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

ABSTRACT

1.	**Survey Area**	:	Nalbari district, Assam
2.	**Geographical Extent**	:	26°07' to 26°50' North latitude and 91°14' to 91°43' East
3.	**Agro Climatic Region**	:	Eastern Himalayan region (Zone no. II as per planning commission)
4.	**Total area of the district**	:	**2,25,750 ha.**
5.	**Kind of Survey**	:	Soil resources mapping using remote sensing techniques.
6.	**Base map**	:	a) IRS – ID Geocoded Satellite Imagery (1: 50000 scale) b) SOI –toposheet (1:50000 scale)
7.	**Scale of Mapping**	:	1 : 50000
8.	**Period of Survey**	:	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	5191	2.30
02	ALb2a2	Mangaldai-Boramu-Bartala	3251	1.44
03	ALb2a3	Bargumura-Hutiakuchi-Mangaldai	10339	4.58
04	ALf2a1	Ketkushi-Sarabari	265	0.12
05	ALb2c1	Ata-Nagrijuli	74811	33.14
06	ALb2d1	Disalgaon-Tiklibhanga	215	0.10
07	ALb3b1	Rampur-Tiklibhanga	1989	0.88
08	ALn2a1	Adabari-Bartala	4284	1.90
09	ALe3c1	Nagrijuli-Sarabari	1781	0.79
10	ALb3c1	Nagrijuli-Rampur	895	0.40
11	ALb3e1	Sarabari-Adabari-Ketkushi	5984	2.65
12	ALb3f1	Bangajuli-Rampur	59881	26.53
13	ACx2a1	Dodkhari-Gurumara-Kurua	5689	2.52
14	ACx3a1	Kurua-Dodkhari-Gahian	10444	4.63

Mapping Symbol	Mapping Unit	Soil Association	Area(ha)	Area%
15	ACx3c1	Tambulpur-Muthanbari	3893	1.72
18	ACo4c1	Bhutan-Baksha	2962	1.31
19	SDr5c1	Mathanbari-Mathanguri	1067	0.47
20	SDn7c1	Mathanguri-Mathanbari	259	0.11
21	SDn9c1	Mathanguri-Mathanbari	462	0.20
22	ACx3f1	Tambulpur-Mathanbari	2052	0.91
23	ALd3c1	Nagrijuli-Sarabari	4099	1.82
24	SDn6c1	Kherkhreria-Mathanbari	175	0.08
26	Waterbodies	Waterbodies	2665	1.18
27	River	River	23097	10.23
		Total	**225750**	**100.00**

Salient Features of the area:-

Key features	**:**	**Findings**
Series mapped	**:**	26 nos series mapped in this district
Depth of soil	**:**	Deep and very deep
Geology of the district	**:**	Mostly Alluvium, Sandstone is also found in hilly terrain
Physiography	**:**	Hill side slope to levies. Mostly alluvial and flood plain
Major Landuse	**:**	Cultivation, forest and plantation
Slope	**:**	Nearly level to gently slope are 86.4% of total area
Erosion	**:**	Moderately eroded lands are 68.7% of total area
Management	**:**	Moderately managed area are 74.0% of total
Land capability	**:**	83.8% lands are capability classes II and III
Soil irrigibility	**:**	Class B i.e. Moderate soil limitation for sustained use under irrigation lands are 83.8%
Land irrigibility	**:**	Class 2 i.e. Lands that have moderate soil limitation for sustained use under irrigation are 46.1%
Hydrological soil grouping	**:**	79.3% lands are under B group i.e. Soils with moderate infiltration rate, moderately low run-off potential
Taxonomically classification	**:**	Three orders i.e. Alfisols, Entisols and Inceptisols. All the 26 soils series identified in the area are further classified into 6 sub-orders, 8 great groups, 17 subgroups and 25families.
Management of Agriculture production	**:**	Acidic in reaction, low to medium fertility status needs recommended doses of balanced fertiliser in addition to lime & organic manure application and assured irrigation for sustainable agriculture production.

HOW TO USE SOIL RESOURCE MAPPING REPORT

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

Nalbari district of Assam is spread over an area of 225750 ha. The district is covered by six Survey of India 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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