

Growth and yield of white guinea yam (*Dioscorea rotundata* Poir.) influenced by NPK fertilization on a forest site in Nigeria

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Abstract

Two field experiments were conducted at Evboneka in Edo State, Nigeria to determine the optimum fertilizer requirement of white guinea yam (*Dioscorea rotundata* Poir) and to develop an efficient fertilization strategy for yam production in the rainforest locations of Nigeria. We examined the dry matter production and yield, besides growth parameters under five levels of NPK in 2005 and 2006. The treatments (0, 100, 200, 300, and 400 kg 15:15:15 NPK ha⁻¹) were arranged in a randomized complete block design with three replications. Leaf area index (LAI) and dry matter content increased significantly as the quantities of fertilizer applied increased. LAI values ranged from 1.24 to 5.73 at 16 week after planting (WAP) and 2.77 to 6.37 at 24 WAP respectively for the unfertilized and 400 NPK kg ha⁻¹ plots. The corresponding values for dry matter accumulation were 1.29 to 3.70 t ha⁻¹ and 6.0 to 8.77 t ha⁻¹ at 16 and 24 WAP respectively. These parameters resulted in higher crop growth rate for the fertilized plants giving higher tuber yield and relative yields. The maximum tuber yield of 24 t ha⁻¹ and a relative yield 2.16 were obtained at 300 kg ha⁻¹ of NPK, implying the adequacy of this fertilizer dose.

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