



# Growing Bamboo in Georgia

*by*

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## Ode to Bamboo



A man can sit in a bamboo house under a bamboo roof, on a bamboo chair at a bamboo table, with a bamboo hat on his head and bamboo sandals on his feet. He can at the same time hold in one hand a bamboo bowl, in the other hand bamboo chopsticks and eat bamboo sprouts. When through with his meal, which has been cooked over a bamboo fire, the table may be washed with a bamboo cloth, and he can fan himself with a bamboo fan, take a siesta on a bamboo bed, lying on a bamboo mat with his head resting on a bamboo pillow. His child might be lying in a bamboo cradle, playing with a bamboo toy. On rising he would smoke a bamboo pipe and taking a bamboo pen, write on bamboo paper, or carry his articles in bamboo baskets suspended from a bamboo pole, with a bamboo umbrella over his head. He might then take a walk over a bamboo suspension bridge, drink water from a bamboo ladle, and scrape himself with a bamboo scraper (handkerchief).



Quoted from *A Yankee on the Yangtze*. William Edgar Geil. London: Hodder and Stoughton. 1904. In *Yangtze Patrol*. Kemp Tolley. Annapolis: U.S. Naval Institute Press. 1971. Page 268. Source - <http://www.geocities.com:0080/Vienna/5048/bamboo.html>

## Acknowledgment

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## Foreword

**B**amboo is an essential plant of life for many people around the world. Bamboo is used in many ways, including structural support for housing, rebar in concrete, paneling, floor tiles, musical instruments, fishing poles, hunting, furniture, toys, rafts, bridges, clothing, baskets, scaffolding, medicine, food, and water and soil conservation; and it makes thousands of agro-forestry products. Taiwan alone uses 80,000 tons of bamboo shoots annually, a projected \$50 million industry.

Bamboo is native in Southeast Asia, Africa and the Americas. It is a perennial, woody shrub/tree-like plant that grows from the hottest areas of the tropics and subtropics to snow-covered mountains in temperate zones. Bamboo is a member of the grass family called *Poaceae*, which was called *Gramineae*. Information is a little fuzzy but there are approximately 70 genera making up over 1200 species.

Sadly, only a few books have been written about bamboo. One of the best sources of information is on the internet at **www.bamboo.org**. This booklet is written in an attempt to filter through much of the available information and make a simple, user-friendly information guide on growing bamboo in Georgia. Georgia has a wide variety of soils and temperate zones. Due to huge differences in growing conditions and species of bamboo, however, each selected species should be grown on a small scale and tested before investing large amounts of money.

The following information is written as a general guide. Bamboo varieties selected in this guide are believed to grow well in most areas of Georgia. This is not a comprehensive list and does not mean other varieties won't grow well. Just like other plants, each variety of bamboo has unique characteristics that may require special care. There are always exceptions to the rule and further research of each species is advisable.

## Information

**M**ost of the pictures (except where noted) were taken at the Bamboo Farm and Coastal Gardens in Savannah, Georgia. The Bamboo Farm and Coastal Gardens is open Monday through Saturday. Self-guided tour brochures are available that show many of the bamboo species and other rare plants. More than 150 different species of temperate bamboo grow on this 52 acre farm. Admission is free. For more information, call the following:

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# Growing Bamboo in Georgia

David Linvill, Frank Linton and Michael Hotchkiss

## Characteristics of Bamboo

Bamboo is one of the fastest growing plants on earth. Some varieties can grow over 1 meter/day and grow  $\frac{1}{3}$  faster than the fastest growing tree. Bamboo can be as short as 1 foot or grow to more than 120 feet tall and have a 12 inch diameter.

Bamboo is in the grass family called *Poaceae*. Flowering is very diverse. Some species can flower annually while others flower every 1 to 120 years. Many times the entire grove of some bamboo species will die after flowering, while other species of bamboo don't. Typically, bamboo has three lodicules (scales at the base of the ovary), six stamens, and three stigmas. There are three major types of bamboo consisting of 70 genera and up to 1,200 different species. These are 1) Clumpers (sympodial); 2) Runners (monopodial); and 3) Reed types. This booklet will cover only some of the Clumpers and Runners.

Running bamboo is invasive and many homeowners consider it a weed. This bamboo spreads by underground rhizomes and can spread quickly. Install root barriers to prevent bamboo growth in unwanted areas. Rhizomes can grow 5 feet or more a year and groves can double in size every year. Clumping bamboo are noninvasive and only grow an inch or so every year.



Bamboo Flowers (seeds have been spent)

## Some Bamboo Terms

**Clone:** Plants reproduced vegetatively from a single parent, so all the plants should be genetically the same as the parent plant.

**Culm:** The main stem of the bamboo, also called the cane.

**Culm Sheath:** A type of leaf surrounding the young shoot. It is sometimes used in identifying bamboo species. It protects the shoot when sprouting from the soil.

**Cultivar:** It is usually a mutation of an accepted variety which has a distinguishing feature.

**Internode:** Segment of the cane between the nodes.

**Monopodial:** Temperate bamboo that produces underground rhizomes and produces side buds which grow upward and produce a new culm.



Cane or Culm on left, new shoot middle, week old shoot on right

Photos taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Node:** Jointed area of the stem which often has buds.

**Pachymorphic:** Description of rhizome growth of clumping bamboo. Rhizome: An underground food storing stem used in reproduction. Sympodial rhizomes are tropical clumping types and monopodial are temperate running types.

**Rhizome sheath:** husk-like protective organ attached basally to each rhizome node.

**Shoot:** Development of the bud before it becomes a culm with branches and leaves.

## Keeping Running Bamboo From Spreading

The easiest way to prevent unwanted bamboo growth is to install a root barrier between the bamboo grove and the bamboo-free zone. Dig a trench approximately 36 inches deep. Use rolls of fiberglass or 40 ml polypropylene in the trench. Leave about 2 inches of the barrier above the soil to discourage rhizomes from growing over the top of the barriers.

## Ground Preparation for Groves

Generally, bamboo is planted in the spring. Apply lime and fertilize according to soil test results. Incorporate 6 inches of soil amendments or compost into the soil surface and incorporate everything to a 12-inch depth if possible. A soil pH of 6 - 6.5 is desirable. The University of Georgia (UGA) Cooperative Extension Service Agent has free information on starting a garden, which is essentially what you are doing when starting a bamboo grove.

## Fertilizing Bamboo

**Groves** - Although many bamboo species grow in acid soils with few nutrients, a well-balanced fertilizer including pH adjustments with dolomitic limestone is suggested. Bamboo is in the grass family. Ask the local County Extension Agent about how to take a proper soil test sample. Have the soil sample analyzed for a corn recommendation for an acre basis recommendation or have the soil analysis done for heavy feeders in the vegetable garden category. The results will be given on a thousand square

foot area. Either of these two analyses should give approximately the same results. Do not fertilize dug plants the first year.

**Pot Culture** - Bamboo are heavy feeders. Follow the directions on water soluble fertilizers like Peters or Miracle Grow and use the high dosage range. Slow release fertilizers for pots may cost more, but are time savers. Remember, bamboo are heavy feeders.

## Watering Bamboo

Although many bamboo varieties are drought tolerant, watering for establishment is essential. Water bamboo one to two times weekly (depending on soil type) for the first 3 to 6 months until fully established. Applying a 2-inch deep mulch layer will help tremendously. In general, bamboo needs about 1 inch of water every 7-10 days, depending on conditions. The edges of the leaves will roll up when the bamboo needs watering.

## Planting Bamboo

Always plant the bamboo rootball at the same depth (soil-line) it was grown. Commonly, running bamboo rootballs are planted approximately 15 feet apart in a grid system. Dig the hole twice as wide as the rootball and then fill back in when the rootball is placed in the hole. Pack the soil tightly and water heavily to get rid of any air spaces.

## Pruning

There are no hard and fast rules about pruning. Some people prefer a dense-looking grove while others remove canes to have a more open appearance. Always remove dead canes. A general rule of thumb is to remove canes that are 5-7 years old. Use a good pair of shears to cleanly remove the cane at the soil line.

## Bamboo as a Food

Bamboo is best eaten fresh, but can be canned or frozen. Fresh bamboo has a crisp, sweet flavor. It is used as an extender, taking on the flavor of the food it is being cooked with. Bamboo has the same nutritional value as onions and is a good source of fiber. An established grove of bamboo will produce 10-20

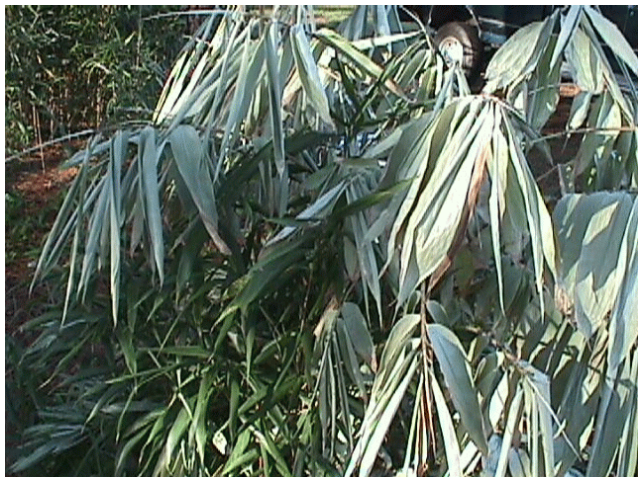


thousand pounds of shoots annually, depending on the variety. Some fresh bamboo shoots can be eaten as soon as they are harvested, others have to be boiled or sit in water to remove an acrid taste.

## Cold Tolerant Bamboo

If area temperatures get below 10 degrees Fahrenheit, grow cold hardy bamboo species. Go to the ABS website for cold hard varieties. See web site

<http://www.bamboo.org/abs/SpeciesSourceList/Pages/ColdHardyBamboos.html>



Typical cold injury symptoms on bamboo: dry, silvery-type color. Picture taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

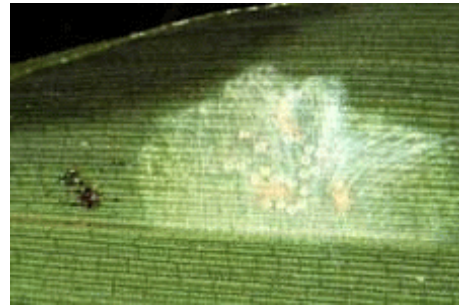
## Falling Leaves

Bamboo is an evergreen but there is a considerable amount of leaf drop in the spring. There will be a combination of yellow leaves, unfurled leaves and leaf drop as new leaves develop every spring. The leaves on the ground of the grove can remain for mulch and fertilizer.

## Insects and Disease

Bamboo is very resistant to insects and diseases. Some varieties of bamboo are susceptible to scale red spider mites and rust. See your extension agent for control measures. Many bamboo growers believe that mites are not a problem until they are brought into the grove on new plants. It is highly recommended that new plants be put into quarantine and sprayed with a miti-

cide, and inspected closely before setting outside.



Bamboo spider mite colony. Eggs, webbing, mites



Mite injury on bamboo leaf



Rust on Bamboo

Mite pictures from Oregon State University Extension Urban Entomology website



Scale on bamboo



Paper wasp nest in bamboo

## Propagating Clumping Bamboo (Bambusa Multiplex Cultivars and Species)

There are several ways to propagate both types of bamboos. However, the clumping type lends itself to an easier though more time consuming method than the running type. Seeding, single node cuttings, trench layering, and clump separation are just a few techniques.

**Seeding** - This method is by far the easiest and most prolific way to obtain new plants. Seed is not readily available and must be guaranteed for one year if shipped from outside the United States. The flowering cycle in bamboo can be from one to 60 plus years. As a rule, bamboo does not set many viable seed even though the whole grove may flower gregariously. Storage life is short lived under the best of conditions. If one is fortunate enough to obtain seed, they should be sown as soon as possible. In a greenhouse starting bed, use any good starting medium which contains peat moss and vermiculite. Set the seeds deep enough to be well covered. Put about 6-8 seeds per hole and place holes approximately 4 inches apart. Seedlings should be shaded for the first summer. Seedlings should germinate in about 3 weeks.

**Culm cuttings** - Use  $\frac{1}{2}$  to  $\frac{3}{4}$  diameter culms of *Bambusa multiplex* that are 2 to 3 years old. Younger culms are usually located on the perimeter of the clumps. Cut the culm flat, as close to ground level as possible. Remove the top portion down to the desired diameter to be used for propagation. Cut the cane about 1or  $1\frac{1}{4}$

inches above the node. Drop below the node approximately 4 to  $4\frac{1}{2}$  inches and make a cut. Repeat the cutting of the cane until reaching the maximum diameter for the propagation stock. Remove the very small branches and reduce 3 to 5 of the very largest branches to the second node from the culm. These cuttings can be placed flat in the starting medium or set at a 20 degree angle. In both cases the medium should cover the node completely. The branches do not have to be completely covered. New growth should appear in about 6 weeks.

**Trench layering** - Use the lower 20 or so nodes on 1- to 2-year-old, strong culms located on the outer edge of the grove. Remove all of the small branches and shorten 3 to 5 of the main branches to the second node. Cut the culm through about  $\frac{2}{3}$  of its diameter, just above the soil line. Dig a trench approximately 6 inches deep and place the lower 20 nodes of the stripped canes into the trench. Cut the top off leaving only one full branch with leaves above the soil line. Cover the lower 20 internodes with soil. In about 3 months, shoots should appear at each node. This can be done from late March into early June.

**Dividing** - Remove the plant from the pot. The pot may need to be cut to get the plant out. Inspect the plant and decide where to make the cut into the rhizomes that will do the least damage. The soil from the rhizomes may need to be washed off to make this decision. Using a stiff spade or an old saw, make the cut and repot. If the plant is heavily rootbound, cut the plant in half or make three or four sections depending on the size of the plant. It is better to have two plants that live than three that do not. If the rootball is open, use hand clippers and cut where the neck of the younger rhizome joins with the

mother rhizome. When taking multiple plants, be sure to keep them shaded and moist; pot as soon as possible and always water in well.

## Propagating Running Bamboo

**Rhizome Cuttings** - Select a plant on the outer perimeter of a grove. Loosen the soil around the plant to determine the direction the rhizome is growing. After determining the direction, carefully uncover as much of the rhizome as possible. Use care when exposing the rhizome so as not to damage any of the viable buds. Two to three year old material should be used. The rhizome, buds and roots should be bright and vigorous. If the rhizome is dark or spotted, it is probably over three years old. Sever the rhizome, taking care to leave a sufficient amount intact to continue to support the mother plant. Using a stiff spade, start at the severed end and lift from under and along the sides. Sometimes the rhizome can be removed by lifting and pulling by hand from the severed end. After removal, keep the material moist and out of the wind and sun.

For bench culture, cut the rhizome into 12- to 14-inch lengths with two or more viable buds. Set in trenches and cover with 2 to 4 inches of medium. Firm the soil over the propagated plantings, water in well and keep moist and warm. Single node cuttings can be done in pots. Shoots should begin to emerge in about four to six weeks.

**Two-Year Nursery Culture** - Ideally, a nursery should be started with rhizomes from 2 to 3 year-old plantings. This is not always possible and sometimes older rhizomes must be used to get started. However, a satisfactory nursery can be developed by consolidating the few plants and rhizomes that do develop the first two years from this planting and multiplying these with each 2-year cycle of production. A two-year program is necessary as one season's growth does not produce enough for satisfactory increase in plants or rhizomes. Cut the rhizomes into 14- to 16-inch lengths (make sure there are several viable nodes on each piece of rhizome) and place them end to end in parallel rows in a furrow 5 to 6 inches deep on 3-foot centers. This spacing allows for excessive competition and ease of removal by tractor and plow. For an acre planting, 29,000 feet of rhizomes are required for these specifications.

Under average conditions, in two seasons, this planting will produce about one plant unit (with one or more culms) per foot of nursery row, or approximately 15,000 plants/acre. In addition, 50,000 to 75,000 feet of rhizomes can be produced for replanting or sale.

It is unnecessary to apply inorganic fertilizers at planting, as the quantity of nutrients taken from the soil by the rhizomes is negligible. (The rhizomes will be living on stored food). If the soil is subject to leaching, the fertilizers would probably be lost before the plants could benefit from them. Incorporating manure into the soil before planting will provide a gradual supply of nutrients. About three months after planting, the rhizomes will develop roots and fertilizer should be applied at this time. Thereafter scheduled applications should be made in February, June and September at the rate 1500 lbs./acre. Bamboo is a heavy feeder. Any fertilizer formulated for turf will work (10-10-10 with micro nutrients works well and also 28-8-8). Weed control is a must the first season but may not be possible the second season due to the emergence of new shoots.

Harvest the plants and rhizomes after two growing seasons in late February - early March depending on climatic conditions in the area. One pass is made with a plow along one side of the row. Each row is cleared of all plants and rhizomes before proceeding to the next row. The material is moved to a shaded area and kept moist. Rhizomes for the next planting are removed from the plants, cut to length, and covered with a moist medium or heeled in. Be sure to leave enough rhizome to support the original plant. The plants and rhizomes can be potted or heeled in for some weeks as long as they are kept moist and covered with proper medium. Removed plants that are to be potted or sold should have enough rhizome to support the plant and have at least two viable buds attached.

The size of the culm produced depends on the amount of food stored in the rhizome and root system. A rhizome 12 to 14 inches in length will produce at least one culm averaging 2 feet in height the first season. The second season it can produce shoots that will attain heights of 4 to 10 feet. The height of the culm and spread of rhizomes will depend on species, soil type, fertilization, and climatic conditions. Larger species may take 6 to 10 years to develop a



rhizome system to put up shoots of maximum size.

## Digging Single Plants

**Single Plant Removal** - S. Sato, an expert in Moso culture, has said that a bamboo planted by 1 man takes 10 years to make a grove. A large bamboo plant requiring 10 men to plant makes a grove in 1 year. So, bigger is better but more expensive and labor intensive.

Generally, a plant with about 2½ feet of rhizome works well for transplanting of large propagules. After being severed and lifted from the soil, the rhizome is the sole support of the plant until the root system becomes reestablished. In all cases, enough rhizome needs to be lifted with the plant to carry it through to the time of reestablishment. Here again, select 2 to 3 year-old plants from the perimeter of the grove or planting. The digging will be easier and most of the younger plants will be found there. Clear the area around the plant to about a 2½-foot diameter. Generally, the rhizome grows in the direction of the branching. Using a heavy steel spade or other heavy digging instrument, cut all of the rhizome around the plant. Once the direction is determined of the growing rhizome, the rootball can be dug in a rectangular form. Usually but not in all cases, all of the rhizomes will be found within 6 to 18 inches of the soil surface. It is best to sever the growing end of the rhizome longer than the incoming end, approximately 1½ feet on the distal or outgoing side and 1 foot on the incoming side. When two plants are growing within 6 inches or so from each other, they should be dug as one plant. Separating the two sometimes kills both plants unless one is quite small.

When the root ball is loose in the hole, use a shovel or other levering device to lift the plant from the hole. It is not wise to lift the bamboo by its culm, as it may damage or break where the rhizome and culm are joined. Keep as much soil attached to the root ball as possible to prevent drying of roots and rhizome. When plants are dug at the proper time, branches should not have to be removed. However, if the plant begins to curl its leaves upward, that is a sign that its equilibrium of absorption and transpiration of moisture is not being met and some branches must be removed (usually to 3 leaf branches).

Small plants dug for nursery planting usually do not need to have branches removed, although these same plants do not need more than four leafy branches. If branches are removed, don't break them off at the culm. Use hand or lopping shears to cut them to prevent injury to the culm. When a culm is cut, it dies from the point of cut to the first node below it. The cane below the node will not die.

Ideally there should be enough soil on the root ball to cover the feeder roots. This is almost an impossibility when digging by hand. For this reason the plants should be moved to shade and kept moist if possible, until potted or set out in a nursery. They can be kept heeled in and in a moist medium for some time. If the plants are to be set out shortly after being dug, being kept moist is not of great importance.

The planting hole should be about one third larger than the root ball, and slightly deeper than the depth at which it was growing, two or three inches below its original depth. Bamboo always show the ground line clearly, the above ground part is green and the below ground part is yellow. Plant to cover the yellow part. Some bamboo will grow adventitious roots from the culm which will help the plant recover its growing vigor. If soil has been lost from the rootball and roots, or rhizomes are exposed, or if the rootball is planted in dry soils, a method known as "water culture" should be used at planting. Simply put water in the planting hole, add soil and make mud. Place the plant in the hole, add more soil and water until the hole is filled. As with all plantings, it is important to get the soil packed firmly around the root ball to remove any air pockets which could kill true roots and rhizome. Always water in well!

Fertilizer is not important for the first three months, some say for the first year. However, organic fertilizer mixed into the soil at planting will help increase the vigor of the root system. Inorganic fertilizers can be applied in June and September of the first year and in February, June and September the second year. Any formula used for lawn grasses in the area will work well. Bamboo is a heavy feeder needing approximately 3 lbs./100 square feet watered in. Three to five inches of mulch 5 to 6 feet in diameter is a great help in preventing water loss, soil temperature control, and preventing weed growth.

Bamboo can be dug at any time of the year, but the risk of the plants dying is much greater when plants are producing new shoots or during summer months. The best time to transplant is just before the emergence of the new shoots. In Georgia and most of the southeast, transplant time will be February and early March in the warmer areas; about the middle of March for the colder areas.

Bamboo requires about 1 inch to 1½ inch of water per week on well drained soils. It should receive water in half-inch increments every few days for the first three or four months. In drought conditions, it will need watering until it has established a self-sustaining root system.

### Georgia Recommended Clumping Bamboo

These are just a few varietal recommendations. There are many more varieties from which to choose. Unless noted, the following bamboo do not require full sun.

*Bambusa dolichomerithalla* - 'Green stripestem'  
*Bambusa multiplex* - Hedge bamboo

*Bambusa multiplex* cv 'Alphonse Karr'  
*Bambusa multiplex* cv 'Fernleaf'  
*Bambusa multiplex* cv 'Fernleaf stripestem'  
*Bambusa multiplex* cv 'Golden Goddess'  
*Bambusa multiplex* ssp 'Riviereorum' - Chinese Goddess  
*Bambusa multiplex* cv 'Silverstripe'  
*Bambusa multiplex* cv 'Tiny Fern'  
*Bambusa multiplex* cv 'Willowly'

### Georgia Recommended Running Bamboo

These are just a few varietal recommendations. There are many more varieties from which to choose. Most of these bamboo will take full sun but look best with some shade.

*Chimonobambusa tumidissinoda* - prefers 60% shade  
*Phyllostachys aurea holochrysa* - 'Golden Golden'  
*Phyllostachys bambusoides* - 'Giant Japanese Timber Bamboo,' Madake  
*Phyllostachys nigra* - Black Bamboo  
*Phyllostachys nigra* 'Henon'  
*Phyllostachys rubromarginata* - Red Margin Bamboo  
*Phyllostachys vivax* - 'Vivers Bamboo'  
*Pseudosasa japonica* - 'Arrow Bamboo'  
*Sasa veitchii* 'Kuma-Zasa' (prefers 60% shade)  
*Sinobambusa tootsik albostrata* (full sun or 60% shade)

# BAMBOO

**Scientific Name** - *Bambusa dolichomerithalla* - cv 'Green stripstem'

**Common Name** -

**Type** - Clumping

**Minimum Temperature** - 15° F

**Maximum Height** - 35 feet

**Maximum Diameter** - 2 inches

**Use** - Ornamental, utilitarian, agricultural

**Comments** - Yellow-green culms striped with dark green



Pictures provided by Frank Linton



**Scientific Name** - *Bambusa multiplex*

**Common Name** - Hedge Bamboo

**Type** - Clumping

**Minimum Temperature** - 12° F

**Maximum Height** - 25 feet

**Maximum Diameter** - 1½ inches

**Use** - Ornamental, windbreaks, utilitarian, agricultural tools, paper pulp

**Comments** - Node has large number of branches down the culm base, making a dense hedge. Hardest of the *Bambusa*.



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Bambusa multiplex* cv 'Alphonse Karr'

**Common Name** - Alphonse Karr

**Type** - Clumping

**Minimum Temperature** - 12° F

**Maximum Height** - 25 feet

**Maximum Diameter** - 1½ inches

**Use** - Ornamental

**Comments** - Each node bears many branches which makes a dense hedge. Culms and branches are bright yellow with irregular longitudinal, narrow, dark green stripes.



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia



**Scientific Name** - *Bambusa multiplex* cv 'Fernleaf'

**Common Name** - Fernleaf

**Type** - Clumping

**Minimum Temperature** - 12° F

**Maximum Height** - 20 feet

**Maximum Diameter** - ½ inch

**Use** - Ornamental

**Comments** - Small size, 10-20 closed spaced, two ranked leaves, often culms revert to the larger leaves

Picture provided by Frank Linton



**Scientific Name** - *Bambusa multiplex* cv 'Fernleaf stripestem'

**Common Name** - Fernleaf stripestem

**Type** - Clumping

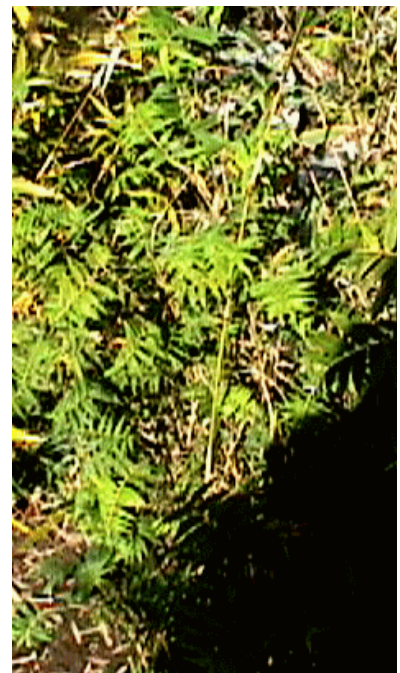
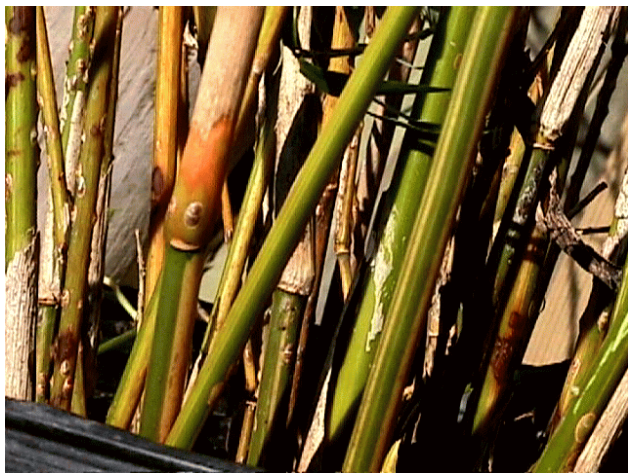
**Minimum Temperature** - 12° F

**Maximum Height** - 12 feet

**Maximum Diameter** - ½ inch

**Use** -

**Comments** - Similar to 'Fernleaf' except culms are reddish or yellowish and striped with green.



Pictures provided by Frank Linton

**Scientific Name** - *Bambusa multiplex* cv 'Golden Goddess'

**Common Name** - Golden Goddess

**Type** - Clumping

**Minimum Temperature** - 12° F

**Maximum Height** - 10 feet

**Maximum Diameter** - ½ inch

**Use** - Ornamental

**Comments** - Dwarf form and similar to Fernleaf but larger leaves. Culms tend to be yellowish, sensitive to cold, good inside plant

Picture provided by Frank Linton



**Scientific Name** - *Bambusa multiplex* ssp 'Riviereorum'

**Common Name** - Chinese Goddess

**Type** - Clumping

**Minimum Temperature** - 12° F

**Maximum Height** - 6 feet

**Maximum Diameter** - ¼ inch

**Use** - Ornamental

**Comments** - Solid culms, tiny leaves

Picture taken at Bamboo Farm and Coastal Gardens,  
Savannah, Georgia





**Scientific Name** - *Bambusa multiplex* 'Silverstripe'  
**Common Name** - Silverstripe  
**Type** - Clumping  
**Minimum Temperature** - 12° F  
**Maximum Height** - 25 feet  
**Maximum Diameter** - 1¼ inches  
**Use** - Ornamental, utilitarian such as tools, fences, poles, etc.  
**Comments** - Some leaves and culms may have white stripes.



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Bambusa multiplex* cv 'Tiny Fern'  
**Common Name** - Tiny Fern  
**Type** - Clumping  
**Minimum Temperature** - 12° F  
**Maximum Height** - 3 feet  
**Maximum Diameter** - 1/8 inch  
**Use** - Ornamental  
**Comments** - A dwarf form with leaves often less than 1 inch long



Pictures provided by Frank Linton





**Scientific Name** - *Bambusa multiplex* cv 'Willow'

**Common Name** - Willowy

**Type** - Clumping

**Minimum Temperature** - 12° F

**Maximum Height** - 20 feet

**Maximum Diameter** -  $\frac{3}{4}$  inch

**Use** - Ornamental

**Comments** - Culms droop or arch, has small narrow leaves



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Chimonobambusa tumidissinoda*

**Common Name** -

**Type** - Running

**Minimum Temperature** - 10° F

**Maximum Height** - 20 feet

**Maximum Diameter** - 1  $\frac{1}{4}$  inches

**Use** - Crafts, and shoots for food

**Comments** - Rare Chinese bamboo with inflated culm nodes, prized for dried shoots and walking sticks.

**Note:** Needs 60% shade



Photos provided by Frank Linton



**Scientific Name** - *Phyllostachys aurea holochrysa*

**Common Name** - Golden Golden

**Type** - Running

**Minimum Temperature** - 0° F

**Maximum Height** - 27 feet

**Maximum Diameter** - 1<sup>3</sup>/<sub>4</sub> inches

**Use** - Crafts, utilitarian, shoots for food, ornamental

**Comments** - Culms stay green to gold and then switch to yellow and golden orange



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Phyllostachys bambusoides*

**Common Name** - Giant Japanese Timber Bamboo, Madake

**Type** - Running

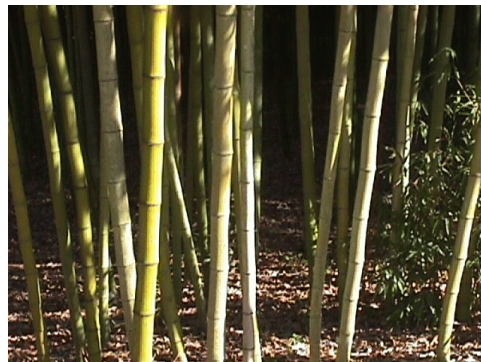
**Minimum Temperature** - 5° F

**Maximum Height** - 72 feet

**Maximum Diameter** - 6 inches

**Use** - Medicine, shoots for food, buildings, crafts

**Comments** - Most used bamboo in Japan



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

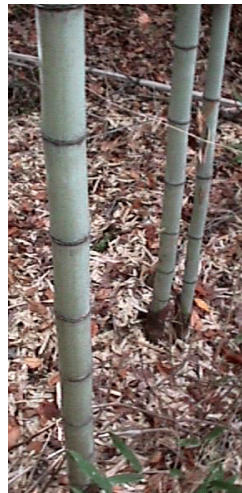


**Scientific Name** - *Phyllostachys nigra*  
**Common Name** - Black Bamboo  
**Type** - Running  
**Minimum Temperature** - 0° F  
**Maximum Height** - 30 feet  
**Maximum Diameter** - 2 inches  
**Use** - Ornamental, medicine, shoots for food, building materials  
**Comments** - Culms turn black after 6 months



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Phyllostachys nigra* 'Henon'  
**Common Name** - Henon  
**Type** - Running  
**Minimum Temperature** - 0° F  
**Maximum Height** - 65 feet  
**Maximum Diameter** - 4½ inches  
**Use** - Building houses, structures, bridges, shoots for food, crafts, medicine, utilitarian and agricultural tools.  
**Comments** - Culms are green and larger than Black Bamboo. Distinctive culms are rough and whitish green.



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia



**Scientific Name** - *Phyllostachys rubromarginata*

**Common Name** - Red Margin Bamboo

**Type** - Running

**Minimum Temperature** - -5° F

**Maximum Height** - 55 feet

**Maximum Diameter** - 2<sup>3</sup>/<sub>4</sub> inches

**Use** - Crafts, building houses, structures, bridges, shoots for food, utilitarian, textiles

**Comments** - Good quality wood, edible shoots, good cold and dry wind tolerance, good culm production.



Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Phyllostachys vivax*

**Common Name** - Vivers Bamboo

**Type** - Running

**Minimum Temperature** - -5° F

**Maximum Height** - 70 feet

**Maximum Diameter** - 5 inches

**Use** - Building houses, structures, bridges, shoots for food, crafts, medicine, utilitarian and agricultural tools, textiles.

**Comments** - Resembles *P. bambusoides* except thinner wall culms and has a powdery white band beneath each node at sheath fall. Gray-green when mature.



Picture taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia

**Scientific Name** - *Pseudosasa japonica*

**Common Name** - Arrow Bamboo

**Type** - Running

**Minimum Temperature** - 0° F

**Maximum Height** - 18 feet

**Maximum Diameter** -  $\frac{3}{4}$  inch

**Use** - Make arrows, used for medium size hedges

**Comments** - Culms are erect with large leaves (up to 1 foot long by 1.5 inches wide), less invasive than most running bamboos, does well in tubs and pots.



Arrow bamboo in bloom, 12-12-2000

Pictures taken at Bamboo Farm and Coastal Gardens, Savannah, Georgia



**Scientific Name** - *Sasa veitchii*

**Common Name** - Kuma-Zasa

**Type** - Running

**Minimum Temp** - 0° F

**Maximum Height** - 5 feet

**Maximum Diameter** - ¼ inch

**Use** -

**Comments** - Large dark green leaves turn white along margins.

**Note:** Needs heavy partial shade.

Picture provided by Frank Linton



**Scientific Name** - *Sinobambusa tootsik albostriata*

**Common Name** -

**Type** - Running

**Minimum Temperature** - 10° F

**Maximum Height** - 30 feet

**Maximum Diameter** - 1½ inches

**Use** - Can be trimmed into different shapes

**Comments** - Yellowish white striped leaves



Pictures provided by Frank Linton

## Bamboo Farm and Coastal Gardens History

Cornell Dayton of Savannah, Georgia, contacted Dr. David Fairchild, US Department of Agriculture (USDA) Section of Seed and Plant Introduction, in 1915, telling him of a large grove of bamboo growing 12 miles south of Savannah. When Fairchild failed to respond, Dayton went to Washington, DC, with several bamboo shoots. He entered Fairchild's office, laid the bamboo on his desk and told Fairchild that he was the man writing all the letters. Dayton informed Fairchild that unless action was taken, the property owner was going to cut down all the bamboo.

Fairchild, remembering that he had set aside the letters, telegraphed Barbour Lathrop, his mentor, and asked if he would like to own a grove of bamboo on the Ogeechee River. Lathrop replied, "No, but I will buy it and give it to you." The owner wanted such an extravagant price that the parties haggled over it from 1915 until late 1918. The final price was approximately \$5,430 for the original 46 acres. The site became a US Department of Agriculture Research Station.

Plants from all over the world started pouring in to the Bamboo Farm research station, known as "the station." The purpose of the station was to introduce plants of all kinds to see if they would grow well in the Southeast. Lathrop had supplied bamboo to an introduction station located in Brooksville, FL, in 1912. Because the site had very poor soil, the bamboo did not grow well. It was removed and replanted at the Savannah site in the 1920s.

The Savannah station has been the site of several major experiments, such as developing rubber, paper, and cures for cancer. An experiment using goldenrod to develop an alternative source of rubber was started at the station in 1939. Harvey Firestone and Henry Ford initiated this project. Thomas Edison had realized that this nation would need to produce its own rubber and started to experiment in Fort Meyers, FL. Firestone and Ford continued the Edison project at the station.

Paper-making experiments took place in the early 1940s, using bamboo from the station. The Hearty Foundation did the pulping in Savannah. Bamboo makes the world's finest tissue and

writing paper. This experiment ended in 1965 when the US Congress stopped funding the project. The Champion and Scott paper companies were involved in this project.

Yucca was screened for use as a source of fiber. Cephalotaxus, yucca and several bamboo varieties were screened for properties that might cure cancer in the '60s. During the late '60s and early '70s, much of the bamboo was harvested for use by the US Armed Services to recreate Viet Nam villages to train soldiers for combat. Water chestnut farming was also explored as a possibly viable crop in the United States, but labor costs were too prohibitive for it to be successful. Kanaf and Yucca were crops studied at the Bamboo Farm as an alternative source of paper and roofing material.

The USDA began to phase out the research station in 1975. It was considered too small and too far from Savannah, and the USDA had difficulty finding scientists to staff it. The station was put into caretaker status until 1983, when it was donated to the University of Georgia.

Today, the Bamboo Farm and Coastal Gardens is a research/education center concentrating on urban ornamental horticulture. There are approximately 140 bamboo species at the Farm, the largest collection of bamboo open to the public in the United States. Approximately 20 percent of the world's temperate bamboo genetic stock is located there. There are about 17 USDA sponsored experiments now being conducted on the station. The Southeastern Palm Society has started a collection of palms and is examining cold hardy tolerance. The Bamboo Farm also sponsors a collection of daylilies, crape myrtles, hollies, a xeriscape demonstration garden and Georgia Gold Medal plants, as well as many rare and one-of-a-kind species.

## Bamboo Farm and Coastal Gardens Building Inventory and History

### Main Office (Old Superintendent's Cottage)

This Craftsman-style cottage was the first building erected after the United States Department of Agriculture acquired the Bamboo Farm in 1918 and, for the 60 years the USDA occupied the site, it served as a private residence for the Station Superintendent and his family. Several

alterations were made to the original structure during this period, including the addition of a north wing containing a kitchen and back porch and the construction of a sleeping porch, later enclosed, on the southeastern side facade. After the station was deeded to the University of Georgia College of Environmental and Agricultural Sciences in 1983, the front porch, originally an open structure, was enclosed to create a sun room. Today, the Superintendent's Cottage serves as the main office for the Bamboo Farm and Coastal Gardens.

### **Bethel Burton Conference Center (Bamboo Museum)**

This building, erected in 1929, originally housed the USDA collection of bamboo artifacts. Originally constructed in a Chinese architectural style as a single story structure with a curving tile roof, the building has undergone extensive changes over the past 70 years, including the addition of a second story with offices for USDA scientists in the 1950s. In the early 1990s, a local community club helped to fund the removal of the dilapidated second story office area and the construction of a conference room and demonstration kitchen.

### **Packing Shed**

The Packing Shed, completed in 1919, was the second building erected on this property by the USDA. During the early years, the Packing Shed served as a workshop, office, storage facility and livery stable. Between 1919 and 1979, thousands of seed and bamboo plants were packaged for worldwide distribution in this building, earning it the unofficial title of "Packing Shed." Throughout the years, the Packing Shed was modified as the need arose. The two most notable alterations include the addition of a lean-to on the eastern side of the structure (1928) and the construction of a laboratory for alligator weed research in the loft on the northern side of the building (1970).

Today, the Packing Shed houses a classroom for the Roots and Shoots educational program, a joint effort of the Cooperative Extension Service, the Georgia Master Gardeners and the Bamboo Farm. The northern half of the building still functions as a workshop and the loft has been remodeled into an apartment for visiting researchers.

### **Office (Old Station Superintendent's Office)**

Originally constructed in 1936 with excess funding from contributions to the Bamboo Museum, this building served as the Station Superintendent's Office for more than 40 years. Perhaps the most interesting feature of this building is its construction. Built of hollow ceramic tiles and stucco, the Station Superintendent's Office demonstrates a type of construction is rarely seen today. This office functioned as a meeting room for several years after the University of Georgia was deeded the station in 1983. Since 1995, the Station Superintendent's Office has housed a gift shop that is opened only for special events at the Bamboo Farm and Coastal Gardens. This building has been converted to office space once again and no longer houses a gift shop.

### **Lab and Greenhouse II (Rubber Office and Greenhouse)**

During the 1940s, the USDA, in cooperation with industrialists such as Henry Ford, began researching the latex content of various plants in hopes of identifying native latex sources suitable for use in the production of rubber. Fields of goldenrod were grown at the Bamboo Farm while dog fennel was cultivated at the Ford Plantation in nearby Richmond Hill, Georgia. In 1946, the Rubber Office and its adjacent greenhouse were constructed to facilitate this research. Ultimately, neither plant produced latex in high enough quantities to be industrially useful, and the research was discontinued upon the development of synthetic rubber in 1955. The Rubber Lab still functions as an office and laboratory for research personnel at the Bamboo Farm and Coastal Gardens.

### **Headhouse and Greenhouse I**

Between 1965 and 1979, thousands of plants slated for worldwide distribution were propagated in this greenhouse. A number of research projects, including experiments with various growing media, watering treatments, fertilizers and temperature regimes, were also conducted here by USDA scientists. Today, the greenhouse still functions as a research greenhouse for University of Georgia scientists. Recent studies conducted in this greenhouse include calibration

trials for plant growth regulators and screening for nematode resistance in melon germplasm.

### Quonset Greenhouse

This greenhouse, constructed in the 1960s, is the newest and best of the three greenhouses at the Bamboo Farm. The greenhouse originally housed the hibiscus collection of the first UGA superintendent, Mr. Charles Bruce. With the inception of the Roots and Shoots educational program in 1995, the greenhouse became the site of the laboratory session. Since the opening of the new classroom in 1999, the Quonset greenhouse has remained unused as a laboratory.

### Drying Shed

Built during the 1930s, the design of this building is typical of farm structures built during the first half of the twentieth century. The Drying Shed was used by the USDA for equipment and fertilizer storage and, presumably, for curing bamboo poles, from which it obtained its name. Over the years, several alterations have been made to the Drying Shed, including the addition of a photo lab that juts from the west side of the building. Although the photo lab is no longer used, the main building still provides storage space for equipment and fertilizer.

### Pavilion

Partially funded by former Chatham County Extension Agent Carolyn Bryant, this open air picnic area serves as a location for various types of outdoor events and programming. Approximately 175 individuals can be accommodated at the covered picnic area, with additional seating possible on the dock overhanging the pond.

### Equipment Storage Shed

Of an indeterminate age, this building houses mowers, rakes, hoes, and other grounds care equipment.

### Wash House

Possibly constructed in the 1950s, this building houses a washing machine and dryer, from which it obtains its name. These appliances are used to wash work rags, bathroom towels, tablecloths and similar items. Although there is no environmental control, the building has both electricity and water and may have potential as

office space. In addition to the laundry appliances, the building currently houses refrigerators/freezers, ice chests, and signs.

## SE Chapter of the American Bamboo Society (ABS)

The SE Chapter of the American Bamboo Society (ABS) has members throughout the southeast, publishes a quarterly newsletter and has numerous meetings each year. The chapter was founded in 1990 by Adam and Sue Turtle and has members from Florida to Virginia, Ohio and Alabama. The organization is a diverse group and includes hobbyists, nurseries, landscape professionals, public gardens, zoos, and crafts people.

The quarterly newsletter includes chapter news, original articles, and reprinted articles from other publications. SE chapter members who join the ABS also receive six newsletters per year, a journal with original research papers, and the opportunity to attend a national bamboo meeting. The chapter has two to six meetings each year. Meeting activities are varied and include talks and demonstrations on bamboo culture and use, as well as tours of bamboo nurseries, bamboo collections, and private gardens.

There are also work days at zoos, botanical gardens and public groves where members groom groves and share knowledge. The chapter has a lending library that contains a large collection of bamboo literature including many out of print publications. Contact any ABS member or Mike Hotchkiss for membership.

## Sources of Information

American Bamboo Society web site:

**<http://www.bamboo.org/abs/>**

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