



## BioGro Inc. - Field Trial Research

### Premium 21 on Young Citrus

**Objective:** To evaluate five competitive treatments for effectiveness at root density establishment in newly transplanted citrus trees.

**Conclusions:**

The treatment that contained Premium 21 exhibited the highest average for all six metrics of root density that were evaluated. These results were heavily influenced by the rate of attrition observed in the other treatments, resulting in values of 0 that greatly affected the other treatment averages. Blue treatment exhibited the lowest average for all six metrics of root density that were evaluated.

**Cooperator(s):** Villa Citrus, Emerald BioAgriculture

**Location:** Zolfo Springs, FL

**Date:** 07/28/16 – 04/06/17

**Test Crop:** Young Citrus

**Treatments:**

Treatments were color coded to maintain anonymity.

**Yellow** – Color code assigned to a treatment containing 1gpa Premium 21 + 2.0qta 5-18-3 liquid fertilizer

**Trial Layout:**

Root cages were wrapped around young citrus trees prior to transplant. Trees were marked off at random with colored flags. Five rows across had two flagged trees of each color for a total of 10 trees per color. Pre-treatment averages for each color were established by root density screening. Colors were then randomly assigned one of five treatments to be applied via soil drench application. Applications were made at transplant (07/28/16) and then roughly every 60-days (09/27/16, 11/28/16) until final application on 01/11/17 for a total of 4 applications. Trees and cages were carefully excavated and put through root density screening again on 04/06/17 for post-treatment evaluation

**Results:**

1. Highlighted in **RED** indicates the lowest average for each metric in post-treatment evaluation.
2. Highlighted in **GREEN** indicates the highest average for each metric in post-treatment evaluation.
3. Highlighted in **GRAY** indicates trees that did not live and were assigned values of '0' for the measured variables



Post-Treatment:

Treatment	Mass (g)	Length(cm)	SurfArea(cm2)	AvgDiam(mm)	RootVolume(cm3)	# Tips
Blue	0	0	0	0	0	0
Blue	0	0	0	0	0	0
Blue	0	0	0	0	0	0
Blue	0	0	0	0	0	0
Blue	0	0	0	0	0	0
Blue	0.001	4.8759	1.1741	0.7665	0.022	30
Blue	0	0	0	0	0	0
Blue	0.001	11.0439	1.8348	0.5288	0.024	293
Blue	0.044	105.7961	19.0939	0.5745	0.274	360
Blue	0.002	4.7604	0.9183	0.6141	0.014	44
Blue AVG	<b>0.0048</b>	<b>12.6476</b>	<b>2.3021</b>	<b>0.2484</b>	<b>0.0334</b>	<b>72.7</b>
Treatment	Mass (g)	Length(cm)	SurfArea(cm2)	AvgDiam(mm)	RootVolume(cm3)	# Tips
Green	0	0	0	0	0	0
Green	0	0	0	0	0	0
Green	0	0	0	0	0	0
Green	0.001	10.7772	1.5702	0.4638	0.018	225
Green	0.004	3.2748	0.4995	0.4855	0.006	46
Green	0.013	37.5909	7.1242	0.6033	0.107	200
Green	0.017	40.4467	7.9473	0.6254	0.124	406
Green	0.027	22.414	8.6111	1.2229	0.263	93
Green	0.098	157.2774	27.9552	0.5658	0.395	453
Green	0.152	191.3352	42.2677	0.7032	0.743	594
Green AVG	<b>0.0312</b>	<b>46.3116</b>	<b>9.5975</b>	<b>0.4670</b>	<b>0.1656</b>	<b>201.7</b>
Treatment	Mass (g)	Length(cm)	SurfArea(cm2)	AvgDiam(mm)	RootVolume(cm3)	# Tips
Orange	0.001	28.1144	3.5864	0.406	0.036	1348
Orange	0	0	0	0	0	0
Orange	0.138	169.7246	38.3378	0.719	0.689	238
Orange	0	0	0	0	0	0
Orange	0.002	6.0228	0.9061	0.4789	0.011	93
Orange	0.026	56.0502	11.0837	0.6294	0.174	175
Orange	0.011	26.3916	5.3723	0.648	0.087	112
Orange	0.025	30.1368	7.9687	0.8417	0.168	73
Orange	0.016	36.8312	7.1772	0.6203	0.111	220
Orange	0.08	152.2562	27.4934	0.5748	0.395	754
Orange AVG	<b>0.0299</b>	<b>50.5528</b>	<b>10.1926</b>	<b>0.4918</b>	<b>0.1671</b>	<b>301.3</b>



Treatment	Mass (g)	Length(cm)	SurfArea(cm2)	AvgDiam(mm)	RootVolume(cm3)	# Tips
Red	0.011	14.5418	3.071	0.6722	0.052	22
Red	0.117	147.7165	29.6461	0.6388	0.473	160
Red	0	0	0	0	0	0
Red	0	0	0	0	0	0
Red	0.024	48.9665	12.0931	0.7861	0.238	206
Red	0.005	4.6098	1.0578	0.7304	0.019	13
Red	0.015	28.9786	4.5333	0.498	0.056	68
Red	0	0	0	0	0	0
Red	0.005	15.7693	2.1155	0.427	0.023	209
Red	0.004	58.9331	5.5944	0.3022	0.042	2233
<b>Red AVG</b>	<b>0.0181</b>	<b>31.9516</b>	<b>5.8111</b>	<b>0.4055</b>	<b>0.0903</b>	<b>291.1</b>
Treatment	Mass (g)	Length(cm)	SurfArea(cm2)	AvgDiam(mm)	RootVolume(cm3)	# Tips
Yellow	0.002	19.2843	2.6561	0.4384	0.029	102
Yellow	0.008	12.4515	2.7919	0.7137	0.05	100
Yellow	0.009	18.6505	4.7807	0.8159	0.098	205
Yellow	0.022	23.7522	4.7779	0.6403	0.076	184
Yellow	0.034	68.404	12.1591	0.5658	0.172	388
Yellow	0.036	123.7771	23.9282	0.6153	0.368	550
Yellow	0.08	144.214	29.6428	0.6543	0.485	707
Yellow	0.084	178.3208	32.8832	0.587	0.483	560
Yellow	0.128	265.912	47.4052	0.5675	0.673	1643
Yellow	0.152	127.6352	28.3531	0.7071	0.501	231
<b>Yellow AVG</b>	<b>0.0681</b>	<b>118.8332</b>	<b>22.9913</b>	<b>0.6442</b>	<b>0.357</b>	<b>558.5</b>