

蒙古栎不同冠层部位叶片养分动态

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Nutrient dynamics in *Quercus mongolica* leaves at different canopy positions.CHENG Xu-bing^{1,2}, HAN Shi-jie¹, ZHANG Zhong-hui³, ZHOU Yu-mei¹, WANG Shu-qi¹, WANG Xue-juan^{1,2}

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摘要 以长白山原始阔叶混交林优势树种蒙古栎为对象,研究了6—10月生长季不同冠层叶片单位叶面积质量(LMA)、单位质量和单位叶面积的C、N、P含量变化,以及N、P的再吸收效率与利用效率。结果表明:在生长季,蒙古栎冠层上、下部叶片的LMA和单位叶面积C含量(C_{area})表现出明显的月动态变化;单位叶面积N、P含量(N_{area} 、 P_{area})的月变化趋势与单位质量N、P含量(N_{mass} 、 P_{mass})相似,而用单位叶面积与单位质量表示的N、P再吸收效率无明显差异。冠层位置对N的再吸收效率和利用效率无明显影响,但冠层上部P的再吸收效率和利用效率显著高于冠层下部。在未来气候变化情景下,蒙古栎较高的生存力和竞争力有助于促进生态系统的养分循环。

关键词: 冠层部位 养分再吸收效率 养分利用效率 蒙古栎 长白山

Abstract: Taking the dominant tree species *Quercus mongolica* in natural coniferous-broadleaved mixed forest in Changbai Mountains as test object, this paper studied the variations of leaf dry mass per unit area (LMA), leaf carbon (C), nitrogen (N), and phosphorus (P) contents per unit mass and per unit area, as well as the leaf N and P resorption efficiency and use efficiency at upper and lower canopy positions during growth season (from June to October). In the growth season, and at both upper and lower canopy positions, the LMA and leaf C content per unit area had obvious monthly fluctuation, the leaf N and P contents per unit area had the similar monthly variation trend with the leaf N and P contents per unit mass, but the leaf N and P resorption efficiency per unit mass had no significant difference with the leaf N and P resorption efficiency per unit area. The leaf N resorption efficiency and use efficiency were less affected by canopy position, but the leaf P resorption efficiency and use efficiency were higher at upper canopy than at lower canopy. Under the scenario of future climate change, the higher survival and competitive capabilities of *Q. mongolica* would benefit the nutrient cycling in the test forest ecosystem.

Key words: canopy position nutrient resorption efficiency nutrient use efficiency *Quercus mongolica* Changban Mountain

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