

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

ABSTRACT

1.	Survey Area	:	Bardhaman District, West Bengal
2.	Geographical Extent	:	88°25' E to 86°48' E Longitudes and 23°53' N to 22°56' N Latitudes
3.	Agro Climatic Region	:	Lower Gangetic Plain (Zone no. III as per planning commission)
4.	Total area of the district	:	702400 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	:	January to March, 2010

9. Soil Series association mapped and their respective area

Sl. No.	Mapping Symbol	Mapping Unit	Soil Association	Total Area (ha)	Area (%)
1	01	ALb1a1	Budbud-Gopalmat	33988	4.84
2	02	ALb1a2	Utra-Banagram	76514	10.89
3	03	ALb2a1	Aushgram-Baduria	88986	12.67
4	04	ALb2a2	Mahachandpur-Budbud-Bardhaman	108473	15.44
5	05	ALb2a3	Madhaipur-Budbud-Keyatola	26543	3.78
6	06	ALb2a4	Krishna-Begunia-Srirampur	97261	13.85
7	07	ALe3a1	Kaksha-Hatipota	11519	1.64
8	08	ALg3a1	Basatpur-Hatipota	3971	0.57
9	09	ALb1a3	Baribund-Gopalmat	30808	4.39
10	10	LAv2a1	Madhalganja-Jamgara	9053	1.29

Sl. No.	Mapping Symbol	Mapping Unit	Soil Association	Total Area (ha)	Area (%)
11	11	LAv2c1	Gopinathpur-Ajodhya	2481	0.35
12	12	LAv3c1	Pratappur-Meledanga	12107	1.72
13	13	LAv3c2	Kalikapur-Meledanga	9199	1.31
14	14	LAv3c3	Baburbagh-Pratappur	4185	0.60
15	16	SDn7c1	Bistupur	293	0.04
16	17	SDo3c1	Holda-Maithan-Maliadih	602	0.09
17	18	SDv3a1	Kendulia-Joba-Jamsal	43300	6.16
18	19	SDv3d1	Joba-Kendulia	1103	0.16
19	20	SDw1a1	Laikdanga-Hadmedhaura-Jobacob	8406	1.20
20	21	Airport		343	0.05
21	22	Coalmine		30189	4.30
22	23	H.S.		84169	11.98
23	24	M.Query		3478	0.50
24	25	RI		13415	1.91
25	26	W.B.		2014	0.29
			Grand Total	702400	100.00

10. Area under different erosion classes

Sl. No.	Erosion	Area(ha)	%
1	None to slight erosion	462573	65.86
2	Slight to moderate erosion	51706	7.36
3	Moderate erosion	18854	2.68
4	Moderate to severe erosion	35366	5.04
5	Severe erosion	293	0.04
6	Misc.	133608	19.02
	Total	702400	100.00

11. Area under different slope classes

Sl. No.	Slope Classes	Area(ha)	%
1	Level to nearly level slope	149716	21.31
2	Nearly level to very gently slope	332797	47.38
3	Very gently to gently slope	85986	12.24
4	Moderately steep to steep slope	293	0.04
5	Misc.	133608	19.02
	Total	702400	100.00

Salient Features:

- ❖ Three types of landscape i.e. alluvium, laterite and sandstone are found in Bardhaman district.
- ❖ Total 35 nos soil series have been mapped in Bardhaman district.
- ❖ 76.71 % area of the district are cultivated followed by forest land (4.41%) and open scrub(0.17%).

❖ Soils of the district, falls under six major physiography

☐ Alluvial plain	462573	65.86
☐ Levees	11519	1.64
☐ Lower pediplain	8406	1.20
☐ Upper pediplain	81428	11.59
☐ Foot hill slope	602	0.09
☐ Hill side slope	293	0.04

- ❖ About 482573ha(68.69%) of survey area having slope range 0-3% i.e plain land, suitable for intensive agriculture system.
- ❖ About 65.86% area having none to slight erosion hazard and only 0.04% suffered from severe erosion & 5.33% moderate to severe erosion, needs urgent attention for soil conservation measures.
- ❖ Nearly 65.86% of total surveyed area comes under capability ClassII. Has good potential for Agriculture/Horticulture development on sustainable basis where as 15.12% area comes under III & IV, marginally suited for agriculture.
- ❖ Soils of the area are taxonomically classified into three orders i.e. Alfisols, Entisols and Inceptisols. All the thirty five soils series identified in the area are further classified into 9 sub-orders, 12 great groups, 26 subgroups and 34 families.
- ❖ Soils are acidic to neutral in nature and low to medium in fertility status needs recommended doses of balanced fertilizer in addition to assured irrigation for sustained increase in agriculture production

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of Bardhaman 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 irrigibility 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 **Chapter5**.

Bardhaman district of West Bengal is spread over an area of 702400 ha. The district is covered by twenty two 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 Budbud as dominant series in association with Gopalmat 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
1	-	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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