

Effect of Poultry Fertilizer and *Tithonia diversifolia* on The Growth and Yields of Kales in Embu

Auma Lavender Otieno

(A100/10781/2014)

Abstract

Land depletion and declining soil fertility are increasingly viewed as critical problems affecting agricultural activities and human welfare in Kenya. Despite the low soil fertility problem, effective demand for fertilizer has greatly reduced because many smallholder farmers lack the ability to afford the fertilizers because of the high prices. A study was conducted on the effect of poultry manure and *Tithonia diversifolia* on the growth and yields of kales in Embu, in order to assess the potential of the organic fertilizers on soil fertility improvement. Collard mfalme F1 variety was used as the plant material. The study was carried out at the University of Embu demonstration farm. The experiment was a Complete Randomized Block Design. There were five treatments and three replicates. The treatments were tithonia green manure, poultry manure, and a mixture of tithonia and poultry manure, Diammonium phosphate for the control and the treatment with no input. Poultry manure was administered at planting at a rate of 2.8 t of DM/ha. Tithonia was incorporated 15 cm deep into the soil two weeks before planting at a rate of 8.6 t of DM/ha and DAP was applied at planting at the rate of 60kg N/ha which is equivalent to the amounts of poultry and tithonia in terms of the amount of nitrogen they provide. Individual plots of size 3m by 2m were used. Spacing of interplant was 60 cm by 60 cm, resulting to 18 individual plants per plot. Data that was collected includes: plant height and the number of leaves for each treatment at interval of 10 days and fresh leaf weight collected at the end of the harvesting period. The data was analyzed using ANOVA and means were compared using least significance difference (LSD) at a 5% probability level. The results indicated that the combination of poultry manure and tithonia green manure produced the highest fresh weight of kales followed by Diammonium phosphate. The difference was not significantly difference from the treatments with DAP and poultry but significance differences were observed from tithonia sole application and the control. Combination of poultry and tithonia green manure can be used undoubtedly to complement the inorganic fertilizers.