GROW YOUR OWN ORGANIC Small Fruits
**Benefits of Home Grown Organic Fruits**

**Information about growing strawberries, blackberries, blueberries, figs and muscadine grapes.**

Growth benefits:
- Well adapted for growing in Middle Georgia.
- As a group, these fruits provide 6 months of continuous fresh eating between April and September. Extra fruit is easily, well preserved by freezing.
- Lower insect and disease pressures than for tree fruits make them a wise first fruit choice.
- Fruit 2 to 3 years earlier than tree fruits.
- Take less space to grow than tree fruits.

Research trials over 7-16 years at Boggs Organic Garden in Burke County and Fort Valley State University (FVSU):
- Fruit size, quality, and yields have been good despite challenging pressure from weeds, diseases and insects.
- Average seasonal yields include 2 pints of strawberries per plant, 8 pints of blueberries per bush, 12 pints of blackberries per trellised plant, 80 pounds of figs per bush, and 120 pounds of muscadines per plant.

Cost benefits:
- Ever increasing retail prices are strong incentives for growing them at home.
- Store prices for organic strawberries are at least $3 per pint.
- Blackberries and blueberries average $4 per pint.
- Muscadine grape prices are often $3 or more per pound.

Nutritional benefits:
- Research shows the dark colored fruits, blackberries, blueberries and grapes are extra rich in antioxidants and other phytonutrients that help fight cancer and negative effects of brain aging.
- Higher levels of minerals are being found in organically grown fruit.
Strawberries

Cool Season Crop
Mid to late October is prime time to set out strawberries in Middle Georgia. They make vigorous plants with strong fruiting crowns during the winter months of our climate. In early April of the following spring, fresh fruit begins ripening and continues producing into mid-June.

Site Selection
A family of four can make a good start with 50 plants on a 3 ft. x 25 ft. bed. The site should have at least 8-10 hours of full sunlight and be located near a water source.

Bed Preparation
The double dig method gives a superior, deep, long lasting bed and is well worth the labor invested. Before shaping and leveling the bed, add soil amendments and fertilizer according to soil test results, if possible. Without a soil test, for a new site, generally broadcast 5-10 pounds of lime and 10 pounds of a vegetable meal or animal based organic fertilizer. Valuable organic matter can be added with a one inch layer of compost. Final shaping and leveling should result in a bed 6 inches high and 30 inches wide at the top.

Setting Plants
For dry soil, moisten it 6 inches deep the day before planting. Locate and dig the holes in 2 rows, 15 inches apart, with holes spaced 12 inches within each row. A practical tool for digging uniform 4 inch deep holes is a tulip bulb planter. Before setting each plant, trim away dead leaves and stolons, as well as, excess green leaves. Keep only 1 to 2 center leaves depending on the amount of roots. Set each plant at the mid point of the stem crown when firming in the soil. Avoid planting too deep or too shallow.

Watering
Use a slow seep, drip hose down the center of the bed and water immediately. Water at least 3 times a week for the first 2 weeks, followed by once or twice a week from November through February. As the weather warms up, resume watering 2 to 3 times a week from March through June. To reduce fruit rot in April and May, make only deep waterings before mid-afternoon.

Winter Maintenance
Remove winter weeds and diseased leaves at least every 2 weeks. From mid-January through February, pinch out flower buds twice a week. During the month of March and early April be prepared to frost protect blooms and fruit by covering the bed with floating row cover. A two inch mulch of finely shredded wheat straw should be put between the fruit and soil in mid-March.

Harvest Practices
During the fruiting season provide protection from bird damage by covering with ½ inch mesh polynetting. Practice good sanitation at each picking by disposing of all spoiled fruit. Also, avoid overwatering to reduce fruit rot.
Optional Plant Production
In late June, the original plants can be thinned to a group of 12 “mother” plants spaced at 24 inches. The bed will require weeding, 5 pounds of recommended fertilizer and careful watering to produce runner plants during the summer. The 12 “mother” plants should be removed in late August. The new plants should be large enough by late October to establish 5-10 new beds of equal size. The value of these plants is about $150.00. By leaving about 100 plants, spaced at 6 to 9 inches, the propagation bed can be maintained to produce another good crop the following spring.

Yield and Crop Value
The potential income for locally grown organic strawberries was demonstrated in an “on farm” trial near Marshallville, Georgia. from November 2008 through June 2009. Based on a 100 square foot bed with 100 Chandler plants, a yield of 153 pints of quality fruit was produced. The fruit was sold at both Perry and Atlanta markets for $4 per pint, providing a crop value of $612.

Varieties
Varieties of choice continue to be Chandler and Camarosa. After several years of trials, these varieties continue to provide good yields, large berry size, and good taste. A new variety, Festival, was included in the 2010-2011 season and it compared very favorably to Chandler and Camarosa. Strawberry trials are ongoing at the Boggs Organic Garden in Burke County.
**Blackberries**

### Variety Choices

Blackberries are self-pollinating and may be planted as a single variety. The blackberry’s late blooming habit protects the flowers from late freezes in April. Thornless varieties are easier to maintain and harvest. As a group, their fruit is somewhat smaller, but sweeter, than the fruit from thorny varieties.

Cane rust disease can have a moderate to severe effect on the thornless varieties, while double blossom blight can severely affect the thorny varieties. Remedial pruning and organic growing methods can keep these diseases in check. Thornless varieties of choice include Natchez and Ouachita, while Kiowa and Chickasaw are the best thorny varieties. Thorny varieties ripen their fruit from mid-May to mid-June and most thornless varieties ripen their fruit from mid-June to mid-July. Natchez and Ouachita, as exceptions, ripen from early to late-June.

### Site Selection and Bed Preparation

A good site should have at least 10 hours of full sun, preferably a sandy loam soil, close access to water, and be free of invasive perennial weeds. Bed making is best accomplished by double digging, a spading machine or a subsoiler. A 3 ft. x 35 ft. bed will accommodate a family size trellis for 2 Kiowa and 3 Natchez plants, providing a five week season for fresh fruit.

Soil test results in December will indicate the amounts of lime and rock phosphate recommended to apply prior to bed making. Other amendments and 12 pounds of recommended organic fertilizer may be applied and raked into the top of the finished bed.

### Setting Plants, Irrigation and Mulching

From mid-February to mid-March obtain well rooted plants in one gallon pots from a certified source. Space the plants 7 feet apart and keep the thorny and thornless plants in separate blocks. If Bermuda grass or other perennial weeds are a potential problem, consider laying a 4 foot wide piece of landscape fabric with buried edges. Use a drip hose down the center of the bed and maintain good moisture.

A simple low-cost drip hose system utilizes ½ inch black poly pipe with ¼ inch holes drilled every 3 feet and drilled through both sides of the pipe. Use a final 4 inch layer of wheat straw mulch over the bed to moderate soil temperature and conserve moisture. Replenish this mulch once or twice a year. Row orientation going north to south optimizes plant exposure to sunlight for blackberries, as well as for blueberries and muscadines.

### Building the Trellis (see diagram on page 4)

The drawing and the list of materials explain the details and costs of construction for a five plant, family size trellis. Three, 8 foot steel T posts are set 16 feet apart and are driven
in the ground 18 inches to form the main structure. The three strands of 16 gauge wire are attached and tightened working from the top to the bottom. For longer trellises requiring anchor wires, two spiral, 18 inch anchors may be used.

### Trellis Measurements, Components and Costs

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<tr>
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#### Pruning and Tieing

In its first season the blackberry plant develops a larger root system, long canes and side shoots. These canes and shoots produce fruit in late spring and early summer the second year. By mid-July when fruiting is finished these canes dry up and die. This is the best time to prune them at ground level and remove them. By this time the plant has partially developed new canes for fruiting the next year. These should be tied to the wires using flagging tape or a similar material.

Side shoots that develop below 18 inches on the new canes should be pruned out during June, July and August to encourage the growth of higher shoots on the cane for improved training and fruiting. The higher shoots should be looped and tied to the wires or to each other to maximize fruiting wood on the trellis. Both the pruning of lower shoots and the tieing of higher shoots should be done every other week during the summer and into the fall.

#### Yield and Crop Value

At the FVSU organic trials in 2008, five Ouachita plants on a 30 foot bed produced 41 pints of high quality berries valued at $164 ($4 per pint retail). Kiowa produced 53 pints of medium quality fruit valued at $159 on the same size bed. The Ouachita plants were three years old and Kiowa was in its fourth year.
Blueberries

Variety Choices
Rabbiteye blueberries are native to Georgia. This is an excellent type for home gardeners and organic growers; always plant more than one variety for cross-pollination and fruit set. By growing early, mid and late season varieties, you have fresh fruit from late May to early August. Premier and Brightwell ripen early, while Powderblue and Tiftblue produce mid-season fruit. Centurian and Baldwin produce late season fruit. If late spring freezes are problematic, consider planting the most cold weather resistant varieties, Brightwell, Powderblue, Tiftblue and Centurian. Also, avoid low sites prone to cold weather.

Site Selection and Bed Preparation
Success with blueberries also depends heavily on having the right soil conditions. A soil sample should be taken in December to check for pH, calcium and phosphorous levels. The best pH range is 4.0 to 5.3. If your soil pH is between 5.4 and 6.0, apply ½ to 1 pound of sulfur per 100 square feet; with a soil pH above 6.0 try another site. Also, if the calcium level is above 900ppm (parts per million) or if the phosphorous level exceeds 200ppm, another site should be considered.

The same general site conditions suggested for blackberries should exist for blueberries. The basic methods described for bed preparation for blackberries are also useful for blueberries. Perennial subterranean clover is also recommended as a ground cover for blueberries. Check with your local County Extension Service for a source of seed.

Setting Plants, Irrigation and Mulching
The standard spacing for rabbiteye blueberries is 6 feet within the row and 12 feet between rows for a hedge row system. To develop individual bushes, plant 8 to 10 feet apart in the row. A three gallon size nursery plant is preferred over a one gallon size for survivability and earlier fruit production. Mid-February to mid-March is a good time to plant blueberries.

Spread the roots apart for pot bound plants. Set the plant at the same depth it grew in the pot. Mix 3 gallons of milled pine bark with an equal amount of soil when filling in around the roots. Use medium foot pressure to do final firming of the soil. Mulch the bed 4 inches deep with pine straw or pine bark.

Use hand pruners to remove all low twiggy growth as well as the tops of overly tall shoots. In mid-April, for 3 gallon size plants, hand strip ½ of the flower buds to promote more growth the first year. For the same reason, remove all flower buds from one gallon size plants.
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On level land with beds up to 150 feet long, the same drip irrigation system described for blackberries works well for blueberries. If invasive weeds, especially Bermuda grass, are a problem, lay the 4 foot wide landscape fabric before installing the drip tubing and laying the organic mulch. Deep watering at least twice a week during the hot summer months is important.

**Pruning**

Pruning for rabbiteye blueberries usually begins in mid to late July of the fifth year when the bush reaches a 6 to 8 foot height. As soon as the final fruit is picked, remove one to three of the largest canes at 3 inches above the ground. Whether the number of canes is 1, 2 or 3 the amount removed should equal about 20% of the total canopy. Over the next five years the bush will be completely renewed. Other pruning at this time involves cutting the top of the bush to 7 feet and cutting back low hanging side branches. Summer pruning is preferred over winter pruning because the bush is able to make significant mature, new wood and flower buds before cold weather in November. Continue normal irrigation for August and September but discontinue it by mid-October.

**Yield and Crop Value**

In the fourth year of the FVSU organic trials, Powderblue had high yield, good fruit size and sweetness. Five plants on a 25 foot bed produced 26 pints of berries with a market value of $104. Brightwell yielded nearly 21 pints but the smaller fruit size required longer picking times. Premier, Tifblue, and Centurian had total yields of about 10 pints per variety with good fruit size and sweetness.
Variety Choices
Celeste is the most common variety grown in Georgia. If planted in the mountains it needs a protected site. Other varieties are less winter hardy and should be planted south of Macon and the fall line. Along with Celeste, other varieties with good fruit quality for Middle to South Georgia include Alma, LSU Purple and Brown Turkey. Alma is a late ripening variety which will extend the fig season. Figs are self pollinating and may be planted as single varieties.

Site Selection, Soil Preparation and Planting
Figs are adaptable to many types of soils, however, they are susceptible to root-knot nematodes. Avoid a former garden site and look for an area well established in grass. Your local extension office offers a soil test for nematodes. If winter protection from cold is important, choose a site on the south side of a building. During the first winter, a wire cage filled with hay offers further protection.

The best soil pH range for figs is 5.5 to 6.5. If the pH reading is low, apply sufficient lime over a 20 foot diameter circle. In the center of the circle, double dig a 3 ft. x 3 ft. area to set out the plant in early April or when the danger of frost is past. Apply one pound of organic fertilizer in this area before planting. Purchase a 3 gallon size plant, if possible, and set it a few inches deeper than it grew in the pot.

Space the plants 20 feet apart if grown as bushes and 25 feet apart if grown as trees. Use wheat straw or clean, aged hay to lay a 4 inch mulch over a 5 foot circle. In October, for each bush, sow subterranean clover seed in a 20 foot diameter circle to provide a valuable perennial, winter cover crop for fixing nitrogen. Using drip irrigation, provide 10-15 gallons of water weekly the first summer and use increasing amounts in future years.

Pruning and Training
Mature fig trees often reach 25 foot heights making much of the fruit difficult to harvest. For that reason, training to a bush form is recommended for figs. At the time of planting, cut the plant back by 1/3 to 1/2 to force new shoots to grow from the base. Within six weeks, select 3 or 4 vigorous well spaced shoots for leaders. Prune out all other shoots at the ground. When the leaders reach 6 feet, tip prune them to encourage branching. During the summer keep all new suckers at the base removed.

Maintenance pruning in future years should be done in late March or when the danger of frost is past. Remove all dead wood, crowded branches and low growing branches. Also, keep tall leaders cut back to 7 or 8 feet. Access into the bush for easier harvesting may be provided by pruning 3 or 4 pathways. Make sure all pruning cuts are made flush back to a bud, shoot or branch.

Harvest Practices
Figs are highly perishable when ripe and should be picked every 2 to 3 days. Poly netting (½ inch mesh) will save about 10% of the fruit from bird damage. At each picking remove over ripe and damaged fruit to avoid the buildup of wasps. Surpluses of figs in July are easily preserved by dehydration followed by freezing.
**Muscadines**

**Variety Choices**
Muscadine varieties fall into five categories, three based on fruit color (bronze, black or red) and two based on flower type (self pollinating or female). A female variety needs to be within 50 feet of a self pollinating variety.

A number of organically grown varieties have been compared for fresh eating qualities over several years. Those with thinner fruit skins and fewer seeds are easier to chew and more pleasant to eat. Sweetness and flavor are also important. Two self pollinating varieties with high marks include Ison (black) and Triumph (bronze). Also rated very high are two female varieties, Supreme (black) and Fry (bronze). Other black female varieties worthy for organic trial include Black Beauty, Sugargate and Black Fry.

**Site Selection and Bed Preparation**
The same recommendations given for blackberries concerning site selection and bed preparation should be followed for muscadines. In addition, the site should have sufficient elevation to offer good cold air drainage for protection against late freezes in April. A 3 ft. x 50 ft. bed will provide room for two plants trained on a double curtain trellis and spaced at 24 feet. Ison and Supreme or Ison and Triumph would be excellent variety choices.

Also follow the same guidelines for lime, rock phosphate and other soil amendments as given for blackberries. With this size of bed, apply 15 pounds of recommended organic fertilizer. If the soil test results show a medium to low level for magnesium, apply 4 ounces of Epsom salt over a 4 foot diameter circle at each planting site. An excellent perennial cover crop to grow along each side of the trellis is subterranean clover. Make a note to plant seeds of this valuable nitrogen fixing crop in October. This clover also works well for blackberries, blueberries and figs to reduce future amounts of purchased nitrogen fertilizer.

**Setting Vines, Irrigation and Mulching**
Obtain well rooted plants in one gallon pots from a reputable nursery between mid-February and mid-March. Set the two plants, 24 feet apart and center them on the 50 foot bed. The 4 foot wide piece of landscape fabric is highly recommended for covering the bed to better exclude weeds and promote quicker, early plant development. The same irrigation system described for blackberries works well for muscadines. The 4 inch layer of wheat straw mulch should also be used.

**Building the Trellis (see diagram on page 9)**
The drawing with the list of materials explain the details and costs of construction for a 48 foot long, double curtain trellis designed to support two muscadine plants. Ten, 6 ½ feet steel T posts are used to form the main structure. By the fourth year, with increased plant and fruit weight, the four end posts and the four posts supporting the two trunks need re-enforcement posts driven and wired beside each of them.

A number 9 gauge galvanized wire should be passed through drilled holes of the ten original posts and tightened. The spiral anchors, anchor wires, and turnbuckles are used to
maintain good wire tension. The single wire trellis is easier to build, however, yields are greater for the double curtain. If a single wire trellis is used, the same size posts should be spaced 10 feet apart and the plants set at 30 feet or 40 feet apart. For more than one row, allow 12 feet between rows.

**Pruning and Training**

After setting the muscadine plant at the same depth it grew in the pot, select the longest, healthiest shoot and prune off all other shoots. Tie the shoot to a 5 foot stake until the double curtain trellis is built. With the trellis in place, tie a small wire between the two posts, at the plant, and tie the shoot to its mid point. Pinch the shoot when it reaches 5 feet and train the two top, new shoots out to the trellis wires. Once they get there, pinch them again to force two new shoots to run each trellis wire in opposite directions. These will form the four arms coming from the trunk.

Each arm has the potential to grow 8 to 10 feet in length the first season, if all side shoots growing from the trunk and arms are pruned and maintained at three leaves, on a two week schedule. These pruned shoots will become spurs which begin fruiting in the second season. Continue the same pruning schedule for new shoots in the second season until each arm reaches a maximum length of 12 feet. At that time tip prune it as well.

Winter pruning should be done in early February each year by cutting the spurs and shoots back to two buds each. At the same time remove all tendrils wrapped around the arms and spurs. After each pruning, tighten the trellis wires. As spur clusters begin crowding each other in the fifth year, prune out the lower and weakest ones to space them at 10 to 12 inches. Each July, in the third year and following, keep the center of the double curtain open with limited pruning of cross over shoots.

**Yield and Crop Value**

At the Boggs Organic Garden, one eight-year-old Fry plant produced 170 pounds of large sweet organic grapes valued conservatively at $425. Weekly harvests were made and much of the crop was frozen for sampling by some 450 visitors at the October, Sunbelt Ag Expo in Moultrie, Georgia in 2008.

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**Trellis Measurements, Components and Costs**

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