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Morphology and genesis of the calcic layer in soils of arid Rajasthan

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Occurrence of a calcic layer is the most conspicuous pedogenic manifestation in the soils of the region. Based on a study of 260 pedons, various forms of lime and other morphological attributes of the calcic layer were described and a generalised distribution of the dominant forms shown on a map for an area of 29,000 km^2. The studies revealed that the strongly cemented, plugged concretionary formation and the lithic calcrete were associated with the Plio-pliestocene and still older surfaces. The calcic layer in the dominant late Pleistocene alluvial plains was a variable admixture of finely dispersed and hard, macro-crystalline concretionary forms. The concretions had a mean $CaCO_3$ and $MgCO_3$ contents of 81.6 and 1.8 per cent respectively, the rest being silicate residue. The radio-carbon carbonate dates ranged from 11,300 to 33,700 years, B.C.

The observations suggest that lime enrichment has formed part of the aggradation process of these late pleistocene plains under a more moist climate than that of present day. The segregation of lime involved both the alluvial carbonate and that inherited. Evidence showed that the morphogenetic appearance of calcic layer was not, essentially, a chronological sequence.

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Criteria for mapping of calcimorphic soils of the mediterranean region

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Under mediterranean climate, soils may be developed along two paths: Calcimorphic path in which soils are supersaturated with respect to calcium and do not have any A_2 horizon, and acidic path along which upper horizons are temporarily depleted in calcium, and an A_2 horizon is formed. Mediterranean red soils are intermediate between those two paths.

When calcimorphic soils get more confined, due to climatic, topographic or lithologic factors, a number of morphologic features are changed: A_1 horizon

more or less pale colored, A_1 and A_2 more or less red coloured, calcium content in A and B horizons, calcium carbonate accumulation, vertic features, gypsum and soluble salts accumulation, and wetness. These changes are accounted for by mapping at the level of pedological horizons.

GENESIS AND DESTRIBUTION OF VERTISOLS

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Geographical distribution of Vertisols and Vertic soils in China

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This paper deals with a preliminary map of Vertisols and Vertic soils in China, compiled on the basis of different soil survey reports and publications. The Vertisols and Vertic soils are present in ten different regions. According to "Soil Taxonomy" (USDA, 1975) various kinds of Vertisols are present mostly in the regions of Nanyang basin of the south-western Henan province, the Huai River Plain, plain of western and northern Shandong Peninsula, the northern part of Hainan Island and the Leizhou Peninsula respectively. Different Vertic soils are present in the other regions. In the region of big lake basins of the Yangtze River there are mostly Vertic Fluvaquents of different heavy clay parent materials. They are not classified as Vertisols because of their low-lying topographic position and aquic moisture regime of the soil.

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Comparative diagnosis of Vertisols and Vertic subgroups—a case study of peninsular India

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Soils of Typic Chromusterts and Vertic Ustropepts in peninsular India were studied to define the diagnostic characteristics of these taxa. The diagnostic characteristics in partial modification and some in addition to those already given in Soil Taxonomy are brought out. Vertisols must have gilgai and intersecting slicken sides that form parallel piped structural aggregates with long axis tilted at 30° to 60° from horizontal at depths between 30 to 160 cm; varying

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