

研究报告

## 米亚罗林区土地利用变化对土壤有机碳和微生物量碳的影响

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**摘要** 为了解土地利用变化对土壤有机碳和微生物量碳的影响, 分析了川西米亚罗林区原始冷杉林、20世纪60年代云杉人工林、20世纪80年代云杉人工林和农地的土壤有机碳和微生物量碳状况. 结果表明, 土地利用变化明显地影响了土壤有机碳和微生物量碳含量. 土壤有机碳和微生物量碳含量原始林最高, 其次为60年代人工林和80年代人工林, 农地最低. 农地土壤有机碳含量分别比原始林、60年代人工林和80年代人工林低83%、53%和52%, 微生物量碳含量分别低23%、25%和21%. 土壤有机碳和微生物量碳含量均随土壤深度的增加而降低, 并且两者在不同土地利用类型的变化趋势基本一致. 相关分析表明, 土壤有机碳和土壤微生物量碳与全氮、水解氮、速效磷呈极显著相关 ( $P < 0.01$ ), 说明土壤微生物量碳可作为衡量土壤有机碳变化的敏感指标, 而土壤有机碳和微生物量碳含量可作为衡量土壤肥力和土壤质量变化的重要指标.

**关键词** [土地利用变化](#) [土壤有机碳](#) [微生物量碳](#)

分类号

## Effects of land use change on soil organic carbon and microbial biomass carbon in Miyaluo forest area

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### Abstract

In last century, extensive areas of native vegetation in the Miyaluo forest area of Western Sichuan were converted into agricultural land and forestland. To assess the effects of land use change on soil organic carbon (SOC) and microbial biomass carbon (MBC), soil samples were taken from *Abies faxoniana* wildwood, *Picea likiangensis* var. *balfouriana* plantations established in 1960s and 1980s, and cropland, and their SOC and MBC contents were determined. The results showed that *A. faxoniana* wildwood had the highest SOC and MBC contents, followed by the *P. likiangensis* var. *balfouriana* plantations established in 1960s and 1980s, and cropland. The SOC content was 83%, 53% and 52% lower, and the MBC content was 23%, 25% and 21% lower in cropland than in wildwood and in the plantations established in 1960s and 1980s, respectively. SOC and MBC contents decreased with increasing soil depth. There existed significant correlations of these two indices with soil total N, hydrolysable N and available P, indicating that both SOC and MBC could be used as the important indicators to measure the changes of soil quality.

**Key words** [Land use change](#) [Soil organic carbon](#) [Microbial biomass carbon](#)

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