

沼液与化肥配施对冬小麦根际土壤微生物数量和酶活性的影响

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Effects of combined application of biogas slurry and chemical fertilizer on winter wheat rhizosphere soil microorganisms and enzyme activities.

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摘要

研究了等氮量条件下沼液与化肥配施对冬小麦根际土壤微生物(细菌、真菌和放线菌)数量及土壤酶(脲酶、蛋白酶和过氧化氢酶)活性的影响.结果表明:随着生育期的推进,不同施肥处理小麦根际土壤微生物数量和土壤脲酶、过氧化氢酶活性均呈先降后升的变化趋势,而蛋白酶活性则呈“S”形曲线变化.沼液与化肥合理配施能显著增加根际土壤微生物数量,提高土壤脲酶和蛋白酶活性,以基施50%沼液氮基础上追施50%化学氮处理和基施25%沼液氮基础上追施75%化学氮处理较好,传统尿素处理和单一沼液处理效果均较差.土壤过氧化氢酶活性以基施25%沼液氮基础上追施75%化学氮处理及单施沼液处理在所有测定时期均表现最高,其他处理在各生育时期差异很大.沼液与尿素配合施用可以提高小麦根际土壤微生物数量和酶活性.

关键词: 冬小麦 沼液 化肥 土壤微生物 根际酶活性

Abstract:

This paper studied the effects of combined application of biogas slurry and chemical fertilizer under same N application rate on the quantities of bacteria, actinomycetes and fungi as well as the activities of urease, protease and catalase in winter wheat rhizosphere soil. With the growth of winter wheat, the quantities of test microorganisms and the activities of urease and catalase showed a trend of increasing after an initial decrease, while the protease activity showed an S-type change. Combined application of biogas slurry and chemical fertilizer increased the quantities of test microorganisms significantly, and improved the activities of soil urease and protease. Applying 50% biogas slurry N as basal plus 50% chemical N as topdressing and applying 25% biogas slurry N as basal plus 75% chemical N as topdressing had the best effect, while applying single conventional urea or biogas slurry had the worst effect. At all growth stages, the activity of soil catalase was the highest in treatments 25% biogas slurry N as basal plus 75% chemical N as topdressing and single biogas slurry, but had greater differences in other treatments among the growth stages. The results suggested that proper biogas slurry application combined with chemical fertilization could increase the microbial quantity and enzyme activities in winter wheat rhizosphere soil.

Key words: winter wheat biogas slurry chemical fertilizer soil microorganism rhizosphere enzyme activity

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[1] 郑有飞,倪艳利,麦博儒,吴荣军,冯妍,孙健,李健,徐静馨. 太阳辐射减弱对冬小麦旗叶光合速率的影响[J]. 应用生态学报, 2011, 22(06): 1457-1464.

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