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

ABSTRACT

1.	Survey Area	:	West Tripura District, Tripura State
2.	Geographical Extent	:	Between 23°25′ to 24°14′ North Latitude and 91°45′ to 92°10′ East Longitude
3.	Agro Climatic Region	:	Eastern Himalayan Region-II
4.	Total area of the district	:	302651 ha.
5.	Kind of Survey	:	Soil Resources Mapping using Remote sensing and GIS 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	:	2013-14

9. Soil Series association mapped and their respective area

Sl No	Mapping Unit	Soil Association	Area (ha)	Area (%)
1	ALb2a1	Harinmara-Bhabliya	11939	3.94
2	ALg2a1	Balhar-Charilam	61	0.02
3	ALg2a2	Manu-Balhar	14	0.01
4	ALn2a1	Bampur-Gopinagar	98	0.03
5	ALp2a1	Amtali-Bisalgarh	2825	0.93
6	ALp3a1	Gopinagar-Khamarbari-Lalchhari	42	0.01
7	ALq1a1	Melaghar-Rautkhola-Sutarmura	24965	8.25
8	ALq2a1	Sutarmura-Kamrangabari	10522	3.48
9	SDi4c1	Betchhara-Rangutia	520	0.17
10	SDi4d1	Taidubari-Gokulnagar	3376	1.12
11	SDn7c(a)1	Kumarghat-Shantipur-Nalifa	464	0.15
12	SDn7c(a)2	Shantipur-Nalifa	558	0.18
13	SDn7c1	Champamura-Kumarghat	10824	3.58
14	SDn7c2	Nalifa-Shantipur	17622	5.82
15	SDn9c(a)1	Shantipur-Kumarghat	163	0.05

16	SDn9c(a)2	Kumarghat-Nalifa-Shantipur	168	0.06
17	SDn9c1	Mandirghat-Kumarghat	1516	0.5
18	SDn9c2	Kumarghat-Shantipur	3673	1.21
19	SDr4a1	Lembuchhara-Nalifa	220	0.07
20	SDr4b1	Khamting-Betchhara	8144	2.69
21	SDr4c1	Nabibari-Bagmara-Rangutia	24406	8.05
22	SDr4c2	Jugalkishor-Rangutia	7354	2.43
23	SDr4d1	Gokulnagar-Rangutia	46283	15.29
24	SDr6c(a)1	Jugalkishor-Taidubari-Khamting	1312	0.43
25	SDr6c(a)2	Kumarghat-Taidubari-Shantipur	353	0.12
26	SDr6c1	Baramura-Nalifa-Shantipur	6175	2.04
27	SDr6c2	Champamura-Shantipur	38497	12.72
28	SDr6d1	Taidubari-Shantipur-Nalifa	2814	0.93
29	SDv3b1	Jagatpur-Rangutia-Khamting	1029	0.34
30	SDv3c1	Brajapur-Nabibari	2175	0.72
31	SDv3d1	Brajapur-Gokulnagar	8455	2.79
32	SDy5b1	Nainachhara-Anandanagar-Rangutia	4122	1.36
33	SDy5c1	Bagmara-Nalifa-Rangutia	10032	3.31
34	SDy5c2	Nalifa-Rangutia	30698	10.14
35	SDy5d1	Rangutia-Nalifa	13214	4.37
36	Habitation		6709	2.22
37	River		1097	0.36
38	Waterbody		212	0.07
		Grand Total	**302651**	**100**

10. Area under different erosion classes

Sl. No.	Erosion	Area (ha)	Area %
1	None to slight erosion	50312	16.62
2	None to slight to moderate erosion	154	0.05
3	Moderate erosion	68195	22.54
4	Moderate to severe erosion	175972	58.14
5	Misc.	8018	2.65
	Total	**302651**	**100.00**

11. Area under different slope classes

Sl. No.	Slope Classes	Area (ha)	Area %
1	Nearly level to very gently slope	39790	13.1
2	Very gently slope	98	0.0
3	Very gently to gently slope	22237	7.3

4	Gently to moderately slope	80095	26.5
5	Moderately to strongly slope	27368	9.0
6	Strongly to moderately steep slope	100528	33.2
7	Moderately steep to steep slope	17622	5.8
8	Very steep to extremely steep slope	6895	2.3
9	Misc.	8018	2.6
	Total	**302651**	**100.0**

12. Area under different depth classes

Sl. No.	Depth Classes	Area(ha)	%
1	Moderately deep	6175	2.0
2	Deep	3266	1.1
3	Very deep	285192	94.2
4	Misc.	8018	2.6
	Total	**302651**	**100.0**

Salient Features:

- ❖ Alluvium and Sandstone are the two major landscape found in West Tripura district.
- ❖ Total 34 nos soil series have been mapped in West Tripura district.
- ❖ About 43% of the area falls under Forest followed by scrub/ shrub lands (25%).

- ❖ About 100528 ha (33.2%) of survey area having strongly to moderately steep slope range followed by gently to moderately slope range followed by (26.5%).
- ❖ About 94.2% of the district area is under very deep soils.

- ❖ 58.14% of the area suffers from moderate to severe erosion hazard.
- ❖ Nearly 45.63% of total surveyed area comes under Land Capability Class IV, land suitable for cultivation, moderately good land to fairly good land with occasional cultivation with major limitations where as 15.7% area comes under LCC class II, Land suitable for cultivation, good land with minor limitations.
- ❖ Soils of the area are taxonomically classified into four orders i.e. Alfisols, Entisols Inceptisols and Ultisols.
- ❖ Nearly 49.0% of total surveyed area comes under Land Irrigability Class 4, lands that are marginal for sustained use under irrigation because of very severe limitations.
- ❖ Nearly 84.67% of total surveyed area comes under Soil Irrigability Class C, lands that 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 West 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**.

West Tripura district of Tripura state is spread over an area of 302651 ha. The district is covered by thirteen 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**, A**ppendix 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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