

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

## ABSTRACT

1.	<b>Survey Area</b>	:	Barpeta district, Assam
2.	<b>Geographical Extent</b>	:	26°05' to 26°49' North latitude and 90°40' to 91°18' East latitude
3.	<b>Agro Climatic Region</b>	:	Eastern Himalayan region ( Zone no. II as per planning commission)
4.	<b>Total area of the district</b>	:	<b>3,24,500 ha.</b>
5.	<b>Kind of Survey</b>	:	Soil resources mapping using remote sensing techniques.
6.	<b>Base map</b>	:	a) IRS – ID Geocoded Satellite Imagery (1: 50000 scale) b) SOI –toposheet (1:50000 scale)
7.	<b>Scale of Mapping</b>	:	1 : 50000
8.	<b>Period of Survey</b>	:	March, 2009 to April, 2009

### 9. Soil Series association mapped and their respective area

Mapping Symbol	Mapping Unit	Soil Association	Area(ha)	Area%
01	ALb2a1	Hutiakuchi-Mangaldai-Majarbari	24196	7.46
02	ALb2a2	Mangaldai-Boramu-Bartala	2354	0.73
03	ALb2a3	Bargumura-Hutiakuchi-Mangaldai	33998	10.48
04	ALf2a1	Ketkushi-Sarabari	710	0.22
05	ALb2c1	Ata-Nagrijuli	74363	22.92
06	ALb2d1	Disalgaon-Tiklibhanga	1515	0.47
07	ALb3b1	Rampur-Tiklibhanga	393	0.12
08	ALn2a1	Adabari-Bartala	598	0.18
09	ALe3c1	Nagrijuli-Sarabari	551	0.17
10	ALb3c1	Nagrijuli-Rampur	5397	1.66
11	ALb3e1	Sarabari-Adabari-Ketkushi	3374	1.04
12	ALb3a1	Bangajuli-Rampur	61346	18.90
13	ACx2a1	Dodkhari-Gurumara-Kurua	2218	0.68
14	ACx3a1	Kurua-Dodkhari-Gahian	2692	0.83
15	ACx3c1	Tambulpur-Muthanbari	2859	0.88
16	ACx3e1	Manas-Kurua	73	0.02
17	ACx2c1	Tambulpur-Manas-Muthanbari	16609	5.12

18	ACo4c1	Bhutan-Baksha	6071	1.87
19	SDr5c1	Mathanbari-Mathanguri	963	0.30
20	SDn7c1	Mathanguri-Mathanbari	7	0.01
22	ACx3f1	Tambulpur-Mathanbari	304	0.09
23	ALd3c1	Sarabari-Nagrijiuli	3184	0.98
25	GNn6c1	Ghatuapara-Barkhola	175	0.05
26	WB	Waterbody	3730	1.15
27	RI	River	76820	23.67
			<b>324500</b>	<b>100.00</b>

### Salient Features of the area:-

1. Total twenty eight soil series have been mapped in four different landscape of Barpeta district.
2. Soils of the district are deep and very deep.
3. Geology of the area is mainly Alluvium. Sandstone and Gneiss are also found in northern side of the district
4. Physiography of Barpeta district, Assam mostly falls under Alluvial plain 206936ha (63.77%) which is followed by Piedmont plain (7.63%) and foot hill slope (1.87%).
5. Most of the survey area is covered by cultivation (39.47%) and deciduous forest (32.29%).
6. About 156561 ha (48.2%) area falls under level to very gently sloping, 80173 ha (24.7%) area falls under very gently to gently sloping, 7034ha (2.2%) area falls under gently to strong sloping and only 182ha (0.06%) area falls under strongly to steep sloping hill side slope.
7. Soils of Barpeta district is mostly slight to moderate erosion (54.53%). About 3495 ha (1.08%) area is suffering from moderate to severe water erosion as well as poorly to unmanaged and requires integrated soil conservation measures urgently.
8. About 72% (covering 233571ha) land of the study area suitable for cultivation, moderately good to good land with limitations i.e LCC II to III
9. Soils of the area are taxonomically classified into two orders i.e. Entisols, and Inceptisols. All the 28 soils series identified in the area are further classified into 5 sub-orders, 8 great groups, 18 subgroups and 27 families.
10. Soils are acidic in nature and low to medium fertility status, needs recommended doses of balanced fertiliser along with lime and organic manure.
11. Soils on fluvial origin can be used for wide variety of crops besides taking suitable agronomic practices and assured irrigation.

## HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of Barpeta district of 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 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 **Chapter 5**.

Barpeta district of Assam is spread over an area of 324500 ha. The district is covered by six 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. ALb1a1 (Alluvium; alluvial plain; 0-3 % slope; agriculture land use; Soil Series Association, describing Tekelachuk- as dominant series in association with Magnagaon & Ailamukh 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
1	-	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

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