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SOIL CHARACTERISTICS OF ANER BASIN IN SATPUDA MOUNTAIN

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ABSTRACT

The soil of the Aner basin is discussed in this paper. The study area of the Aner basin extend in between 21º 15' to 21º 30' North latitude and 74º45' to 75º 00' East longitude. This paper covers soil types, soil profile, and soil erosion and physical and chemical characteristics of the soils occurring in the study area. These are the basic conditions present in the study area. All these factors determine the soil characteristics of Aner basin. Which is underlain by Deccan trap basaltic formation and litho logically homogeneous. The lower much of the basin is covered by alluvial formation. Aner is the mountainous and forest covered basin.

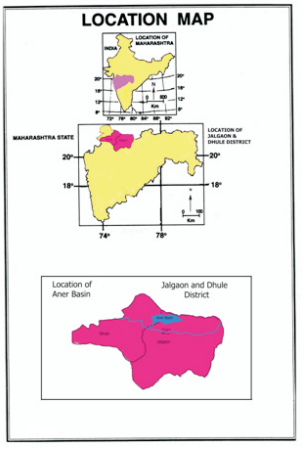
KEYWORDS:*Aner basin, soil type, profile .*

INTRODUCTION

The soil of the Aner basin is discussed in this paper. This paper covers soil types, soil profile, and soil erosion and physical and chemical characteristics of the soils occurring in the study area. These are the basic conditions present in the study area. All these factors determine the soil characteristics of Aner basin. Which is underlain by Deccan trap basaltic formation and litho logically homogeneous. The lower much of the basin is covered by alluvial formation. Aner is the mountainous and forest covered basin..

Location

Aner basin is located in Satpuda Mountain covering the Northeastern part of Dhule district and Northwestern part of Jalgoan district of Maharashtra. Hence its location is transitional between Dhule and Jalgoan district of Maharashtra. It extent between 21°15' N to 21° 30' N. Latitude and 74°45' E to 75°00' East longitude as shown in the Fig. No.2.1. Basin drains nearly 1240 Sq.km area of Shirpur Tahasil of Dhule and Chopada Tahasil of Jalgoan District.



DISCUSSIONS

Soil Types: -

Of the various soils forming factors relief, slope and climate basically influence the soil formation in Aner basin. The basin in general presents undulating topography with hillocks of the Satpuda ranges in the Northern area. The rainfall in this area is comparatively higher.

The soils of the Aner basin can be divided two broad groups, which residual soils in the north especially in the higher summits of the Satpuda range. The Alluvial tract of Tapi flood plain in South.

1) Residual Soils –

The Residual soils of the Aner basin are derived from trapped rocks in the Satpuda ranges. The soils are comparatively thin and predominately reddish in color. Soils are acidic in nature and contents. They contain comparatively higher organic matter in some localized parts. Soils are rich in humus and organic matter in forest area. The forest litter decomposed and acts as the organic matter in to the soils. The reddish color of the soils may be due to the oxidation processes. The thickness of such soils is less than 30 cm. The residual soils are comparatively less productive than the alluvial soils. The residual soils covers nearly 70% area of the basin.

2)Alluvial soils: -

The lower reach of the Aner basin covers alluvial soils. However in the interior alluvial soils also present in small pockets. The soils are depositional in origin. They are clay, loam to clay texture with dark brown to vary in dark gray in color. The structure is sub-angular blocky to angular blocky. The soils are alkaline in reaction with P.H. almost fluctuate around 8.5. The soils are poor in organic matter but rich in calcium carbonate. These soils are fertile and highly productive. They covers less than 30% area of the Aner basin.

Apart from these two board groups of soils some colluvial soils are also found in the basin. Over the piedmont zone of the Satpuda and piedmont slopes, the soils are coarse in texture and composed of weathered debris in the form of tracks. The soil texture is coarse and structure is angular. They are the transitional talus. Hence medium organic matter, medium content of calcium carbonate. The P.H. of the soil fluctuate around eight. Such soils are medium productive.

Soil Profile: -

A vertical section from surface through soil layer is called as profile. Soil profiles of each cross section have been drawn with the help of field observation and measurements. Each profiles represents successive horizons differentiated from one another however genetically related to the parent material. The profile shows three horizons above the parent rock.

The upper most is 'A' horizon, which covers a black and reddish soil layer with wide variation in thickness. However the thickness of the black layer is considerable in alluvial soils.

Alluvial soils are river born soils. Sediments are deposited through the river flow. These soils vary greatly in there physical and chemical properties depending upon the phase of parent material. In the catchment area where topography and climatic conditions may vary. The alluvium deposited in the valley in the form of flood plain. These soils are poorly drained alkaline in nature. The calcareous conversation has been developed in the profile. A profile of alluvial soil is broadly divided into three major zones: - Upper layers with younger alluvium lower yellow-wish in color rest off conglomeritic bed. These soils present in Tapi river basin in form of flood plain and flood terraces Alluvium soils are agriculturally very significant. These are the most fertile and productive in this area. These are called as black cotton soils.

The black layer is rich in organic matter the blackness of the soil due to the humus. Below the black layers there is red-yellow earth consist of flood layers. These horizons as considerable depth on an average the depth is around one meter. Bellow this layer a whitish layer reach in calcareous material. This layer has hardly 30 to 50 cm thickness. Bellow this layer there is sand and silt layer with wide variation in the composition of sand, silt and clay. This layer has a thickness up to 10 to 20 cm. Bellow this layer there is a conglomeratic layer with rounded boulders cemented with calcareous material. The conglomerate rests directly on a basalts rock or the weathered basalts rock. A soil profile covers two parts upper solum and lower regolith. The hypothetical profile in alluvium is given in the Aner basin. The soil profile in a pediment and pediment zone and in the forest area varies greatly. The soils over the pediment are comparatively thin and consists of light yellow-wish in color. The textural composition varies greatly. Soils are rich in calcareous material soil consists of angular fragments. These are shallow soils rest on the parent rock. These are also alkaline soils comparatively less productive and less fertile.

Interior of the Aner basin covered with comparatively dense forest. Soils are black and red color. The black color is due to humus. Humus is generally rich in soils. The forest litter decomposed and the organic carbon is added to the upper horizons of the soil. These are comparatively require more rainfall. Therefore the chemical

weathered material influence soil profile.

Physical Characteristics of Soils:-

The soil is a complex mechanical system consisting of three phases solid, liquid, and gaseous. Physical properties of a soil greatly influence its use and behavior towards plant growth, physical properties also influence the chemical and biological behavior of a soil.

The physical properties of a soil depend on the amount size, shape, arrangement and mineral composition of its particles. Some of the important physical properties of soils are texture, structure, density, color and temperature.

The physical characteristics of soils in the Aner basin depend upon the sand, silt, clay, and the water holding capacity. The highest (70%) percentage of sand in the village of Plioda, and the lowest percentages (10%) of sand in the village of also Agantisim. The highest percentage of silt (50%) in the village of Ganpur, Taluka Chopada and also village of Karjane. The lowest percentage of silt (15%) Hisale. The highest percentage of clay (70%) in the village of Piloda and lowest percentage of clay (10%) in the village of Hisale. The highest % of water holding capacity (67.18%) in the village of Gadriyakhera, and lowest % of W.H.C. (51.34) in the village of Langra Amba.

Chemical Characteristics of soil:-

Soil reaction is the most important single chemical characteristics influencing many physical and chemical properties of the soil. It effect is change of P.H. of soil. It is usually necessary determine acidic, alkaline and neutral to soil reaction. The chemical characteristics of soils of Aner basin are summarized as follows.

1) The highest soil P.H. in the village (7.99) of the Satrasen and lowest (7.62) P.H. in the village of Piloda.
2) The highest salinity of the soil in the village of Gadriyakhera (0.931), and lowest salinity of the soil in the village of Morchida (0.503).
3) The highest soil, free lime in the village of Karjane (12.00) and lowest soil free lime in the village of Gadriyakhera (3.37).
4) The highest organic carbon in the village of Karjane (0.87) and lowest organic carbon in the village of Ajantisim (0.33).
5) The highest sulpher in the village of Hisale (40.77) and lowest sulpher in the village of Umarti (23.81).
6) The highest potash in the village of Hisale (745 kg) and lowest potash in the village of Gadriyakhera (329 kg).
7) The highest Exchangeable Calcium in the village of Ghodgaon (78.83%) and lowest 65.31 % of exchangeable calcium in the village of Morchida (65.31%).
8) The highest % of exchangeable magnesium in the village of Ganpur (30.54%) and lowest % of exchangeable magnesium in village of Ajantisim (19.22%).
9) The highest % of exchangeable sodium in the village of Mohanpura (2.51%) and lowest % of exchangeable sodium in village of Piloda (1.41%).

Soil Erosion and Conservation: -

Aner is the severely suffering from soil erosion. The emphasis is also laid on the erosion problem over sloping land surface in Aner basin.

Soil erosion is the wearing away detachment and removal of soil from one place and its deposition at another place through the forces of stroking and moving water the erosion that takes place is normal. The erosion over floodplain in the village of Piloda, Hisale, Bablaz Taluka Shirpur and also Ajante Sim, Mohada, Anwarde, Galangi and Ganpur Dam Taluka Chopda are seen acccelerately.

Conservation: -

The soil thins outer mantle of the earth ranging in depth from few inches to a few feet. Nature takes centuries to produce this soil but man may loose it in a few years. Therefore save our soil against erosion because the soil once lost is difficult and expensive to replace.

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