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'Palmetto' Southern Highbush Blueberry

D. Scott NeSmith[1]
Department of Horticulture, Georgia Station, Griffin, GA 30223-1797

Arlen D. Draper[2] **and James M. Spiers**[3]
U.S. Department of Agriculture, Agricultural Research Service, Small Fruit Laboratory, Poplarville, MS 39470

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'Palmetto' is a southern highbush blueberry (*Vaccinium sp.* hybrid) joint release by The University of Georgia College of Agricultural and Environmental Sciences, The University of Georgia Agricultural Experiment Station, and the U.S. Department of Agriculture's Agricultural Research Service. 'Palmetto' is an early season blueberry, having favorable commercial fruit attributes, concentrated ripening, good yields and excellent plant vigor. Berries are firm, medium sized, very flavorful, have small stem scars, and good color.

Origin

'Palmetto', tested as TH-471, was selected in 1985 at the Coastal Plain Experiment Station in Tifton, Ga. from a cross of US-158 X TH-157 (Fig. 1). US-158 is an F_1 hybrid of FL 4-B (*V. darrowi* Camp) and a highbush blueberry (*V. corymbosum* L.). TH-157 was derived from a cross of highbush blueberry and FL 63-4, a complex hybrid of complex parentage.

Description and Performance

Southern highbush blueberries are grown across the southeastern U.S. because of their early ripening fruit which brings high market prices. 'Palmetto' is the second southern highbush cultivar to be released by the University of Georgia Blueberry Breeding Program. The cultivar was tested in an advanced selection trial in southeast Georgia (Alapaha, Ga.) in 1992. The test site was nonirrigated, was not frost protected, and conventional fertilizer applications were made. The cultivars Georgiagem and Sharpblue were used for standards. 'Georgiagem' (Austin and Draper, 1987) was the first southern highbush release from the Georgia Breeding Program, and local producers have found it difficult to grow and desired earlier ripening cultivars. 'Sharpblue' (Lyrene and Sherman, 1992), also has not been widely grown by Georgia growers due to early flowering and protracted ripening. Table 1 depicts yields over a 5-year period for 'Palmetto', 'Georgiagem', and 'Sharpblue'. 'Georgiagem' yielded no fruit during the first week in May, whereas, 'Palmetto' yielded >35% of its fruit during that time period on average. When the first 2 weeks of May are considered, 'Palmetto' ripened more than 75% of its fruit during that time on average, compared to only 38% and 51% for 'Georgiagem' and 'Sharpblue', respectively. 'Palmetto' yields overall were greater than 'Georgiagem' over the 5-year period.

Table 2 portrays average berry attributes and plant vigor for 'Palmetto' and 4 other southern highbush blueberry selections grown at Alapaha, Ga. over a 6-year period. 'Palmetto' exceeded all of the cultivars with respect to plant vigor, and berry scar was superior to all cultivars except for 'O'Neal'. For other berry attributes, 'Palmetto' was generally similar to the various cultivars, except for berry size, which was smaller (but commercially acceptable). Thus, 'Palmetto' has good to excellent fruit quality, and outstanding plant vigor.

Flowering and ripening times are important data for growers who are considering producing southern highbush blueberries. Generally, early flowering cultivars require frost protection measures, and growers want fruit ripening to be early enough to offer a "high price reward" for the risk. Table 3 lists flowering and ripening dates for 'Palmetto' and 3 southern highbush cultivars at Alapaha, Ga. over a 6-year period. Flowering dates of all cultivars were early (late February to early March), yet, 'Palmetto' generally ripened the earliest. Table 4 depicts flowering and ripening times for several southern highbush cultivars grown for two years in a high density planting at Alapaha, Ga. The data suggest that 'Palmetto' will be in the middle of these cultivars with respect to flowering date, yet, will be early ripening. 'Palmetto' has an estimated chilling requirement of 350 to 450 hours (<7 °C), and it should succeed in areas where southern highbush is adapted.

As for adaptability to other areas, 'Palmetto' seems to be as widely adapted as the popular cultivar 'Star' (released by Florida in 1996). Fruit and plant characteristics of 'Palmetto' and 'Star' were evaluated for 2- to 4-year-old plants at three locations in Georgia and one location in Mississippi during 2003. Across locations, the two entries generally ripened at

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[1]Professor.
[2]Research geneticist, retired.
[3]Research horticulturist.

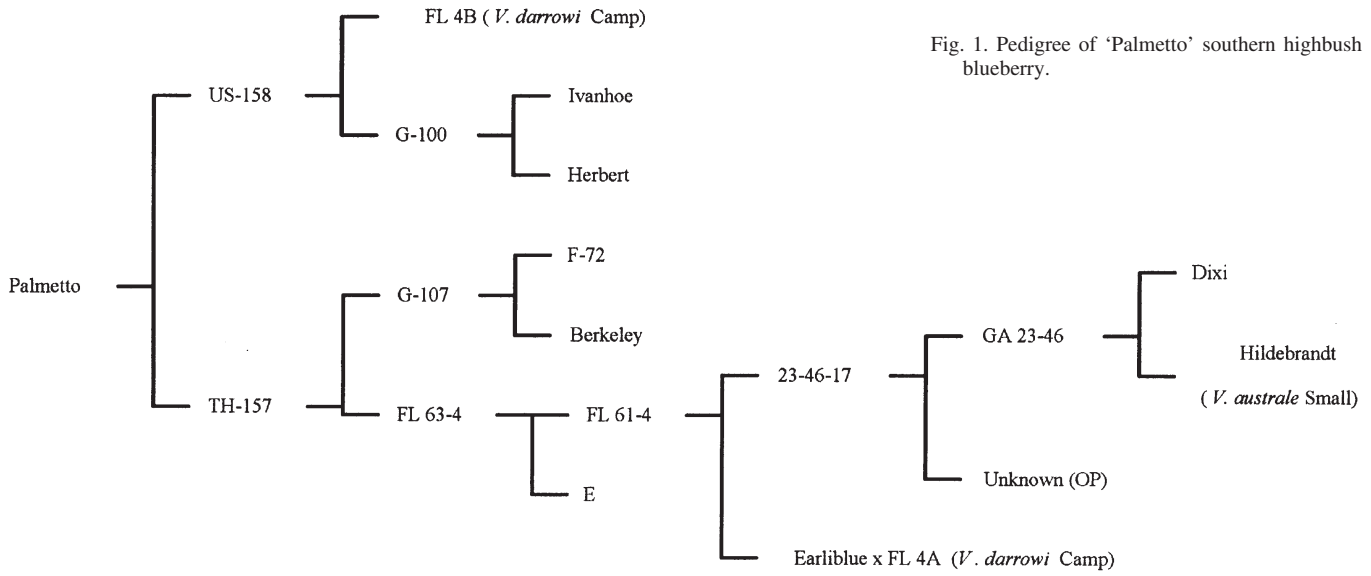

Fig. 1. Pedigree of 'Palmetto' southern highbush blueberry.

Table 1. Yield of the southern highbush 'Palmetto' and the standard cultivars Georgiagem and Sharpblue for different harvest periods during 1999 thru 2003. Plants were established in southeastern Georgia near Alapaha in 1992, and were grown without mulch, bedding, or irrigation.

	Total yield/bush (kg)		
Year	Georgiagem	Sharpblue	Palmetto
First week of May			
1999	0.0	0.8	0.5
2000	0.0	0.6	1.4
2001	0.0	1.3	0.8
2002	0.0	0.5	1.2
2003	0.0	---	0.9
5-Year average[z]	0.0 b	0.8 a	1.0 a
Second week of May			
1999	0.0	1.0	1.1
2000	0.6	1.0	1.7
2001	0.7	1.3	1.3
2002	0.4	0.0	0.3
2003	0.3	---	0.9
5-Year average	0.4 a	0.8 a	1.0 a
Total for season			
1999	1.2	3.3	2.8
2000	1.5	2.7	3.7
2001	2.0	6.0	2.8
2002	0.4	0.5	1.5
2003	0.5	---	2.3
5-Year average	1.1 b	3.1 a	2.6 a

[z]The same lower case letter indicates yields for the 5-year average were not significantly different at the 10% probability level.

Table 2. Average ratings of some fruit and plant characteristics of 'Palmetto' and several southern highbush standard cultivars over a 6-year period at Alapaha, Ga. Rating scales are based on a 1 to 10 score, with 1 being the least desirable and 10 being the most desirable. A value of 6 to 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Berry and plant	Cultivar				
attribute	Palmetto	Georgiagem	Sharpblue	Star[z]	O'Neal
Berry size[y]	7.3 b	7.5 ab	7.7 ab	7.8 ab	8.1 a
Berry scar	8.5 a	7.0 c	7.8 b	7.8 b	7.9 ab
Berry color	8.0 a	7.9 a	8.4 a	8.0 a	7.9 a
Berry firmness	8.3 a	6.7 c	7.6 ab	7.5 b	7.6 ab
Berry flavor	8.0 a	7.0 c	7.9 ab	7.3 bc	8.0 a
Plant vigor	8.8 a	7.0 b	6.8 b	6.3 bc	5.1 c

[z]'Star' plants were only evaluated for the last 3 years.
[y]The same lower case letter indicates attribute was not significantly different at the 10% probability level.

Table 3. Average flowering and ripening date of 'Palmetto' and three southern highbush standard cultivars over a 6-year period at Alapaha, Ga.

	Cultivar			
Year	Palmetto	Georgiagem	Sharpblue	O'Neal
Date of 50% flowering				
1998	18 Feb.	23 Feb.	13 Feb.	15 Feb.
1999	6 Mar.	20 Mar.	3 Mar.	15 Mar.
2000	4 Mar.	17 Mar.	18 Feb.	12 Mar.
2001	26 Feb.	1 Mar.	21 Feb.	1 Mar.
2002	25 Feb.	5 Mar.	26 Feb.	----
2003	13 Mar.	20 Mar.	----	----
Average[z]	1 Mar. ab	10 Mar. a	22 Feb. b	4 Mar. ab
Date of 50% ripening				
1998	9 May	18 May	17 May	22 May
1999	16 May	21 May	19 May	21 May
2000	7 May	17 May	11 May	12 May
2001	6 May	14 May	10 May	11 May
2002	5 May	11 May	7 May	----
2003	9 May	21 May	----	----
Average	9 May a	17 May b	13 May ab	17 May b

[z]The same lower case letter indicates flowering and ripening date across years were not significantly different at the 10% probability level.

Table 4. Average flowering and ripening date of 'Palmetto' and four southern highbush standard cultivars in a High Density Production System at Alapaha, Ga., in 2003. The high density beds were established in 2002.

	Date of	
Cultivar	50% flowering	50% ripening
Palmetto	17 Mar.	10 May
O'Neal	13 Mar.	14 May
Star	8 Mar.	8 May
Emerald	1 Mar.	13 May
Windsor	24 Mar.	24 May

Table 5. Firmness values (measured with FirmTech II) for southern highbush blueberries in response to hand and mechanical harvesting.

	Firmness at harvest ($g \cdot mm^{-1}$)	
Cultivar or selection	Hand harvested	Machine harvested
Georgiagem	135 a[z]	116 a
Palmetto	140 b	142 b

[z]Values within a column followed by the same letter were not significantly different at the 10% probability level.

the same time, and had similar attributes. The exceptions were that 'Palmetto' had firmer fruit than 'Star', and typically had a better cropping score also, while 'Star' had larger berry size (data not shown).

Growers are interested in the firmness of fruit to offer the possibility of machine instead of hand-harvesting. To date, little or no fruit from southern highbush cultivars grown in Georgia are machine harvested. Table 5 presents data from a 1999 experiment comparing firmness of hand harvested and machine harvested 'Palmetto' and 'Georgiagem'. 'Georgiagem' showed the typical response of a great loss in firmness of berries due to mechanical harvesting; whereas, 'Palmetto' appeared to remain firm when mechanically harvested.

Availability

A U.S. Plant Patent for 'Palmetto' has been applied for on behalf of the University of Georgia Research Foundation. Contact the Georgia Seed Development Commission, 2420 S. Milledge Ave., Athens, Ga. 30606, for information on plant source and availability. Neither the Georgia Agricultural Experiment Station nor the USDA-ARS have plants for sale or distribution.

Literature Cited

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