'TH-921' Southern Highbush Blueberry Miss Alice Mae™

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Southern highbush blueberries (inter-specific hybrids containing mostly *Vaccinium corymbosum* L.) have gained a significant share of the production acreage of commercial blueberries in Georgia in recent years. A major reason for the interest in the species has been that berries ripen early during the months of April and May. Recently, University of Georgia (UGA) cultivars 'Rebel' (USPP 18138) and Georgia Dawn™ (USPP 24696) were released for the very early market window (NeSmith, 2008, 2014), and 'Camellia' (USPP 18151) was released as a later season southern highbush (NeSmith and Draper, 2007). However, there is a need for midseason cultivars (those ripening during the first 2 to 3 weeks in May) to replace the older standard cultivar 'Star' (USPP 10675) which was released by the University of Florida in 1996 (Lyrene and Sherman, 2000).

'TH-921' (USPP 27292) southern highbush blueberry Miss Alice Mae™ has been released by The UGA, College of Agricultural and Environmental Sciences along with the Georgia Agricultural Experiment Station as a midseason southern highbush. The new cultivar has good yields, along with excellent berry flavor, picking scar, and firmness. Miss Alice Mae™ usually flowers late, so frost/freezing protection measures are not typically necessary to achieve successful production as is often required for earlier flowering southern highbush cultivars.

Origin and Description

Miss Alice Mae™ was selected in 2005, at the Georgia Experiment Station in Griffin, GA, originating from a cross of TH-647 × 'Windsor' made in 2002. The maternal parent, TH-647, is a UGA breeding line derived from a cross of 'Reveille' × 'Palmetto' (USPP 16756), whereas the paternal parent, 'Windsor', is a University of Florida cultivar (USPP 12783). Miss Alice Mae™

has been tested in plantings at UGA Blueberry Research Farms in Alapaha and Griffin, GA, since 2007.

Miss Alice Mae™ is being released for commercial usage. The new cultivar has an estimated chill requirement of 450 to 550 h (<7 °C) based on observations and comparisons with other cultivars. It is a midseason southern highbush with medium-large size fruit (1.5 to 2.1 g/berry). Berries are medium to light blue in color and have a small, dry picking scar. Berry flavor and firmness are very good. Miss Alice Mae™ plants are moderately vigorous, and have a semi-upright bush habit with a relatively narrow crown. Propagation is easily accomplished using either softwood cuttings or in vitro production. Plants are self-fertile, but planting with other southern highbush

Performance

Miss Alice Mae™ was established in selection blocks at the UGA Blueberry Research Farms in Alapaha and Griffin, GA, as multiple plants in 2007. Fruit and plant data averaged across several years from these two test sites for the new cultivar and for 'Star' and 'Camellia' are presented in Tables 1 and 2. Miss Alice Mae™ flowered between 'Star' and 'Camellia' at both locations, but typically ripened nearer the time of 'Star'. Fruit ratings showed a good picking scar, along with very good berry firmness and flavor for Miss Alice Mae™ as compared with the two standard cultivars. Berry size ratings showed 'Camellia' with a larger berry, however. Plant vigor for Miss Alice Mae™ was equal to or better than 'Star', but less than 'Camellia'. However, 'Camellia' has been almost too vigorous (personal observations in the southeastern and western United States), especially in high input systems where it can grow excessively with an unfavorable plant growth habit that leads to "legginess" and "floppiness." Therefore, the more moderate plant vigor of Miss Alice Mae™ is more desirable.

Table 1. Five-year average ratings of some fruit and plant characteristics of Miss Alice Mae™ and southern highbush standard cultivars 'Star' and 'Camellia' from 2009 to 2013 in field test plots 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 6–7 is generally considered to be the minimum acceptable rating for a commercial cultivar. These plants were established in Fall 2007.

Berry and plant attributes ^z	Alapaha location		
	'Star'	'Camellia'	Miss Alice Mae™
Berry size	7.6 ± 0.2	8.9 ± 0.2	7.4 ± 0.3
Berry scar	7.0 ± 0.1	7.2 ± 0.2	7.9 ± 0.3
Berry color	7.1 ± 0.1	8.7 ± 0.2	7.6 ± 0.1
Berry firmness	7.2 ± 0.1	7.2 ± 0.1	7.6 ± 0.1
Berry flavor	7.0 ± 0.1	7.8 ± 0.1	7.9 ± 0.3
Cropping	4.7 ± 1.7	5.4 ± 0.3	5.9 ± 1.4
Plant vigor	6.3 ± 0.2	9.8 ± 0.2	8.4 ± 0.5
Date of 50% flowering	3 Mar.	1 Mar.	8 Mar.
Date of 50% ripening	8 May	15 May	8 May
Fruit development period (days)	66.3 ± 6.1	65.3 ± 4.9	61.0 ± 6.5

^zValues are means ± SE with n = 5.

Table 2. Five-year average ratings of some fruit and plant characteristics of Miss Alice Mae™ and southern highbush standard cultivars 'Star' and 'Camellia' (2009–13) in field test plots at Griffin, 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 6–7 is generally considered to be the minimum acceptable rating for a commercial cultivar. These plants were established in Fall 2007.

Berry and plant attributes ^z	Griffin location		
	'Star'	'Camellia'	Miss Alice Mae™
Berry size	7.4 ± 0.2	8.6 ± 0.2	7.8 ± 0.3
Berry scar	6.9 ± 0.1	7.0 ± 0.1	7.5 ± 0.1
Berry color	7.1 ± 0.1	7.9 ± 0.2	7.8 ± 0.2
Berry firmness	7.2 ± 0.1	7.2 ± 0.1	7.4 ± 0.3
Berry flavor	7.1 ± 0.1	7.4 ± 0.2	7.9 ± 0.2
Cropping	6.8 ± 1.1	7.9 ± 0.2	6.6 ± 0.5
Plant vigor	8.5 ± 0.3	9.8 ± 0.1	8.7 ± 0.3
Date of 50% flowering	13 Mar.	25 Mar.	21 Mar.
Date of 50% ripening	25 May	31 May	26 May
Fruit development period (days)	73.3 ± 10.4	67.3 ± 4.8	66.0 ± 4.8

^zValues are means ± SE with n = 5.

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Table 3. Three-year average ratings (2014–16) of some fruit and plant characteristics of Miss Alice Mae™ and southern highbush standard cultivars ‘Star’, ‘Rebel’, ‘Farthing’ (USPP 19341), and ‘Camellia’ in Advanced Selection field test plots 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 6–7 is generally considered to be the minimum acceptable rating for a commercial cultivar. These plants were established in Fall 2010.

Berry and plant attributes ^z	Alapaha advanced selection trial				
	‘Star’	‘Rebel’	‘Farthing’	‘Camellia’	Miss Alice Mae™
Berry size	7.2 ± 0.3	7.5 ± 0.3	7.1 ± 0.3	8.8 ± 0.2	7.7 ± 0.2
Berry scar	6.9 ± 0.1	7.4 ± 0.1	7.4 ± 0.2	7.0 ± 0.1	7.5 ± 0.1
Berry color	7.1 ± 0.1	7.0 ± 0.1	6.8 ± 0.1	8.2 ± 0.2	7.5 ± 0.1
Berry firmness	7.5 ± 0.1	7.4 ± 0.2	7.3 ± 0.2	7.5 ± 0.1	7.5 ± 0.2
Berry flavor	7.2 ± 0.2	6.6 ± 0.2	7.0 ± 0.1	8.0 ± 0.2	8.0 ± 0.1
Cropping	5.3 ± 1.1	4.5 ± 0.7	8.2 ± 0.2	6.2 ± 0.4	7.6 ± 0.3
Plant vigor	8.2 ± 0.2	6.6 ± 0.6	7.5 ± 0.5	9.8 ± 0.2	8.5 ± 0.3
Date of 50% flowering	5 Mar.	1 Mar.	7 Mar.	12 Mar.	9 Mar.
Date of 50% ripening	5 May	1 May	11 May	12 May	9 May

^zValues are means ± SE with n = 3.

Fig. 1. Southern highbush blueberry ‘TH-921’ Miss Alice Mae™ fruit during ripening.

Table 4. Yield and berry weight, firmness, and Brix for ‘Star’ and ‘Camellia’ cultivars and Miss Alice Mae™ grown in Griffin, GA during 2010–13.

Yr	‘Star’	‘Camellia’	Miss Alice Mae™
		Yield (kg/plant) ^z	
2011	5.8 ± 1.6	4.4 ± 0.4	4.7 ± 0.3
2012	5.3 ± 1.0	4.8 ± 0.4	4.1 ± 0.5
2013	1.8 ± 0.3	7.2 ± 0.5	6.5 ± 1.1
Average	4.3	5.5	5.1
		Berry wt (g/berry) ^y	
2010	1.53 ± 0.09	2.94 ± 0.12	2.07 ± 0.09
2011	1.20 ± 0.04	1.97 ± 0.11	1.47 ± 0.04
2012	1.80 ± 0.07	1.60 ± 0.09	1.75 ± 0.06
2013	1.79 ± 0.06	2.56 ± 0.10	2.00 ± 0.04
Avg	1.58	2.28	1.82
		Firmness (g/mm) ^y	
2010	196 ± 4	150 ± 2	208 ± 2
2011	206 ± 6	166 ± 3	190 ± 2
2012	190 ± 5	164 ± 4	182 ± 4
2013	191 ± 5	150 ± 2	208 ± 3
Avg	196	157	197
		Brix (%) ^x	
2012	13.9 ± 0.6	14.5 ± 0.4	15.3 ± 0.9
2013	13.5 ± 0.5	13.3 ± 0.3	14.0 ± 1.2
Avg	13.7	13.9	14.7

^zValues are means ± the SE with n = 3.

^yValues are means ± the SE with n = 3 (each sample derived from 25 berry average).

^xValues are means ± the SE with n = 3 (each sample derived from five berry composite).

Table 3 lists comparisons of Miss Alice Mae™ to several cultivars in a replicated Advanced Selection Trial at Alapaha, GA, for the period from 2014 to 2016. There were three replications of 10 plants each in this trial that were established in 2010. Miss Alice Mae™ flowered and ripened later than ‘Star’ and ‘Rebel’, earlier than ‘Camellia’, and near the time of ‘Farthing’ (USPP 19341) on average over the 3-year period. Fruit attributes of size, scar, color, flavor, and firmness for the new cultivar

were generally very good, and cropping was among the best for this cultivar overall.

Total yield per plant was determined for three single plant replicates via hand harvesting in selection test plots at Griffin in 2011–13 (Table 4). These data support that Miss Alice Mae™ has good yields when compared with ‘Star’ and ‘Camellia’. A more detailed view of select berry attributes of size, firmness, and Brix, are also presented in Table 4 for a multiyear period. Miss Alice Mae™

berry size was typically less than ‘Camellia’, but similar to or greater than ‘Star’. Fruit firmness of the new cultivar was excellent, being similar to ‘Star’, but greater than ‘Camellia’. And finally, Brix readings for Miss Alice Mae™ were very good, averaging 14.7% which is high for fresh blueberries in the southeastern United States, which often have Brix values of 12% or less (personal observations).

In summary, Miss Alice Mae™ (Fig. 1) is a midseason southern highbush blueberry with good to very good berry quality with regards to size, firmness, and picking scar. A moderate degree of plant vigor, good yields, and outstanding flavor, all add to the desirability of this new cultivar.

Availability

Miss Alice Mae™ has been patented as TH-921 (USPP 27292) and is owned by the University of Georgia Research Foundation. Propagation rights are controlled by UGA Research Foundation, Innovation Gateway, GSRC Boyd Building, Athens, GA, 30602-7411 (<http://research.uga.edu/gateway/>).

Literature Cited

- Lyrene, P.M. and W.B. Sherman. 2000. ‘Star’ southern highbush blueberry. HortScience 35: 956–957.
- NeSmith, D.S. and A. Draper. 2007. ‘Camellia’ southern highbush blueberry. J. Amer. Pomol. Soc. 61:34–37.
- NeSmith, D.S. 2008. ‘Rebel’ southern highbush blueberry. HortScience 43:1592–1593.
- NeSmith, D.S. 2014. ‘TH-819’ southern highbush blueberry Georgia Dawn™. HortScience 49: 674–675.