

研究报告

红壤丘陵景观单元土壤有机碳和微生物生物量碳含量特征

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摘要

为了探讨我国亚热带红壤丘陵区不同利用方式下土壤有机碳(SOC)和土壤微生物生物量碳(SMB-C)含量的特征,在湖南省桃源县选取典型样区,通过密集取样,分析了红壤丘陵景观单元内水田、旱地、林地、果园4种典型利用方式下表层土壤(0~20 cm)SOC和SMB-C含量.结果表明,典型红壤丘陵景观单元中SOC含量高低的顺序为水田(16.0 g·kg⁻¹)>旱地(11.2 g·kg⁻¹)>果园(9.5 g·kg⁻¹)>林地(8.4 g·kg⁻¹),SMB-C含量则为水田(830 mg·kg⁻¹)>旱地(361 mg·kg⁻¹)>林地(200 mg·kg⁻¹)>果园(186 mg·kg⁻¹),且在不同利用方式下SOC与SMB-C均呈极显著正相关($P<0.01$),说明本研究区内各土地利用类型的土壤SMB-C含量变化可以敏感地指示SOC的动态.研究结果还表明,将我国亚热带红壤丘陵林地开垦为果园或耕地后,表层土壤SOC含量不可能降低.

关键词 [丘陵景观](#) [土壤有机碳](#) [微生物生物量碳](#) [利用方式](#)

分类号

Characteristics of soil organic carbon and microbial biomass carbon in hilly red soil region

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Abstract

In this paper,535 soil samples (0~20 cm) were taken from the woodland,orchard,upland,and paddy field in the hilly red soil region of south China,and the quantitative characteristics of soil organic carbon (SOC) and soil microbial biomass carbon (SMB-C) were studied.The results showed that SOC content was the highest (16.0 g·kg⁻¹) in paddy field and the lowest (8.4 g·kg⁻¹) in woodland,while SMB-C content was the highest in paddy field (830 mg·kg⁻¹) and the lowest in orchard (200 mg·kg⁻¹).There was a highly significant positive correlation ($P<0.01$) between the contents of SOC and SMB-C in the four land use types.It was suggested that the changes of SMB-C content could sensitively indicate the dynamics of SOC.The transition from woodland to orchard or cultivated land in hilly red soil region would not decrease the SOC content.

Key words

[Hilly red soil region](#) [Soil organic carbon](#) [Microbial biomass carbon](#) [Land-use type](#)

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