

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

ABSTRACT

1.	Survey Area	:	Katihar district, Bihar State
2.	Geographical Extent	:	25°14' N to 25°53' N latitude and 87°12' E to 88°05' 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	:	2,91,349 ha.
6.	Agro Climatic Zone	:	Middle Gangetic Plain Region (IV) (as per planning commission)
7.	Base map used	:	a) IRS – P6-- 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	ALg2a1	Yhangia-Koshidhar	7,531	2.58
2	02	ALg2a2	Supalnagar-Champabati	18,869	6.48
3	03	ALe2a1	Bangra-Danraha	4,387	1.51
4	04	ALd2a1	Charaiya-Yhangia	8,954	3.07
5	05	ALn1a1	Parasmani-Rampur-Bisantha	17,127	5.88
6	06	ALn1a2	Khuskibag-Harchandpur-Baisi	27,290	9.37
7	07	ALn1a3	Dobha-Surigaon	45,372	15.57
8	08	ALn2a1	Katihar-Parara	23,089	7.92
9	09	ALn2a2	Jalalgarh-Sikindarpur	52,682	18.07

Sl. No.	Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
10	10	ALn2b1	Kasba-Banbagh	2,356	0.81
11	11	ALf1a1	Marocha-Bhelai	4,456	1.53
12	12	ALe2a2	Uchla-Danraha	453	0.16
13	13	ALn2a3	Katihari-Sikindarpur-Tinpani	13,539	4.65
14	14	ALn2a4	Nababganj	8,554	2.94
15	15	ALk1a1	Belabagan-Gulabbagan	11,088	3.81
16	9797	Waterbody		1,637	0.56
17	9898	Habitation		30,745	10.55
18	9999	River		13,220	4.54
Total				2,91,349	100

9. Area under different erosion classes

Sl. No.	Erosion classes	Area(ha)	Area (%)
1.	None to slight erosion	2,03,197	69.74
2.	Slight to moderate erosion	16,150	5.54
3.	Moderate erosion	26,400	9.07
4.	Misc.	45,602	15.65
Total		2,91,349	100

10. Area under different slope classes

Sl. No	Slope Classes	Area(ha)	Area (%)
1.	Level to nearly level slope	1,05,333	36.15
2.	Nearly level to very Gently slope	1,40,414	48.20
3.	Misc.	45,602	15.65
Total		2,91,349	100

11. Salient Features:

- ❖ Total 28 soil series have been identified and mapped in Katihar district of Bihar state.
- ❖ 83.54% area of the district are cultivated (80.47% area comes under multiple crop cultivation whereas 3.07% area under single crop cultivation) followed by plantation (0.81%).
- ❖ 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 recommended dose of balance fertilizer and manures besides suitable agronomic practices.
- ❖ Major soil erosion of the district are none to slight erosion (69.74%) followed by slight to moderate erosion (5.54%) and Moderate erosion (9.07%).
- ❖ Flood plain (65.22%) is the major physiography of the district followed by Stream bank (9.06%), Marshy land (3.81%), Pointbar complex (3.07%) and Levees (1.66%), Paleo channel (1.53%).
- ❖ Soils of the district fall in two slope classes. Out of which 48.20 % area is comes under nearly level to very gentle slope followed by Nearly level slope (36.15%).
- ❖ Land suitable for cultivation, good land with minor limitations i.e. LCC II covers the maximum area 1,46,059 ha. followed by Land suitable for cultivation, moderately good to good land with limitations i.e. LCC II- III (30.99%) and Land suitable for cultivation, moderately good land with major limitations i.e. LCC III (3.23%).
- ❖ Soils of the area are taxonomically classified into three orders i.e. Alfisols, Inceptisols and Entisols. All the identified 28 soils series in the area are further classified into 6 sub-orders, 10 great groups, 16 subgroups and 21 families.

HOW TO USE SOIL RESOURCE MAPPING REPORT

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

Katihar district of Bihar is spread over an area of 2,91,349 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 Katihar as dominant series in association with Parara and Chhapra 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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