

桂西北喀斯特坡地土壤¹³⁷Cs的剖面分布特征及其指示意义冯腾^{1,2,3},陈洪松^{1,2},张伟^{1,2},聂云鹏^{1,2,3},王克林^{1,2}*

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¹³⁷Cs profile distribution character and its implication for soil erosion on Karst slopes of Northwest Guangxi.FENG Teng^{1,2,3}, CHEN Hong-song^{1,2}, ZHANG Wei^{1,2}, NIE Yun-peng^{1,2,3}, WANG Ke-lin^{1,2}

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摘要

分析了¹³⁷Cs及土壤有机碳(SOC)在桂西北典型峰丛坡地及岩溶裂隙中的剖面分布特征,探讨了¹³⁷Cs方法在喀斯特坡地的适用性及其指示的坡面土壤侵蚀特征.结果表明:所有剖面¹³⁷Cs与SOC均显著相关,两者可能有相同的流失途径;次生林坡地¹³⁷Cs主体分布深度在24 cm以内,中上及中坡剖面随深度呈指数递减分布,地表无侵蚀或侵蚀轻微,坡脚剖面呈较严重侵蚀形态;坡耕地剖面¹³⁷Cs在耕层内均匀分布,中上坡及中坡主体分布深度在15 cm左右,面积活度远低于背景值,土壤侵蚀剧烈,坡脚分布深度至45 cm,呈堆积形态;次生林坡脚剖面、耕地中上坡剖面及所有裂隙剖面,¹³⁷Cs在主体分布深度以下有断续极微量的分布,指示了喀斯特坡地土壤颗粒有随降雨沿地表负地形向地下流失的趋势,但流失量轻微.

关键词: 喀斯特 土壤侵蚀 ¹³⁷Cs 土壤有机碳 剖面分布

Abstract:

This paper studied the profile distribution characters of ¹³⁷Cs and soil organic carbon (SOC) on the Karst slopes and in the fissures in typical peak-cluster depression in Northwest Guangxi, aimed to approach the applicability of ¹³⁷Cs method on Karst slopes and the implication of ¹³⁷Cs for the characteristics of slope soil erosion. In all test profiles, there was a significant correlation between ¹³⁷Cs and SOC, indicating that both of them might have the same loss pathway. On the slopes under secondary forests, ¹³⁷Cs mainly existed within the depth 0-24 cm. On the upper middle and middle slope sites, ¹³⁷Cs had an exponential decrease with depth, indicating no or slight surface erosion; while on the foot slope site, the distribution pattern of ¹³⁷Cs indicated severer erosion. On the slopes with cultivated lands, ¹³⁷Cs distributed uniformly within the plough layer. In the upper middle and middle slopes profiles, ¹³⁷Cs mainly existed in the depth around 15 cm and far less than the background value, indicating severe soil erosion; while in foot slope profiles, ¹³⁷Cs was aggraded to the depth 45 cm. A discontinuous distribution of ¹³⁷Cs in the profiles was detected on the foot slopes under secondary forests, on the upper middle and foot slopes of cultivated lands, and in the fissures, indicating that the soil particles on Karst slopes had a trend of losing with rainwater to the underground, but the loss quantity was negligible, compared with surface erosion.

Key words: Karst soil erosion ¹³⁷Cs soil organic carbon (SOC) profile distribution

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