

研究报告

阿特拉津及其降解菌的使用对土壤微生物群落的影响

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摘要

比较了阿特拉津及降解菌株BTAH1的使用对土壤微生物的影响.结果表明,在实验周期内阿特拉津对土壤微生物的代谢作用有较明显的刺激作用,与空白土壤(未施用阿特拉津和降解菌)相比,对照土壤(施用50 mg·kg⁻¹阿特拉津)呼吸强度显著增加,且土壤中的阿特拉津浓度对土壤NH₄⁺-N和NO₃⁻-N浓度的影响显著.降解菌BTAH1可在1周内降解土壤中98%以上的阿特拉津,从而使土壤呼吸强度有所下降,土壤中NH₄⁺-N和NO₃⁻-N的浓度基本与空白土壤持平,对微生物量C和微生物量N影响不显著;放线菌和真菌数量也基本与空白持平,细菌数量较高.对土壤细菌的16S rDNA文库的ARDRA分析发现,阿特拉津及其降解菌的使用对土壤细菌群落结构有一定程度的影响,阿特拉津的使用会降低细菌群落的多样性,而降解菌的使用会恢复土壤细菌的多样性.

关键词

[阿特拉津](#), [生物降解](#), [土壤微生物](#), [群落结构](#), [ARDRA](#)

分类号

Effects of atrazine and its degrader *Exiguobacterium* sp.BTAH1 on soil microbial community

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Abstract

The study showed that the application of atrazine stimulated soil microorganisms obviously. In comparing with control (without atrazine), the respiration intensity of soil applied with 50 mg atrazine·kg⁻¹ soil increased greatly, the concentrations of soil NH₄⁺-N and NO₃⁻-N changed significantly, and the individuals of soil microbes, especially bacteria and fungi, also increased greatly. The application of strain BTAH1 could degrade 98% of applied atrazine within one week, and led to the decrease of soil respiration intensity. Under BTAH1 application, the individuals of actinomyces and fungi decreased, while those of bacteria did not, and the concentrations of soil NH₄⁺-N and NO₃⁻-N came back to the level of the control. ARDRA analysis on the 16s rDNA library of soil bacteria suggested that the application of atrazine could decrease the biodiversity of soil microorganisms, while applying BTAH1 could recover the biodiversity.

Key words [Atrazine](#) [Biodegradation](#) [Soil microorganisms](#) [Community structure](#) [ARDRA](#)

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