Aspects of the nutrients cycling in a restinga formation at Ilha do Mel Paranaguá, Paraná, Brazil

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Abstract

The present study approached some aspects of the nutrient cycling in a "Restinga" formation, at Ilha do Mel, Paranaguá, Paraná, Brazil. The monthly and annual litter production and accumulation, as well as nutrient contents; the nutrient contents in fresh leaves and in the litterfall of the most important species of community; the decomposition and the nutrient renovation rates of accumulated litterfall; the foliar litterfall decomposition and the nutrient mineralization were studied. The annual litter production (5080,6 kg. ha^{-1}), as well as other "Restinga" formation, is inferior than those of the majority of the tropical forests, probably due to the edaphic conditions. The litter production, caracterized by foliar fraction, was more intense in high temperature and precipitation period. The annual medium concentrations of nutrients in the produced foliar litterfall are whithin the variations found in tropical forests, highligthing the low concentrations of N, Cu, Mn and Fe, while Ca, P and B presented relatively high discharges. *Ternstroemia brasilienses*, *Tapirira guianensis*, *Guapira opposita*, *Ilex theezans* and *Clusia criuva* represented 60,3% of the total of leaves deposited during the year. The medium contents of Ca, N, P and Mg, obtained in fresh leaves of the four analyzed species (*Guapira opposita*, *Ocotea pulchella*, *Tapirira guianensis*, *Ternstroemia brasiliensis*), showed higher than those described for other forests on sandy soils. The results suggest an strong influence of the salt spray in the input of the nutrients to the ecossystem, mainly Ca, Mg and B. A great litter accumulation (5541,9 Kg. $ha^{-1}ano^{-1}$) was not observed, in despite of the calculated decomposition coefficient values are considered low for tropical forests. The slow decomposition observed in the restinga ecosystems is probably due to the high degree of vegetable scleromorphy, which is allied to the edaphic conditions. This characteristic, as well as the synchrony observed between the litter production and decomposition, are efficient adaptations for its maintenance of the ecossystem, because enables a smaller loss of nutrient through leaching, whereas those communities are established in a moist climate, and sandy soils areas, poor chemically and very leached. The elements S, Ca and Cu presented the largest residency time in the accumulated litterfall, being restrained on the compartiment. The elements that presented the largest remaining amount in the decomposition bags, after one year of studies, were N and Fe, because the immobilization in the tissues of the decompositor organisms and low mobility, respectively. The elements K, S and Cu had smaller remaining amounts, denoting their susceptibility to leaching. The characteristics observed for the litter production and decomposition promote an efficient nutrient cycling, showing that the studied community is well adapted to the oligothrophy soils.

Key-words: Ecologia vegetal, Ciclagem de nutrientes, Decomposição, Serapilheira produzida, Serapilheira acumulada

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ELABORADA PELA STATI – BIBLIOTECA DA UNESP CAMPUS DE RIO CLARO/SP

581.5 Pires, Luciana Andréa
P667a Aspectos da ciclagem de nutrientes em uma formação de restinga na Ilha do Mel, Paranaguá-PR / Luciana Andréa Pires. – Rio Claro : [s.n.], 2001

187 f. : il., gráfs., tabs.

Dissertação (mestrado) – Universidade Estadual Paulista,
Instituto de Biociências de Rio Claro

Orientador: Sérgio Nereu Pagano

1. Ecologia vegetal. 2. Ciclagem de nutrientes. 3. Decomposição. 4. Serapilheira produzida. 5. Serapilheira acumulada. I. Titulo.