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'Camellia' Southern Highbush Blueberry

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Abstract

'Camellia' is a new southern highbush blueberry (*Vaccinium* hybrid) jointly released by the University of Georgia College of Agricultural and Environmental Sciences, the University of Georgia Agricultural Experiment Station, and the United States Department of Agriculture - Agricultural Research Service. 'Camellia' is an early-to mid-season southern highbush blueberry, having highly desirable fruit attributes, including very light blue color and large berry size. The new cultivar has an estimated chill-hour requirement (hours at < 7 °C) of 450 to 500 hours based on comparisons of multi-year bloom dates with the standard southern highbush cultivars 'Star' and 'O'Neal'. Plants are highly vigorous, with strong cane growth and an open, upright bush habit and a narrow crown.

'Camellia', tested as TH-621, was selected in 1996 at the Coastal Plain Experiment Station in Tifton, Georgia by Arlen Draper from a cross of MS-122 X MS-6 he made in the mid 1980s in Beltsville, Maryland. A pedigree of the new cultivar is depicted in Figure 1. 'Camellia' is a hybrid containing mostly *V. corymbosum*, some *V. darrowi*, and a small amount of *V. ashei*. The percentages of *V. darrowi* and *V. ashei* are difficult to determine because the grandparent 'Sharpblue', was derived from a series of crosses having complex parentage involving these species (3). The new cultivar was tested for several years in field plots and high density pine bark beds at the University of Georgia Blueberry Research Farms in Alapaha and Griffin, Georgia (Ga).

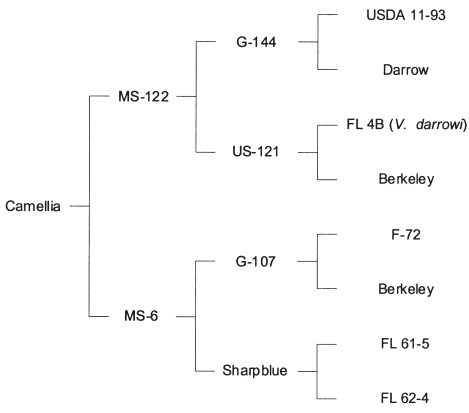

Figure 1. Pedigree of 'Camellia' southern highbush blueberry.

Table 1 lists berry and plant attributes for 'Camellia' and four southern highbush cultivars grown under field conditions at Alapaha, Ga. from 1999 to 2002. Plants were established during 1994 ('O'Neal', 'Sharpblue', and 'Georgiagem') and 1998 ('Star' and 'Camellia') in a Leefield loamy sand soil with a pH of 4.7. Plants were grown in five-plant plots with a row width of 3 m and an in-row spacing of 1.5 m. Ratings were taken yearly as composite values for each plot. Ratings were made using a scale of 1=poorest to 10=best, with a value of 6-7 generally considered "commercially acceptable" for various berry characteristics including size, scar, color, firmness, and flavor (4). An exception is the value for cropping score, where the most desirable rating is in the range of 6 to 8, and a value of 10 would likely be considered over-cropped.

'Camellia' had larger berry size than all the standard cultivars and better color (very light blue) than 'Georgiagem' and 'O'Neal' under the Alapaha field test conditions. The large berry size and light blue fruit make the cultivar desirable for fresh market sales. The date of

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Table 1. Average ratings of some fruit and plant characteristics of 'Camellia' and four southern highbush cultivars over four years (1999-2002) at Alapaha, Ga. under field conditions. Rating scales are based on a 1 to 10 score, with 1 being the poorest and 10 being the best. A value of 6 to 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Berry and plant attributes	Cultivar[z]				
	Camellia	Georgiagem	Sharpblue	Star	O'Neal
Berry size	9.3 ± 0.3	7.5 ± 0.2	7.7 ± 0.1	7.9 ± 0.1	8.1 ± 0.1
Berry scar	7.5 ± 0.3	7.0 ± 0.2	7.8 ± 0.1	7.9 ± 0.1	7.9 ± 0.1
Berry color	9.0 ± 0.3	7.9 ± 0.4	8.8 ± 0.1	8.2 ± 0.2	7.9 ± 0.1
Berry firmness	7.9 ± 0.1	6.7 ± 0.1	7.7 ± 0.3	7.8 ± 0.2	7.6 ± 0.3
Berry flavor	7.6 ± 0.4	7.0 ± 0.1	8.1 ± 0.1	7.5 ± 0.3	8.0 ± 0.1
Cropping	6.0 ± 0.4	4.4 ± 0.9	6.3 ± 1.8	5.8 ± 2.0	4.7 ± 0.3
Plant vigor	9.3 ± 0.1	7.0 ± 0.1	6.9 ± 0.4	6.5 ± 0.1	5.0 ± 0.3
Flowering[y] date	11 Mar. ± 5.8 d	11 Mar. ± 4.6 d	24 Feb. ± 2.9 d	3 Mar. ± 3.5 d	9 Mar. ± 4.3 d
Ripening date[y]	16 May ± 4.1 d	16 May ± 2.1 d	12 May ± 3.3 d	10 May ± 3.0 d	17 May ± 4.5 d

[z]Values are means ± standard errors (n=4) from observations across years
[y]Dates are estimates of the date for 50% flowering and ripening

50% flowering for 'Camellia' was later than 'Star' and 'Sharpblue' which is desirable for reducing the risk of spring freeze damage. The time of 50% ripening was generally similar for the various cultivars under these conditions, except for 'Star' which ripened the earliest. Plant vigor of 'Camellia' was greater than all the cultivars in this trial. In fact, 'Camellia' plant vigor was rated highest when compared to twenty southern highbush cultivars in a previously published study comparing influence of pine bark mulch on establishment (5).

In Griffin, Ga. during 2006, berry firmness and berry weight were determined for 'Camellia' and three other southern highbush blueberry cultivars (Table 2). Data were taken from four-year-old plants growing in a Cecil sandy clay loam soil having a pH of 5.2. Plants were grown in 3 plant plots with drip irrigation and pine bark mulch. Firmness readings were determined using a FirmTech 2 firmness device (BioWorks, Inc., Wamego, Kansas), with instrument settings of 50 g minimum force and 250 g maximum force (6,7). Four samples of 25 berries, each taken from multiple plants in a plot, were evaluated for firmness and berry weight on two harvest dates. 'Camellia' firmness was similar to 'O'Neal', but less than 'Legacy' and 'Star'; however, 'Camellia' berry weight was greater than the other cultivars.

Some growers in Georgia are growing southern highbush blueberries in a high density system utilizing raised beds filled with pine bark. These systems are used for rapid establishment of southern highbush blueberries in an environment where they can be easily frost protected using overhead sprinklers in a confined area and fruit can be harvested beginning the second year. A high density planting was established during 2002 at Alapaha, Ga. to evaluate performance of several blueberry cultivars grown in such a system. Table 3

Table 2. Average berry firmness and individual berry weight for 'Camellia' and three other southern highbush cultivars grown in Griffin, Ga. in 2006. Firmness readings were taken using a FirmTech 2 device with settings of 50 g minimum force and 250 g maximum force.

Cultivar	Berry firmness (g/mm)[z]	Berry weight (g)[z]
Camellia	173 ± 3.7	2.51 ± 0.08
Legacy	186 ± 9.8	1.32 ± 0.02
O'Neal	167 ± 4.2	1.79 ± 0.06
Star	182 ± 4.6	1.46 ± 0.10

[z]Values are means ± standard errors from four 25 berry samples per cultivar taken from multiple plants in 2006

Table 3. Average ratings of some fruit and plant characteristics of 'Camellia' and four southern highbush cultivars over two years (2003-2004) at Alapaha, Ga. in a high density pine bark bed growing system. Rating scales are based on a 1 to 10 score, with 1 being the poorest and 10 being the best. A value of 6 to 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Berry and plant attributes	Cultivar[z]				
	Camellia	Emerald	Star	O'Neal	Windsor
Berry size	8.9 ± 0.3	8.6 ± 0.2	7.4 ± 0.2	7.3 ± 0.1	8.4 ± 0.1
Berry scar	7.8 ± 0.1	7.8 ± 0.3	7.6 ± 0.2	7.1 ± 0.1	6.4 ± 0.1
Berry color	8.9 ± 0.2	8.5 ± 0.2	7.9 ± 0.2	7.5 ± 0.2	7.9 ± 0.3
Berry firmness	7.8 ± 0.3	7.0 ± 0.2	7.4 ± 0.1	6.5 ± 0.2	6.6 ± 0.1
Berry flavor	7.6 ± 0.2	7.1 ± 0.1	7.1 ± 0.1	8.3 ± 0.1	7.1 ± 0.1
Cropping	7.5 ± 0.4	8.3 ± 0.8	5.4 ± 1.2	6.3 ± 0.9	6.9 ± 1.2
Plant vigor	9.5 ± 0.2	8.8 ± 0.3	6.8 ± 0.5	8.0 ± 0.2	8.0 ± 0.4
Flowering[y] date	16 Mar. ± 1.0	1 Mar. ± 1.0	7 Mar. ± 1.0	11 Mar. ± 1.5	20 Mar. ± 2.5
Ripening date[y]	24 May ± 1.0	15 May ± 1.5	11 May ± 1.5	17 May ± 1.5	25 May ± 1.5

[z]Values are means ± standard errors (n=4) from observations in two replications per cultivar over two years
[y]Dates are estimates of the date for 50% flowering and ripening

presents data from the years 2003 and 2004 for 'Camellia' and four standard cultivars grown in five-plant plots with two replications of each cultivar. 'Camellia' generally rated high in berry size, berry color, and plant vigor, similar to previously discussed field ratings. Time to 50% flowering and ripening for 'Camellia' in the high density system was later than for 'Star', 'Emerald', and 'O'Neal'.

The degree of self-fertility of 'Camellia' has not been established; therefore, it is recommended that 'Camellia' be planted with another southern highbush cultivar to facilitate cross-pollination (1, 2).

Availability

'Camellia' is a patent-pending cultivar owned by the University of Georgia Research Foundation. Contact the Georgia Seed Development Commission, 2420 S. Milledge Ave., Athens, Georgia, 30606 (web site www.gsdc.com) for information on plant source and availability. Neither the Georgia Agricultural Experiment Station nor the USDA-ARS have plants for sale or distribution.

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