

UV-B辐射对杉木凋落叶分解的影响

张慧玲¹, 宋新章^{1*}, 张智婷², 江洪¹, 王懿祥¹, 白尚斌¹¹浙江农林大学浙江省森林生态系统碳循环与固碳减排重点实验室, 浙江临安 311300|²河北北方学院, 河北张家口 075000Effects of UV-B radiation on the decomposition of *Cunninghamia lanceolata* leaf litter.ZHANG Hui-ling¹, SONG Xin-zhang¹, ZHANG Zhi-ting², JIANG Hong¹, WANG Yi-xiang¹, BAI Shang-bin¹¹Zhejiang Province Key Laboratory of Carbon Cycling in Forest Ecosystems and Carbon Sequestration, Zhejiang A & F University, Lin'an 311300, Zhejiang, China|²Hebei North College, Zhangjiakou 075000, Hebei, China

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全文: PDF (479 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要

采用分解袋法对自然和UV-B辐射滤减环境下的杉木凋落叶进行分解试验. 结果表明: 与对照相比, UV-B辐射滤减处理使杉木凋落叶的分解速率降低了69.6% ($P < 0.001$), 凋落叶中氮、磷和木质素的相对含量分别增加150%、83.3%和13.8%, 抑制了钾和碳的释放. 木质素光降解在杉木凋落叶分解过程中的作用不明显. UV-B辐射可以加快杉木凋落叶的分解, 促进氮、磷、钾和碳的释放, 以及杉木林凋落物层的营养周转速度, 增加地表的碳通量, 对杉木林的碳源或碳汇功能具有潜在的影响.

关键词: 凋落叶分解 UV-B辐射 营养循环 木质素 杉木

Abstract:

A litterbag experiment was conducted to study the decomposition of *Cunninghamia lanceolata* leaf litter under ambient and reduced UV-B radiation (22.1% below ambient). Comparing with ambient treatment, the reduced treatment decreased the decomposition rate of *C. lanceolata* leaf litter by 69.6% ($P < 0.001$), making the relative contents of nitrogen (N), phosphorus (P), and lignin in the litter increased by 150%, 83.3%, and 13.8%, respectively, and the release of potassium (K) and carbon (C) slowed down. In the process of litter decomposition, photo-degradation of lignin didn't play crucial role. The results suggested that UV-B radiation could accelerate the decomposition rate of *C. lanceolata* leaf litter, promote the release of N, P, K, and C from it, and increase the nutrients turnover rate in litter layer as well as the carbon flux on the ground, giving potential effects on the function of *C. lanceolata* forest as a carbon source or sink in humid subtropical China.

Key words: leaf litter decomposition UV-B radiation nutrient cycling lignin *Cunninghamia lanceolata*

引用本文:

. UV-B辐射对杉木凋落叶分解的影响[J]. 应用生态学报, 2011, 22(04): 845-850.

. Effects of UV-B radiation on the decomposition of *Cunninghamia lanceolata* leaf litter. [J]. Chinese Journal of Applied Ecology, 2011, 22(04): 845-850.

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