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综合评述

森林土壤呼吸研究进展

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摘要 各种测量森林土壤呼吸的方法都存在不足，红外CO_2分析仪法是目前最理想的方法；土壤CO_2通量模型的优点是考虑了土壤呼吸生物和物理学过程；一般情况下，温度和湿度与森林土壤呼吸呈正相关关系，火烧、采伐和施肥等营林活动对土壤呼吸的影响有很大的不确定性；森林土壤呼吸与植被、微生物生物量的关系，以及土壤呼吸的空间变异规律已成为近年来的研究热点. 最后提出了森林土壤呼吸研究中存在的一些问题及今后的发展方向.

关键词 森林土壤呼吸 CO_2生产转移模型（PATCIS） 营林活动 时空变异 自养呼吸

分类号

Research advances in forest soil respiration

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Abstract

Among the methods of measuring forest soil respiration, infrared CO_2 analysis is the optimal one so far. Comparing with empirical model, the process-based model in simulating the production and transportation of soil CO_2 has the advantage of considering the biological and physical processes of soil respiration. Generally, soil respiration is positively correlated with soil temperature and moisture, but there are still many uncertainties about the relationships between soil respiration and forest management activities such as firing, cutting, and fertilization. The relationships of soil respiration with vegetation type and soil microbial biomass, as well as the spatial heterogeneity of soil respiration, are the hotspots in recent researches. Some issues and future development in forest soil respiration research were discussed in this paper.

Key words Forest soil respiration CO_2 production and transportation model Forest management activity Temporal and spatial variation Autotrophic respiration

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