

Inventory of Soil Resources of Saharsa District, Bihar Using Remote Sensing and GIS Techniques

ABSTRACT

1.	Survey Area	:	Saharsa district, Bihar State
2.	Geographical Extent	:	25°36' N to 26°05' N latitude and 86°19'E to 86°53' E longitude
3.	Kind of Survey	:	Soil Resources Mapping using remote sensing and GIS techniques.
4.	Period of Survey	:	November, 2014 to January, 2015
5.	Total area	:	1,68,700 ha.
6.	Agro Climatic Zone	:	Middle Gangetic Plain Region (IV) (as per planning commission)
7.	Base map used	:	a) IRS – ID Geocoded Satellite Imagery (1: 50,000 scale) b) SOI –toposheet (1:50,000 scale)

8. Soil Series association mapped and their respective area

SL. No.	Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
1	01	ALe2a1	Ekashi-Bisanpur	6,595	3.91
2	02	ALf2a1	Saronikala-Marocha-Bhelai	2,678	1.59
3	03	ALg2a1	Tilak Nagar-Phultora-Koshidhar	3,267	1.94
4	04	ALn1a1	Chandni Chock-Rampur-Bisantha	13,801	8.18
5	05	ALn1a2	Tulsia-Khuskibag-Harchandpur	6,810	4.04
6	06	ALn1a3	Dobha-Bajnathpur-Surigaon	8,255	4.89
7	07	ALn2a1	Parwa-Musarnia-Purnia	42,352	25.09
8	08	ALn2a2	Jalaiya-Tilathi-Jalalgarh	30,900	18.32
9	09	ALn2a3	Gamariya-Kaurihar-Sikindarpur	25,239	14.96
10	10	ALn2a4	Ketaun-Bhawanipur	5,146	3.05

SL. No.	Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
11	11	ALn2b1	Baghrauli-Kasba-Banbagh	1,486	0.88
12	12	ALk1a1	Belabagan-Gulabbagan	4,113	2.44
13	8888	Sandbar		3,438	2.04
14	9797	Waterbody		5,449	3.23
15	9898	Habitation		2,917	1.73
16	9999	River		6,254	3.71
TOTAL				1,68,700	100

9. Area under different erosion classes

Sl. No.	Erosion classes	Area(ha)	Area (%)
1	None to slight erosion	1,25,493	74.39
2	Slight to moderate erosion	25,149	14.91
4	Misc.	18,058	10.70
Total		1,68,700	100

10. Area under different slope classes

Sl. No.	Slope Classes	Area(ha)	Area (%)
1	Level to nearly level slope	32,979	19.55
2	Nearly level to very Gently slope	1,17,663	69.75
3	Misc.	18,058	10.70
Total		1,68,700	100

11. Salient Features:

- ❖ Total 30 soil series have been identified and mapped in Saharsa district.
- ❖ More than 97.38% area of the district are cultivated (88.42 % area comes under multiple crop cultivation whereas 18.32 % area under single crop cultivation) followed by plantation (0.88%).
- ❖ Soils of the district are highly suitable for variety of crops and horticulture crops like Rice, Wheat, Maize, Pulses, oilseeds, Sugarcane, Potato, Jute, Banana, etc.
- ❖ The cropping intensity can be increased by ensuring irrigation and balance fertilizer and manures.
- ❖ Major soil erosion of the district are none to slight erosion (74.39%) followed by slight to moderate erosion (14.91%)
- ❖ Flood plain (79.42 %) is the major physiography of the district followed by Levees (3.91 %), Marshy land (2.44 %), Stream bank (1.94 %) and Paleo channel (1.59%).
- ❖ Soils of the district fall in two slope classes. Out of which 69.75 % area is comes under nearly level to very gentle slope followed by nearly level slope (19.55 %).
- ❖ Land suitable for cultivation, good land with minor limitations i.e. LCC II covers the maximum area 1,01,079 ha. followed by Land suitable for cultivation, moderately good to good land with limitations i.e. LCC II- III (29.38%).
- ❖ Soils of the area are taxonomically classified into three orders i.e. Entisols and Inceptisols. All the identified 30 soils series in the area are further classified into 6 sub-orders, 9 great groups, 15 subgroups and 23 families.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources Mapping of Saharsa district, Bihar 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**.

Saharsa district of Bihar is spread over an area of 1,68,700 ha. The district is covered by eight SOI topographical sheets on the scale of 1:50,000 which are used as base map along with satellite imageries.

Each soil mapping unit is marked by mapping unit i.e. ALn1a1 (Alluvium; flood plain; 0-1 % slope; agriculture land use; Soil Series Association, describing Chandni Chock as dominant series in association with Rampur and Bisantha 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
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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