

研究报告

黄土丘陵区土壤质量评价指标研究

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摘要

针对黄土丘陵区侵蚀土壤最主要的功能——生产力和抗侵蚀能力, 运用敏感性分析、主成分分析和判别分析法, 对10种土地利用类型、208个样点的32项土壤属性指标进行了筛选. 结果表明, 在黄土丘陵区, 土壤速效磷含量、抗冲性、渗透系数、活性有机碳、有机质、脲酶作为土壤质量评价的高度敏感指标, 是土壤质量恢复与调控的主要目标. 土壤生物指标属于高度敏感和中度敏感指标. 黄土丘陵区侵蚀土壤的29项理化及生物属性指标可以被归纳为5个土壤质量因子: 有机质因子、质地因子、磷因子、孔隙因子和微结构因子. 5个因子中, 孔隙因子在不同土地利用方式之间差异不显著, 其余4个质量因子在不同土地利用方式之间差异极显著. 黄土丘陵区侵蚀土壤质量评价指标为有机质、渗透系数、抗冲性、CEC、蔗糖酶、团聚体平均重量直径、速效磷、微团聚体平均重量直径. 其中, 有机质、渗透系数、抗冲性是表征黄土丘陵区侵蚀土壤质量的关键指标.

关键词 [土壤质量, 评价指标, 黄土丘陵区](#)

分类号

Assessment indicators of soil quality in hilly Loess Plateau

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Abstract

By the methods of sensitivity analysis, main component analysis and discriminant analysis, this paper screened the sensitive indicators from 32 soil attributes to assess the productivity and erosion-resistance ability of the soils in hilly Loess Plateau. The results showed that soil available phosphorus content, anti-scouring ability, infiltration coefficient, labile organic carbon content, organic matter content and urease activity were the most sensitive indicators for soil quality assessment and the main targets for soil quality management and improvement, while soil biological indicators were with high and medium sensitivity. Five soil quality factors were summed up from 29 soil chemical, physical and biological attributes, i.e., organic matter, texture, phosphorus, porosity and microstructure. Except the factor porosity, the other four factors were significantly different between different land use types. Eight indicators including soil organic matter content, infiltration coefficient, anti-scouring ability, CEC, invertase activity, mean weight diameter (MWD) of aggregates, available phosphorus, and MWD of micro-aggregate were identified as the assessment indicators of the soil quality in hilly Loess Plateau, with the organic matter content, infiltration coefficient and anti-scouring ability as the key indicators.

Key words [Soil quality](#) [Assessment indicator](#) [Hilly Loess Plateau](#)

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