

C A M C O R E

ANOVA AND MULTIPLE COMPARISONS FOR PROVENANCE AND FAMILY HEIGHT

ONE YEAR MEASUREMENTS

TEST IDENTIFICATION: 21-26-01A1
SPECIES: Pinus pringlei
COMPANY: Klabin Do Parana Agro Florestal
SITE NAME: Imbauzinho 104
LATITUDE: 24° 16' 10" S
LONGITUDE: 50° 38' 25" W
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 | 5.40085798 | 12.65 ** |
| PROV | 7 | 22.24961496 | 59.57 ** |
| REP*PROV | 56 | 2.98803896 | 1.70 ** |
| FAM(PROV) | 43 | 5.01756898 | 3.72 ** |
| REP*FAM(PROV) | 344 | 10.80492123 | 1.71 ** |
| ERROR | 2174 | 39.91783333 | |
| <hr/> | | | |
| CORRECTED TOTAL | 2632 | 89.86770794 | |

** Significant at $p < .01$

TEST MEAN
0.454 m

C.V. (%)
29.82
233

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

WALLER-DUNCAN MULTIPLE COMPARISONS FOR ONE YEAR PROVENANCE 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 | 0.8700 | 45 | Control | (999) |
| | A | | | | |
| | A | 0.8440 | 50 | Control | (998) |
| | B | 0.5053 | 721 | Tlahuitoltepec | (3) |
| | B | | | | |
| C | B | 0.4571 | 211 | El Tlacuache | (5) |
| C | | | | | |
| C | | 0.4421 | 463 | Sola de Vega | (4) |
| C | | | | | |
| C | D | 0.4333 | 468 | Santa María Lachixio | (1) |
| | D | | | | |
| E | D | 0.3870 | 314 | El Guajolote | (6) |
| E | | | | | |
| E | | 0.3467 | 361 | Santo Domingo Yosoñama | (2) |

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

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

| <u>Family</u> | <u>Prov</u> | <u># Trees</u> | <u>% Survival</u> | <u>Mean Height (m)</u> | <u>C.V. (%)</u> |
|---------------|-------------|----------------|-------------------|--------------------------------|-----------------|
| 999 | * | 45 | 83.33 | 0.87 | 24.76 |
| 998 | * | 50 | 92.59 | 0.84 | 15.91 |
| 85 | 3 | 53 | 98.15 | 0.65 | 25.25 |
| 98 | 3 | 53 | 98.15 | 0.56 | 39.84 |
| 93 | 3 | 54 | 100.00 | 0.55 | 35.06 |
| 89 | 3 | 53 | 98.15 | 0.54 | 28.91 |
| 83 | 3 | 53 | 98.15 | 0.54 | 30.00 |
| 136 | 4 | 51 | 94.44 | 0.54 | 30.49 |
| 90 | 3 | 54 | 100.00 | 0.53 | 26.81 |
| 12 | 1 | 54 | 100.00 | 0.50 | 35.85 |
| 87 | 3 | 50 | 92.59 | 0.50 | 29.92 |
| 95 | 3 | 49 | 90.74 | 0.50 | 35.87 |
| 97 | 3 | 52 | 96.30 | 0.49 | 35.25 |
| 120 | 5 | 53 | 98.15 | 0.49 | 37.36 |
| 92 | 3 | 48 | 88.89 | 0.48 | 37.44 |
| 114 | 5 | 53 | 98.15 | 0.47 | 37.13 |
| 81 | 3 | 52 | 96.30 | 0.47 | 32.09 |
| 91 | 3 | 52 | 96.30 | 0.46 | 29.27 |
| 21 | 1 | 53 | 98.15 | 0.46 | 42.07 |
| 132 | 4 | 52 | 96.30 | 0.46 | 29.09 |
| 127 | 4 | 54 | 100.00 | 0.45 | 30.58 |
| 130 | 4 | 52 | 96.30 | 0.45 | 32.56 |
| 4 | 1 | 52 | 96.30 | 0.44 | 35.00 |
| 128 | 4 | 50 | 92.59 | 0.44 | 30.81 |
| 137 | 4 | 50 | 92.59 | 0.44 | 29.22 |
| 14 | 1 | 54 | 100.00 | 0.44 | 35.20 |
| 134 | 4 | 48 | 88.89 | 0.44 | 38.99 |
| 110 | 5 | 51 | 94.44 | 0.43 | 38.87 |
| 84 | 3 | 52 | 96.30 | 0.43 | 33.64 |
| 13 | 1 | 52 | 96.30 | 0.43 | 37.31 |
| 103 | 5 | 54 | 100.00 | 0.43 | 36.98 |
| 10 | 1 | 53 | 98.15 | 0.43 | 47.39 |
| 52 | 6 | 51 | 94.44 | 0.42 | 36.21 |
| 17 | 1 | 47 | 87.04 | 0.42 | 37.86 |
| 58 | 6 | 50 | 92.59 | 0.41 | 33.11 |
| 11 | 1 | 51 | 94.44 | 0.41 | 34.11 |
| 50 | 2 | 52 | 96.30 | 0.40 | 29.66 |
| 122 | 4 | 53 | 98.15 | 0.39 | 38.33 |
| 125 | 4 | 53 | 98.15 | 0.39 | 39.32 |
| 60 | 6 | 53 | 98.15 | 0.38 | 28.13 |
| 61 | 6 | 53 | 98.15 | 0.38 | 38.33 |
| 59 | 6 | 53 | 98.15 | 0.38 | 31.32 |

| <u>Family</u> | <u>Prov</u> | <u># Trees</u> | <u>% Survival</u> | <u>Mean Height (m)</u> | <u>C.V. (%)</u> |
|---------------|-------------|----------------|-------------------|--------------------------------|-----------------|
| 7 | 1 | 52 | 96.30 | 0.38 | 35.87 |
| 99 | 3 | 46 | 85.19 | 0.36 | 39.79 |
| 48 | 2 | 54 | 100.00 | 0.36 | 44.61 |
| 75 | 6 | 54 | 100.00 | 0.36 | 29.51 |
| 49 | 2 | 49 | 90.74 | 0.35 | 27.18 |
| 46 | 2 | 53 | 98.15 | 0.35 | 41.33 |
| 41 | 2 | 51 | 94.44 | 0.33 | 45.08 |
| 36 | 2 | 51 | 94.44 | 0.32 | 43.14 |
| 28 | 2 | 51 | 94.44 | 0.32 | 31.61 |

| | | | | | |
|---------|--|------|-------|------|-------|
| OVERALL | | 2538 | 95.92 | 0.44 | 38.08 |
|---------|--|------|-------|------|-------|

The overall mean does not include control lots.

Provenance code: 1 = Santa María Lachixio, Mexico
 2 = Santo Domingo Yosonáma, Mexico
 3 = Tlahuitoltepec, Mexico
 4 = Sola de Vega, Mexico
 5 = El Tlacuache, Mexico
 6 = El Guajolote, Mexico