies and preserves. The grape aroma is retained in these products.

CULTURE

Cultural practices used for the Lake Emerald variety are suitable for Blue Lake. It is moderately hardy and productive on its own roots, but when grafted on a compatible rootstock, its vigor and productivity are both increased. Information on compatibility with Blue Lake is limited, but Lake Emerald is a suitable rootstock. Blue Lake is adapted to a fairly wide range of Florida soils but is likely to do best on well-drained areas from Highlands County north.

Propagation of Plants from Cuttings.—Rooted grape nursery stock customarily is produced from cuttings made in December and January from 9- or 10-month-old wood. Canes used for hardwood cuttings should be about 12 inches long, with 2 or more buds, pencil-diameter or a little larger, healthy, fairly straight, and mature. The bottom cut should be just below the lowest bud and the top cut about 1 inch above another bud. The cuttings should be tied tightly in bundles of 50 or less with the bottom ends even.

A cool, shady location should be chosen for the callusing bed. A trench should be dug slightly deeper than the length of the cuttings. The bundles should be placed in an inverted position

(node-cut ends up) in the trench and soil pulled around them and packed firmly. Additional soil should be used to provide about 3 inches of cover over the entire bed. Cuttings placed in a bed of this type in a cool shady location will callus and start roots in about 6 weeks.

A moist location or at least one where watering can be done should be chosen for the nursery. Nursery rows should be 4 or 5 feet apart and callused or rooted cuttings should be lined out about 10 inches apart in the row. Bonemeal scattered thinly in the planting furrow prior to setting the cuttings promotes better root development on the young plants.

Cuttings must be set **right side up** in the nursery row. They should be set with almost their entire length covered with soil and kept moist until they are growing rapidly. Such cuttings will be ready for digging the following winter.

Location and Spacing.—Grapevine plantings should be established in an open, sunlit area away from competition with trees and shrubs. Vines should be spaced 8 or 9 feet apart. Crowding is undesirable.

Planting.—Roots of nursery plants should be pruned to 4 or 5 inches before the vines are set. Before or immediately after planting, the tops of the young vines should be cut back to 2 buds. Straight-sided holes 12 inches across and a little deeper than the vine will require are recommended. A spadeful of topsoil should be replaced so that the young vine will rest on a cone of topsoil at the same depth in the ground that it occupied in the nursery. A handful of steamed bonemeal may be sprinkled over the roots (no other fertilizer should be used). Soil should be packed thoroughly around the roots and the plants watered liberally.

Trellis.—The standard 3-wire Kniffin trellis (sometimes called "fence trellis") is well adapted for the Blue Lake grape (Fig. 2). Another suitable trellis is the Munson canopy post system, with a 30-inch crossarm at a height of 5 feet and 3 supporting wires, 1 at the center and 2 at the ends of the crossarms. Trellises need not be erected until the vines are growing.

Fertilizer Practices.—The fertilizer requirements for Blue Lake may vary with the soil type on which the planting is established. A 6-6-6 fertilizer mixture with about 30 percent of the nitrogen derived from natural organic sources will generally be satisfactory for most central Florida locations. The rates of application should vary with the age of the vines. The small

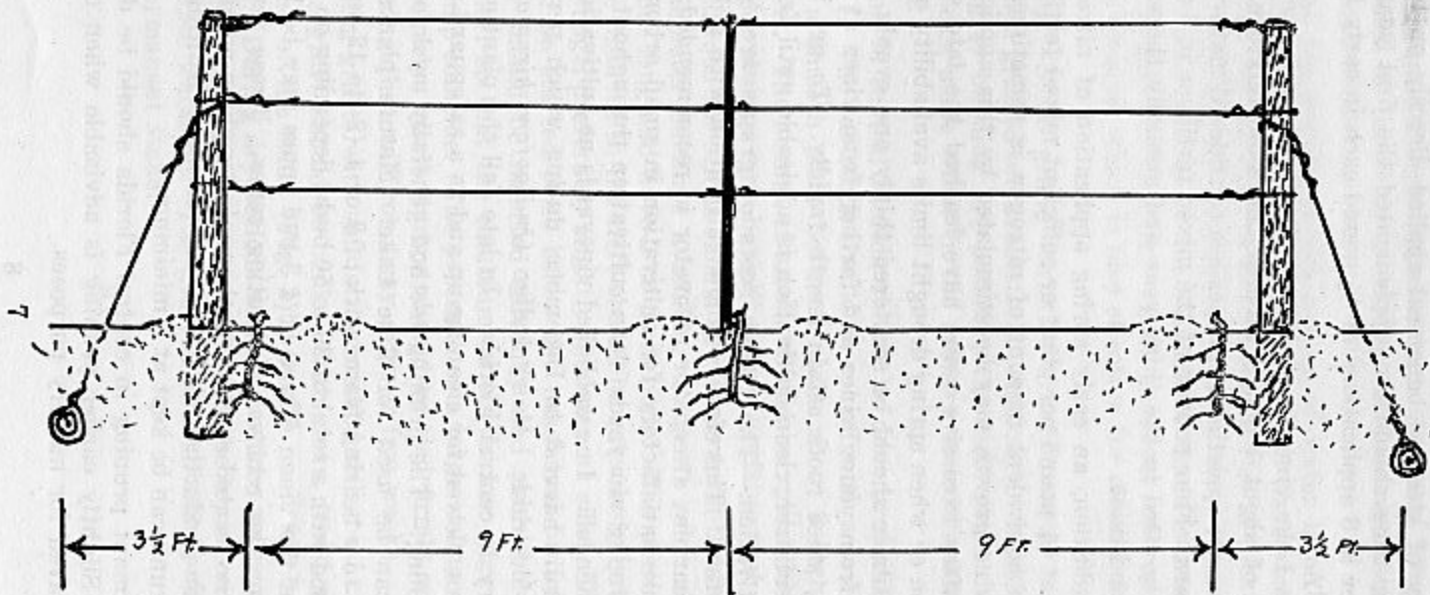


Fig. 2.—Three-wire Kniffin trellis suitable for grape culture.

quantity of steamed bonemeal applied directly on the roots at planting time should be supplemented the first year by mixed fertilizer in 3 applications of $\frac{1}{2}$ pound each in early March, May and July.

Blue Lake vines in their second year should receive 3 applications of about 1 pound each of the 6-6-6 mixture.

Domestic varieties of grapes are considered mature in Florida at 3 years. Four pounds of the mixed fertilizer in 3 applications should be used in the third year and annually thereafter under most conditions.

In addition, an early spring application of nitrate of soda-potash at $\frac{1}{4}$ pound per plant or sufficient mixed fertilizer to furnish an equivalent amount of nitrogen is sometimes advisable. Early vine growth may be stimulated by this application, especially after excessive rains have leached the late summer application or when spring drought limits availability of nutrients.

Fertilizer should be scattered thinly and evenly, at least 12 inches from young vines and farther from vines at later applications, since roots attain length rapidly. To get best results from fertilizer, clean cultivation is advisable until fruit harvest.

Cultivation.—The feeder roots of grapes are located near the surface. Therefore, shallow cultivation with a disk harrow, Acme harrow, sweeps or rotovator is recommended. Hoes and rakes are satisfactory for cultivation in small arbors.

In young vineyards clean cultivation throughout the year is recommended. In established vineyards no cultivation is needed from fruit harvest to December, during which period a cover crop is desirable. Hairy indigo (*Indigofera hirsuta* L.) is satisfactory in central Florida. In late fall the planting should be disked or plowed for cleaning up and as a safeguard against fire.

Pruning.—The pruning method generally used for Lake Emerald can be used for Blue Lake. Mature plants should be pruned to a bearing framework of 3 or 4 (8- to 12-bud) canes of new wood with a total of 30 to 50 buds, depending on the age and vigor of the vine. Three or 4 3-bud spurs may be left on Blue Lake for the renewal of fruiting canes. These renewal spurs should be located as close to the main trunk as possible in order that non-productive old wood between the fruiting wood and main trunk can be kept at a minimum.

Dormant pruning in central Florida should be done in January. Slightly earlier pruning is advisable when cuttings are to be saved for nursery purposes.

Disease and Insect Control.—Blue Lake has considerable resistance to most fungus diseases and insects. However, a spraying program is advisable to minimize fruit losses. Spraying should be begun in the spring when buds are about 2 inches long and continued at intervals of 10 days to 2 weeks until berries have attained maximum size.

Zineb at $1\frac{1}{2}$ pounds to 100 gallons of water is an effective grape fungicidal spray. If applied less than 6 weeks before harvest, a visible residue may be left on the berries at picking time. Malathion emulsifiable concentrate (56%) may be used with zineb for insect control at the rate of 24 liquid ounces to 100 gallons. Garden stores carry small packages of ready-mixed zineb with lindane, which is also effective for disease and insect control.

Grafting.—Some grape varieties are frequently more productive when grafted on a rootstock. Although several methods of grafting or budding are possible, the cleft graft on 1-year-old rootstocks, made either in the nursery or in the field, is recommended.

Grafting in central Florida should be done preferably about February 1. The rootstock should be cut off with a saw or sharp shears at a smooth place between nodes about 2 inches above ground level. The stump, if small, should be split with a sharp knife; larger stumps may be split with a grafting tool or chisel.

The budwood for scions should be chosen from the healthiest, medium-diameter cuttings available. A graft scion should be 5 to 8 inches long and have 2 or more buds. The portion of the scion to be inserted in the cleft should be cut carefully to a long, tapering wedge, preferably slightly thicker on 1 side. The wedge cut should be started close below the basal bud on both sides. The scion should be inserted carefully and pushed down well into the cleft so that the cambium on its thicker edge and that of the stump coincide. The pressure of a large stump may hold a scion securely; small stumps should be tied firmly with raffia or soft string that will rot away after a few weeks.

Mounding grafts with soil is the method still most commonly used. The graft should be banked with clean, moist soil up to the top bud of the scion (Fig. 3). Grafts must not be allowed to dry out. During dry periods watering will be necessary about twice a week. A small depression made in the top of each mound will facilitate watering. The grafted vine should be trained on a stout permanent stake.

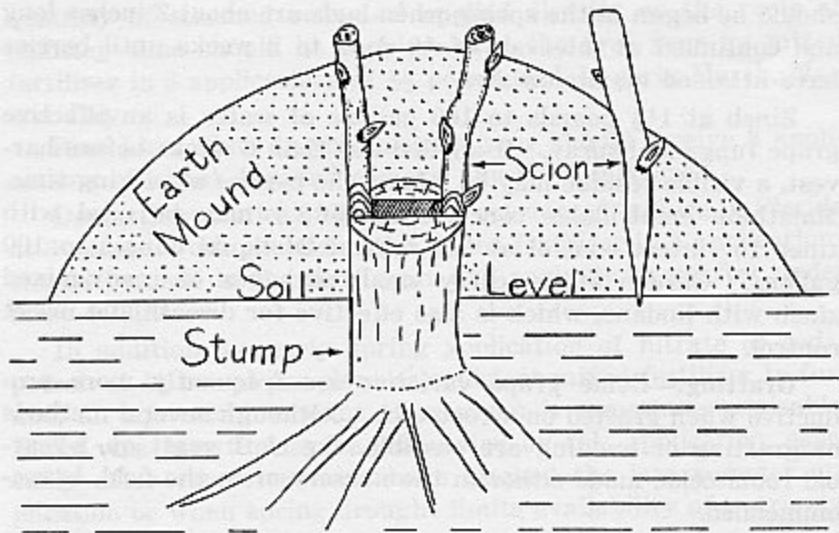


Fig. 3.—A typical cleft graft. (After Munson.)

OBTAINING PLANTING STOCK

Obtain planting stock from your local nurseryman. If he does not have stock available, write Watermelon and Grape Investigations Laboratory, Box 321, Leesburg, Florida, for the addresses of nurserymen who may have planting stock.