Influence of the water supply on the cambial growth dynamics of *Swietenia macrophylla* King under controlled conditions

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This investigation makes part of the SHIFT project ENV 42 studying the relationship of site factors (light, water, nutrient supply) of degraded areas on the growth dynamics and wood formation of native tree species of the Central Amazon.

In our study the relationship of the water supply and the cambial growth dynamics of four years *old Swietenia macrophylla* King was investigated under greenhouse conditions. The water supply and the growth dynamics were studied under five different soil water conditions: 1) wet soil, 2) reduced soil water content, 3) dry soil, 4) reirrigated soil, 5) wet soil.

During these periods the suction force of the soil was monitored by tensiometer measurements. The water uptake of the plants was determined gravimetrically. The water potential of young and old leaves was studied by means of a Scholander pressure chamber. In addition the water content and the mass of the leaves were quantified. The cambial growth dynamics of the plants was studied by means of increment measurements carried out with a high sensitive laser (spot size 0.01 mm, accuracy 0.001 mm, measure interval 1 min.).

In old leaves a higher leaf water potential was found compared to younger leaves. A reduction of the leaf water potential and the water uptake of the plants was found during the dry period. A higher rate of cambial cell divisions was found during the wet period than in periods with a reduced water supply of the soil. Cambial cell divisons preferably were detected during the night.

These results indicate the strong dependency of the cambial growth of *Swietenia* on a sufficient soil water supply.

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