

An Update on UF/IFAS CREC Citrus Scion Varieties

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UF UNIVERSITY of
FLORIDA
IFAS
Citrus Research and Education Center



CITRUS EXPO
15 AUGUST 2019

- **Overcome the devastation of HLB**
- **Develop new, or recapture old, markets**
 - **Sweet oranges for the juice business**
 - **Mandarin hybrids**
 - **Grapefruit and grapefruit like hybrids**
 - **Acid fruit, e.g. lemons**

Our Priorities

- **Current portfolio of Hamlin, Midsweet, and Valencia; is that where we want the future OJ business to be?**
- **New midseason options include Valquarius, Vernia, and an earlier maturing LS Midsweet**
- **Later season, higher quality options include improved clones of Valencia and some of the OLL series**
- **Early season options, not only high colored Hamlin, but now the groundbreaking 'Florida EV 1' and 'Florida EV 2'**

New Sweet Oranges



Valquarius™



7-year old reset of SF14W62 on rough lemon, showing yield potential.



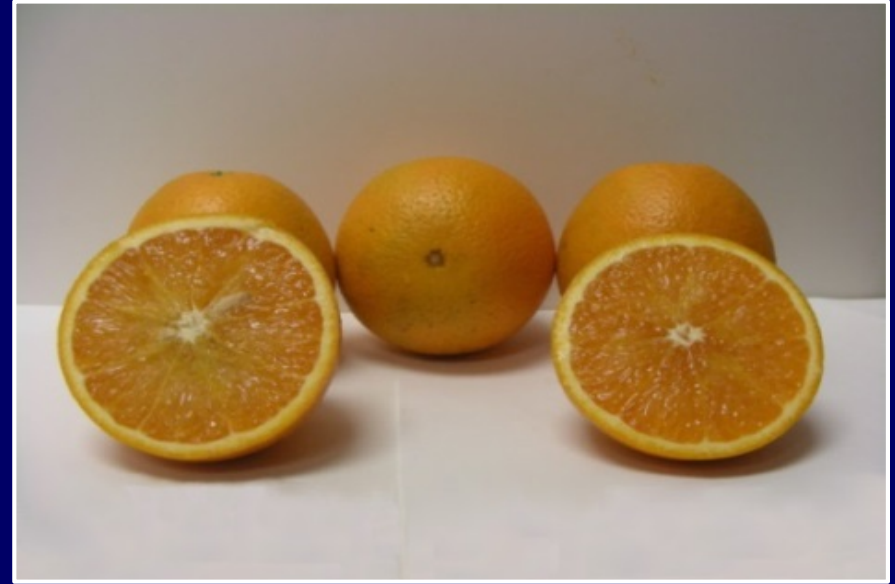
B9-65 Valencia for processing



ORANGES

'OLL-8'

- Key attributes: Excellent color and quality, extends harvest window of 'Valencia' quality juice
- Produces round oranges with internal and external color similar to 'Rhode Red Valencia'
- Holds on the tree exceptionally well, and maintains quality into the summer
- Trees appear to yield better than standard 'Valencia'
- High juice content and good pounds solids
- Peels easier than a standard 'Valencia'
- With its added color, could also be a valuable addition to the Florida fresh market portfolio
- Most precocious bearing clone among the OLL somaclones



'OLL-4'

- Key attributes: excellent color and quality, extends harvest window of 'Valencia' quality juice; also believed to be higher yielding than 'Valencia'
- Produces fruit with excellent internal and external quality with exceptional juice color scores, juice content and soluble solids
- Holds on the tree exceptionally well
- Maintains quality into the summer; however, it matured earlier, and with better ratios than 'Valencia' in 2014
- Has been the highest yielding tree among the OLL somaclones



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OLL-8 on UFR-4 (4 years)



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EV 1 and EV 2

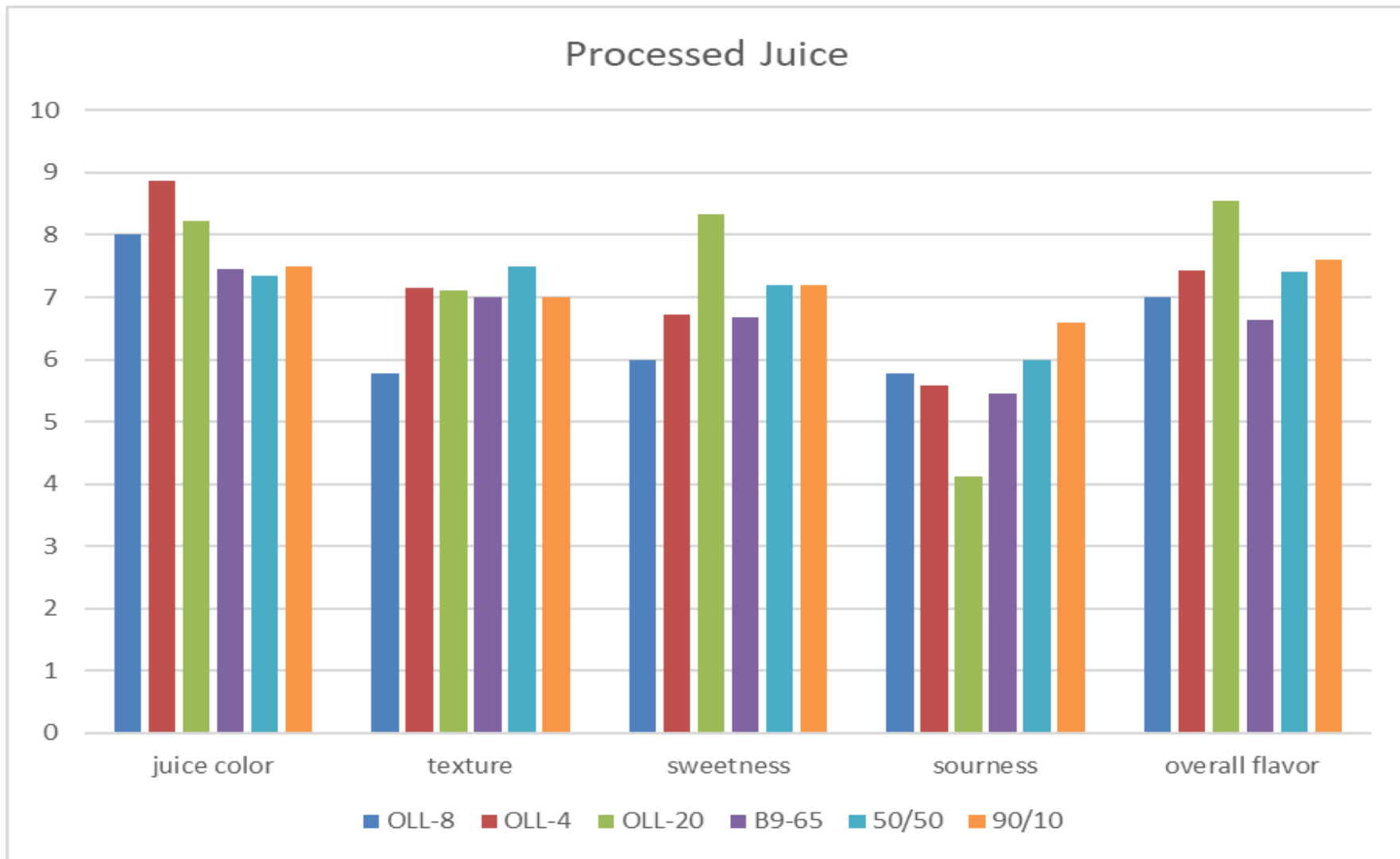
Table 3. Juice data from 6-year old trees on rough lemon rootstock – Alligator Grove, St. Cloud, FL. Pilot-Plant Data from samples run on December 10, 2014.

Variety	Wt. Sample	Wt. Juice	Lbs. Juice Per Box	Acid	Total Brix	Ratio	Fruit Ct	Lbs. Solids	Lbs. Solids Per Box	Juide Color
Vernia	26.83	16.07	53.906	0.87	11.04	12.69	78	5.9512	5.95	35.3
B7-70	26.94	15.24	50.913	0.71	11.30	15.92	61	5.7532	5.75	36
Hamlin	25.36	14.91	52.914	0.94	11.17	11.88	64	5.9105	5.91	34.5
Valuarius	25.69	14.48	50.728	0.84	9.87	11.75	55	5.0069	5.01	35.7
SF14W-65	26.75	14.95	50.299	0.67	11.06	16.51	63	5.5631	5.56	36
TI-19	28.14	16.71	53.443	0.98	9.53	9.72	58	5.0931	5.09	35.4

EV-1 and EV-2 Early Valencias generally reach 15 ratio by Thanksgiving!



OLL-20, A NEW LATE SEASON JUICE ORANGE



OLL-20, A NEW LATE SEASON JUICE ORANGE



LB8-9 (Sugar Belle®)



Sugar Belle® near Vero Beach, HLB+ >8 years !



Use of Sugar Belle® juice in OJ



50/50 VA/SB

90/10 VA/SB

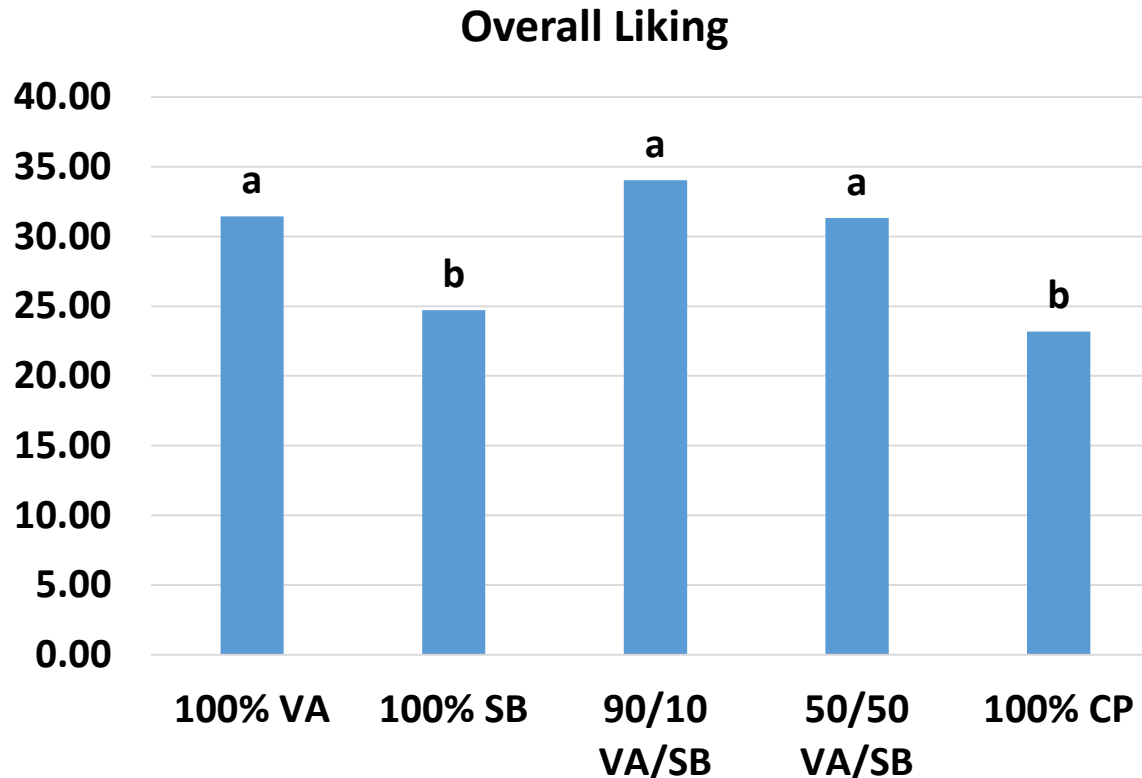
Sample	Brix	Acid	Ratio
100% VA	11.4	1.0	11.4
100% SB	15.4	1.5	10.3
90/10 VA/SB	11.7	1.1	10.6
50/50 VA/SB	13.3	1.2	11.1
100% CP	10.8	0.9	12.0

100% VA: 100% Valquarius; 100% SB: 100% Sugar Belle; 90/10 VA/SB: 90% Valquarius & 10% Sugar Belle; 50/50 VA/SB: 50% Valquarius & 50% Sugar Belle; 100% CP: 100% commercial product



Use of Sugar Belle® juice in OJ

Overall Liking

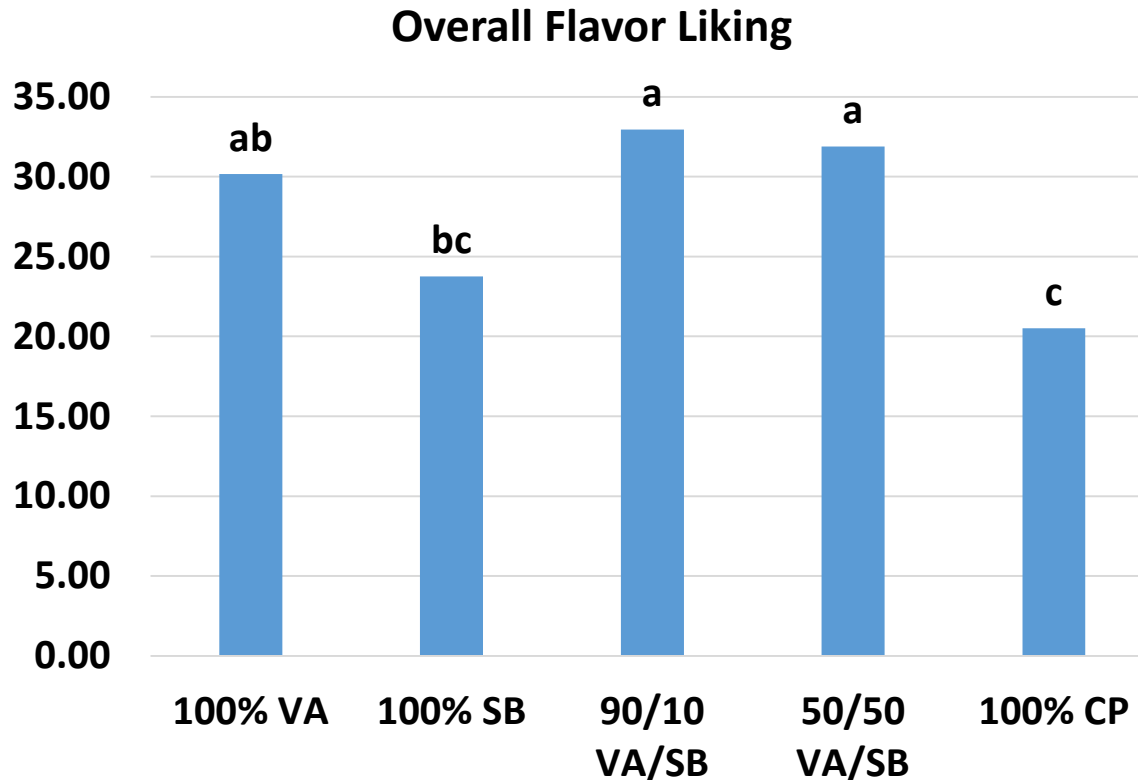


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Use of Sugar Belle® juice in OJ

Overall Flavor Liking

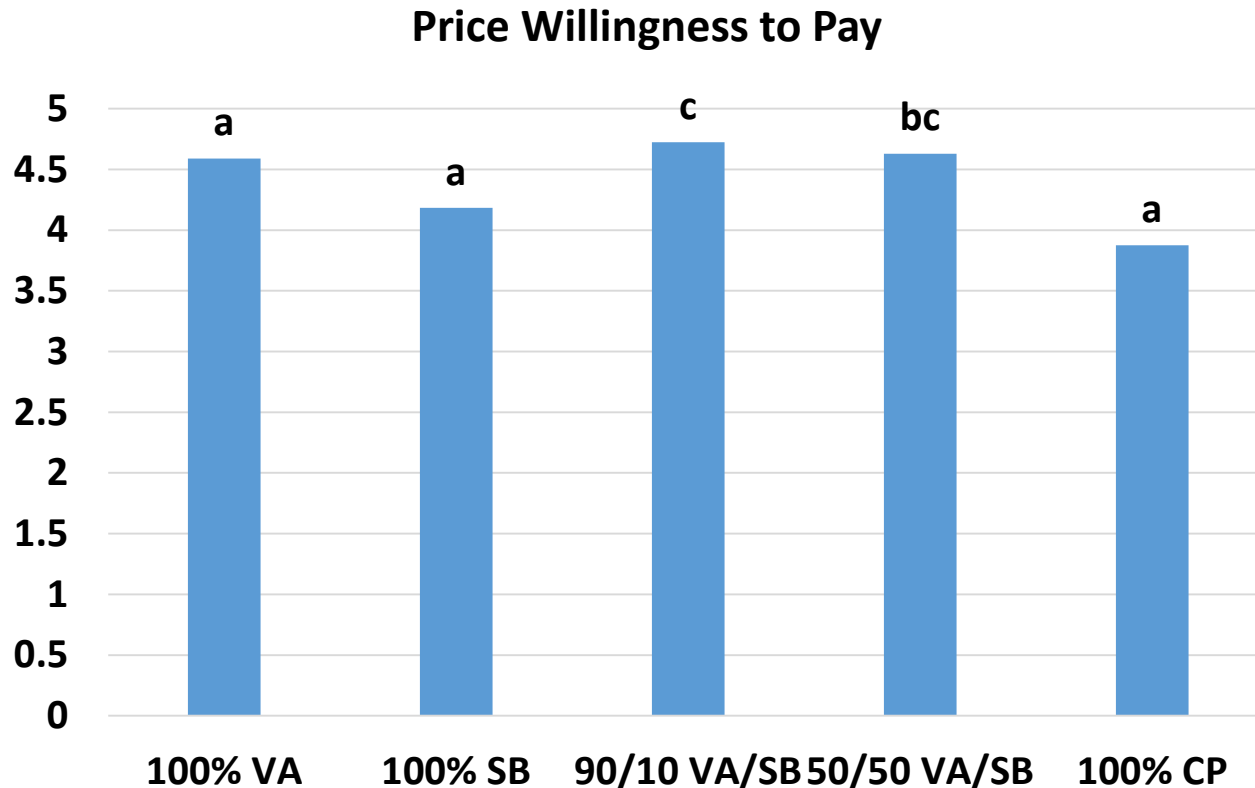


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Use of Sugar Belle® juice in OJ

Price Willingness to Pay



100% VA: 100% Valquarius; 100% SB: 100% Sugar Belle; 90/10 VA/SB: 90% Valquarius & 10% Sugar Belle; 50/50 VA/SB: 50% Valquarius & 50% Sugar Belle; 100% CP: 100% commercial product

411 Mandarin Hybrid – Resurgence against HLB!



411 mandarin hybrid showing a resurgence against HLB on multiple rootstocks. HLB+ tree on WGFT+50-7 rootstock shown on right dug up from lost Haines City trial and moved to CREC 4 years ago, among several showing a remarkable recovery and productivity! An absolutely delicious piece of fruit!

UF 950

- EZ to peel, seedless
- Clementine size
- Convenient to eat
- Crisp texture
- Better color and flavor than Clementine
- December maturity
- Alternaria resistant
- HLB tolerant
- Moved into commercial plantings





'BINGO'



'Bingo' on 4/4/16

- **Twig and young tree dieback**
 - **Some evidence of Colletotrichum**
 - **Recovery can be vigorous**
- **Three year old trees set very heavy crops in most groves**
 - **Fruit thinning to increase size?**
 - **Fruit split and drop**
- **Some fruit likely to enter the marketplace this season**
- **Much to learn!**

2019 Status of Bingo

UF 914



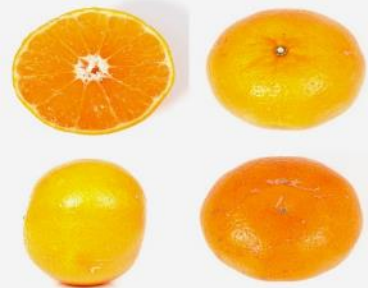
UF Mandarin Selection 1420

Suggested name: 'Marathon'

A FAST-TRACK Release

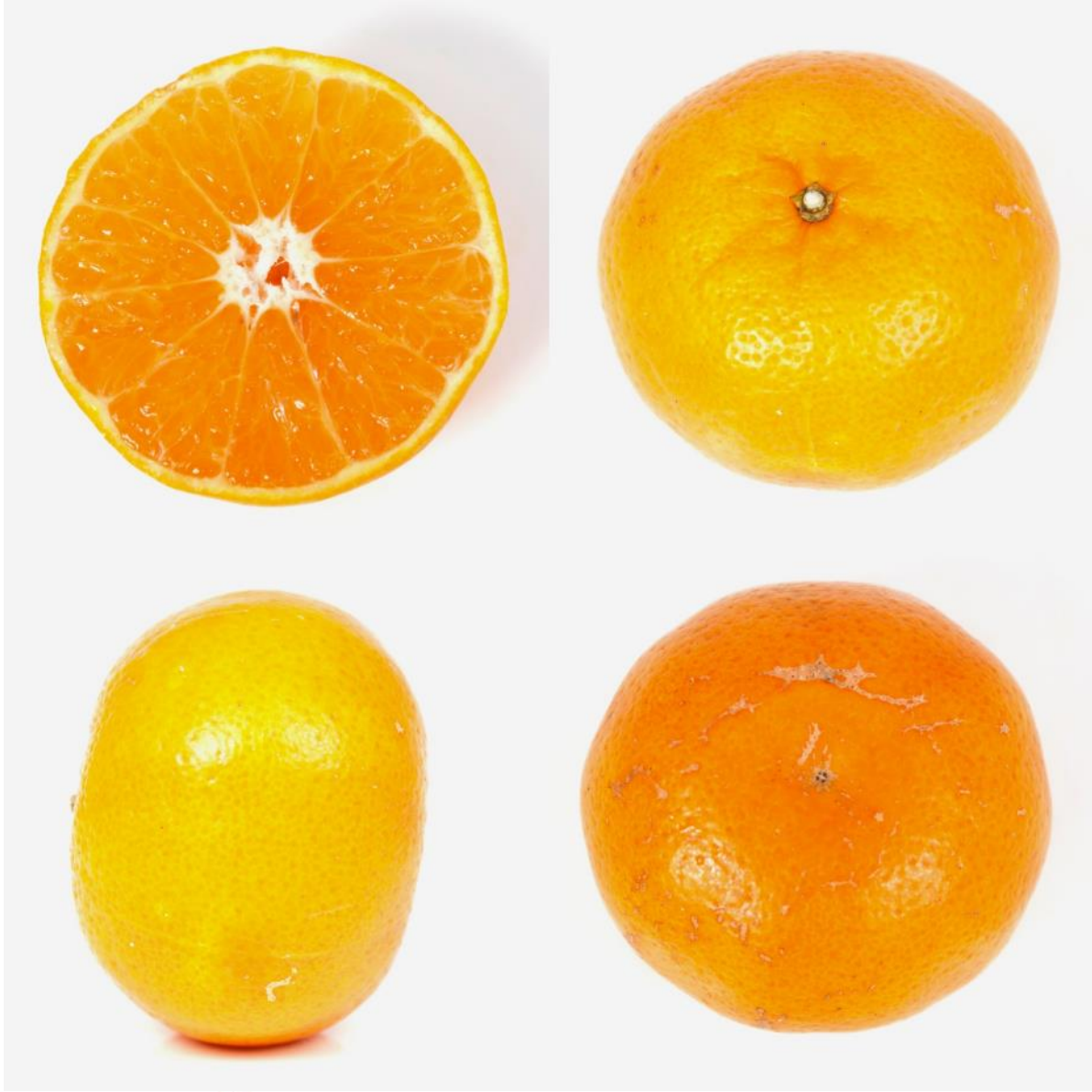
Fred G. Gmitter Jr.
University of Florida

...on behalf of the Team!





Typical Fruiting Habit and Foliage



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'Marathon'

- **Brix: 12.5 Acid: 0.89 Ratio: 14.04 19 August 2015**
- **Brix: 13.0 Acid: 0.59 Ratio: 22.03 25 September 2015**
- **Brix: 14.0 Acid: 0.69 Ratio: 20.28 29 October 2015**
- **Brix: 17.4 Acid: 0.62 Ratio: 28.06 17 December 2015**
- **Fruit remained in sound condition until early January**
- **No clipping required**

1420: Long Maturity Window

Selection	Degreening	6 weeks of storage	8 weeks of storage		
		Healthy Fruit (%)	Healthy Fruit (%)	Total Decay (%)	Total Peel Breakdown (%)
BB-4-8-20	yes	100.00	62.50	25.00	12.50
	No	100.00	75.00	12.50	12.50
Bingo	yes	100.00	92.30	7.70	0.00
	No	100.00	92.85	0.00	7.15
1420	Yes	100.00	100.00	0.00	0.00
	No	100.00	100.00	0.00	0.00
Fallglo	Yes	100.00	66.66	33.33	0.00
	No	100.00	83.33	16.66	0.00

Post-harvest behavior

- **Seedless under all circumstances, and easy to peel**
- **Acceptable color, good flavor, and segment structure**
- **Very early maturity, with long on-tree storage capacity**
- **Firm fruit that can be harvested without clipping, saving labor costs at harvest**
- **Responds well to ethylene, and performs very well in long term cold storage**
- **‘Daisy’ mandarin x ‘Mukaku Kishu’ parentage**

Unique Characteristics

UF-CREC Lemon Cultivars for Florida: Current Status and Future Perspectives

Fred Gmitter on behalf of the CREC Team

OJ Break: Lemon Workshop
Lake Alfred, FL
September 11, 2018



IDENTIFICACION	Nro CULTIVAR	SUP. (HAS)	CANT. PLANTAS	First harvest	kg per plant	Snd. Harvest	kg per plant	TOTAL
L8A-C-Y 2-0-31	1	1,49	578	2.177	3,77	3.871	6,70	10,46
Bea-D-Ct 1-15-30	2	1,54	597	1.967	3,29	3.157	5,29	8,58
ML-C-Y 2-5-11	6	1,43	557	1.736	3,12	3.115	5,59	8,71
V-C-3X-R 2-1-28	22	1,47	567	2.037	3,59	2.723	4,80	8,40
V-C-3X-R 2-1-17	23	1,50	619	2.373	3,83	4.795	7,75	11,58 *
CE-D-3 1-20-1	24	1,56	597	2.114	3,54	2.961	4,96	8,50
LO-C-Y 2-0-40	34	1,55	602	2.086	3,47	3.339	5,55	9,01 *
Bea-D-3 1-8-57	35	1,61	620	2.597	4,19	3.402	5,49	9,68
Lis-D-5 1-3-15	43	1,58	608	2.072	3,41	4.466	7,35	10,75
Lisboa	44	1,45	553	1.743	3,15	2.282	4,13	7,28
Limoneira	45	1,45	554	2.947	5,32	4.641	8,38	13,70

Yield Data from Bolivia: Two year old trees

- They have been selected and developed in Florida
- They are all true lemons, derived from existing cultivars
- Yields, juice quality, etc. essentially unchanged
- Lemon oil is an extremely valuable commodity globally
- Current Florida industry targeted to juice, but no one will discard oil; bring more VALUE to the chain

Why Consider UF Lemon Cultivars?

- **Field trial performance: We are drawing conclusions from the Bolivia field trial**
- **Propagations, trial plantings in Florida in progress**
- **Commercialization of the top 3 selections in South Africa**
- **Plans for commercialization in Florida**
 - **Approved for release by UF-IFAS**
 - **Patent application underway (top 3-5 selections)**
 - **Pathogen tested materials in the DPI Parent Tree Program**
 - **Nursery increase/propagation could begin immediately**

Current Perspective

USDA-NIFA-SCRI

CRDF



FCPRAC

OUR TEAM

NVDMC

THANK YOU!