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Mapping and Classification of upland soils formed from sand stone and micaceous schist in Koko/Besse Area in North western Nigeria.

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The study was set up to characterize upland soils of Koko/Besse Local Government Area in North western Nigeria for sustainable intensification of cropped land. Soil units were identified using flexible grid method. Based on the geology, morphology and physical properties the soil units were identified provisional Soil map was produced in a GIS environment using combination of DEM and field boundary parameters. The major pedogenic processes included ferruginisation, lessivage, and mineralization. All these processes combined to form ferrallitic soils with low organic matter content. The soil units on sand stone were generally low in Cation Exchange Capacity (CEC) (0.88-3.82cmol/kg) while the soils formed from metamorphic rock had low to high CEC (2.92-12.44) The Phosphorus distribution was generally low (0.71–6.96 mg/kg) while Nitrogen content was less than or equal to 0.07% in all the units Soil organic carbon ranged from 0.21-0.95%. The major pedogenetic processes included, cummilation and gleization at the lower slopes while ferrolyses and lessivage and ferruginisation with formation of iron stone rubbles and plinthite was dominant at upper slope position of the soils formed from sand stone. While mineralization, salinisation and lessivage were dominant processes with basement complex. The soil units were classified using USDA classification system. The soils on sand stone include Plinthustults, Kandiustults, Dystrochrept. Natrustalf and Kandiustalf dominated areas underlain by micaceous ferromagnesium rock. Based on the characterization, sustainable land use will involve use of fortified organic fertilizers, green manure, leguminous cover crops and erosion control measures such as vetiver grass strips