

Qualitative and quantitative patterns of variation in throughfall in spontaneous and enriched secondary vegetation under fallow in Northeastern Pará State, Brazil

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Rainfall partitioning within vegetation communities is closely related to water and nutrient balances, functional grouping, and plant surviving/tolerance strategies, and may be modified by structural changes in vegetation components, either natural or imposed. A series of gross rainfall and throughfall measurements were performed in both indigenous and enriched fallow vegetation in Northeastern Pará, Brazil, including: i) a four and a half year old series of two indigenous fallow vegetations, capoeiras, (respectively, 2 to 7-year-old and 8 to 13-year-old); and ii) fallow vegetation enriched with fast growing leguminous trees (four species under two spacings). The collectors had an open area of 78.5 cm² and the funnels had a vertical side of 5 cm. Besides computing the quantitative contribution of throughfall to rainfall partitioning on those plots, the following cations were also determined in the samples: Na, K, Ca and Mg, and the anions: P-PO₄, S-SO₄, N-NO₃, and the organic nitrogen, and N-NH₄, by atomic absorption spectrophotometry and calorimetry. Generally, the younger capoeiras exhibited lower leaching, which may be credited to their lower biomass. Among the cations, potassium, followed by sodium and calcium were the ones to be most subjected to internal cycling. The most recycled anions in the system were the organic forms of nitrogen and sulfate. Phosphate has shown little expression in this process. In the enriched capoeira it was observed that the quantity of nutrients leached in plots enriched with *Acacia angustissima* were similar to those found in the control plot, but in all other enrichment plots they were slightly lower. Just after the dry season, when some of the fast growing leguminous species had lost their leaves, the washing of nutrients by the first rain was significantly greater in all plots. In this context, the control plot and the plots enriched with *Clitoria racemosa* were the ones to least contribute to the input of nutrients to the soil.

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