应用生态学报 2006 17 (05): 759-764 ISSN: 1001-9332 CN: 21-1253/Q

研究报告

秦岭火地塘林区油松林土壤碳循环研究

康博文,刘建军,党坤良,陈海滨

西北农林科技大学林学院，杨凌 712100

收稿日期 2005-3-2 修回日期 2006-2-15 网络版发布日期 接受日期

摘要 采用土壤碳循环分室模型，对秦岭火地塘林区油松林土壤碳各分室的碳贮量和通量进行了研究.结果表明,研究区油松林土壤有机碳贮量为146.071 t·hm^{-2}，其中矿质土壤层130.366 t·hm^{-2}、凋落物层12.626 t·hm^{-2},土壤有机碳储存量低于我国森林土壤碳贮量平均值，高于处在我国最低水平的暖性针叶林和热带林，与本区锐齿栎林相比也明显偏低.林地植物年凋落进入土壤的碳量为5 939 t·hm^{-2}，其中地上枯枝落叶占56.9%、地下死细根占43.1%； 凋落物层分解后每年以腐殖酸形式输入矿质土壤中的碳量为2.034 t·hm^{-2}.油松林土壤(含植物根系)年呼吸释放碳量14.012 t·hm^{-2}，其中凋落物层、矿质土壤层、死根系和活根系分别占林地总呼吸量的15.7%、14.5%、11.7%和58.1%
.

关键词 油松林 土壤碳循环 土壤碳贮量

分类号

Soil carbon cycle of *Pinus tabulaeformis* forest in Huoditang forest region of Qinling Mountains

KANG Bowen,LIU Jianjun,DANG Kunliang,CHEN Haibin

College of Forestry,Northwest Sci-Tech University of Agriculture & Forestry,Yangling 712100,China

Abstract

With soil carbon cycle compartment model,this paper studied the carbon storage and flux of each carbon compartment of soil under *Pinus tabulaeformis*,a main forest type in the Huoditang forest region of Qinling Mountain.The results showed that the storage of soil organic carbon was 146.071 t·hm^{-2}, with 130.366 t·hm^{-2} in mineral soil layer and 12.626 t·hm^{-2} in litter layer.The storage was lower than the average value of forest soils in China and of oak Sharptooth forest soil in Huoditang,but higher than that of the soils under temperate coniferous forest and tropical forest.The annual carbon input into litter layer was 5.939 t·hm^{-2},with 56.9% from above-ground litter and 43.1% from underground dead roots,while that into mineral soil layer via humic acid was 2.034 t·hm^{-2}.The annual amount of carbon released from the respiration of *P.tabulaeformis* forest soil system was 14.012 t·hm^{-2},with litter layer,mineral soil layer,dead root system,and live root system occupied 15.7%,14.5%,11.7% and 58.1%,respectively.

Key words *Pinus tabulaeformis* forest Soil carbon cycle Soil carbon storage

DOI:

通讯作者