

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

ABSTRACT

1.	Survey Area	:	Dhalai District, Tripura
2.	Geographical Extent	:	Between 23°24' to 24°15' North Latitude and 91°45' to 92°10' East Longitude
3.	Agro Climatic Region	:	Eastern Himalayan Region-II
4.	Total area of the district	:	221230 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	6150	2.8
2	ALp2a1	Amtali-Bisalgarh	1327	0.6
3	ALp3a1	Gopinagar-Khamarbari-Lalchhari	642	0.3
4	ALq1a1	Melaghar-Rautkhola-Sutarmura	2257	1.0
5	ALq2a2	Tilthaibari-Rautkhola	3805	1.7
6	SDi4c1	Betchhara-Rangutia	3894	1.8
7	SDi4d1	Rangutia-Gokulnagar	398	0.2

Sl. No.	Mapping Unit	Soil Series Association	Total Area (ha)	Area (%)
8	SDn7c(a)1	Kumarghat-Shantipur-Nalifa	1504	0.7
9	SDn7c1	Champamura-Kumarghat	7212	3.3
10	SDn9c(a)1	Shantipur-Kumarghat	730	0.3
11	SDn9c1	Mandirghat-Kumarghat	376	0.2
12	SDn9c2	Kumarghat-Shantipur	2279	1.0
13	SDr4a1	Lembuchhara-Nalifa	88	0.0
14	SDr4b1	Khamting-Betchhara	332	0.2
15	SDr4c1	Nabibari-Bagmara-Rangutia	2301	1.0
16	SDr4c2	Jugalkishor-Rangutia	2013	0.9
17	SDr4d1	Gokulnagar-Rangutia	3075	1.4
18	SDr6c(a)1	Jugalkishor-Taidubari-Khamting	1681	0.8
19	SDr6c1	Baramura-Nalifa-Kanchanbari	2257	1.0
20	SDr6c2	Champamura-Shantipur	54843	24.8
21	SDr6d1	Taidubari-Shantipur-Nalifa	1239	0.6
22	SDv3c1	Phattabari-Nabibari	1239	0.6
23	SDv3d1	Brajapur-Gokulnagar	4624	2.1
24	SDy5b1	Nainachhara-Anandanagar-Rangutia	1217	0.6
25	SDy5c1	Bagmara-Nalifa-Rangutia	16216	7.3
26	SDy5d1	Rangutia-Nalifa	1947	0.9
27	SHn7c(a)1	Kailasahar-North Tripura	4690	2.1
28	SHn7c1	Balidhum-North Tripura-Chandrapara	55153	24.9
29	SHn7c2	Bhagwanpur-Unakoti	2765	1.3
30	SHn9c1	Kailasahar-Jubarajnagar	10995	5.0
31	SHn9c2	Jubarajnagar-Kailasahar	18782	8.5
32	Habitation		1571	0.7
33	Water body		2832	1.3
34	River		796	0.4
		Total	221230	100.0

10. Area under different erosion classes

Sl. No.	Erosion	Area (ha)	Area %
1	None to slight erosion	13539	6.1
2	None to slight to moderate erosion	642	0.3
3	Moderate erosion	38538	17.4
4	Moderate to severe erosion	8871	4.0
5	Severe erosion	154441	69.8
6	Misc.	5199	2.3
	Total	221230	100.0

11. Area under different slope classes

Sl. No.	Slope Classes	Area (ha)	Area %
1	Nearly level to very gently slope	10376	4.7
2	Very gently to gently slope	9668	4.4
3	Gently to moderately slope	13384	6.0
4	Moderately to strongly slope	19778	8.9
5	Strongly to moderately steep slope	65550	29.6
6	Moderately steep to steep slope	57918	26.2
7	Very steep to extremely steep slope	39357	17.8
8	Misc.	5199	2.3
	Total	221230	100.0

Salient Features:

- ❖ Alluvium, Sandstone and Shale are the three major landscape found in Dhalai district.
- ❖ Total 38 nos soil series have been mapped in Dhalai district.
- ❖ About 75% of the area falls under Forest.
- ❖ Soils of the district, falls under eight physiographic classes of which majority of the area falls under undifferentiated hill side slopes followed by Hillocks/hummocks/ subdued hill.

Sl. No	Landscape	Physiography	Area(ha)	Area %
1	Alluvium	Alluvial plains	6150	2.8
2		Broad hill valleys	6062	2.7
3		Narrow hill valleys	1969	0.9
4		Hillocks/hummocks/ subdued hill	72740	32.8
5	Sandstone	Plateau plains / hill tops / mesa	3894	1.8
6		Rolling upland	19778	8.9
7		Undifferentiated hills side slope	4889	2.2
8		Upper pediplains	8163	3.7
9		Undifferentiated hills side slope	92386	41.8
10	Shale	Misc	5199	2.3
		Total	221230	100.0

- ❖ About 65550 ha (29.6%) of survey area having strongly to moderately steep slope followed by moderately steep to steep slope range (26.2%).
- ❖ About 79.3% of the district area is under very deep soils.
- ❖ Majority of the area suffers from severe erosion hazard.
- ❖ Nearly 70.3% of total surveyed area comes under capability Class VII, land not suitable for cultivation, suitable for pasture and forestry with major limitations .
- ❖ Soils of the area are taxonomically classified into three orders i.e. Alfisols, Entisols Inceptisols and Ultisols. All the thirty eight soil series identified in the area are further classified into 9 sub-orders, 12 great groups, 26 subgroups and 34 families.
- ❖ Nearly 73.0% of total surveyed area comes under Soil 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 Dhalai 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**.

Dhalai district of Tripura state is spread over an area of 221230 ha. The district is covered by seven 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. 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

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