

Inventory of Soil Resources of Bharuch District, Gujarat Using Remote Sensing and GIS Techniques

ABSTRACT

1.	Survey Area	Bharuch district, Gujrat
2.	Geographical Extent	72°51', to 74°16' East Longitude and 21°49' to 22° .48' –North Latitude
3.	Agro Climate Region	XIII - Gujarat plain and hills
4.	Total area of the district	7,00675.00 ha.
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 Scale) (b) SOI - Toposheet (1:50,000 scale)
7.	Scale of mapping	1: 50,000
8.	Period of survey	Feb, 2009

9. Soil Series association mapped and their respective area.

Mapping Symbol	Mapping Unit	Series Association	Area (ha)	Area (%)
A01	ALb2a1	Sajod-Latipura-Thasra	59533	8.50
A02	ALb2a2	Varnol-Sajod	135950	19.40
A03	ALb2a3	Varnol-Sajod	19983	2.85
A04	ALb2a4	Latipura-Varnol-Sajod	27778	3.96
A05	ALb2d1	Thasra-Kawa-Sajod	10613	1.51
A06	ALb2d2	Kawa-Sajod	6751	0.96
A07	ALg3d1	Rumalpur-Varnol	8677	1.24
A08	ALb2a5	Sajod-Latipura	21340	3.05
A09	ALh4d1	Rumalpur-Mulad	11345	1.62
A10	ALi5d1	Derol-Rumalpur	226	0.03
A11	ALb2a6	Latipura-Rumalpur- Thasra	6833	0.98
A12	ALb3a1	Bariya-Latipura	1273	0.18
A14	ALb3d1	Borsad-Bariya	1011	0.14
A15	ALb2a7	Varnol-Thasra	816	0.12

B01	BAn8c1	Kavachiya-Dungra	6140	0.88
B02	BAn8c2	Dungra-Kavachiya	3097	0.44
B03	BAn8d1	Dungra-Kavachiya	110	0.02
B04	BAn6c1	Dungra-Kavachiya	2413	0.34
B05	BAn6c2	Kavachiya-Dungra	906	0.13
B07	BAu5a1	Jambar-Singlvan	857	0.12
B08	BAu4a1	Jambar-Singlvan	18399	2.63
B09	BAu4d1	Singlvan-Jambar	2725	0.39
B10	BAv3a1	Chandravan-Kadaba	8765	1.25
B11	BAw2a1	Sagbara-Chandeliya	11042	1.58
B12	BAw2a2	Chandeliya-Sagbara	17008	2.43
B13	BAG4d1	Kadaba-Chandeliya	7256	1.04
B14	BAu4a2	Chandeliya-Kadaba	19477	2.78
BO6	BAn6a1	Dungra-Kavachiya	105	0.01
CA01	CAI2e1	Hansot-Sarod	19587	2.80
CA02	CAI2d1	Sarod-Vansali	10197	1.46
CA03	CAM1e1	Vansali-Nadiyad	72193	10.30
CA04	CAM1c1	Hansot-Sarod	7705	1.10
CA05	CAI2a1	Nadiyad-Vansali	31243	4.46
CA06	CAI2d2	Nadiyad-Vansali	7373	1.05
CA07	CAI2a2	Lakhigaom-Nadiyad	670	0.10
L01	LAu4d1	Dungri	649	0.09
L02	LAg4d1	Naldhari	1496	0.21
Mud	Mud		16212	2.31
R	i		18505	2.64
RQ	e		657	0.09
Sea	g		74447	10.63
SP	SP		9587	1.37
T	g		1198	0.17
H	f		18527	2.64
Total			700675	100.00

10. Physiography wise distribution of the area

Landscape	Physiography	Area (ha)	Area (%)
Alluvium	Alluvial plains	291881	41.66
	Dissected stream banks	11345	1.62
	Ravinous lands	226	0.03
	Stream banks	8677	1.24
Basalt	Lower pediplains	28050	4.00
	Narrow mountain valleys	7256	1.04
	Pediments	41458	5.92
	Undifferentiated hills side slope	12771	1.82
	Upper pediplains	8765	1.25
Laterite	Narrow mountain valleys	1496	0.21
	Pediments	649	0.09
Coastal Alluvium	Coastal alluvial plains	69070	9.86
	Marshy Land	79898	11.4
Misc.		139133	19.86
Total		700675	100.00

11. Various land use / Land cover classes of the district are as under.

Cultivated lands –381072 ha. (54.38 %)

Forest lands - 20261 ha. (2.89%)

Open scrub/pasture lands -68429 ha. (9.77%)

Waste land -91780 ha. (13.10%)

Miscellaneous lands- 139133 ha. (19.86%)

12. Soils of the district fall in four erosion classes.

Types of erosion	Area in ha.	Area in %
Non to slight erosion	466615	66.60
Slight to moderate erosion	11049	1.58
Moderate to Severe erosion	41250	5.89
Severe erosion	42628	6.08
Misc. Land	139133	19.86
Total	700675	100.00

13. Soils under different Land capability classes.

LCC	Area(ha)	Area (%)
II	332799	47.50
III	129117	18.43
II-III	8043	1.15
III-IV	8677	1.24
IV	52449	7.49
IV-VI	7256	1.04
VI	2830	0.40
VII	110	0.02
Forest	20261	2.89
Misc	139133	19.86
Total	700675	100.00

Salient Feature: -

- Major part of survey area covered under alluvial landscape (44.55% of total geographical area) of district, it is followed by Basaltic landscape (14.03 %), Coastal alluvium (21.26%).
- Soils of the area have been classified under five orders Aridisol, Alfisol, Entisol, Inceptisol and Vertisol. In all, twenty-five series in the district have been mapped under 5 order, 7 suborder 7 Great groups, 12 Sub group and 15 family classes.
- The interpretation of data reveals that major part of area i.e. 67.08 % falls under land capability II & III indicates soils are having minor to moderate limitation for cultivation & can be utilized for sustainable agriculture development. 7.49% area is under capability class IV, have major constraints to be used for agriculture production but can be put under diversified activities.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the soil resource mapping of Bharuch district of Gujarat providing information on the geographical setting of the district, such as location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use & soils.

The report contains other information on interpretative grouping of soils such as land capability classes; land irrigability classes, soil suitability grouping and hydrological grouping and also recommendation for crops; horticulture development; forest, forage and grasslands development; water harvesting, water storage and water management that are essential for soil land resource management. The genesis and classification of the soils are also discussed in chapter-5.

Bharuch district of Gujarat is spread over an area of 700675 ha. The district is covered by ten SOI topographical sheets on the scale of 1:50,000 which are used as base material along with satellite imageries.

Each soil mapping unit is marked by mapping unit i.e. Alb2a1 (Alluvium, alluvial plain; 0-3% slope; agriculture land use; soil series Association, describing Sajod - as dominant series in association with Latipura & Thasra series). Each soil association is restricted to maximum of three soil series.

For the use of the soil resource mapping report, first locate the area of your 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 follow:

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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