Inventory of Soil Resource of Gopalganj District, Bihar State using Remote Sensing and GIS Technique.

Abstract

1.	**Surveyed Area**	**:**	Gopalganj district, Bihar
2.	**Location**	**:**	Latitude 26°12′ to 26°39′N Longitude 83°54′ to 84°55′E
3.	**Agroclimatic Region**	**:**	Middle Gangetic Plain (Zone – IV as per planning commission)
4.	**Total Area of the District**	**:**	203913
5.	**Kind of Survey**	**:**	Soil Resource Mapping using Remote Sensing and GIS Techniques
6.	**Base Map**	**:**	a) IRS-ID Geocoded Satellite Imagery 1:50,000 b) Survey of India Topographical maps on 1:50,000
7.	**Scale of Mapping**	**:**	1:50,000
8.	**Period of Survey**	**:**	Dec.2014 to Jan. 2015

9. Soil Series Association mapped and their respective area:

Mapping Symbol	Mapping Unit	Soil Association	Area(ha)	%
01	ALb1a1	Thawe - Saidpur	11196	5.49
02	ALb1a2	Bishanpura - Sonbarsa	28103	13.78
03	ALb2a1	Routari – Bhore - Parsa	9758	4.79
04	ALb2a2	Parsa - Magrora	13641	6.69
05	ALb2a3	Katsikri - Dharamgata	38166	18.72
06	ALb2a4	Jagdishpur - Bhit Bherwa	50957	24.99
23	ALg3a1	Mangalpur - Sarfara	7770	3.81
24	ALn2a1	Sarfara - Nautan	10652	5.22
25	ALn2a2	Yodapur – Sarfara	7592	3.72
12	ALe3a1	Bagha – Dhana	2766	1.36
26	ALe3d1	Dhana - Bagha	6943	3.41
19	Habitation		5035	2.47
20	River and Water body		10794	5.29
21	Canal		540	0.26
		Grand Total	203913	100

10. Salient Features:

- ⇨ Total 18 soil series have been mapped in Gopalganj district.
- ⇨ Soils of the districts are very deep.
- ⇨ Soils of the district mainly fall under one landscape and four physiography.
  - Alluvial Plain - 151821 ha (74.46 %)
  - Flood Plain - 18244 ha (8.94%)
  - Stream/river banks- 7770 ha (3.81%)
  - Levees - 9709 ha (4.77%)

⇨ Soils of the district fall in five slope classes:

- Nearly level sloping - 39299 ha (19.27%)
- Nearly level to very gently sloping - 112522 ha (55.19%)
- Very gently to gently sloping - 26014 ha (12.75%)
- Gently sloping - 9709 ha (4.77 %)

⇨ Various land use / land cover classes of the district are as under

- Cultivated lands 180601 ha (88.57%)
- Open scrub lands 6943 ha (3.41%)

⇨ Soils of the area are taxonomically classified into three orders i.e Alfisols, Entisols and Inceptisols. All the eighteen soils series identified in the area are further classified into 5 sub order, 6 great group, 9 sub group and 15 families.

⇨ Soils of the districts have five erosion classes

- None to slight erosion: 151821 ha (74.46 %)
- Slight to moderate erosion: 26014 ha (12.75 %)
- Moderate to severe erosion: 2766 ha (1.36 %)
- Severe erosion: 6943 ha (3.41 %)

⇨ Soils under different Land Capability classes

- II 151821 ha (74.46 %)
- II-III 18244 ha (8.94 %)
- III 10536 ha (5.17%)
- III-IV 6943 ha (3.41 %)

The data indicate that soils have good potential for agricultural production. The soil health management is key for sustainable agriculture development.

How To Use Soil Resource Mapping Report

This report embodied the results of the Soil Resource Mapping of Gopalganj 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 8)** 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.**

Gopalganj district of Bihar is spread over an area of 203913 ha. The district is covered by 11 SOI topographical sheets on the scale of 1:50,000 which are used as base material along with satellite imageries.

Each soil mapping units is marked by mapping unit i.e ALb2a1 (Alluvium; alluvial plain; 0-3% slope; agriculture land use; soil series association describing Routari as dominant series in association with Bhore and Parsa 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 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 and 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 ALb2a1 may be referred as follows:

AL	-	Alluvium	-	Landscape
a	-	Alluvial plain	-	Physiography
2	-	0-3% slope	-	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 further enquiry / or clarification, correspondence or personal contact may be established with either of the following address:

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