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### 新疆膜下滴灌棉田土壤酶活性与土壤养分的关系

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### Relationship between Soil Enzymatic Activities and Soil Nutrients in Cotton Field under Film Irrigation in South Xinjiang

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摘要

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**摘要** 探讨土壤酶活性与土壤肥力质量指标的相关性, 为棉田土壤质量评价提供生物学指标。以南疆棉田土壤为研究对象, 测定棉田土壤养分含量和土壤酶活性, 采用相关分析、通径分析和主成分等统计方法进行分析。土壤过氧化氢酶、酸性转化酶、碱性磷酸酶、脲酶与土壤有机质、全氮、速效磷达到极显著相关关系; 通径分析表明, 全氮和有机质含量是影响土壤酶活性的主要因子; 有机质、全氮、过氧化氢酶、碱性磷酸酶是反映土壤肥力和质量的主要组分。用过氧化氢酶、酸性转化酶、碱性磷酸酶作为评价棉田土壤肥力水平的敏感生物指标具有可行性。

**关键词:** 棉田 土壤养分 土壤酶 相关性

**Abstract:** Explore and assess the relationship between soil enzymatic activities and soil nutrients to screen several biological attributes in soil quality indication. cotton field soil in south Xinjiang was used as tested samples, soil enzymatic activities as well as soil nutrients were determined. Correlation analysis, path analysis and principal component analysis were employed for data processing. Significant correlations were found within soil enzymes and soil nutrients as well as the interaction of soil enzymes and soil nutrients. Total N and organic matters contents were the most important factors determining soil enzymatic activities, which discovered by path analysis. Soil enzymatic is a crucial component in soil fertility and quality. Conclusion catalase, acidic invertase and alkaline phosphatase can be used as applicable biological indicators in the assessment of cotton soil fertility.

**Keywords:** cotton field soil enzymatic soil nutrients correlation

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