

Seasonal Variation of the Content of Reserve Carbohydrates of Tropical Tree Species of the Central Amazon

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In this study the seasonal variation of the content of the reserve carbohydrates glucose, fructose, sucrose, stachyose, raffinose and starch of seven years old *Swietenia macrophylla*, *Carapa guianensis*, *Cedrela odorata*, *Dipteryx odorata*, and *Hymenaea courbaril* was studied in a monoculture and an enrichment plantation of the research station of the EMBRAPA Amazonia Ocidental located 29 km out of the city of Manaus.

Sample collection of leaves, bark, wood and roots was carried out in monthly intervals. After an extraction with 75% methanol the content of the soluble carbohydrates in the tissue was quantified by means of HPLC chromatography. The starch content of the samples was determined photometrically after an enzymatic reduction (amylase, amyloglucosidase) of starch to glucose. The total content of reserve carbohydrates of leaves, phloem, xylem and roots was calculated from biomass data and the content of reserve

carbohydrates. For the comparison of the contents of the reserve carbohydrates and the growth dynamics of the trees the growth of leaves, of the stem and of the roots of the planted trees was also studied in the monoculture and the enrichment plantation in monthly intervals during the 12 months of experiments.

Data are presented on the distribution within the tree and the seasonal variation of the content of reserve carbohydrates of the selected tree species. In addition results are presented for the relationship of carbohydrate storage and mobilization and the intra-annual growth dynamics of the trees. Comparing the results obtained in the monoculture and the enrichment plantation the adaptation of the selected tree species to the site conditions of the two plantation systems will be discussed with regard to the carbohydrate supply of the trees.

Provenance Study of Native Tree Species of the Central Amazon for Wood Production in Plantations on the "Terra Firme" near Manaus

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For the production of high quality timber in plantations of the central Amazon, the selection of suitable seed provenances is an urgent need. Therefore a provenance study for the selection of best seed provenances of *Swietenia macrophylla*, *Carapa guianensis*, *Cedrela odorata*, *Dipteryx odorata*, and *Hymenaea courbaril* for plantations on the terra firme near Manaus was installed at the research station of EMBRAPA Amazonia Ocidental located 29 km out of the city of Manaus.

Seeds were collected from native grown trees in the region of Manaus and Manucapuru, state of Amazonas, in the region of Santarem, state of Para, the region of Caracarai, state of Roraima, and in the region of Aripuana, state of Mato Grosso. The seeds were characterized in terms of the 1000 seeds mass, the seed size, the percentage of seeds

without embryo, the element, starch, glucose, fructose and sucrose content and the germination of the seeds. In April 1999 the 4 months old plants were planted in circles of 25 plants each bounded by a 8 years old secondary vegetation. The nutrition of the plants was monitored during the dry season in September 1999 and the wet season in February 2000 in terms of the content of mineral elements and reserve carbohydrates in the leaves. The water supply of the plants was quantified by means the water content of different plant tissues and the water potential of the leaves determined by a Scholander pressure chamber. In addition the height and the diameter of the plants was quantified.

According to the concept of genotype-environment interactions first results on the adaptation of the provenances to the site conditions will be presented.