

C A M C O R E

ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY VOLUME

FIVE YEAR MEASUREMENTS

TEST IDENTIFICATION: 13-02-02E
SPECIES: Pinus tecunumanii - High elevation
COMPANY: Cartón de Colombia
SITE NAME: Finca San Jose
ELEVATION: 1750 m
ANNUAL PRECIPITATION: 1949 - 2060 mm

DATE PLANTED: October 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	0.03204276	1.41 ns
PROV	5	0.11625210	8.16 **
REP*PROV	38	0.10825529	1.93 **
FAM(PROV)	44	0.21012523	3.24 **
REP*FAM(PROV)	264	0.38925231	0.90 ns
ERROR	1531	2.52080939	
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CORRECTED TOTAL	1890	3.44933072	

ns: Not significant

** Significant at $p < .01$

TEST MEAN
0.08737 m³

C.V. (%)
46.45

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***** 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	0.10213	43	* Control
	A			
	A	0.09735	413	Montebello
	A			
B	A	0.09543	400	Chempil
B				
B	C	0.08542	366	Jitotol
	C			
D	C	0.08145	318	Las Piedrecitas
D				
D		0.07201	351	San Jose

***** 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>D.B.H. (cm)</u>	<u>Tree Volume (cubic m)</u>
390	16	50	92.59	11.45	13.24	18.23	0.11765
393	16	47	87.04	11.22	15.90	17.72	0.11135
356	11	50	92.59	11.31	14.43	17.38	0.10919
375	16	48	88.89	10.53	19.05	17.79	0.10579
387	16	48	88.89	10.70	18.55	17.39	0.10171
352	11	47	87.04	10.58	22.75	17.13	0.10086
200	99	49	90.74	10.90	16.46	16.92	0.09979
416	13	44	81.48	10.25	18.17	17.43	0.09942
430	13	51	94.44	10.39	20.70	17.09	0.09880
348	11	52	96.30	10.72	16.64	16.88	0.09873
389	16	37	68.52	10.73	21.20	16.71	0.09850
349	11	49	90.74	10.67	15.75	16.79	0.09606
362	11	51	94.44	10.54	20.58	16.31	0.09463
314	15	49	90.74	10.28	19.22	16.79	0.09398
355	11	52	96.30	10.24	22.35	16.88	0.09362
384	16	47	87.04	10.79	18.53	16.43	0.09232
329	20	49	90.74	9.88	20.17	17.00	0.09221
369	11	50	92.59	10.09	22.42	16.72	0.09121
392	16	52	96.30	9.96	24.71	16.71	0.09080
412	13	44	81.48	9.45	26.22	16.73	0.08963
427	13	44	81.48	9.78	22.81	16.74	0.08838
310	15	42	77.78	10.49	11.61	16.18	0.08762
304	15	49	90.74	10.21	18.97	16.16	0.08720
300	15	49	90.74	10.39	13.08	16.08	0.08522
422	13	51	94.44	9.84	16.47	16.16	0.08319
406	13	44	81.48	9.68	23.34	15.99	0.08017
372	11	49	90.74	10.41	19.39	15.13	0.07915
382	16	48	88.89	9.48	26.36	15.95	0.07888
327	20	48	88.89	9.74	18.89	15.57	0.07690
340	20	52	96.30	9.63	19.72	15.62	0.07522
337	20	49	90.74	10.02	15.34	15.13	0.07521
413	13	46	85.19	9.42	21.79	15.83	0.07473
317	15	43	79.63	9.20	23.60	15.34	0.07187
336	20	46	85.19	9.42	14.62	15.35	0.07179
308	15	42	77.78	9.65	17.17	14.84	0.06915
301	15	33	61.11	9.27	22.85	14.75	0.06868
426	15	47	87.04	9.12	22.89	15.11	0.06846
339	20	48	88.89	9.15	21.53	14.53	0.06284
344	20	48	88.89	9.25	27.36	13.80	0.06114
221	20	47	87.04	8.77	24.09	14.48	0.06070

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

	<u># Trees</u>	<u>% Surv</u>	<u>Mean Height (m)</u>	<u>C.V. (%)</u>	<u>D.B.H. (cm)</u>	<u>Tree Volume (cubic m)</u>
OVERALL	1848	87.50	10.08	20.63	16.24	0.08702

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: 11 = Chempil, Mexico
13 = Jitotol, Mexico
15 = Las Piedrecitas, Mexico
16 = Montebello, Mexico
20 = San Jose, Mexico

* Control lot: 200 = Commercial control, P. tec., San Jeronimo, Guatemala