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前植物生产层

黄土高原森林草原区土壤有机碳库研究

杨晓梅, 程积民, 孟 蕾, 韩娟娟, 范文娟

摘要:

森林土壤有机碳是陆地生态系统最大的有机碳库, 对全球碳平衡有着重要的意义。研究对黄土高原森林草原子午岭地区天然柴松林、辽东栎林以及人工油松林土壤有机碳库及其影响因子之间的关系进行了研究。结果表明: 柴松林、油松林和辽东栎林3种林地碳密度分别为10.76、9.382和11.43 kg/m²; 且有机碳密度随着土壤深度的增加呈现递减趋势, 不同土壤深度差异显著(P<0.05); 不同立地条件下, 3种林地碳密度差异明显, 柴松林和辽东栎林在整个剖面有机碳密度阴坡>阳坡, 而油松林在050 cm土层是阳坡>阴坡, 5090 cm土层是阴坡>阳坡; 不同林地土壤有机碳密度与土壤含水量、pH值、全氮、全磷等理化指标在不同土层中相关性差异较大, 而在整个土壤剖面, 除pH值以外, 3种林地土壤有机碳密度与理化指标呈极显著(P<0.01)的正相关关系。

关键词: 黄土高原; 森林草原区; 土壤有机碳; 碳库

Study on soil organic carbon pool at forest steppe zone of loess plateau

YANG Xiao-Mei, CHENG Ji-Min, MENG Lei, HAN Juan-Juan, FAN Wen-Juan

Abstract:

Forest soil organic carbon (SOC) is the largest organic carbon pool in terrestrial ecosystem. It is of great significance for the carbon balance of the earth. The content of SOC, soil organic carbon density (SOCD) and relationship between influence factors of two naturally grown forests, *Pinus tabulaeformis* f. *shekannensis* and *Quercus liaotungensis*, and an artificially planted forest, *P. tabulaeformis*, were studied in Ziwuling forest area of the Loess Plateau. The means of SOCD were 10.76, 11.43 and 9.38kg/m², respectively. SOCD decreased significantly as soil depth increased (P<0.05). SOCD in three forests was different significantly. SOCD in the whole soil profile was positive correlated significantly with soil moisture, TN, TP, potassium and AN, but negative correlations with soil pH value.

Keywords: loess plateau forest steppe zone soil organic carbon carbon pool

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