

Elasticity of Soil Fertility Indicators and pH in Termite Infested Cassava Field as Influenced by Tillage and Organic Manure Sources

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Abstract : Apart from the devastating nature of termites as pest of cassava, nearly all termite species have been implicated in soil fertility modifications. Elasticity of soil fertility indicators and pH in termite infested cassava field as influenced by tillage and organic manure sources in Owerri, Southeast, Nigeria was investigated in this study. Three years of field trials were conducted in 2007, 2008 and 2009 cropping seasons respectively at the Teaching and Research Farm of the Federal University of Technology, Owerri. The experiments were laid out in a 3x6 split-plot factorial arrangement fitted into a randomized complete block design (RCBD) with three replications. The TMS 4 (2)1425 was the cassava cultivar used. Treatments consists three tillage methods (zero, flat and mound), two rates of municipal waste (1.5 and 3.0tonnes/ha), two rates of Azadirachta indica (neem) leaves (20 and 30tonnes/ha), control (0.0 tonnes/ha) and a unit dose of carbofuran (chemical check). Data were collected on pre-planting soil physical and chemical properties, post-harvest soil pH (both in water and KCl) and residual total exchangeable bases (Ca, K, Mg and Na). These were analyzed using a Mixed-model procedure of Statistical Analysis Software (SAS). Means were separated using Least Significant Difference (LSD.) at 5% level of probability. Result shows that the native soil fertility status of the experimental site was poor. However soil pH increased substantially in plots where mounds, A.indica leaves at 30t/ha and municipal waste (1.5 and 3.0t/ha) were treated especially in 2008 and 2009. In 2007 trial, highest soil pH was maintained with flat (5.41 in water and 4.97 in KCl). Control on the other hand, recorded least soil pH especially in 2009 with values of 5.18 and 4.63 in water and KCl respectively. Equally, mound, A. indica leaves at 30t/ha and municipal waste at 3.0t/ha consistently increased organic matter content of the soil than other treatments. Finally, mound and A. indica leaves at 30t/ha linearly and consistently increased residual total exchangeable bases of the soil.

Keywords : elasticity, fertility, indicators, termites, tillage, cassava and manure sources

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