

农业资源与环境科学

重度盐渍化土壤灌溉碱性淡水与施用改良剂效果研究

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摘要:

摘要: 试验采用了灌水和施用改良剂相结合的方法对重度盐渍化土壤进行改良。试验采用2因素3水平组合设计,3个灌水量,3个改良剂施用量,12个处理,3次重复。结果表明:灌水量525m³/hm²土壤全盐量由1.72%降至0.48%~0.64%、灌水量750m³/hm²土壤全盐量降至0.4%~0.6%。改良剂不同施用量与对照相比,土壤ESP下降幅度为2.83%~26.44%;土壤HCO₃⁻下降幅度9.13%~43.47%;土壤Cl⁻下降幅度19.6%~29.9%;土壤SO₄²⁻增加幅度10.36%~58.22%;土壤Ca²⁺增加幅度0.68%~62.24%。灌水量750m³/hm²洗盐效果明显,改良剂施用量4500kg/km²防碱效果明显。但从节水和土壤盐分积累分析,灌水量525 m³/hm²、改良剂施用量3000 kg/km²为宜。

关键词: 重盐渍化土壤;改良;灌水量;改良剂

Effect of Alkaline Freshwater Irrigation and Amendment Application on Heavy Saline Soil

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Abstract:

Abstract: Irrigation of alkaline freshwater and application of amendment were used to improve the soil. The experiment was conducted with two factors (irrigation amount and amendment application rate) and three levels combination design with three replications. The soil salt content deceased from 1.72% to 0.48%~0.64% and 0.4%~0.6% when irrigated by 525m³/hm² and 750m³/hm², respectively. Compared with the control treatment, application of amendment reduced 2.83%~26.44% of soil ESP, 9.13%~43.47 of soil HCO₃⁻ and 19.6%~29.9% of soil Cl⁻. and increased 10.36%~58.22% of soil SO₄²⁻ 0.68%~62.24% of soil Ca²⁺. Irrigation with 750m³/hm² water has significant effect on desalting, application of amendment at 3000 kg/km² has significant effect on preventing alkalization. Comprehensive considering water usage and soil salt accumulation, irrigation with 525 m³/hm² water and application of amendment at 3000 kg/km² was recommended.

Keywords: heavy saline soil soil improvement irrigation amendment

收稿日期 2009-04-27 修回日期 2009-06-03 网络版发布日期 2009-09-05

DOI:

基金项目:

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