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研究论文

南亚热带4种人工林凋落物动态特征

邹碧，李志安*，丁永祯，谭万能

中国科学院华南植物园，广州 510650

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摘要 森林凋落物是森林生态系统能量与物质过程的重要环节。研究了南亚热带4种常见人工林凋落物特征，材料取自中国科学院鹤山丘陵综合试验站，人工林栽植于1984年，从2002年至2003年进行了每月凋落物测定，同时测定了地表凋落物量。人工林凋落物总量大小依次为马占相思（10.433 t/(hm^2•a)）>大叶相思(7.538 t/(hm^2•a))>湿地松（6.445 t/(hm^2•a)）>荷木（5.541 t/(hm^2•a)），凋落物量年度间无显著变化，凋落叶量占总凋落物量的83.2%（马占相思）至93.7%（湿地松）。上半年凋落物量通常较平稳，下半年7～9月份多有一个峰值凋落期，主要原因是台风雨及叶子进入成熟期。除台风等因素引起激烈变化的月份外，二年度对应月份凋落物量极为相似。除大叶相思外，其它林型从14a林龄开始凋落物量有所下降。4种林型中，只有马占相思与湿地松的凋落物量与气温或降雨有显著的相关，特别是马占相思的总凋落物量与这些气候因素相关性最高。地表凋落物蓄积量大小为湿地松(13.81 t/hm^2)>马占相思(13.53 t/hm^2)>大叶相思(6.46 t/hm^2)>荷木(5.02 t/hm2)，马占相思的高蓄积量源于大凋落物量及较慢的分解速率，湿地松的高蓄积量源于针叶的难分解性。与世界其它类型的比较显示，低气温高纬度地区，地表凋落物蓄积量大大高于凋落物量，高温高湿的低纬度地区，地表凋落物蓄积量通常低于年凋落物量，但松林在不同纬度区，地表凋落物量均高于年凋落物量。

关键词 人工林；凋落物；凋落物蓄积量；南亚热带

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Litterfall of common plantations in south subtropical China

ZOU Bi, LI Zhi-An*, DING Yong-Zhen, TAN Wan-Neng

South China Botanical Garden, Chinese Academy of Sciences, Guangzhou 510650,China

Abstract Litterfall plays an important role in nutrient cycling and energy flow of forest ecosystems. In this paper, four common plantations of Acacia mangium, Acacia auriculaeformis, Pinus elliottii and Schima superba in south subtropical China were studied for their litter production and litter stock on the ground. Research site was in Heshan Hilly Land Experimental Station of Chinese Academy of Sciences (112°54′E，22°41′N). The plantations were set up in 1984. Monthly litterfall was monitored for 2 yrs starting in January 2002. Litter stock of forest floor was also estimated. Annual litterfall production was in a descending order: A. mangium (10.433 t/(hm^2•a)), A. auriculaeformis (7.538 t/(hm^2•a)), P. elliottii (6.445 t/(hm^2•a)), S. superba (5.541 t/(hm^2•a)). No significant difference of litterfall production between years was detected. Leaf litter accounted for 83.2% (A.mangium)～93.9% (P. elliottii) of total amount of the litterfall. Litterfall in first six months was stable. However, peaks occurred from July to September, which mainly resulted from fallen mature leaves by storms. Litterfall of corresponding months during the 2 years was very similar except some months with storms. Litterfall production of 3 plantations started to decrease when the plantations were at the age of 14. A.auriculaeformis behaved differently. Significant correlations between litterfall and temperature or precipitation were found only for A.mangium and P.elliottii. Litter stock of forest floor ranked as P. elliottii (13.81 t/hm2)>A.mangium (13.53 t/hm^2)>A.auriculaeformis (6.46 t/hm^2)>S. superba (5.02 t/hm^2). High litter stock of A.mangium was derived from high litterfall and relatively slow decomposition, but P.elliottii mainly from low decomposability. Globally, at the region of low temperature, litter stock was much higher than annual litterfall pro

duction. At the region of high temperature and high precipitation, litter stock was generally lower t
han annual litterfall. Pine was an exception in that the litter stock was higher than annual litterfall pr
oduction in different regions.

Key words plantation； litterfall； litter stock； south subtropical China

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通讯作者 李志安 lizan@scbg.ac.cn