

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

## ABSTRACT

1.	<b>Survey Area</b>	:	South Tripura District, Tripura State
2.	<b>Geographical Extent</b>	:	Between North Latitudes 22°58'00" and 23°45'00" East Longitude 91°15'30" and 91°58'30"
3.	<b>Agro Climatic Region</b>	:	Eastern Himalayan Region-II
4.	<b>Total Area of the District</b>	:	314531 ha.
5.	<b>Kind of Survey</b>	:	Soil Resources Mapping using Remote Sensing Techniques.
6.	<b>Base Map</b>	:	a) IRS – P6 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>	:	December, 2013 to January, 2014

### 9. Soil Series Association Mapped and their Respective Area

Sl. No.	Mapping Unit	Soil Series Association	Area (ha)	Area (%)
1	ALb2a1	Harinmara-Bhabliya	5297	1.68
2	ALg2a1	Charilam-Balhar	32	0.01
3	ALg2a2	Manu-Balhar	26	0.01
4	ALp2a1	Amtali-Bisalgarh	6798	2.16
5	ALp3a1	Gopinagar-Khamarbari-Lalchhari	2128	0.68
6	ALq1a1	Melaghar-Rautkhola-Sutarmura	16981	5.40
7	ALq2a1	Sutarmura-Kamrangabari-Bhabliya	2025	0.64
8	SDi4c1	Betchhara-Rangutia	298	0.09
9	SDi4d1	Rangutia-Gokulnagar	1243	0.40

Sl. No.	Mapping Unit	Soil Series Association	Area (ha)	Area (%)
10	SDn7c(a)1	Kumarghat-Shantipur-Nalifa	1029	0.33
11	SDn7c(a)2	Shantipur-Nalifa	569	0.18
12	SDn7c1	Champamura-Kumarghat	31370	9.97
13	SDn7c2	Nalifa-Shantipur	12029	3.82
14	SDn9c(a)1	Shantipur-Kumarghat	737	0.23
15	SDn9c(a)2	Kumarghat-Nalifa-Shantipur	307	0.10
16	SDn9c1	Mandirghat-Kumarghat	3364	1.07
17	SDn9c2	Kumarghat-Shantipur	15062	4.79
18	SDr4a1	Lembuchhara-Nalifa	231	0.07
19	SDr4b1	Khamting-Betchhara	197	0.06
20	SDr4c1	Nabibari-Bagmara-Rangutia	24582	7.82
21	SDr4c2	Jugalkishor-Rangutia	12193	3.88
22	SDr4d1	Gokulnagar-Rangutia	7967	2.53
23	SDr6c(a)1	Jugalkishor-Taidubari-Khamting	1082	0.34
24	SDr6c(a)2	Kumarghat-Taidubari-Shantipur	1007	0.32
25	SDr6c1	Baramura-Nalifa-Shantipur	7986	2.54
26	SDr6c2	Champamura-Shantipur	74089	23.56
27	SDr6d1	Taidubari-Shantipur-Nalifa	3981	1.27
28	SDv3c1	Phattabari-Nabibari	2086	0.66
29	SDv3d1	Brajapur-Gokulnagar	1620	0.52
30	SDy5b1	Nainachhara-Anandanagar-Rangutia	537	0.17
31	SDy5c1	Bagmara-Nalifa-Rangutia	11202	3.56
32	SDy5c2	Nalifa-Rangutia	55744	17.72
33	SDy5d1	Rangutia-Nalifa	4687	1.49
34	Brick Kiln		74	0.02
35	Habitation		2794	0.89
36	Reservoir		2048	0.65
37	River		1033	0.33
38	Water body		96	0.03
			<b>314531</b>	<b>100.00</b>

### 10. Area under different Erosion classes

Sl. No.	Erosion classes	Area(ha)	Area (%)
1	None to slight erosion	31101	9.89
2	None to slight to moderate erosion	2128	0.68
3	Moderate erosion	54477	17.32
4	Moderate to severe erosion	219474	69.78
5	Severe erosion	1306	0.42
6	Misc.	6045	1.92
	<b>Total</b>	<b>314531</b>	<b>100.0</b>

### 11. Area under different Slope classes

Sl. No.	Slope Classes	Area(ha)	Area (%)
1	Nearly level to very gently slope	31204	9.92
2	Very gently to gently slope	5789	1.84
3	Gently to moderately slope	50407	16.03
4	Moderately to strongly slope	81585	25.94
5	Strongly to moderately steep slope	11967	3.80
6	Steep to very steep slope	122864	39.06
7	Very steep to extremely steep slope	4670	1.48
8	Misc.	6045	1.92
	<b>Total</b>	<b>314531</b>	<b>100.0</b>

### 12. Area under different Landscape and physiography classes

Sl. No	Landscape	Physiography	Area(ha)	Area (%)
1	Alluvium	Alluvial plains	5297	1.68
2		Broad hill valleys	19006	6.04
3		Narrow hill valleys	8926	2.84
4		Stream banks	58	0.02
5	Sandstone	Hillocks/hummocks/ subdued hill	206869	65.77
6		Plateau plains / hill tops / mesa	298	0.09
7		Rolling upland	17669	5.62
8		Undifferentiated hills side slope	22075	7.02
9		Upper pediplains	28288	8.99
		Misc	6045	1.92
		<b>Total</b>	<b>314531</b>	<b>100.0</b>

### 13. Area under different depth classes

Sl. No.	Depth Classes	Area(ha)	Area (%)
1	Moderately deep	7986	2.54
2	Deep	4670	1.48
3	Very deep	295830	94.05
4	Misc	6045	1.92
	Total	<b>314531</b>	<b>100.0</b>

#### Salient Features:

- ❖ Alluvium and Sandstone are the two major landscape found in South Tripura district.
- ❖ Total 34 nos soil series have been mapped in South Tripura district.
- ❖ About 70.82% of the area falls under forest followed by scrub/ shrub lands (13.8%).
- ❖ Soils of the district, falls under nine physiographic classes of which majority of the area falls under Hillocks/hummocks/ subdued hills followed by upper pediplains.
- ❖ About 122864 (39.06%) of survey area having steep to very steep slope range followed by moderately to strongly slope range (25.94%).
- ❖ About 94.05 % of the district area is under very deep soils followed by moderately deep soils (2.54%) and deep soils (1.5%).
- ❖ Majority of the area suffers from moderate to severe erosion hazard followed by moderate erosion hazard.
- ❖ Soils of the area are taxonomically classified into four orders i.e. Alfisols, Entisols Inceptisols and Ultisols.
- ❖ Nearly 37.33% of total surveyed area comes under Land Capability Class VI and is not suitable for cultivation, suitable for pasture and forestry with minor limitations where as 23.03% area comes under LCC class VII which is not suitable for cultivation, suitable for pasture and forestry with major limitations.
- ❖ Nearly 66.52% of total surveyed area comes under Land Irrigability Class 6 and are not suitable for sustained use under irrigation.
- ❖ Nearly 59.59% of total surveyed area comes under Soil Irrigability Class C and are having severe soil limitations for sustained use under irrigation.

## HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources Mapping of South 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**.

South Tripura district of Tripura state is spread over an area of 314531 ha. The district is covered by eleven 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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