

Inventory of Soil Resources of Dibrugarh District, Assam Using Remote Sensing and GIS Techniques

ABSTRACT

1.	Survey Area	:	Dibrugarh district, Assam
2.	Geographical Extent	:	27° 5' 38" N to 27° 42' 30" N latitude and 94° 33' 46" E to 95° 29'8" E longitude
3.	Kind of Survey	:	Soil Resources Mapping using remote sensing and GIS techniques.
4.	Period of Survey	:	Jan-Feb, 2009
5.	Total area	:	3,38,100 ha.
6.	Agro Climatic Region	:	Eastern Himalayan region (Zone no. II as per planning commission)
7.	Base map used	:	a) IRS – ID Geocoded Satellite Imagery (1: 50000 scale) b) SOI –toposheet (1:50000 scale)

8. Soil Series association mapped and their respective area

Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	%
01	ALn2a1	Nagaon-Kamtighat	32249	9.54
02	ALn2d1	Bagibill-Dubigaon	18878	5.58
03	ALf2a1	Namdeng-Manoharbari	6246	1.85
04	ALe3a1	Sauraguri	509	0.15
05	ALb3c1	Dibrugarh-Hensua	6671	1.97
06	ALb3c2	Namdang-Dibrugarh	4614	1.36
07	ALb3b1	Hensua-Dibrugarh	53283	15.76
08	ALb3f1	Tinsukia-Kharikar	64776	19.16
09	ALb2a1	Madhupur-Tegrani	2589	0.77
10	ALb2a2	Kuluthagaon-Hensua	57343	16.96
11	ALb3d1	Chabbua-Pipratoli	782	0.23
12	ACx4c1	Barjan-Dhekiajuli	4018	1.19
14	ACx4b1	Rampur-Dhekiajuli	1110	0.33
15	ACx2a1	Bhimpathar-Balijan	841	0.25
16	ACx3c1	Dhekiajuli-Barjan	101	0.03

Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	%
17	SHn9c1	Tipling-Chantlang	539	0.16
18	SHn7c1	Chantlang-Tipling	1739	0.51
19	SHn6c1	Chantlang-Tipling	3684	1.09
20	SHr5c1	Dasalong-Dholbagaon	1559	0.46
94	Sandbar		1335	0.39
95	Waterbody		484	0.14
98	Habitation		1104	0.33
99	River		73646	21.78
		Grand Total	338100	100.00

9. Area under different erosion classes

Sl. No.	Erosion classes	Area(ha)	%
1	None to slight erosion	841	0.25
2	Slight to moderate erosion	103555	30.63
3	Moderate erosion	148832	44.02
4	Moderate to severe erosion	8303	2.46
5	Misc.	76569	22.65
	Total	338100	100.00

10. Area under different slope classes

Sl. No	Slope Classes	Area(ha)	%
1	Nearly level to very gently slope	79651	23.56
2	Very gently to gently slope	169130	50.02
3	Gentle to moderately slope	5229	1.55
4	Moderately to strongly slope	1559	0.46
5	Strongly to moderately steep slope	5423	1.60
6	Moderately steep to steep slope	539	0.16
7	Misc.	76569	22.65
	Total	338100	100.00

11. Salient Features:

- ❖ Total 26 soil series have been identified mapped in Dibrugarh district.
- ❖ More than 30% area of the district are cultivated followed by homestead lands(19.6%), plantation(15.76%) deciduous forest(6.78%) and grass land (5.58%).
- ❖ Soil of the district are highly suitable for variety of crops and horticulture crops like Rice, Wheat, Maize, Pulses, oilseeds, Sugarcane, Potato, Jute, Banana, Coconut, Areca nut, Orange, Pineapple.
- ❖ The cropping intensity can be increased by ensuring irrigation and balance fertilizer and manures.
- ❖ Major soil erosion of the district is moderate erosion(44.02%) followed by slight to moderate erosion(30.63%), moderate to severe erosion(2.46%) and none to slight erosion (0.25%).
- ❖ Alluvial plains (56.21%) is the major physiography of the district followed by flood plain (15.12%), paleo channel (1.85%), piedmont plain (1.80 %), hill side slope(1.76%) and hillocks(0.46%).
- ❖ Soils of the district falls in six slope classes. Out of which 50.02% area are very gently to gently slope followed by nearly level to very gently slope(23.56%), strongly to moderately steep slope(1.60%), gentle to moderately slope(1.55%) and moderately steep to steep slope(0.16%).
- ❖ Land suitable for cultivation, moderately good land to good land with moderate limitations i.e LCC II-III covers the maximum area 221626 ha (65.55%) followed by III-IV (5.81%) and II (2.10%)
- ❖ Soils of the area are taxonomically classified into four orders i.e. Alfisols, Inceptisols, Entisols and Ultisols. All the 26 soils series identified in the area are further classified into 8 sub-orders, 11 great groups, 22 subgroups and 25 families.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of Dibrugarh district, Assam providing information on the geographical setting of the district, such as location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use and soils.

The report contains other information on Interpretative grouping of soils(Chapter 7) such as land capability classes; land irrigability classes, soil suitability grouping and hydrological grouping and also recommendation for crops; horticulture development; forest, forage and grassland development; water harvesting, water storage and water management that are essential for soil and land resource management. The genesis and classification of the soils are also discussed in **Chapter5**.

Dibrugarh district of Assam is spread over an area of 338100 ha. The district is covered by eleven SOI topographical sheets on the scale of 1: 50,000 which are used as base material along with satellite imageries.

Each soil mapping unit is marked by mapping unit i.e. ALb2a1 (Alluvium; alluvial plain; 0-3 % slope; agriculture land use; Soil Series Association, describing Madhupur as dominant series in association with Tegrani series). Each soil association is restricted to a maximum of three soil series

For the use of the soil resource report, first locate the area of your interest on the map and note down the soil mapping units. Permanent features such as road, stream, lakes and village habitation etc. shown on the map, help to locate the area of interest on the map. For the detailed information on soil mapping unit in respect of soil series of the area of interest, its extent, present and proposed land uses, reference may be made to **Chapter 4, appendix I and II**.

The mapping unit used in soil mapping represents the five levels of mapping i.e. ALb1a1 may be referred as follows:

AL	-	Alluvium	-	Landscape
b	-	Alluvium plain	-	Physiography
2	-	0-3 %	-	Slope class
a	-	Agriculture land	-	Land use
1	-	Association of Soil series with erosion and management soil unit.		

Any comment and suggestion on the report would be welcome. For any further enquiry / or clarification, correspondence or personal contact may be established, with the

**Chief Soil Survey Officer,
Soil and Land Use Survey of
India, IARI Buildings, Pusa,
New Delhi – 110012,
Email- csso-slusi@nic.in.
Ph. - 01125841263**

**Soil Survey Officer,
Soil and Land Use Survey of India,
Baishnabghata-Patuli Township,
Block-E, Kolkata, Pin-700094,
Email - ssokolkata-slusi@nic.in.
Ph. - 033-24301425/1581**

Or

Our website: <http://www.slusi.dacnet.nic.in>