

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

ABSTRACT

1.	Survey Area	:	Tinsukia district, Assam
2.	Geographical Extent	:	95°22' to 95°38'E Longitudes and 27°23' to 27°48'N Latitudes
3.	Kind of Survey	:	Soil Resources Mapping using remote sensing and GIS techniques.
4.	Period of Survey	:	Jan-Feb, 2009
5.	Total area	:	3,79,550 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	10863	2.86
02	ALn2d1	Bagibill-Dubigaon	17203	4.53
03	ALf2a1	Namdeng-Manoharbari	3599	0.95
04	ALc3a1	Shantipur-Kamtighat	9793	2.58
05	ALb3c1	Dibrugarh-Hensua	39799	10.49
06	ALb3c2	Namdang-Dibrugarh	10750	2.83
07	ALb3b1	Hensua-Dibrugarh	56818	14.97
08	ALb3f1	Tinsukia-Kharikar	71627	18.87
09	ALb2a1	Madhupur-Tegrani	16701	4.40
10	ALb2a2	Kuluthagaon-Hensua	53587	14.12
11	ALb3d1	Chabbua-Pipratoli	6414	1.69

Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	(%)
12	ACx4c1	Barjan-Dhekiajuli	15335	4.04
13	ACx4c2	Dumduma-Barjan	1584	0.42
14	ACx4b1	Rampur-Dhekiajuli	5617	1.48
15	ACx2a1	Bhimpathar-Balijan	3919	1.03
16	ACx3c1	Dhekiajuli-Barjan	11581	3.05
17	SHn9c1	Tipling-Chantlang	7819	2.06
18	SHn7c1	Chantlang-Tipling	2424	0.64
19	SHn6c1	Chantlang-Tipling	3534	0.93
20	SHr5c1	Dasalong-Dholbagaon	1113	0.29
21	Sandbar		1567	0.41
22	Waterbody		757	0.20
23	Habitation		630	0.17
24	River		26516	6.99
		Grand Total	379550	100.00

9. Area under different erosion classes

Sl. No.	Erosion classes	Area(ha)	%
1	None to slight erosion	13712	3.61
2	Slight to moderate erosion	105702	27.85
3	Moderate erosion	209362	55.16
4	Moderate to severe erosion	21304	5.61
5	Misc.	29470	7.76
	Total	379550	100.00

10. Area under different slope classes

Sl. No	Slope Classes	Area(ha)	%
1	Nearly level to very gently slope	105872	27.90
2	Very gently to gently slope	206782	54.49
3	Gentle to moderately slope	22536	5.93
4	Moderately to strongly slope	1113	0.30
5	Strongly to moderately steep slope	3534	0.93
6	Moderately steep to steep slope	2424	0.63
7	Very steep to extremely steep slope	7819	2.06
8	Misc.	29470	7.76
	Total	379550	100.00

11. Salient Features:

- ❖ Total 27 soil series have been mapped in Tinsukia district.
- ❖ 25.94 % area of the district are cultivated followed by deciduous forest(24.75%), orchard plantation(18.87%), plantation (14.97%) and grass land (4.53%).
- ❖ 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 timely irrigation and balance fertilizer and manures.
- ❖ Major soil erosion of the district is moderate erosion(55.16%), followed by slight to moderate erosion(27.85%), moderate to severe erosion(5.61%) and some area are none to slight erosion (3.61%).
- ❖ Alluvial plains (67.37%) is the major physiography of the district followed by piedmont plain(10.02%) flood plain(7.39%). and hilly terrain on shale landscape (3.92%).
- ❖ Soils of the district fall in seven slope classes. Out of which 54.49% area are very gently to gently slope followed by nearly level to very gently slope(27.90%) gentle to moderately slope(5.93%), very steep to extremely steep slope(2.06%),strongly to moderately steep slope(0.93%) and moderately steep to steep slope (0.63%).
- ❖ Land suitable for cultivation, moderately good land to good land with moderate limitations i.e LCC II-III covers the maximum area 271726 ha (71.59%) followed by LCC III is 22536ha (5.94%) and LCC II is 17311ha (4.56%)
- ❖ Soils of the area are taxonomically classified into four orders i.e. Alfisols, Inceptisols, Entisols and Ultisols. Twenty seven soils series identified in the area are further classified into 8 sub-orders, 11 great groups, 22 subgroups and 27 families.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of Tinsukia 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**.

Tinsukia district of Assam is spread over an area of 379550 ha. The district is covered by twelve 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 Kaliachak as dominant series in association with Srirampur and Popra 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**

Or

**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**

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