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Effects of Poultry Manure on Soil Fertility, Growth and Yield of White Yam and Yellow Yam

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Abstract: Field experiments were conducted at Owo in the forest-savanna transition zone of southwestern Nigeria during 2007 and 2008 cropping seasons to study the effect of different levels of poultry manure (0, 10, 20, 30 and 40 t/ha) on soil fertility, leaf nutrient content, growth and tuber yield of two species of yam; namely, white yam (*Dioscorea rotundata* Poir) and yellow yam (*Dioscorea cayenensis* Lam). The treatments were factorially arranged in a randomized block design with three replications. The soil was deficient in organic matter (OM), total N, available P, exchangeable K, Ca and Mg. The results showed that poultry manure increased soil and leaf N, P, K, Ca and Mg, and soil OM, growth and tuber yield of the yams compared with the control treatments. White yam produced significantly higher yield than yellow yam. Compared with yellow yam, white yam increased tuber yield by 19%, 26%, 36%, 3% and 12%, respectively, for 0, 10, 20, 30 and 40 t/ha poultry manure. Application of poultry manure at 20 t/ha and 30 t/ha significantly improved growth and tuber yield of white yam and yellow yam, respectively, compared with the other treatments. These levels of poultry manure are, therefore, recommended for the two yam species in forest-savanna transition zone of southwest Nigeria. Recommendations of manure for yam production should be variety specific.

Key words: Poultry manure; soil fertility; yam; leaf nutrient content; Nigeria