

C A M C O R E

ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY VOLUME

FIVE YEAR MEASUREMENTS

TEST IDENTIFICATION: 06-06-24A
 SPECIES: Pinus oocarpa
 COMPANY: EMBRAPA
 SITE NAME: Angatuba
 LATITUDE: 23° 29' S
 LONGITUDE: 48° 25' W
 ELEVATION: 800 - 1000 m
 ANNUAL PRECIPITATION: 1190 mm

DATE PLANTED: March 1984
 DATE MEASURED: August 1989

ANALYSIS OF VARIANCE

DEPENDENT VARIABLE: Five Year Volume (cubic meters)

<u>SOURCE</u>	<u>DF</u>	<u>SUM OF SQUARES</u>	<u>F VALUE</u>
REP	8	0.02164539	1.68 ns
PROV	8	0.02986774	2.31 *
REP*PROV	64	0.10329715	1.04 ns
FAM(PROV)	47	0.30428913	4.18 **
REP*FAM(PROV)	376	0.58194336	0.97 ns
ERROR	2350	3.75355865	
CORRECTED TOTAL	2853	4.80302333	

ns: Not significant

* Significant at $p < .05$

** Significant at $p < .01$

TEST MEAN
 0.10511 m³

C.V. (%)
 38.02

***** MEANS BY PROVENANCE *****

WALLER-DUNCAN MULTIPLE COMPARISONS FOR FIVE YEAR PROVENANCE VOLUME

MEANS WITH THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT.

<u>Waller</u>	<u>Grouping</u>	<u>Mean</u>	<u>N</u>	<u>Provenance</u>	
	A	0.11291	52	* Control	(999)
	A				
B	A	0.11090	399	Guaimaca	(7)
B	A				
B	A	0.10837	51	* M. P. R.	(202)
B	A				
B	A	0.10637	397	Las Crucitas	(6)
B	A				
B	A	0.10533	302	Tablazon	(9)
B	A				
B	A	0.10412	417	San Marcos de Colon	(8)
B	A				
B	A	0.10332	414	El Castaño	(2)
B	A				
B	A	0.10324	409	La Campa	(5)
B					
B		0.10142	413	San Luis Jilotepeque	(4)

* Control lots: 202 = Pinus tecunumanii, Mt. Pine Ridge, Belize
 999 = Commercial control, CAFMA, Zarlazda

***** MEANS BY FAMILY *****

<u>Fam</u>	<u>Prov</u>	<u># Trees</u>	<u>% Surv</u>	<u>Mean Height (m)</u>	<u>C.V. (%)</u>	<u>Mean Diameter (cm)</u>	<u>Tree Volume (cubic m)</u>
339	7	48	88.89	12.16	12.39	18.17	0.12547
96	4	51	94.44	11.48	11.94	18.73	0.12453
149	2	51	94.44	11.93	8.26	18.42	0.12346
146	2	52	96.30	11.43	13.61	18.36	0.12286
399	9	47	87.04	11.49	12.62	18.54	0.12195
330	7	51	94.44	11.90	10.66	18.13	0.12088
276	6	53	98.15	12.37	12.71	17.77	0.12067
390	5	53	98.15	12.12	10.76	17.73	0.11870
243	8	50	92.59	12.07	14.62	17.49	0.11795
290	6	53	98.15	12.55	9.52	17.30	0.11634
363	7	49	90.74	12.32	9.55	17.20	0.11534
266	6	46	85.19	12.61	10.80	17.14	0.11525
115	4	54	100.0	11.24	12.54	18.06	0.11488
359	7	52	96.30	12.25	12.14	17.17	0.11370
999	*	52	96.30	11.77	14.11	17.55	0.11291
350	7	50	92.59	11.87	10.49	17.53	0.11251
237	8	53	98.15	11.84	11.38	17.39	0.11167
389	5	51	94.44	11.79	13.30	17.24	0.11056
141	2	53	98.15	11.29	14.17	17.64	0.10931
202	*	51	94.44	11.19	18.25	17.43	0.10837
338	7	49	90.74	11.53	13.72	17.07	0.10827
198	9	51	94.44	11.46	13.17	17.05	0.10732
382	5	51	94.44	11.60	12.85	17.15	0.10652
269	6	48	88.89	11.78	13.50	17.05	0.10648
157	2	53	98.15	11.20	11.73	17.49	0.10574
195	9	51	94.44	11.39	14.19	17.16	0.10569
252	8	53	98.15	11.30	16.70	16.91	0.10564
263	8	51	94.44	11.87	9.41	16.91	0.10509
283	6	51	94.44	11.58	13.64	16.91	0.10476
394	5	50	92.59	11.70	15.61	16.64	0.10472
374	5	51	94.44	11.63	13.70	16.76	0.10275
260	8	51	94.44	11.90	11.15	16.60	0.10204
210	9	51	94.44	11.90	10.69	16.57	0.10177
97	4	53	98.15	11.29	13.55	16.83	0.10152
250	8	52	96.30	11.36	12.12	16.87	0.10141
321	7	50	92.59	11.54	13.50	16.65	0.10125
207	9	53	98.15	11.45	17.45	16.48	0.10086
246	8	54	100.0	11.55	11.69	16.36	0.09930
378	5	50	92.59	11.38	8.95	16.75	0.09861
155	2	51	94.44	11.47	13.52	16.39	0.09852
296	6	49	90.74	11.56	12.75	16.56	0.09849

<u>Fam</u>	<u>Prov</u>	<u># Trees</u>	<u>% Surv</u>	<u>Mean Height (m)</u>	<u>C.V. (%)</u>	<u>Mean Diameter (cm)</u>	<u>Tree Volume (cubic m)</u>
158	2	51	94.44	11.13	12.80	16.62	0.09824
119	4	52	96.30	10.72	15.16	16.78	0.09764
117	4	51	94.44	10.95	14.59	16.67	0.09686
112	4	48	88.89	10.46	18.58	16.95	0.09590
161	2	52	96.30	10.53	21.41	16.33	0.09564
190	9	49	90.74	11.20	15.51	16.34	0.09549
293	6	50	92.59	11.37	16.99	15.96	0.09525
391	5	52	96.30	11.34	14.63	16.05	0.09341
265	6	47	87.04	11.10	13.73	16.16	0.09198
256	8	53	98.15	11.12	13.19	16.02	0.09060
393	5	51	94.44	11.53	13.94	15.73	0.09015
343	7	50	92.59	11.06	17.82	15.87	0.09009
110	4	50	92.59	10.90	15.70	15.84	0.08996
107	4	54	100.0	10.74	15.31	16.03	0.08950
160	2	51	94.44	9.58	19.00	15.14	0.07225

OVERALL	2751	92.63	11.50	14.14	16.96	0.10490
---------	------	-------	-------	-------	-------	---------

Note: Tree volume with bark was calculated using a formula for juvenile trees: Volume (cubic meters) = $0.0003 \cdot D^2 \cdot H$, where D=DBH in centimeters and H = total height in meters.
The overall mean does not include control lots.

Provenance code: 2 = El Castaño, Guatemala
4 = San Luis Jilotepeque, Guatemala
5 = La Campa, Honduras
6 = Las Crucitas, Honduras
7 = Guaimaca, Honduras
8 = San Marcos de Colon, Honduras
9 = Tablazon, Honduras