'T-1101' Rabbiteye Blueberry Krewer™

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Rabbiteye blueberry (*Vaccinium virgatum* Aiton; syn. *Vaccinium ashei* Reade) cultivars constitute a major portion of the blueberry acreage in Georgia and across much of the Southeast (Krewer and NeSmith, 2002; Scherm et al., 2001). The species is largely grown because of its high plant vigor and adaptability to the area. However, the small fruit size of most current rabbiteye blueberry cultivars often diminishes their potential to compete with larger fruited high-bush (*Vaccinium corymbosum* L.) cultivars from other regions in the fresh market arena. Small berry size also results in poor efficiency with hand harvesting, which often destines much of the rabbiteye crop to being machine harvested and used for processing. Thus, commercial growers could reap immediate tangible benefits from larger fruited rabbiteye cultivars that improve hand-harvest efficiency. Concurrently, many small pick-your-own operations would greatly benefit from larger fruited cultivars to improve the overall "harvest experience" for their customers. We have been diligently seeking to develop larger fruited rabbiteye cultivars at The University of Georgia (UGA) for the past 20 years with hopes of alleviating some of these issues. NeSmith (2014) described the recently released Titan™ (patented as 'T-959', USPP 24,135), and a second large-fruited cultivar T-1101 (USPP 28,623) rabbiteye blueberry Krewer™ is being released. Together, the two cultivars offer growers of rabbiteye blueberries companion cultivars suitable for pollinating each other that also have large, compatible berry size.

Origin and Description

Krewer™, named in honor of retired UGA Blueberry Extension Specialist Dr. Gerard Krewer, was selected in 2007 at the Georgia Experiment Station in Griffin, GA, originated from a group of seedlings derived from open pollinated 'Vernon' fruit in 2004. The maternal parent, 'Vernon' (USPP 18,291), is a 2004 UGA release (NeSmith et al., 2005). Tested and patented as 'T-1101' (USPP

28,623), Krewer™ is being released for commercial usage, and for pick-your-own and homeowner markets. Krewer™ ripens around the time of the early rabbiteye cultivars Alapaha (USPP 16,266), Titan™, and Vernon (NeSmith, 2014; NeSmith et al., 2002, 2005). Krewer™ has very large (2.7–3.1 g), firm berries that are medium blue, with a medium size, dry picking scar. Plants are vigorous and semiupright, having shown very good adaptation to both the Coastal Plains and Piedmont Regions of Georgia. No notable disease or other pest problems have been observed for Krewer™ that have not also been common in other blueberry cultivars and selections in the vicinity of the test plots. Krewer™ is estimated to have a chilling requirement of 350–450 h below 7 °C based on observations and comparisons with other cultivars. Propagation is easily accomplished using either softwood cuttings or in vitro tissue culture production. Plants have low self-fertility like most rabbiteye cultivars; therefore, planting with

Performance

Krewer™ was tested in UGA Research Farm plantings at Alapaha and Griffin, GA locations starting in Fall 2009. Tables 1 and 2 present multiyear fruit and plant data for Krewer™ and three commercial blueberry cultivars as standards at the two sites. Overall, numerical ratings indicate Krewer™ berry size was superior to that of 'Alapaha' and 'Vernon', being similar to the large-fruited Titan™ at both locations. The new cultivar generally ripens early in the season, along with 'Alapaha', 'Vernon', and Titan™, but tends to flower 5–7 d earlier than those cultivars.

A detailed assessment of the berry attributes, weight, firmness, and Brix for Krewer™ and other cultivars during the 2012 and 2013 seasons is denoted in Table 3. Mean berry weight was obtained from three samples of 25 berries per cultivar; firmness was determined for three 25-berry samples using a FirmTech II device (Bioworks Inc., Wamego, KS); and Brix readings were determined from a subsample of five berries using a handheld refractometer (Extech Instruments, Boston, MA). Data were obtained from the first 25% to 30% of ripe fruit for each cultivar. Krewer™ had notably larger berries than 'Alapaha' and 'Vernon' each year. Firmness of Krewer™ was less than that of Titan™ each year, but better than those of 'Alapaha' and

Table 1. Four-year average ratings of some fruit and plant characteristics of Krewer™ and rabbiteye standard cultivars Alapaha, Vernon, and Titan™ from 2011 to 2014 in field test plots at Alapaha, GA. Rating scales are based on a 1–10 score, with 1 being the least desirable and 10 being the most desirable. A value of 6 and 7 (except for cropping score) is generally considered to be the minimum acceptable rating for a commercial cultivar. These plants were established in Fall 2009.

Berry and plant attributes ^z	Krewer™	Alapaha	Titan™	Vernon
Berry size	9.3 ± 0.1	6.3 ± 0.1	8.9 ± 0.2	7.9 ± 0.1
Berry scar	7.4 ± 0.2	7.4 ± 0.1	7.5 ± 0.2	7.2 ± 0.1
Berry color	7.2 ± 0.2	6.7 ± 0.1	7.0 ± 0.1	7.1 ± 0.1
Berry firmness	7.8 ± 0.1	6.9 ± 0.1	8.3 ± 0.2	7.5 ± 0.2
Berry flavor	7.2 ± 0.1	7.1 ± 0.1	6.8 ± 0.1	7.3 ± 0.1
Cropping	6.1 ± 0.5	6.8 ± 1.0	5.2 ± 0.8	4.5 ± 0.9
Plant vigor	8.6 ± 0.1	8.0 ± 0.3	9.5 ± 0.3	9.2 ± 0.3
Date of 50% flowering	16 Mar.	26 Mar.	24 Mar.	21 Mar.
Date of 50% ripening	28 May	4 June	2 June	1 June
Fruit development period (d)	78 ± 3.7	73 ± 2.0	75 ± 1.6	75 ± 3.0

^zValues are means ± the SE with *n* = 4.

Table 2. Four-year average ratings of some fruit and plant characteristics of Krewer™ and rabbiteye standard cultivars Alapaha, Vernon, and Titan™ from 2011 to 2014 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 and 7 (except for cropping score) is generally considered to be the minimum acceptable rating for a commercial cultivar. These plants were established in Fall 2009.

Berry and plant attributes ^z	Krewer™	Alapaha	Titan™	Vernon
Berry size	8.7 ± 0.2	6.5 ± 0.2	8.8 ± 0.3	7.7 ± 0.1
Berry scar	7.4 ± 0.1	7.3 ± 0.1	7.6 ± 0.4	7.1 ± 0.1
Berry color	7.3 ± 0.3	7.0 ± 0.1	7.1 ± 0.1	7.2 ± 0.1
Berry firmness	7.4 ± 0.1	6.9 ± 0.1	8.5 ± 0.3	7.5 ± 0.2
Berry flavor	7.1 ± 0.2	7.3 ± 0.2	7.0 ± 0.1	7.5 ± 0.2
Cropping	6.6 ± 0.7	7.5 ± 0.9	7.1 ± 1.0	6.2 ± 0.5
Plant vigor	7.4 ± 0.4	7.5 ± 0.3	9.5 ± 0.2	8.8 ± 0.1
Date of 50% flowering	24 Mar.	1 Apr.	3 Apr.	2 Apr.
Date of 50% ripening	16 June	13 June	18 June	13 June
Fruit development period (d)	84 ± 1.9	76 ± 1.6	80 ± 3.9	76 ± 2.1

^zValues are means ± the SE with *n* = 4.

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Table 3. Berry weight, firmness, and Brix for Krewer™ and standard cultivars Alapaha, Vernon, and Titan™ at Griffin, GA, during 2012 and 2013. These plants were established in 2009.

Yr	Krewer™	Alapaha	Titan™	Vernon
Berry wt (g/berry) ^z				
2012	2.92 ± 0.07	1.28 ± 0.06	2.60 ± 0.06	1.60 ± 0.05
2013	3.08 ± 0.10	1.63 ± 0.04	3.10 ± 0.08	2.43 ± 0.09
Avg	3.00	1.46	2.85	2.01
Firmness (g/mm) ^z				
2012	198 ± 5	175 ± 4	240 ± 7	185 ± 4
2013	168 ± 3	169 ± 4	220 ± 5	164 ± 6
Avg	183	172	230	175
Brix (%) ^y				
2012	12.7 ± 0.3	10.8 ± 0.4	10.2 ± 0.3	11.5 ± 0.5
2013	13.0 ± 0.5	13.2 ± 0.3	10.0 ± 0.1	10.0 ± 0.5
Avg	12.9	12.0	10.1	10.8

^zValues are means ± the SE with $n = 3$ (three samples, each derived from 25-berry average).

^yValues are means ± the SE with $n = 3$ (three samples, each derived from five-berry composite).

Table 4. Yield and berry weight for Krewer™ and ‘Vernon’ at Alapaha, GA, during 2013 and 2014. These plants were established in 2009.

Yr	Krewer™	Vernon
Berry wt (g/berry) ^z		
2013	2.75 ± 0.09	1.93 ± 0.08
2014	2.90 ± 0.08	2.14 ± 0.09
Avg	2.83	2.03
Yield (kg/plant) ^y		
2013	5.7 ± 0.2	4.3 ± 0.9
2014	10.9 ± 0.7	9.8 ± 0.6
Avg	8.3	7.1

^zValues are means ± the SE with $n = 3$ (three samples, each derived from 25-berry average).

^yValues are means ± the SE with $n = 3$ (three individual plants).

Fig. 1. Fruit of ‘T-1101’ rabbiteye blueberry Krewer™ during ripening.

‘Vernon’ in 2012. Brix readings were highest for Krewer™ in 2012 and for Krewer™ and ‘Alapaha’ in 2013.

The total yield per plant was determined for three single plant replicates via multiple hand harvests in selection test plots at Alapaha, GA, in 2013 and 2014 for Krewer™ and ‘Vernon’ (Table 4). Mean berry weight was also determined from three 25-berry samples for each plant at each harvest. These data support that Krewer™ is also high yielding and further supported the new cultivar’s tendency to produce large berry size.

With all of the positive attributes, Krewer™ does carry the negative characteristic of being slightly to moderately susceptible to fruit splitting. Fruit splitting is a physiological phenomenon, not completely understood, that occurs periodically for certain varieties after heavy rains that occur during fruit ripening (Marshall et al., 2007). Limited field observations indicate that, Krewer™ could encounter fruit splitting problems under certain conditions; however, Titan™ has been shown to be even more susceptible (NeSmith, 2014). Another less desirable trait for Krewer™ is that there can be some delay in the development of blue color over the entire berry. Those harvesting will need to let the fruit fully mature

before harvest to avoid “pink backs” with the fruit. However, full color development does occur if the fruit is not harvested prematurely. Finally, early flowering could predispose Krewer™ to spring frost damage in some years at vulnerable locations.

In summary, ‘T-1101’ rabbiteye blueberry Krewer™ (Fig. 1) is large-fruited, with good firmness and Brix. A high degree of plant vigor, good yields, and an early ripening time are desirable features of this new cultivar. Krewer™ is somewhat susceptible to rain splitting; however, this potentially negative trait is outweighed by the benefits of the very large berry size and other positive attributes.

Availability

Blueberry ‘T-1101’ (USPP 28,623) Krewer™ is owned by the University of Georgia Research Foundation. Propagation rights are controlled by the University of Georgia Research Foundation, Innovation Gateway, GSRC Boyd Bldg, Athens, GA 30602-7411 (<http://research.uga.edu/gateway/>).

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