Detailed Soil Survey

This is a high intensity soil survey. In this survey, soil series its types and phases are mapped. The larger scale village maps or aerial photographs ranging from 1:4,000 to 1:10,000 are used as base maps. In India village maps of 1:1,000, 1:2,000 (Himachal Pradesh), 1:4,000 and 1:8,000 are available. These cadastral maps possess several prominent permanent features such as lakes, ponds, rivers, rivulets, roads, habitation, hillocks and field boundaries with Khasra No. which help surveyor to locate himself in the field and finally in delineating soil boundaries.

Depending upon the soil heterogeneity and variation in terrain form, the profile site for characterization of soils would be located. There should be at least one soil profile for every 80 to 100 ha of area. Auger bore examination and sampling is done at intervals of 200 to 500 m. The delineation of the soil boundaries are done in greater detail containing soil series, soil depth, surface soil texture, slope, erosion and surface information such as stones, gravels, cobbles chart etc. The minimum map able unit will depend on scale of map. However, the minimum area that warrants the differentiation of soil series should be in the range of 4 to 5 ha. The use of aerial photographs has advantages over cadastral maps for its wealth of details and three-dimensional view. The aerial photographs are in frequent use nowadays.

Collection of Data: The background information required for interpretation, classification and prediction of different aspects of soil and land need to be collected before proceeding to the survey work. Such information includes geological information, climatic, agronomical and socio-economical data pertaining to the area of interest.

Methodology

Traversing: A preliminary traverse should be made to assess the range of textural and depth characteristics within the soil as also the slope and erosion features so that list of mapping units can be drawn up and legend prepared.

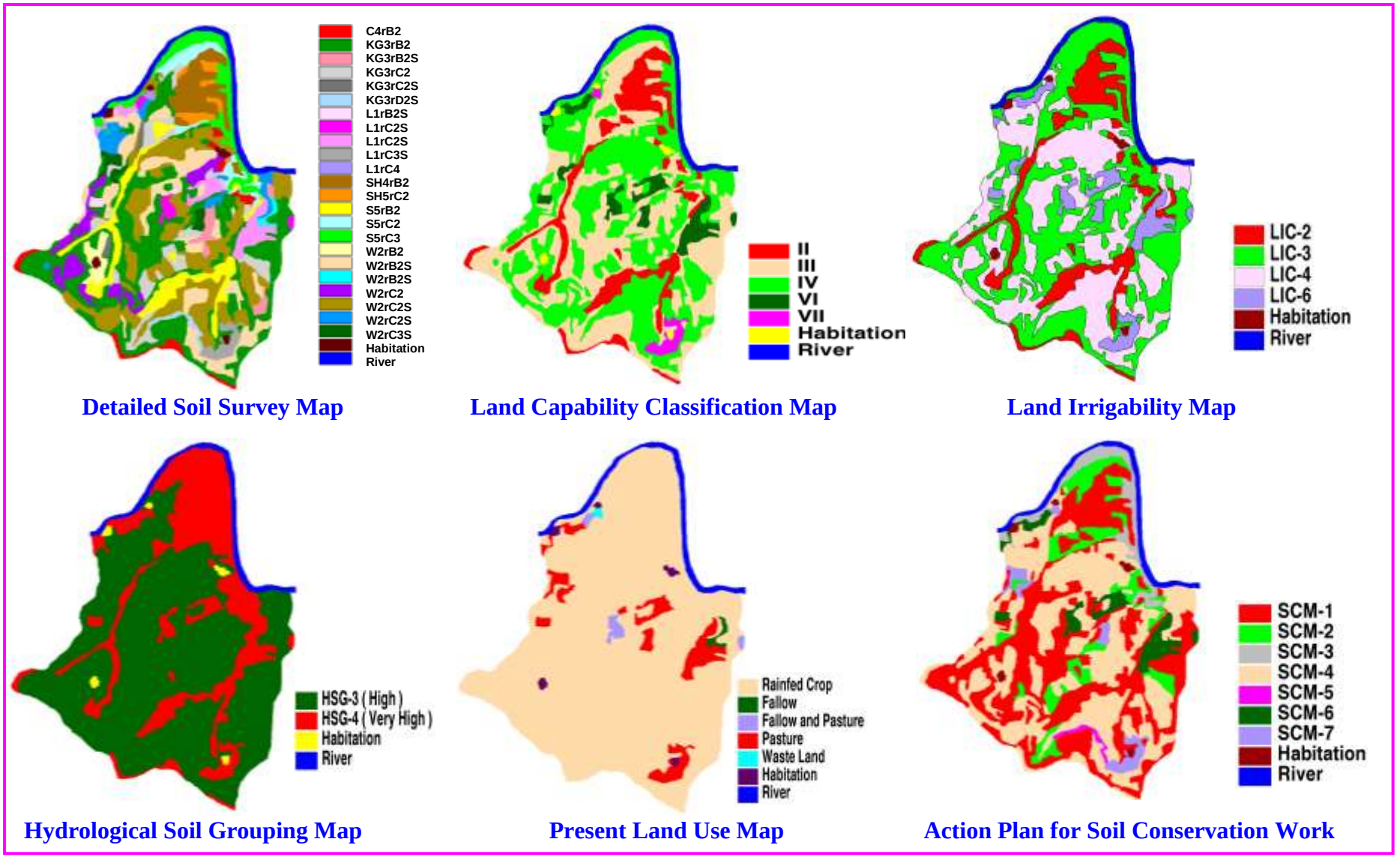

Fig. 11: Map of Detailed Soil Survey (DSS), and different Interpretative Groupings for Watershed Management

In proceeding with the operations of detailed soil survey detailed studies of profiles located at a suitable site and distance should be made and these characterized. Landform study together with morphological study of the soil profiles will enable to establish series and phases. This knowledge will ultimately help in raising the legend. This legend and mapping units thus drawn are compiled, even when the survey is in progress and recorded in hand book.

The party should traverse the area on foot intensively and examine auger bores at an interval of 200 m to 500 m should also be adopted at the same interval. The delineation of soil boundary demarcating soil mapping units should be supported by observations on either side of the boundary and correction if any should be made in the field only. As soil series and its type and phases are mapped in this survey, therefore, it is necessary to have very clear concept of soil series.

Soil Series: A group of soils having soil horizons, similar in differentiating characteristics and arrangements within the soil profile, except for texture of surface soil and developed over a particular kind of parent material. The soils grouped in a series should have similar response to a management.

Mapping Legend: Soil series, its types and phases are mapped in detailed soil survey. The mapping unit includes the name of soil series, soil depth class, textural class, slope class, erosion class and other phases such as stoniness, rockiness, gravelliness, etc. The name of series is designated by Capital letter or a Capital letter associated with small letter of English alphabet. Arabic numeral and textural class designates depth class by small English alphabets followed by erosion class designated by Arabic numeral. G, S and R show gravelliness, stoniness and rockiness respectively. The intensity of the above is shown drawing bars above the letter for slight and below the letter for severe e.g. K3rC2G Connotes

K	=	Kamliakheri series
3	=	Moderate depth class (25 – 50 cm)
r	=	Clay textural class
C	=	Gentle slope (3 – 5%)
2	=	Moderate erosion class
B	=	Severely Gravelly phase

Report Writing: Soil Survey report is a permanent record of soils of a particular area and hence has to be drafted very cautiously. The report is expected to give general account of the area including geographical and administrative location, climatic features, geology, physiography, relief and drainage, vegetation, water resource and socio economic characteristics etc. Present land use, agriculture, cropping pattern etc. are incorporated to give a general view of present agriculture status. The chapter on soils is elaborated to describe occurrence and formation of soils and different sol characteristics. Several interpretations for different purposes are made the part of report. Recommendations are also given on

the basis of findings arrived during the course of survey. Thus, the complete report gives a description on management of land use suitability and limitations. The information is appended in tabular form wherever required to give a quick look at the result. Glossary and maps with legends are appended for convenience of the user. Some of the applications of soil survey are given below.

- Sediment Yield Prediction
- Soil Erosion Modeling
- Soil Quality
- Crop Suitability
- Hydrology
- Global Change and Monitoring
- Soil and Water Conservation
- Ecological Model
- Land Use
- Environmental Quality
- Watershed management