

Effect of Di-Ammonium Phosphate Application on the Yield Components of Three Sweet  
Potato (*Ipomoea batatas* (L.) Lam) Varieties in Homa-bay District.

by

Julius Oteki Ocharo

A Thesis Submitted to the Department of Agriculture and Natural Resources, Faculty of  
Science and Technology In Partial Fulfillment of the Requirement for the Degree of Master  
of Science in Agricultural and Rural Development

of the



KENYA METHODIST UNIVERSITY

July, 2011

## ABSTRACT

Sweet potato (*Ipomoea batatas* (L.) Lam) is a drought tolerant root crop consumed as human food and its vines fed to livestock as fodder. Currently the average national yield is 5.6 ton/ha against a potential of 50 tons/ha in Kenya. The low production is attributed to poor agronomic practices like poor land preparation, variety selection, and low use of fertilizers. The objective of this study was to determine the effect of Diammonium phosphate application on the yield components of sweet potato and examine the response of SPK004, the local check (Odinga) and Mugande varieties to the same fertilizer. The research was laid out in a randomized complete block design (RCBD) with fifteen treatments replicated three times from September 2010 to February 2011 at the Homa-bay Agricultural training centre farm. Data was collected on yield components of sweet potato mainly fresh roots and vines and harvest index was determined. Data collected was subjected to statistical analysis using SPSS for the analysis of variance (ANOVA) to check whether there were significant differences between the treatments. Pair wise comparison was then conducted to determine where the differences were where necessary ( $\alpha = 0.05$ ). The yield components increased with the DAP application levels. The rate of increase was highest at 125 kg/ha but reduced at 150 kg/ha where the number of roots increased while their weight reduced. 125 kg/ha of DAP is the best level of application. SPK004 increased most in fresh root yield followed by Mugande and then the local check Odinga. Mugande led in fresh vine yield and total biomass followed by SPK004 and then Odinga. The mean harvest index was above 0.44. Mugande can be planted as a dual purpose variety while SPK004 can be planted when roots are a priority. The local check variety (Odinga) should be improved through breeding to increase both root and vine biomass production potential.