Variety Trials

Evaluation of Commercial Banana Cultivars in Southern Georgia for Ornamental and Nursery Production

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Summary. **Bananas (*Musa* spp.) are a popular ornamental plant in the southern United States; however, only a few cultivars, such as Lady's Finger and Orinoco, are grown in Georgia. Thirty-three primarily commercial cultivars of bananas were grown for 2 years near Savannah, Georgia, to determine their suitability for ornamental and nursery production, and for 3 years for fruit observations. Most plants were grown from tissue culture plugs. They were given rates of fertilization used for commercial banana fruit production. Most cultivars produced 10 to 14 leaves and grew to heights of 1.5 to 2.0 m. Some displayed desirable ornamental characteristics such as pink-tinted pseudostems, colorful flowers, and large graceful leaves. Some of the most attractive tall-growing cultivars were Belle, Ice Cream, Kandarian, Manzano, Saba, and 1780. Some of the most attractive medium-height cultivars were Dwarf Namwah, Dwarf Orinoco, Goldfinger, Raja Puri, and Super Plantain. In the short category, the cultivars Dwarf Nino, Gran Nain, Kru, and Sum X Cross were among the most attractive ornamentals. Many of the cultivars flowered and began producing fruit in late summer, although only 'Raja Puri', 'Sweetheart', and '1780' produced palatable fruit before frost in November. Cultivars were also rated for their ability to produce suckers that could be used for nursery production. In year 2, 'Manzano' and '1780' produced more than six high-quality suckers for nursery propagation. Potential income for these cultivars was over $60 per plant. For the planting as a whole, sales of suckers at a field day averaged $7 per plant in year 2, and $17 per plant in year 3.**

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Bananas are often grown for ornamental purposes in the warmer areas of the southern United States. Bananas are considered one of the most beautiful plants to lend a subtropical ambience to gardens of the region (Sauls, 2005). Bananas have been recognized in other parts of the world for human food (flowers and fruit), beer production, livestock food, shade, roofing thatch, and as eco-friendly cooking wraps and plates (Marangu, 1985). In the southern and coastal districts of Georgia, occasionally, mature fruit is produced after mild winters (mid 20s °F) or normal winters (about 20 °F) if the plants are grown in protected locations with a microclimate. Typically, in the climate of southern Georgia, the pseudostem must survive the winter for fruit production. However, bananas are often killed to near ground level by winter freezes of 13 °F to 19 °F (Robinson, 1996; Stover and Simmonds, 1987), thus fruit production is only an occasional bonus in the home garden. However, flower production in the fall is common and adds to the attractiveness of the plant.

Only limited information is available on the ornamental and cold hardiness characteristics of fruiting bananas. 'Orinoco' and 'Raja Puri' are reported to be two of the most cold-hardy cultivars in southern Texas (Richardson, 2003). 'Dwarf Cavendish' and 'Williams' are recommended in southern Florida (Crane et al., 2005). 'Cavendish', 'Lady's Finger', and 'Apple' ('Manzano') are recommended for central Florida (Watkins, 2006). 'Raja Puri', 'Mysore', 'Praying Hands', 'Saba', and 'Red Iholene' have been recommended for Georgia (LeVert, 2005). Nursery propagation using suckers is a popular and practical method of production. These can be cut from the base of the mother plant and sold bare root or potted and sold for $10 to $20 after a short period of establishment.

The objective of this study was to produce recommendations on banana cultivars for gardeners and nurseries in southern Georgia. In this study, we grew plants under

Units

To convert U.S. to SI, multiply by	U.S. unit	SI unit	To convert SI to U.S., multiply by
0.3048	ft	m	3.2808
3.7854	gal	L	0.2642
2.54	inch(es)	cm	0.3937
0.4536	lb	kg	2.2046
28.3495	oz	g	0.0353
(°F – 32) ÷ 1.8	°F	°C	(1.8 × °C) + 32

replicated and uniform conditions to determine the height, pseudostem diameter, leaf dimensions, plant coloration, and sucker production during the first and second years after planting. A combination of these factors was used to formulate recommended cultivars for trial in home garden and nursery production. Observations on edible fruit production during the first 3 years were also noted.

Materials and methods

CULTURAL TECHNIQUES. The experiment was conducted at the University of Georgia Bamboo Farm Coastal Gardens southwest of Savannah (latitude 32.1°N, elevation 14 m, U.S. Department of Agriculture hardiness zone 8b). The average temperature ranges from 76.9 °F during the summer to 55.7 °F during the winter, with a daily average of 66 °F. The frost-free period is normally mid-March to mid-November. Most plants used in the experiment were obtained from a commercial tissue culture nursery (Agri-starts, Apoka, FL) as three- to four-leaf plugs. Plants were grown in a warm greenhouse (minimum temperature of 60 °F) from 3 Mar. until 24 Apr. 2003. During the greenhouse phase, plants were grown in a 1-L container in bedding plant mix (Fafard 3-B; Fafard Co., Agawam, MA) and fertilized with 15 g of top-dressed 18N–2.6P–10K controlled-release fertilizer (Osmocote; Scotts Co., Marysville, OH). Two additional cultivars, Raja Puri and Frank Unknown, were obtained locally as sword suckers (suckers with narrow leaves) and were then planted in the field in a Pelham fine loamy sand soil. Field experimental design was a randomized complete block with five single-plant replications. Plants were set on a raised bed about 1 m wide and 30 cm high. Plant spacing was 8 × 8 ft. Soil pH was adjusted to 6.5 before planting with dolomitic limestone. Preplant soil nutrient levels were medium for potassium and high for phosphorus, thus no preplant fertilizer was applied. Plants were fertilized with 112 g of controlled-release Osmocote 18N–2.6P–10K at planting. Plants were refertilized with 110

Table 1. Banana sucker production in the second year after planting at Savannah, Georgia.

	19 Apr.		26 May		30 July	
Cultivars	Suckers (no.)	Suckers ≥ 10 inches long (no.)[z]	Suckers (no.)	Suckers ≥ 10 inches long (no.)	Suckers (no.)	Suckers ≥ 10 inches long (no.)
Belle	3.2 b–e[y]	2.6 a–d	4.4 b–f	3.6 a–e	6.2 d–h	4.2 b–e
Burmese	1.0 fg	0.6 h–j	1.0 I	1.0 i–l	5.7 d–h	2.3 d–i
Brazilian	2.4 b–g	0.8 g–j	3.6 d–g	2.0 e–l	4.0 e–j	1.4 f–i
Cardaba	2.0 c–g	0 j	3.8 c–g	2.2 e–k	12.8 a	4.6 a–d
Dwf. Namwah	3.6 a–c	2.8 a–d	5.2 a–e	3.6 a-e	7.2 b–e	6.8 a
Dwf. Nino	1.53 e–g	0.1 j	4.3 c–f	0.5 l	6.8 b–g	0.3 hi
Dwf. Orinoco	2.0 c–g	1.6 d–i	3.8 c–g	2.4 d–k	4.5 e–j	1.7 e–i
Ele Ele	3.4 a–d	0.6 h–j	4.0 c–g	1.5 g–l	3.4 f–j	0.2 I
FHIA 17[x]	1.8 d–g	0 j	4.6 b–f	1.6 f–l	6.0 d–h	1.0 g–i
FHIA 18[x]	3.6 a–c	1.8 d–h	4.2 c–f	3.4 a–e	6.2 d–h	3.4 c–g
FHIA 23[x]	2.4 b–g	0.8 g–j	5.6 a–c	2.2 e–k	6.6 c–g	1.6 f–i
Frank Unknown	2.03 c–g	1.0 f–j	4.0 c–g	2.5 d–j	7.0 b–f	4.7 a–d
Goldfinger[x]	3.8 ab	1.6 d–i	4.6 b–f	3.6 a–e	7.0 b–f	3.2 c–g
Grand Nain	3.4 a–d	0 j	6.8 a	2.6 d–i	9.0 b–d	2.8 c–h
Hua Moa	3.0 b–e	0 j	3.8 c–g	1.6 f–l	1.5 j	0.3 hi
Ice Cream	4.0 ab	3.8 a	5.6 a–c	4.8 a	7.2 b–e	6.2 ab
Kalela	4.0 ab	3.2 a–c	4.8 b–f	4.0 a–d	6.8 b–g	3.4 c–g
Kandarian	3.0 ab	3.2 a–c	4.4 b–f	3.2 a–f	5.4 d–h	3.6 c–f
Kofi	3.6 a–c	0.8 g–j	4.0 c–g	2.8 c–h	1.6 ij	1.0 g–i
Kru	1.0 fg	0 j	2.95 f–h	0.9 j–l	3.3 g–j	1.5 f–i
Kummunaba	3.2 b–e	0.4 ij	3.8 c–g	2.8 c–h	4.4 e–j	0.6 hi
Manzano	5.0 a	2.4 b–e	5.4 a–d	4.6 ab	10.0 a–c	5.0 a–c
Mysore	2.6 b–f	1 g–j	3.4 e–g	2.4 d–k	5.6 d–h	2.0 e–i
Pace	2.7 b–f	2 b–f	4.0 c–g	2.5 d–j	6.2 d–h	3.6 c–f
Pisang Ceylon	2.8 b–e	2.2	4.8 b–f	2.2 e–k	5.3 e–i	2.0 e–i
Raja Puri	3.2 b–e	1.6 d–i	5.6 a–c	3.6 a–e	6.6 c–g	4.8 a–c
Saba	3.2 b–e	1.5 d–i	3.7 d–g	2.9 b–g	6.0 d–h	2.8 c–h
Sikkimensis	0.8 g	0.4 ij	1.4 hi	0.6 l	2.79 h–j	0.4 hi
Sum X Cross	0.8 g	0 j	2.2 g–i	0.8 kl	3.4 f–j	1.4 f–i
Super Plantain	4.0 ab	1.2 e–j	5.4 a–d	3.4 a–e	6.6 c–g	2.0 e–i
Sweet Heart	3.2 b–e	2.6 a–d	3.0 f–h	3.0 b–g	3.4 f–j	0.6 hi
Wiliams	2.0 c–g	0 j	6.2 ab	1.2 h–l	6.8 b–g	2.6 c–i
1780	3.8 ab	3.4 ab	6.8 a	4.4 a–c	10.4 ab	6.2 ab

[z]1 inch = 2.54 cm.
[y]Means with the same letter in a column are not significantly different ($P \geq 0.05$) according to the PDIFF option in PROC MIXED (SAS, version 9.0; SAS Institute, Cary, NC) with Satterthwaite option on the model statement.
[x]Fundacion Hondurena de Investigacion Agricola (FHIA) is a banana breeding program created in Honduras in 1959 by United Fruit Co. and donated to the Honduran government in 1984.

g of 10N–4.4P–0.8K (IMC Agribusiness, Tifton, GA) per plant on 4 June 2003. A third fertilization was conducted on 22 Aug. 2003. Plants in replications 1, 2, and 3 were fertilized with 56 g of 15.5N–0P–36.5K per plant. Plants in replications 4 and 5 were fertilized with 110 g of 10N–4.4P–0.8K (IMC Agribusiness) per plant. On 19 Apr. 2004, plants were fertilized with 1.1 kg 10N–4.4P–0.8K (IMC Agribusiness) and 0.35 kg of 0N–0P–49.8K (source unknown) per plant. The same amount was applied each month from May to October. This rate of fertilization was based on the author's experiences in commercial banana production in Africa and Hawaii (Fonsah and Chidebelu, 1995).

Weeds were controlled by the use of postplant-directed sprays of glyphosate and paraquat applied as needed. Two lines of drip irrigation tape with emitters 24 inches apart were used on each bed in 2003. Plants were watered three or four times per week for several hours or as needed to keep the bed moist. In 2004, overhead irrigation was used. Plants were watered weekly with about 1 inch of water or as needed. In Spring 2003, about 10 cm of yard waste mulch was applied to the top of the bed in a band about 1.2 m wide. Weather records were obtained from a Georgia environmental monitoring station (Georgia Automated Environmental Monitoring Network, 2005) located at the gardens. T-type thermocouples and a data logger (CR7; Campbell Scientific, Logan, UT) were installed in early winter to collect rhizome and air temperatures.

Data on sucker production were recorded on 4 Sept. and 14 Oct. 2003. Data on sucker production were collected three times in 2004 (Table 1). Plant height from the soil line to the base of the first expanded leaf (growing point) was measured on 4 Sept. and 14 Oct. 2003. The pseudostem circumference, length, and width of the leaf blade on the fifth leaf from the apex were measured on 14 Oct. 2003. Plant height and other data were collected 27 Aug. 2004. Notes on plant color and other

Table 2. Vegetative performance of bananas in the year of planting at Savannah, Georgia.

Cultivars	Suckers to Sept. 2003 (no.)	Plant ht (m)[z]	Pseudostem circumference (cm)[y]	Leaves to Oct. 2003 (no.)	Leaf width to Oct. 2003 (cm)	Leaf length to Oct. 2003 (m)
Belle	3.6 d–h[x]	1.83 b–cd	45.8 b–d	11.0 d–h	53.0 c–h	1.27 c–g
Brazilian	3.0 e–i	1.34 f–j	37.6 f–i	12.8 a–d	51.2 c–i	0.84 i
Burmese Blue	3.3 d–h	1.28 g–j	17.5 p	7.5 k	37.4 kl	0.85 j
Cardaba	4.3 a–f	1.37 f–j	39.2 e–h	12.0 b–f	42.7 i–k	1.23 e–g
Dwf. Namwah	4.0 b–g	1.54 e–fg	49.2 a–c	11.2 c–g	57.6 a–e	1.13 f–i
Dwf. Nino	5.7 ab	1.02 kl	27.0 l–o	13.1 a–d	44.3 h–k	0.82 i
Dwf. Orinoco	4.2 b–f	1.59 d–ef	39.1 e–h	10.0 e–j	54.6 b–g	1.16 fg
Ele Ele	4.2 b–f	1.38 f–i	36.0 g–k	8.2 jk	57.2 b–e	1.18 fg
FHIA 17[w]	3.2 d–i	1.43 e–i	35.4 h–k	10.6 e–i	58.8 a–c	1.24 d–g
FHIA 18[w]	3.0 e–i	1.48 e–h	38.0 f–i	10.4 e–j	52.8 c–h	1.09 g–i
FHIA 23[w]	4.2 b–f	1.41 f–i	36.2 g–k	8.8 h–k	56.0 b–f	1.27 c–g
Frank Unknown	1.9 hi	1.28 g–k	29.3 l–n	13.5 a–c	46.4 g–j	1.08 g–i
Goldfinger[w]	3.2 d–i	1.48 e–h	35.4 h–k	10.0 f–j	55.2 b–g	1.16 fg
Grand Nain	5.4 a–c	1.23 h–k	30.4 k–m	11.2 c–g	49.4 d–j	1.10 g–i
Hua Moa	3.1 d–i	1.38 f–i	32.7 i–l	9.1 g–k	47.6 f–j	1.18 fg
Ice Cream	4.6 a–e	1.94 a–bc	47.6 a–c	9.8 f–k	55.6 b–f	1.34 b–f
Kalela	3.8 c–g	1.46 e–i	39.2 e–h	9.6 g–k	53.0 c–h	1.19 fg
Kandarian	4.4 a–f	2.12 a	51.4 ab	8.8 h–k	63.0 ab	1.49 ab
Kofi	4.0 b–g	1.68 c–e	41.6 d–g	8.4 i–k	62.0 ab	1.22 e–g
Kru	1.9 hi	1.37 f–j	25.6 m–o	8.4 i–k	41.5 jk	0.92 h–j
Kummunaba	3.6 d–h	2.08 ab	44.4 c–e	12.4 a–e	58.6 a–c	1.44 a–d
Manzano	6.0 a	2.04 ab	41.4 d–g	13.0 a–d	56.4 b–f	1.49 a–c
Mysore	3.4 d–h	1.48 e–h	31.8 j–l	9.4 g–k	55.2 b–g	1.22 e–g
Pace	3.6 d–h	1.68 c–e	36.4 g–j	9.0 g–k	55.0 b–g	1.23 e–g
Pisang Ceylon	3.8 c–g	1.52 e–g	35.4 h–k	8.6 i–k	55.0 b–g	1.17 fg
Raja Puri	2.4 g–hi	1.30 g–j	41.6 d–g	14.4 ab	48.8 e–j	1.12 g–i
Saba	3.2 d–i	2.04 ab	53.2 a	11.0 d–h	66.4 a	1.63 a
Sikkimensis	1.5 i	0.82 l	23.0 op	8.7 h–k	32.2 l	0.75 j
Sum X Cross	4.6 a–e	1.12 jk	24.2 no	14.6 a	42.4 i–k	1.13 ij
Super Plantain	4.2 b–f	1.43 e–i	39.0 e–h	10.4 e–j	58.0 a–d	1.13 f-h
Sweetheart[x]	2.8 f–i	1.56 ef	43.4 c–f	11.0 d–h	56.6 b–e	1.19 fg
Williams	3.4 d–h	1.20 i–k	31.0 j–m	11.0 d–h	50.8 c–i	1.09 g–i
1780	4.8 a–d	2.07 ab	44.8 c–e	12.4 a–e	56.5 b–e	1.41 b–e

[z]1 m = 3.2808 ft.
[y]1 cm = 0.3937 inch.
[x]Means with the same letter in a column are not significantly different ($P \geq 0.05$) according to the PDIFF option in PROC MIXED (SAS, version 9.0; SAS Institute) with Satterthwaite option on the model statement.
[w]Fundacion Hondurena de Investigacion Agricola (FHIA) is a banana breeding program created in Honduras in 1959 by United Fruit Co. and donated to the Honduran government in 1984.

characteristics were obtained during this same time. Plant color data were collected by visual agreement of the authors. Observations on overall plant performance were collected during 2003 and 2004 and were based on survival and attractiveness as judged by the authors. Some cultivars were more prone to what appeared to be a physiological leaf browning on the edges of the leaves late in the season. A list of the best-performing cultivars in the tall, medium, and short categories was developed using a combinations of all these factors. Observations on fruit production were made in 2003, 2004, and 2005. After each data collection, sanitation involving removal of dead leaves and suckers was conducted. Data were analyzed using ProcMixed from SAS (version 9.0; SAS Institute, Cary, NC).

Results and discussion

SUCKER PRODUCTION. There is excellent demand for banana nursery stock by gardeners in southern Georgia. In the first year, 'Dwarf Nino', 'Grain Nain', 'Ice Cream', 'Manzano', 'Sum X Cross', and '1780' produced more suckers compared with the other cultivars tested (Table 2). All of these cultivars produced a mean of more than 4.4 suckers, and 'Manzano' averaged 6 suckers. In year 2, 'Cardaba', 'Grand Nain', 'Manzano', and '1780' produced more suckers by 30 July 2004 compared with other cultivars (Table 1). In year 2, the best producers of large-size suckers (>10 inches long) were 'Cardaba', 'Frank Unknown', 'Ice Cream', 'Manzano', 'Raja Puri', and '1780' (Table 1). All of these cultivars produced more than 4.8 large-size suckers per plant by 30 July. 'Ice Cream', 'Manzano', 'Raja Puri', and '1780' had good growth characteristics and desirable large-size sucker production. The suckers were sold retail to the public, bare root for $10 to $15 per sucker at a fall field day. For the planting as a whole, sales of suckers at the fall field day averaged $7 per plant in year 2, and $17 per plant in year 3. Sales would have been much higher if the best sucker-producing clones had been grown. In year 2, 'Ice Cream' and 'Manzano' produced more than six high-quality suckers for nursery propagation. Potential income per plant for these cultivars was over $60.

PLANT LOSS AND WINTER INJURY. Shortly after establishment, 12 plants died from an unidentified disease. The greatest losses were in 'Burmese Blue', which lost three of five plants; 'Cardaba', which lost two of five plants; and 'Sikkimensis', which lost two of five plants. In the winter of 2003–04, the minimum air temperature recorded by the Coastal Gardens weather station was 20 °F on 21 Dec. 2003. Surprisingly, many of the plants had pseudostems that survived the winter and showed green leaves on 18 Mar. 2004, but were killed by a late spring frost (29.5 °F) on 23 March No plants were killed, but the frost killed or damaged many of the surviving pseudostems. Plants were pruned back to living tissue, which varied in height from ground level to 1.5 m. There was no significant plant loss due to winter injury in 2003–04. Minimum air temperatures in the experimental plot were about –3 °C to –5 °C during three consecutive nights of subfreezing weather in Dec. 2003 (Fig. 1). However, rhizome temperatures at the soil line remained at or above 0 °C throughout the entire event. Thus, rhizomes were not injured by freezing during 2003–04, and variation in performance among cultivars probably does not reflect differences in rhizome cold hardiness. In 2005, a low temperature of 18.1 °F occurred on 24 Jan. When the pseudostems were cut to 1 m in the spring, it was observed that a core of living tissue had survived on many plants, but the outside of the pseudostem tissue was killed. All plants survived the winter.

FRUIT PRODUCTION. For commercial production of banana fruit, a minimum of eight leaves is needed for proper bunch maturation, with nine to 12 leaves being ideal (Fonsah and Chidebelu, 1995; Robinson, 1996; Stover and Simmonds, 1987; Waddick and Stokes, 2000). However, small fruit bunches such as those of organic bananas require only four to six healthy leaves during fruit maturation. Leaf numbers produced by August of the second year (11–14) were sufficient to carry the flower/fruit to full development and maturity of many cultivars. However, only a few cultivars produced edible fruit before frost. In 2004, all plants of 'Raja Puri' and three of five plants of 'Sweet Heart' produced fruit that was sufficiently mature to ripen indoors after harvest on 10 Nov. 2004. Fruiting occurred in the spring on some plants, but these fruit where

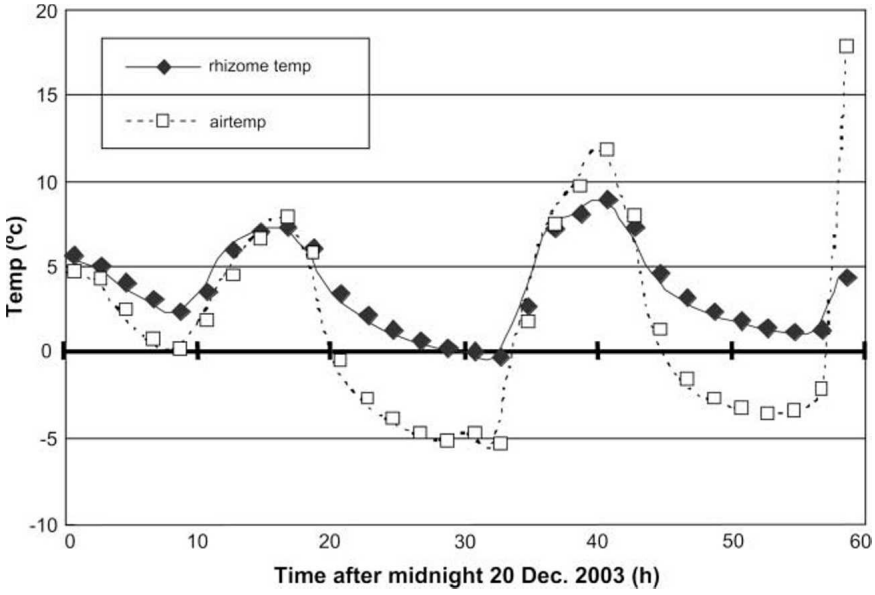

Fig. 1. Rhizome and air temperatures in the experimental plot during the three coldest nights (20–22 Dec. 2003) during the winter of 2003–04 at the Coastal Gardens, Savannah, Georgia. Air temperature minima recorded by the Coastal Gardens weather station were −4.9 °C, −6.0 °C, and −4.2 °C on 20, 21, and 22 Dec., respectively [(1.8 × °C) + 32 = °F].

Table 3. Vegetative performance of bananas in the second year after planting at Savannah, Georgia.

Cultivars	Plant ht (m)[z]	Pseudostem circumference (cm) [y]	Leaves (no.)	Leaf width (cm)	Leaf length (m)	Performance	Pseudostem coloration	Leaf and petiole coloration
Belle	2.14 bc[y]	45.6 c–h	12.8 c–i	62.4 d–g	1.55 c–e	Good	Light green, pink base	Green leaves; green petiole
Brazilian	1.51 e–h	34.4 i–l	13.6 b–g	54.6 f–i	1.12 g–l	Good	Light green with slight pink base	Green leaves
Burmese blue	1.31 g–j	18.7 qr	7.0 m	36.6 kl	0.88 j–m	Poor/fair	Light green w/brown patches	Green leaves
Cardaba	1.25 h–k	33.8 i–m	14.1 b–e	59.1 d–h	1.15 f–k	Good/fair	Green w/brown patches, base pink	Green leaves; red piping on petiole edges
Dwf. Namwah	1.85 c–e	52.6 bc	14.8 a–c	72.6 a–c	1.42 d–g	Good	Light green, pink streaks on base	Green leaves; green petioles
Dwf. Nino	0.79 lm	21.4 o–r	11.2 h–j	37.0 kl	0.77 lm	Good	Green with extensive brown patches	Light green leaves; pink edge on petioles
Dwf. Orinoco	1.74 c–f	39.4 f–j	14.2 b–e	58.0 d–h	1.35 d–h	Good	Light green	Light green leaves; green petioles
Ele Ele	1.09 i–l	28.4 k–p	11.2 h–j	50.2 h–j	0.98 i–m	Good	Light green with extensive brown patches	Green leaves; pink edges on petioles
FHIA 17[w]	1.25 h–k	29.0 k–o	11.6 g–j	53.8 g–j	1.17 f–k	Good	Light green with brown patches	Green leaves; pink piping on petioles
FHIA 18[w]	1.89 c–e	49.2 c–e	14.2 b–e	68.0 b–d	1.59 b–d	Poor	Light green with brown patches	Green leaves; green petioles
FHIA 23[w]	1.24 h–k	32.2 j–n	11.6 g–j	55.8 e–h	1.21 e–j	Good	Light green with brown patches	Green leaves; pink edges on petioles
Frank Unknown	2.17 a–c	38.6 g–j	11.9 g–j	54.3 f–i	1.22 e–j	Good	Green	Green leaves
Goldfinger[w]	1.69 d–g	39.4 f–j	14.2 b–e	61.4 d–g	1.41 d–g	Good	Light green with brown patches; red at base	Green leaves; pink piping on petioles
Grand Nain	1.06 j–l	27.4 l–q	12.7 d–i	45.3 i–k	1.07 g–l	Good/fair	Green with brown patches; pink base	Green leaves; pink edge on petioles
Huamoa	1.08 j–l	24.4 m–q	10.1 jk	43.6 jk	1.03 h–m	Good	Light green	Green leaves; pink petioles
Ice Cream	2.16 a–c	48.6 c–f	12.8 c–i	64.2 c–f	1.59 b–d	Good	Light green with slight brown patches	Green beans; green petioles
Kalela	1.74 c–f	46.2 c–g	14.0 b–f	64.4 c–f	1.51 c–f	Good	Green with brown patches	Green leaves; pink piping on petioles
Kandarian	2.51 ab	59.0 ab	12.0 f–j	74.8ab	1.80 a–c	Good	Light green with slight brown patches	Green leaves; green petioles
Kofi	1.59 e–h	37.4 g–k	12.2 e–i	58.8 d–h	1.36 d–h	Good/fair	Light green with slight brown patches	Green leaves
Kru	1.12 i–l	21.4 o–r	9.2 kl	44.1 jk	0.98 i–m	Good	Light green with brown patches, red base	Green leaves; red edge on petiole, red midrib

(*Continued on next page*)

Table 3. (*Continued*) Vegetative performance of bananas in the second year after planting at Savannah, Georgia.

Cultivars	Plant ht (m)[z]	Pseudostem circumference (cm) [y]	Leaves (no.)	Leaf width (cm)	Leaf length (m)	Performance	Pseudostem coloration	Leaf and petiole coloration
Kummunaba	1.78 c–f	39.2 f–j	12.0 f–j	58.0 d–h	1.39 d–g	Good	Light green with slight pink patches	Green leaves; pink blush midrib, pink edges petiole
Manzano	2.58 a	54.2 bc	15.0 ab	64.0 c–f	1.93 ab	Good	Light green with brown patches	Green leaves; slight pink piping on petioles
Mysore	1.70 d–g	33.4 i–m	12.0 f–j	59.8 d–h	1.33 d–i	Good/fair	Green with brown patches	Green leaves; pink midrib, with yellow stripes on leaves (virus?)
Pace	2.10 b–d	41.4 e–j	14.0 b–f	63.6 c–g	1.65 b–d	Good	Green with brown patches	Green leaves; light pink midrib, pink edges on petioles Long internodes
Pisang Ceylon	1.74 c–f	35.6 i–l	13.0 b–h	60.0 d–h	1.33 d–i	Good	Light green with brown patches	Green leaves, pink ribs; Pink piping on petioles
Raja Puri	1.66 e–h	51.0 b–d	16.6 a	65.2 b–e	1.61 b–d	Good	Light green with brown patches	Green leaves; pink piping on petioles
Saba	2.59 a	66.8 a	12.6 d–i	80.2 a	2.15 a	Good	Light green with slight brown patches	Green leaves; green petioles
Sikkimensis	1.00 j–l	19.2 p–r	7.5 lm	36.1 kl	0.68 m	Poor/fair	Green with brown patches	Light green, brown patches on petioles with very slight brown streaks; some leaves with brown edges
Sum X Cross	0.67 m	14.6 r	10.8 i–k	32.8 l	0.80 k–m	Good	Maroon stem with brown patches	Green leaves with maroon spots, maroon underside
Super Plantain	1.35 f–i	36.6 h–l	13.2 b–h	60.4 d–g	1.17 f–j	Good	Light green and pink with brown patches	Green leaves with extensive pink edges on petioles
Sweet Heart[w]	1.88 c–e	52.2 bc	13.2 b–h	66.6 b–d	1.60 b–d	Good	Green with brown patches	Green leaves; pink piping on petioles
Williams	0.82 k–m	23.4 n–r	11.2 h–j	39.8 kl	1.20 e–j	Good	Green with many brown patches, pink base	Light green leaves; pink edges on petioles
1780	2.36 ab	42.6 d–i	14.4 b–d	58.0 d–h	1.51 c–f	Good	Light green with brown patches	Green leaves; green petioles

[z]1 m = 3.2808 ft.
[y]1 cm = 0.3937 inch.
[x]Means with the same letter in a column are not significantly different ($P \geq 0.05$) according to the PDIFF option in PROC MIXED (SAS, version 9.0; SAS Institute) with Satterthwaite option on the model statement.
[w]Fundacion Hondurena de Investigacion Agricola (FHIA) is a banana breeding program created in Honduras in 1959 by United Fruit Co. and donated to the Honduran government in 1984.

malformed. Good-quality fruit was produced in the fall. In 2005, many pseudostems also survived the winter. In 2005, three of five plants of '1780' and one of five plants of 'Sweet Heart' produced edible fruit before harvest on 18 Nov. 2005. Generally, the mature fruit or fruit closest to maturity in November was produced on pseudostems that sprouted the previous year and survived the winter with at least the core of the pseudostem alive.

Plant height, growth performance, and appearance. Detailed data are presented in Tables 2 and 3. "Poor" means undesirable performance, "fair" means variable or mediocre performance, and "good" is desirable performance. Some of the most attractive tall-growing cultivars (1.5–2.0 m in year 1, and 2–2.5 m in year 2) were 'Belle', 'Ice Cream', 'Kandarian', 'Manzano', '1780', and 'Saba'. By the late summer of the first year, these cultivars produced massive banana "trees" that would be ideal for shading gardens and poolsides. 'Saba', a commonly grown cooking banana, produced the tallest plants and largest leaves in years 1 and 2 (Tables 2 and 3; Fonsah et al., 2004, 2005). Some of the most attractive medium-height cultivars (1.0–1.49 m in year 1, and 1.5–1.9 m in year 2) were 'Dwarf Namwah', 'Dwarf Orinoco', 'Goldfinger', 'Raja Puri', and 'Super Plantain'. In the short category (<1.0 m high in 2003, and <1.5 m in year 2), 'Dwarf Nino', 'Gran Nain', 'Kru', and 'Sum X Cross' were among the most attractive ornamentals. Very attractive color patterns were present on the leaves, petioles, and pseudostems of many cultivars. Of special note were 'Sum X Cross' and 'Kru' for maroon coloration on the leaves. Members of the Cavendish group (for example, 'Grand Nain') contain red piping along the edge of the petioles that stands in stark contrast to the green of the foliage and petioles. 'Dwarf Nino' exhibited light green instead of dark foliage. Some cultivars, such as 'Raja Puri' and 'Ice Cream', also have highly colored bracts on the inflorescence, which adds to the attractiveness of the plant in the late summer/fall of the year when flowers emerge. During the brief southern Georgia winter, the leaves of all cultivars were brown. Except during the time of establishment, few pest problems were observed at this location.

Conclusion

In the southern United States, bananas are highly prized for lending a tropical ambience to gardens and poolsides. This research identified a number of outstanding cultivars of large, medium, and small size adapted to the USDA middle 8b region. Cultivars were sorted by height, pseudostem size/color, and leaf characteristics. Cultivars that produced some edible fruit were also identified. This research should be useful for home gardeners and landscape professionals wishing to expand the use of bananas in this region. Detailed information on sucker production is also provided, and this data should be great value to nursery personnel in the region.

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