Blueberry Cultivar Development at The University of Georgia

A Progress Report for 2004

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The UGA Blueberry cultivar development program generates and evaluates numerous selections of southern highbush and rabbiteye blueberries each year. Currently, the UGA Blueberry Research Farm near Alapaha is the primary field evaluation site for advanced seedlings, new selections, and advanced selections. Griffin is the primary site for high density seedling nurseries and it is a duplicate test site for growing selections for further testing. Starting in 2001, the UGA Branch Station at Blairsville was enlisted as an advanced selection testing site for blueberry. Having these multiple sites provides considerable climatic and edaphic variability which enhances the cultivar development process.

General Overview of 2004

The 2004 growing season at Alapaha was generally highlighted by favorable yields across most cultivars and selections. There was little crop reduction due to poor pollination weather or freeze damage in either Griffin or Alapaha. Comprehensive flowering notes, cropping notes and fruit characteristic evaluations were taken for more than 300 selections and advanced seedlings of rabbiteye and southern highbush blueberries, as well as numerous cultivar standards at the test sites. Additionally, more than 2000 seedlings were evaluated in the nursery at the Griffin site in 2004. This resulted in several advanced seedlings and selections being identified for further testing. Ratings were made for some selections at the Blairsville, Ga. test site, and some on farm test sites in south Georgia were rated for the first time in 2004.

Performance of Rabbiteye Selections at Alapaha

Detailed data on plant and berry attributes were collected for numerous rabbiteye selections in 2004 at Alapaha. Table 1 depicts data for some of the more promising selections along with observations for some cultivar standards. Data for selections with numbers less than T-619 and for cultivar standards are from plants that are mature (8 to 15 years old). Those selections beginning with number T-626 are younger plants (2 to 6 years old). Older selections are in non-bedded, non-irrigated plots, while the younger selections are in plots that have been bedded and irrigated.

We continue to be interested in early ripening selections to replace ‘Climax’ and ‘Premier’. ‘Climax’ had 50% ripening by June 9 this year, which is several days later than previous years. ‘Premier’ ripening date was June 10. The new UGA release

‘Alapaha’ ripened a few days earlier (June 2) than ‘Climax’ and ‘Premier’ during 2004. Another outstanding early season rabbiteye selection is T-584. It also ripened slightly earlier than ‘Climax’ or ‘Premier’, yet generally flowered 5 days or more after the standards. T-584 also has favorable berry size (Table 2). More detailed data on T-584 are presented in other sections of this report. This selection has been submitted for release in 2004. T-611, T-616, T-626, T-630, and T-676 all had ripening dates earlier than ‘Climax’ and ‘Premier’. Of these, T-616 had the largest berry size and best berry quality. Younger selections including T-670 and T-671 were of great interest due their early ripening dates and excellent berry quality. These early selections were propagated to conduct more advanced tests at multiple sites.

As for mid-season ripening berries, ‘Brightwell’ continues to be the standard for testing. ‘Brightwell’ ripened late during 2004 (June 20 to 24), presumably due to a heavy crop load. Several selections ripened with ‘Brightwell’ or earlier. Selections in the ‘Brightwell’ season worth noting are T-516, T-538, T-619, T-672, and T-674. Of these, T-516 has very good berry color and size, T-538 has excellent berry size, T-619 has good berry color and scar, and T-672 and T-674 have good berry firmness. Some of these selections have been propagated for advanced testing.

As for the ‘Tifblue’ ripening season, there are only a few selections we are looking at. Of these, T-459 is the most promising. This selection generally has a good crop, and berry size is large compared to ‘Tifblue’. The berry size of T-459 is generally maintained across all harvests, also making it a desirable selection. This selection is being considered for release in 2005.

Other rabbiteye selections worth noting for their large berry size are T-451 and T-460. We continue to exam T-451 as a potential release. The berry is very large, but it has a great tendency for fruit splitting in wet weather. In addition to favorable berry size, T-460 generally has a very good crop load, good berry color, and good plant vigor. In some years however, the ripening of T-460 has been too drawn out. T-672, T-674, and T-675 are young selections with exciting potential. They have both good to very good berry size, and good to excellent firmness.

Performance of Rabbiteye Selections at Griffin

Many of the rabbiteye selections listed above for the Alapaha location also performed well at the Griffin test site (Table 3). All plants at the Griffin test site are young (6 years old or less), and all plants are irrigated and mulched with bark. In Griffin, ‘Climax’ ripened on June 16 during 2004. Again, the new release ‘Alapaha’ performed well in comparison to ‘Climax’, as did the selection T-584. Other selections ripening before ‘Climax’ in Griffin were T-626, T-628, T-630, T-671, T-672 and T-676. T-630 is a selection that has performed well in Griffin over the past couple of years, especially with regards to crop load. However, the selection has performed only moderately well in south Georgia. T-626 had one of the better crop loads among the rabbiteye selections

in Griffin, and ripened 5 days earlier than 'Climax' and 15 days earlier than 'Brightwell'. We will continue to evaluate this selection at both Griffin and Alapaha, as well as at other locations. Several selections had very large berry size at Griffin (Table 4). T-451, T-670, T-671, T-672 and T-675 were particularly noteworthy. Many of these rabbiteye selections were those with good berry size at the Alapaha test site as well. The new release 'Columbus' from North Carolina had excellent berry size in Griffin.

Multi-year Yields of Advanced Rabbiteye Selections at Alapaha

Yields have been taken for several rabbiteye selections and cultivar standards at the Alapaha test site since 1998 (Table 5). When considering the early season, 'Climax' yield has been inferior to the selections T-451 and T-584. As mentioned previously, T-584 has been submitted for release in 2004. The 7-year average yields for this selection are nearly twice that of 'Climax'. As for T-451, the 7-year average yields are nearly 2.5 times that of 'Climax'. The large berry size of T-451 tends to give high total yields even when cropping is low. However, the selection is plagued by a fruit splitting problem. T-451 is being considered for release in 2005, but the commercial potential may be limited. However, the selection should make an outstanding variety for the homeowner and smaller, pick-your-own grower due to its tremendous berry size.

In the later season, T-459 continues to perform well, and it has a very favorable berry size across multiple harvests. The selection has yielded nearly 50% more than 'Tifblue' on average over a 7-year period. We are also considering T-459 for release in 2005.

Multi-location Yields and Performance of Advanced Rabbiteye Selections

In addition to the multi-year yield data from Alapaha, in 2004 we collected yield and performance data for three advanced selections at three diverse test sites (Table 6). Chill hours (calculated from Oct. 1 thru Feb. 15) at the locations in 2004 were as follows: Blairsville had 1807; Griffin had 1357; Alapaha had 882. Plants of 'Tifblue' and T-459 at Alapaha were mature plants (more than 10 years old), and plants of 'Climax', T-451, and T-584, were 3-year old plants. At Griffin, 'Tifblue' and T-459 plants were 6 years old, and others were only 3 years old. At Blairsville all plants were 3 years old. Bloom dates in Griffin were generally 8 to 14 days later for a particular selection than at Alapaha, and Blairsville bloom dates were generally 2 to 3 weeks later than in Griffin. T-584 generally bloomed a few days after 'Climax' at all locations, but ripened before the standard cultivar. This response of T-584 indicates it would be a better early season choice due to the fact that it blooms later, thus missing some early season freeze events that would harm 'Climax'.

T-584 performed well across the environments, yielding more than 'Climax' at two of the locations. Berry size of T-584 was considerably greater than 'Climax' at all locations. This is additional evidence that the selection will make a good cultivar. T-459 had

similar yield as ‘Tifblue’ at Griffin, greater yield at Alapaha, and less yield at Blairsville. However, berry size was greater for T-459 than for ‘Tifblue’ at all locations. Berry size of T-451 was also very large across all locations. Berry size of all selections was generally greatest in the cooler mountain location of Blairsville.

The data from the multi-location tests are very useful in determining the adaptability of selections across environments. We will continue to monitor these selections at the locations for a few more years, and have added new plantings at the sites.

Performance of Field Grown Southern Highbush Selections at Alapaha

The UGA Blueberry Breeding Program continues to aggressively generate and evaluate southern highbush plant material. Most southern highbush selections that existed at Alapaha prior to 1998 had very low vigor due to the lack of suitable highbush soil at the site, poor drainage, and absence of irrigation. Since 1998, southern highbush selections have been planted in raised beds, with irrigation and pine bark mulch. Performance of several of these new selections at Alapaha, along with some standard cultivars, is depicted in Table 7. These selections are all less than 6 years old.

Much of our effort with southern highbush has been aimed at developing selections that have high quality berry attributes and a high degree of plant vigor. Results suggest that we are making considerable advances toward these goals. Numerous selections have a plant vigor rating of 8.0 or higher (on a 1 to 10 scale). Notable selections are TH-621, TH-639, TH-642, TH-653, TH-656, TH-681, and TH-691. Of these, TH-621 has a high degree of plant vigor, along with very good berry quality. However, the selection tends to ripen somewhat late for the south Georgia southern highbush market. We are releasing TH-621 in 2004 with hopes that interest will be among growers for a vigorous, high quality berry, that ripens after ‘Star’ but before the rabbiteye season.

Early ripening fruit continues to appeal to many south Georgia growers. The Florida release ‘Star’ is currently a prominent standard cultivar, and it had 50% ripe fruit by May 11 at Alapaha in 2004 under field conditions. Among the new selections, TH-642 is one of the more outstanding with regards to early ripening (50% ripe on April 25), and it has very good berry size, crop load, and plant vigor. We have propagated this selection for further testing, and will likely fast-track it for release in 2005 if it continues to perform well. Other notable selections that ripened earlier than ‘Star’ were TH-639 and TH-644. Both of these selections bloom at a similar time as ‘Star’, have larger berry size, and are generally more vigorous. Several selections ripened with ‘Star’ or 3 to 4 days after. Of these, TH-681 and TH-691 were the most notable, having very large fruit size, excellent color, and good firmness. These selections also bloomed 10 to 12 days after ‘Star’. ‘Palmetto’, released in 2003, performed adequately in 2004. It ripened with ‘Star’, although it had smaller berry size. ‘Palmetto’ is noteworthy for firmness, flavor, and plant vigor.

Berry firmness is of great interest in southern highbush, and the selections TH-639, TH-653, and TH-658 all had excellent firmness. We will evaluate these many selections for 3 to 5 more years in order to identify those that are suitable as cultivars.

Performance of Southern Highbush in A High Density System at Alapaha

Some Georgia growers are interested in growing southern highbush blueberries in high density production systems. To date, there has been little or no comparative information on how different southern highbush selections and cultivars perform in such a system. In 2002, we established a high density test site at Alapaha consisting of several leading cultivars and some of the new UGA selections. This site consists of raised beds filled with bark, overhead irrigation, bird netting, and a plant spacing of 3 ft. x 5 ft. Table 8 presents performance data for the various selections during 2004, which was the second cropping season. Generally all selections and cultivars had suitable plant vigor in this system. Two of the most important pieces of data for this system are the ripening date and crop load for the various entries, as growers need to maximize returns. 'Emerald' had the best crop load, but this was the earliest flowering selection which could be troublesome in frost prone years. 'Star' performed well in most regards, especially crop load and early ripening. 'O'Neal' lacked berry size and firmness, while 'Palmetto' showed good firmness. ' Windsor' had a decent crop load, but berry scar and firmness were not good. TH-658 was a notable selection that ripened early (May 14) and had outstanding berry firmness, however, it produced only a light crop. TH-621 was noteworthy, although, it ripened a little later than desired. It appears plants having berries that ripen by May 15-20 or earlier would be those to be considered for high density production.

Performance of Field Grown Southern Highbush Selections at Griffin

All of the southern highbush plants growing in Griffin are 4 years old or less. While the test site is not considered very suitable for southern highbush production, we have been able to grow several of our selections in the red Piedmont soil with pine bark mulch and irrigation. Table 9 lists data for several of the highbush selections in Griffin. Most of these were evaluated at Alapaha as well. Again, we have selections that demonstrate outstanding plant vigor, including TH-662, TH-664, TH-667, TH-668, and TH-678. Of these, TH-664 is the most notable as it also had large berry size, excellent firmness, and a ripening date earlier than 'Star'. TH-642, one of the prominent selections in south Georgia, had a ripening date 9 days earlier than 'Star' in Griffin. TH-681 had outstanding berry and plant attributes, but ripening was 5 days later than 'Star'. TH-639 performed well, but flowering date was early.

One of the most noteworthy highbush selections in Griffin during 2003 was TH-658. This early ripening selection looked good in 2004 also, with excellent berry firmness and flavor, good berry size and plant vigor; however, crop load was light. The selection will

be closely monitored at both Griffin and Alapaha over the next 3 to 5 years to determine its suitability as a cultivar. We have also propagated a limited number of plants to test at additional locations.

Performance of a New Rabbiteye Release

After several years of testing, we have submitted the selection T-584 to be approved for release in 2004. If approved, the planned name for the new cultivar is 'Vernon'. Table 10 portrays 5-year average data (1998-2002) for 'Premier', 'Climax', and T-584 at Alapaha, Ga. The data indicate that T-584 generally flowers 10 days after 'Climax', yet, ripens with it. T-584 flowers 5 days after 'Premier', and ripens before it. Berry size of T-584 is large, and firmness is very good. Yields on average for 5-years exceeded both 'Climax' and 'Premier'.

As for adaptability to other areas, T-584 seems to be as adaptable as the standard cultivar Climax. Table 11 depicts fruit and plant characteristics of T-584 and 'Climax' for 2 to 4 year-old plants at 2 locations in Georgia (Blairsville and Griffin), one location in Mississippi (McNeil), and one location in Arkansas (Clarksville) during 2003. The two entries generally ripened at the same time, and had similar attributes. The exceptions were that T-584 had considerably larger berry size than 'Climax', and typically had better cropping also.

Plans are being made to have T-584 plant material available for propagators by March 2005, assuming the release is approved. In order to obtain a license for propagating 'Vernon' and other UGA blueberry cultivars, contact the Georgia Seed Development Commission in Athens (ph. 706-542-5640).

Goals of The UGA Blueberry Cultivar Development Program for 2005

Plans for the year 2005 are to continue aggressively evaluating seedlings, advanced seedlings, selections, and advanced selections of both rabbiteye and southern highbush blueberries. More than 30 new crosses (yielding 50 to 300 seedlings per cross) of rabbiteye and southern highbush will be made during 2005. Nearly 2500 seedlings were generated from crosses made in 2004. These seedlings will be planted in a seedling nursery during the early summer of 2005 to be grown for future evaluations. More than 5000 seedlings were planted in nurseries during 2003 and 2004, and these seedlings will be screened during 2005 for fruit characteristics including size, scar, firmness, color, and flavor. The most promising seedlings will be identified as advanced seedlings for further evaluation (estimated to be 2 to 3% of total seedlings). In 2004, over 50 seedlings were identified as advanced seedlings from 2002 crosses. These advanced seedlings will be planted in the field at Alapaha, and will be further evaluated as potential selections in 2005. In addition to the advanced seedlings from 2004, more than 50 new selections were made from seedlings of

crosses made by the UGA program. These were propagated, and multiple plants will be established at Alapaha and Griffin in 2005 for replicated evaluations. These new selections will be added to the many currently growing at these locations, and all will be evaluated during 2005 for possible designation as advanced selections.

In 2004, several selections were identified as advanced selections and were propagated. These will be further evaluated in 2005 for potential as cultivars, and some of the advanced selections will be distributed to cooperators to assist in the evaluation process. Several rabbiteye and southern highbush advanced selections were distributed to grower-cooperators in 2002 and 2003 to begin the final phase of testing for their potential as cultivar releases. Plantings of several selections have been made in recent years in Georgia, Florida, Mississippi, North Carolina, and Arkansas. Data from these trials will be collected again in 2005. Evaluations of these advanced selections will include fruit characteristics, plant growth characteristics, flowering times, and yields.

Table 1. Ratings (1 to 10 scale) of some fruit and plant characteristics of rabbiteye blueberry cultivars and selections from the Blueberry Cultivar Development Program at the Alapaha, GA location during 2004. A value of 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Selection or Variety	Date of 50% Flowering	Date of 50% Ripening	Berry Size	Berry Scar	Berry Color	Berry Firmness	Berry Flavor	Crop Load	Plant vigor
Alapaha	---	June 2	7.5	8.0	7.0	7.5	8.0	6.5	8.0
Brightwell	---	June 24	6.0	8.0	7.5	8.5	8.0	8.5	7.5
Climax	March 16	June 9	6.5	8.0	8.0	8.5	8.0	7.0	8.0
Columbus	---	June 21	8.5	7.0	9.0	7.5	8.5	6.5	6.0
Premier	---	June 10	7.5	8.5	8.5	6.5	8.0	6.5	9.0
Tifblue	March 25	June 25	7.5	8.0	9.0	8.0	8.0	7.0	7.5
T-451	March 16	June 16	9.0	8.0	8.5	8.0	7.0	6.0	8.5
T-459	March 18	June 25	8.5	8.0	8.5	8.0	8.0	9.5	8.5
T-460	March 17	June 13	8.0	9.0	9.0	9.0	8.0	8.5	9.5
T-516	March 19	June 11	8.5	8.0	9.5	7.0	7.0	8.5	9.0
T-538	March 15	June 9	9.0	8.0	8.0	8.5	7.0	8.5	9.0
T-584	March 21	June 5	8.0	8.5	8.0	8.0	8.0	6.0	8.5
T-611	March 15	May 28	7.0	7.0	9.0	7.5	7.0	7.0	7.5
T-616	March 17	May 25	8.5	9.0	8.5	8.5	8.5	4.5	9.0
T-619	March 17	June 12	8.5	8.0	9.0	8.5	7.5	8.0	9.0
T-626	March 15	June 5	6.5	8.5	8.5	8.0	8.0	7.5	9.0
T-630	March 17	June 1	7.5	8.0	9.0	9.0	8.0	5.5	7.5
T-631	---	June 8	8.0	7.5	8.5	8.0	9.0	7.5	9.0
T-655	March 22	June 9	8.5	7.5	8.0	8.5	8.0	7.5	8.5
T-670	March 20	June 7	7.5	7.5	7.0	8.0	7.5	6.0	8.0
T-671	March 16	June 5	8.5	8.0	8.0	8.0	7.0	6.0	7.5
T-672	March 22	June 15	8.5	8.0	8.0	8.5	7.0	7.5	8.5
T-674	March 16	June 9	7.5	8.5	8.5	9.0	8.0	7.5	8.5
T-675	March 23	June 12	8.5	8.5	7.0	8.5	8.5	7.5	8.5
T-676	March 5	May 27	8.0	7.5	8.5	8.0	8.0	5.0	9.0
T-723	---	June 14	8.0	7.5	9.5	8.5	8.5	8.5	8.5
T-724	---	June 15	8.5	8.5	8.5	8.5	8.0	7.0	8.0

Table 2. Berry weight at first harvest of several rabbiteye blueberry selections from the Blueberry Cultivar Development Program at the Alapaha, GA location during 2004.

Cultivar or selection	Berry weight (g)
Alapaha	1.33
Climax	1.14
Premier	1.28
Tifblue	1.25
T-451	2.46
T-459	2.21
T-516	1.70
T-584	1.78

Table 3. Ratings (1 to 10 scale) of some fruit and plant characteristics of rabbiteye blueberry cultivars and selections from the Blueberry Cultivar Development Program at the Griffin, GA location during 2004. A value of 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Selection or Variety	Date of 50% Flowering	Date of 50% Ripening	Berry Size	Berry Scar	Berry Color	Berry Firmness	Berry Flavor	Crop Load	Plant vigor
Alapaha	April 1	June 9	7.0	8.0	7.0	7.5	8.0	8.5	8.0
Brightwell	March 29	June 27	7.0	8.5	7.5	8.5	8.0	10.0	8.5
Climax	March 26	June 17	7.0	8.3	8.0	8.3	8.0	7.0	8.0
Columbus	April 7	June 21	9.0	7.3	8.3	8.0	8.3	7.0	8.3
Tifblue	April 2	July 1	6.0	8.5	9.3	8.3	8.0	7.0	9.0
T-451	March 27	June 25	9.3	7.6	8.0	8.1	8.0	7.0	8.2
T-459	April 6	June 25	8.5	8.3	8.0	8.5	8.3	7.3	8.3
T-584	March 29	June 13	7.7	8.8	8.3	8.0	8.2	8.0	8.8
T-626	March 22	June 12	7.5	8.3	7.5	8.0	8.3	7.8	9.0
T-628	March 29	June 3	6.8	8.5	8.5	8.8	8.3	5.0	7.5
T-630	March 29	June 6	8.3	7.0	8.8	6.8	8.5	8.3	8.0
T-631	March 20	June 15	8.0	7.8	8.8	8.3	8.8	6.5	8.5
T-655	March 27	June 19	8.5	8.5	7.0	7.5	7.0	7.5	7.0
T-670	March 27	June 18	9.5	8.5	7.0	8.5	8.5	7.5	9.0
T-671	March 28	June 11	9.0	8.5	8.0	8.5	8.0	5.5	8.0
T-672	March 26	June 13	9.0	8.5	7.0	9.0	7.5	6.5	9.0
T-674	March 28	June 15	8.0	8.5	7.0	9.0	8.5	8.0	9.0
T-675	April 1	June 17	8.5	8.5	7.0	8.5	8.0	6.5	8.5
T-676	March 19	June 11	8.5	7.0	8.0	8.5	7.5	4.5	8.0

Table 4. Berry weight at first harvest of several rabbiteye blueberry selections from the Blueberry Cultivar Development Program at the Griffin, GA location during 2004.

Cultivar or selection	Berry weight (g)
Brightwell	1.69
Climax	1.23
Columbus	2.71
Premier	1.56
Tifblue	1.35
T-451	2.75
T-459	2.36
T-584	1.60
T-670	2.97
T-671	2.59
T-672	2.35
T-674	2.11
T-675	2.64
T-676	2.30

Table 5. Total yield (lbs/bush) during 1998 thru 2004 of some rabbiteye blueberry selections and cultivar standards at The University of Georgia Blueberry Research Farm, Alapaha, Ga.

Cultivar or selection	Total yield per bush (lbs)							
	1998	1999	2000	2001	2002	2003	2004	multi-year avg.
				Early Season [Z/]				
Climax	6.6	6.2	11.2	7.9	5.2	3.5	4.8	6.5
T-451	8.6	23.0	23.2	23.8	14.0	10.7	3.9	15.3
T-584	7.4	13.4	14.0	22.5	13.0	6.6	4.5	11.6
				Late Season				
Tifblue	6.3	3.1	17.5	16.8	6.7	5.8	7.7	9.1
T-459	8.8	14.3	16.8	10.1	17.3	9.0	18.2	13.5

[Z/] Note in 2004, early season selection yields came from young plants only 3 years old. Previous years were from mature bushes 8 to 15 years old. All late season yields are from mature bushes.

Table 6. Performance data for standard rabbiteye blueberry cultivars and some advanced selections at three locations in Georgia during 2004.

Location	Cultivar or selection					
	Brightwell	**Climax**	**Tifblue[Y/]**	**T-451**	**T-459[Y/]**	**T-584**
			Total yield (lbs/plant)			
Alapaha	---	4.8	7.7	3.9	17.3	4.5
Griffin	10.3	6.7	18.3	12.6	18.2	8.5
Blairsville	21.6	3.6	10.6	7.1	7.2	11.1
			Berry weight (g)			
Alapaha	---	1.17	1.25	2.37	2.21	1.54
Griffin	1.57	1.21	1.35	2.62	2.22	1.60
Blairsville	1.73	1.60	1.67	2.80	2.20	2.33
			Date of 50% blooming			
Alapaha	---	March 15	March 25	March 16	March 18	March 20
Griffin	March 29	March 26	April 2	March 27	April 6	March 29
Blairsville	April 14	April 19	April 12	April 23	April 20	April 20
			Date of 50% ripening			
Alapaha	June 24	June 9	June 25	June 16	June 24	June 5
Griffin	June 29	June 17	July 1	June 25	June 24	June 13
Blairsville	July 20	July 7	July 16	July 18	July 23	July 3

[Y/] Note that Tifblue and T-459 plants at Griffin and Alapaha locations were mature bushes (6 years or older); whereas, other cultivars and selections were plants only 3 to 4 years old.

Table 7. Ratings (1 to 10 scale) of some fruit and plant characteristics of field grown southern highbush blueberry cultivars and selections from the Blueberry Cultivar Development Program at the Alapaha, GA location during 2004. A value of 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Selection or Variety	Date of 50% Flowering	Date of 50% Ripening	Berry Size	Berry Scar	Berry Color	Berry Firmness	Berry Flavor	Crop Load	Plant vigor
O'Neal	March 7	May 18	6.0	7.0	7.5	6.5	7.5	6.0	5.5
Palmetto	March 10	May 10	6.5	8.5	7.0	9.0	9.0	7.5	8.0
Star	March 5	May 11	7.0	7.5	8.0	7.5	7.0	6.0	6.5
TH-605	---	May 15	8.0	8.5	9.5	7.5	7.5	6.0	7.0
TH-621	---	May 21	8.0	7.0	9.0	7.5	7.0	8.5	8.5
TH-639	March 1	May 4	8.0	8.0	8.0	9.0	9.0	4.5	8.5
TH-642	March 3	April 25	8.0	8.0	8.5	7.5	7.0	8.5	8.5
TH-644	March 7	May 6	8.5	8.5	8.0	8.5	8.0	5.5	7.5
TH-653	March 15	May 15	7.5	8.5	9.0	9.0	7.5	7.5	8.5
TH-656	March 12	May 13	7.5	8.5	7.0	8.5	7.0	4.5	8.5
TH-658	March 4	May 11	8.0	8.5	7.5	9.5	9.0	3.0	7.5
TH-663	March 26	May 17	7.5	8.5	7.5	7.5	7.0	5.0	6.0
TH-668	May 15	May 22	8.0	7.5	8.0	8.0	7.0	7.5	8.0
TH-678	March 26	May 14	7.0	8.0	8.0	8.0	6.5	6.5	7.5
TH-681	March 17	May 19	9.0	8.0	9.5	7.5	7.0	6.5	8.0
TH-687	March 30	May 29	8.5	8.0	9.0	8.0	7.5	6.0	7.0
TH-691	March 15	May 15	9.0	8.0	9.5	7.0	7.0	4.5	8.5
TH-710	---	May 18	7.5	8.5	8.0	8.0	8.0	5.0	7.5
TH-729	---	May 16	8.5	8.0	8.0	8.0	7.5	5.0	7.0

Table 8. Ratings (1 to 10 scale) of some fruit and plant characteristics of southern highbush blueberry cultivars and selections grown in a high density test plot at Alapaha, GA during 2004. A value of 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Selection or Variety	Date of 50% Flowering	Date of 50% Ripening	Berry Size	Berry Scar	Berry Color	Berry Firmness	Berry Flavor	Crop Load	Plant Vigor
Emerald	March 1	May 17	8.5	7.5	8.5	7.3	7.3	9.3	9.3
O'Neal	March 9	May 19	7.0	7.0	7.3	6.0	8.5	7.8	8.3
Star	March 6	May 14	7.3	8.0	8.3	7.3	7.3	7.5	7.0
Windsor	March 17	May 24	8.5	6.5	8.3	6.8	7.3	8.8	8.5
Palmetto	March 19	May 19	7.3	8.5	7.0	8.3	7.8	7.0	8.0
TH-621	March 17	May 23	8.5	7.5	8.5	7.5	7.8	8.0	9.8
TH-622	April 7	June 5	8.8	8.0	9.0	7.5	7.8	7.8	10.0
TH-649	March 22	May 17	7.3	6.8	7.5	8.0	8.0	7.5	8.5
TH-656	March 10	May 20	7.8	8.3	7.0	9.0	8.8	6.5	10.0
TH-658	March 14	May 14	8.0	8.5	7.0	9.5	9.0	3.8	7.0
TH-663	March 24	May 23	7.0	7.8	7.3	8.0	7.3	7.5	7.3

Table 9. Ratings (1 to 10 scale) of some fruit and plant characteristics of field grown southern highbush blueberry cultivars and selections from the Blueberry Cultivar Development Program at the Griffin, GA location during 2004. A value of 7 is generally considered to be the minimum acceptable rating for a commercial cultivar.

Selection or Variety	Date of 50% Flowering	Date of 50% Ripening	Berry Size	Berry Scar	Berry Color	Berry Firmness	Berry Flavor	Crop Load	Plant vigor
Star	March 18	May 26	5.5	8.0	7.5	8.0	7.5	9.0	6.5
TH-639	March 10	May 16	8.0	8.5	8.0	8.5	8.0	5.0	7.5
TH-642	March 12	May 17	7.0	8.5	8.0	8.0	7.0	8.5	7.0
TH-653	March 16	May 29	6.5	8.5	7.5	8.0	8.0	8.0	7.0
TH-656	March 19	May 20	8.0	7.0	7.0	8.5	8.5	5.5	7.5
TH-658	March 12	May 16	8.0	8.5	7.5	9.5	9.0	3.0	8.0
TH-661	March 17	May 18	7.0	8.0	8.0	7.5	7.0	5.5	8.0
TH-662	March 29	May 20	7.0	7.5	8.0	7.5	7.5	7.0	9.0
TH-663	March 25	May 21	7.0	8.0	8.0	8.5	8.0	7.5	8.0
TH-664	March 29	May 18	8.0	8.5	8.0	9.5	8.5	4.5	9.0
TH-667	March 22	May 19	8.0	7.5	7.5	7.0	7.5	6.0	8.5
TH-668	March 17	June 4	8.0	8.0	7.5	7.5	7.5	9.0	9.5
TH-678	March 29	May 25	7.5	8.0	8.0	8.0	7.0	5.5	8.5
TH-681	March 21	June 1	8.5	8.0	9.5	8.0	7.5	8.0	8.0
TH-687	April 5	June 4	9.5	8.5	9.0	8.5	8.0	7.0	8.5
TH-691	March 21	May 27	9.5	8.5	8.5	8.0	8.0	5.5	7.5

Table 10. Ratings of berry and plant attributes of T-584, 'Climax', and 'Premier' rabbiteye blueberries. Data are averages for a 5 year period (1998-2002) from replicated plots at Alapaha, Ga. Berry size is actual weight of berries (g) at first harvest and yield is (lbs/bush) is total for the season. Other ratings are on a scale of 1=poorest to 10=best, with a value of 6-7 generally considered "commercially acceptable". Plants of each blueberry line were established in 1995.

Berry/Plant attribute	Selection		
	T-584	Climax	Premier
Berry size (g)	1.87	1.27	1.85
Berry scar	8.8	8.2	8.0
Berry color	8.5	8.1	8.0
Berry firmness	8.5	8.3	7.4
Berry flavor	7.5	8.0	8.3
Plant vigor	8.5	8.3	8.8
Flowering date	March 17	March 7	March 12
Ripening date	May 30	May 30	June 2
Yield (lbs/plant)	14.1	7.4	9.9

Table 11. Ratings of some fruit and plant characteristics of T-584 and the rabbiteye blueberry standard 'Climax' at four locations in 2003. Plantings were 2 to 4 years old and all were irrigated. Berry size is actual weight of berries (g) at first harvest. Scar, color, firmness, flavor, plant vigor, and cropping 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. Ripening information is estimates of actual dates.

Berry and plant attributes	Location								Avg across locations	
	Blairsville, GA		Griffin, GA		McNeil, MS		Clarkesville, AR			
	T-584	Climax	T-584	Climax	T-584	Climax	T-584	Climax	T-584	Climax
Berry size (g)	1.96	1.66	1.84	1.62	---	---	2.39	1.40	2.06	1.56
Berry scar	8.5	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1
Berry color	8.5	8.0	7.5	7.5	8.0	8.0	7.0	8.0	7.8	7.9
Berry firmness	8.0	8.5	8.0	8.0	8.0	7.7	8.0	8.0	8.0	8.0
Berry flavor	8.0	8.0	7.5	7.5	8.7	7.7	8.3	7.0	8.1	7.6
Plant vigor	9.0	8.5	8.5	7.5	8.7	8.0	8.0	5.7	8.6	7.4
Cropping	6.5	5.5	4.0	4.0	7.3	7.3	7.3	6.3	6.3	5.8
Ripening date	July 11	July 9	June 20	June 21	June 14	June 8	June 24	June 24	June 25	June 23