

**APPLICATION FOR APPROVAL OF 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-730
3. **Pedigree and history:** TH-730 was selected in 2002 at the Georgia Experiment Station in Griffin, Ga. from a group of seedlings of the cross 'Star' X TH-474 planted in a nursery in Griffin in 1999. The pedigree of TH-730 is complex (Fig. 1), involving multiple *Vaccinium* species, including *V. corymbosum*, *V. ashei*, and *V. darrowi*. TH-730 has been tested in plantings at Alapaha and Griffin, Ga. since 2003. The selection was planted at 4 grower test sites in 2007 in Ware County, Bacon County and Appling County.
4. **Description:** TH-730 is an early season southern highbush blueberry flowering and ripening about the same time as 'Star', but 1 week later than 'Rebel'. TH-730 berries are similar in appearance to 'Star' and 'Rebel'. In Griffin, Ga. berry weight of TH-730 has been larger than 'Star', averaging 2.2 to 2.8 g compared to 1.5 to 2.2 g for 'Star'. TH-730 flavor is noticeably sweeter than 'Rebel', which has a mild to bland flavor. The new 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-730 was developed primarily at the Georgia Station, with some activity at the Coastal Plain Experiment Station.
6. **Participating scientists:** The sole scientist participating in the development of this blueberry cultivar was D. Scott NeSmith, UGA.
7. **In what respect is the new cultivar superior to the cultivar now in use?:**

Southern highbush blueberries ripening around the first of May in south Georgia are becoming increasingly popular. The variety 'Star' (a 1995 Univ. of Florida release) dominates the market window due to its reliability and firm, early ripening flavorful berry. In 2006, we released 'Rebel' as a variety to be even earlier than Star. 'Rebel' is becoming popular among growers, but it can lack flavor in many environments. Thus, additional early ripening southern highbush varieties are needed for Georgia growers.

Table 1 presents multi-year fruit and plant data for TH-730, Star, and Rebel from a high density pine bark production system at Alapaha, Ga. TH-730 has performed equal to 'Star' in many regards, and has shown better berry firmness and overall better cropping than the older standard. When compared to 'Rebel' in this test, TH-730 typically had larger berry size and better overall flavor ratings.

While obtaining yield on our blueberry plots is difficult, we were able to hand-harvest and measure yield from the bark bed test plots in 2005, 2006, and 2008 at the Alapaha test site (Table 2). A severe freeze in 2007 prevented evaluation on plants for that year. Data are from three single plant replicates for each selection. Plants were established in 2003, and were pruned annually using grower simulated practices after the third year. Yields from 2005 were low for all selections as plants were still young. However, TH-730 yielded more than Rebel and Star during that first harvest year. During 2006, yields for all selections were very high, and again TH-730 had more total berry yield than Star and Rebel. In 2008, Star yielded more than TH-730, but yield of the new selection was still very good and was greater than that of Rebel.

In addition to the Alapaha high density pine bark bed test site, plants of TH-730 and Star were established under field conditions with pine bark soil amendment at Griffin, Ga. in 2003. Average fruit and plant evaluations for this test site from 2005, 2006, and 2008 are presented in Table 3, where years were considered as replications. At this location, TH-730 and Star generally flowered and ripened at the same time on average, and had many similar attributes. However, TH-730 berry size, berry firmness, and overall cropping were greater than Star. More quantitative data (Table 4) for firmness and berry size were taken for these two selections in 2006 and 2008 (crop was lost to freeze in 2007). In each of the years TH-730 had larger average berry size than Star, and in 2006 berry firmness (as measured with a FirmTech 2 instrument) of TH-730 was greater.

To further test TH-730, we established on-farm test sites at 4 locations in 2007 throughout south Georgia in Appling, Bacon, and Ware counties of the selection along with the standards 'Star' and 'Rebel'. There were 10 to 25 plants of each cultivar at the various sites. These plants were evaluated in 2008 (Table 5), using the four farms as "replications". Firmness and berry size of TH-730 were again better than Star, and berry flavor was better than Rebel. Overall cropping and plant vigor of the 2 year-old plants were better for TH-730 across the locations than for either Star or Rebel.

8. **Method of propagation:** Propagation of TH-730 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-730 propagation material is currently available in limited quantities from stock plants at Griffin and Alapaha, Ga. More than 8000 rooted cuttings are being propagated during 2008 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) *Suziblue*,
14. **Name approved by plant cultivar and germplasm release committee:** *Suziblue*
15. **Form of intellectual property protection:** Selection should be patented.
16. **Is a royalty assessment recommended?:**  Yes  No

**RECOMMENDED BY:**

- |   |   |
|---|---|
| A. _____<br>Originating Scientist   | B. _____<br>Department Head                     |
| C. _____<br>Chairperson, GAES Plant Cultivar and<br>Germplasm Release Committee | D. _____<br>Assistant Dean /Appropriate Station |
| E. _____<br>Associate Dean for Research   | F. _____  |

**APPROVED:**

\_\_\_\_\_  
Dean and Director  
College of Agricultural and Environmental Sciences

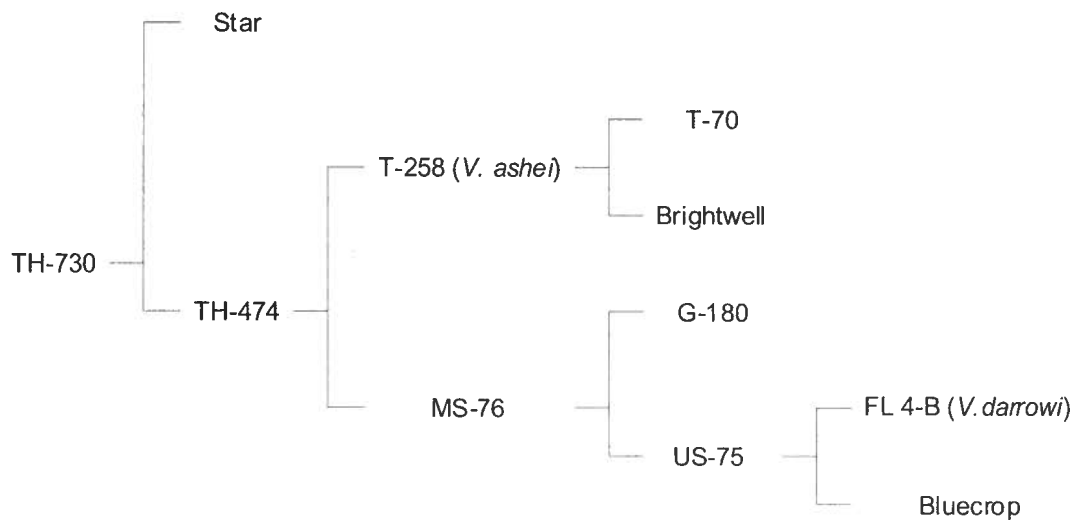
- 11. Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable): TH-730 propagation material is currently available in limited quantities from stock plants at Griffin and Alapaha, Ga. More than 8000 rooted cuttings are being propagated during 2008 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) *Suziblue*,
- 14. Name approved by plant cultivar and germplasm release committee: *Suziblue*
- 15. Form of intellectual property protection: Selection should be patented.
- 16. Is a royalty assessment recommended?:  Yes  No

RECOMMENDED BY:

- A. \_\_\_\_\_  
Originating Scientist
- B. \_\_\_\_\_  
Department Head
- C. \_\_\_\_\_  
Chairperson, GAES Plant Cultivar and Germplasm Release Committee
- D. \_\_\_\_\_  
Assistant Dean /Appropriate Station
- E. \_\_\_\_\_  
Associate Dean for Research
- F. \_\_\_\_\_

APPROVED:

\_\_\_\_\_  
 Dean and Director  
 College of Agricultural and Environmental Sciences



**Figure 1.** Pedigree of TH-730 southern highbush blueberry.

**Table 1.** Average ratings of some fruit and plant characteristics of TH-730 and southern highbush standard cultivars Star and Rebel from 2005-2008 in a high density pine bark bed growing system 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. These plants were established in 2002-2003. A severe freeze in 2007 prevented evaluations for that year.

Berry and plant attributes <sup>Y/</sup>	Cultivar		
	TH-730	Star	Rebel
Berry size	8.5 ± 0.1	8.5 ± 0.3	8.0 ± 0.2
Berry scar	8.0 ± 0.3	8.0 ± 0.3	8.5 ± 0.3
Berry color	8.0 ± 0.5	7.5 ± 0.3	7.7 ± 0.2
Berry firmness	8.0 ± 0.3	7.3 ± 0.2	8.0 ± 0.3
Berry flavor	7.8 ± 0.3	7.2 ± 0.2	6.8 ± 0.1
Cropping	6.7 ± 1.1	5.3 ± 1.3	7.3 ± 1.2
Plant vigor <sup>Z/</sup>	9.0 ± 0.3	8.5 ± 0.3	8.8 ± 0.4
Date of 50% flowering	Mar. 1 ± 2.3	Mar. 1 ± 4.6	Feb. 23 ± 4.0
Date of 50% ripening	May 9 ± 3.0	May 8 ± 3.3	May 2 ± 4.0

<sup>Y/</sup> Values are means ± the standard error with n=3.

<sup>Z/</sup> 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 2.** Yields of TH-730 and southern highbush standard cultivars Star and Rebel from 2005-2008 in a high density pine bark bed growing system at Alapaha, Ga. These plants were established in 2002-2003. A severe freeze in 2007 prevented evaluations for that year.

Year	Cultivar yields (kg/plant) <sup>YI</sup>		
	TH-730	Star	Rebel
2005	0.54 ± 0.05	0.22 ± 0.07	0.44 ± 0.02
2006	5.14 ± 0.53	2.81 ± 0.11	4.10 ± 0.38
2008	5.41 ± 1.02	6.32 ± 0.85	4.20 ± 0.20

<sup>YI</sup> Values are means ± the standard error with n=3 from single plant replications.

**Table 3.** Average ratings of some fruit and plant characteristics of TH-730 and the southern highbush standard cultivar Star during 2005-2008 for field grown plants 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 6-7 is generally considered to be the minimum acceptable rating for a commercial cultivar. These plants were established in 2003. A severe freeze in 2007 prevented evaluations for that year.

Berry and plant attributes <sup>Y/</sup>	Cultivar	
	TH-730	Star
Berry size	8.7 ± 0.1	8.1 ± 0.1
Berry scar	8.1 ± 0.2	7.7 ± 0.2
Berry color	7.9 ± 0.3	7.3 ± 0.1
Berry firmness	8.0 ± 0.2	7.1 ± 0.1
Berry flavor	7.8 ± 0.2	7.2 ± 0.1
Cropping	5.8 ± 1.1	4.0 ± 1.3
Plant vigor <sup>Z/</sup>	7.8 ± 0.2	7.9 ± 0.1
Date of 50% flowering	Mar. 16 ± 1.2	March 16 ± 3.2
Date of 50% ripening	May 19 ± 3.2	May 19 ± 3.8

<sup>Y/</sup> Values are means ± the standard error with n=3.

<sup>Z/</sup> 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 4.** Average berry weight and berry firmness readings using a FirmTech 2 firmness tester of TH-730 and the standard cultivar Star grown in Griffin, Ga. Data were taken in 2006 and 2008. A severe freeze during 2007 prevented evaluations.

Year	Average berry wt (g)		Berry firmness (g/mm)	
	TH-730	Star	TH-730	Star
2006	2.19 ± 0.10	1.46 ± 0.10	216 ± 4.3	182 ± 4.6
2008	2.78 ± 0.12	2.22 ± 0.15	207 ± 2.6	209 ± 4.0

**Table 5.** Average ratings of some fruit and plant characteristics of TH-730 and southern highbush standard cultivars Star and Rebel during 2008 from on-farm test plots at 4 locations in south Georgia (Appling, Bacon, and Ware counties). 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. These plants were established at test sites in 2007.

Berry and plant attributes <sup>Y/</sup>	Cultivar		
	TH-730	Star	Rebel
Berry size	8.7 ± 0.1	8.2 ± 0.1	8.5 ± 0.1
Berry scar	8.3 ± 0.1	7.3 ± 0.1	8.3 ± 0.3
Berry color	7.5 ± 0.2	7.4 ± 0.1	7.5 ± 0.2
Berry firmness	7.9 ± 0.2	7.4 ± 0.1	8.3 ± 0.1
Berry flavor	7.7 ± 0.1	7.3 ± 0.1	6.8 ± 0.1
Cropping	7.3 ± 0.6	5.0 ± 1.2	5.5 ± 1.0
Plant vigor <sup>Z/</sup>	9.1 ± 0.4	8.0 ± 0.4	8.3 ± 0.4
Date of 50% flowering	Mar. 3 ± 4.5	Mar. 2 ± 3.8	Feb. 23 ± 3.8
Date of 50% ripening	May 9 ± 1.7	May 7 ± 1.5	May 1 ± 1.5

<sup>Y/</sup> Values are means ± the standard error with n=4.

<sup>Z/</sup> 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.

## Blueberry Traits and Rating Scale

D. Scott NeSmith

Many of the traits evaluated in the blueberry breeding program are qualitative and/or subjective, and we use a 1 to 10 scale for our ratings. In this system, typically a value of 1 is poor and least desirable, and a value of 10 is excellent and most desirable. A value of 6-7 on this scale is generally considered to be the minimum level for “commercial acceptability”. An exception is cropping score, which can be less than 6 in some years depending on weather, pollination, etc. For advanced selections, nearly all traits would be at the minimum value (6-7), therefore, there is not a wide range in values among entries in these final trials (i.e., those selections with values < 6 didn't make it this far). Ratings are based on averaged or integrated values across several plants and berries, not just single berries. More specific information for the different traits is listed below.

**Berry size** – For berry size large berries are typically desirable. There are occasions that small berries may be desired, but in general we select for large fruit. Our berry size scale does relate to a quantity in many regards. A value of 6 is given to berries that are 13 to 14 mm in diameter, a value of 7 is 15 to 16 mm, a value of 8 is 17 to 18 mm, a 9 is 20 to 21 mm, and a value of 10 is greater than 21 mm.

**Berry scar** – Berry scar refers to the region where the fruit is detached from the stem. The most desirable form of this trait is a very small scar, that is completely dry. A value less than 6 is unacceptable commercially because the tearing and leakage would cause fruit storage problems. A value of 6 would be a scar with perhaps slight tearing on an occasional berry. A value of 7 would be a large scar, but would tend to be dry. The rest of the scale (8 to 10) basically accounts for a smaller and smaller scar.

**Berry color** – The “blue color” of blueberries actually is caused by the waxy bloom covering the fruit. Nearly all blueberries are midnight blue to black if this wax is removed. So, in essence the color scale we use is an indicator of waxy bloom on the fruit. The most desirable form of this trait is a high wax bloom that gives a sky blue appearance. In our scale, a value less than 6 is considered too dark (not waxy enough) for commercial acceptance. Going from 6 to 10 is basically increasing in intensity of light blue color.

**Berry firmness** – Firmness of blueberries is important for harvesting, handling, and storage of the fruit. If a berry is too soft, it will bruise during these processes and become unusable. Our fruit firmness rating is based on “feel” when rolling berries between the fingers, and somewhat on texture “crispness” when biting into the fruit. Rating values < 6 are considered too soft to be commercially viable. Going from a value of 6 to 10 is increasing in firmness. Very few berries are ever rated at 10 on this scale. Typically fruit that exceed a value of 8.5 to 9.0 could likely be machine harvested.

**Berry flavor** – Blueberry flavor is a blend of volatiles, acid and sugars that give various combinations of flavor. If berries are too acid, they are bitter and are not appealing to

consumers. If both acidity and sugars are too low, berries can have too bland of a flavor and this is not appealing to consumers either. A flavor rating < 6 is not considered commercially suitable. Going from a rating of 6 to 10, flavor is becoming increasingly sweet, aromatic, and more pronounced.

**Cropping** – Cropping score is an integrated value of the “percent” crop a plant is carrying. It is related to yield somewhat, but is actually more a measure of fruit set. Thus, overall size of the canopy is not accounted for. You could have a small plant canopy with high fruit set, but overall yield would be low due to its size. Also, large berry size can increase yield if two selections have a similar crop load, but one has larger berry size. The 1 to 10 scale used is basically a percentage of crop that is set (i.e., 1 = 10%, 2=20%, etc.).

**Plant Vigor** – Rating of plant vigor integrates the overall robustness and durability of the plant itself (wood and vegetation). It does not reflect berry quality, although poor vigor plants can have very small berries, but not always. This is a 1 to 10 visual scale, with 1 being near death, and 10 being extremely healthy and vigorous.

## Blueberry Cultivar Descriptive data for Patent

DETAILED DESCRIPTION OF THE NEW VARIETY: 'Suziblue' southern highbush

The following is a detailed description of the botanical and pomological characteristics of the subject blueberry clone. Where dimensions, sizes, colors, and other characteristics are given, it is to be understood that such characteristics are approximations and averages set forth as accurately as practicable. Color data are presented in Royal Horticultural Society Colour Chart designations. The descriptions reported herein are largely from specimen plants grown in Alapaha, Ga. and Griffin, Ga, with supplemental irrigation. Plants were 3 to 5 years old.

### **Plant:**

*Size* - 1.0 to 1.3 m tall by 3 years

*Growth habit* – Semi-spreading with 2 to 5 canes arising from the crown.

*Growth* - Highly vigorous.

*Productivity* - High, averaging 8 to 10 lbs per plant each year for 4 to 5 year old plants grown in bark beds with irrigation.

*Cold hardiness* - Similar to other southern highbush cultivars such as Star and Rebel.

*Chilling requirement* - Plants estimated to require 450-500 hours of temperatures at or below 45 F (7C) to induce normal leafing and flowering during the spring.

*Leafing* - Plants readily break numerous leaf buds simultaneously with anthesis.

*Canes* - Cane 3 yrs old and older can be 20 to 30 mm in diameter; color is Grey Brown 199D. 2 yr old wood is 8 to 12 mm in diameter; color is Yellow-Green 146D, transitioning to Brown 200D. Current season shoot is 3 to 5 mm in diameter; color is Yellow-Green 145B.

### **Foliage:**

*Leaf color* - Healthy mature leaves: top side of leaf color is Green 137B, under side of leaf color is Yellow-Green 148D.

*Leaf arrangement* - alternate, simple

*Leaf shape* - Elliptic

*Leaf margins* – Entire

*Leaf venation* - reticulate

*Leaf apices* – Broadly acuminate to broadly acute

*Leaf bases* - Acute

*Leaf dimensions* - Length 65 to 75 mm; width 30 to 35 mm.

*Petioles* - Small, 3.0 to 4.0 mm long; 1.8 to 2.0 mm wide. Color Yellow-Green 145C

**Flowers:**

*Date of 50% anthesis* – 3-year average March 1 in southeast Georgia; March 16 in middle Georgia.

*Flower shape* - Urceolate.

*Flower bud number* - medium to high

*Flowers per cluster* - 5 to 9

*Flower fragrance* - no

*Corolla color* - White 155B (open flower).

*Corolla length* – 7.8 to 8.5 mm

*Corolla width* - 5.3 to 5.8 mm

*Corolla aperture width* - 2.3 to 2.8 mm

*Flower peduncle* - length 11.5 to 13.0 mm; Color Yellow-Green 145C

*Flower pedicle* - length 2.5 to 3.0 mm; Color Yellow-Green 145C

*Calyx (with sepals)* - diameter 7.0 to 8.0 mm; color: sepals, Yellow-Green 144D; center of calyx, Yellow-Green 144A

*Stamen* - length 6.3 to 6.7 mm; number per flower 10; filament color: Yellow-Green 145C

*Style* - length 7.0 to 8.0 mm; color Yellow-Green 145B

*Pistil* - length 9.5 to 10.5 mm; ovary color (exterior) Yellow-Green 144A

*Anther* - length 4.0 to 4.5 mm; number 10; color Greyed-Orange 165B

*Pollen* - abundance: medium; color Yellow-Orange 20B

The cultivar has a high degree of self-compatibility.

**Fruit:**

*Date of 50% maturity* - 3-year average May 9 in southeast Georgia, May 19 in middle Georgia

*Fruit development period* - 64 to 68 days

*Berry color* - with wax Violet-Blue 97C; with wax removed Greyed-Purple 187A to Black 202A

*Berry surface wax abundance* - medium

*Berry flesh color* - Yellow-Green 146D

*Berry weight* - 1st harvest 2.7 g to 3.1 g; 2<sup>nd</sup> harvest 2.2 g to 2.6 g

*Berry size* - height from calyx to scar 15.0 to 17.0 mm; diameter 18.0 to 22.0 mm

*Berry shape* – semi-spherical

*Fruit stem scar* - small, dry, no tearing

*Berry firmness* – very good to excellent

*Berry flavor and texture* – mild, sweet flavor; firm crisp texture

*Storage quality* - very good

*Suitability for mechanical harvesting* - slight

*Uses* - Primarily used as fresh fruit for shipping

**Seed:**

*Seed abundance in fruit:* Low to medium

*Seed color:* Greyed-Orange 165B

*Seed dry weight:* 38.8 mg per 100

*Seed size:* 1.5 to 2.4 mm long for fully developed seeds

Alapaha, Ga. More than 8000 rooted cuttings are being propagated during 2008 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) *Suzi-Q*,

*Suzi blue.*  
*see*  
*Revision*

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?:  Yes  No

**RECOMMENDED BY:**

A.   
Originating Scientist

B.   
Department Head

C.  10/6/08  
Chairperson, GAES Plant Cultivar and  
Germplasm Release Committee

D. \_\_\_\_\_  
Assistant Dean /Appropriate Station

E.   
Associate Dean for Research

F. \_\_\_\_\_

**APPROVED:**

\_\_\_\_\_  
Dean and Director  
College of Agricultural and Environmental Sciences



Alapaha, Ga. More than 8000 rooted cuttings are being propagated during 2008 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) Suzi-Q,

*Suzi blue.*

*See*

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

*Revision*


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

16. Is a royalty assessment recommended?:  Yes  No

RECOMMENDED BY:

A.   
Originating Scientist

B.   
Department Head

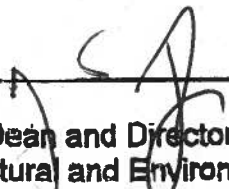
C.  10/6/08  
Chairperson, GAES Plant Cultivar and Germplasm Release Committee

D.  - 10/10/08  
Assistant Dean /Appropriate Station

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

F. \_\_\_\_\_

APPROVED:

  
Dean and Director  
College of Agricultural and Environmental Sciences