

Evaluation of the Influence of Biochar and Compost on the Saline Soil Properties and Quality

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Abstract

Soil salinization is one of the major environmental issues which affect the sustainability of agricultural production in the world. In the means of agriculture, soil salinity retards the plant growth and production. In the present study, *Gliricidia sepium* L. biochar produced in 300°C pyrolysis temperature and solid waste compost obtained from Nawalapitiya municipal waste composting centre were used to evaluate their influence on salinity and soil quality of saline soil. An incubation experiment was conducted by adding three different rates of biochar and compost as 1%, 2.5% and 5% by soil weight. A saline soil was collected from Kokkuvil salt affected area in Batticaloa. After one month of incubation period, soil parameters were analyzed for pH, electrical conductivity (EC), cation exchange capacity (CEC), total organic carbon (TOC), plant available nitrate, acid and alkaline phosphatase. An increment of pH was recorded with the increment of application rate of amendments. The maximum pH increment was shown by 5% compost treatment. An increment in electrical conductivity was recorded in all treatments. Cation exchange capacity of biochar and compost treatments showed a decrease and the maximum reduction was shown by 2.5% and 5% compost treatments. Total organic carbon content of the soil was significantly increased in all treatments. Both acid and alkaline phosphatase activities have increased compared to the control. The overall results suggest, biochar and compost have a significant effect on improving the properties of saline soil though there's no significant effect on salinity removal during one month of incubation period. The experiment should continue with extended incubation time period to assess the influence of biochar and compost on salinity of the soil.

Key words: Salinity, Biochar, Saline soil, Compost, Soil quality

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