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The Validation of Soil Transformation under Chhotanagpur Plateau – A Case Study

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Abstract–*Typical four pedons representing an undulating terrain under rainfed agro-eco system from Ranchi in Chhotanagpur plateau of Jharkhand developed from granite-gneiss under sub humid climate were studied for their physical, chemical and mineralogical characteristics. Soils are deep to very deep, red to grey in colour, sandy clay loam to clay in texture and moderate to severely eroded. The soils of uplands are strongly to moderately acidic (pH 5.2 to 5.9), low in organic carbon, CEC and exchangeable bases while the soils of low land is moderately acidic to neutral (pH 5.5 to 7.5), high in organic carbon, CEC and exchangeable bases. The variation of landform from upland to low land gives rise to the development of soils of different characteristics including mineralogical characteristics. Kaolinite is the dominant clay mineral in theses soils followed by mica especially in the upland situation indicating intensive leaching and relatively stable landform. Sm/K in the upland situation with concomitant increase of smectite in the micro depressions regulates the probable transformation of smectite to Sm/K under acidic weathering environment of Ranchi plateau.*

Keywords: Clay mineralogy, Soil characteristics, Granite-gneiss, Ranchi plateau