

# EFFECTS OF RUMEN DIGESTA ON THE PHYSICO-CHEMICAL PROPERTIES OF SOIL IN NSUKKA, SOUTHEASTERN NIGERIA

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## ABSTRACT

*In tropical and subtropical areas, the importance of organic manure in improving soil physico-chemical properties and crop production for food security cannot be overemphasized. A study was conducted during 2012/2013 crop years, to investigate the effects of rumen digesta on the physical and chemical properties of soil in Nsukka, Enugu State, Nigeria. Soil samples were collected from Opi, Nsukka and treated to four rates of rumen digesta (viz. 0, 50, 100, and 150 gkg<sup>-1</sup> soils). Physical and chemical properties of the soil were determined pre and post-experiment. The results obtained revealed that rumen digesta significantly ( $p = 0.05$ ) increased the mean weight diameter (0.49 to 1.75 mm), aggregate stability (54.7% to 75.3%), soil pH (3.8 to 7.8), total nitrogen (0.01% to 0.02%), exchangeable sodium and potassium (0.22 to 4.39 cmolkg<sup>-1</sup> for Na<sup>+</sup> and 0.30 to 4.31 cmolkg<sup>-1</sup> for K<sup>+</sup>), CEC (7.2 to 14.9 cmolkg<sup>-1</sup>) and organic matter content (0.97% to 4.29%). It had no significant effect on the texture, micro-aggregate (measured as dispersion ratio), exchangeable calcium and magnesium content of the soils. The study found significant reduction in the exchangeable aluminum (1.5 to 0.0 cmolkg<sup>-1</sup>) and hydrogen (3.7 to 2.2 cmolkg<sup>-1</sup>) contents of the soils. Farmers can therefore improve the physical and chemical properties of soils by using rumen digesta as an alternative liming material.*

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