

The Effect of Amendment of Soil with Rice Husk Charcoal Coated Urea and Rice Straw Compost on Nitrogen, Phosphorus and Potassium Leaching

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Abstract : Agriculture plays an important and strategic role in the performance of Sri Lankan national economy. Rice is the staple food of Sri Lankans thus; rice cultivation is the major agricultural activity of the country. In Sri Lanka, out of the total rice production, a considerable amount of rice straw and rice husk goes wasted. Hence, there is a great potential of production of quality compost and rice husk charcoal. The concept of making rice straw compost and rice husk charcoal is practicable in Sri Lanka, where more than 40% of the farmers are engaged in rice cultivation. The application of inorganic nitrogen fertilizer has become a burden to the country. Rice husk charcoal as a coating material to retain N fertilizer is a suitable solution to gradually release nitrogenous compounds. Objective of this study was to produce rice husk charcoal coated urea as a slow releasing fertilizer with rice straw compost and to compare the leaching losses of nitrogen, phosphorus and potassium using leaching columns. Leaching column studies were prepared using 1.2 m tall PVC pipes with a diameter of 15 cm and a sampling port was attached to the bottom end of the column-cap. Leachates (100 ml/leaching column) were obtained from two sets of (each set has four leaching columns) leaching columns. The sampling was done once a week for 3 month period. Rice husk charcoal coated urea can potentially be used as a slow releasing nitrogen fertilizer which reduces leaching losses of urea. It also helps reduce the phosphate and potassium leaching. The cyclic effect of phosphate release is an important finding which could be the central issue in defining microbial behavior in soils. The fluctuations of phosphate may have cyclic effects of 28 days. In addition, rice straw compost and rice husk charcoal coating is less costly and contribute to mitigate pollution of water bodies by inorganic fertilizers.

Keywords : leaching, mitigate, rice husk charcoal, slow releasing fertilizer

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