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广东省典型土壤类型和土地利用方式对土壤酶活性的影响

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Effects of typical soil types and land use patterns on soil enzyme activities in Guangdong Province

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摘要 通过野外调查与室内分析，研究了广东省韶关红壤、广州赤红壤、雷州砖红壤3个典型地带性土壤分布区4种不同土地利用方式（包括林地、果园、草地和农田）对表层（020 cm）土壤几种主要酶活性（过氧化氢酶、纤维素酶、蔗糖酶、脲酶、蛋白酶活性）的影响。结果表明，不同土壤类型和不同土地利用方式对土壤酶活性均有一定影响，其中土地利用方式影响更为明显。土壤酶活性多表现为果园和林地较高，农田和草地较低;而土壤过氧化氢酶对土地利用方式和土壤类型的响应均较其它几种酶弱。典范相关分析结果表明，全磷、速效磷、速效氮含量是土壤养分因子中影响土壤酶活性的最重要因素，5种酶中纤维素酶和蛋白酶活性与土壤养分因子关系最大，而土壤酶活性之间也存在着一定的共性关系。

关键词： 土地利用方式 土壤类型 土壤酶活性

Abstract： Soil enzyme activities have been used as bioindicators for soil quality and health due to their high sensitivity to soil changes. With the intensity and amplification of land use, the impacts on soil fertility, nutrient status and soil enzyme activities by land use changes and soil types received more and more attentions. In this paper, field investigation and lab experiment analysis were carried out to study activities of catalase, cellulose, invertase, urease, and protease in the surface soil (0-20cm). Three soil types including Latosolic red soil, Red soil, Latosol and four land use patterns including grassland, forest, farmland and orchard were selected in this study. Results showed that land use patterns and soil types affected activities of cellulose, invertase, urease, and protease. Higher activities in forest lands and orchard were found compared to those in the cropland and grassland. Soil type had less pronounced effect on enzyme activities compared to agricultural land use pattern. The response of activity of ctalase was weaker than those of the other studied enzymes. The results of canonical correlation analysis showed that total P, available P and available N were the domain factors influencing soil enzyme activities, especially cellulose and protease activities. There were also correlations between the various soil enzyme activities.

Keywords： land use patterns soil type soil enzyme activities

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