

## Leaf morphology and leaf anatomy of selected tropical timber trees of the Central Amazon \*

Ronaldo Ribeiro de Moraes, CPAA/EMBRAPA, Manaus  
O. Dünisch, Institute of Wood Biology, Hamburg University

This study on morphological and anatomical leaf characteristics of important tropical timber trees of the Central Amazon is part of the development of sustainable landuse systems in this region. Especially for the recultivation of degraded land areas, a small portion of long-lived trees for high quality timber production might contribute to the stabilization of mixed culture plantation systems. Therefore tree species for high quality timber production have to be selected, which are well adapted to the site conditions of degraded areas. In this study morphological and anatomical parameters of leaves of five important native timber trees (*Carapa guianensis*, *Dipteryx odorata*, *Hymenaea courbaril*, *Ceiba pentandra*, *Virola surinamensis*) are investigated as to characterize their significance for the adaptation of these species to degraded site conditions.

The study was carried out at the experimental forest sites of the CPAA/EMBRAPA, Manaus, established in 1992 as monoculture systems with a spacing of 3 x 3m. In this study the subsequent morphological and anatomical parameters of the leaves were investigated: Leaf area, leaf weight, number of stomata per mm<sup>2</sup>, length and width of the stomata, thickness of the epidermis and of the cuticula.

The highest leaf area (421 cm<sup>2</sup>), the highest leaf weight (5.18 g) as well as the highest leaf water content (61 %) was found for the leaves of *Carapa guianensis*, whereas the leaf area (82 cm<sup>2</sup>) and the leaf weight (0.53 g) of *Hymenaea courbaril* was fairly low. On the other hand the leaves of *Hymenaea courbaril* (520/mm<sup>2</sup>) showed the highest number of stomata per mm<sup>2</sup>, whereas the number of stomata per mm<sup>2</sup> of the leaves of *Dipteryx odorata* was low (271/mm<sup>2</sup>). The thickest epidermis was found in leaves of *Virola surinamensis* and *Ceiba pentandra*, the two tree species, which are preferably grown at Varzea sites.

From these data it is suggested that especially the leaf morphology and leaf anatomy of *Hymenaea courbaril* is suitable for an active regulation of the water uptake and the water transport of the tree, which is confirmed by xylem flux measurements (comp. Dünisch, Erbreich, Gasparotto, Schroth).

\*Financial support by the CNPq/IBAMA, Brasilia and the BMBF Bonn within the Brazilian-German cooperation program „SHIFT“ (ENV 42/0339638).