

三种不同种植模式对土壤细菌群落多样性的影响

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Effects of three different cropping system on diversity of soil bacterial community

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摘要 采用变性梯度凝胶电泳(DGGE)技术,研究了不同种植模式对土壤细菌群落多样性的影响。结果表明,不同种植模式下DGGE图谱条带的数量及亮度有较大区别,且有几条特征性条带发生了明显的变化。0—15 cm土层细菌群落的丰富度、多样性指数及均匀度指数均表现为:“菜稻菜模式”(RVCs) > “休闲轮作模式”(FRCs) > “蔬菜连作模式”(VCCs); 15—30 cm土层细菌群落的丰富度、多样性指数及均匀度指数均表现为: FRCs > RVCs > VCCs。UPGMC聚类分析表明, RVCs 处理的细菌群落结构相似性较低。主成分分析表明,对各主成分起分离作用的主要是 RVCs和FRCs; 与主成分因子1 正相关程度较高的种植模式为: RVCs和VCCs, 与主成分因子2 正相关程度较高的是 FRCs。可见,水稻土壤细菌群落多样性与种植模式密切相关,这些变化对土壤细菌群落有重要的调节作用。

关键词: 种植模式 土壤 土壤细菌 群落多样性 种植模式 土壤 土壤细菌 群落多样性

Abstract:

Effects of different cropping system on diversity of soil bacterial community were studied by using denatured gradient gel electrophoresis (DGGE) analysis. Results showed that the numbers and strength of the bands from DGGE profiles varied with the different cropping system, especially the distinguished bands were different. The bacterial community diversity, the richness index and the evenness index showed the effects of the rice vegetable cropping system (RVCs) > the fallow rotation cropping system (FRCs) > the vegetable continuous cropping system (VCCs) in the soil layer of 0-15 cm, but FRCs > RVCs > VCCs in the soil second layer of 15-30 cm. The UPGMC cluster analysis indicated that the system of RVCs and FRCs plays the differential role to the components. RVCs and VCCs systems were related with the principal components factor 1, but the FRCs system showed highly related with the principal components factor 2. Based on these results, the bacterial community diversity was closely related with planting system and the changed cropping system possibly played an important role in the soil bacterial community diversity.

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