

湖南双季稻种植区不同生产力水稻土肥力特征的研究

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Studies on fertility characteristics of different productive paddy soils in double-rice cropping regions of Hunan province

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摘要 通过对湖南省8个双季稻种植区田间采样并结合水稻产量测产, 研究了不同生产力水稻土的有机质(全有机质和腐殖质组成)和养分含量状况(全量和有效养分), 分析其环境意义。结果表明, 湖南省双季稻种植区高产水稻土的有机质、全氮和速效磷含量分别为 47.74 ± 11.59 g/kg、 2.70 ± 0.72 g/kg和 39.8 ± 14.21 mg/kg, 均达到非常丰富的水平; 中产水稻土的有机质、全氮和速效磷含量也处于丰富水平, 与高产水稻土比较, 其差异不显著; 低产水稻土的上述养分显著低于高产和中产水稻土。高产水稻土的速效钾含量处于中等水平(105.83 ± 22.73 mg/kg), 中产和低产水稻土速效钾含量处于缺乏和严重缺乏水平。经过长期的培肥, 高产水稻土的有机质、全氮和速效磷含量均达到非常丰富的水平, 有机质库和磷库均处于丰富水平和盈余状态。高产水稻田土壤的质地一般为壤土和粘壤, 固持钾的能力弱, 速效钾含量不丰富, 应该重视施用化学钾肥、有机肥和稻草还田, 保持土壤钾库的平衡和提高。多数中产水稻土的有机质和养分均比较丰富, 只要采用最佳的田间管理, 可以实现高产水稻土的生产目标。低产水稻土的结构一般都比较差, 养分缺乏, 应加强改良和培肥管理, 提升其土壤肥力。

关键词: 湖南省 双季稻种植区 水稻土 肥力特征

Abstract: Fertility characteristics of different productive paddy soils were studied to provide scientific basis for the management and sustainable utilization of paddy soils. Fraction of organic matter (total organic matter and humus composition) and nutrient contents (total and available nutrients) and their relationships with rice yield were investigated by soil sampling and recorded rice yield from double-rice cropping areas of eight important rice production counties in Hunan province. The results show that the contents of organic matter (47.74 ± 11.59 g/kg), total N (2.70 ± 0.72 g/kg) and available P (39.8 ± 14.21 mg/kg) of the high productive paddy soils are at their very rich levels, respectively, the contents of organic matter, total N and available P in the middle productive paddy soils are at their rich levels, and the contents are not significant differences between the high productive paddy soils and the middle productive paddy soils. The contents of the low productive paddy soils are significantly lower than those of the high and middle productive paddy soils. Available K contents are at the middle level (105.83 ± 22.73 mg/kg) in high productive paddy soils, and are at deficient and very deficient levels for the middle and low productive paddy soils, respectively. The contents of organic matter, total N and available P are at the very rich levels in high productive paddy soils because of the long-term rice cultivation and fertilization, and both organic matter and P pool are at very rich and surplus states. Textures of the high productive paddy soils are generally loamy soils and sandy clay loam soils with a weak K retention capacities, and the available K contents are not rich in high productive paddy soils, it should be pay attention to rational application of potassium fertilizer, organic matter and rice straw returning to soil for maintaining the balance and increase of soil K pool. For most of the middle productive paddy soils, due to relative rich with contents of organic matter, total N and available P, could achieve rice yield target of high productive paddy soils only under good field management practices. Soil physical properties and nutrients of the low productive paddy soils are all poor, it should be pay attention to rational combing application of organic manure and inorganic fertilizer for improving the soil physical quality and soil fertility.

Keywords: Hunan province Double-rice cropping region Paddy soil Fertility characteristics

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