

## Inventory of Soil Resources of Howrah District, West Bengal State Using Remote Sensing and GIS Techniques

### ABSTRACT

1.	Survey Area	:	Howrah District, West Bengal State
2.	Geographical Extent	:	22°12' N and 22°47' N latitudes and between 88°37' E and 87°50' E longitudes
3.	Agro Climatic Region	:	Lower Gangetic Plain (Zone no. III as per planning commission)
4.	Total area	:	146701 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	:	2013-14

### 9. Soil Series association mapped and their respective area

S.NO.	Map Symbol	Mapping Uuit	Soil Association	Area (ha)	Area (%)
1	1	ALb1a1	Sluria-Hoglar	15180	10.35
2	10	ALb2b1	Amta-Chinsura	1792	1.22
3	11	ALb1d1	Nampala-Khalna	2072	1.41
4	12	ALg3a1	Bagnan-Betai Amta	2084	1.42
5	13	ALe3a1	Goindpur-Betai Amta	3263	2.22
6	2	ALb1a2	Mansma-Dhaudhali	13023	8.88
7	3	ALb1a3	Chandpur-Khalna	15151	10.33
8	4	ALb1a4	Khalna-Najekhan-Mansinghapur	17728	12.08
9	5	ALn2a1	Mainan-Kandulia-Haridhara	6852	4.67
10	6	ALb2a1	Uluberia-Dhaudhali	8347	5.69
11	7	ALb2a2	Udaynarayanpur-Shibanipur	28256	19.26
12	8	ALb2a3	Bansipur-Ichapur	3920	2.67
13	9	ALb2a4	Dhaudhali-Nuniadanga	777	0.53
14	HS	Homestead		19481	13.28
15	River	River		8382	5.71
16	Tank	Tank		383	0.26
17	Water body	WB		10	0.01
			<b>Grand Total</b>	<b>146701</b>	<b>100</b>

## 10. Area under different erosion classes

Erosion Classes	Area(ha)	%
None to slight erosion	111306	75.87
Slight to moderate erosion	3263	2.22
Moderate to severe erosion	3876	2.65
Misc.	28256	19.26
<b>Total</b>	<b>146701</b>	<b>100</b>

## 11. Area under different slope classes

Slope Classes	Area(ha)	%
Nearly level slope	56983	38.84
Nearly level to very gently slope	45319	30.90
Very gently slope	12267	8.36
Very gently to gently slope	3876	2.64
Misc.	28256	19.26
<b>Total</b>	<b>146701</b>	<b>100</b>

## 12. Salient Features:

- ❖ Total 24 nos soil series have been mapped in Howrah district.
- ❖ 37.00 % area of the district is single cropped area and 41.11% area is under double cropped.
- ❖ Soils of the district has almost none to slight (75.87%) erosion followed by moderate to severe erosion(2.65%) and slight to moderate erosion (2.22%).
- ❖ Alluvial plains (72.42%) are the major physiography of the district followed by flood plains (4.68%), levee (2.22%) and stream bank (1.42%)
- ❖ Soils under different Land Capability classes
  - II 62555 ha 42.64%
  - II-III 53818 ha 36.68%
  - III 2072 ha 1.41%
- ❖ Soils of the area are taxonomically classified into three orders i.e. Alfisol, Inceptisols and Entisols. All the 24 soils series identified in the area are further classified into 7 sub-orders, 7 great groups, 14 subgroups and 24 families.
- ❖ Soils of the district have tremendous potential for variety of agriculture crops.
- ❖ Proper crop rotation and diversification of crops are necessary for sustainable agricultural production.

## HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of Howrah district, West Bengal 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 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**.

Howrah district of West Bengal is spread over an area of 146701 ha. The district is covered by twelve 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. ALb1a1 (Alluvium; alluvial plain; 0-3 % slope; agriculture land use; Soil Series Association, describing Sluria as dominant series in association with Hoglar 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:

<i>AL</i>	-	<i>Alluvium</i>	-	<i>Landscape</i>
<i>b</i>	-	<i>Alluvium plain</i>	-	<i>Physiography</i>
<i>1</i>	-	<i>0-3 %</i>	-	<i>Slope class</i>
<i>a</i>	-	<i>Agriculture land</i>	-	<i>Land use</i>
<i>1</i>	-	<i>Association of Soil series with erosion and management soil unit.</i>		

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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