

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

### ABSTRACT

1.	<b>Survey Area</b>	:	Madhepura district, Bihar State
2.	<b>Geographical Extent</b>	:	25°27' N to 26°07' N latitude and 86°37'E to 87°07' E longitude
3.	<b>Kind of Survey</b>	:	Soil Resources Mapping using remote sensing and GIS techniques.
4.	<b>Period of Survey</b>	:	November,2014 to January, 2015
5.	<b>Total area</b>	:	1,78,800 ha.
6.	<b>Agro Climatic Zone</b>	:	Middle Gangetic Plain Region(IV)(as per planning commission)
7.	<b>Base map used</b>	:	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	1159	0.65
2	02	ALf2a1	Saronikala-Marocha-Bhelai	899	0.50
3	03	ALg2a1	Tilak Nagar-Phultora-Koshidhar	1009	0.56
4	04	ALn1a1	Chandni Chock-Rampur-Bisantha	7077	3.96
5	05	ALn1a2	Tulsia-Khuskibag-Harchandpur	13167	7.36
6	06	ALn1a3	Dobha-Bajnathpur-Surigaon	3706	2.07
7	07	ALn2a1	Parwa-Musarnia-Purnia	72689	40.66
8	08	ALn2a2	Jalaiya-Tilathi-Jalalgarh	27144	15.19
9	09	ALn2a3	Gamariya-Kaurihar-Sikindarpur	16647	9.31
10	10	ALn2a4	Ketaun-Bhawanipur-Kasba	30604	17.12

SL. No.	Mapping Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
11	11	ALn2b1	Baghrauli- Banbagh	489	0.27
12	9797	Waterbody		268	0.15
13	9898	Habitation		2598	1.45
14	9999	River		1344	0.75
<b>TOTAL</b>				<b>178800</b>	<b>100</b>

### 9. Area under different erosion classes

Sl. No.	Erosion classes	Area(ha)	Area (%)
1	None to slight erosion	1,66,505	93.12
2	Slight to moderate erosion	7,077	3.96
3	Moderate erosion	1009	0.56
4	Misc.	4,210	2.35
		<b>1,78,800</b>	<b>100</b>

### 10. Area under different slope classes

Sl. No	Slope Classes	Area(ha)	Area (%)
1	Level to nearly level slope	23,950	13.39
2	Nearly level to very gently slope	1,50,640	84.26
3	Misc.	4,210	2.35
	<b>Total</b>	<b>1,78,800</b>	<b>100</b>

## 11. Salient Features:

- ❖ Total 29 soil series have been identified on fluvial land scape and mapped in Madhepura district.
- ❖ More than 97.38% area of the district are cultivated (81.05% area comes under multiple crop cultivation whereas 16.33% area under single crop cultivation) followed by plantation (0.27%).
- ❖ 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 having none to slight erosion (93.69%) followed by slight to moderate erosion (3.96%) and only 0.56% area comes under moderate erosion.
- ❖ Flood plain (95.94%) is the major physiography of the district followed by Levees (0.65%), Stream bank (0.56%) and Paleo channel (0.50%).
- ❖ Soils of the district fall in two slope classes. Out of which 84.26% area is comes under nearly level to very gentle sloping followed by nearly level sloping (13.39%).
- ❖ Land suitable for cultivation, good land with minor limitations i.e. LCC II covers the maximum area 1,63,957 ha. followed by Land suitable for cultivation, moderately good to good land with limitations i.e. LCC II- III (5.38%) and LCC III (0.56%) Land suitable for cultivation, moderately good land with major limitations.
- ❖ Soils of the area are taxonomically classified into three orders i.e. Entisols and Inceptisols. All the identified 29 soils series in the area are further classified into 5 sub-orders, 9 great groups, 15 subgroups and 23 families.