



Soil classification of district Bhiwani

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Abstract

Normally, the soils which are found at the place of their origin, known as remaining soils, are poorer than those which have been carried from the place of their origin. The transported soils are rich and have a variety of minerals in them. The transported soils are: (a) loess, transported by wind (b) alluvial, transported by river water (c) glacial, transported by glaciers.

The fertility of the soils decreases with constant cultivation. Soil becomes unproductive if the fertility is not changed. This can be achieved by leaving the land fallow, by rotation of crop and by use of manures and fertilizers.

Soil erosion and water logging have become major problems with soils as such these should be blocked by adopting the line cultivation, terrace farming, constructing dams and dykes in this paper.

Keywords: *Soil, Line cultivation, Terrace farming, Dams, Dykes, Soil Transportation, Crop Rotation.*

Introduction

The richness of soil is another important physical factor affecting agriculture. Soils differ in respect of physical and chemical composition. Soils may be fine or coarse, porous or non-porous. In general fine soils like loam or silt are very fertile. The chemical composition of the soil determines its productivity.

Generally, the soils which are found at the place of their origin, known as residual soils, are poorer than those which have been transported from the place of their origin. The transported soils are rich and have a variety of minerals in them. The transported soils are: (a) loess, transported by wind (b) alluvial, transported by river water (c) glacial, transported by glaciers.

The fertility of the soils decreases with constant cultivation. Soils become infertile if the fertility is not renewed. This can be achieved by leaving the land fallow, by rotation of crop and by use of manures and fertilizers.

Soil erosion and water logging have become major problems with soils as such these should be checked by adopting contour farming, terrace farming, constructing dams and dykes.

Good soil is part of the farmer's stock in trade. So good farming also depends upon good soil. Top soil is the principal feeding zone of plants, which provides food for human consumption and fodder for livestock. The soil development is determined in large measures by conditions of temperature and moisture, so that soil types show a close relationship between surface of land and the soil that develops on it. We should not regard the soil as some static resource which provides food to the plants. It is depleted while giving nutrition to our crops. We should consider

it as sensitive, vital, and dynamic whole having characteristic functions and possibilities in relation to crop production which are certain to change by man's interference. When over worked, it leads to depletion.

The alluviums of Bhiwani are on the whole, fertile and dependent on nature, but there is lack of water facilities. Rain erosion and wind erosion are prevalent in Bhiwani, because the alluviums are loose in texture due to low rainfall and excessive evaporation. The present description of the soil is the synthesis reports, soil samples, and personal observations.

Physical Properties of Soil

A vast area of Bhiwani district is covered by the alluvium deposits of Pleistocene times. Main component of these alluvium are sand, and clay. The component of soil helps in finding the quality of land for successful crop growth. Different types of particles are present in soils; and on the basis of these particulars are present in soil texture can be classified as salty, sandy, and loam. apart from purely physical property of permeability, however, soil properties are also very closely bound up with the relative amount of clay and quartz in the inorganic fraction of soil (Eyre, 1963).

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Chemical Properties of Soils.

The chemical condition of soil is also necessary for the required nutrients for plants. The chemical composition of the soil depends upon weathering and biotic activities. Under the chemical properties the salinity and alkalinity of the soil is also taken into account. The sandy soil is more alkaline, while the loam soil is saline. Both are poor in humus due to the absence of natural vegetation. So chemical properties of soil are not less important than physical properties.

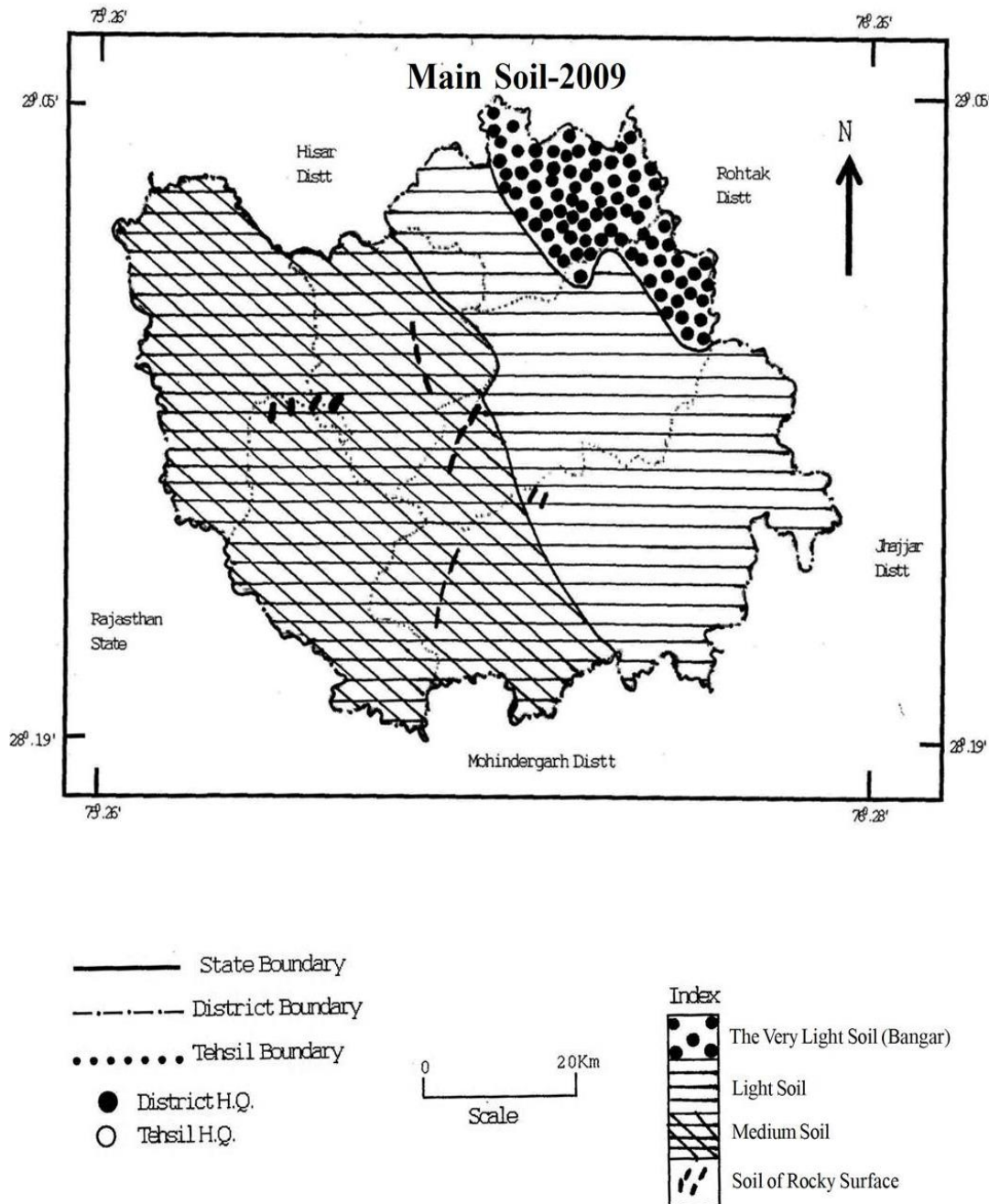
Agronomic Classification of Soils

Since crop growth and production are the main functions of the soils under cultivation, the criteria of classification should be agronomic. There is soil conservation department which surveys the soils of each village. From the department some information was obtained about the soils of Bhiwani district. The soil categories summarized below have been written on the basis of soil texture and structures:

1- Loam (Banger):

It is the very light soil (Banger), It covers most of the Bawani Khara Tehsil and a small portion of Bhiwani tehsil in the east. This tract is generally level and sand dunes are almost rare. This soil is richer than sandy (Bagar) tract in the west.

The major crops during the kharif are Bajra, Jowar and Cotton and during the Rabi Gram, Wheat is grown. Irrigation is provided by the western Yamuna Canal System. But in winter, with normal rains, it produces the rabbi crops like Barley, mustard, and gram without irrigation.



2- Relatively Sandy Loam

It is light soil (Sandy Loam), These soils lie in the west of the loam tract. These cover the middle parts and eastern part of Bhiwani district. It is called 'Bail mar Dharti' (soil which is hard on bullocks). It requires a great many ploughings, several watering and much labor. Working of

this soil exhausts the bullocks. As it takes time to absorb water, the surface moisture evaporates and a few light showers of rain are not enough to fertilize it. Generally, wheat, gram, and jowar are raised on it, when the seasonal rains are abundant. Even the barani Dakar produces two crops in a year. When this soil lies waste, it produces the Samak, Palinji and Doob grasses (fodder)

Changing Pattern of Agricultural Land- Use In Bhiwani District (1985- 2010

Fig No 6

3. Sandy & loam sand (Bagar):

It is medium soil (Bagar), The western parts of Bhiwani district contain this type of soil. The soil is coarse grained and is covered by a venur of an Aeolian deposits. This is poor in fertility, but produce high yields, when irrigation and manures. It is easy to work and does not produce any clods when worked dry. These soils are good for Bajra, Gram, and Gowar cultivation. It is especially important for Kharif pulses. When this soil is heavily manure and properly irrigated, high yields of Barley and wheat can be obtained.

4. Hilly Soils:

Base rocks are met on the hill tops where stones and coarse stony soils are exposed to the surface. In these hilly areas weathering is counter balanced by denudation and whatever material is weathered that is taken away by rain water and wind. These soils support poor pastures and semiarid vegetation.

Soil Problems in Bhiwani District

The soils of Bhiwani district suffer from two main problems:-

- (a) Soil Erosion
- (b) Soil Moisture Deficiency

Soil Erosion:

The wind work, a powerful force in removing material, leads to soil erosion on a decidedly bigger scale. During the hot season, when there is no rain and the sand is wind-lifted and deposited over the fertile land of the region. The damage to the land done by the wind erosion on the one hand and its accumulation over a considerable time is very colossal. It suggests that the farmers should adopt two fold measures to save the top soil of arable land from erosion and to prevent sand deposition on agriculturally useful land. The wind erosion is intensified because of the absence of vegetation cover, and low rainfall. It occurs when the soil is dry. Hence one of the chief measures of its control is the conservation of water in order to raise the moisture content of the soil (Webster and Wilson 1966).

The running water is also a powerful agent causing soil erosion. The erosion takes place by gulling action. Gullies whiles start as small rills are the most spectacular symptoms of this destruction. One main reason of this erosion is that people inhabiting this area are interested in livestock raising. This has led to overgrazing which resulted in soil erosion.

Soil Moisture Deficiency:

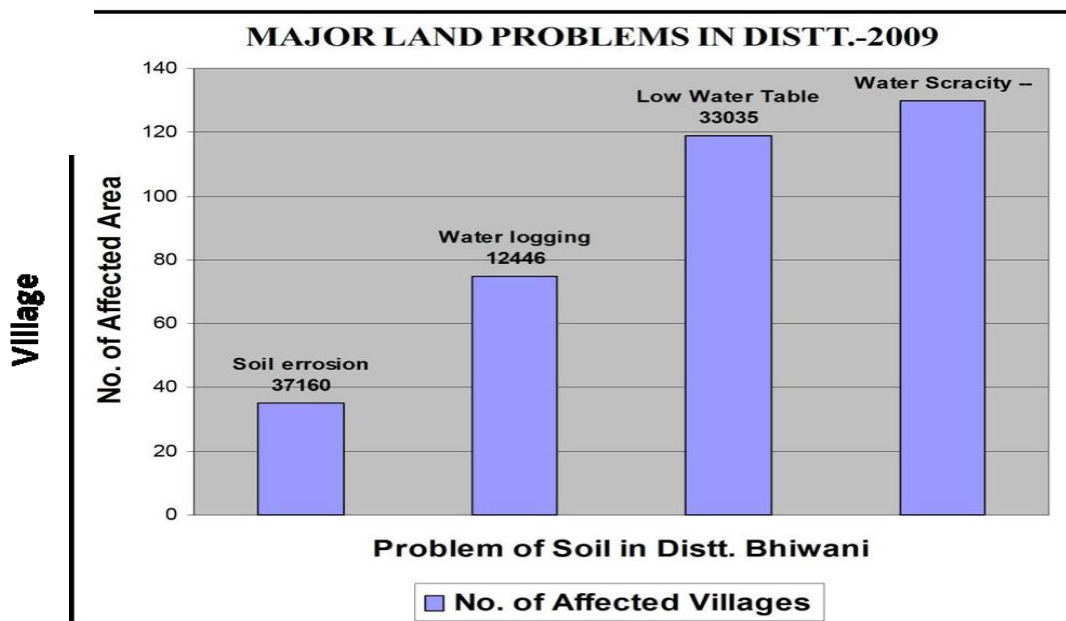
The soil drought differs from drought. Soil drought is related to soil moisture and it begins when the available soil moisture diminishes and the crops or vegetation can no longer absorb water from the soil. The soil drought is a common feature in Bhiwani district, having monthly, seasonal, yearly and spatial variability.

Since it is not possible to increase rainfall to fit the water needs, but with the application of lime and green manure soil-drought can be checked. Secondly, dry farming techniques can be improved. Dry farming is a system of conserving some moisture for best of its use by preventing soil erosion and crop management in areas of low and uncertain rainfall. So farmers should have devised dry farming techniques which maintain the moisture and fertility of soil.

Soil Health

The soils of the district have varied landscape comprising valleys, undulating lands, sand dunes and alluvial plains. According to land ability classification, the soils of the district varies from good (Class II) to fairly good land (Class IV) suited for infrequent farming. The bulk of soils are sandy and alkaline in nature. Accumulation of salts in the soil following ground water irrigation is very common. The soil physical condition of the district is of poor fertility. As per soil health indices soils are low in natural carbon, low to medium in phosphorus (60% low and 40% medium) and medium in potash. The carbon content in cultivable soils is very low. With the acceptance of intensive farming the soil productivity has decreased slowly.

Changing Pattern of Agricultural Land-Use In Bhiwani District (1985 - 2010)



Conclusion:

Although foundation of the district is practically uniform, the presence of sand-dunes, sand hills and the relief of the Aravalli mountain system land diversity to its topography. The Bagger closely dotted with sand features of verging shapes and sizes, in southern and south



western parts of the district, is in marked contrast to the fairly level landscape of the eastern area. Over large area lie the future prospectuses for development of irrigated farming and for increasing scope of farming. On the whole soils are well drained and granular in structure. Irrigation is required to provide water frequency and to keep the soil compact for facing wind erosion. The deficiency of N₂ 'phosphorus' and humus in the soils can be met with the necessary use of commercial fertilizers. If productivity of the soil is to be improved, better soil management and utilization must become the main plank of agriculture. Great care is needed in irrigation the sandy soils. The size of the plots should be small. The water should reach to every part of the land. More plants should be grown to check the problem of soil erosion. Cultivation of soil – building crops is essential for improving the structure of the soil. Ultimately, these measures would lead to improve the economic status of the cultivation.

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