PROPERTIES, CLASSIFICATION AND AGRICULTURAL POTENTIALS OF THE SOILS OF LOWER OSHIN RIVER FLOODPLAINS IN KWARA STATE, NIGERIA

B. A. Lawal[1*], A. G. Ojanuga[2], S. S. Noma[2], A. Singh[3], M. K. A. Adeboye[1] and A. J. Odofin[1],

[1]Department of Soil Science, Federal University of Technology, Minna., [2]Department of Soil Science and Agricultural Engineering, Usmanu Danfodiyo University, Sokoto., [3]Department of Crop Science, Usmanu Danfodiyo University, Sokoto.

Abstract

A semi-detailed soil survey of the floodplains of lower Oshin River in Kwara State, Nigeria was carried out using rigid-grid survey method. Three soil units designated as OSH-1, OSH-2 and OSH-3 were identified on the basis of drainage, topography, soil texture and depth. The soil texture ranges from sandy clay loam in OSH-1 to sandy loam in OSH-2 and OSH-3 for the topsoil overlaying clay loam or sandy loam subsoil. The soil pH (H_2O) was moderately to slightly acid with values ranged from 5.1-5.7 in OSH-1 and 5.9-6.9 in OSH-2 and OSH-3. The available P in all soil units decreased with soil depth and the values for the topsoil were 22, 40 and 10 mg kg^{-1} respectively for OSH-1, OSH-2 and OSH-3 and were rated high in OSH-1 and OSH-2, and medium in OSH-3. Also, organic C content for topsoil was 27.5, 35.5 and 28.0 g kg^{-1} for OSH-1, OSH-2 and OSH-3 and its distribution within the profiles was irregular except in OSH-1 where it decreased regularly with soil depth. The CEC value for the topsoil was between 19.14 and 21.99 $cmol_{(+)}$ kg^{-1} and all rated high. The soil units were classified as Typic Endoaquepts/ Fluvic Cambisols (Clayic), Aquic Ustifluvents/ Gleyic Fluvisols (Arenic) and Oxyaquic Ustifluvents/ Gleyic Fluvisols (Eutric) using USDA Soil Taxonomy and WRB systems respectively. With exception of drainage problems which can be overcome by provision of adequate drainage infrastructure, the soils of the lower River Oshin floodplain have great potential for rain-fed agriculture.

*Corresponding author E-mail address: lawalba63@yahoo.com.
Keywords: Agricultural potentials; soil classification; floodplains

Received: 2012/02/02

Accepted: 2012/02/29