

不同土地利用方式下赤红壤生物学性状及其与土壤肥力的关系

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Biological properties of lateritic red soil and their relationships with soil fertility in Southern China under different land use types.

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摘要

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摘要

以我国华南地区典型坡地的赤红壤为对象,研究了不同土地利用方式(新垦旱地、灌木林、桉树林及果园)下土壤微生物性状、酶活性及其与土壤肥力的关系.结果表明:不同土地利用方式下土壤生物学性质差异极显著.其中,果园土壤的微生物数量和酶活性显著增加;新垦旱地土壤的呼吸速率显著增加,微生物数量、酶活性显著下降;灌木林和桉树林则介于果园和新垦旱地之间,且两者具有高度的相似性.不同土地利用方式下的土壤微生物数量和酶活性与土壤有机碳、大部分养分之间存在显著正相关;高有机质含量和高肥力水平的土壤有利于微生物的生长和酶活性的提高.

关键词: 土地利用方式 赤红壤 土壤微生物 土壤酶活性 土壤肥力

Abstract:

Taking the lateritic red soil on a typical slopeland in Southern China as test object, this paper studied the soil microbial properties, enzyme activities, and their relationships with soil fertility under four land use types (newly cultivated dryland, shrub land, *Eucalyptus* land, and orchard). There existed significant differences in the soil biological properties under different land use types, among which, orchard soil had the highest microbial quantity and enzyme activities, newly cultivated dryland soil had the fastest soil respiration rate, the fewest soil microorganism quantity, and the lowest enzyme activities, whereas shrub land and woodland soils had the biological properties ranged between newly cultivated dryland and orchard soils, and there was a high similarity in the biological properties between shrub land and woodland soils. Under different land use types, the soil microbial quantity and enzyme activities were positively correlated with soil organic carbon and most of the soil nutrients. It was suggested the soils with high soil organic matter content and high fertility level were beneficial to the soil microbial growth and enzyme activities.

Key words: land use type lateritic red soil soil microbe soil enzyme activity soil fertility.

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