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人为干扰对喀斯特土壤团聚体及其有机碳稳定性的影响

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Effects of human disturbance on soil aggregates content and their organic C stability in Karst regions.

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摘要

以桂西北喀斯特原生林地、自然恢复地、放牧+火烧草地和玉米-红薯轮作地为对象，研究了不同人为干扰方式下4种生态系统中土壤团聚体含量及其有机碳的稳定性.结果表明： 除玉米-红薯轮作地土壤的水稳性团聚体(>0.25 mm)含量为37.7%外，其余样地土壤水稳性团聚体(>0.25 mm)含量均大于70%；土壤团聚体结构破坏率为玉米-红薯轮作地(54.9%)>放牧+火烧草地(23.2%)>自然恢复地(9.8%)和原生林地(9.6%)，差异显著.随培养时间的延长，团聚体有机碳的矿化速率先增加后减小，20 d后趋于平稳，而且随团聚体粒级的减小逐渐增大；相同粒级团聚体中有机碳的矿化速率为原生林地>放牧+火烧草地和自然恢复地>玉米-红薯轮作地；原生林地有机碳矿化率在1.7%～3.8%，显著高于自然恢复地、放牧火烧草地和玉米-红薯轮作地；有机碳的累积矿化量与矿化速率变化规律一致.土壤有机碳和团聚体中有机碳含量分别与矿化速率和累积矿化量呈极显著正相关，与矿化率极显著负相关 .

关键词： 喀斯特生态系统 土壤团聚体 有机碳 矿化

Abstract：

Taking the primary forest land (PF), natural restoration land (NR), grazing grassland burned annually in winter (GB), and maize-sweet potato cropland (MS) in Karst regions of Northwest Guangxi as test objects, this paper studied the soil aggregates content and their organic C stability in the four ecosystems under different human disturbance patterns. The soil water-stable aggregates (>0.25 mm) content in PF, NR, and GB accounted for more than 70%, while that in MS was only 37%. The destruction rate of soil aggregates structure in the four ecosystems decreased in the sequence of MS (54.9%) > GB (23.2%) > NR (9.8%) and PF (9.6%), with significant differences among them (P<0.05). With increasing incubation time, the mineralization rate of soil aggregate organic C decreased after an initial increase and kept stable after 20 days, and increased with decreasing aggregate size. In the same size aggregates, the mineralization rate of organic C in the four ecosystems increased in the sequence of MS < GB and NR < PF. In PF, the mineralization ratio of soil organic C was 1.7%-3.8%, being significantly higher than that in NR, GB, and MS. The cumulative mineralization amount of soil organic C had the same change trend with the mineralization rate. The contents of soil organic C and aggregate organic C were significantly positively correlated with the mineralization rate and cumulative mineralization amount of organic C, respectively, and significantly negatively correlated with the mineralization ratio of organic C.

Key words： Karst ecosystem soil aggregate organic C mineralization

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[1] . **土壤有机碳分组方法及其在农田生态系统研究中的应用**[J]. 应用生态学报, 2011, 22(07): 1921-1930.