

CHARACTERISTICS AND CLASSIFICATION OF SOILS ON QUATERNARY COVERSAND IN SOKOTO-RIMA BASIN, NIGERIA

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ABSTRACT

A study was conducted to characterize and classify the soils on quaternary parent materials (Sangiwa, Sokoto, and Illela coversand) of Sokoto-Rima river basin area of Sokoto state. Areas covered with the coversand were identified using geologic map of the Sokoto-Rima basin followed by ground truthing. Soils from different coversand were examined using auger in order to ascertain relationships between coversand and geologic formations. Six pedons, two each from the three different coversand were dug and described. Morphological properties of the soils revealed a dominant spectral colour hue of 7.5YR and 10YR with a weak to moderate fine-medium subangular block at the subsurface and subsoil and single grain structure at the surface. The soils are predominantly sandy in texture with sand weighted average values of > 90 % in Sokoto and Illela coversand and > 80 % in Sangiwa coversand. The soils were acidic with pH values ranging from 4.6 to 5.4. Organic matter, exchangeable bases, CEC and base saturation were generally low indicating low fertility status of the soils. The dominant mineral found in the soils is quartz with traces of kaolinite. The soils were classified as Ustic Quartzipsamment (Sokoto and Illela coversand) and Typic Ustipsamment (Sangiwa coversand) according to the USDA Soil Taxonomy System and correlate with Haplic and Dystric Arenosols in the World Reference Base (WRB) for soil resources system. The soils may not be suitable for irrigated agriculture due to their coarsed texture and thus suitable for rain-fed agriculture.

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