

CRDF Peace River Packers Rootstock Trial, 7th March 2018.

Trial Objectives

To evaluate citrus performance of 5 potentially HLB-tolerant candidate rootstocks on, compared to standard rootstocks. Field trial management: Aggressive pest management, fertility, irrigation and programs.

- Large scale field trial at three locations: 2 Ridge, 1 South west, Evaluate candidate HLB-tolerant rootstocks w/ Industry standards budded with '1-14-19 Valencia'
- 5 randomized replications of each scion/rootstock
- At **Peace River Packing Company** location, each plot has 144 trees. Plots planted in a 12 x 12 with two buffer rows (8ft bt. trees, 18ft bt. rows). Measurement plot 64 trees (8 x 8). Horticultural traits measured from the same 8 trees quarterly.
- Data collected, analyzed and published in quarterly reports
 - HLB DI, Bacterial titer, other pests and diseases
 - Canopy Volume (m³), trunk cross sectional area (cm²), and tree height (cm),
 - Yield and fruit quality
 - 2016 Peace River Trial, year 1- fruit weight and count

Results

Data collection efforts to evaluate rootstock horticultural performance and HLB infection. Presented, is the data collected in the fall (4th quarter of 2016 and 2017 for HLB DI, canopy volume, trunk cross-sectional area and tree height and total fruit count (June 2016) (tables 1 to 5) and bacterial titer (PCR cycle threshold) sampled annually and analyzed in winter and (table 5). The trial data is considered preliminary as the trees are ~ 3 years old and the crop is not mature.

This trial presents an opportunity to make large-scale side-by-side comparisons of released rootstocks from the IFAS and USDA plant improvement programs adding to the knowledge that has been collected on other trials in the Florida.

Data in each table was analyzed with a one-way ANOVA; mean separation letter groupings obtained using the Tukey-Kramer method. Values followed by the same letter do not differ statistically at the 5% level.

Table 1. CRDF Peace River site rootstock trial HLB Disease index (DI) means \pm standard error of the mean data collected in fall 2016 and 2017

Rootstock	HLB DI ^a 2016	HLB DI ^a 2017
Carrizo	0.5 \pm 0.1 AB	3.2 \pm 0.2 BC
UFR 2	0.9 \pm 0.1 A	3.6 \pm 0.2 AB
UFR 3	0.4 \pm 0.1 B	3.5 \pm 0.2 ABC
UFR 4	0.6 \pm 0.1 AB	4.1 \pm 0.2 A
UFR 16	Late planting	3.7 \pm 0.2 AB
US 812	0.5 \pm 0.1 AB	2.7 \pm 0.2 C
US 897	0.3 \pm 0.1 B	2.9 \pm 0.2 BC
US 942	0.3 \pm 0.1 B	3.5 \pm 0.2 ABC

^aHLB DI rating on a scale of 0 to 5 per side of the tree 0= no foliar symptoms, 5 = foliar symptoms on more than 80% of the canopy. Maximum HLB DI rating = 10.

Table 2. CRDF Peace River site rootstock trial canopy volume (m³) means ± standard error of the mean data collected in fall 2016 and 2017

Rootstock	Canopy volume (m ³) 2016	Canopy volume (m ³) 2017
Carrizo	1.38 ± 0.12 CD	3.3 ± 0.3 BC
UFR 2	0.95 ± 0.09 D	2.2 ± 0.1 D
UFR 3	0.37 ± 0.10 E	1.3 ± 0.2 E
UFR 4	1.96 ± 0.14 B	3.1 ± 0.2 BC
UFR 16	Late planting	1.4 ± 0.1 E
US 812	2.12 ± 0.10 AB	3.7 ± 1.3 AB
US 897	1.69 ± 0.10 BC	2.8 ± 0.9 CD
US 942	2.56 ± 0.11 A	4.0 ± .0.2 A

Table 3. CRDF Peace River site rootstock trial trunk cross-sectional area means ± standard error of the mean data collected in fall 2016 and 2017

Rootstock	Trunk cross-sectional area (cm ²) 2016	Trunk cross-sectional area (cm ²) 2017
Carrizo	10.81 ± 4.25 B	26.9 ± 1.7 AB
UFR 2	6.89 ± 2.69 C	16.0 ± 0.8 D
UFR 3	3.95 ± 3.84 D	11.3 ± 1.2 E
UFR 4	10.74 ± 2.95 B	24.8 ± 1.2 BC
UFR 16	Late planting	11.5 ± 0.8 DE
US 812	12.44 ± 2.34 B	26.6 ± 0.9 AB
US 897	10.66 ± 3.04 B	21.2 ± 0.8 C
US 942	15.37 ± 2.71 A	29.7 ± 1.1 A

Table 4. CRDF Peace River site rootstock trial tree height means ± standard error of the mean data collected in fall 2016 and 2017

Rootstock	Tree Height (cm) 2016	Tree Height (cm) 2017
Carrizo	137.1 ± 3.9 BC	164.3 ± 6.0 A
UFR 2	128.5 ± 2.9 C	140.9 ± 2.5 B
UFR 3	110.9 ± 3.9 D	125.6 ± 2.5 B
UFR 4	145.4 ± 2.9 AB	162.6 ± 3.8 A
UFR 16	Late planting	136.1 ± 6.0 B
US 812	153.6 ± 2.8 A	173.3 ± 4.2 A
US 897	147.0 ± 3.0 AB	161.0 ± 2.9 A
US 942	158.2 ± 2.6 A	173.2 ± 4.3 A

Table 5. CRDF Peace River site rootstock trial PCR cycle threshold means \pm standard error of the mean data collected in 2017 and 2018

Rootstock	PCR cycle threshold 2017	PCR Cycle threshold 2018
Carrizo	28.22 \pm 1.38	30.4 \pm 0.7 B
UFR 2	29.29 \pm 0.57	30.0 \pm 0.7 B
UFR 3	30.15 \pm 1.04	30.8 \pm 0.8 B
UFR 4	26.29 \pm 0.79	29.9 \pm 0.6 B
UFR 16	39.74 \pm 0.17	35.0 \pm 0.9 A
US 812	25.23 \pm 1.13	29.9 \pm 0.5 B
US 897	29.77 \pm 2.24	30.1 \pm 0.6 B
US 942	27.54 \pm 1.29	30.4 \pm 0.5 B

Fruit was stripped from all the plots at Peace River in June of 2016 to promote vegetative growth. Staff collected total fruit weight and counts which may be used as a measure of precocity. There were significant effects of the rootstocks ($p < 0.05$) on total fruit weight and pieces of fruit counted (Table 6). Fruit weight and count are consistent with tree size with the largest trees having the greatest estimated measure of precocity. The trial will be harvest for yield and analyzed for fruit quality in March 2018.

Table 6. Peace River total fruit weight (Kg) and fruit count (pieces) stripped in June 2016

Rootstock	Total Fruit Weight (Kg)	Fruit Count (pieces)
Carrizo	7.02 \pm 1.44 BC	142.4 \pm 30.5 B
UFR 2	3.50 \pm 2.09 C	79.8 \pm 42.9 B
UFR 3	5.08 \pm 1.97 BC	135.6 \pm 51.8 B
UFR 4	6.88 \pm 1.70 BC	162.0 \pm 45.8 B
UFR 16	Late planted	.
US 812	8.72 \pm 1.91 BC	182.6 \pm 41.2 B
US 897	13.24 \pm 1.57 B	246.0 \pm 24.0 AB
US 942	23.36 \pm 2.31 A	414.2 \pm 44.8 A