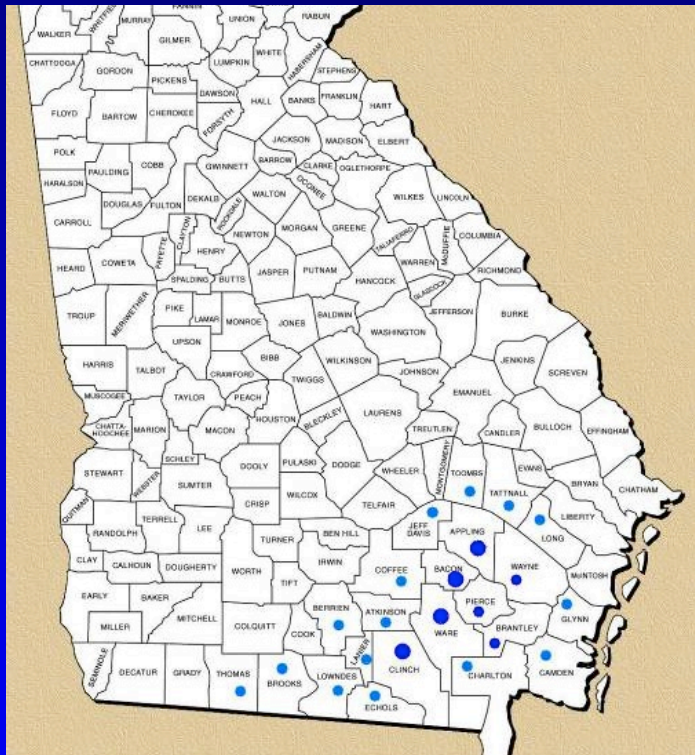


# UGA Blueberry Breeding and New Varieties

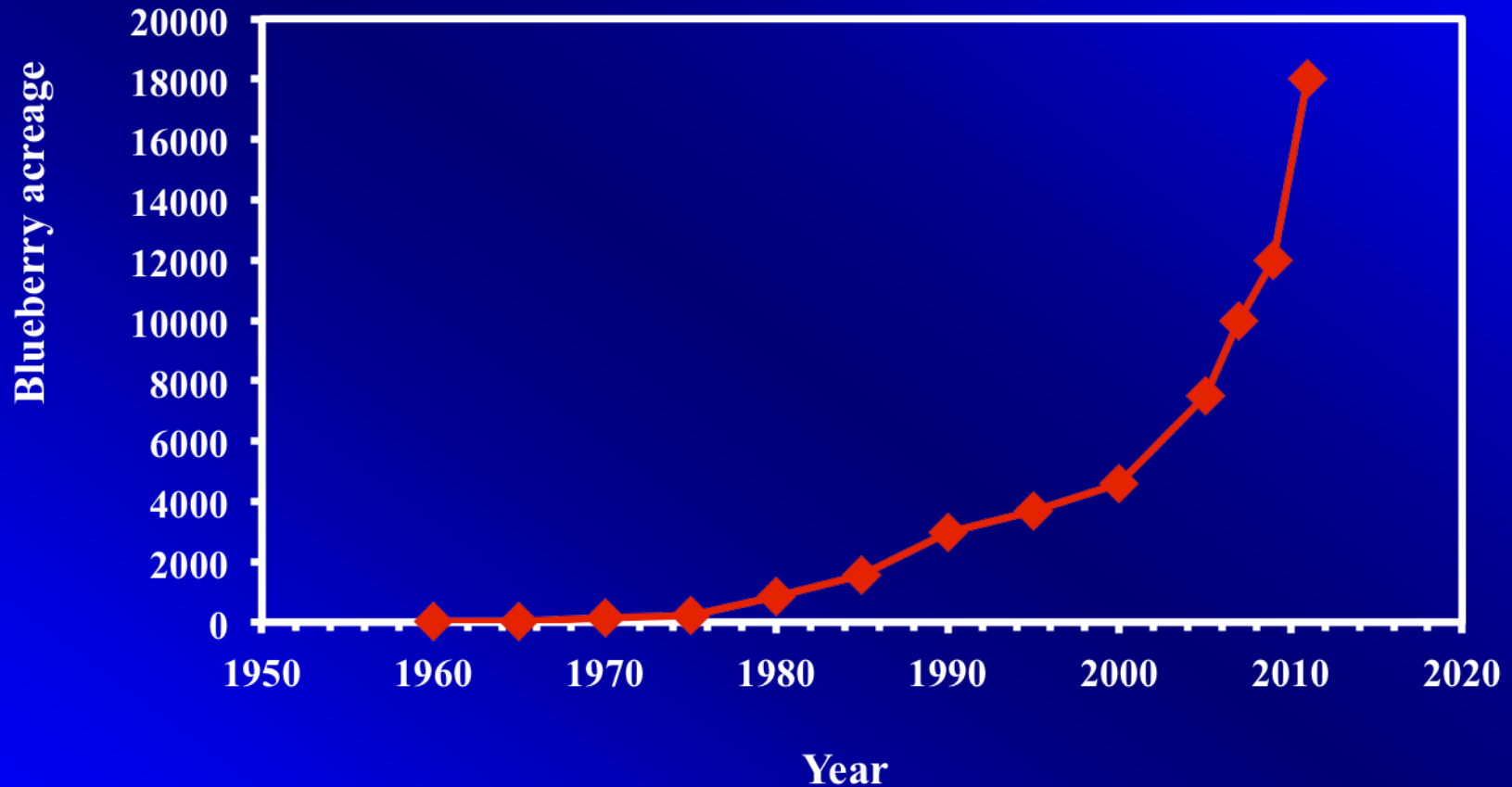


**D. Scott NeSmith**  
*Dept. of Horticulture*  
*Univ. of Georgia*  
*Griffin, GA*

# Georgia blueberry industry

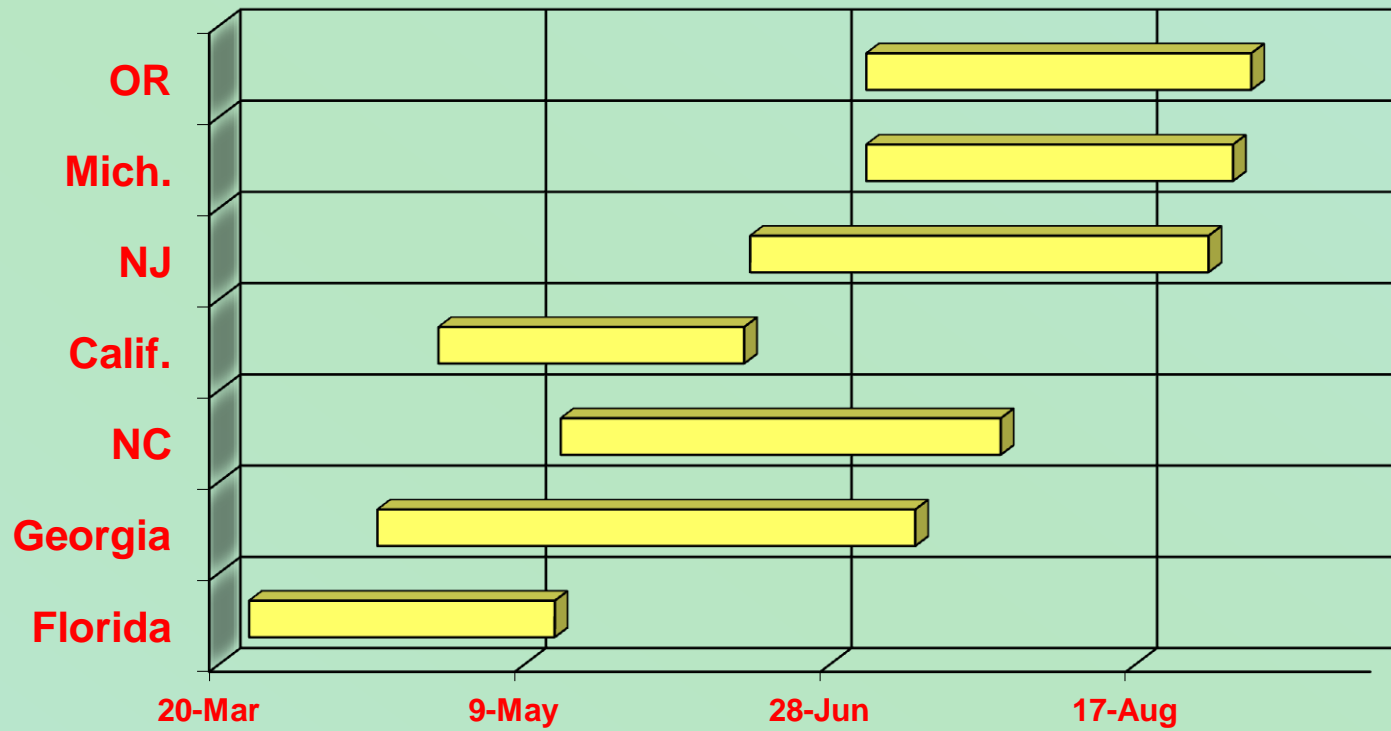


# Blueberry acreage in Georgia continues to increase!



# Georgia Blueberry Farm-gate Value

Year	Value (million \$)
2000	22
2002	30
2004	48
2006	60
2008	75-80
2010	90-110
2012	150 <





## **Two major species in Southeastern U.S.**

- **Rabbiteye blueberries (*Vaccinium ashei*)**
- **Southern highbush (*Vaccinium* hybrids)**

# **Rabbiteye Advantages**

- **Later flowering time**
- **More vigorous plants**
- **Grow better on upland soils; require less organic matter**
- **More heat and drought tolerant**
- **Firmer fruit**
  - **Possible machine harvest even for fresh market**
  - **More suitable for long distant shipping**

# **Southern highbush advantages**

- **Ripen early**
- **Generally larger berry size**
- **Most varieties are self fruitful whereas rabbiteye varieties are not**
- **Typically smoother textured berry**



## **Georgia Rabbiteye vs SHB**

- **Early 1990' s acreage of SHB was  $< 1\%$ .**
- **Late 1990' s maybe up to 10% SHB.**
- **Currently, 30% or more SHB.**

# **Fresh vs. Processed**

- **Most of 1990' s was around 25% fresh 75% processed.**
- **In last few years, has been more nearer 50% fresh and 50% processed.**

# UGA Blueberry Breeding Program History



- **Dr. W. Thomas Brightwell** really gave the program a boost in 1945, when 25 acres of land in south Georgia near Alapaha was dedicated to blueberry cultivar development.
- First 5 decades, primarily bred rabbiteye blueberries, but now also very active in southern highbush cultivar development.

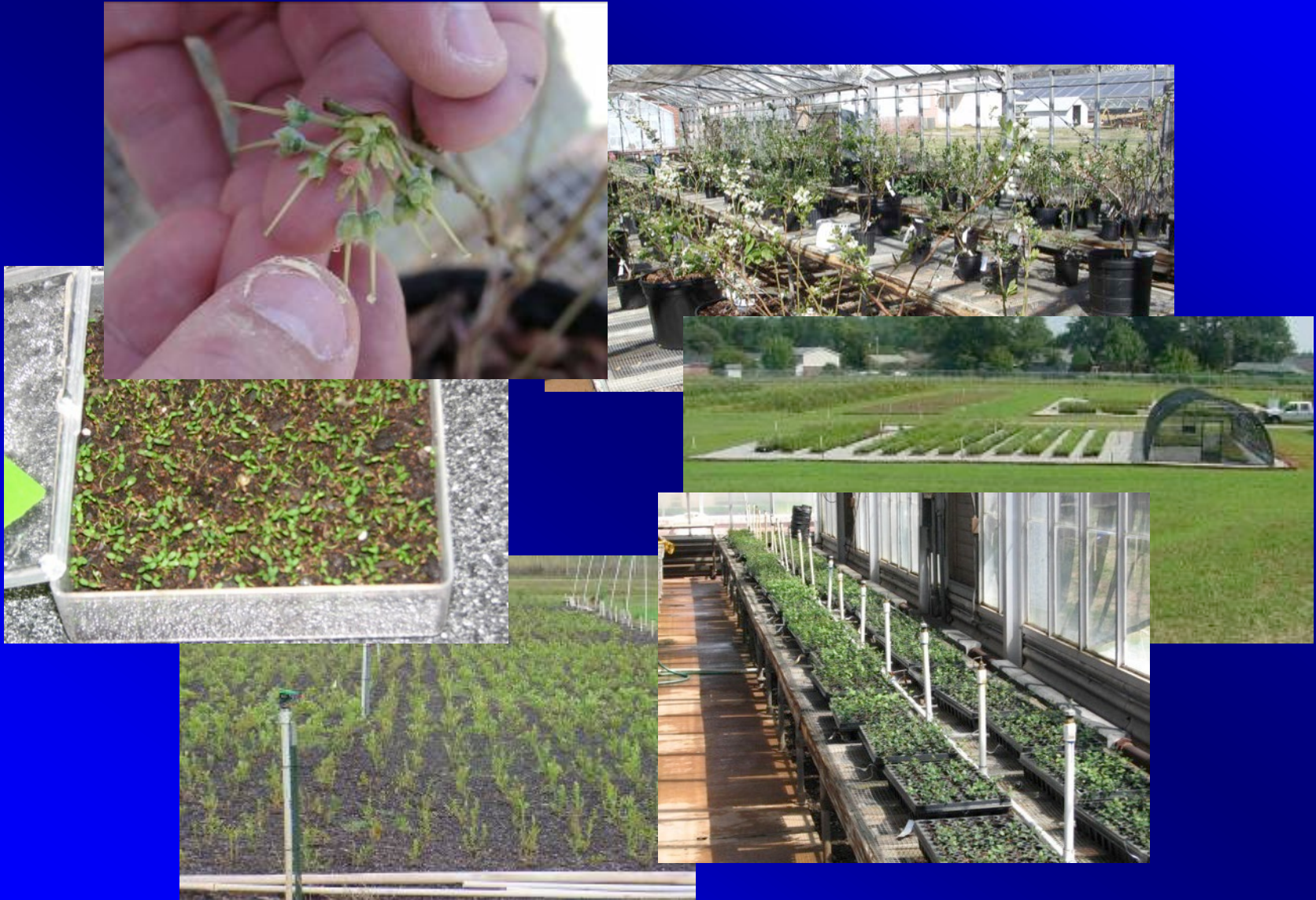
# Today

- Program occupies **about 50 acres** of land at Alapaha where chill hours are **600 to 700** per year.
- About **12 acres** at Griffin, where chill hours are **1100 to 1200** per year.





# Breeding Program Overview

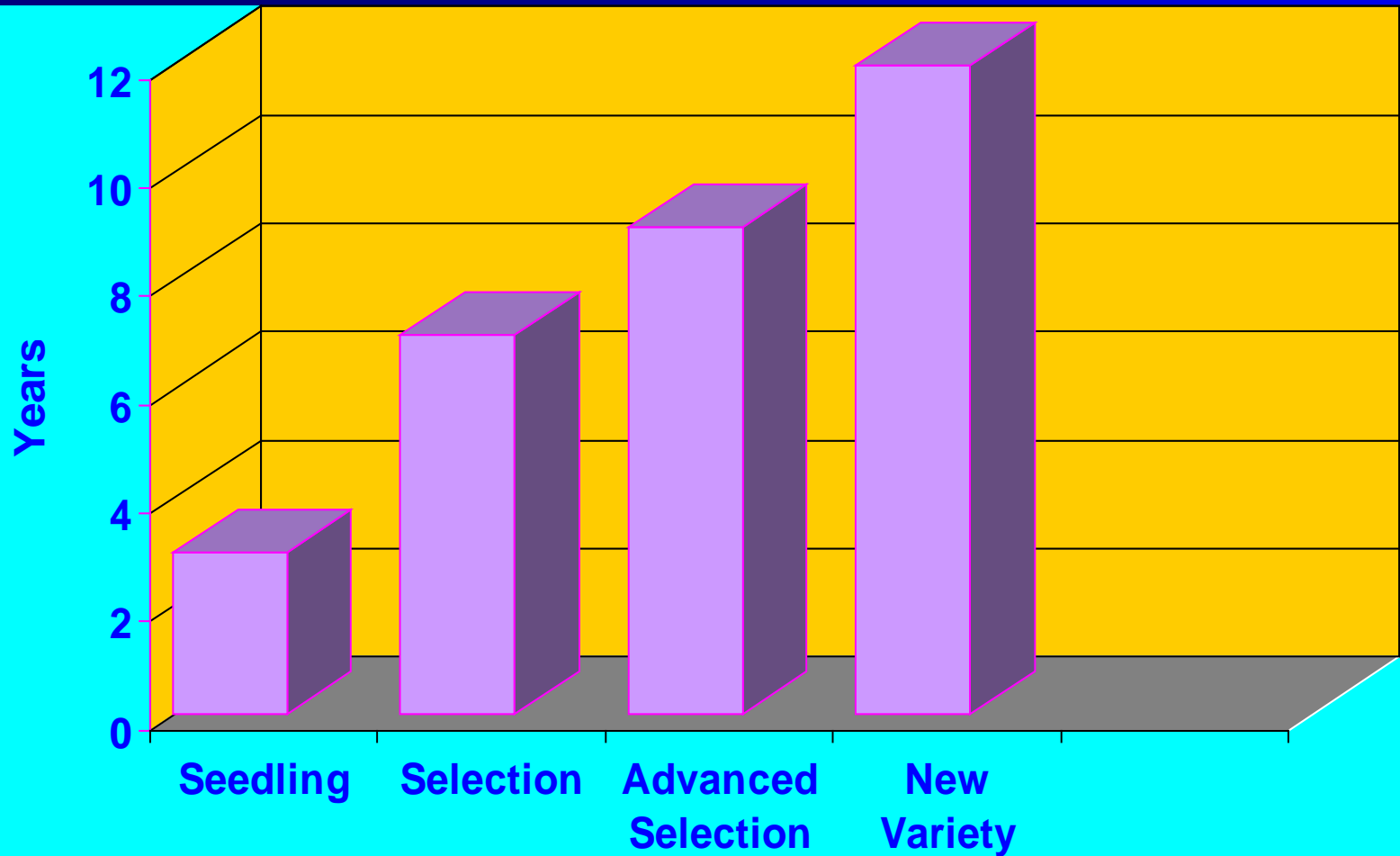


# Breeding Program Overview





# Blueberry Cultivar Development Timeline





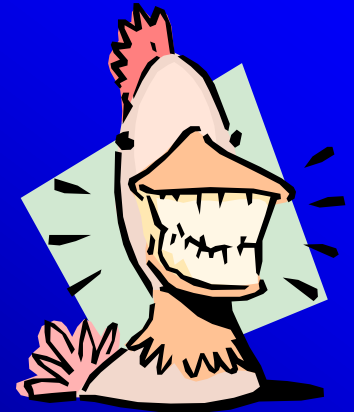
# BAD NEWS

Takes 12 or more Years





**GOOD NEWS**

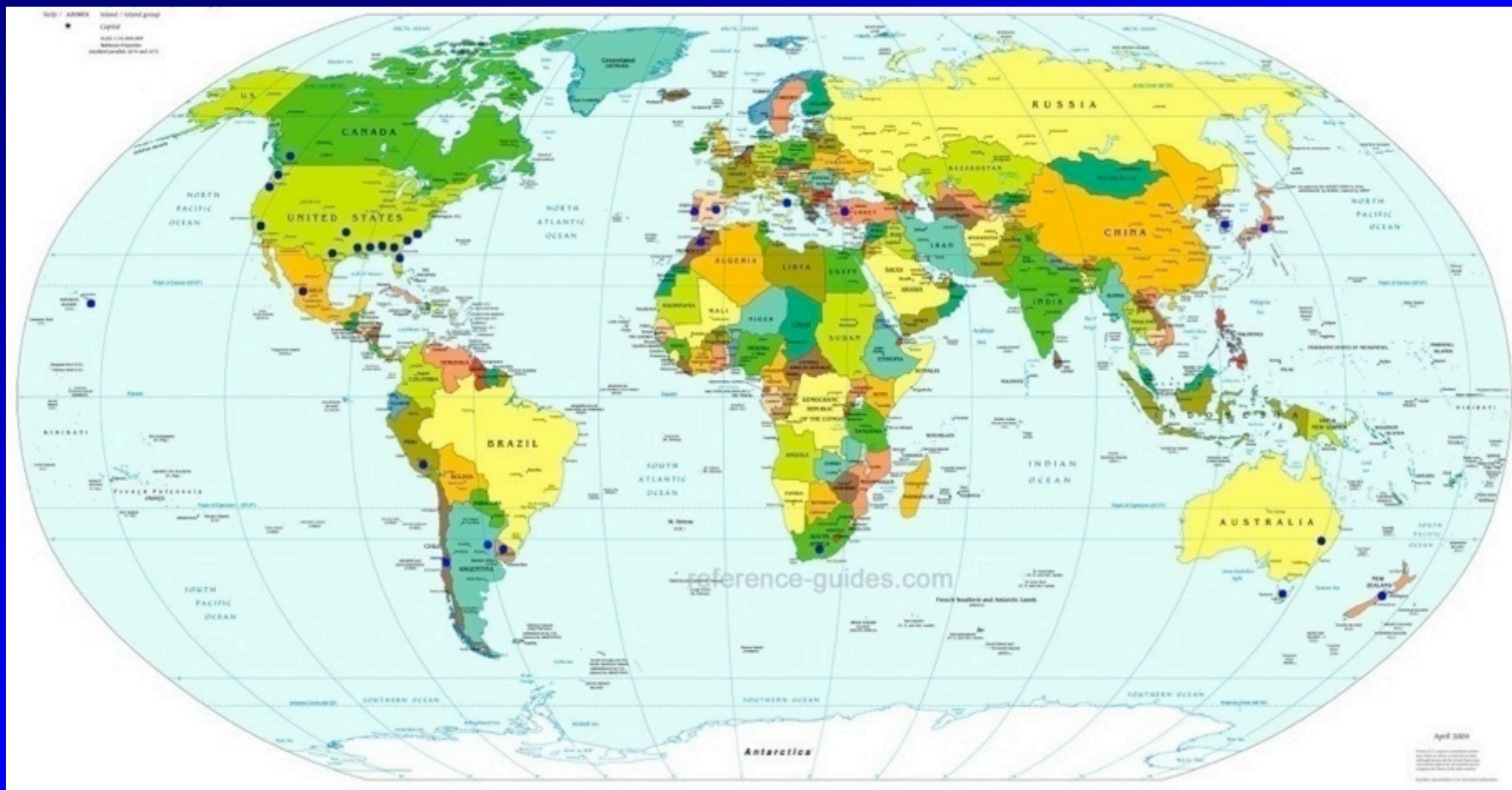


**HAVE THINGS AT ALL  
STAGES**



## Recent UGA Blueberry Variety Releases

VARIETY	YEAR RELEASED	PATENT
Alapaha	2001	USPP 16,266
Ochlockonee	2002	USPP 17,300
Palmetto	2003	USPP 16,756
Rebel	2004	USPP 18,138
Camellia	2005	USPP 18,151
Vernon	2006	USPP 18,291
TH-682 (Blue Suede™)	2007	USPP 21,222
Suzibblue	2008	USPP 21,167
Southern Splendour	2009	USPP 22,692
T-885 (Summer Sunset™)	2009	USPP 23,374
T-959 (Titan™)	2010	USPP 24,135
TH-819 (Georgia Dawn™)	2011	USPPAF
TH-929 (Victoria™)	2013	USPPAF





# Descriptions of UGA Varieties





# **‘Alapaha’ Rabbiteye Blueberry**

- **Early rabbiteye season (ripens with Climax, before Premier)**
- **Blooms late, ripens early**
- **Medium size**
- **Reliable production**
- **500 chill hours**




## **5 yr. average berry and plant ratings at UGA Blueberry Farm**

<u><b>Attribute</b></u>	<u><b>Alapaha</b></u>	<u><b>Climax</b></u>
<b>Berry size</b>	<b>7.0</b>	<b>7.0</b>
<b>Berry scar</b>	<b>8.0</b>	<b>8.2</b>
<b>Berry color</b>	<b>7.8</b>	<b>8.0</b>
<b>Berry firmness</b>	<b>7.9</b>	<b>8.3</b>
<b>Berry flavor</b>	<b>7.8</b>	<b>8.0</b>
<b>Plant vigor</b>	<b>8.7</b>	<b>8.0</b>
<b>Flowering</b>	<b>March 18</b>	<b>March 7</b>
<b>Ripening</b>	<b>May 31</b>	<b>May 30</b>

# Yield at UGA Blueberry Farm

<u>Year</u>	<u>Alapaha</u>	<u>Climax</u>
	----- lbs/bush -----	
1998	11.5	6.6
1999	13.4	6.2
2000	15.0	11.2
2001	12.5	7.9
2002	13.0	5.2
2003	14.0	3.5
<b>6 year avg.</b>	<b>13.2</b>	<b>6.8</b>





He Smith

Climax  
2-23-99



NeSmith

T-256

2-23-99











# **‘Vernon’ Rabbiteye Blueberry**

- **Early RE season (ripens with Climax and Premier)**
- **Blooms late, ripens early**
- **Large berry size**
- **Vigorous plant**
- **550 chill hours**



## 5-year average berry and plant ratings at Alapaha Farm

<u>Attribute</u>	<u>Vernon</u>	<u>Climax</u>	<u>Premier</u>
Berry Size (g)	1.87	1.27	1.80
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	8.4
Plant vigor	8.5	8.3	8.8
Flowering	March 14	March 7	March 15
Ripening	May 30	May 30	June 3

## **Yield at UGA Alapaha Blueberry Farm**

<u>Year</u>	<u>Vernon</u>	<u>Climax</u>	<u>Premier</u>
----- Total yield per bush (lbs) -----			
1998	7.4	6.6	8.0
1999	13.4	6.2	5.9
2000	14.0	11.2	11.7
2001	22.5	7.9	14.1
2002	13.0	5.2	---
2003	6.6	3.5	---
<b>avg.</b>	<b>12.8</b>	<b>6.8</b>	<b>9.9</b>











# **‘Ochlockonee’ Rabbiteye Blueberry**

- **Late season (later than Tifblue and Powderblue)**
- **Blooms late, ripens late**
- **Medium to large size**
- **Less rain splits than Tifblue**
- **650 chill hours**



## 5-yr average berry and plant ratings at Alapaha Farm

<u>Attribute</u>	<u>Ochlockonee</u>	<u>Tifblue</u>
Berry wt (g)	1.4 g	1.1 g
Berry scar	8.0	8.2
Berry color	8.2	8.7
Berry firmness	7.7	7.9
Berry flavor	7.7	7.4
Plant vigor	9.2	8.8
Flowering	March 27	March 23
Ripening	June 28	June 22

# Yield at UGA Blueberry Farm

<u>Year</u>	<u>Ochlockonee</u>	<u>Tifblue</u>
	----- lbs/bush -----	
1998	14.5	6.3
1999	5.3	3.1
2000	26.5	17.5
2001	17.5	16.8
2002	21.0	6.7
<b>5 year avg.</b>	<b>17.0</b>	<b>10.1</b>









# **‘Titan<sup>TM</sup>’ Rabbiteye Blueberry**

- **Early season**
- **Very large berry size**
- **Excellent firmness**
- **Good crop**
- **Vigorous plant**
- **High yielding**





## Average berry and plant ratings 2008-2010 at Alapaha.

<u>Attribute</u>	<u>Titan</u>	<u>Alapaha</u>	<u>Vernon</u>	<u>Premier</u>	<u>Brightwell</u>
Berry Size	9.5	6.9	7.9	7.8	7.0
Scar	8.2	7.6	8.0	7.7	7.7
Color	7.3	7.0	7.2	7.5	7.3
Firmness	8.3	7.0	7.7	6.9	7.7
Flavor	7.0	7.8	7.7	7.8	7.0
Cropping	6.3	6.2	4.5	2.5	7.8
Plant vigor	10.0	8.0	8.8	9.3	9.2
Flowering date	Mar. 21	Mar. 22	Mar. 20	Mar. 23	Mar. 25
Ripening date	June 1	June 4	June 2	June 6	June 19

## Average berry and plant ratings 2008-2010 at Griffin.

<u>Attribute</u>	<u>Titan</u>	<u>Alapaha</u>	<u>Vernon</u>	<u>Premier</u>	<u>Brightwell</u>
Berry Size	9.6	7.1	8.0	7.7	6.8
Scar	8.2	7.7	7.8	7.5	7.7
Color	7.3	7.0	7.2	7.3	7.4
Firmness	8.3	7.2	7.8	6.8	8.1
Flavor	7.2	7.9	8.0	7.7	7.1
Cropping	5.5	5.2	4.2	3.2	6.0
Plant vigor	9.8	8.3	8.2	7.8	8.3
Flowering date	Apr. 6	Apr. 3	Apr. 2	Apr. 2	Apr. 5
Ripening date	June 20	June 16	June 14	June 16	June 28

# Average berry weight (g/berry) of ‘Titan’ and rabbiteye standards in Alapaha and Griffin.

	<u>Alapaha</u>		<u>Griffin</u>	
<u>Variety</u>	<u>2009</u>	<u>2010</u>	<u>2009</u>	<u>2010</u>
Alapaha	1.4	1.4	1.8	1.8
Vernon	2.1	2.1	2.3	2.2
Premier	1.8	1.7	2.1	2.0
Brightwell	1.5	1.6	1.6	1.3
<b>Titan</b>	<b>3.3</b>	<b>3.2</b>	<b>4.2</b>	<b>3.1</b>



# Titan at Alapaha during 3<sup>rd</sup> leaf



## Titan (T-959) vs Premier

T-959

Alapaha 6/4/08



Premier

Alapaha 6/4/08



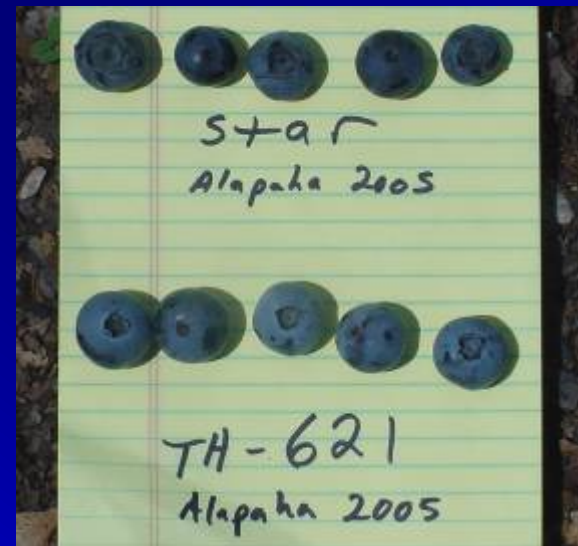






# **‘Camellia’ Southern Highbush Blueberry**

- **Early-mid season**
- **Excellent flavor**
- **Large size**
- **Excellent light blue color**
- **Vigorous plant**
- **500 chill hours**



## 4-year avg. ratings for field grown plants south Ga

	<u>Camellia</u>	<u>Georgiagem</u>	<u>Sharpblue</u>	<u>Star</u>	<u>O' Neal</u>
Fruit size	9.0	7.5	7.7	7.8	8.1
Fruit Scar	7.5	7.0	7.8	7.8	7.9
Color	9.0	7.9	8.4	8.0	7.9
Firmness	7.9	6.7	7.6	7.5	7.6
Flavor	7.6	7.0	7.9	7.3	8.0
Cropping	6.0	4.4	6.3	6.0	4.7
Vigor	9.3	4.0	6.8	6.3	5.1
Flowering	Mar. 9	Mar. 14	Feb. 24	Mar. 2	Mar. 1
Ripening	May 19	May 21	May 18	May 10	May 15









# **‘Suziblue’ Southern Highbush**

- **Early season**
- **Very good firmness**
- **Large size**
- **Consistent crop**
- **Vigorous plant**
- **Good flavor**



**Average berry and plant ratings 2005-2008 at Alapaha in  
a high density pine-bark bed.**

<u>Attribute</u>	<u>Suziblue</u>	<u>Star</u>	<u>Rebel</u>
Berry Size	8.5	8.5	8.0
Berry Scar	8.0	8.0	8.5
Berry color	8.0	7.5	7.7
Berry firmness	8.0	7.3	8.0
Berry flavor	7.8	7.2	6.8
Cropping	7.0	5.3	7.0
Plant vigor	9.0	8.5	8.8
Flowering date	March 1	March 1	February 23
Ripening date	May 9	May 8	May 2



**Average berry weight and firmness values for ‘Suziblue’  
and ‘Star’ in Griffin.**

	<u>Avg. berry wt (g)</u>		<u>Berry firmness (g/mm)</u>	
<u>Year</u>	<u>Suziblue</u>	<u>Star</u>	<u>Suziblue</u>	<u>Star</u>
2006	2.19	1.46	216	182
2008	2.78	2.22	207	209
avg.	2.49	1.84	212	196









# **‘Rebel’ Southern Highbush Blueberry**

- **Very early season**
- **Good firmness**
- **Large size**
- **Very good scar**
- **Vigorous plant**
- **400 chill hours**



## 3 yr avg data south Ga

<u>Attribute</u>	<u>Rebel</u>	<u>Star</u>	<u>O' Neal</u>
Fruit wt.	2.3 g	1.8 g	2.0 g
Fruit Scar	8.5	8.3	7.3
Fruit Color	7.9	8.0	7.0
Firmness	7.9	7.5	6.9
Flavor	7.0	7.5	7.8
Cropping	7.3	5.8	5.5
Plant vigor	9.1	7.8	6.8
Flowering	Feb 25	March 1	March 8
Ripening	May 3	May 8	May 15



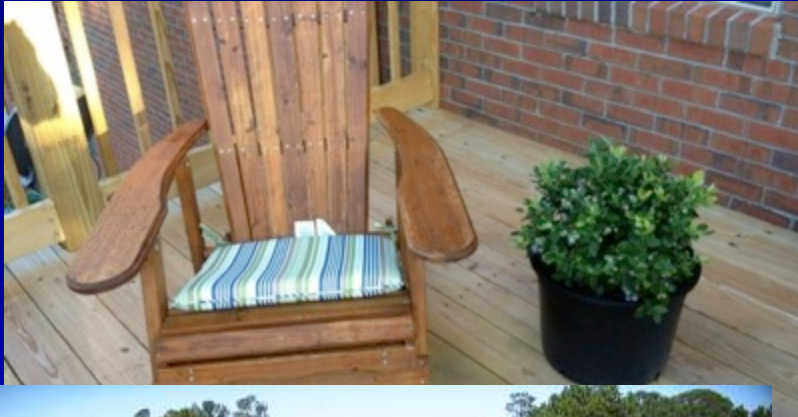








# Ornamental Blueberries: Surround yourself with flavorful beauty!!





# **‘Blue Suede’™**

## **Southern Highbush Blueberry**

- **Early season**
- **Sky blue fruit**
- **Large size**
- **Consistent crop**
- **Vigorous plant**
- **Good flavor**
- **Attractive Fall foliage**





# **‘Blue Suede’<sup>TM</sup> Fall color**





# **‘Summer Sunset’™**

## **Hybrid Blueberry**

- **Mostly rabbiteye**
- **Medium size**
- **Consistent crop**
- **Very vigorous plant**
- **Nice, tart/sweet flavor**
- **Attractive multi-colored fruit**









# Summer Sunset Fruit



# Selection TO-1088





# Compact homeowner selections









# UGA Variety Availability

- Patented cultivars
- For information on licensing contact :  
**University of Georgia Research Foundation**  
**Technology Commercialization Office**  
**808 GSRC Boyd Building**  
**Athens, Ga. 30602-7411**
- Phone number is **706-542-1404**

Licensee	Phone	Web site
Cornelius Farms	912-284-0266	<a href="http://www.CorneliusFarms.com">www.CorneliusFarms.com</a>
Alma Nursery	912-632-5708	NA
Oregon Blueberry	503-873-1200	<a href="http://www.oreblueberry.com">www.oreblueberry.com</a>
Fall Creek Nursery	541-937-2973	<a href="http://www.fallcreeknursery.com">www.fallcreeknursery.com</a>