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研究报告

不同促腐条件下秸秆还田对土壤微生物量碳氮磷动态变化的影响

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摘要

通过2年田间定位试验，研究了冀东地区小麦 玉米轮作制度下，不同促腐条件下玉米秸秆配施化肥直接还田对土壤微生物量C、N、P动态变化的影响，并讨论了其与土壤养分和酶活性的关系.结果表明，秸秆配施化肥并调节其C/N条件下，施用促腐剂处理作物各生育期土壤微生物量C、N、P均表现出高于未施用处理的趋势，并使微生物量N、P达到高峰期的时间提前，对土壤养分调控效果较好.土壤微生物量C、N、P与土壤酶活性在作物各生育期均表现为显著和极显著正相关关系，但与土壤碱解氮、有效磷的相关性受到施肥制度和作物生长的强烈影响.

关键词 褐土,秸秆还田,促腐条件,微生物量,动态变化

分类号

Effects of returning maize straw into field on dynamic change of soil microbial biomass C,N and P under different promoted decay condition

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Abstract

A 2-year field experiment of wheat-maize rotation was conducted on a cinnamon soil of east Hebei Province to study the effects of returning maize straw into field on the dynamics of soil microbial biomass C,N and P,and their relationships with soil nutrients and enzyme activities.The results showed that under the condition of returning maize straw combined with applying chemical fertilizer to adjust straw C/N,the application of effective microorganisms could increase soil microbial biomass C,N and P in each crop growth period,advance their peak time,and better regulate soil nutrient supply,compared with no application of effective microorganisms.Soil microbial biomass had a significantly positive correlation with soil enzyme activities,but its correlation with soil hydrolysable N and available P was strongly affected by crop growth and fertilization system.

Key words Cinnamon soil Returning straw into field Promoted decay condition Microbial biomass Dynamic change

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