

CHARACTERISTICS AND CLASSIFICATION OF SOILS DEVELOPED OVER TALC AT EJIBA, KOGI STATE, NIGERIA.

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ABSTRACT

Six soil profiles representing the six mapping units delineated from a detailed soil survey of selected sites at Ejiba were studied to determine the characteristics of soils developed over talc in the southern guinea savanna zone of Kogi State, Nigeria. Ejiba was selected based on the occurrence of large deposits of talc, ease of accessibility and intensive irrigation agricultural activities.

Most horizons had greater than 60% sand, 15% clay and less than 10% silt. Thus the predominant textures of the soils were sand, sandy loam, loamy sand and sandy clay loam. The soil reactions were generally slightly acidic to mildly alkaline (pH 5.70 – 7.50 in H₂O). The cation exchange capacity by NH₄OAc at pH 7.0 (CEC) values were moderate to high (4.95 cmol kg⁻¹ to 53.32 cmol kg⁻¹). The exchange sites of the soils were dominated by exchangeable calcium and magnesium with values ranging from 2.40 cmol kg⁻¹ to 26.80 cmol kg⁻¹ and 0.40 cmol kg⁻¹ to 21.60 cmol kg⁻¹ respectively. The available phosphorus was low to moderate in the surface horizons (1.88 mg kg⁻¹ to 9.38 mg kg⁻¹) and very low in the subsurface horizons (0.13 mg kg⁻¹ to 2.00 mg kg⁻¹). Five pedons were classified as Alfisol and one pedon as Inceptisol. The preponderance of Ca²⁺ and Mg²⁺ in the exchange sites of the soils implies that fertilizer application should aim at preventing complementary ion effect between K⁺ and Ca²⁺ or Mg²⁺ by increasing K⁺ supply. To maintain the productive potentials of the soils, it is suggested that an integrated nutrient management system should be adopted. This system involves the wise use and management of organic and inorganic nutrient sources to achieve tight nutrient circle with synchrony between nutrient demand by crops and nutrient release in the soils, while minimizing losses through leaching, runoff, volatilization and immobilization.