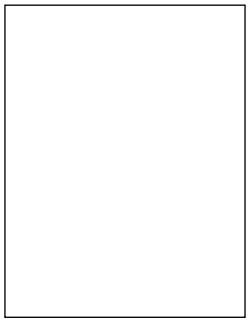

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Response of Saline Soil Properties and Cotton Growth to Different Organic Amendments

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ABSTRACT

The effects of applying different organic amendments (e.g., cattle dung, vermicompost, biofertilizer) and earthworm inoculations (*Eisenia fetida*) for saline soil improvement and cotton growth were compared during 1 year of cotton cultivation. Compared with the control, which consisted of inorganic NPK fertilizer applications, the physicochemical properties of soil were improved as a result of applying organic materials. Biofertilizer application improved available nutrient content, decreased soil electrical conductivity in the short-term, and produced the highest cotton yield, whereas cattle dung and vermicompost application resulted in higher soil organic matter content. Application of organic materials significantly increased soil microbial biomass carbon during flowering, which sharply decreased during harvesting. This was especially the case for the biofertilizer treatment, which also exhibited lower nematode abundance than the other organic materials. Earthworm inoculation following cattle dung application failed to significantly change soil physicochemical properties when compared with a treatment without earthworm inoculation. These results suggest that pretreatment of organic materials to saline soil would improve soil nutrient status in the short-term. However, raw organic material applications would do more to improve soil organic matter content, and increase soil organism abundance. However, different strategies might be required for long-term saline soil remediation.

Key Words: biofertilizer, cattle dung, cotton growth, saline soil remediation, vermicomposting

INTRODUCTION

Degraded saline alkaline land in coastal areas is an important resource that has been targeted for remediation. Application of organic waste to saline alkaline soils is considered a good practice for soil