

Inventory of Soil Resources of North Tripura District, Tripura State Using Remote Sensing and GIS Techniques

ABSTRACT

1.	Survey Area	:	North Tripura District, Tripura
2.	Geographical Extent	:	Between 23°39' to 24°32' North Latitudes and 91°55' to 92°20 East Longitudes
3.	Agro Climatic Region	:	Eastern Himalayan Region-II
4.	Total area of the district	:	2,10,070 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	:	December, 2013 to January, 2014

9. Soil Series association mapped and their respective area

Sl. No.	Mapping Unit	Soil Series Association	Total Area (ha)	Area (%)
1	ALb2a1	Harinmara-Bhabliya	5609	2.67
2	ALn2a1	Bampur-Gopinagar	210	0.10
3	ALp2a1	Amtali-Bisalgarh	5567	2.65
4	ALp3a1	Gopinagar-Khamarbari-Lalchhari	4033	1.92
5	ALq1a1	Melaghar-Rautkhola-Sutarmura	9159	4.36
6	ALq2a1	Sutarmura-Kamrangabari-Bhabliya	4264	2.03
7	SDi4c1	Betchhara-Rangutia	1218	0.58
8	SDi4d1	Rangutia-Gokulnagar	294	0.14

Sl. No.	Mapping Unit	Soil Series Association	Total Area (ha)	Area (%)
9	SDn9c(a)1	Shantipur-Kumarghat	630	0.30
10	SDn9c1	Mandirghat-Kumarghat	147	0.07
11	SDr4a1	Lembuchhara-Nalifa	21	0.01
12	SDr4b1	Khamting-Betchhara	147	0.07
13	SDr4c2	Jugalkishor-Rangutia	10209	4.86
14	SDr4d1	Gokulnagar-Rangutia	8130	3.87
15	SDr6c1	Baramura-Nalifa-Kanchanbari	11575	5.51
16	SDr6c2	Champamura-Shantipur	37826	18.00
17	SDr6d1	Taidubari-Shantipur-Nalifa	105	0.05
18	SDv3b1	Jagatpur-Rangutia-Khamting	8	0.01
19	SDv3c1	Phattabari-Nabibari	4096	1.95
20	SDv3d1	Brajapur-Gokulnagar	546	0.26
21	SDy5b1	Nainachhara-Anandanagar-Rangutia	651	0.31
22	SDy5c1	Bagmara-Nalifa-Rangutia	17121	8.15
23	SDy5d1	Rangutia-Nalifa	1828	0.87
24	SHn7c(a)1	Kailasahar-North Tripura	2626	1.25
25	SHn7c1	Balidhum-North Tripura-Chandrapara	43295	20.61
26	SHn7c2	Bhagwanpur-Unakoti	1828	0.87
27	SHn9c1	Kailasahar-Jubarajnagar	21301	10.14
28	SHn9c2	Jubarajnagar-Kailasahar	12205	5.81
29	Habitation		4033	1.92
30	River		1365	0.65
31	WB		21	0.01
		Total	210070	100.0

10. Area under different erosion classes

Sl. No.	Erosion	Area (ha)	Area %
1	None to slight erosion	24809	11.8
2	None to slight to moderate erosion	4033	1.9
3	Moderate erosion	34018	16.2
4	Moderate to severe erosion	22709	10.8
5	Severe erosion	119081	56.7
6	Misc.	5420	2.6
	Total	210070	100.0

11. Area under different slope classes

Sl. No.	Slope Classes	Area (ha)	Area %
1	Nearly level to very gently slope	24368	11.6
2	Very gently slope	210	0.1
3	Very gently to gently slope	8915	4.2
4	Gently to moderately slope	21700	10.3
5	Moderately to strongly slope	17772	8.5
6	Strongly to moderately steep slope	49653	23.6
7	Moderately steep to steep slope	69050	32.9
8	Very steep to extremely steep slope	12982	6.2
	Misc.	5420	2.6
	Total	210070	100.0

Salient Features:

- ❖ Alluvium, Sandstone and Shale are the three major landscape found in North Tripura district.
- ❖ Total 40 nos soil series have been mapped in North Tripura district.
- ❖ About 66.4% of the area falls under Forest followed by about 13.7% under agriculture, mostly single crop cultivation on valleys.
- ❖ About 56.7% area comes under severe erosion which needs immediate soil-water conservation measures followed by 16.2% area are under moderate erosion.

❖ Mostly soils are acidic in nature and low in fertility status and needs balanced fertilizer in addition to lime applications.

❖ Soils of the district, falls under nine physiographic classes of which majority of the area falls under undifferentiated hill side slopes followed by hillocks/hummocks/subdued hills uplands.

Sl. No	Landscape	Physiography	Area(ha)	Area %
1	Alluvium	Alluvial plains	5609	2.7
2		Broad hill valleys	13423	6.4
3		Flood plains	210	0.1
4		Narrow hill valleys	9600	4.6
5	Sandstone	Hillocks/hummocks/ subdued hill	68013	32.4
6		Plateau plains / hill tops / mesa	1512	0.7
7		Rolling upland	19600	9.4
8		Upper pediplains	4651	2.2
9		Undifferentiated hills side slope	777	0.4
10	Shale	Undifferentiated hills side slope	81255	38.7
	Misc.		5420	2.6
		Total	210070	100.0

❖ About 69050 ha (32.9%) of survey area having moderately steep to steep slope range followed by strongly to moderately steep slope range (23.6%).

❖ About 73.5% of the district area is under very deep soils.

❖ Nearly 57.1% of total surveyed area comes under capability Class VII, land not suitable for cultivation, suitable for pasture and forestry with major limitations where as 19.1% area comes under IV, Land suitable for cultivation, moderately good land to fairly good land with occasional cultivation with major limitations .

❖ Soils of the area are taxonomically classified into four orders i.e. Alfisols, Entisols Inceptisols and Ultisols. All the forty soil series identified in the area are further classified into 9 sub-orders, 12 great groups, 26 subgroups and 34 families.

❖ Nearly 62.6% of total surveyed area comes under Land Irrigability Class 6, lands not suitable for sustained use under irrigation.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of North Tripura district, Tripura 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, the crops suitability, horticulture development, forest, forage and grassland development; water harvesting, water storage and water management are also essential for soil and land resource management. The genesis and classification of the soils are also discussed in **Chapter 5**.

North Tripura district of Tripura state is spread over an area of 2,10,070 ha. The district is covered by ten 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 - Harinmara as dominant series in association with Bhabliya 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. ALb2a1 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

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