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HEIGHT GROWTH OF MAHOGANY SEEDLINGS, ST. CROIX, VIRGIN ISLANDS

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Summary

Small-leaf mahogany seedlings grew more rapidly than bigleaf and their hybrids grew more rapidly than either for the first two years. However, by age 4 and continuing through age 7, both hybrids and bigleaf were significantly taller than small-leaf.

Bigleaf suffered the most mortality, followed by small-leaf, then the two hybrids.

Resumen

Los estudios de crecimiento de caoba en Santa Cruz, Islas Vírgenes, indicaron que durante los primeros dos años los híbridos de la caoba de hoja grande y de la caoba de hoja pequeña sobrepasaron la caoba de hoja pequeña, que a su vez sobrepasó la de hoja grande.

Desde los 4 hasta los 7 años, la altura alcanzada por la caoba de hoja grande y por el híbrido de los árboles portagranos de las dos especies fué esencialmente igual, y todos sobrepasaron en altura a la caoba de hoja pequeña.

La caoba de hoja grande sufrió la mortalidad mayor seguida por la caoba de hoja pequeña y finalmente por los dos híbridos.

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* In cooperation with the University of Puerto Rico.

Since the recognition of natural hybridization[1/] of small-leaf (West Indies) mahogany (Swietenia mahagoni Jacq.) with bigleaf (Honduras) mahogany (S. macrophylla King) there has been conjecture about their relative growth rates. One would expect small-leaf to be the fastest growing on dry sites, the hybrids to be fastest on intermediate sites, and bigleaf to excel on wet sites.

In 1960 a comparison was begun on dry and intermediate sites on St. Croix, Virgin Islands. Four types of 1-0 seedlings were planted:

Seedling	Mother-tree
Bigleaf	Bigleaf
Mediumleaf	Bigleaf
Mediumleaf	Small-leaf
Small-leaf	Small-leaf

Each plot contained one seedling of each type, a total of 4, at 3-meter (10-foot) spacing. There were 9 well-scattered plots at each of 11 locations.

Elevations range up to 180 meters (600 feet) above sea level. Mean annual rainfall varies from 700 to 1400 mm (29 to 54 inches) per year for the 7 locations.

Results from 7 locations are given in Table 1. The remaining locations were eliminated: three because of drouth mortality and one because of destruction by bulldozer.

For the first two years:

(a) Both types of hybrid seedlings outgrew both species at all locations but one, where small-leaf grew slightly more[2/].

(b) Small-leaf growth exceeded bigleaf growth.

(c) The hybrids were not different from each other.

After 7 years, both hybrids average 15 centimeters (6 inches) taller than the bigleaf, but the difference is not significant. The bigleaf averages 1.5 meters (5 feet) taller than small-leaf, a highly significant difference.

1/ C. B. Briscoe and F. B. Lamb. 1962. Leaf size in Swietenia. Car. For. 23:2:112-115.

2/ C. B. Briscoe and R. W. Nobles. 1962. Height growth of mahogany seedlings. Trop. For. Notes #13.

Because of prolonged dry spells, mortality in 7 years was high: 109 of 252 trees in all plots. In two of the wettest sites, Ham Bluff and Cane Bay, mortality jumped 44 percent and 36 percent, respectively, in the past 5 years. As expected, mortality was highest for bigleaf, 63 percent for all sites. Somewhat surprisingly, mortality for hybrids was less than for small-leaf, 37 and 32 percent compared to 44 percent.

The present pattern of development was established by age 4, and has remained constant since, Table 1.

Table 1.--Mean height growth in meters of mahogany seedlings, 1960-67

Location	Approximate Rainfall mm/Yr.	Bigleaf	Mediumleaf, Bigleaf mother	Mediumleaf, Small-leaf mother	Small-leaf	Mortality Percentage
New Works	700	-	3.8	4.4	2.1	33
Thomas	1100	4.6	5.1	4.7	4.2	42
Sion Hill	1100	-	3.1	2.7	1.2	78
Betsy Jewel	1200	6.6	7.5	7.8	4.1	14
Cane Bay	1300	0.8	3.3	2.6	1.7	53
Ham Bluff	1300	-	5.6	5.0	3.1	61
Bodkin I	1400	6.3	5.5	6.0	5.0	31
Combined (1960-62)		4.6 (0.5)	4.8 (1.1)	4.7 (1.2)	3.0 (0.8)	
Mortality Percent		63	37	32	44	43