

## **Overview of Three New Southern Highbush Blueberry Varieties for Proposed Release in 2014**

***D. Scott NeSmith***

Attached are applications for three new blueberry varieties proposed for release for the commercial blueberry industry. The group is intended to be part of a new “Blue Collar” series, targeting our major southern highbush growing season with some improvements. The individual varieties are presented in their respective individual release applications, but these should be envisioned as a group. Overall, this suite of 3 varieties should offer Georgia growers, and others across the Southeast, novel new southern highbush varieties to develop more reliable production strategies. A brief synopsis of each is given below to help visualize how they might be used together.

**TH-921** - This is a main season southern highbush cultivar aimed at replacing an older industry standard ‘Star’. TH-921 will flower a few days later than ‘Star’, helping to avoid some freeze damage scenarios, but it would still be suggested that TH-921 be considered for production using frost protection measures. The new variety should ripen during the current “peak” of southern highbush season, which is around the first week of May in south Georgia. Yields and berry quality are very good, and the variety will hopefully provide the industry a new main season workhorse.

**TH-917** – This new variety is later ripening than TH-921 and ‘Star’, ripening more closely to our 2006 release ‘Camellia’. The latter half of May is a production time frame in south Georgia that often has a “fruit gap”. This gap occurs as the main season highbush varieties expire; and, before the early season rabbiteye varieties come into significant production. ‘Camellia’ has proven to help fill this gap, but additional varieties are needed. TH-917 fits the timing of the gap well, and should compliment ‘Camellia’ nicely. The variety generally flowers later than main season varieties, but it also ripens later. This variety, like ‘Camellia’, could be used in production systems without frost protection to achieve later season highbush production. Fruit are high quality, and the bush is generally easier to manage than ‘Camellia’, as ‘Camellia’ can be overly vigorous, causing excessive plant “leggyness”. TH-917 isn’t necessarily expected to replace ‘Camellia’, but it will be a strong candidate as a companion variety, or as a variety offering an additional option to growers in this production window.

**TH-948** – This variety is expected to offer growers fruit that ripens in the early to main season, but without the requirement of frost protection. TH-948 flowers very late, yet ripens with ‘Star’ and TH-921. Many growers are looking for some reliable main season highbush varieties that they do not have to over manage with frost protection expense. TH-948 yields are less than ‘Star’ or TH-921 on average, but the yields are steady from year to year due to the late flowering habit. Therefore, the variety nearly always escapes cold damage. The lower per plant yield for TH-948

can be somewhat compensated by higher density planting, since the plant is relatively narrow and upright. Higher density planting should achieve good per acre yields in that case. But, regardless, there are a number of growers looking for an easier to manage, early ripening southern highbush. TH-948 could be grown with 'Camellia' and TH-917 to provide early and later ripening fruit on the same farm.

APPLICATION FOR RELEASE

APPLICATION FOR RELEASE OF (check one):

**CULTIVAR**

**ASSOCIATE CULTIVAR**

**GERMPLASM**

**PARENTAL LINE**

**GENETIC STOCK**

1. Crop: Southern Highbush Blueberry (*Vaccinium sp.*)

2. Experimental no. or name: TH-917

3. Pedigree and history:

TH-917 was selected in 2005 at the Georgia Experiment Station in Griffin, Ga, originating from a cross of TH-653 X Millennia made by Scott NeSmith in 2002. The maternal parent, TH-653, is a UGA breeding line derived from a cross of Legacy X TH-454, while the paternal parent, Millennia, is a Florida released variety (USPP 12816). TH-917 has been tested in plantings at UGA Blueberry Research Farms in Alapaha and Griffin, Ga. since 2007.

4. Description of plant material:

TH-917 is a southern highbush blueberry being released for commercial blueberry production. The selection flowers and ripens with the UGA release Camellia (USPP 18151), which is mid-to-late season for southern highbush in Georgia. TH-917 has highly favorable fruit attributes, especially scar, firmness, and flavor. The new variety also has good yield and plant vigor, and is estimated to have a chill hour requirement in the range of 500 to 550 hours. Data describing these and other details follow in Tables.

5. Need for and potential users of plant material:

Commercial blueberry producers in Georgia are becoming increasingly interested in southern highbush blueberries due to their highly desirable fruit quality. Currently, there is a production gap between southern highbush varieties and early rabbiteye varieties that occurs around the middle to latter half of May in south Georgia. Camellia (released by UGA in 2006) has proven to help fill this gap in recent years, but there is a need for other cultivars to supply fruit in this market window. Also, having cultivars compatible with Camellia will provide improved cross pollination which is always beneficial.

6. Justification for release:

As mentioned already, TH-917 is being proposed for release as a cultivar to compliment 'Camellia' in providing high quality fruit during mid to late May in south Georgia commercial blueberry production areas. Multi-year data supporting this release (and 2 other releases being presented in separate applications) are presented in Tables 1 thru 3. Comparing TH-917 and 'Camellia' fruit data over a 5 year period at Alapaha and Griffin locations show that TH-917 has good scar, flavor, and firmness characteristics (Tables 1 & 2). More detailed data from Griffin (Table 3) reveals that TH-917 firmness (as measured with a FirmTech 2 instrument) generally exceeds 'Camellia'. 'Camellia' has larger berry size than TH-917, but TH-917 still has good berry size, especially when compared to the main season standard 'Star'. TH-917 yield data from 3 years (Table 3) shows yields comparable to or better than 'Camellia'. TH-917 plant vigor is very good at both Griffin and Alapaha locations. 'Camellia' is a highly vigorous variety, and in fact, it is often considered overly vigorous to a degree, especially under high fertility growing conditions. This can cause "leggyness" which is not an issue with TH-917. Flowering and ripening times (Tables 1 & 2) are highly compatible for 'Camellia' and TH-917 at both Alapaha and Griffin locations. Photos of TH-917 plant and fruit are shown in Figs. 1 thru 3.

7. Participating scientists:

D. Scott NeSmith, UGA

8. Location(s) at which plant material was developed:

UGA Griffin Campus and UGA Alapaha Blueberry Farm

9. Recommended form of intellectual property protection and royalty:

Plant Patent and royalty based on per plant sold or production based.

10. Method of propagation:

TH-917 readily propagates using softwood cuttings, and can also be easily produced using tissue culture techniques.

11. Amount of breeder seed stocks available (if applicable): NA

12. Amount of foundation seed stocks available if applicable: NA

13. Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable):

Approximately 300 to 500 small rooted liners have been produced in Griffin by our program for potential distribution. Also, we have contracted with Agri-Starts commercial TC lab to produce 500 TC plants for distribution, with increased numbers possible if desired.

14. Describe any unusual difficulty anticipated in the production of any class of seed stocks:

15. Suggest up to three names for the cultivar, if appropriate:

This is intended to be part of a set of 3 releases that will be billed as a “Blue Collar” series. Suggested name for this variety is ‘Keystone’.

16. Name approved by plant cultivar and germplasm release committee:

APPLICATION FOR RELEASE

(Please keep this as a separate page)

Application for the release of (insert experimental name or number and crop)

Recommended:

A. D. Scott NeSmith  January 28, 2014  
Originating Scientist Date

B. \_\_\_\_\_  
Department Head Date

C. Dr. Gerald Arkin  January 31, 2014  
For Griffin and Tifton, Assistant Dean Date

D. \_\_\_\_\_  
Chair, GAES PCGRC Date

E. \_\_\_\_\_  
Associate Dean for Research Date

Approved:

F. \_\_\_\_\_  
Dean and Director Date

**Table 1.** Plant and fruit ratings for new varieties and standards Alapaha 5 Year avg.

	<b>Star</b>	<b>Camellia</b>	<b>TH-917</b>	<b>TH-921</b>	<b>TH-948</b>
<b>Berry size</b>	7.6 ± 0.2	8.9 ± 0.2	7.9 ± 0.3	7.4 ± 0.3	8.4 ± 0.2
<b>Berry scar</b>	7.0 ± 0.1	7.2 ± 0.2	7.5 ± 0.2	7.9 ± 0.3	7.4 ± 0.1
<b>Berry color</b>	7.1 ± 0.1	8.7 ± 0.2	7.6 ± 0.2	7.6 ± 0.1	7.8 ± 0.1
<b>Berry firmness</b>	7.2 ± 0.1	7.2 ± 0.1	7.8 ± 0.1	7.6 ± 0.1	7.8 ± 0.2
<b>Berry flavor</b>	7.0 ± 0.1	7.8 ± 0.1	7.5 ± 0.2	7.9 ± 0.3	7.8 ± 0.2
<b>Cropping</b>	4.7 ± 1.7	5.4 ± 0.3	5.9 ± 0.5	5.9 ± 1.4	5.2 ± 0.5
<b>Plant vigor</b>	6.3 ± 0.2	9.8 ± 0.2	8.5 ± 0.4	8.4 ± 0.5	7.6 ± 0.4
<b>Date of 50% flowering</b>	Mar 3	Mar 11	Mar 10	Mar 8	Mar 17
<b>Date of 50% ripening</b>	May 8	May 15	May 17	May 8	May 11
<b>Fruit development period (days)</b>	66 ± 6.1	65 ± 4.9	67 ± 3.8	61 ± 6.5	55 ± 5.2

**Table 2.** Plant and fruit ratings for new varieties and standards Griffin 5 Year avg.

	<b>Star</b>	<b>Camellia</b>	<b>TH-917</b>	<b>TH-921</b>	<b>TH-948</b>
<b>Berry size</b>	7.4 ± 0.2	8.6 ± 0.2	7.5 ± 0.2	7.8 ± 0.3	8.7 ± 0.2
<b>Berry scar</b>	6.9 ± 0.1	7.0 ± 0.1	7.1 ± 0.1	7.5 ± 0.1	7.2 ± 0.1
<b>Berry color</b>	7.1 ± 0.1	7.9 ± 0.2	7.6 ± 0.2	7.8 ± 0.2	7.3 ± 0.2
<b>Berry firmness</b>	7.2 ± 0.1	7.2 ± 0.1	7.5 ± 0.3	7.4 ± 0.3	7.7 ± 0.3
<b>Berry flavor</b>	7.1 ± 0.1	7.4 ± 0.2	7.5 ± 0.3	7.9 ± 0.2	7.4 ± 0.2
<b>Cropping</b>	6.8 ± 1.1	7.9 ± 0.2	6.4 ± 0.4	6.6 ± 0.5	6.2 ± 0.2
<b>Plant vigor</b>	8.5 ± 0.3	9.8 ± 0.1	8.4 ± 0.3	8.7 ± 0.3	9.1 ± 0.2
<b>Date of 50% flowering</b>	Mar 13	Mar 25	Mar 25	Mar 21	Mar 28
<b>Date of 50% ripening</b>	May 25	May 31	May 30	May 26	May 21
<b>Fruit development period (days)</b>	73 ± 10.4	67 ± 4.8	65 ± 1.9	66 ± 4.8	54 ± 2.3



**Table 3.** Yield, berry wt., firmness and BRIX for 3 new UGA blueberry varieties and 2 standards 2010 thru 2013.

Year	Star	Camellia	TH-917	TH-921	TH-948
	Yield (lbs/bush)				
2011	12.7 ± 3.6	9.7 ± 0.9	10.0 ± 0.7	10.4 ± 0.7	8.5 ± 1.2
2012	11.7 ± 2.3	10.5 ± 0.8	17.0 ± 1.0	9.1 ± 1.0	7.2 ± 0.7
2013	3.9 ± 0.6	15.9 ± 1.0	15.5 ± 0.8	14.3 ± 2.4	7.3 ± 0.6
<b>Avg</b>	<b>9.4</b>	<b>12.0</b>	<b>14.2</b>	<b>11.3</b>	<b>7.7</b>
	Berry wt (g/berry)				
2010	1.53 ± 0.09	2.94 ± 0.12	1.90 ± 0.10	2.07 ± 0.09	3.15 ± 0.05
2011	1.20 ± 0.04	1.97 ± 0.11	1.80 ± 0.08	1.47 ± 0.04	2.08 ± 0.10
2012	1.80 ± 0.07	1.60 ± 0.09	1.55 ± 0.05	1.75 ± 0.06	2.17 ± 0.15
2013	1.79 ± 0.06	2.56 ± 0.10	1.76 ± 0.03	2.00 ± 0.04	2.12 ± 0.21
<b>Avg</b>	<b>1.58</b>	<b>2.28</b>	<b>1.75</b>	<b>1.82</b>	<b>2.38</b>
	Firmness (g/mm)				
2010	196 ± 4	150 ± 2	165 ± 4	208 ± 2	165 ± 1
2011	206 ± 6	166 ± 3	173 ± 3	190 ± 2	188 ± 5
2012	190 ± 5	164 ± 4	168 ± 2	182 ± 4	186 ± 7
2013	191 ± 5	150 ± 2	166 ± 2	208 ± 3	188 ± 9
<b>Avg</b>	<b>196</b>	<b>157</b>	<b>168</b>	<b>197</b>	<b>182</b>
	Brix (%)				
2012	13.9 ± 0.6	14.5 ± 0.4	12.0 ± 0.3	15.3 ± 0.9	12.0 ± 0.2
2013	13.5 ± 0.5	13.3 ± 0.3	13.3 ± 0.7	14.0 ± 1.2	12.3 ± 0.3
<b>Avg</b>	<b>13.7</b>	<b>13.9</b>	<b>12.7</b>	<b>14.7</b>	<b>12.2</b>



**Figure 1.** TH-917 plant in Griffin, GA. Plant is 6 years old.



**Figure 2.** TH-917 fruit clusters in Griffin, GA.





**Figure 3.** TH-917 fruit harvested in Griffin, GA.

APPLICATION FOR RELEASE

APPLICATION FOR RELEASE OF (check one):

**CULTIVAR**

**ASSOCIATE CULTIVAR**

**GERMPLASM**

**PARENTAL LINE**

**GENETIC STOCK**

1. Crop: Southern Highbush Blueberry (*Vaccinium sp.*)

2. Experimental no. or name: TH-921

3. Pedigree and history:

TH-921 was selected in 2005 at the Georgia Experiment Station in Griffin, Ga, originating from a cross of TH-647 X Windsor made by Scott NeSmith in 2002. The maternal parent, TH-647, is a UGA breeding line derived from a cross of Reveille X Palmetto (USPP 16756), while the paternal parent, Windsor, is a Florida released variety (USPP 12783). TH-921 has been tested in plantings at UGA Blueberry Research Farms in Alapaha and Griffin, Ga. since 2007.

4. Description of plant material:

TH-921 is a southern highbush blueberry being released for commercial blueberry production. The selection ripens with the Florida release Star (USPP 10675), which has been the main season standard for southern highbush in Georgia for the past 15 years. However, TH-921 generally flowers 5 to 7 days after Star. TH-921 has highly favorable fruit attributes, especially size, scar, firmness, and flavor. The new variety also has good yield and plant vigor, and is estimated to have a chill hour requirement in the range of 500 to 550 hours. Data describing these and other details follow in Tables.

5. Need for and potential users of plant material:

Commercial blueberry producers in Georgia are becoming increasingly interested in southern highbush blueberries due to their highly desirable fruit quality. The main season standard variety for the past 15 years has been the 1996 Florida release 'Star'. While that variety has helped establish the industry, new varieties are needed that have improved plant vigor, higher yield, improved fruit quality, and better adaptation to Georgia's growing conditions. Varieties that flower later but still ripen early are desirable as this helps to avoid some of the perils of freezing temperatures that often occur during early season flowering times.

6. Justification for release:

TH-921 is being proposed for release as a main season cultivar to potentially replace 'Star' in providing high quality fruit during early May in south Georgia commercial blueberry production areas. Multi-year data supporting this release (and 2 other releases being presented in separate applications) are presented in Tables 1 thru 3. Comparing TH-921 and 'Star' fruit data over a 5 year period at Alapaha and Griffin locations show that TH-921 has good scar, color, firmness, and flavor characteristics (Tables 1 & 2). More detailed data from Griffin (Table 3) reveals that TH-921 firmness (as measured with a FirmTech 2 instrument) is comparable to 'Star', while berry weight and BRIX (sweetness index) generally exceeds 'Star'. TH-921 yield data from 3 years (Table 3) shows yields comparable to or better than 'Star', especially in 2013 when early season freeze damage greatly reduced 'Star' yield. TH-921 plant vigor is very good at both Griffin and Alapaha locations. Ripening times (Tables 1 & 2) are highly compatible for 'Star' and TH-921 at both locations. However, TH-921 flowers 5 to 7 days later than 'Star', which is advantageous for helping avoid freeze damage in some instances. Photos of TH-921 plant and fruit are shown in Figs. 1 thru 4.

7. Participating scientists:

D. Scott NeSmith, UGA

8. Location(s) at which plant material was developed:

UGA Griffin Campus and UGA Alapaha Blueberry Farm

9. Recommended form of intellectual property protection and royalty:

Plant Patent and royalty based on per plant sold or production based.

10. Method of propagation:

TH-921 readily propagates using softwood cuttings, and can also be easily produced using tissue culture techniques.

11. Amount of breeder seed stocks available (if applicable): NA

12. Amount of foundation seed stocks available if applicable: NA

13. Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable):

Approximately 300 to 500 small rooted liners have been produced in Griffin by our program for potential distribution. Also, we have contracted with Agri-Starts commercial TC lab to produce 500 TC plants for distribution, with increased numbers possible if desired.

14. Describe any unusual difficulty anticipated in the production of any class of seed stocks:

15. Suggest up to three names for the cultivar, if appropriate:

This is intended to be part of a set of 3 releases that will be billed as a “Blue Collar” series. Suggested name for this variety is ‘Citadel’, ‘Bulwark, or ‘Cornerstone’.

16. Name approved by plant cultivar and germplasm release committee:

APPLICATION FOR RELEASE


(Please keep this as a separate page)

Application for the release of (insert experimental name or number and crop)

Recommended:

A. D. Scott NeSmith  January 28, 2014  
Originating Scientist Date

B. \_\_\_\_\_  
Department Head Date

C. Dr. Gerald Arkin  January 31, 2014  
For Griffin and Tifton, Assistant Dean Date

D. \_\_\_\_\_  
Chair, GAES PCGRC Date

E. \_\_\_\_\_  
Associate Dean for Research Date

Approved:

F. \_\_\_\_\_  
Dean and Director Date



**Table 1.** Plant and fruit ratings for new varieties and standards Alapaha 5 Year avg.

	<b>Star</b>	<b>Camellia</b>	<b>TH-917</b>	<b>TH-921</b>	<b>TH-948</b>
<b>Berry size</b>	7.6 ± 0.2	8.9 ± 0.2	7.9 ± 0.3	7.4 ± 0.3	8.4 ± 0.2
<b>Berry scar</b>	7.0 ± 0.1	7.2 ± 0.2	7.5 ± 0.2	7.9 ± 0.3	7.4 ± 0.1
<b>Berry color</b>	7.1 ± 0.1	8.7 ± 0.2	7.6 ± 0.2	7.6 ± 0.1	7.8 ± 0.1
<b>Berry firmness</b>	7.2 ± 0.1	7.2 ± 0.1	7.8 ± 0.1	7.6 ± 0.1	7.8 ± 0.2
<b>Berry flavor</b>	7.0 ± 0.1	7.8 ± 0.1	7.5 ± 0.2	7.9 ± 0.3	7.8 ± 0.2
<b>Cropping</b>	4.7 ± 1.7	5.4 ± 0.3	5.9 ± 0.5	5.9 ± 1.4	5.2 ± 0.5
<b>Plant vigor</b>	6.3 ± 0.2	9.8 ± 0.2	8.5 ± 0.4	8.4 ± 0.5	7.6 ± 0.4
<b>Date of 50% flowering</b>	Mar 3	Mar 11	Mar 10	Mar 8	Mar 17
<b>Date of 50% ripening</b>	May 8	May 15	May 17	May 8	May 11
<b>Fruit development period (days)</b>	66 ± 6.1	65 ± 4.9	67 ± 3.8	61 ± 6.5	55 ± 5.2

**Table 2.** Plant and fruit ratings for new varieties and standards Griffin 5 Year avg.

	<b>Star</b>	<b>Camellia</b>	<b>TH-917</b>	<b>TH-921</b>	<b>TH-948</b>
<b>Berry size</b>	7.4 ± 0.2	8.6 ± 0.2	7.5 ± 0.2	7.8 ± 0.3	8.7 ± 0.2
<b>Berry scar</b>	6.9 ± 0.1	7.0 ± 0.1	7.1 ± 0.1	7.5 ± 0.1	7.2 ± 0.1
<b>Berry color</b>	7.1 ± 0.1	7.9 ± 0.2	7.6 ± 0.2	7.8 ± 0.2	7.3 ± 0.2
<b>Berry firmness</b>	7.2 ± 0.1	7.2 ± 0.1	7.5 ± 0.3	7.4 ± 0.3	7.7 ± 0.3
<b>Berry flavor</b>	7.1 ± 0.1	7.4 ± 0.2	7.5 ± 0.3	7.9 ± 0.2	7.4 ± 0.2
<b>Cropping</b>	6.8 ± 1.1	7.9 ± 0.2	6.4 ± 0.4	6.6 ± 0.5	6.2 ± 0.2
<b>Plant vigor</b>	8.5 ± 0.3	9.8 ± 0.1	8.4 ± 0.3	8.7 ± 0.3	9.1 ± 0.2
<b>Date of 50% flowering</b>	Mar 13	Mar 25	Mar 25	Mar 21	Mar 28
<b>Date of 50% ripening</b>	May 25	May 31	May 30	May 26	May 21
<b>Fruit development period (days)</b>	73 ± 10.4	67 ± 4.8	65 ± 1.9	66 ± 4.8	54 ± 2.3

**Table 3.** Yield, berry wt., firmness and BRIX for 3 new UGA blueberry varieties and 2 standards 2010 thru 2013.

Year	Star	Camellia	TH-917	TH-921	TH-948
	Yield (lbs/bush)				
2011	12.7 ± 3.6	9.7 ± 0.9	10.0 ± 0.7	10.4 ± 0.7	8.5 ± 1.2
2012	11.7 ± 2.3	10.5 ± 0.8	17.0 ± 1.0	9.1 ± 1.0	7.2 ± 0.7
2013	3.9 ± 0.6	15.9 ± 1.0	15.5 ± 0.8	14.3 ± 2.4	7.3 ± 0.6
<b>Avg</b>	<b>9.4</b>	<b>12.0</b>	<b>14.2</b>	<b>11.3</b>	<b>7.7</b>
	Berry wt (g/berry)				
2010	1.53 ± 0.09	2.94 ± 0.12	1.90 ± 0.10	2.07 ± 0.09	3.15 ± 0.05
2011	1.20 ± 0.04	1.97 ± 0.11	1.80 ± 0.08	1.47 ± 0.04	2.08 ± 0.10
2012	1.80 ± 0.07	1.60 ± 0.09	1.55 ± 0.05	1.75 ± 0.06	2.17 ± 0.15
2013	1.79 ± 0.06	2.56 ± 0.10	1.76 ± 0.03	2.00 ± 0.04	2.12 ± 0.21
<b>Avg</b>	<b>1.58</b>	<b>2.28</b>	<b>1.75</b>	<b>1.82</b>	<b>2.38</b>
	Firmness (g/mm)				
2010	196 ± 4	150 ± 2	165 ± 4	208 ± 2	165 ± 1
2011	206 ± 6	166 ± 3	173 ± 3	190 ± 2	188 ± 5
2012	190 ± 5	164 ± 4	168 ± 2	182 ± 4	186 ± 7
2013	191 ± 5	150 ± 2	166 ± 2	208 ± 3	188 ± 9
<b>Avg</b>	<b>196</b>	<b>157</b>	<b>168</b>	<b>197</b>	<b>182</b>
	Brix (%)				
2012	13.9 ± 0.6	14.5 ± 0.4	12.0 ± 0.3	15.3 ± 0.9	12.0 ± 0.2
2013	13.5 ± 0.5	13.3 ± 0.3	13.3 ± 0.7	14.0 ± 1.2	12.3 ± 0.3
<b>Avg</b>	<b>13.7</b>	<b>13.9</b>	<b>12.7</b>	<b>14.7</b>	<b>12.2</b>



**Figure 1.** TH-921 plant during flowering in Griffin, GA.





**Figure 2.** TH-921 plant in Griffin, GA. Plant is 6 years old.



**Figure 3.** TH-921 fruit clusters in Griffin, GA.





**Figure 4.** TH-921 fruit harvested in Griffin, GA.

## APPLICATION FOR RELEASE

### APPLICATION FOR RELEASE OF (check one):

**CULTIVAR**

**ASSOCIATE CULTIVAR  
GERMPLASM**

**PARENTAL LINE  
GENETIC STOCK**

1. Crop: Southern Highbush Blueberry (*Vaccinium sp.*)

2. Experimental no. or name: TH-948

3. Pedigree and history:

TH-948 was selected in 2005 at the Georgia Experiment Station in Griffin, Ga, originating from a cross of Camellia X Reveille made by Scott NeSmith in 2002. The maternal parent, 'Camellia', is a UGA release (USPP 18151), and the paternal parent, Reveille, is a North Carolina released variety (non-patented). TH-948 has been tested in plantings at UGA Blueberry Research Farms in Alapaha and Griffin, Ga. since 2007.

4. Description of plant material:

TH-948 is a southern highbush blueberry being released for commercial blueberry production. The selection generally ripens within a few days of the Florida release Star (USPP 10675), which has been the main season standard for southern highbush in Georgia for the past 15 years. However, TH-948 flowers 2 weeks after Star. Thus, a highlight of TH-948 is a very short fruit development period. TH-948 has favorable fruit attributes including scar, firmness, flavor, and especially berry size. The new variety also has good plant vigor, but only medium per plant yield. TH-948 is estimated to have a chill hour requirement in the range of 500 to 550 hours. Data describing these and other details follow in Tables.

5. Need for and potential users of plant material:

Commercial blueberry producers in Georgia are becoming increasingly interested in southern highbush blueberries due to their highly desirable fruit quality. The main season standard variety for the past 15 years has been the 1996 Florida release 'Star'. While that variety has helped establish the industry, new varieties are needed that have improved plant vigor, stable yield, improved fruit quality, and better adaptation to Georgia's growing conditions. There is especially a desire for varieties that flower late enough to miss damaging spring freeze events; yet, ripen early enough to receive premium prices. Such varieties can be



economical for producers, even if they have reduced yields, since they would not have to invest in expensive frost/freeze protection systems.

6. Justification for release:

TH-948 is being proposed for release as a main season cultivar to provide high quality fruit during early May in south Georgia commercial blueberry production areas without the added expense of frost/freeze protection measures. Multi-year data supporting this release (and 2 other releases being presented in separate applications) are presented in Tables 1 thru 3. Comparing TH-948 and 'Star' fruit data over a 5 year period at Alapaha and Griffin locations show that TH-948 has good scar, color, firmness, and flavor characteristics (Tables 1 & 2). More detailed data from Griffin (Table 3) reveals that TH-948 firmness (as measured with a FirmTech 2 instrument) is less than 'Star', but greater than 'Camellia'. Berry weight generally exceeds 'Star', and rivals 'Camellia'. TH-948 yield data from 3 years (Table 3) shows medium, but steady yields across years. Yield was greater than 'Star' in 2013 when early season freeze damage greatly reduced 'Star' yield. TH-948 is a very narrow, upright plant, and would be suitable for higher density plantings, which could result in improved per acre yields for TH-948. TH-948 plant vigor is good to very good at both Alapaha and Griffin locations. Ripening times (Tables 1 & 2) are highly compatible for 'Star' and TH-948 in south Georgia, and are earlier for TH-948 in Griffin on average. However, the new variety flowers 2 weeks later than 'Star', which is advantageous for helping avoid freeze damage in most all seasons. Photos of TH-948 plant and fruit are shown in Figs. 1 thru 3.

7. Participating scientists:

D. Scott NeSmith, UGA

8. Location(s) at which plant material was developed:

UGA Griffin Campus and UGA Alapaha Blueberry Farm

9. Recommended form of intellectual property protection and royalty:

Plant Patent and royalty based on per plant sold or production based.

10. Method of propagation:

TH-948 readily propagates using softwood cuttings, and can also be easily produced using tissue culture techniques.

11. Amount of breeder seed stocks available (if applicable): NA

12. Amount of foundation seed stocks available if applicable: NA

13. Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable):

Approximately 300 to 500 small rooted liners have been produced in Griffin by our program for potential distribution. Also, we have contracted with Agri-Starts commercial TC lab to produce 500 TC plants for distribution, with increased numbers possible if desired.

14. Describe any unusual difficulty anticipated in the production of any class of seed stocks:

15. Suggest up to three names for the cultivar, if appropriate:

This is intended to be part of a set of 3 releases that will be billed as a "Blue Collar" series. Suggested name for this variety is 'Reliablue', 'Safeguard', or 'Guardian'.

16. Name approved by plant cultivar and germplasm release committee:

APPLICATION FOR RELEASE


(Please keep this as a separate page)

Application for the release of (insert experimental name or number and crop)

Recommended:

A. D. Scott NeSmith  January 28, 2014  
Originating Scientist Date

B. \_\_\_\_\_  
Department Head Date

C. Dr. Gerald Arkin  January 31, 2014  
For Griffin and Tifton, Assistant Dean Date

D. \_\_\_\_\_  
Chair, GAES PCGRC Date

E. \_\_\_\_\_  
Associate Dean for Research Date

Approved:

F. \_\_\_\_\_  
Dean and Director Date

**Table 1.** Plant and fruit ratings for new varieties and standards Alapaha 5 Year avg.

	<b>Star</b>	<b>Camellia</b>	<b>TH-917</b>	<b>TH-921</b>	<b>TH-948</b>
<b>Berry size</b>	7.6 ± 0.2	8.9 ± 0.2	7.9 ± 0.3	7.4 ± 0.3	8.4 ± 0.2
<b>Berry scar</b>	7.0 ± 0.1	7.2 ± 0.2	7.5 ± 0.2	7.9 ± 0.3	7.4 ± 0.1
<b>Berry color</b>	7.1 ± 0.1	8.7 ± 0.2	7.6 ± 0.2	7.6 ± 0.1	7.8 ± 0.1
<b>Berry firmness</b>	7.2 ± 0.1	7.2 ± 0.1	7.8 ± 0.1	7.6 ± 0.1	7.8 ± 0.2
<b>Berry flavor</b>	7.0 ± 0.1	7.8 ± 0.1	7.5 ± 0.2	7.9 ± 0.3	7.8 ± 0.2
<b>Cropping</b>	4.7 ± 1.7	5.4 ± 0.3	5.9 ± 0.5	5.9 ± 1.4	5.2 ± 0.5
<b>Plant vigor</b>	6.3 ± 0.2	9.8 ± 0.2	8.5 ± 0.4	8.4 ± 0.5	7.6 ± 0.4
<b>Date of 50% flowering</b>	Mar 3	Mar 11	Mar 10	Mar 8	Mar 17
<b>Date of 50% ripening</b>	May 8	May 15	May 17	May 8	May 11
<b>Fruit development period (days)</b>	66 ± 6.1	65 ± 4.9	67 ± 3.8	61 ± 6.5	55 ± 5.2

**Table 2.** Plant and fruit ratings for new varieties and standards Griffin 5 Year avg.

	<b>Star</b>	<b>Camellia</b>	<b>TH-917</b>	<b>TH-921</b>	<b>TH-948</b>
<b>Berry size</b>	7.4 ± 0.2	8.6 ± 0.2	7.5 ± 0.2	7.8 ± 0.3	8.7 ± 0.2
<b>Berry scar</b>	6.9 ± 0.1	7.0 ± 0.1	7.1 ± 0.1	7.5 ± 0.1	7.2 ± 0.1
<b>Berry color</b>	7.1 ± 0.1	7.9 ± 0.2	7.6 ± 0.2	7.8 ± 0.2	7.3 ± 0.2
<b>Berry firmness</b>	7.2 ± 0.1	7.2 ± 0.1	7.5 ± 0.3	7.4 ± 0.3	7.7 ± 0.3
<b>Berry flavor</b>	7.1 ± 0.1	7.4 ± 0.2	7.5 ± 0.3	7.9 ± 0.2	7.4 ± 0.2
<b>Cropping</b>	6.8 ± 1.1	7.9 ± 0.2	6.4 ± 0.4	6.6 ± 0.5	6.2 ± 0.2
<b>Plant vigor</b>	8.5 ± 0.3	9.8 ± 0.1	8.4 ± 0.3	8.7 ± 0.3	9.1 ± 0.2
<b>Date of 50% flowering</b>	Mar 13	Mar 25	Mar 25	Mar 21	Mar 28
<b>Date of 50% ripening</b>	May 25	May 31	May 30	May 26	May 21
<b>Fruit development period (days)</b>	73 ± 10.4	67 ± 4.8	65 ± 1.9	66 ± 4.8	54 ± 2.3

**Table 3.** Yield, berry wt., firmness and BRIX for 3 new UGA blueberry varieties and 2 standards 2010 thru 2013.

Year	Star	Camellia	TH-917	TH-921	TH-948
	Yield (lbs/bush)				
2011	12.7 ± 3.6	9.7 ± 0.9	10.0 ± 0.7	10.4 ± 0.7	8.5 ± 1.2
2012	11.7 ± 2.3	10.5 ± 0.8	17.0 ± 1.0	9.1 ± 1.0	7.2 ± 0.7
2013	3.9 ± 0.6	15.9 ± 1.0	15.5 ± 0.8	14.3 ± 2.4	7.3 ± 0.6
<b>Avg</b>	<b>9.4</b>	<b>12.0</b>	<b>14.2</b>	<b>11.3</b>	<b>7.7</b>
	Berry wt (g/berry)				
2010	1.53 ± 0.09	2.94 ± 0.12	1.90 ± 0.10	2.07 ± 0.09	3.15 ± 0.05
2011	1.20 ± 0.04	1.97 ± 0.11	1.80 ± 0.08	1.47 ± 0.04	2.08 ± 0.10
2012	1.80 ± 0.07	1.60 ± 0.09	1.55 ± 0.05	1.75 ± 0.06	2.17 ± 0.15
2013	1.79 ± 0.06	2.56 ± 0.10	1.76 ± 0.03	2.00 ± 0.04	2.12 ± 0.21
<b>Avg</b>	<b>1.58</b>	<b>2.28</b>	<b>1.75</b>	<b>1.82</b>	<b>2.38</b>
	Firmness (g/mm)				
2010	196 ± 4	150 ± 2	165 ± 4	208 ± 2	165 ± 1
2011	206 ± 6	166 ± 3	173 ± 3	190 ± 2	188 ± 5
2012	190 ± 5	164 ± 4	168 ± 2	182 ± 4	186 ± 7
2013	191 ± 5	150 ± 2	166 ± 2	208 ± 3	188 ± 9
<b>Avg</b>	<b>196</b>	<b>157</b>	<b>168</b>	<b>197</b>	<b>182</b>
	Brix (%)				
2012	13.9 ± 0.6	14.5 ± 0.4	12.0 ± 0.3	15.3 ± 0.9	12.0 ± 0.2
2013	13.5 ± 0.5	13.3 ± 0.3	13.3 ± 0.7	14.0 ± 1.2	12.3 ± 0.3
<b>Avg</b>	<b>13.7</b>	<b>13.9</b>	<b>12.7</b>	<b>14.7</b>	<b>12.2</b>



**Figure 1.** TH-948 plant during flowering in Griffin, GA.





**Figure 2.** TH-948 plant in Alapaha, GA. Plant is only 2 years old.





**Figure 3.** TH-948 fruit harvested in Griffin, GA.