



## **9 New Citrus Rootstocks – Descriptions and Data**

### **UFR-1 (U.S. Patent Pending)**

- Seed available
- Experimental Designation: Orange 3
- Tetraploid
- High yield<sup>i</sup>
- Low-to-Medium HLB<sup>ii</sup>
- Potential salinity tolerance
- Potential Diaprepes/Phytophthora complex tolerance
- Small-to-Medium sized tree
- High fruit quality
- High confidence; Good, also for use in Advanced Citrus Production Systems<sup>iii</sup>



**‘UFR-1’ top worked onto Carrizo citrange rootstock**

**(~10 Year old Tree)**

## **UFR-2 (U.S. Patent Pending)**

- Seed available
- TC liners available
- Experimental Designation: Orange 4
- Tetraploid
- Medium yield<sup>i</sup>
- Low-to-Medium HLB<sup>ii</sup>
- Potential salinity tolerance
- Medium sized tree
- Medium fruit quality
- Medium confidence; good at 3 locations, better on the Ridge, less impressive in flatwoods.<sup>iii</sup>



**Valquarius® Valencia on 'UFR-2'**





**Valquarius® Valencia on 'UFR-2'**



**Vernia on 'UFR-2'**



**Sugar Belle® 'LB8-9' on 'UFR-2'**  
**(two trees on left)**



## **UFR-3 (U.S. Patent Pending)**

- Seed available
- TC liners available
- Experimental Designation: Orange 15
- Tetraploid
- High yield<sup>i</sup>
- Low HLB<sup>ii</sup>
- Small-to-Medium sized tree
- Medium-to-High fruit quality
- High confidence; good at St. Helena trial; good for ACPS<sup>iii</sup>



**Valquarius® Valencia on 'UFR-3'**  
**(This photo shows ACPS potential. 5 year old tree)**

## **UFR-4 (U.S. Patent Pending)**

- Seed available
- TC liners available
- Experimental Designation: Orange 19
- Tetraploid
- Medium-to-high yield<sup>i</sup>
- Low-to-medium HLB<sup>ii</sup>
- Medium sized tree
- High fruit quality
- High confidence; blight tolerance; diaprepes/phytophthora tolerance; good at 4 locations; good for ACPS<sup>iii</sup>



**Vernia on 'UFR-4'**





**Sugar Belle® 'LB8-9' on 'UFR-4'**  
(five trees on left)



**Valencia on 'UFR-4'**  
(5 year-old tree, between two Rough Lemon trees planted at the same time)

## **UFR-5 (U.S. Patent Pending)**

- Seed available
- Experimental Designation: White 4
- Tetraploid
- High yield<sup>i</sup>
- Low-to-Medium HLB<sup>ii</sup>
- Potential Diaprepes/Phytophthora complex tolerance
- Small-to-Medium sized tree
- High fruit quality
- Medium confidence; good at St. Helena; good for Advanced Citrus production Systems; good against Diaprepes/Phytophthora in GH Test.<sup>iii</sup>



**'UFR-5' grafted onto Swingle citrumelo rootstock**

**(~11 Year Old Tree)**



## **UFR-6 (U.S. Patent Pending)**

- Seed available
- Experimental Designation: Changsha mandarin + 50-7 trifoliate orange
- Tetraploid
- High yield<sup>i</sup>
- Medium HLB<sup>ii</sup>
- Small-to-Medium sized tree
- High fruit quality
- Cold Hardy
- Medium confidence; good at 3 locations including SG Dunwoody/Clewiston; good for Advanced Citrus production Systems.<sup>iii</sup>



**'UFR-6' planted in Lee Alligator Grove, Osceola County**

**(~ 8 Year Old Tree)**

## **UFR-15 (U.S. Patent Pending)**

- Seed available
- Experimental Designation: 46x20-04-37
- Diploid, Sour Orange type
- No yield data<sup>i</sup>
- Low HLB<sup>ii</sup>
- Large sized tree
- Medium-to-High confidence; No HLB at Alligator Trail; Robust trees with good fruit set.<sup>iii</sup>



**Valquarius® 'SF14W-62' on 'UFR-15' tetrazyg rootstock**

**(over 5 year old tree at St. Helena, Dundee FL)**





**'UFR-15' grafted onto Swingle citrumelo rootstock**

**(~10 Year Old Tree)**

## **UFR-16 (U.S. Patent Pending)**

- Seed available
- Experimental Designation: 46x31-02-13
- Diploid, Sour Orange type
- No yield data<sup>i</sup>
- Low HLB<sup>ii</sup>
- Medium-to-large sized tree
- Medium-to-high confidence; performed well at St. Helena; 4-year old, HLB positive tree growing.<sup>iii</sup>



## **UFR-17 (U.S. Patent Pending)**

- Seed available in fall 2014
- Experimental Designation: Green #2
- Tetrazyg
- Medium Yield<sup>i</sup>
- Low HLB<sup>ii</sup>
- Small-to-Medium sized tree
- Medium-to-High confidence; cold hardy; performed well at St. Helena; Limited trees performed well at two other loactions.<sup>iii</sup>



**'UFR-17'**

**Table 1.** Rootstock Data from 5-year old trees in the St. Helena trial – Dundee, FL.

Scion	Rootstock	Lbs Solids/Box		Yield Boxes/Tree			Cumulative Yield (Boxes)	Trees with Symptoms as of March 2013	Number of Trees in Trial	Percentage with HLB as of March 2013 (5 Years)
		2012	2013	2011 (35 mo.)	2012 (47 mo.)	2013 (59 mo.)				
VALQUARIUS	'UFR-6'	5.64	5.43	0.5	0.78	1.94	3.22			
VERNIA	'UFR-6'	5.67	6.01	0.4	0.63	1.41	2.44			
VALQUARIUS	'UFR-1'	5.5	4.87	NS	0.72	2.23	2.95			
VERNIA	'UFR-1'	5.61	6.28	0.31	0.67	1.33	2.31			
VERNIA	'UFR-2'	5.47	5.93	0.35	0.25	1.38	1.98	22	73	30%
VALQUARIUS	'UFR-2'	4.57	5.37	NS	0.75	1.73	2.48			
VALQUARIUS	'UFR-3'	4.84	5.05	NS	0.81	1.97	2.78	6	43	23%
VERNIA	'UFR-3'	5.46	5.82	0.37	0.38	1.82	2.57			
VERNIA	'UFR-4'	5.79	6.07	0.54	0.71	1.73	2.98	30	129	23%
VALQUARIUS	'UFR-4'	4.65	5.07	NS	0.65	1.59	2.64			
VALQUARIUS	'UFR-5'	5.76	5.72	0.33	0.56	1.80	2.69			
VERNIA	'UFR-5'	5.89	5.34	0.42	0.25	1.93	2.60			
VALQUARIUS	FG 1731	5.83	6.81	NS	0.68	2.20	2.88			
VALQUARIUS	FG 1733	5.12	5.63	NS	0.67	2.77	3.44			
VERNIA	SWINGLE*	5.11	5.79	0.33	0.85	1.08	2.26	14	20	70%
VALQUARIUS	SWINGLE*	NS	5.61	NS	NS	1.50	1.50			
VERNIA	CLEO*	4.79	5.51	NS	0.50	0.83	1.33	6	16	38%
VALQUARIUS	CLEO*	NS	5.21	NS	NS	1.7	1.7			
VERNIA	R. LEMON*	3.67	na	NS	0.78	na	0.78	12	18	67
VALQUARIUS	VOLK*	NS	4.12	NS	NS	2.58	2.58	18	20	90%
VERNIA	VOLK*	3.6	4.73	0.4	1.13	0.83	2.36			
VALQUARIUS	KUHARSKE	NS	5.75	NS	NS	2.2	2.2	56	65	86%
VERNIA	KUHARSKE	4.34	5.83	0.15	0.75	1.08	1.98			

NS - not significant fruit; na - data not available; \* - control commercial rootstock

<sup>i</sup>As yield varies according to a host of conditions, it is rated for the age and size of tree based on the scientist's experience and judgment in comparison to trees on Swingle or Carrizo.

<sup>ii</sup> Rating for leaf symptoms, and overall tree appearance and condition regarding HLB incidence and severity.

<sup>iii</sup> Given that the data/info available is less than what would ordinarily be used to assess a rootstock in some instances, a description of a rootstock's attributes as known is provided along with the researcher's professional opinion regarding potential.