

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

ABSTRACT

1.	Survey Area	:	Birbhum District, West Bengal
2.	Geographical Extent	:	87°5'25" to 88°1'40"E Longitudes and 23°32'30" to 24°35'0"N Latitudes
3.	Kind of Survey	:	Soil Resources Mapping using remote sensing techniques.
4.	Total area	:	454505 ha.
5.	Agro Climatic Region	:	Lower Gangetic Plain (Zone no. III as per planning commission)
6.	Base map	:	a) IRS – ID Geocoded Satellite Imagery (1: 50000 scale) b) SOI –toposheet (1:50000 scale)
7.	Period of Survey	:	February to March, 2011

9. Soil Series association mapped and their respective area

S.NO.	Map Symb	Mapping Uuit	Soil Association	Area (ha)	Area (%)
1	1	ALb1a1	Tentulia-Bejuri-Kichai	55072	12.12
2	2	ALb1a2	Raghunathpur-Bejuri	28607	6.29
3	3	ALb2a1	Margarm-Gogonpur	57724	12.7
4	4	ALb2a2	Hetampur-Margarm	20182	4.44
5	5	ALb2a3	Gogonpur-Hetampur-Bejuri	38571	8.49
6	6	ALg3a1	Lalitikunda-Bagdanga	7407	1.63
7	7	ALe3a1	Ramchanrapur-Kichai	6397	1.41
8	8	ALb1a3	Gopalpur-Kichai	3161	0.7
9	21	BAv2a1	Badzol-Dharampur	3713	0.82
10	22	BAv2a2	Bahadurpur-Badzol	9001	1.98
11	23	BAv2b3	Rangamati-Bahadurpur	2805	0.62
12	24	BAv2e1	Jethia-Rangamati	462	0.1
13	31	GNv2a1	Darsandhari-Shibdanga	10650	2.34
14	32	GNv2a2	Hingla-Kulkuri	42107	9.26
15	33	GNv2a3	Debgram-Murdanga	12042	2.65
16	34	GNv3a1	Kulkuri-Hingla Bazar	5829	1.28
17	35	GNv3c1	Rajarpukur-Kulkuri	3697	0.81
18	36	GNv3c2	Shunkana-Kulkuri	5969	1.31
19	41	LAW2a1	Habispur-Makwa-Adityapur	19074	4.2

20	42	LAW2a2	Paikpara-Habispur-Prantik	35322	7.77
21	43	LAW3a1	Paikpara-Prantik-Adityapur	30948	6.81
22	44	LAW3c1	Moubelia-Chandpur	3949	0.87
23	45	LAW3c2	Chandpur-Moujurkhala	4295	0.94
24	46	LAW3c3	Moujurkhala-Chandpur	1834	0.4
25	47	LAW3c4	Chandpur-Nimphari	2291	0.5
26	48	LAW2b1	Chandpur-Nimphari	2317	0.51
27	9	ALb2a4	Gogonpur-Bejuri	3201	0.7
28	ATRP	Airstrip		94	0.02
29	HS	Homestead		24312	5.35
30	QRY	Quarrie		1097	0.24
31	RE	Reservoir		720	0.16
32	RI	River		9943	2.19
33	ROC	Rock		14	0
34	T	Tank		449	0.1
35	WB	Water body		1249	0.27
			Grand Total	454505	100

10. Area under different erosion classes

Erosion Classes	Area(ha)	%
None to slight erosion	279904	61.58
None to slight to moderate erosion	99780	21.95
Moderate erosion	24435	5.38
Moderate to severe erosion	12508	2.76
Misc.	37878	8.33
Total	454505	100

11. Area under different slope classes

Slope Classes	Area(ha)	%
Nearly level slope	86840	19.11
Nearly level to very gently slope	257171	56.58
Very gently to gently slope	72616	15.98
Misc.	37878	8.33
Total	454505	100

Salient Features:

- ❖ Total 34 nos soil series in four different Landscape have been mapped in Birbhum district.
- ❖ 83.60 % area of the district are cultivated followed by forest (4.65%) and occasional cultivation(1.28%).
- ❖ Soils of the district has almost none to slight erosion(61.58%) followed by slight to moderate erosion (21.95%) , moderate erosion 5.38% and moderate to severe erosion (2.76%).
- ❖ Alluvial plains (45.44%) is the major physiography of the district followed by Lower pediplain (22.01%)
- ❖ Very deep soils (53.81%) is the major soil depth followed by deep soil (6.42%).

- ❖ Good land with minor limitations and suitable for cultivation i.e LCC II – III covers the maximum area 214784 ha (47.26%) followed by II (34.73%), III-IV(1.73%), IV(1.27%) and III(0.70%). These lands are suitable for the adoption of crop based farming system.

- ❖ Soils of the area are taxonomically classified into four orders i.e. Alfisols, Inceptisols, Vertisol and Entisols. All the 34 soils series identified in the area are further classified into 7 sub-orders, 12 great groups, 22 subgroups and 32 families.

- ❖ Soils are slightly acidic to neutral in reaction and low to medium in fertility needs recommended doses of balanced Fertilizer in addition suitable agronomic practices for sustained increase in agriculture production

HOW TO USE SOIL RESOURCE MAPPING REPORT

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

Birbhum district of West Bengal is spread over an area of 454505 ha. The district is covered by sixteen 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 Tentulia as dominant series in association with Bejuri and Kichai 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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