UF/CREC Rootstocks in CRDF Trials - Jude W. Grosser, March 7, 2017

Rootstocks: UFR-2,3,4 and 16: What are they and where did they come from?

UFR-2,3 and **4** are progeny from the same conventional breeding cross of two tetraploid somatic hybrids (parents produced by protoplast fusion). The mother is Nova+Hirado Buntan pummelo, and was selected for adaptation to calcareous soils as well as superior tolerance of the Diaprepes/Phytophthora complex. The mother tree has also shown exceptional tolerance of HLB. The pollen parent (father) is Cleopatra+Argentine trifoliate orange, a hybrid that performed well in the Dunwody trial with US Sugar back in the 90's. UFR-4 has shown ability to maintain feeder roots after initial Liberibacter infection, and infected trees at the USDA Picos Farm are performing well. UFR-2 has been shown to grow a massive root system. Valquarius fruit drop on UFR-2 was stopped in the CREC Kinsey block by application of CRF plus extra manganese, and trees have cropped heavily 3 subsequent years with nearly no fruit drop. All 3 of these rootstocks do much better when provided continuous root nutrition, especially containing high levels of manganese. All 3 are amenable to seed propagation.

St. Helena Trial: Projected lbs. solids per acre based on actual yield, lbs. solids and tree size data.

Dundee, FL, Trees planted in 2008, c/o Orie Lee.

Scion	**Rootstock**	Diameter	tress/ac	Ps/ac 2011	Ps/ac 2012	Ps/ac 2013	Ps/ac 2014	Ps/ac 2015	Ps/ac 2016	Ps/ac 2017	Ps/acre Cumm.
Valquarius	**UFR-13**	8.25	264	0	1047	3955	3374	3795	1434	1406	15010
Valquarius	**UFR-1**	8.94	244	0	965	2647	2064	3663	1904	1342	12585
Valquarius	**UFR-14**	10.00	218	0	747	3397	1794	2940	1284	1501	11663
Vernia	**UFR-4**	9.81	222	694	912	2331	1986	1796	1545	1618	10882
Valquarius	**UFR-5**	8.50	256	487	826	2636	1971	2185	941	1556	10601
Valquarius	**UFR-6**	8.44	258	728	1136	2719	1636	1829	1285	1243	10576
Vernia	**UFR-5**	9.44	231	571	340	2378	1865	2367	1541	1059	10121
Vernia	Swc	9.50	229	0	0	1929	1247	2714	876	3184	9951
Vernia	**UFR-6**	7.96	274	621	979	2322	1934	1717	1249	1116	9939
Vernia	**UFR-3**	9.25	235	0	923	1879	1961	2741	804	1555	9862
Valquarius	**UFR-3**	9.56	228	460	473	2413	1394	2443	1325	1107	9615
Vernia	**UFR-2**	9.67	225	0	772	2093	1974	2881	1130	570	9420
Valquarius	Volk	12.25	178	256	723	698	721	2305	2606	2016	9326
Vernia	**UFR-1**	9.36	233	405	875	1944	1876	2223	735	1005	9062
Valquarius	Swc	9.75	223	377	970	1397	854	1550	1806	1857	8811
Valquarius	KCZ	11.37	192	0	0	2423	1175	3237	889	1071	8795
Vernia	Volk	11.62	187	0	0	1992	1237	2661	1246	1640	8776
Vernia	KCZ	9.75	223	145	727	1407	577	1323	2047	1768	7993
Valquarius	**UFR-2**	8.81	247	473	338	2023	1378	1227	798	1036	7273
Vernia	RL	10.19	214	0	782	1723	1142	1966	987	622	7223
Vernia	Cleo	10.25	212	0	0	1882	924	2507	949	950	7212
Valquarius	**UFR-4**	8.94	244	0	737	1964	1257	1357	450	1269	7035
Valquarius	Cleo	10.75	203	0	485	927	940	1204	1096	1449	6101
Valquarius	RL	9.29	234	0	0	0	0	1282	1465	1479	4226

UFR-16 is a diploid sour orange-like hybrid produced from a cross of Hirado Buntan pummelo with Shekwasha mandarin. Several hybrids from this cross showed early promise in a blight screen performed at the Orie Lee Alligator Grove east of St. Cloud. This hybrid was selected for fast-track release because it was the first of the better performers from the cross amenable to seed propagation. The male parent Shekwasha has been shown to exhibit good adaptation to calcareous soils. Note that UFR-16 exhibited the highest yield increase last season of trees planted in the St. Helena trial during 2010. Trees on pummelo x shekwasha hybrids generally show precocious bearing and do not get as large as trees on sour orange.

St. Helena Project (Dundee)– Projected Cumulative PS per rootstock for 2nd set of trees after 7 years planted in 2010, c/o Orie Lee ; trees planted among HLB-infected trees.

Scion	Rootstock	Width	Trees/ acre	Bxs/ acre 2017	PS / Acre 2014	PS / Acre 2015	PS / Acre 2016	PS / Acre 2017	Cumulative PS / Acre
Vernia	**UFR-16**	7.77	280	280.0	0	1978	1142	**1672**	4792
Vernia	46x31-02-S3	8.25	264	264.0	660	1942	1228	1407	5237
Vernia	6058x6056-00-2	9.13	239	250.6	0	1543	966	1343	3853
Vernia	Wmur+HBJL-7	8.06	270	202.6	571	990	1135	1319	4014
Vernia	Amb+Volk	7.44	293	219.6	660	1945	2189	1318	6111
Vernia	**UFR-17**	7.35	293	219.8	0	2073	1395	1270	4738
Vernia	Nova+7-2-99-2	7.56	288	187.2	757	1394	1239	1200	4590
Vernia	A-Macrophylla	7.44	293	190.3	1024	921	611	1112	3669
Valquarius	White1	8.12	268	201.0	807	2259	833	1101	5000
Vernia	N+HBP-SS-8	9.62	226	181.1	380	1164	1224	1074	3842
Vernia	N+HBP-SS-9	6.56	332	165.9	649	922	562	1011	3143
Vernia	6058x2071-01-02	7.31	298	178.7	1052	1611	967	981	4611
Vernia	Amb+5-1-99-2	7.36	296	148.0	882	2765	821	950	5418
Vernia	46x31-02-S9	6.87	317	158.5	1336	1248	786	946	4317
Valquarius	6058x2071-01-02	5.58	390	195.0	0	599	2001	928	3528
Vernia	46x31-02-9	6.87	317	126.8	624	1039	1501	744	3908
Valquarius	HBJL-2B(n)	7.88	277	110.6	981	1459	994	705	4138
Vernia	SR+SH-99-11	5.50	396	118.8	375	1279	1123	697	3474
Vernia	Nova+7-3-99-1	7.50	290	87.1	836	494	673	535	2538