Soil types of India: A Review

Accepted 26th October, 2020

ABSTRACT

This paper describes soil formation from the rocks and minerals. Due to undergoing the effect of factors such as parent material which took long duration in which particles break due to climatic factors like heat and then separated due to outwash, wind and deposits on the surface. Climatic factors play role as temperature, precipitation, evapotranspiration. Soil organisms are involved in this process of soil formation such as microorganisms, vegetation. There are different types of soils presents in India. Classification of soil types is a powerful tool to utilize our national soil resource purposefully and scientifically. The efforts being made since long past did suffer from common acceptance. In order to present a simplified version of soil classification of Indian soils, efforts are made after thorough discussions and interactions to present this scheme for Indian soils.

Key words: Soil classification, black soil, saline soil.

INTRODUCTION

India has a vast longitudinal and latitudinal extent and different regions in India have different kinds of soil because different regions have different parent material and climate conditions.

Soil is composed of both biotic-living and once-living things, like plants and insects-and abiotic materials-non-living factors, like minerals, water and air. Soil contains air, water and minerals as well as plant and animal matter, both living and dead. These soil components fall into two categories. On the basis of genesis, color, composition and location, the soils of India have been classified into: (i) Alluvial soils (ii) Black soils (iii) Red and Yellow soils (iv) Laterite soils (v) Arid soils (vi) Saline soils (vii) Peaty soils (viii) Forest soils.

SOIL TYPES OF INDIA

This report introduces many important soil types of India. Including concept. Figure 1 shows the soil map of India.

(i) Alluvial soil: Alluvium is a finer particle of rock materials carried in suspension and later deposited by the river in its bed and bank. The soils which is composed of alluvium is called alluvial soil. Alluvial soils are formed mainly due to silt deposited by Indo-Gangetic-Brahmaputra River. In coastal regions some alluvial deposits are formed due to wave action.

(ii) Black soil: It is also known as Regur or black cotton soil as it is best suited for cotton cultivation. In India black soil are largely found in this states Maharashtra, Madhya Pradesh, parts of Andhra Pradesh, Northern part of Karnataka, Gujarat, parts of Tamil Nadu and Rajasthan.

(iii) Red soil: These are basically reddish to brownish in color generated from weathering of granites, gneisses and crystalline rocks and grade from poor, thin and light colored soils on the uplands to that of fertile deep dark color soils of plains and valley. Found in Tamil Nadu, Southern Karnataka, South-East Maharashatra, parts of Madhya Pradesh, Goa, Kerala, Orissa, Bihar, West Bengal, Uttar Pradesh, Eastern Parts of Rajasthan, Assam, Manipur, Tripura, Meghalaya and Nagaland.

(iv) Laterite soil: Laterite is a genesis that is only found in tropical country like India with different wet and dry climatic conditions. They are mainly found on the top of Western Ghats and Eastern Ghats along with Vindhyas and satpura in these states Kerala, Madhya Pradesh, Karnataka, Assam, Orissa, Assam.
(v) **Arid soil**: these soils are mainly found in semi-arid regions of India like western Rajasthan, southern Haryana.

(vi) **Saline Soil**: These soils are mainly found in saline, semi-arid parts of Rajasthan, Punjab, Haryana, Maharashtra.

(vii) **Peaty soil**: These types of soils are generated in places with hot humid conditions. Mainly found in Orissa, Uttar Pradesh.

(viii) **Forests soil**: Forest soils are formed in the forest areas where sufficient rainfall is available. These are found in the forest areas of Himalayas, Sahyadris, Eastern Ghats and terai region.

**Soil types of India**

The study areas and their soil type are shown in Figures 1 and 2.

**REVIEW OF LITERATURE**

Murthy RS, Pandey S et al. (1983) described Soil map of India: new initiative, Area and distribution of soil groups, Soils in different zones of India, Progress in basic knowledge on Indian soils. Velayutham, M. and Pal, D. K. et al (1999) worked on classification of Indian soil. The soil resources vary in agro-ecological sub-regions (AESRs) in terms of soil reactions, base saturation, nutrient-holding capacity, organic matter content and length of growing period (LGP) to support a host of agricultural and horticultural crops. Because India is a large country we divided it into major zones, viz. northern, western, central, southern, eastern, north eastern and islands. G.KaviMukilan et al. (2006) worked on black soils. These are mineral soils which have a black surface horizon, enriched with organic carbon that is at least 25 cm deep that 3 types of black soils are present (i) High black soil (ii) Medium black soil (iii) Low black soil, it is mainly covered area of M.P, Punjab, M.H. Tapas Bhattacharya et al. (2013) carried work on major soil distribution of different types of soils. Soil resources vary in agro-ecological sub-regions (AESRs), determined the pie chart of various soil orders in India and their extent in India. R.Psharma et al. (2020) described that three representative alluvial soils were studied from Kothari river basin of Bhilwara district in southeast Rajasthan to assess degree of chemical weathering and pedogenesis. Morphological, geochemical, mineralogical and other analytical investigations were carried out. Soils were classified as Entisols and Inceptisols. These soils are mostly sandy with more than 50% of fine and medium sand fractions, silt to clay ratio more than 0.45 and little textural variation suggesting more uniform weathering. These soils are slight to strongly alkaline with high exchangeable sodium (>15%) and cation exchange capacity less than 10 cmol(+)/kg<sup>-1</sup>. Mineralogical investigations showed the dominance of micas and smectites in Pedon 1 (P1) and Pedon 2 (P2) and increase of smectites and micas in Bw3 horizon of P3 under strong alkalinity and high silica activity.
Figure 2: Area and distribution of soil groups

with limited lessivage. The widest occurrence of the alluvial soils is in the Indo-Gangetic Plain starting from Punjab, Haryana, Uttar Pradesh, Bihar, West Bengal and Assam in the east, northern parts of Gujarat also have some covers alluvial soils. Basantasingh et al. (2013) worked on lateritic soils. These are particularly found on high flat erosion surfaces in areas of high (>200cm) and seasonal rainfall. The alternating wet and dry seasons lead to the leaching away of the siliceous matter of the rocks leaving behind the compounds of iron and aluminium. These are zonal soils. Alka Dwevedi et al. (2017) described red soils along with its minor groups form the largest soil group of India. The main parent rocks are crystalline and metamorphic rocks like acid granites, gneisses and quartzites.

CONCLUSION

On the basis of review of the numerous research paper we can conclude that different types of soils in India designate that the soil diversification is quite large because of variability of various factors of soil formation. Rationalization about Indian soils made so far, are unlikely to have broad applicability in an agriculturally progressive country like India.

REFERENCES


Department of Soil & Water Conservation, Government of Punjab (2017). Department Of Soil And Water Conservation, Punjab, Schemes/Programmes Of The Department.


Cite this article as:

Submit your manuscript at
http://www.academiapublishing.org/journals/ajar