

Pimolsiri Supasatienchai 2009: Utilization of Slop Ash as Source of Potassium Fertilizer for Rice and Corn. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Associate Professor Jongruk Chanchareonsook, D.Agr. 91 pages.

Utilization of slop ash, a waste material from distillery factory, as a source of potassium for rice and corn was studied. The investigation was divided into two parts. The first part was carried out in the laboratory to study the effect of slop ash on available potassium content in Roi-et, Kamphaeng Saen, Phimai and Pak Chong soil series. The second part was conducted in greenhouse and consisted of two experiments. The first experiment aimed at using slop ash as source of potassium for rice. A 3×3 Factorial in CRD was used with 3 replications. The two factors were soil series (Roi-et, Kamphaeng Saen and Phimai soil series), and potassium application from different sources including (no potassium, potassium chloride and slop ash). The second experiment was intended to use slop ash as source of potassium in Pak Chong soil series for corn. A 2×3 Factorial in CRD was employed with 3 replications. The two factors were potassium from two sources including potassium chloride and slop ash, and three rates of application at 0, 75 and 150 mg $K_2O\ kg^{-1}$ soil were investigated.

The results showed that application of slop ash increased available potassium content in Roi-et, Kamphaeng Saen, Phimai and Pak Chong soil series. The effectiveness of slop ash in increasing available potassium content in the soil was similar to that of potassium chloride fertilizer. Application of slop ash significantly increased growth, yield and total potassium uptake of rice and corn as compared with no potassium fertilizer application. The effectiveness of slop ash in increasing growth and total potassium uptake of rice and corn was similar to that of potassium chloride fertilizer. The efficiency of slop ash in increasing grain yield of rice was superior to that of potassium chloride fertilizer, whereas for corn, slop ash had similar efficiency as that of potassium chloride fertilizer. Utilization of slop ash as source of potassium for rice and corn did not change soil pH and EC. Because application of slop ash as potassium fertilizer significantly increased growth, yield and total potassium uptake of rice and corn, it is indicative that waste material can be utilized by soil-plant system.

Student's signature

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