

*Vismia guianensis* (Aubl.) Choisy, Clusiaceae:  
Management factors in early stages of agroforestry systems

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**Content of Abstract:**

*Vismia guianensis* is a common pioneer tree species in the Central Amazon, which occurs on degraded areas during the early succession. Resprouting vegetatively by roots, *V. guianensis* builds up the first dense thickets in the fallow vegetation and shows a high rate of biomass production. Loss of nutrients is thus prevented by uptake from the soil into the plant biomass. Therefore *V. guianensis* may contribute to the management of the early stages of agricultural systems, e.g. as a shadow plant or nutrient accumulator plant, which can be used in the form of mulch as a natural fertilizer. However, little is known about this plant species. The objective of our study was to investigate plant growth, nutrient content, root morphology, and interactions with other plant species.

*V. guianensis* grows rapidly and shows a high accumulation of magnesium and phosphorus into the biomass. In the study area, phosphorus is a limiting factor for plant growth. Under these circumstances the question arises how *V. guianensis* is able to accumulate phosphorus. The root system of *V. guianensis* is dense and heavily branched with a high proportion of fine roots as root hairs are present in very low numbers, the fine roots are responsible for the up take of most nutrients. Due to the large intercellular spaces and fragile cell walls these fine roots break off easily. This light-weight construction enables a fast distribution in the soil, without preventing root growth of other species. Primary forest species, planted into the *Vismia*-thicket, grow well. This suggests that growth of many other plant species is not inhibited.

The results demonstrate a potential use of *V. guianensis* as integrative component in sustainable agroforestry systems. More detailed studies about the processes of nutrient absorption and fertilization experiments with litter of *V. guianensis* are necessary.