

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

ABSTRACT

1.	Survey Area	:	Hooghly District, West Bengal State
2.	Geographical Extent	:	87°30'15"E to 88°30'20" E Longitudes and 22°39'32"N to 23°01'20" N Latitudes
3.	Agro Climatic Region	:	Lower Gangetic Plain (Zone no. III as per planning commission)
4.	Total area	:	314900 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	:	March to April, 2011

9. Soil Series association mapped and their respective area

Sl. No.	Mapping Symbol	Mapping Unit	Soil Association	Total Area (ha)	Area (%)
1	1	ALb2a1	Saljhar-Sitanagar-Mandoli	76,484	24.29
2	10	ALn2a1	Keshabpur-Gholdigri-Narayanpur	17,801	5.65
3	11	ALb2a4	Chinsura-Bansipur	26,158	8.31
4	12	ALb2b2	Chinsura-Balarampur	7,188	2.28
5	13	ALn2a2	Nuniadanga-Saktipur-Balarampur	2,663	0.85
6	14	ALk1d1	Sitanagar-Saljhar	3,275	1.04
7	2	ALb2a2	Elahipur-Nuniadanga	46,230	14.68
8	3	ALb2a3	Bansipur-Ichapur-Mubarakpur	17,454	5.54
9	4	ALb1a1	Saljhar-Nuniadanga	45,732	14.52
10	5	ALb2b1	Rangamete-Mandoli	45,499	14.45
11	6	ALb2c1	Porabagan- Rangamete	81	0.03
12	7	ALe3c1	Rangamete-Kirtichandrapur	192	0.06
13	9	ALg2a1	Mandoli-Digrighat	3,466	1.10
14	97	Tank		165	0.05
15	98	Habitation		16,267	5.17
16	99	River		5,426	1.72
17	77	Waterbodies		819	0.26
			Grand Total	3,14,900	100.0

10. Area under different erosion classes

Sl. No.	Erosion	Area (ha)	%
1	None to slight erosion	2,07,167	65.79
2	Slight to moderate erosion	39,284	16.82
4	Moderate erosion	45,772	14.54
	Misc.	22,677	7.20
	Total	3,14,900	100.00

11. Area under different slope classes

Sl. No.	Slope Classes	Area(ha)	%
1	Level to nearly level slope	49,007	15.56
2	Nearly level to very gently slope	2,39,558	76.07
3	Very gently slope	3,466	1.10
4	Very gently to gently slope	192	0.06
5	Misc.	22,677	7.20
	Total	3,14,900	100.00

12. Salient Features:

- ❖ Total 18 nos soil series have been mapped in Hooghly district.
- ❖ 74.95 % area of the district are cultivated followed by homestead surrounding orchards (14.45%), grass land (1.04%), and forest land (0.09%).
- ❖ Soils of the district has almost none to slight (65.79%) erosion followed by moderate erosion(14.54%) and slight to moderate erosion (16.82%).
- ❖ Alluvial plains (84.10%) are the major physiography of the district followed by flood plains (6.50%), stream bank (1.10%) and marshy land (1.04%).
- ❖ Soils of the districts fall in four slope classes

● Level to nearly level slope	49,007ha	15.56%
● Nearly level to very gently slope	2,39,558ha	76.07%
● Very gently slope	3,466ha	1.10%
● Very gently to gently slope	192ha	0.06%
- ❖ Soils under different Land Capability classes

● II	2,03,701 ha	64.69%
● II-III	84,974 ha	26.98%
● III	3,548 ha	1.13%
- ❖ Soils of the area are taxonomically classified into three orders i.e. Alfisol, Inceptisols and Entisols. All the 18 soils series identified in the area are further classified into 7 sub-orders, 8 great groups, 14 subgroups and 18 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 Hooghly 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**.

Hooghly district of West Bengal is spread over an area of 314900 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 Saljhar as dominant series in association with Nuniadanga 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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