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Soil Properties and Yam Performance as Influenced by Poultry Manure and Tillage on an Alfisol in Southwestern Nigeria

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Abstract : Field experiments were conducted to investigate the effect of soil tillage techniques and poultry manure application on the soil properties and yam (Dioscorea rotundata) performance in Ondo, southwestern Nigeria for two farming seasons. Five soil tillage techniques, namely ploughing (P), ploughing plus harrowing (PH), manual ridging (MR), manual heaping (MH) and zero-tillage (ZT) each combined with and without poultry manure at the rate of 10 tha-1 were investigated. Data were obtained on soil properties, nutrient uptake, growth and yield of yam. Soil moisture content, bulk density, total porosity and post harvest soil chemical characteristics were significantly ($p>0.05$) influenced by soil tillage-manure treatments. Addition of poultry manure to the tillage techniques in the study increased soil total porosity, soil moisture content and reduced soil bulk density. Poultry manure improved soil organic matter, total nitrogen, available phosphorous, exchangeable Ca, k, leaf nutrients content of yam, yam growth and tuber yield relative to tillage techniques plots without poultry manure application. It is concluded that the possible deleterious effect of tillage on soil properties, growth and yield of yam on an alfisol in southwestern Nigeria can be reduced by combining tillage with poultry manure.

Keywords : poultry manure, tillage, soil chemical properties, yield
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