CHAPTER-3

TOPOGRAPHY OF THE STUDY AREA
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Geographically the district is situated between north latitude 13° 27’-14° 39’ and east longitude 74° 37’-75° 52’. Its greatest length is 95 miles from east to west and from north to south the longest line is 80 miles. Its areas are about 4,030 square miles of which 1,171 square miles are under cultivation and about 198 square miles are uncultivated. It is bounded on the east and south by Davangere and Kadur districts, on the north by Dharwar, north- west by north Kanara and on the west by the south Kanara. The district is surrounded by Udupi and north Canara on the western side, Chikkamanglore the south, north Haveri and Davangere on east.

The district has been divided into 7 taluks namely Thirthahalli, Hosanagara, Sagara, Soraba, Shikaripura and Bhadravathi. Thirthahalli, Hosanagara, Sagara are predominantly malnad taluks receive heavy rainfall. Shimoga, Soraba, Shikaripura, Bhadravathi are meidan belt. The district has 40 hoblies, 260 panchayaths and 9 municipalities. The average annual rainfall in the district is 1813 mm. The total geographical area of the district is 847784 ha. The major rivers in district are Tungabhadra, Sharavathi, Kumudawathi and Varada.

Paddy is the most important cereal major crop grown on about 1.15 lakh ha. The other important crops are cotton, maize, groundnut, pulses, vegetables and some extent ragi, jowar. In Shimoga the cold season is from December to February followed by the hot season from March to May. The south - West monsoon season is from June to September. October and November constitute the post monsoon season.

The places where soil samples were collected from this district includes 7 taluks namely Bhadravathi, Shimoga, Thirthahalli, Soraba, Sagara, Hosanagara and Shikaripura with the total of 7 soils.

Since a number of soils were collected from each place, the total of all these have made and the average of the soils for a particular place has been taken in to account and per cent values will represent the per cent values.
TYPES OF SOIL COLLECTED IN SHIMOGA DISTRICT

- Shimoga - Red soil, medium black soil, sandy loamy soil.
- Bhadravathi - Loamy soil, sand loamy soil, red soil, medium black soil.
- Shikaripura - Sandy soil, red soil, black soil.
- Thirthahalli - Sandy, laterite soil.
- Hosanagar - Sandy and laterite soil.
- Soraba - Sandy and laterite soil.
- Sagara - Sandy and laterite soil.

SOIL TYPES COLLECTED

Agricultural properties of soil can be best known by considering their composition, texture, structure, its constituents and climatic factors. As soil is usually made up of particles of a wide variety of sizes, the texture indicates the fineness or coarseness of soil mass. Physical characteristics of soils can also be known by texture classification.

RED SOILS:
Red soil is textured and rich in humus. Red soils are generally red or reddish brown in colour. These are derived from granites, gneiss and other metamorphic rocks either in situ or from the decomposed rock material washed down to lower level by rain. These soils are formed under well drained condition eluviation and illuviation of clay, iron, aluminium and bases are the main soil forming processes. These soils are red because they contain iron oxides. They are not fertile but are useful for cultivation with fertilizers. It is found in Tamil nadu, Karnataka, Andra Pradesh, Orissa, Madhya Pradesh and Eastern Rajasthan. Wheat, Rice, Millets and Pulses are cultivated. Red loams have a pH varying between 6.6 to 7.6. The red soil of Shimoga, Hosanagar are light in texture and deficient in Nitrogen.

MIXED RED AND BLACK SOILS:
These soils are heavy textured with a high content of bases like lime and magnesiu. They have 60% to 75% water holding capacity. The pH varying from 7.5 to 8.5.
These are found in Bhadravathi, Thirthahalli and Shikaripura.

**BLACK SOILS:**

Black soils are fine grained, clay like and dark in colour. This is a well known group of soils, characterized by dark grey-black colour, high clay content, neutral to slightly alkaline relation and deep cracks during summer. The depth of soil varies from less than a meter to several meters. It has the capacity to retain moisture. They are rich in iron, calcium and magnesium. Black soil is found mostly in Gujarat, Andra Pradesh, Karnataka and Southern parts of Tamil nadu. Cotton, rice, tobacco, oil seed etc grow well on these soils. The black soils of Karnataka are fine textured with varying salt concentration. These are found in Bhadravathi, Thirthahalli, and Shikaripura.

**LOAMY RED SOILS:**

Loamy red soils are predominant in plantation districts of Shimoga. They are rich in the total and available K₂O and contain sufficient amount of P₂O₅. Nitrogen is below 1 %.

**LATERITE SOILS:**

It is a geological term and means literally a rock. The laterite soils have often been loosely used in the same sense. The laterite soil are those in which laterization is the dominant soil forming process that is eluviations of silica and enrichment with oxide of iron and aluminium. Under high rainfall condition (more than 100 cm), silica is released and leached downwards and the upper horizon of soil become rich in oxides of iron and aluminium. Ultimately cinder like residues of oxides of iron and aluminium are left. The end product of the process is termed laterite. These are poor, scanty soil but rich in iron. Due to the presence of iron oxide they become red in colour. It is found in Deccan plateau; Western Ghats, Eastern Ghats, Cardamom hills and Assam. Tea, Rubber and Cashew nuts grow in this soil. Laterite are red to yellow in colour due to the presence of hydrated oxides of manganese, titanium etc. Soils widely vary in their characteristics and properties. These are rich in Humus and nitrogen.
SANDY SOIL:

These soils are found in the desert regions. It is sandy and unsuitable for agriculture under irrigation desert soil has been used for cultivation. These soils are found in western Rajasthan, south Punjab and Gujarat.

CLASSIFICATION BASED ON SOIL COLOUR (MUNSELL’S COLOUR CHART FOR SOILS):

Colour gives a ready clue to soil conditions and some important properties. Red, Yellow or brown colour are mostly related to the different degrees of oxidation, hydration and diffusion of iron oxides in the soils, while dark coloured soils are associated with one or more combination of general factors (Hand Book of Agriculture, ICAR, New Delhi, 1968).

Classification of soils based on their colour also indicate whether the land is suited for regular cultivation or their capability of producing high yields of one or more of the common forms of crop or whether the land is suited for limited cultivation. Red soils are moderately good lands that can be cultivated safely with common management of crop rotation, use of cover crops, etc. likewise brown soils are sometimes not suited for cultivation but can be used as grazing lands.