

# Blueberry cultivars for north and north-central Florida

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# Florida's Winter Climate

- Winter chilling in the southeastern U.S. is highly variable and unpredictable from year to year.
- For early-flowering crops like blueberry, late damaging freezes may occur during bloom and early fruit development.
- North and north-central Florida are subject to late-winter freezes.

# Chilling Requirement limits choices for cultivars

- The amount of exposure to cold temperatures required for the resumption of normal growth the following spring (generally hours  $\leq$  45F).
- 42-45 F seems to be the optimum temperature range to satisfy the chilling requirement.
- Higher and lower temperatures satisfy the chilling requirement less efficiently.
- Periods of high temperatures during dormancy can negate accumulated chilling.

# Florida's Winter Climate

- Winter chilling in the southeastern U.S. is highly variable and unpredictable from year to year.
- Late freezes may occur during bloom and early fruit development.
- Freezes are less common in central and south-central Florida but do occur, and chill accumulation can be very low.

# Chill accumulation in north and central Florida beginning November 1\*

Date	Long-term Average		Winter 2021/2022		Winter 2022/2023	
	Alachua	Lake Alfred	Alachua	Lake Alfred	Alachua	Lake Alfred
Dec. 15	184	47	104	0	51	0
Dec. 31	286	86	123	0	188	74
Jan. 15	388	128	178	4	272	99

- Winter chill accumulation is highly variable by year. Chilling accumulated by December 31 is generally more effective than late winter chilling after hydrogen cyanamide applications are made and after the initiation of bud swell has occurred.

\*Data taken from the AgroClimate website.

# Chill accumulation in north and central Florida beginning November 1\*

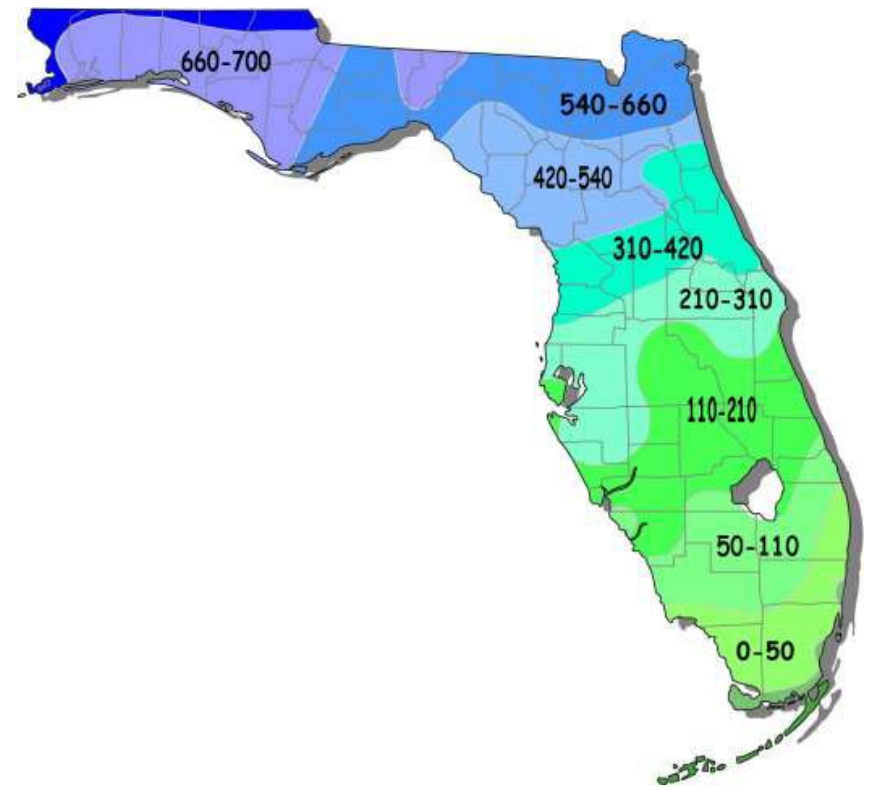
Date	Long-term Average		Winter 2010/2011		Winter 2011/2012	
	N. Florida	C. Florida	N. Florida	C. Florida	N. Florida	C. Florida
Dec. 15	182	46	346	146	139	15
Dec. 31	283	85	520	254	195	22
Jan. 15	384	127	664	307	275	81

- Winter chill accumulation is highly variable by year. Chilling accumulated by December 31 is generally more effective than late winter chilling after hydrogen cyanamide applications are made and after the initiation of bud swell has occurred.
- Winter chilling was well above average during 2010/2011 and much below average in 2011/2012.

\*Data taken from the AgroClimate website.

# Winter chill unit accumulation

- Map showing typical winter chilling units received during most winters in Florida.
- Chilling varies greatly from year to year.



# Weather may be the greatest challenge for fruit growers in Florida

- Late winter and early spring freezes
  - Flowering often occurs before the threat of freezes is over.
- Inadequate winter chill accumulation
  - Potential problem throughout Florida, but more limiting in central and south Florida.



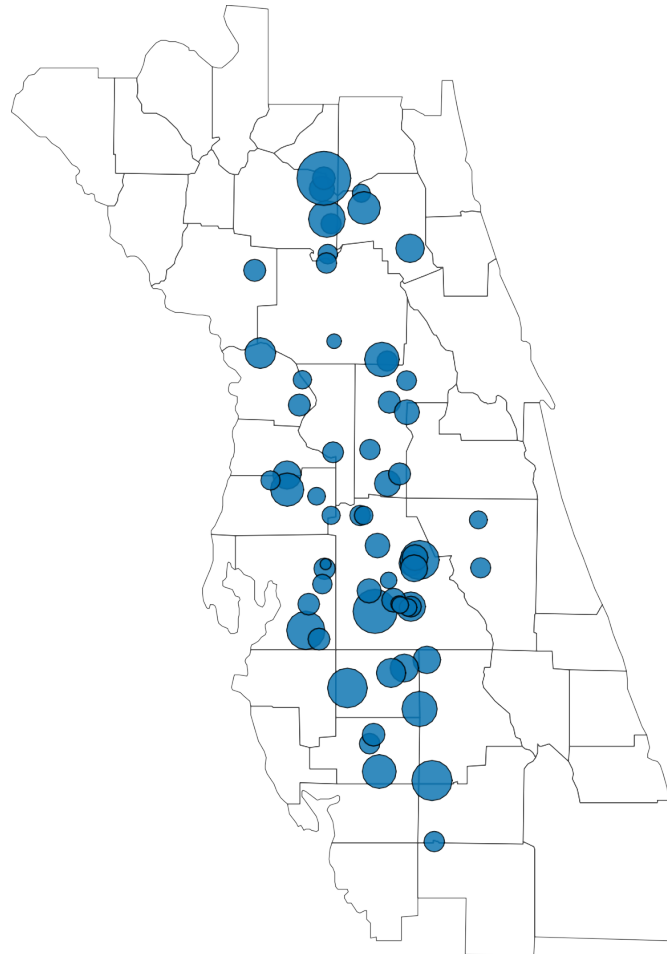
# Southern highbush vs. rabbiteye blueberry

- Southern highbush (SHB) are earlier ripening than rabbiteye (RE).
  - Earliness = higher prices in the commercial markets.
- SHB bloom earlier, more susceptible to freezes, frosts.
- SHB have more exacting soil requirements
  - Soil organic matter requirement (pine bark).
- Generally, SHB are more difficult and expensive to grow than RE.
- SHB production range extends further south than rabbiteye.

# Two low-chill SHB blueberry production systems

- **Traditional deciduous production system**
  - Plants enter dormancy, growth (flowering and vegetative bud break) resumes in late winter (Jan/Feb).
  - Timing of “spring” growth is dependent on many factors including winter temperatures.
  - Often relies on dormancy-breaking compounds in Florida.
- **Evergreen or non-dormant production system**
  - Plants retain foliage and are managed for dormancy avoidance.
  - Flowering and fruit harvest begin early and extend over a longer time.
  - May be used in combination with greenhouses or tunnels in regions where hard freezes occur.

# Commercial southern highbush acreage in peninsular Florida



Relatively new acreage in the south to escape freeze damage. Very low-chill conditions.

# ‘Emerald’ (USPP # 12,165 )



- Low chill requirement
- High yield potential
- Vigorous, spreading bush
- Large fruit size, good quality, tight clusters
- Blooms 1 week earlier than ‘Star’
- Long harvest period
- Firmness greater than Jewel but not as firm as some newer cultivars.
- Not suitable for machine harvest.

# 'Farthing' (USPP # 19,341)



- Vigorous, compact growth habit
- Blooms between 'Emerald' and 'Star'
- High yield potential, long picking season
- Very firm fruit, potential for machine harvesting
- Color can be non-uniform (red on back of berry)
- Watch for bud mites, gall midge and algal stem blotch.

# 'Patrecia'



Credit: UF Blueberry Breeding Program

- Upright open architecture
- Later blooming than some southern highbush.
- Large berry size but picking scar may be larger than desirable.
- Good flavor.

# 'Optimus'



Credit: UF Blueberry Breeding Program

- Vigorous plant
- Early-ripening
- Fruit are firm and high quality but small by today's standards.
- Suitable for machine harvesting.
- High yielding but somewhat difficult to harvest by hand due to smaller than average berry size.
- For trial use in north Florida.

# 'Sentinel' (PPAF)



- Released in 2020.
- Vigorous, early ripening.
- Has performed well in north and north-central Florida.
- Excellent fruit quality.
- Productive
- Does not need hydrogen cyanamide.



## 'Albus' (TBD)



- New release from the UF breeding program.
- Vigorous and high yielding as an evergreen.
- For trial in the central Florida region.
- Excellent fruit quality.

# Other cultivars for north Florida and the panhandle

- In extreme north Florida and the Florida panhandle, only a few SHB cultivars from the UF breeding program are likely to produce reliably because of freezes after bloom. Freeze protection is required for SHB production.
  - Southern highbush from UF – ‘Farthing’, ‘Keecrisp’, and ‘Emerald’ for u-pick and local sales in extreme north Florida and the panhandle.
  - A number of rabbiteye cultivars are adapted to these areas (‘Climax’, ‘Powderblue’ and ‘Brightwell’) for U-pick and local sales as well as for home gardening.

The University of Georgia has bred rabbiteyes and some southern highbush for this climatic zone.

# 'Keecrisp'

- Mid to late season.
- May benefit from HC.
- Not recommended for Florida, late and high chilling.
- High fruit quality and firmness.
- Is being trialed in south Georgia.



# 'Suziblue'

- Released in 2009 by UGA.
- Blooms and ripens approx. with 'Star'.
- Berries may be larger and firmer than 'Star'
- Yields are similar, or greater than, 'Star'
- May have machine harvest potential.
- Chilling requirement – approx. 400 hrs.
- For trial use in north Florida.



<http://www.smallfruits.org/blueberries/production/newugablueberryvarieties2012.pdf>

# 'Georgia Dawn'

- 300-400 chill hours
- Medium-sized fruit, good scar, good firmness.
- Vigorous plant.
- Early flowering and early ripening.
- Susceptible to late freezes.



[http://georgiacultivars.com/images/uploads/varieties/58/georgia\\_dawn\\_variety.jpg](http://georgiacultivars.com/images/uploads/varieties/58/georgia_dawn_variety.jpg)

# Rabbiteye cultivars

- Rabbiteyes have greater chilling requirements than most SHB.
- Rabbiteyes generally bloom later and ripen later than SHB.
- Rabbiteyes are more vigorous, larger plants, and will tolerate drought better than SHB.
- Cross-pollination very critical for rabbiteye.

# 'Climax' rabbiteye

- 400 – 450 chill units.
- Early for a rabbiteye (late May through mid-June).
- Reliable producer.
- more susceptible to freezes than mid to late season rabbiteyes.



# 'Brightwell' rabbiteye

- 350 – 400 chill units.
- Ripens early June through early July.
- Fruit are firm with good color, firmness and size.
- May over-crop some years.
- Plant is productive, vigorous and upright.



[http://www.aces.edu/extcomm/timelyinfo/Horticulture/2011/July/Rabbiteye\\_Blueberry\\_Cultivars\\_for\\_AL.pdf](http://www.aces.edu/extcomm/timelyinfo/Horticulture/2011/July/Rabbiteye_Blueberry_Cultivars_for_AL.pdf)



# 'Powderblue' rabbiteye

- 550 – 650 chill units.
- Late season variety.
- Excellent quality fruit with light blue color.
- Upright , productive vigorous plant.



[http://www.aces.edu/extcomm/timelyinfo/Horticulture/2011/July/Rabbiteye\\_Blueberry\\_Cultivars\\_for\\_AL.pdf](http://www.aces.edu/extcomm/timelyinfo/Horticulture/2011/July/Rabbiteye_Blueberry_Cultivars_for_AL.pdf)

# 'Alapaha' rabbiteye

- Released in 2001 (UGA)
- 450 -500 chill units.
- Flowers 7-10 days after Climax.
- Ripens with Climax.
- + Crop.
- Medium-sized fruit.
- Good post-harvest traits.
- For trial use in Florida  
north Florida.



<http://www.smallfruits.org/blueberries/production/newugablueberryvarieties2012.pdf>

# ‘Vernon’ rabbiteye

- Released in 2004 by UGA.
- 450 chill units.
- Flowers after ‘Climax’ most years.
- Ripens early, several days ahead of ‘Climax’
- Berries have excellent firmness and good size.
- Good postharvest char.
- Possible replacement for ‘Climax’
- For trial use in north Florida



<http://www.smallfruits.org/blueberries/production/newugablueberryvarieties2012.pdf>

# Blueberry Pollination

- Blueberry varieties benefit from cross-pollination.
- Especially critical for rabbiteye.
- Important for most SHB.
- Plant more than one cultivar close together.
- Bumblebees are very efficient pollinators.
- Honey bees are effective because of their high populations.



**BEEES**

**NO BEES**



Overhead irrigation is needed for reliable production of southern highbush blueberry in Florida.



# Unusual nitrogen fertilizer source preference of blueberry



$\text{NH}_4$

From Rebecca Darnell, Horticultural Sciences Dept., IFAS, UF



$\text{NO}_3$



Thank You!

Questions?