

A ASSESSMENT OF SOIL USE IN CONSTRUCTION ACTIVITY AND RELATED PROBLEMS IN INDIA'S NORTH-EASTERN STATE

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Abstract

Soil is one of the most important natural resources for human welfare. It has been meeting other needs including food, clothing, shelter for a long time. It is a resource vulnerable to decay. Once lost, it is almost impossible to recover. This Hobson's choice resource is currently facing various problems with the improvement of society. Among the eight districts of North Bengal, Darjeeling and Kalimpong are located in the foothills of the Himalayas. The soil here is completely different from other parts of the state. This area is mainly found in hilly soils, forest soils, Old Alluvium and Red soils. Acidity, alkalinity, salinity, degradation, lack of organic matter, dryness, etc. are the main problems of the soil of North Bengal. At present, to solve the soil problem, various plans have been taken in government and local ways.

Keys words- Mountain soil Hobson's choice, pH, Steep slope, H.H. Bennet.

1. INTRODUCTION

The English word Soil originates from the Latin Solum. Soil is one of the most important natural resources in the world. Naturally it is non-renewable or exhaustible resources. This natural resource helps meet the basic needs of people around the world, namely food, clothing and shelter. However, this Hobson's choice resource did not exist from the time of the origin of the earth. At the time of origin, the earth was burning gases. Gradually hardening and cooling is the origin of igneous rocks. For a long time, various elements of the weather such as rainfall, temperature, humidity, wind etc. have been dissociated. As a result, the igneous rock is shattered and crushed into the origin of Regolith. Soil originates when the process of mummification eluviation illuviation, calcification, laterelization etc. is effective on Regolith.

So, the definition is that soil is the surface of the earth made up of loose materials like silt, sand, gravel etc. The plant on the surface of the earth has maintained the balance of the environment by maintaining the levels of oxygen and carbon dioxide in the air through its birth, growth and reproduction. Again, people are fulfilling their own needs through settlement, agriculture, animal husbandry, road construction and other construction work on this soil. However, at present this Hobson's choice resource is facing various problems due to natural and socio-economic reasons.

1.1 STUDY AREA

Northern part of West Bengal officially known as North Bengal which consists of Darjeeling, Kalimpong, Jalpaiguri, Alipurduar, Koch Bihar, North Dinajpur, South Dinajpur and Malda districts. Conventionally the river Ganga divides the state into two parts southern and

northern. Southern part known as South Bengal and northern part known as North Bengal. North Bengal consists of eight districts with a total area of 21,750 sq km and a total population of 19,012,993. The population density is 874 people per square kilometer. Apart from Siliguri subdivision, Darjeeling, Kalimpong, Jalpaiguri and Alipurduar districts are the main cash crop tea. Elsewhere, rice, wheat, jute, pineapple, maize, mustard, oilseeds, etc. are grown everywhere.



Figure 1 India Map



Figure 2 North Bengal Map

1.2 OBJECTIVES

- i. To know about the soil details of North Bengal
- ii. To find out the major soil problems of the study area.
- iii. To give some important suggestion for Improvement and conservation of soil Quality and productivity

2. RESEARCH METHODOLOGY

Both primary and secondary information has been collected in conducting research work. Preliminary data has been collected mainly through observation of different areas of North Bengal. Talking to 30 local people directly, a lot of information about the soil problem has been collected. Secondary information has been collected from various books, journals, magazines, newspapers, internet, etc.

3. SOIL GROUPS IN NORTH BENGAL

Although the temperature is relatively high in North Dinajpur, South Dinajpur and Malda districts, except for Siliguri subdivision, the temperature is much lower due to its location in the hilly areas of Darjeeling and Kalimpong districts. North Bengal is full of geographical diversity. This is why different types of soils have formed in this region.

3.1 MOUNTAIN SOIL

Igneous and metamorphic rocks at an altitude of 2500 m in Darjeeling and Kalimpong districts have been eroded by various physical, chemical and biological weathering disorders to form mountain soil. This soil is acidic, black in color and has low fertility strength. This soil of North Bengal is suitable for cultivation of tea, pineapple, orange.

3.2 FOREST SOIL

This soil can be seen in the foothills of the Darjeeling Himalayas and in some areas of Jalpaiguri, Alipurduar, and Kochbihar districts. Forest soils are humus-rich and acidic in nature.

3.3 ALLUVIUM SOIL

Alluvium soil is of two types and old alluvium. New Alluvium soil is known as Khadar and old is Bhangar. Old Alluvium Soil Khadar is mainly found in North Bengal which is useful in the production of paddy, wheat, jute, maize, potato, pineapple.

3.4 RED SOIL

Red Soil is mainly found in South Birbhum, Bankura, Burdwan and Medinipur but this soil can be noticed in some areas of Malda, North and South Dinajpur. This soil is red in color due to the presence of ferrous oxide. This soil has low water holding capacity.

4. MAJOR PROBLEMS OF SOIL IN NORTH BENGAL

4.1 GEOLOGICAL PROBLEMS

Geologically, if a region is made up of mica-cysts and sedimentary rocks, then the hardness of the rock in that region is much less and the rock is easily eroded. The Darjeeling Himalayas are mainly composed of sedimentary rocks, so the rocks here are easily eroded.

4.2 pH LEVEL

Soil fertility, infertility, water holding capacity etc. are determined by pH level. If the pH level in the soil is less than 7, the soil is acidic, if the pH is 7, the soil is neutral and if the pH is more than 7, the soil is alkaline in nature.

4.3 ACIDITY OF SOIL

As the amount of hydrogen ions in the soil increases, the soil becomes acidic in nature. Due to the high rainfall in the foothills of the Himalayas, the alkaline substances like Calcium, Magnesium etc. are removed in the washing process. Excessive rainfall causes soil humus to rot and acetic oxalic and citric acid to be produced.

4.4 ALKALINE SOIL

If the amount of sodium in the soil is high then the soil is alkaline in nature. In this case the pH level is more than 8.5. In some areas of Siliguri subdivision, Kochbihar, North Dinajpur, South Dinajpur and Maldar, the problem of alkalinity is seen in the soil.

4.5 STEEP SLOPE

If the slope of the land is steeper, the level of soil erosion increase. According to H.H. Bennet, every 1 degree increase in land slope increases land erosion by 25%. In Darjeeling and Kalimpong districts, soil erosion problems can be noticed in steep slopes.

4.6 DEFECENCY OF SOIL ORGANIC MATTER

Soil usually contains up to 10 percent organic matter! But in Indian soil it is 1-2%. With the exception of Darjeeling, Jalpaiguri, and Alipurduar districts of North Bengal, there is much less organic matter in the soil.

4.7 DEFORESTRATION

The plant grabs the soil with its roots and protects it from decay. But with the development of society and civilization around the world, human needs are changing. As a result, forest land is declining due to urbanization, industrialization, construction of road ghats, construction of furniture, etc. The growing population needs additional land to meet the housing needs, food needs. The additional demand is being met by destroying the forest.

4.8 WATER EROSION

Water erosion is an important cause of soil degradation. We are still a developing country, due to the financial crisis, there is no proper drainage system in the whole country, including North Bengal. Soil erosion, rill erosion, gully erosion, ravine erosion etc. are used throughout the whole of North Bengal

4.9 SOIL DRYNESS AND MOISTURE

The climate of the whole of India including North Bengal is affected by the monsoon winds. The southwest monsoon winds bring rain in the monsoon season and the north-east monsoon winds keep the winters dry. But the early arrival and late return of monsoon winds caused floods and droughts in the whole country including North Bengal. Droughts and floods cause many problems, including cracks in the soil.

5. SUGGESTION

- i. More acidic soils are generally unsuitable for crop production. In this case, if adequate amounts of lime, dolomite, and calcium are used in the soil, the fertility of the soil is restored.
- ii. Soil can be purified by removing salts from excess alkaline soils. Alkaline soils can also be reclaimed by using gypsum during irrigation.
- iii. Drainage system needs to be improved to protect the soil from drought and floods.
- iv. In Darjeeling and Kalimpong districts, the problem of soil erosion can be solved with the increase in agricultural production by cultivating crops in steep slopes.
- v. We need to cut the mature tree without cutting the tree indiscriminately. And the same amount of forest planting is needed. Because trees protect the balance of the environment by preventing soil erosion.

6. CONCLUSION

Since the development of civilization, the soil has been meeting the needs of different people. At present the soil is facing various problems due to many natural and socio-economic reasons. Soil conservation is essential to keep the use of soil going indefinitely in the future.

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