

C A M C O R E

ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY VOLUME

FIVE YEAR MEASUREMENTS

TEST IDENTIFICATION: 13-01-02C
SPECIES: Pinus tecunumanii - High elevation
COMPANY: ARACRUZ Florestal
SITE NAME: Santa Tereza
ELEVATION: 650 - 900 m
ANNUAL PRECIPITATION: 1500 - 1700 mm

DATE PLANTED: August 1984
DATE MEASURED: November 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	6	0.02240862	5.09 **
PROV	7	0.00477667	0.93 ns
REP*PROV	42	0.03079757	3.78 **
FAM(PROV)	19	0.00445249	1.21 ns
REP*FAM(PROV)	114	0.02212521	1.84 **
ERROR	786	0.08288696	
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CORRECTED TOTAL	974	0.16556144	

ns: Not significant

** Significant at $p < .01$

TEST MEAN
0.02208 m³

C.V. (%)
46.50

13-01-02C

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

The Waller-Duncan multiple comparison procedure shows no significant differences among the mean provenance volumes.

<u>Provenance</u>	<u># Trees</u>	<u>% Survival</u>	<u>Mean Height (m)</u>	<u>C.V. (%)</u>	<u>Mean D.B.H. (cm)</u>	<u>Tree Volume (cubic m)</u>
* Control 202	39	92.86	7.1	20.97	10.2	0.02527
Montebello	252	85.71	6.8	20.27	10.5	0.02481
Chempil	182	86.67	7.0	14.89	10.3	0.02383
San Vicente	37	88.10	6.7	21.73	9.9	0.02234
Jitotol	258	87.76	6.7	19.23	9.6	0.02038
San Jose	70	83.33	6.5	24.60	9.4	0.02012
San Piedrecitas	99	78.57	6.3	26.41	9.0	0.01813
Celaque	38	90.48	6.1	24.12	9.1	0.01763

Provenance code: 7 = San Vicente, Guatemala
8 = Celaque, Honduras
11 = Chempil, Mexico
13 = Jitotol, Mexico
15 = Las Piedrecitas, Mexico
16 = Montebello, Mexico
20 = San Jose, Mexico

* Control lot: 202 = P. tec., Commercial control, Mt. Pine Ridge, Belize

***** 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>
375	16	33	78.57	6.9	19.49	11.4	0.03028
392	16	40	95.24	7.2	20.74	10.9	0.02776
374	16	33	78.57	7.1	14.70	10.7	0.02692
202	*	39	92.86	7.1	20.97	10.2	0.02527
356	11	40	95.24	7.2	15.43	10.4	0.02511
426	13	41	97.62	6.9	19.26	10.4	0.02491
329	20	30	71.43	6.9	24.67	10.2	0.02483
362	11	38	90.48	7.2	14.71	10.2	0.02425
358	11	31	73.81	6.9	15.04	10.3	0.02344
355	11	41	97.62	6.8	15.95	10.2	0.02325
382	16	41	97.62	6.7	15.47	10.3	0.02293
384	16	41	97.62	6.4	24.66	10.3	0.02285
349	11	32	76.19	7.1	12.68	10.4	0.02284
387	16	33	78.57	7.0	19.25	10.2	0.02253
195	7	37	88.10	6.7	21.73	9.9	0.02234
430	13	40	95.24	6.6	22.45	9.7	0.02081
389	16	31	73.81	6.3	24.03	9.6	0.02045
427	13	26	61.90	6.8	10.94	9.7	0.02008
415	13	40	95.24	7.0	13.97	9.3	0.01981
410	13	38	90.48	6.5	25.42	9.3	0.01928
422	13	37	88.10	6.5	16.98	9.6	0.01927
308	15	28	66.67	6.1	27.38	9.3	0.01866
301	15	35	83.33	6.5	24.35	8.9	0.01849
416	13	36	85.71	6.5	20.62	9.0	0.01789
275	8	38	90.48	6.1	24.12	9.1	0.01763
300	15	36	85.71	6.3	28.16	8.9	0.01737
336	20	40	95.24	6.2	23.69	8.8	0.01658

OVERALL		936	85.71	6.7	20.45	9.9	0.02195
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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.