

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

ABSTRACT

1.	Survey Area	:	Supaul district, Bihar State
2.	Geographical Extent	:	25°59' N to 26°34' N latitude and 86°24'E to 87°07' 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	:	2,42,500ha.
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	ALn1a1	Khakai-Rahariya-Denga	6,453	2.66
2.	02	ALg2a2	Supalnagar-Yhangia	9,741	4.02
3.	03	ALn2a2	Jadiya-Nirmali-Norhei	81,501	33.60
4.	05	ALn2a1	Amourna-Chhapra	81,202	33.48
5.	07	ALn1a2	Parpetti-Supalnagar-Birna	4,364	1.80
6.	08	ALk1a1	Belabagan-Gulabbagan	5,300	2.19
7.	10	ALb2b1	Bhelaguri-Lodhabari	8,869	3.66
8.	12	ALf2a1	Koshidhar-Champabati	491	0.20
9.	14	ALb2a1	Shapetia-Deramari-Khiradaha	62	0.03
10.	16	ALg2a1	Koshidhar-Champabati	1,150	0.47

SL. No.	Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
11.	17	ALd2a1	Charaiya-Yhangia		
12.	8888	Sand Bar		14,134	5.83
13.	9797	Water Body		512	0.21
14.	9898	Habitation		8,597	3.55
15.	9999	River		13,091	5.40
Total				2,42,500	100

9. Area under different erosion classes

Sl. No.	Erosion classes	Area(ha)	Area (%)
1	None to slight erosion	1,75,527	72.39
2	Slight to moderate erosion	19,748	8.14
3	Moderate erosion	10,891	4.49
4	Misc.	36,334	14.98
	Total	2,42,500	100

10. Area under different slope classes

Sl. No	Slope Classes	Area(ha)	Area (%)
1	Level to nearly level slope	16,117	6.65
2	Nearly level to veryGently slope	1,90,049	78.37
3	Misc.	36,334	14.98
	Total	2,42,500	100

11. Salient Features:

- ❖ Total 24 soil series have been identified and mapped in Supaul district.
- ❖ More than 81.36% area of the district are cultivated (79.17% area comes under multiple crop cultivation whereas 2.19% area under single crop cultivation) followed by plantation (3.66%).
- ❖ 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 as per recommended dose.
- ❖ Major soil erosion of the district are none to slight erosion (72.39%) followed by slight to moderate erosion (8.14%) and moderate erosion (4.49%).
- ❖ Flood plain (71.56%) is the major physiography of the district followed by alluvial plains (3.68%), stream bank (4.49%), point bar complex (2.90%), marshy land (2.19%) and paleo channel (0.20%).
- ❖ Soils of the district fall in two slope classes. Out of which 78.37% area is comes under nearly level to very gently slope followed by very gently slope (6.65%).
- ❖ Land suitable for cultivation, good lands with minor limitations i.e. LCC II covers the maximum area 2,42,500 ha. (40.96%), followed by moderately good to good land with limitations, good lands and fairly good lands with occasional cultivation i.e. LCC II (38.97%), III (2.19) and IV (2.90%) respectively.
- ❖ Soils of the area are taxonomically classified into three orders i.e. Alfisols, Entisols and Inceptisols. All the identified 24 soils series in the area are further classified into 7 sub-orders, 10 great groups, 15 subgroups and 21 families.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resources mapping of Supaul 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**.

Supaul district of Bihar is spread over an area of 2,42,500 ha. The district is covered by ten 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. ALn2a1 (Alluvium; flood plain; 0-3 % slope; agriculture land use; soil series association, describing Amournaas dominant series in association with Chhapraseries). 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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