Soils of Jharsuguda District

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Jharsuguda district is situated in the north western part of Orissa state. It is surrounded by Sundargarh district in the north, Sambalpur in the east, Bargarh in the south and Chhatisgarh state in the west. Extending over an area of 220,000 ha, it occupies 1.41 % of the states area. It receives 1652 mm of average annual rainfall. The district has only one sub-division (Jharsuguda) and 5 blocks (Jharsuguda, Lakhanpur, Kolabira, Laikera and Kirmira). It is one of the most important industrial district of the state with wealth of natural resources (mines and water). The most important rivers flowing through this district are Mahanadi and Ib, the water of which have been most helpful in setting a number of industries in this district. The Mahanadi reservoir formed by Hirakud Dam is adjacent to the block of Lakhanpur and Jharsuguda. The district can be marked into two natural physiographic divisions as follows.

1. Northern Jharsuguda Plateau

   The entire Jharsuguda district except Laikera block comes under this physiographic division. The average height of this division ranges between 500 feet to 750 feet above the mean sea level. This division has no high hills but the terrain mostly comprising of high lands is quite undulating draining into the river Ib which is the most important tributary of river Mahanadi in the Hirakud Catchment (Mishra 1972, 1988). The blocks included in this division are Kolabira, Kirmira, Jharsuguda and Lakhanpur. Many of the streams of this division directly drain into Hirakud reservoir. Lakhanpur block which forms the northern boundary of Hirakud reservoir has a number of such streams running in north-south direction.

2. Eastern Kuchinda Plain

   Located on the north of the high hill ranges of Deogarh district and well-drained by the river Bheden and her tributaries (Mishra et al., 1984), this is a flat terrain, almost plain with high level lands those are quite extensive. This physiographic division comprises of the whole of Laikera block of Jharsuguda district and major parts of Kuchinda and Bamra blocks of adjacent Sambalpur district. The proportion of flat upland in this division in rather very high. In Laikera block it is as much as 75 per cent of the total cultivated area which is the highest among all the blocks of the district.

Soils

Climate of the district is characterized by dry hot summer, monsoon rains and cold winter. May is the hottest month and December the coldest. The mean summer temperature is 38o and mean winter temperature is 15oC. August is
the rainest month (Mishra and Mohapatra, 1996). The most important forest species of the district are Sal, Asan, Kusum, Kendu etc. Most of the district is based on Archaen rocks, such as gneisses, granites, mica schists and quartzites (Sarkar et al., 1998). Laterites belong to the tertiary system which are also observed in many parts of the district (Mishra, 1988).

The agricultural lands of the district can be divided into different land types, and sub-land types with distinct physiographic units (Mishra, 1985). However, broadly these could be classified as high land, medium land and lowland.

The topography is mostly undulating comprising of ridges and valleys. At the ridge crest are the upland and at the upper slopes the bunded and unbunded lands are locally called as Att and Mal respectively which together constitute the high land. The valley bottom lands which constitute the low lands are called Bahal and the lower valley side lands constituting the medium lands are called as Berna (Mishra, 1985).

All the five factors of soil formation (climate, vegetation, parent material, time and topography) have considerably influenced genesis of soils though influence of topography (indicating different landtypes) has been the highest. Consequently great variation in soils in different parts of the district is observed. These belong to the four orders according to the recent system of Soil Taxonomy such as Alfisols, Entisols, Inceptisols and Vertisols (Mishra and Mohapatra, 1996, Sahu and Mishra, 2005; Mishra, 2007). However, as per the earlier system of classification these can be marked into the following two great groups.

1. Laterite and lateritic soils

In both the eastern Kuchinda plain and northern Jharsuguda plateau lateritic soils occurs extensively. This is chiefly attributed to the comparatively flat uplands favouring greater illuviation of iron and manganese and excessive leaching of bases. This is reflected in high soil acidity in all the five blocks of Jharsuguda district (77 % in Jharsuguda; 72 % in Lakhanpur; 78 % in Kirmira; 76 % in Kolabira and 72 % in Laikera block). Around the periphery of Hirakud reservoir low level ground laterites are observed which could be attributed to comparatively higher water table.

2. Alluvial soils

Alluvial soils are observed in limited areas of the district mostly occurring in levees of river Mahanadi and Ib. Besides localized ones along the stream terraces have stratified alluvial material deposited along the stream banks.

Soil scape characteristics of Jharsuguda district

The soils on different land forms vary widely in their characteristics as described below (Sarkar et al., 1998).

Soils of hill slope :

The soils occurring on moderately sloping hills are dominantly shallow to moderately shallow, somewhat excessively drained, loamy-skeletal to loamy-fine texture. They are moderately to severely eroded and have moderate stoniness; have low to medium AWC. These soils have been classified as Lithic Ustorthents.

Soils of gently sloping lands

These are deep to very deep, well drained fine loamy textured with moderate erosion and have medium AWC. They are classified as Ultic Haplustalfs.
Soils of very gently sloping uplands

These land types are dominantly occupied by deep to very deep and well drained soils with loamy texture and medium AWC. They are slightly eroded and have been classified as Rhodic Paleustalfs.

Soils of very gently sloping valleys:

Soils occurring on very gently sloping valleys are moderately deep to deep, well drained, fine-loamy textured with moderate erosion. They are classified as Typic Ustochrepts.

Fertility status of different blocks of Jharsuguda district

Seventy five per cent soils of the district are acidic. The available nitrogen (organic carbon) status of Lakhanpur block is high where as in the other four blocks viz., Jharsuguda, Kolabira, Laikera and Kirmira it is medium. The available phosphorus and potassium status of all the five blocks is medium.

References


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