

一季中晚稻的稻菜轮作模式对土壤酶活性及可培养微生物群落的影响

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Effect of rice-vegetable cropping system with a mid-late rice on soil enzyme activity and cultured microbial diversity

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摘要

通过不同地点的小区试验, 研究不同轮作模式对土壤酶活性及可培养微生物群落的影响。结果表明, 一季中晚稻的稻菜轮作模式和休闲轮作模式明显提高了土壤蔗糖酶和酸性磷酸酶的活性。其中稻菜轮作模式的效果又优于休闲轮作模式; 与蔬菜连作模式相比, 土壤蔗糖酶和酸性磷酸酶活性平均提高了48.1%和27.2%, 有效降低土壤过氧化氢酶和多酚氧化酶活性。在可培养的土壤微生物群落中, 不同种植模式完成一个周期后, 稻菜轮作模式改善了微生物群落的组成, 明显提高土壤细菌和放线菌数量, 减少真菌数量, 对维持土壤生产能力的可持续性具有显著的现实意义。

关键词: 菜地 轮作模式 土壤酶活性 可培养微生物 菜地 轮作模式 土壤酶活性 可培养微生物

Abstract: A series of field trials were conducted on various locations to investigate the influence of different rotation patterns on soil enzyme activity and cultured microbial diversity. Results indicated that the rotation system of rice-vegetable with mid-late rice and the pattern of summer fallow significantly enhanced the activity of soil invertase and acid phosphatase, between which rice-vegetable pattern was superior to summer fallow. In comparison with successive vegetable cropping, the rice-vegetable pattern increased the activity of soil invertase and acid phosphatase by 48.1% and 27.2% in average, meanwhile, significantly decreased the activity of soil catalase and polyphenol oxidase. After completion of each rotation of the various cropping patterns, the rice-vegetable pattern comparably improved cultured microbial community, where the number of soil bacteria and actinomycetes were significantly enhanced but the number of fungi was reduced, thus benefiting the maintenance and sustainability of land productivity.

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