TOPOSEQUENCE ANALYSIS OF SOIL PROPERTIES OF AN AGRICULTURAL FIELD IN THE OBUDU MOUNTAIN SLOPES, CROSS RIVER STATE-NIGERIA

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ABSTRACT

We investigated toposequence of soil properties in an agricultural field in the Obudu Mountains using slope gradient and slope positions. Three slope segments along a catena were identified. Soil samples were collected at the median point of each of the contour of the landscape at two depths (0-15 and 15-30 cm), and paced subjectively to capture the full range of the landscape. The soils were analyzed for textural classes, pH, organic matter, available P and exchangeable bases. Descriptive and bivariate statistics analyses were used to analyze the data. The result reveal that variations in soil properties found among the landscape segments were probably because of toposequence characteristics in soils. However, there was no consistent sequence in the distribution of particle size fractions from the upper slope to the foot slope. The soils in the area are dominated with sand fraction. Soil reaction is slightly acidic, with moderate distribution of organic matter. Available phosphorus is low being less than 8 ppm in all the slope gradients. The coefficient of variation indicated that chemical properties were more variable than the physical properties with exchangeable calcium being the most variable (57.1 %) for surface layers and exchangeable sodium (88.9 %) for subsurface layers. The study recommends that a detail soil survey of the area should be carried out to enable farmers employ precision agriculture to enhance food production.

Keywords: Agricultural filed, Obudu Mountains, Nigeria, soil properties, toposequence.