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‘Prince’ Rabbiteye Blueberry

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The rabbiteye blueberry is the predominant type of blueberry currently being grown commercially in the southeastern United States. In the Gulf Coast region of the southeast, growers require earlier ripening blueberry cultivars adapted to the coastal environment that will allow for competition in the early fresh market and for optimum profits. Potential profits from berries sold in the fresh market greatly exceed those from processing berries; however, producers assume risk of periodic late spring freeze events that may result in injury to flowers and developing fruit. The number of early-ripening rabbiteye blueberry cultivars is limited with ‘Climax’, ‘Premier’, and ‘Brightwell’ (in advancing flowering/ripening order) being among current industry standards. Cropping and plant growth of ‘Climax’ and ‘Premier’ are variable in the southeastern United States (Spiers, 1978) and elsewhere. New consistently productive and early-ripening rabbiteye blueberry cultivars with high vigor and good fruit quality are needed to sustain the early fresh-market blueberry industry in the region.

‘Prince’ is a new rabbitteye blueberry (*Vaccinium asheii* Reade = *V. virgatum* Aiton) released by the U.S. Department of Agriculture’s Agricultural Research Service (USDA-ARS). ‘Prince’ is an early-ripening rabbiteye blueberry possessing favorable attributes, including good fruit quality combined with high yield potential and a highly vigorous growth habit when compared with the early ripening cultivars Climax and Premier (Brightwell and Draper, 1975). Plants of ‘Prince’ flower and ripen 4 to 6 d earlier than ‘Climax’ in southern Mississippi, with ripening occurring well within the lucrative U.S. early fresh-market window. Berries of ‘Prince’ are medium-sized and have excellent firmness, dry scars, and good flavor.

Origin

‘Prince’ was selected in 1996 at the USDA-ARS Southern Horticulture Laboratory in Poplarville, MS, from a cross of MS 598 × FL 80-11 and was tested as MS 706. The pedigree of ‘Prince’ is depicted in Figure 1. MS 706 was tested in a planting at Stone County and McNeil, MS, beginning in 2000.

Description and Performance

Plant and berry attributes of early-ripening rabbiteye blueberry cultivars were evaluated over 7 years from 2003 to 2009 at Stone County, MS, near the DeSoto National Forest in southeastern Mississippi from three plant replicates for each cultivar. Plants were grown in an acidic (pH 5.2) soil amended with 200 m^3 pine bark/ha using recommended production practices. Table 1 depicts plant and berry attributes of ‘Prince’, ‘Brightwell’, and ‘Climax’. Subjective ratings of yield and plant vigor of ‘Prince’ plants were consistently equal to or greater than either ‘Climax’ or ‘Brightwell’. Figure 2 illustrates the vigorous cane growth, large berry clusters, and excellent yield potential of ‘Prince’.

Knowledge of flowering and ripening times is an important consideration for southeastern U.S. blueberry growers, especially those considering early flowering and ripening rabbiteye blueberries (Spiers, 1978). In southern Mississippi, early flowering times predispose flowers and developing fruit to freeze injury. Plants that bloom after mid-March are more likely to escape such late spring frost injury. The average time of 50% flowering for ‘Prince’ was 3 and 14 d earlier, respectively, than ‘Climax’ and ‘Brightwell’ (Table 1). However, observations showed a tendency for ‘Prince’ to have a relatively extended time of flowering and subsequent moderate fruit set after two late spring freeze events (data not shown). Thus, the early flowering habit of ‘Prince’ suggests that frost protection may be necessary. Time of 50% ripening of ‘Prince’ berries was 4 d and 12 d earlier, respectively, for these same comparison cultivars, which is desirable for the early fresh market.

Both empirical laboratory data and subjective rating scales are often used to describe blueberry plant and berry quality attributes, including productivity and vigor and berry color, scar size, and flavor (Clark et al., 1996; Ehlenfeldt and Finn, 2007; Gupton et al., 1994; NeSmith et al., 2005). Rating scores for both productivity and plant vigor were highest for ‘Prince’. Color of all cultivars was commercially acceptable, but berries of ‘Prince’ were slightly darker than those of both ‘Brightwell’ and ‘Climax’. Flavor of ‘Prince’ was sweet and subacid, and berries of all cultivars had good flavor when fully ripe. Berry scars were commercially acceptable for all cultivars.

Laboratory measurements of several berry quality attributes, including average berry weight, berry firmness, pH, and percent soluble solids, were made from three replicate berry samples each year (2006 to 2008) and titratable acidity was measured in 2007; data were pooled across years (Table 2). All calculations were made using SAS System software Version 9.1.2 (SAS Institute, 2004). Size of ‘Prince’ berries (measured from 30 berries of each cultivar) was significantly less than ‘Brightwell’ but similar to ‘Climax’. Berry firmness measurements were obtained from 20 berry samples run on a Firmtech II (BioWorks Corp., Stillwater, OK), an apparatus that measures firmness in terms of the rate (in $g \cdot mm^{-1}$) at which force increases as berries are squeezed and deflected. No differences in berry firmness were detected among cultivars. Tendencies of berry splitting were measured in 2007–2008 by soaking 30 to 50 fully ripe berry samples in distilled water 24 h and counting the number of split berries (Marshall et al., 2007). Results indicated that ‘Prince’ had a greater tendency for splitting in the laboratory than either ‘Climax’ or ‘Brightwell’. Moderate rain-related physiological splitting of ‘Prince’ berries has also been observed in the field in two seasons (data not shown). Soluble solids content, pH, and titratable acidity were determined from juice extracted from a puree of a 40-g berry sample placed into a commercial Waring® blender (Dynamics Corp. of America, Hartford, CT) and strained through cheesecloth. A handheld temperature-compensating refractometer (Leica Microsystems AR 200, Wetzlar, Germany) was used to determine the soluble solids concentration. Juice pH of ‘Prince’ was significantly lower than either ‘Brightwell’ or ‘Climax’ and soluble solids content was significantly higher than either cultivar. Titratable acidity (TA, expressed as citric acid) was measured in 2007 only, and results suggested that TA of ‘Prince’ was intermediate between the two comparison cultivars.

Like with most rabbiteye blueberry cultivars, ‘Prince’ should be planted with other early-flowering rabbiteye blueberries to facilitate pollination and fruit set. Suitable

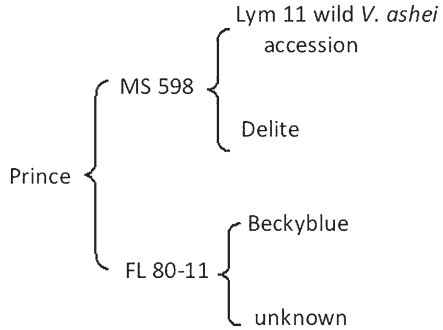

Fig. 1. Pedigree of ‘Prince’.

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Table 1. Subjective ratings of fruit and plant characteristics of 'Prince' and the standard rabbiteye cultivars Brightwell and Climax over a 7-year period (2003 through 2009) at Stone County, MS.[z]

Berry and plant attributes[y]	Cultivar		
	Prince	Brightwell	Climax
Berry color	7.6 ± 0.3	8.0 ± 0.0	8.0 ± 0.0
Berry scar	8.0 ± 0.0	7.9 ± 0.1	8.0 ± 0.0
Berry flavor	7.7 ± 0.3	8.3 ± 0.2	8.0 ± 0.0
Productivity	8.3 ± 0.2	8.1 ± 0.1	7.6 ± 0.5
Plant vigor	8.5 ± 0.7	8.0 ± 0.0	8.0 ± 0.0
Date of 50% blooming	19 Mar. ± 4.7 d	2 Apr. ± 5.6 d	22 Mar. ± 5.2 d
Date of 50% ripening	1 June ± 6.1 d	13 June ± 6.0 d	5 June ± 4.2 d

[z]Ratings are based on subjective scores ranging from 1 to 10 with 1 being the least desirable and 10 being the most desirable . A value of 6 to 7 is considered to be the minimum acceptable rating for a commercial blueberry cultivar.
[y]Values are means ± SE with n = 7.

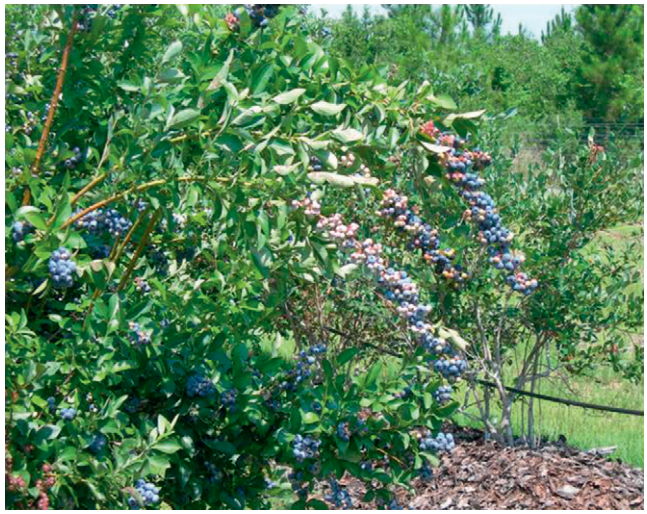

Fig. 2. 'Prince' blueberry cultivar.

Table 2. Laboratory evaluations of berry quality attributes of 'Prince' and the rabbiteye standard cultivars Brightwell and Climax over a 3-year period (2006 to 2008) at Stone County, MS.

Cultivar	Berry size (g)	Berry firmness[z]	Berry splitting (%)[y]	pH	Soluble solids (%)	Titratable acidity (% citric acid)
Prince	1.79 b[x]	228.1 a	24 NS	3.11 b	15.0 a	7.0 ab
Brightwell	1.94 a	220.5 a	11 NS	3.28 a	13.5 b	6.2 a
Climax	1.72 b	210.7 a	14 NS	3.27 a	13.8 b	8.5 b

[z]Rate ($g \cdot mm^{-1}$) at which force required to compress berries increases when compressed.
[y]Percentage of split berries following 24 h distilled water soaking, 2007 to 2008.
[x]Means followed by different letters within the same column are significantly different as determined by least significant difference test at $P \leq 0.05$.

choices may include 'Savory', 'Climax', or 'Premier'. 'Brightwell' and 'Vernon' may be additional but less suitable choices because their flowering dates are usually later.

'Prince' propagates readily from both softwood cuttings taken from new growth in late spring or flushes of new growth in late summer as well as from hardwood cuttings taken in the winter and grows vigorously in the nursery. 'Prince' has shown excellent survival in fields in southern Mississippi, and no diseases have occurred.

Availability

'Prince' is a public domain blueberry cultivar and a limited supply of rooted cuttings, cutting wood, and tissue-cultured plants is available to certified nurserymen. Written requests for plant materials should be sent to Dr. Stephen Stringer, USDA-ARS Southern Horticulture Laboratory, P.O. Box 287, Poplarville, MS 39470. Genetic materials of this release are deposited in the National Plant Germplasm Repository at Corvallis, OR, where it is available for research purposes and commercial development.

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