APPLICATION FOR APPROVAL OF ASSOCIATE CULTIVAR

D. Scott NeSmith, Dept. of Horticulture, Georgia Station, Griffin, GA 30223

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

2. **Experimental no. or name:** TH-621 Camellia

3. **Pedigree and history:** TH-621 was selected in 1996 at the Coastal Plain Experiment Station in Tifton, Ga. from a cross of MS-122 X MS-6 made by USDA. A pedigree of the selection is depicted in Figure 1. The selection is actually a hybrid containing mostly *V. corymbosum* and a small amount of *V. darrowi*. The selection has been tested in a planting at Alapaha, Ga. since 1998. The selection was sent to Japan for testing in 2002.

4. **Description:** TH-621 is an mid-to-early season southern highbush blueberry, having highly favorable fruit attributes, especially color and size, and excellent plant vigor. The selection will likely have a similar chill hour requirement to that of other early season southern highbush, in the range of 450 to 500 hours. Data describing these and other details follow in Tables.

5. **Station(s) where developed:** TH-621 was developed primarily at the Coastal Plain Experiment Station, with some activity at the Georgia Station.

6. **Participating scientists:** Scientists participating in the development of this blueberry cultivar include D. Scott NeSmith, UGA and Arlen D. Draper, USDA-ARS retired.

7. **In what respect is the new cultivar superior to the cultivar now in use?:**

Japanese cooperators with Ocean Trading Co. have found TH-621 to be very useful for their production operations. The company wants to patent the selection in Japan. Particularly they note that excellent fruit quality and plant vigor are outstanding attributes (see attached letter). They see the selection as having considerable utilization for a mid-season market window.

Data from Georgia has indicated that TH-621 is a very nice selection with regards to similar attributes as described by the Japanese evaluators. One of the more outstanding characteristics of TH-621 is its high degree of plant vigor as compared to many other southern highbush cultivars both with and without pine bark mulch (Table 1). Likewise, survivability of the plants the first 3 years was 100%, whereas several selections in the test had significant plant loss.

Table 2 lists average berry and plant attributes for TH-621 and four southern highbush standard cultivars grown under field conditions at Alapaha, Ga. from 1999 thru 2002. TH-621 was most outstanding with regards to berry size, berry

color, and plant vigor. The large berry size and highly blue fruit make the selection more desirable for marketing.

Table 3 presents flowering and ripening dates for TH-621 and several standard cultivars grown under field conditions at Alapaha, Ga. TH-621 flowered later than 3 of the standard cultivars, which is desirable for reducing risk of spring freeze damage. Ripening time was generally similar for the various cultivars under these conditions.

Some growers in Georgia are growing southern highbush blueberries in a high density system utilizing pine bark beds. A high density planting was established during 2002 at Alapaha, Ga. to evaluate cultivar performance under this system. Table 4 presents data from the first fruiting year (2003) for TH-621 and several standard cultivars. TH-621 generally was rated highly with regards to berry size, berry color, and plant vigor as was noted in other tests previously mentioned. Ripening time for TH-621 under this system was later than the cultivars Star, Emerald, and O'Neal. Yields from the high density tests were taken for Star, Emerald, and TH-621 during 2004 (Table 5). Emerald yields were greater than TH-621, however, flowering date of Emerald is very early, which can lead to substantial frost damage in many years. TH-621 berry size was greater than Star at both the first harvest, and over all harvests.

8. **Method of propagation:** Propagation of TH-621 has been easily accomplished from softwood cuttings.

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

10. **Amount of foundation seed stocks available if applicable:** NA

11. **Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable):** TH-621 propagation material is currently available in limited quantities from stock plants at Alapaha, Ga. Additionally, 500 to 1000 rooted cuttings are being propagated during 2004 for distribution by GSDC.

12. **Is there likely to be unusual difficulty in the production of any class of seed stocks?** No.

13. **Three suggested names for the cultivar:** Proposed name: ***1) Camellia***

14. **Name approved by plant cultivar and germplasm release committee:**

15. **Form of intellectual property protection:** Selection should be patented.

16. **Is a royalty assessment recommended?:** _X_Yes ___No

RECOMMENDED BY:

A. _____
Originating Scientist

B. _____ 8/5/04
Department Head

C. _____
Chairperson, GAES Plant Cultivar and Germplasm Release Committee

D. _____ 11/8/04
Assistant Dean /Appropriate Station

E. _____
Associate Dean for Research

F. _____

APPROVED:

_____
Dean and Director
College of Agricultural and Environmental Sciences

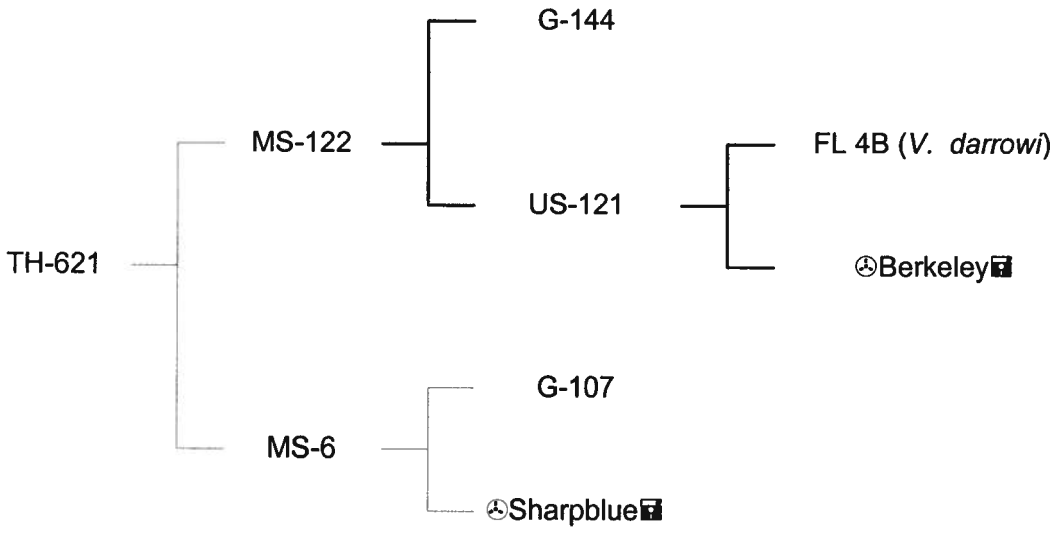
G-144
MS-122
US-121
FL 4B (V. darrowi)
TH-621
Berkeley
G-107
MS-6
Sharpblue

Figure 1. Pedigree of TH-621 southern highbush blueberry.

TABLE 1. Plant survival and vigor rating for 21 genotypes of southern highbush blueberries grown at Alapaha, Ga. from 1998 to 2000 with and without pine bark mulch.

	Plant survival (%)		Plant vigor rating[y/]	
Genotype	No mulch	Mulch	No mulch	Mulch
Biloxi	100	100	3.7	5.3
Bladen	88.9	66.7	4.3	4.7
Cooper	55.6	100	6.0	7.7
Duplin	100	50	4.0	6.0
Georgiagem	100	100	3.3	6.3
Jubilee	100	88.9	4.3	6.3
Legacy	100	77.8	3.3	5.3
Magnolia	100	100	4.7	8.0
Marimba	100	100	5.3	6.0
Misty	77.8	88.9	2.0	2.0
O'Neal	100	100	3.0	5.7
Ozarkblue	77.8	66.7	4.0	6.7
Pender	100	83.5	2.5	6.0
Reveille	77.8	100	2.7	7.0
Sampson	83.5	100	2.5	5.5
Sharpblue	77.8	100	4.3	5.7
Southmoon	44.4	55.6	2.0	3.0
Star	100	100	4.3	6.3
Summit	66.7	83.5	3.0	6.0
TH-621	**100**	**100**	**6.0**	**9.0**
TH-622	100	100	7.0	9.0
$LSD_{0.10}$	28.9	24.4	2.0	1.9

[y/] Ratings were based on a 1 to 10 scale, with 1=very poor vigor, and 10=excellent vigor.

Table 2. Average ratings of some fruit and plant characteristics of TH-621 and several southern highbush standard cultivars over a 4 year period (1999-2002) 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.

Berry and plant attributes	Cultivar				
	TH-621	Georgiagem	Sharpblue	Star	O'Neal
Berry size [Y/]	9.3 a	7.5 b	7.7 b	7.8 b	8.1 b
Berry scar	7.5 ab	7.0 b	7.8 a	7.8 a	7.9 a
Berry color	9.0 a	7.9 b	8.4 ab	8.0 b	7.9 b
Berry firmness	7.9 a	6.7 b	7.6 a	7.5 a	7.6 a
Berry flavor	7.6 ab	7.0 c	7.9 a	7.3 bc	8.0 a
Cropping	6.0 a	4.4 b	6.3 a	6.0 a	4.7 b
Plant vigor [Z/]	9.3 a	7.0 b	6.8 b	6.3 bc	5.1 c

[Y/] The same lower case letter indicates the attribute was not significantly different at the 10% probability level.

[Z/] Plant vigor is a relative scale (1 to 10) that considers overall robustness and durability of the plant itself (wood and vegetation). Vigor does not reflect berry quality, nor is it necessarily related to yield, especially annual yield.

Table 3. Flowering and ripening dates over a 4 year period of TH-621 and four southern highbush standard cultivars grown under field conditions at Alapaha, Ga.

Year	Cultivar				
	TH-621	**Georgiagem**	**Sharpblue**	**Star**	**O'Neal**
			Date of 50% flowering		
1999	Mar 22	Mar. 20	Mar. 3	Mar. 10	Mar. 5
2000	Mar. 6	Mar. 17	Feb. 18	Feb. 27	Mar. 1
2001	Feb. 26	Mar. 4	Feb. 22	Feb. 25	Feb. 23
2002	Mar. 19	Mar. 5	Feb. 26	---	----
Average [Y/]	Mar. 11 c	Mar. 12 c	Feb. 24 a	Mar. 2 b	Feb. 28 ab
			Date of 50% ripening		
1999	May 30	May 28	May 25	May 26	May 25
2000	May 15	May 21	May 18	May 16	May 17
2001	May 8	May 14	May 12	May 6	May 10
2002	May 5	May 11	May 7	May 6	----
Average [Y/]	May 14 ab	May 18 b	May 15 ab	May 13 a	May 17 ab

[Y/] The same lower case letter indicates the flowering and ripening date across years were not significantly different at the 10% probability level.

Table 4. Ratings (1 to 10 scale) of some fruit and plant characteristics of southern highbush blueberry cultivars and selections in a high density test plot at Alapaha, GA during 2003. A value of 6-7 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	Mar. 1a	May 15 b	8.8 a	8.0 a	8.5 ab	6.8 b	7.0 b	7.3 a	8.3 b
O'Neal	Mar. 13 bc	May 15 b	7.5 b	7.3 a	7.8 b	7.0 ab	8.0 a	4.8 bc	7.8 b
Star	Mar. 8 ab	May 9 a	7.5 b	7.3 a	7.5 b	7.0 ab	7.0 b	3.3 c	6.5 c
Windsor	Mar. 24 d	May 28 c	8.7 a	6.5 b	7.5 b	6.5 b	7.0 b	5.0 b	7.5 b
TH-621	Mar. 15 c	May 25 c	9.3 a	8.0 a	9.3 a	8.0 a	7.5 ab	7.0 a	9.3 a

[Y/] The same lower case letter indicates values were not significantly different at the 10% probability level.

Table 4. Flowering and ripening date, yield, and berry weight of TH-621 and two southern highbush standard cultivars in a High Density Production System at Alapaha, Ga. in 2004. The high density beds were established in 2002.

Cultivar	Flowering date	Ripening date	Yield (lbs/plant)	Berry wt. 1st harvest (g)	Berry wt. all harvests (g)
TH-621	Mar. 15 c	May 22 b	4.6 b	1.92 a	1.48 b
Star	Mar. 8 b	May 13 a	5.4 ab	1.21 b	1.29 c
Emerald	Mar. 1 a	May 15 a	6.9 a	1.88 a	1.75 a

[Y/] The same lower case letter indicates values were not significantly different at the 10% probability level.