

## 毛竹林土壤有机碳及微生物量碳特征研究

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**摘要:**通过对湖南会同林区集约经营毛竹林地土壤有机碳和微生物量碳进行测定, 结果表明, 毛竹林地土壤(0—60 cm)有机碳和微生物量碳含量平均值分别为1.727%和551.84 mg/kg, 不同土壤层次有机碳和微生物量碳含量差异极显著, 其中, 0—20 cm土层有机碳含量平均值为2.607%, 分别是20—40 cm和40—60 cm土层有机碳含量的1.67倍和2.57倍; 0—20 cm土的微生物量碳占土壤总微生物量碳的58.9%, 分别是20—40 cm和40—60 cm土层的2.69倍和3.08倍。不同季节间土壤微生物量碳有明显变化规律, 即土壤微生物量碳含量1—7月份呈上升趋势, 7月达到最大值, 8—12月份呈逐渐下降趋势; 不同季节间有机碳含量差异不显著。毛竹林地土壤表层, 土壤微生物量碳为1.1186%, 与40—60 cm土壤层相当, 略高于20—40 cm土壤层, 说明毛竹林不同土壤层次有机碳积累强度相当。

**关键词:**毛竹林; 土壤有机碳; 微生物量碳

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## A Study on the Characteristics of Soil Organic Carbon and Microbial Biomass Carbon in *Phyllostachy edulis* Plantation

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**Abstract:** The soil organic carbon(SOC) and microbial biomass carbon (MBC) content of intensive management Moso bamboo (*Phyllostachy edulis*) plantation in Huitong forest region, Hu'nan Province were analyzed in this paper. The results showed that the Moso bamboo plantation(0—60 cm layer)soil organic carbon and microbial biomass carbon content averaged were 1.727% and 551.84 mg/kg, respectively. There were very significant differences in different soil layer of soil organic carbon(SOC) and microbial biomass carbon. The soil organic carbon content in 0—20 cm layer were 2.607%, which is 1.67 times and 2.57 times than that in 20—40 cm and 40—60 cm layer, respectively. The microbial biomass carbon content in 0—20 cm layer account for 58.9% of the total microbial biomass carbon, which is 2.69 times and 3.08 times than that in 20—40cm and 40—60cm layer, respectively. There were not significant differences in different season of soil organic carbon, however, there were very significant differences of microbial biomass carbon. The microbial biomass carbon content showed an increasing tendency from January to July and showed the downtrend from August to December. Soil microbial quotient in Moso bamboo plantation was 1.1186%, as same as 40—60 cm soil layer, slightly higher than the 20—40 cm soil layer. That is to say, different Moso bamboo soil layer had similar abilities to accumulated soil organic carbon.

**Key words:** *Phyllostachy edulis* plantation; soil organic carbon; soil microbial biomass carbon

土壤有机碳(SOC)及其动态平衡是反映土壤质量或土壤健康的一个重要指标, 土壤微生物碳(MBC)是土壤有机质和土壤养分转化与循环的动力, 可作为土壤中植物有效养分的储备库, 与生态系统的初级生产力以及土壤健康密切相关<sup>[1-4]</sup>。与土壤有机碳相比, 土壤微生物量碳含量虽然较少, 但土壤微生物量碳对土壤条件变化非常敏感, 周转率更大, 周转时间更短, 所以, 微生物量碳比土壤有机碳变化更快, 能在检测到土壤总碳量变

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