TUBER YIELD, LEAF NUTRIENT CONCENTRATIONS AND ARBUSCULAR MYCORRHIZAL COLONIZATION OF WATER YAM (*DIOSCOREA ALATA*) IN RESPONSE TO NPK FERTILIZER APPLICATION

MICHAEL OLAJIRE DARE[1*], OLAJIRE FAGBOLA[2], ROBERT ABAIDOO[3], ROBERT ASIEDU[3].

[1]*Dept. of Soil Science and Land Management, University of Agriculture, Abeokuta, PMB 2240 Abeokuta, Nigeria. Email: lajiire@yahoo.co.uk, Tel: +234 8034650196*

[2]*Dept. of Agronomy, University of Ibadan, Ibadan, Nigeria. Email: fagbola8@yahoo.co.uk, Tel: +234*

[3]*International Institute of Tropical Agriculture, PMB 5320, Ibadan, Nigeria Emails: rabaidoo@cgiar.org, rasiedu@cgiar.org,*

* Corresponding Author: email: lajiire@yahoo.co.uk

ABSTRACT

The tuber yield, arbuscular mycorrhizal colonization and leaf nutrient concentrations of twelve *Dioscorea alata* genotypes under NPK fertilizer application were evaluated at Ibadan in the derived savanna of Nigeria. Twelve genotypes were selected from 75 genotypes of *D. alata* that were initially screened for fertilizer response. The experiment was laid out in a split-plot design with four replications. The main plot was NPK 15-15-15 rates at 0, 200, 400 and 600 kg/ha and the subplot, twelve genotypes. Tuber yields of six genotypes were significantly ($P<0.05$) increased by NPK 15-15-15 application at 200 and 400 kg/ha rates. Percentage AM colonization was not significantly affected by the application of NPK 15-15-15 fertilizer and did not correlate with tuber yield and leaf nutrient concentrations of the twelve genotypes. The leaf N and P concentrations were significantly ($P<0.05$) increased by fertilizer application compared to the control in twelve and nine genotypes respectively. Positive correlations ($P<0.05$) were observed between N and P; Ca and Mg; Ca and Zn and Zn and Mg. This study provides information on NPK 15-15-15 fertilizer requirement for some new yam genotypes.

Keywords: NPK fertilizer. Arbuscular mycorrhiza. Tuber yield. Yam. Leaf nutrient Concentrations