AN EVALUATION OF YIELD RESPONSE OF FOUR SWEET POTATO *VARIETIES (IPOMEA BATATAS)AT DIFFERENT PHOSPHORUS* **APPUCATION RATES IN GALOLE DIVISION OF TANA RIVER COUNTY**

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ABSTRACT

Sweet potato (Ipomea batatas (L.) Lam) belongs to the family convolvulaceae (morningglory) order Polemoniales. Worldwide, sweet potato is the sixth most important food crop after rice, wheat, potatoes, maize, and cassava while in the developing nations sweet potato is the fifth most important food crop. Sweet potato is a food security crop for both human and livestock. Sweet potato is a food security crop for both human and livestock. Farmers in Galole Division of Tana River County mainly plant local sweet potato varieties and a few improved varieties promoted by the local research centre KALRO Mtwapa. Whereas a lot of emphasis has been put on the appropriate sweet potato varieties for tubers, the information on vines as fodder is scanty. This study was done to determine the yield response of sweet potato at different phosphorus application rates in Galole Sub-County of Tana River County. The experiment was set up using randomized complete block design (RCBD) with the plot sizes of 5x3m. There were three replications per site. Each replicate included 16(4*4) treatments which represented all possible combinations. The experiment was repeated by space. The general objective of the study was to determine correlation between yield of sweet potato tubers and vines and phosphorus application rates in Galo le Division of Tana River District.The study showed that there were statistical significance difference between the treatment ($P < 0.05$) means for internode length, length of the vines, number of branches per plant and tuber root length. There were however, significant differences between treatment means ($P < 0.05$) on fresh weight of harvested vines, weight of fresh vines, root diameter and tuber yield.