Effects of Different Nitrogen Rates on Growth and Yield of Kales (*Brassica oleraceae* var acephala)

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Abstract

Kales (*Brassica oleraceae* var acephala) are leafy vegetables belonging to *brassica oleraceae* group acephala. Several varieties are currently grown in Kenya, they include marrow stem, and thousand headed, collards mfalme 1 and other varieties. They are annual plants preferring well rich organic matter soils. These plants are heavy feeders and therefore they require maximum nutrients necessary for plant growth, essential nutrient which is required by plants is necessary though fertilization does not need be heavy. It can be locally consumed or sold to earn income. The experimentation was carried out at university of Embu farm to study effects of nitrogen fertilizer on growth and yield of kales. Calcium Ammonium Nitrate used. The design used was Randomized Complete Block Design (RCBD) with four replications. Each block had four different rates of nitrogen fertilizer applied at rate of 0, 123.55kg/ha, 247.5kg/ha and 370.5kg/ha. Data collected include total weight harvested at various stage of planting, leave area index and also plant height measured using a ruler. Data analyzed statistically using statistical analysis system (SAS) software version 9.0. Mean separation was carried out using least significant difference (LSD) at a 0.05% probability level to compare the differences among the treatments mean. The results shows that there is significant yield increase when CAN is applied, increasing its rates of application results to an increase in yields of kales but it reaches an extent where further increase results to negative effects of crops. The maximum yield is realized when a plant absorb maximum of its nutrients. Difference is being noted from the second week onwards, this increase in height is a results plant has taken in nitrate which is important for vegetative growth. Treatment with 247.5kg/ha realized higher growth rate in height followed by 123.5kg/ha, however treatment withb370.5kg/ha did not realize positive growth despite higher rate this is because when higher nitrogen is available in the soil it become acidic hence affect root growth.