

C A M C O R E

ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY VOLUME

FIVE YEAR MEASUREMENTS

TEST IDENTIFICATION: 13-06-17A
SPECIES: Pinus tecunumanii
COMPANY: EMBRAPA
SITE NAME: CPAC
LATITUDE: 15° 32' S
LONGITUDE: 47° 39' W
ELEVATION: 1190 m
ANNUAL PRECIPITATION: 1546 mm

DATE PLANTED: December 1984
DATE MEASURED: December 1989

ANALYSIS OF VARIANCE

DEPENDENT VARIABLE: Five Year Volume (cubic meters)

<u>SOURCE</u>	<u>DF</u>	<u>SUM OF SQUARES</u>	<u>F</u>	<u>VALUE</u>
REP	8	0.00526862	2.23	*
PROV	10	0.03062808	10.37	**
REP*PROV	80	0.02362188	1.15	ns
FAM(PROV)	34	0.05266599	6.03	**
REP*FAM(PROV)	272	0.06991958	1.22	*
ERROR	1901	0.40146194		
CORRECTED TOTAL		2305	0.58927546	

ns: Not significant

* Significant at $p < .05$
** Significant at $p < .01$

TEST MEAN
0.03217 m³

C.V. (%)
45.17

***** 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	0.03859	46	* Control (200)
	A			
B	A	0.03820	253	San Jeronimo
B	A			
B	A C	0.03512	211	La Soledad
B	C			
B	D C	0.03435	212	Celaque
	D C			
	D C	0.03383	305	Las Trancas
	D C			
	D C	0.03109	515	San Vicente
	D			
E	D	0.03079	362	San Lorenzo
- E	D			
E	D	0.03039	53	* Control (405)
E				
E	F	0.02669	149	KM33
	F			
	F	0.02510	151	KM47
	F			
	F	0.02452	49	* Control (206)

* Control lots: 200 = Pinus tecunumanii, San Jeronimo, Guatemala
 206 = Pinus oocarpa, Agudos, Brazil
 405 = Pinus oocarpa, Commercial control, CAFMA

***** 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 D.B.H. (cm)</u>	<u>Tree Volume (cubic m)</u>
235	9	48	88.89	8.7	17.42	12.69	0.04501
244	9	53	98.15	8.8	14.39	12.45	0.04350
272	8	54	100.00	8.3	18.47	12.53	0.04271
36	5	49	90.74	8.0	15.04	12.65	0.04219
154	3	52	96.30	8.0	18.90	12.47	0.04209
101	5	50	92.59	8.2	14.37	12.81	0.04183
905	5	50	92.59	8.1	12.59	12.40	0.03969
3	6	52	96.30	8.3	12.97	12.33	0.03966
200	*	46	85.19	8.1	12.56	12.22	0.03859
91	7	54	100.00	7.8	13.48	12.30	0.03727
137	3	53	98.15	7.9	12.39	12.03	0.03667
115	7	52	96.30	8.1	10.44	11.86	0.03582
10	5	52	96.30	7.6	13.83	12.12	0.03526
47	6	53	98.15	8.0	21.57	11.39	0.03524
97	7	52	96.30	8.1	17.46	11.42	0.03452
264	8	53	98.15	7.8	15.06	11.57	0.03424
83	7	50	92.59	7.7	12.84	11.89	0.03382
2	6	53	98.15	7.8	20.23	11.33	0.03375
269	8	52	96.30	8.1	15.50	11.37	0.03361
222	9	52	96.30	8.0	17.70	11.18	0.03285
189	7	51	94.44	7.8	10.10	11.56	0.03279
35	5	52	96.30	7.8	10.56	11.54	0.03247
146	3	54	100.00	7.8	12.22	11.43	0.03233
180	1	52	96.30	7.3	19.21	11.09	0.03054
405	*	53	98.15	8.0	11.10	10.97	0.03039
78	6	49	90.74	7.2	26.03	10.66	0.02998
58	3	52	96.30	7.4	16.25	11.07	0.02945
81	7	50	92.59	7.1	18.00	10.92	0.02865
82	7	53	98.15	7.6	17.47	10.68	0.02852
89	7	50	92.59	7.7	12.75	10.79	0.02839
239	9	50	92.59	7.4	17.42	10.66	0.02812
181	2	53	98.15	7.1	21.61	10.38	0.02746
7	6	53	98.15	7.4	17.47	10.56	0.02736
172	2	52	96.30	7.1	14.29	10.73	0.02711
191	7	49	90.74	7.3	20.21	10.44	0.02708
231	9	49	90.74	7.4	13.94	10.60	0.02706
262	8	53	98.15	7.8	12.40	10.44	0.02668
217	9	53	98.15	7.1	12.26	10.87	0.02666
72	6	50	92.59	7.0	15.66	10.68	0.02590
165	1	49	90.74	7.0	15.01	10.46	0.02476
206	*	49	90.74	6.8	17.25	10.57	0.02452

***** 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 D.B.H. (cm)</u>	<u>Tree Volume (cubic m)</u>
169	1	48	88.89	7.0	16.95	10.40	0.02449
90	7	54	100.00	7.1	17.38	10.00	0.02386
14	6	52	96.30	7.1	24.83	9.68	0.02331
178	2	46	85.19	6.0	29.65	9.18	0.02009

OVERALL		2158	95.15	7.6	17.73	11.28	0.03225

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 values do not include control lots.

Provenance code: 1 = KM33, Guatemala
2 = KM47, Guatemala
3 = La Soledad, Guatemala
5 = San Jeronimo, Guatemala
6 = San Lorenzo, Guatemala
7 = San Vicente, Guatemala
8 = Celaque, Honduras
9 = Las Trancas, Honduras