

Red soil

Red soil is a type of soil that develops in a warm, temperate, moist climate under deciduous or mixed forest, having thin organic and organic-mineral layers overlying a yellowish-brown leached layer resting on an illuvial red layer. Red soils are generally derived from crystalline rock. They are usually poor growing soils, low in nutrients and humus and difficult to cultivate because of its low water holding capacity. Red soils denote the third largest soil group of India covering an area of about 3.5 lakhs sq. km (10.6% of India's area) over the Peninsula from Tamil Nadu in the south to Bundelkhand in the north and Rajmahal hills in the east to Katchch in the west. They surround the red soils on their south, east and north.

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Distribution

These soils are found in large tracts of western Tamil Nadu, Karnataka, southern Maharashtra, Chhattisgarh, Telangana, Andhra Pradesh, Odisha and Chotanagpur plateau of Jharkhand. Scattered patches are also seen in (West Bengal), Mirzapur, Jhansi, Banda, Hamirpur (Uttar Pradesh), Udaipur, Chittaurgarh, Dungarpur, Banswara and Bhilwara districts (Rajasthan).

Content

This soil, also known as the omnibus group, have been developed over Archaean granite, gneiss and other crystalline rocks, the sedimentaries of the Cuddapah and Vindhayan basins and mixed Dharwarian group of rocks. Their colour is mainly due to ferric oxides occurring as thin coatings on the soil particles while the iron oxide occurs as haematite or as hydrous ferric oxide, the color is red and when it occurs in the hydrate form as limonite the soil gets a yellow colour. Ordinarily the surface soils are red while the horizon below gets yellowish colour

Characteristics

The texture of red soils varies from sand to clay, the majority being loam. Their other characteristics include porous and friable structure, absence of lime, kankar and free carbonates, and small quantity of soluble salts. Their chemical composition include non-soluble material 90.47%, iron 3.61%, aluminium 2.92%, organic matter 1.01%, magnesium 0.70%, lime 0.56%, carbon dioxide 0.30%, potash 0.24%, soda 0.12%, phosphorus 0.09% and nitrogen 0.08%. However significant regional differences are observed in the chemical composition

In general these soils are deficient in lime, magnesia, phosphates, nitrogen, humus and potash. Intense leaching is a menace to these soils. On the uplands, they are thin, poor and gravelly, sandy, or stony and porous, light-colored soils on which food crops like bajra can be grown. But on the lower plains and valleys they are rich, deep, dark colored fertile loam on which, under irrigation, they can produce excellent crops like cotton, wheat, pulses, tobacco, jowar, linseed, millet, potatoes and fruits. These are also characterized by stunted forest growth and are suited to dry farming.

Morphology

Ray Chaudhary (1941) has morphologically grouped red soils into following two categories:

(a) Red Loam Soil: These soils have been formed by the decomposition of granite, gneiss charnockite and diorite rocks. It is cloddy, porous and deficient in concretionary materials. It is poorer in nitrogen, phosphorus and organic materials but rich in potash. Leaching is dominant.

These soils have thin layers and are less fertile. These soils are mainly found in Karnataka (Shimoga, Chikmagalur and Hassan districts), Andhra Pradesh (Rayalaseema),Telangana [Whole Telanana] , eastern Tamil Nadu (especially tiruvannamalai and cuddalore district), Orissa, Jharkhand (Chotanagpur), Uttar Pradesh (Bundelkhand), Madhya Pradesh (Balaghat and Chhindwara), Rajasthan (Banswara, Bhilwara, Bundi, Chittaurgarh, Kota and Ajmer districts), Meghalaya, Mizoram, Manipur and Nagaland.

(b) Sandy Red Soil: These soils have formed by the disintegration of granite, grani gneiss, quartzite and sandstone. These are friable soil with high content of secondary conc tions of sesquioxide clays.

Due to presence of haematite and limonite its colour ranges from red to yellow. These soils have been rightly leached occupying parts of former eastern Madhya Pradesh (excluding Chhattisgarh region), neighbouring hills of Odisha, Andhra Pradesh, and Tamil Nadu (Eastern Ghats and Sahyadris).

The Indian Council of Agricultural Research (ICAR) has divided red soils into four categories-(a) red soils, (b) red gravelly soils, (c) red and yellow soils, and (d) mixed red and black soils.

See also

- Seerat, the red clay soils of North America.

References

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