RECLAMATION OF SALINE SOIL UTILIZING THE EFFICACY OF SULPHATE OF POTASH AND PARTIALLY BURNT PADDY HUSK

Pithuja S.[1,*] and Premananadarajah P. [2]

[1] Department of Bio-science, Faculty of Applied Science, University of Vavuniya, Sri Lanka.
[2] Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University of Sri Lanka.
* Corresponding author email: sribalupithuja@gmail.com

Abstract: Soil degradation due to salinity is a critical environmental concern, with significant implications for both agricultural systems and the environment. This issue is particularly evident in Navatkadu, located within the Manmunai West D.S. Division of Batticaloa, Sri Lanka. An attempt was made to address this environmental challenge through an integrated management approach using a combination of Sulphate of potash (SOP) and partially burned paddy husk (PBPH) to restore soil fertility and enhance cowpea yield in saline soil. A pot culture experiment was conducted at Eastern University, Sri Lanka, from July to September 2023. To examine the impacts of various potassium rates (0, 43, 86, and 129 kg K_2O/ha) delivered in the form of SOP, both with and without PBPH (O, 10 ton/ha), the experiment used a fully randomized design in a 2×4 factorial arrangement with three replications. According to the findings, adding sulphate of potash to amended soil reduced the electrical conductivity (EC) from 19.17 dS/m to 4 dS/m and soil pH from 8.92 to 7.39, respectively. The treatment using partially burned paddy husk with 86 kg/ha of potassium showed the highest levels of phosphorus availability in the soil (from 12.8 to 71.652 mg/kg), uptake of crucial nutrients like potassium (up to 57.218 mg/g dry weight), and phosphorus (up to 4.662 mg/g dry weight), maximum growth and yield attributes found in partially burnt paddy husk with 86 K_2O kg/ha of combination compared with control. This study's results suggest that the incorporation of partially burnt paddy husk and sulphate of potash can be an effective method to improve saline soil fertility and, by extension, benefit the environment.

Keywords: Partially burnt paddy husk, Phosphorus, Salinity, Sulphate of potash

Supervised (internal) by: Prof. (Ms.) A. Nanthakumaran