

Growth of selected tropical tree species in three different plantation systems near Manaus, Central Amazonia

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Agroforestry system trials on abandoned and/or degraded lands were installed at the CPAA experimental field, in 1992/93, for the purpose of knowing the behavior of twenty tree species in three different plantation systems: monoculture, enrichment lines, and mixed cropping.

Complete randomized plots design, including four replications were used for the monoculture and enrichment lines systems. Monoculture system had 25 trees per plot, spaced 3.0 m X 3.0 m. Enrichment lines had 10 trees, with distance between lines 3.5 m, and distance between lines, 7.0 m. Mixed system followed a complete randomized blocks design, with five replications, and 12 *Hevea brasiliensis* trees, 4 *Schizolobium amazonicum* trees, spaced 12.0 m X 20.0 m, and 4 *Swietenia macrophylla* trees and 4 *Carapa guianensis* trees, spaced 7.0 m X 20.0 m. Secondary regrowth was allowed between the lines.

Since January 1995, investigations on the growth of eight species from the original trials (*Swietenia macrophylla*, *Carapa guianensis*, *Cedrella odorata*, *Dipiteryx odorata*, *Hymenaea courbaril*, *Ceiba pentandra* e *Virola surinamensis* e *Tabebuia heptaphylla*), has been carried out within a Brazilian-German research cooperation, the „SHIFT“ program.

Preliminary results of diameter and height growth, survival and pest and disease occurrence, after four and five years of age are shown. Species under the monoculture systems presented the best growth and survival results. Species' growth variation was very high, considering DBH, total height, and volume among the plantation systems, suggesting a careful species' selection for plantation.

From the selected species, *Carapa guianensis* showed a good growth (SUR(%) = 97.22, 85.00 e 90.00; MAIH(m) = 1.24, 1.06 e 1.37; MAIDBH(cm) = 2.26, 1.37 e 2.26 e VOL(m³/ha) = 1.9538, 6.3352 e 69.5600), in the three planting systems, though, in the monoculture, *Ceiba pentandra* showed the best results (SUR(%) = 97.22; MAIH(m) = 2.14; MAIDBH(cm) = 4.30 e VOL(m³/ha) = 233.2967)

Meliaceae trees had 100 percent attack of *Hypsipyla grandella*, independent of the plantation system, causing high mortality, mainly for *Swietenia macrophylla* trees.