





Blueberry Breeding @ UF Florida Blueberry Growers Association

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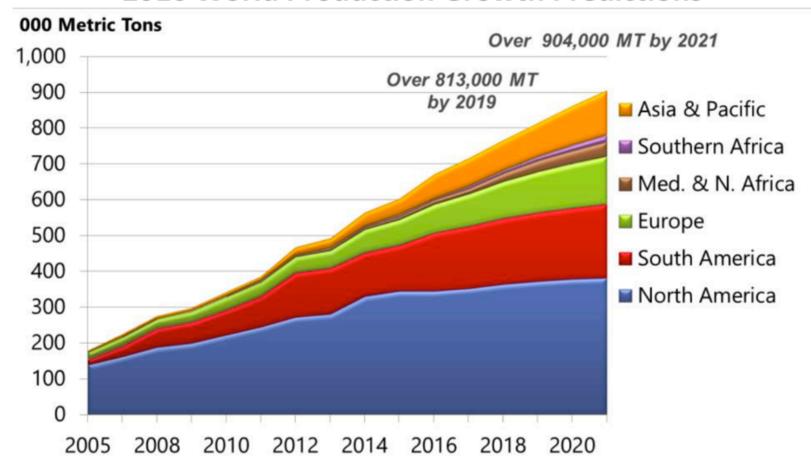
October 26 2017. Plant City, FL.



Making Information about Cultivars available to our producers! www.blueberrybreeding.com



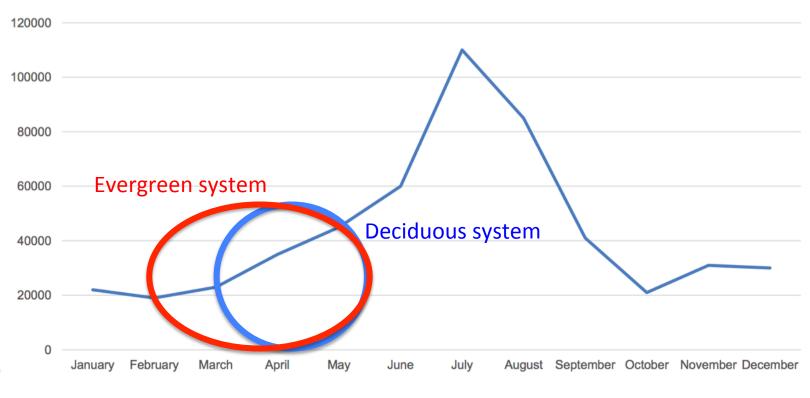
2016 World Production Growth Predictions



- 2016 global production **591,000 metric tons**
- United States 41% fresh and 83% processed market
- United States utilize 68% of global production
- Consumption in North America, Europe, and Asia
- Production doubled (US), tripled (EU) and quadrupled (APAC) since 2008

Monthly Global Production and Florida

Total Global Production





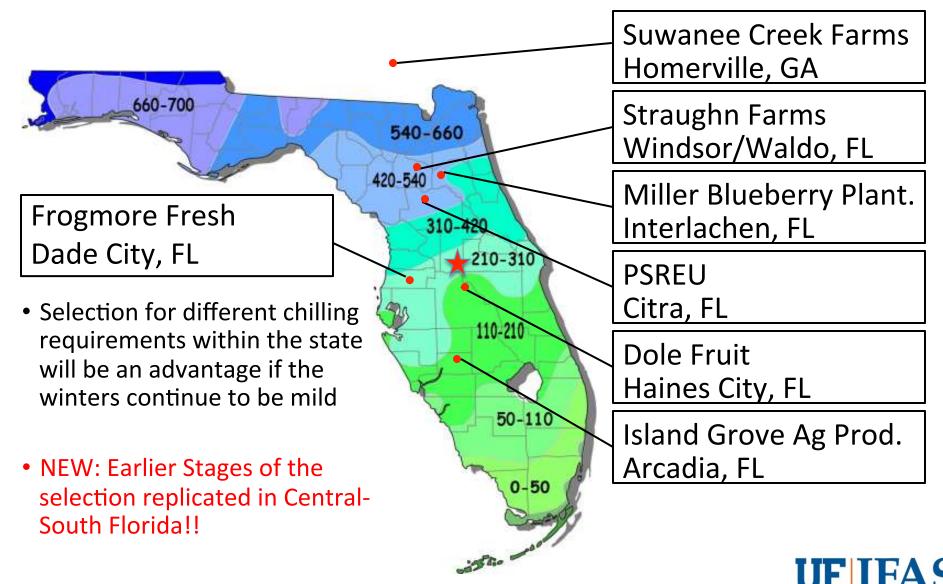
Florida window

Florida Market Window - 2014

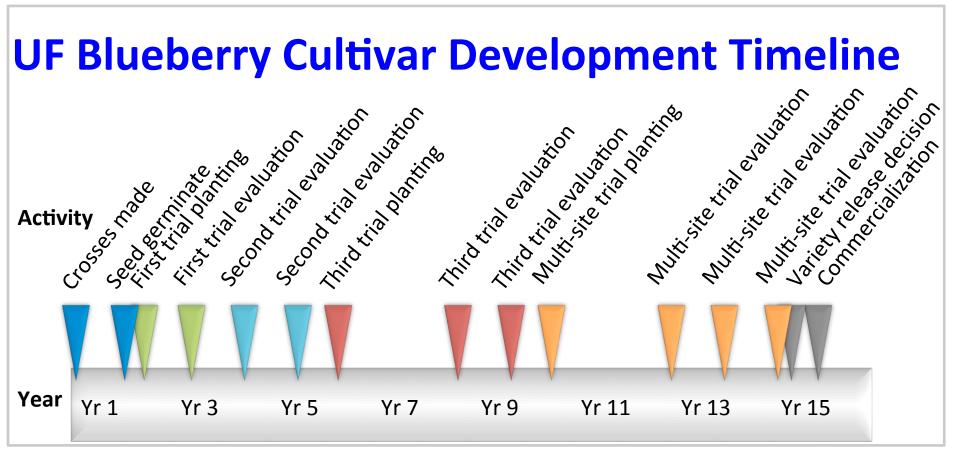


- TIMING IS EVERYTHING!!!
- FL window is dynamic with weather Experience from 2015 and 2016

UF Blueberry Breeding Program Test Sites



New testing site in Lake County!



- Large numbers of parents and crosses each year
- · High density seedling plantings for rapid first evaluation
- Growers-Cooperators early in the breeding cycle
- Large number of cultivars released historically!

UF-IFAS Blueberry Releases (2004-2016)

		FL		
Release Year	Variety	Outlook	Notes	
2004	Springhigh	Decreasing	Early season alternative but Marketers do not want fruit	
2005	Primadonna	Stable	Early season, but difficult to achieve full crop potential	
	Snowchaser	Minor	Very early but fruit quality often not ideal	
	Sweetcrisp	Decreasing	More acreage in Georgia than FL	
2007	Farthing	Increasing	Widely planted north of I-4	
	Scintilla	Decreasing	Plant longevity is an issue	
2009	Bobolink	Minor	Has not been widely adopted	
	Chickadee	Increasing	Interest in very low-chill areas in Central Florida	
	Flicker	Decreasing	Anthracnose problems in Central Florida	
	Kestrel	Increasing	Interesting in very low-chill areas in Central Florida	
	Meadowlark	Stable	Widely planted north of I-4, Xylella an issue	
	Raven	Minor	Has not been widely adopted	
2013	Indigocrisp	Increasing	Planting increasing Gainesville-north, standing water an issue	
2015	Arcadia	Increasing	Great yield in Central-South FL	
	Avanti	Increasing	Planting increasing in Central-South FL	
	Endura	Increasing	Good Yield in Central-South FL	
2016	Keecrisp	Increasing	High fruit quality (Crunchy), North Florida	
	Patrecia	Increasing	Large early fruit, North FL. Possible Springhigh replacement	

HOW THE BREEDING PROGRAM CAN HELP OUR FL PRODUCERS?

1. By developing cultivars that can have higher yield, better quality, and appropriated timing of production to <u>maximize</u> producer profit.

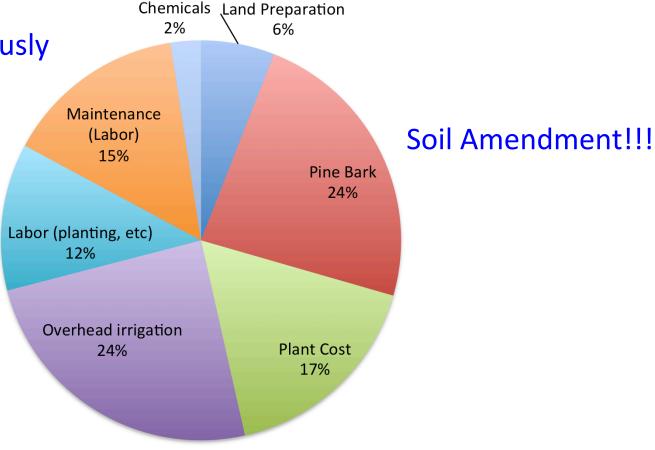
2. By developing cultivars that decrease the cost of production and/or harvesting, thus maximize producer profit.



Average Historical Cost % Establishment and Maintenance

Spraying cost has increased tremendously due to new pests.

Example: SWD!!





Strategic goal: Develop cultivars with lower soil amendment requirements.

Most studies shown that soil amendment is needed for yield.

Most studies have been done with already released cultivars

Selection for this trait will be explored at the seedling stage to observe whether variation exist and thus start selecting for it!

Exploring wild species. Based on Grafting results!

Working with Faculty specialists in this area from UF.



Strategic goal: Develop cultivars with lower spraying requirements; disease/pest tolerant/resistant

Strategy 1: We will select and use as parents, long lasting experimental lines, >90% plot survival after 8-9 years in the field with good yield.

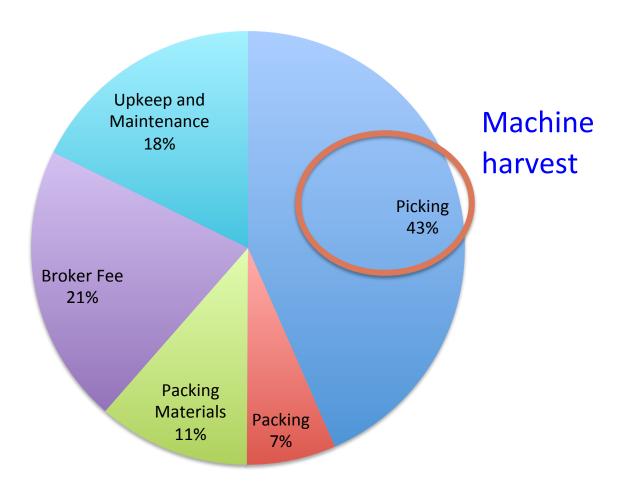
Strategy 2: Are we able to screen for pests/diseases?

Working in collaboration with UF plant pathologist and entomologist to develop protocols for screening of economically important diseases/pests.

Goal will be to create a cultivar catalog for the different levels of resistance observed



Average Historical Harvesting Cost % per Flat

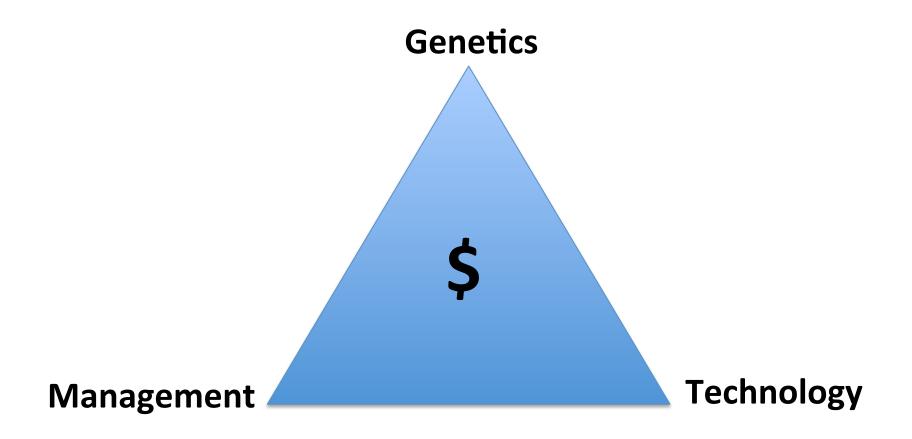








Machine Harvesting Triangle





Blueberry production in Florida

660-700

Florida is an extremely challenging environment for blueberry production

humidity – heat – disease – soil – flooding - pests

- Establishment of a planting is a high cost enterprise. \$33K per acre spent by year 2.
- Plantings in FL last 7 years on average!

	Price (\$/LB)				
Average Yield (Lb/A)	\$3.7	\$4.9			
6000 Lb/A	>15 Years	Year 7			
8000 Lb/A	Year 11	Year 5			

Profitability is tied to the length of production (Singerman et al. 2017.
 EDIS Publication)



540-660

310-420

210-310

110-210

50-110

420-540

Selections Approved for Release as Cultivars 2017

Production for Fresh Market during Florida harvesting window

Magnus (04-213)* – Early production of large fruit for hand harvest in FL window for fresh fruit market. Not firm enough for machine. Expecting over 8 years of high yield. Earlier than Star and Emerald. Recommended for Central-North Florida.

Wayne (06-354)* – Early production and high fruit yield. Not firm enough for machine harvest. Expecting over 8 years of high yield. **Jewel-like but firmer!** Recommended for Central-North Florida.

Optimus (08-262)* – Early production of firm, **machine harvest** fruit (see machine harvest data). High fruit quality. Medium size. Recommended for Central-North Florida.



Machine harvest April 2017

Genotypes	Date	Lb Packed Fruit/Bush	Lb Waste	Yield/Acre (1290 bush)	Yield/Acre (1742 bush)
Wayne	April 6 17	1.23	0.42	1,583	2,138
Optimus	April 6 17	1.22	0.28	1,574	2,125
Wayne	^F April 17 17	0.96	0.49	1,232	1,664
Optimus	April 17 17	1.75	0.28	2,258	3,049
Wayne	^F April 28 17	0.79	0.20	1,016	1,372
Optimus	^F April 28 17	0.68	0.08	876	1,183
		askad tatal viald \rightarrow	Wayne	3,831	5,174
	Ρ,	acked total yield \rightarrow	Optimus	4,708	6,358

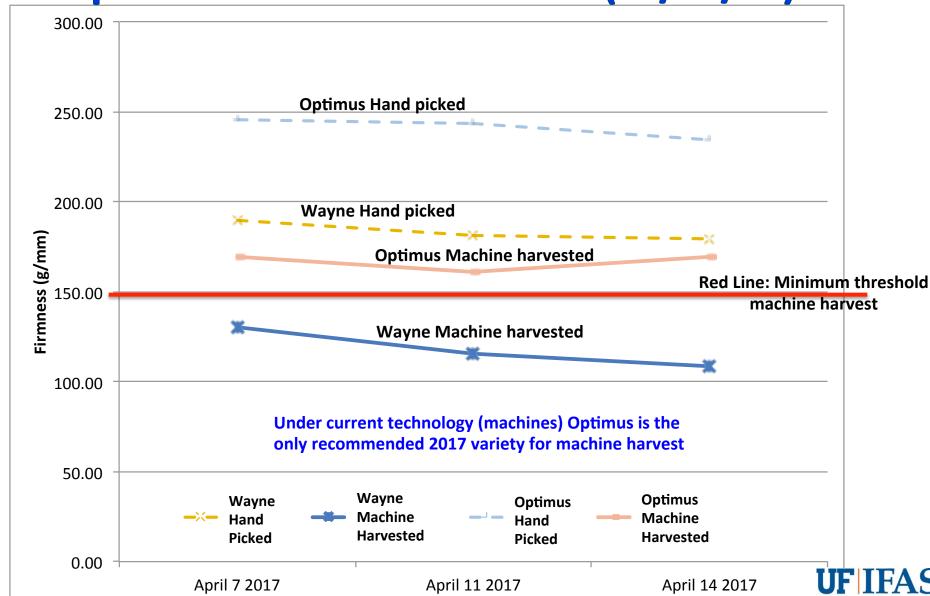
Scenario: 1290 Plants per Acre

Genotypes	Date	Price \$/Lb	\$ per Acre	Savings MH vs HH	Total Savings	Total Income per Acre
Wayne	April 6 17	5.3	\$12,595.1	\$0.50	\$1,188.22	\$13,783.4
Optimus	April 6 17	5.3	\$12,519.3	\$0.50	\$1,181.06	\$13,700.3
Wayne	April 17 17	4	\$7,395.5	\$0.50	\$924.44	\$8,320.0
Optimus	April 17 17	4	\$13,554.0	\$0.50	\$1,694.26	\$15,248.3
Wayne	April 28 17	3.1	\$4,726.3	\$0.50	\$762.30	\$5,488.6
Optimus	April 28 17	3.1	\$4,077.3	\$0.50	\$657.63	\$4,734.9

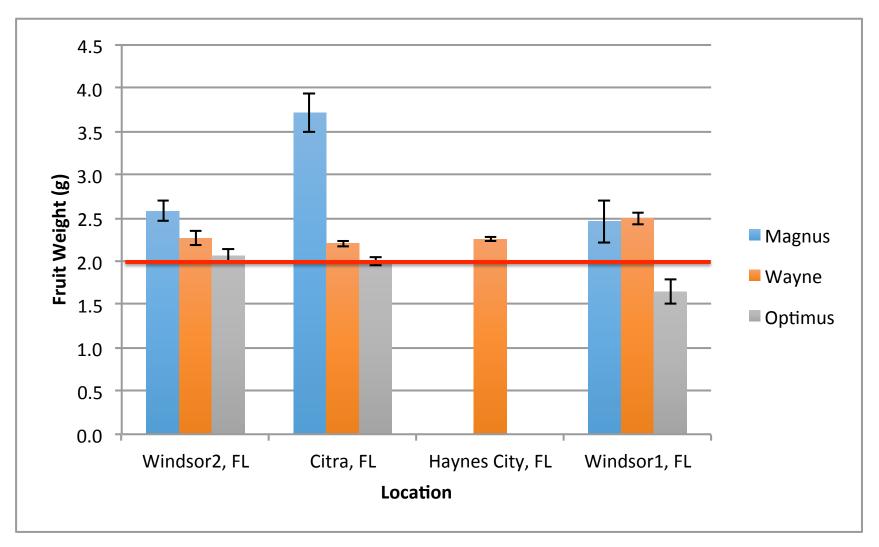
Type of Labor	Local Labor		H2A Labor	
Plants per Acre	1290	1742	1290	1742
Wayne	\$1,916	\$2,587	\$3,448	\$4,656
Optimus	\$2,354	\$3,179	\$4,237	\$5,722

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Post-harvest Firmness 1, 4 and 8 days after hand picked and Machine Harvest (04/06/17)



Fruit Weight (g)

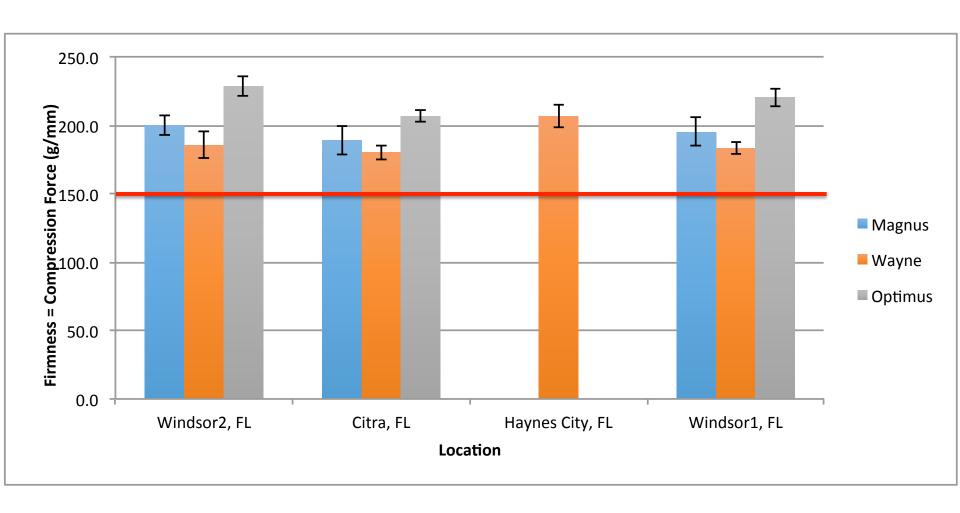


Summary data 2011-2017

Red line= 2.0 g recommended minimum weight acceptability

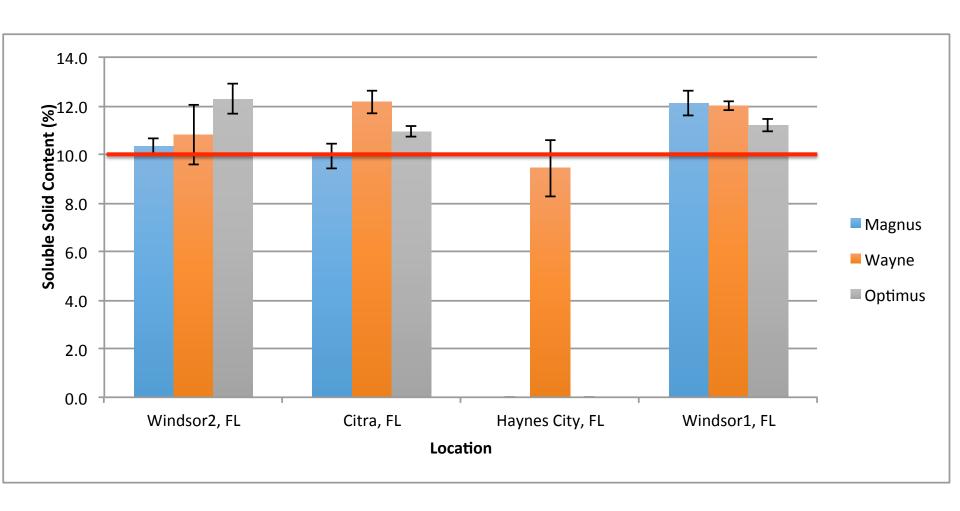


Firmness = Compression Force (g/mm)



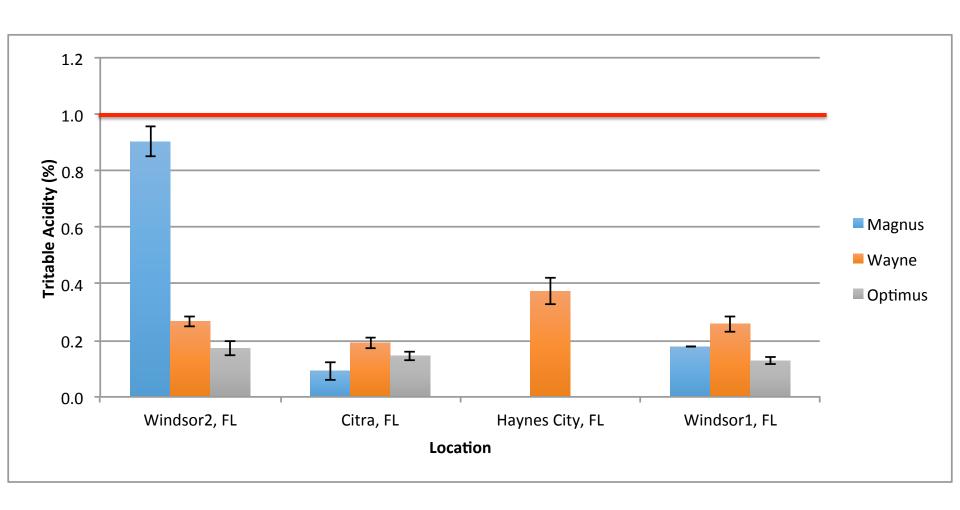


Soluble Solid Content (%)



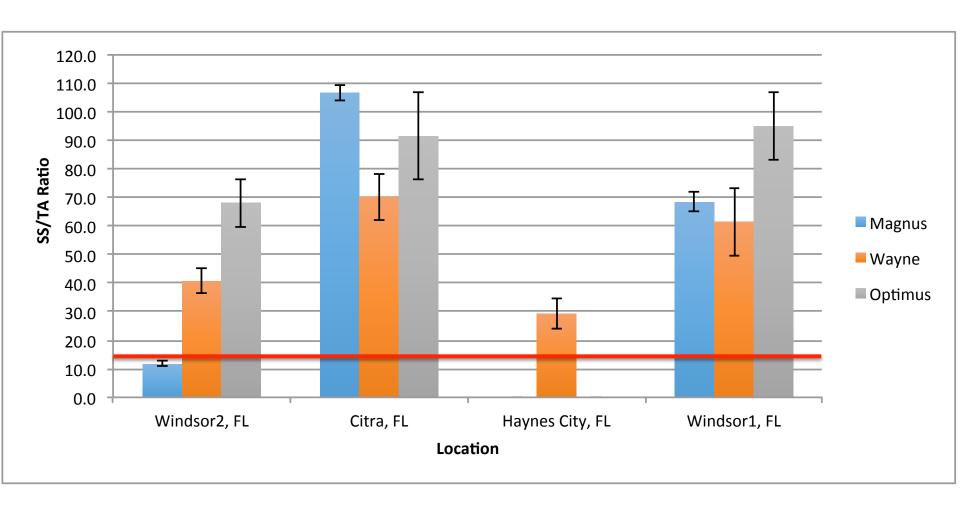


Titratable Acidity (%)

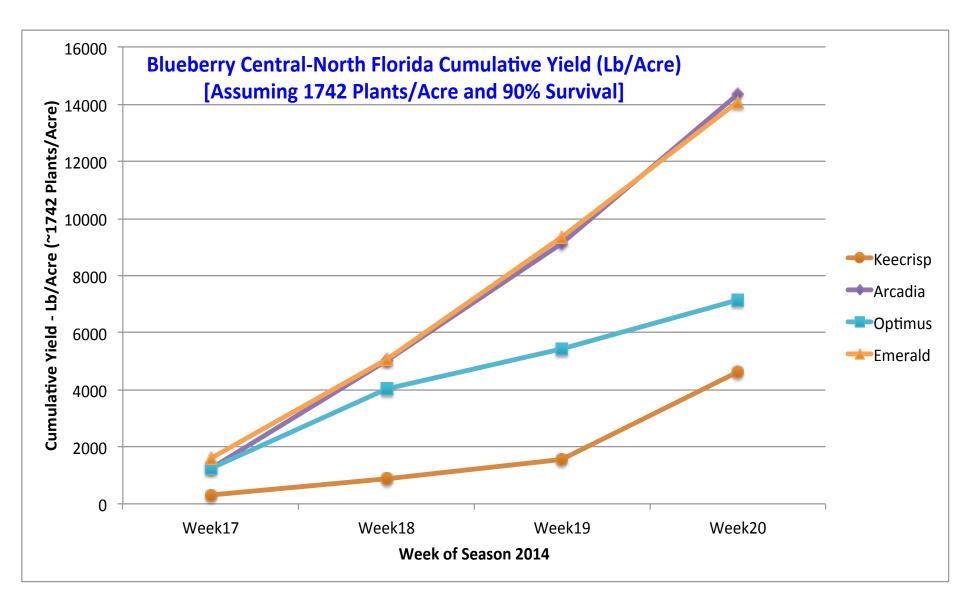




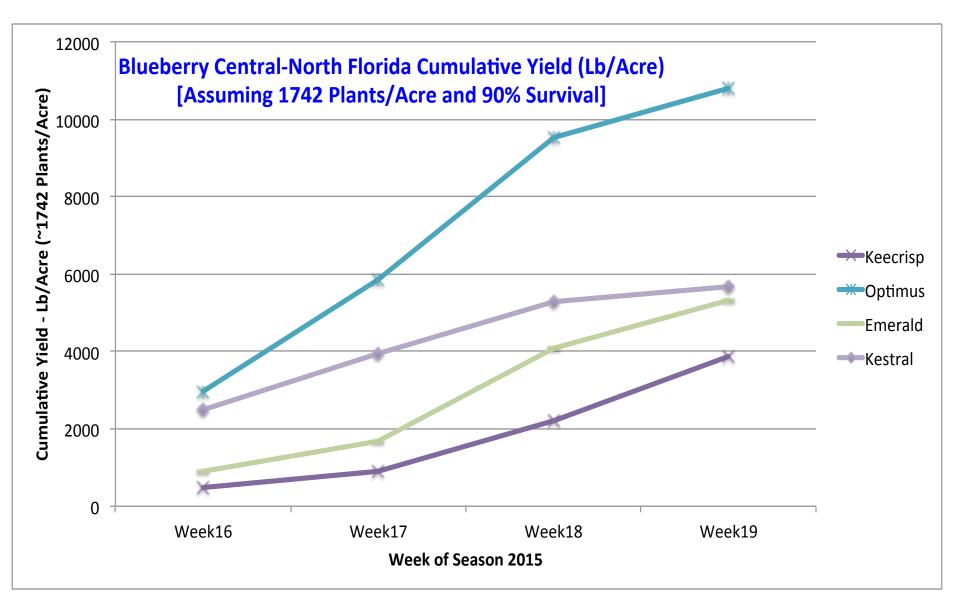
Sugar/Acid Ratio



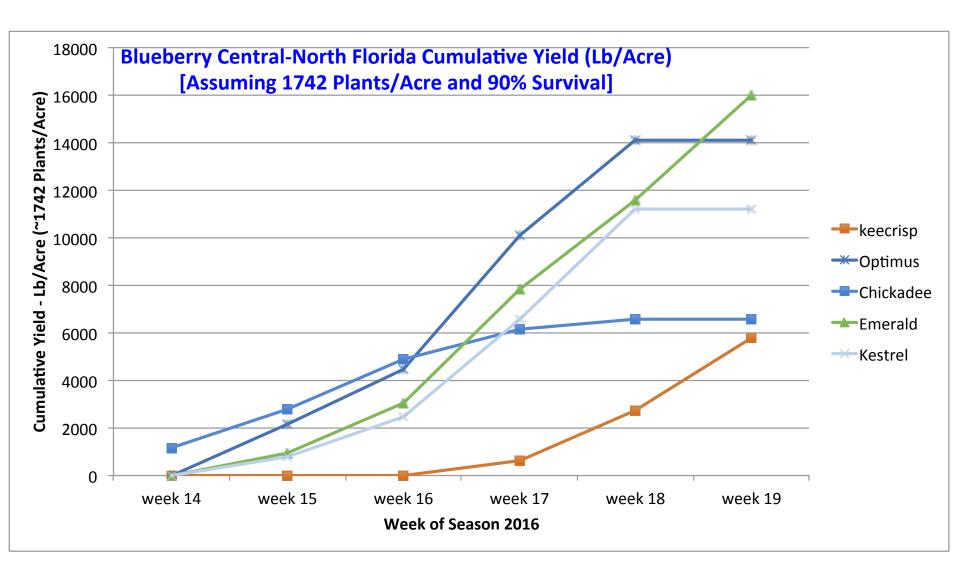




Analysis based on the extrapolation of 2 harvested representative plants during the 2014 season

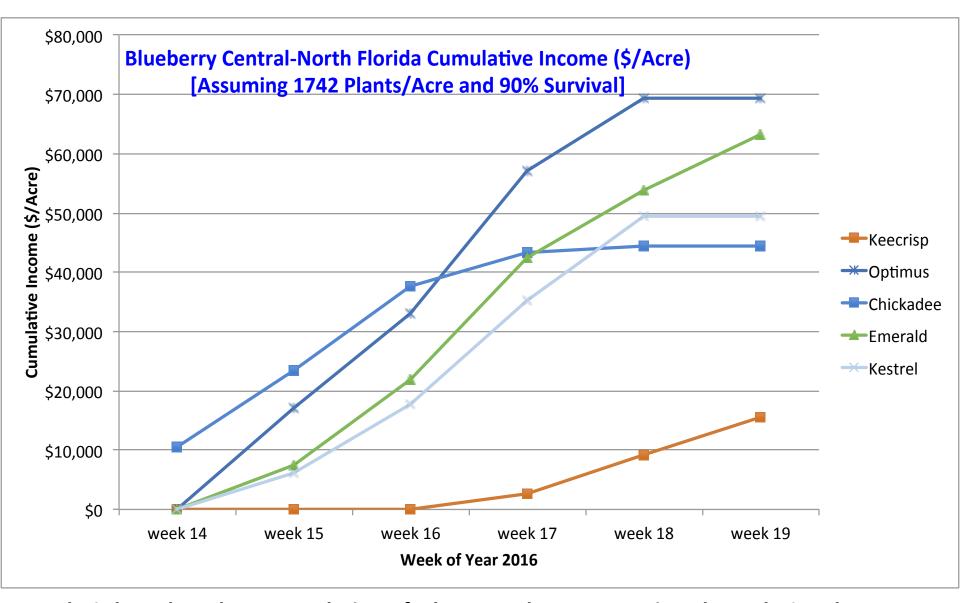


Analysis based on the Extrapolation of 2 harvested representative plants during the 2015 season



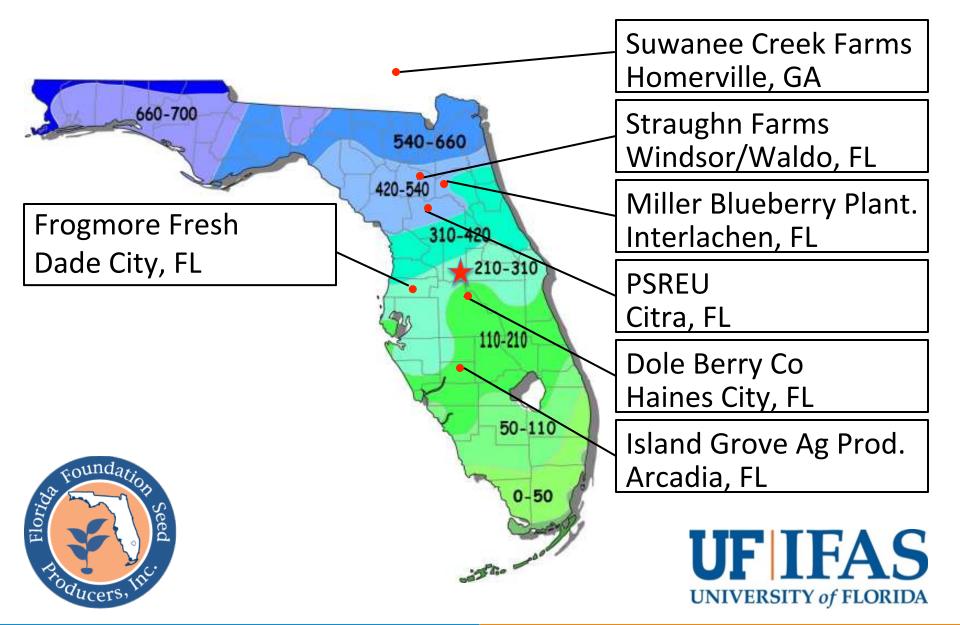
Analysis based on the Extrapolation of 2 harvested representative plants during the 2016 season

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Analysis based on the Extrapolation of 2 harvested representative plants during the 2016 season. Price per week is as important as yield!

Thanks to our collaborators!!



All patented UF blueberry varieties are licensed by:

Florida Foundation Seed Producers, Inc. (FFSP)

Anyone propagating plants for personal use or sale is <u>required</u> to be licensed by FFSP.

Licenses are available to any nursery in Florida by contacting FFSP

http://ffsp.net, (352) 273-3656





Learn more at www.blueberrybreeding.com

