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Morphological traits and ecological behavior of selected secondary forest tree species in the Central Amazon

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Eleven common secondary forest tree species of Terra Firme sites near Manaus, Amazonas, Brazil covering a wide range of growth-form types and of ecological behavior in the successional sequence were selected for a comparative study designed to develop basic knowledge of their autecology. Growth-form, biometric traits and the morphological and anatomical characteristics of leaves and wood were compared. Plant biomass and the mineral nutrient content of different organs were analyzed in individual plants. In addition, the life history of individual twigs and leaves was recorded.

The aim of the study is to detect causal links between the parameters measured and the ecological behavior of the species observed in the field, as a contribution to an autecological description of the species. The results show some characteristics which can be interpreted as "functional traits" of certain types of secondary forest plants, e.g. the plant biomass of the species examined is negatively correlated with leaf sizes and with the percentage of leaf biomass in relation to total biomass. The species with low plant biomass have a different pattern of nutritional elements in roots, trunk, twigs and leaves from those of high biomass. These sets of traits indicate different strategies for an efficient use of resources in a changing environment during a progressive succession. However, of the parameters selected and measured, only a few ecologically meaningful characteristics were detected.

In the poster, the general applicability of the results to the secondary vegetation and successional processes in the test area as a whole is discussed. Finally, an attempt is made to derive "Plant Functional Types" (PFTs) on the local scale of the Terra Firme secondary forests in the Central Amazon from the results of the autecological studies.