

C A M C O R E

ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY VOLUME

FIVE YEAR MEASUREMENTS

TEST IDENTIFICATION: 12-02-01D
SPECIES: Pinus chiapensis
COMPANY: Carton de Colombia
SITE NAME: San José
ELEVATION: 1750 m
ANNUAL PRECIPITATION: 1949 - 2060 mm

DATE PLANTED: October 1984
DATE MEASURED: October 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	0.03666666	1.93 ns
PROV	4	0.42622661	44.78 **
REP*PROV	32	0.07613917	3.36 **
FAM(PROV)	48	0.11266538	3.31 **
REP*FAM(PROV)	370	0.26214162	1.02 ns
ERROR	1871	1.29687932	
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CORRECTED TOTAL	2333	2.25051962	

ns: Not significant

* Significant at $p < .05$

** Significant at $p < .01$

TEST MEAN
0.06112 m³

C.V. (%)
43.08

12-02-01D

***** 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	0.11388	48	Control	(200)
	B	0.07009	597	La Trinidad	(4)
	B				
C	B	0.06463	596	Pueblo Nuevo	(7)
C					
C		0.05708	937	La Libertad	(3)
	D	0.02136	156	Zimbabwe	(13)

* Control Lot: 200 = Pinus tecunumanii, San Jeronimo, Guatemala

12-02-01D

***** 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>
200	*	48	88.89	9.87	22.18	18.90	0.11388
57	7	45	93.75	11.10	12.28	14.96	0.07768
22	4	50	92.59	11.50	8.50	14.60	0.07653
99	3	42	77.78	11.51	10.21	14.45	0.07549
23	4	46	85.19	11.56	8.27	14.49	0.07508
27	4	49	90.74	11.18	7.94	14.64	0.07463
25	4	49	90.74	11.37	9.93	14.42	0.07434
17	4	40	74.07	11.07	7.87	14.73	0.07358
56	7	48	88.89	10.81	10.26	14.66	0.07256
106	3	43	79.63	11.42	8.50	14.12	0.07182
15	4	49	90.74	11.06	13.72	14.00	0.07147
28	4	40	74.07	11.21	9.36	14.27	0.07087
64	7	52	96.30	11.09	8.83	14.24	0.07068
14	4	45	83.33	11.51	14.59	13.68	0.07033
91	3	45	83.33	11.02	10.72	14.16	0.07029
53	7	47	87.04	10.40	11.22	14.52	0.06933
19	4	52	96.30	10.98	9.14	14.12	0.06910
13	4	41	75.93	11.32	10.56	13.54	0.06751
117	3	47	87.04	11.06	11.00	13.87	0.06720
18	4	48	88.89	11.25	10.58	13.76	0.06690
76	7	40	74.07	10.74	11.26	13.78	0.06550
69	7	39	72.22	10.52	9.78	13.96	0.06481
51	7	50	92.59	10.57	11.89	13.74	0.06385
112	3	44	81.48	10.95	10.71	13.41	0.06281
30	4	41	75.93	11.01	15.50	13.16	0.06257
109	3	40	74.07	10.91	11.51	13.44	0.06256
52	7	45	83.33	10.44	13.39	13.73	0.06227
113	3	34	62.96	10.78	10.56	13.49	0.06089
68	7	54	100.00	10.51	11.05	13.43	0.06080
62	7	40	74.07	10.47	15.31	13.32	0.06038
118	3	44	81.48	11.35	12.99	12.97	0.06003
116	3	47	87.04	11.04	11.72	13.06	0.05979
105	3	38	70.37	10.32	14.35	13.41	0.05969
104	3	47	87.04	10.91	11.51	12.95	0.05859
59	7	48	88.89	10.17	14.77	13.05	0.05827
24	4	48	88.89	10.64	18.05	12.84	0.05712
58	7	45	83.33	10.44	9.96	13.12	0.05711
50	7	43	79.63	10.64	11.37	12.78	0.05578
97	3	45	75.00	10.27	9.37	13.08	0.05520
96	3	42	77.78	10.87	11.69	12.45	0.05483
92	3	41	75.93	10.65	13.72	12.54	0.05454

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<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>
98	3	45	83.33	10.29	17.26	12.35	0.05247
115	3	45	83.33	10.47	14.21	12.35	0.05204
111	3	40	74.07	10.49	15.55	12.12	0.05003
93	3	49	90.74	10.28	12.77	11.97	0.04804
100	3	39	72.22	10.37	13.04	11.90	0.04728
103	3	38	70.37	10.64	14.20	11.56	0.04697
110	3	41	75.93	10.36	12.61	11.46	0.04372
94	3	41	75.93	9.96	12.02	11.04	0.03883
7453	13	35	64.81	8.06	14.39	9.96	0.02620
7459	13	44	81.48	8.16	19.15	9.46	0.02415
7458	13	38	70.37	7.67	18.12	8.53	0.01877
7455	13	39	72.22	7.06	17.48	8.33	0.01641

OVERALL		2287	81.45	10.62	14.63	13.14	0.06001
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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 mean does not include control lots.

Provenance code: 3 = La Libertad, Mexico
 4 = La Trinidad, Mexico
 7 = Pueblo Nuevo, Mexico
 13 = Zimbabwe, Zimbabwe