

纸坊沟流域土壤酶活性与土壤肥力关系研究

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Study on the relationships between soil enzyme activities and soil fertility in Zhifanggou Watershed

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2 Tongliao Soil and Water Conservation Bureau, Tongliao, Inner Mongolia 028300, China[摘要](#)[参考文献](#)[相关文章](#)Download: [PDF \(220KB\)](#) [HTML 0KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 本文通过野外调查和室内分析相结合, 运用相关分析和通径分析等方法, 研究了纸坊沟流域空间尺度范围内不同土地利用方式土壤肥力与土壤酶活性的内在关系。结果表明: 土壤有机质、全氮、碱解氮、速效钾、脲酶、蔗糖酶、碱性磷酸酶和过氧化氢酶之间均呈极显著正相关; 有机质、全氮和碱解氮通过直接作用和彼此间接作用成为影响脲酶、蔗糖酶、碱性磷酸酶和过氧化氢酶活性的主要因素, 它们对4种酶的直接通径系数分别为0.148、0.415、0.345、-0.018; 0.241、0.202、0.190、0.318和0.394、0.375、0.507、0.277; 而pH对这4种酶活性的直接作用在很大程度上是通过其它因素的间接作用所抵消; 4种土壤酶活性可以作为黄土丘陵沟壑区小流域土壤肥力的评价指标。

关键词: 土壤酶活性 土壤肥力 相关分析 通径分析 纸坊沟 土壤酶活性 土壤肥力 相关分析 通径分析 纸坊沟

Abstract:

The relationships between soil enzyme activities and soil fertility under the different land uses (forest, shrub, grass and farmland) in the Zhifanggou watershed were studied through field investigation and laboratory analysis. The correlation between soil enzyme activities and soil fertility were evaluated by the methods of correlation analysis and path analysis. The results there are significant positive correlations between soil organic matter, total N, available N, available K, urease, invertase, alkaline-phosphatase and catalase. Soil organic matter, total N and available N are important factors of affecting activities of urease, invertase, alkaline-phosphatase and catalase, and their direct path coefficients to the four enzymes are 0.148, 0.415, 0.345, -0.018; 0.241, 0.202, 0.190, 0.318 and 0.394, 0.375, 0.507, 0.277, respectively. The direct impacts of pH values upon four enzymes are largely minimized by the indirect effects of other factors. The results derived from correlation analysis and path analysis indicate that the four enzyme activities can be used to evaluate soil fertility in the loess hilly region.

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