Abstract

An Evaluation of Potassium in Biomass Power Plant Derived Wood Ash for Agricultural use on East Texas Soils

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A greenhouse pot study was performed to compare potassium (K) found in biomass power plant derived wood ash to commercially available potassium fertilizer (KCI). Wood ash was collected from the Aspen Power Plant located in Lufkin, Angelina County, Texas. In this study both wood ash and KCI were applied to 1000 g of a Darco soil collected in Nacogdoches County, Texas. The soil selected was determined through previous studies to be both low in plant available K and responsive to K fertilization. The experimental design of the study was a randomized block with 4 blocks treated with ten rates of K (0, 20, 40, 60, 80, 100, 200, 300, 400, and 600 mg K kg-1) with two sources, wood ash and KCI. The soil was sampled from each pot after a four week incubation period and after the harvest of the test species, corn (*Zea mays*). Soil samples were analyzed for soil pH, salt pH, electrical conductivity, and Mehlich III extractable P, K, Ca, Mg and S. Corn was planted after the incubation period and was harvested at four weeks. Dry matter yield and chemical analysis of the soil and plants showed that wood ash gave K responses similar to KCI at lower rates; however, at higher rates soil and plant analysis showed wood ash K was not as available as the K from KCI.

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