

# C A M C O R E

## ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY HEIGHT

### ONE YEAR MEASUREMENTS

TEST IDENTIFICATION: 13-26-42A1  
SPECIES: Pinus tecunumanii - High elevation  
COMPANY: Klabin Do Parana Agro Florestal  
SITE NAME: Imbauzinho 124A  
LATITUDE: 24° 16' 10" S  
LONGITUDE: 50° 38' 25" E  
ELEVATION: 780 m  
ANNUAL PRECIPITATION: 1,473 mm

DATE PLANTED: October 1988  
DATE MEASURED: October 1989

### ANALYSIS OF VARIANCE

DEPENDENT VARIABLE: One Year Height (meters)

<u>SOURCE</u>	<u>DF</u>	<u>SUM OF SQUARES</u>	<u>F VALUE</u>
REP	8	1.93704941	3.14 **
PROV	6	4.95313271	10.69 **
REP*PROV	48	3.70606502	1.25 ns
FAM(PROV)	43	11.51080338	4.32 **
REP*FAM(PROV)	344	21.33192522	1.68 **
ERROR	2114	77.95437500	
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CORRECTED TOTAL	2563	122.42744442	

ns: Not significant

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

TEST MEAN  
0.843 m

C.V. (%)  
22.79

## \*\*\*\*\* MEANS BY PROVENANCE \*\*\*\*\*

WALLER-DUNCAN MULTIPLE COMPARISONS FOR ONE YEAR FAMILY HEIGHT  
 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	0.902	502	San Jeronimo	(5)
	A				
	A	0.873	402	Chanal	(10)
	A				
B	A	0.869	202	San Miguel	(22)
B	A				
B	A	0.855	524	Rancho Nuevo	(18)
B					
B	C	0.804	47	Control	(999)
	C				
	C	0.788	47	Control	(998)
	C				
	C	0.783	840	Cabrican	(21)

\* Control lots: 998 = Pinus elliottii, Commercial control  
 999 = Pinus taeda, Commercial control

## \*\*\*\*\* MEANS BY FAMILY \*\*\*\*\*

<u>Family</u>	<u>Provenance</u>	<u># Trees</u>	<u>% Survival</u>	<u>Mean Height (m)</u>	<u>C.V. (%)</u>
786	21	53	98.15	0.98	20.32
10	5	47	87.04	0.98	29.55
22	5	48	88.89	0.97	19.26
672	10	53	98.15	0.95	24.15
677	10	53	98.15	0.95	21.13
681	18	53	98.15	0.94	24.10
36	5	53	98.15	0.94	26.19
665	10	54	100.00	0.93	24.85
31	5	51	94.44	0.93	25.09
17	5	51	94.44	0.93	26.45
663	10	52	96.30	0.92	17.63
694	18	53	98.15	0.91	17.54
37	5	51	94.44	0.91	25.31
684	18	54	100.00	0.90	20.81
793	21	53	98.15	0.90	20.07
683	18	54	100.00	0.90	25.69
18	5	48	88.89	0.89	26.47
820	22	53	98.15	0.89	23.93
818	22	43	79.63	0.88	19.54
23	5	54	100.00	0.87	26.24
821	22	53	98.15	0.86	20.47
689	18	51	94.44	0.86	23.36
784	21	54	100.00	0.86	28.37
680	18	50	92.59	0.86	23.95
29	5	53	98.15	0.85	24.88
662	10	46	85.19	0.84	25.52
827	22	53	98.15	0.84	27.57
696	18	52	96.30	0.84	26.03
802	21	53	98.15	0.83	20.89
806	21	50	92.59	0.82	24.28
692	18	52	96.30	0.82	23.10
779	21	51	94.44	0.81	22.47
999	*	47	87.04	0.80	21.99
666	10	51	94.44	0.80	24.15
661	10	47	87.04	0.80	23.53
998	*	47	87.04	0.79	16.21
777	21	53	98.15	0.78	22.74
658	10	46	85.19	0.78	31.20
679	18	53	98.15	0.77	23.81
772	21	49	90.74	0.76	26.96
780	21	53	98.15	0.76	22.25
804	21	52	96.30	0.75	27.85

<u>Family</u>	<u>Provenance</u>	<u># Trees</u>	<u>% Survival</u>	<u>Mean Height (m)</u>	<u>C.V. (%)</u>
788	21	54	100.00	0.75	28.71
32	5	46	85.19	0.74	30.54
688	18	52	96.30	0.74	31.78
776	21	53	98.15	0.74	21.56
778	21	54	100.00	0.72	24.91
794	21	51	94.44	0.71	22.16
807	21	54	100.00	0.68	28.74
808	21	53	98.15	0.68	23.12

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OVERALL		2470	95.29	0.84	26.11
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The overall mean does not include control lots.

Provenance code: 5 = San Jeronimo, Guatemala  
 10 = Chanal, Mexico  
 18 = Rancho Nuevo, Mexico  
 21 = Cabrican, Guatemala  
 22 = San Miguel, Guatemala