

鼎湖山马尾松林营养元素的分布和生物循环特征

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摘要:较系统地研究了鼎湖山马尾松林营养元素的分布和生物循环情况。马尾松林内各组分营养元素浓度总的规律为: 针叶>细根>林下层植物>凋落物>树皮>树干; 在树皮、树干和凋落物组分中各营养元素的排序为: N>Ca>K>Mg>P; 其它组分中则为: N>K>Ca>P>Mg。马尾松林各营养元素的总贮量(kg/hm²)为: 2278.51(N), 280.01(P), 567.90(K), 456.84(Ca), 144.76(Mg), 其中74%~95%集中在土壤组分, 在地上部分则78%~97%集中在乔木层。乔木层又以树干占的比例最高, 尤其是钙和镁两种元素(46.85%, 49.97%)。各营养元素贮量排序基本上为: N>Ca>K>Mg>P(地上); N>K>Ca>P>Mg(地下)。乔木层地上部分营养元素的年积累量(kg/hm²·a)为: 3.63(N), 0.10(P), 1.04(K), 2.72(Ca), 0.40(Mg)。本研究松林的营养利用系数为: 0.16(N), 0.10(P), 0.09(K), 0.08(Ca), 0.08(Mg); 循环系数: 0.83(N), 0.83(P), 0.71(K), 0.68(Ca), 0.68(Mg); 周转期(a): 7.8(N), 12.2(P), 15.4(K), 17.7(Ca), 17.9(Mg)。

关键词: 马尾松; 鼎湖山; 营养元素; 分布; 生物循环

Nutrient distribution and cycling of a Masson's pine planted forest in Dinghushan

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Abstract: Nutrient distribution and cycling of a Masson's pine (*Pinus massoniana*) planted forest in Dinghushan, Guangdong Province were systematically studied. Nutrient concentrations of various components showed the following order: needles>fine roots>understory>litter>bark>wood. The nutrient element patterns were: N>Ca>K>Mg>P in bark, wood and litter components, and N>K>Ca>P>Mg in other components. The total nutrient standing stocks were estimated to be (kg/hm²): 2278.51(N), 280.01(P), 567.90(K), 456.84(Ca), and 144.76(Mg). Most of these nutrients were distributed in the soil component (74%~95%). Of the nutrient standing stocks in the aboveground components, 78% to 97% were contained in the tree layer. In the tree layer, wood contained the highest nutrient standing stocks, especially for Ca and Mg (46.85% and 49.97%, respectively). The relative amount of the five nutrients in aboveground components were generally: N>Ca>K>Mg>P, and in belowground components were: N>K>Ca>P>Mg. The nutrient annual accumulation in the tree layer were (kg/hm²·a): 3.36(N), 0.01(P), 1.04(K), 2.72(Ca) and 0.40(Mg). The nutrient utilization coefficient of the five elements were estimated to be: 0.16(N), 0.10(P), 0.09(K), 0.08(Ca) and 0.08(Mg), and the nutrient recycling period were also estimated.

Key words: *Pinus massoniana*; Dinghushan; nutrient elements; distribution and cycling

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了解营养元素在森林生态系统中的分布和循环对于许多方面都具有重要的意义^[1]。它可以用来解释

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