

研究报告

套作棉根际与非根际土壤酶活性和养分的变化

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摘要

在棉麦两熟双高产条件下研究了棉花根际与非根际土壤酶活性和养分含量的变化.结果表明,套作棉土壤脲酶、蔗糖酶、蛋白酶及过氧化氢酶活性随生育进程的变化趋势与单作棉表现一致,但整个生育期套作棉根际与非根际土壤各种酶活性均明显高于单作棉.套作棉根际与非根际土壤养分含量在麦棉共生期低于单作棉或差异较小,而在麦收后则显著高于单作棉.套作棉土壤养分含量随生育进程的变化趋势与单作棉大体相同,但一些养分的吸收高峰晚于单作棉.无论套作棉还是单作棉,根际土壤酶活性和养分含量高于非根际.土壤各养分含量与土壤脲酶、蔗糖酶和蛋白酶活性呈显著($P=0.05, n=32$)或极显著($P=0.01, n=32$)相关,与土壤过氧化氢酶活性相关不显著.

关键词 [麦棉两熟,棉花,根际和非根际,土壤酶活性,土壤养分含量](#)

分类号

Dynamics of soil enzyme activity and nutrient content in intercropped cotton rhizosphere and non-rhizosphere

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Abstract

The study with high yield cotton-wheat double cropping system showed that soil urease, invertase, protease and catalase activities in intercropped cotton field had the same changing trends with those in mono-cultured cotton field, but were significantly higher in intercropped than in mono-cultured cotton rhizosphere and non-rhizosphere at all development stages of cotton. During the intergrowth period of wheat and cotton, soil nutrient contents in intercropped cotton rhizosphere and non-rhizosphere were lower than or had little difference with those in mono-cultured cotton rhizosphere and non-rhizosphere, but became significantly higher after wheat harvested. The changing trends of soil nutrient contents in intercropped cotton field had little difference from those in mono-cultured cotton field, but the nutrient absorption peak appeared late. The soil enzyme activities and nutrient contents were generally higher in rhizosphere than in non-rhizosphere of both intercropped and mono-cultured cotton. Soil nutrient contents had significant ($P<0.05, n=32$) or very significant ($P<0.01, n=32$) correlation with the activities of soil urease, invertase and protease, but had little correlation with soil catalase activity.

Key words [Wheat-cotton double cropping](#) [Cotton](#) [Rhizosphere and non-rhizosphere zones](#) [Soil enzyme activity](#) [Soil nutrient content](#)

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