Effect of paddy husk ash as a source of potassium on the performance of Cowpea (*Vigna unguiculata*)

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ABSTRACT

An experiment was conducted at the Agronomy farm, Eastern University, Sri Lanka to study the effect of paddy husk ash as a source of potassium on the performance of cowpea (*Vigna unguiculata)*. The treatments included recommended rate (75 kg/ha) of muriate of potash (T_1) and application of paddy husk ash at the rate of 1.5 (T_2), 2.5 (T_3), 3.5 (T_4), 4.5 (T_5) ton/ha. This experiment was laid out in a Randomized Complete Block Design with four replications in sandy regosol. Before being carried out the research work, the pH, potassium and phosphorous contents of the soil at the experimental site and paddy husk ash used in this experiment were analyzed. The agronomic parameters such as plant height, number of leaves, flowers, pods, seeds and nodules, fresh and dry weights of stem, leaves, roots, pods, seeds and nodules were recorded. After harvest of pods, potassium and phosphorous contents of cowpea seeds and also the pH and potassium content of soil were analyzed.

The present result revealed that no significant difference showed among treatments in number of seeds and dry weight of leaves, stem and root. However, number of nodules, number of pods, dry weight of pod and 100 seed weight were significantly varied among treatments. Significant difference showed among the treatments in yield. Application of paddy husk ash at the rate of 4.5 ton/ha gave highest yield (1.44 ton/ha) followed by T_4 and T_1. Potassium (1.46 g) and phosphorous (0.107 g) contents in 100 g cowpea seeds were slightly high in T_1 than other treatments, however T_5 gave 1.44 g potassium and 0.102 g phosphorous in 100 g seeds.

After the harvest of crop, the soil pH and potassium content of soil increased with the increasing rate of application of paddy husk ash. The soil potassium content after harvest was high in T_5 (0.193 %) followed by T_4 and T_1 (0.191 %). The fresh and dry weights of nodules were also high in T_5.

This study showed that the application of paddy husk ash at the rate of 4.5 ton/ha as a potassium source is most suitable for obtaining high yield and improving soil properties.

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