Inventory of Soil Resource Mapping of Valsad District, Gujarat Using Remote Sensing and GIS Techniques

ABSTRACT

1.	Survey Area	Valsad District, Gujarat
2.	Geographical Extent	72°43' to73°29' East longitude and 20°07' to 20°45'–North latitude
3.	Agro Climate Region	XIII- Gujarat Plain & Hills region
4.	Total area of the district	3,00,612 ha.
5.	Kind of Survey	Soil Resource Mapping (SRM) using Remote Sensing & GIS Techniques.
6.	Base map	(a) IRS-1D Geo-coded Satellite Imagery (1:50,000 Scale) (b) SOI –Toposheet (1:50,000 scale)
7.	Scale of mapping	1: 50,000
8.	Period of survey	December 2013 to January 2014

9. Soil Series association mapped and their respective area.

Mapping Unit	Soil Association	Area (ha)	Area (%)
BAn8c1	Audha-Amba	62856	20.91
BAn6c1	Amba-Audha	25804	8.58
BAr5c1	Kaprada-Amba	10630	3.54
BAi3c1	Piprol-Dabkhal	3917	1.30
BAi3a1	Dabkhal-Piprol	17509	5.82
BAv3a1	Dharampur-Kachigaon	18056	6.01
BAv3a2	Kakarmati-Dharampur	18759	6.24
BAv3a3	Sagar-Bildha	16291	5.42
BAv3a4	Bildha-Sagar	12096	4.02
BAv3b1	Kachigaon-Dharampur	4213	1.40
BAw2a1	Bhambha-Barsol	24711	8.22
BAw2a2	Barsol-Bhambha	33066	11.00
BAw2a3	Valsad	14420	4.80
BAp2a1	Mandwa-Valsad	1379	0.46
CAl2a1	Dungri-Surveda	7812	2.60
CAl2a1	Surveda-Dungri	4721	1.57
H	Habitation	4471	1.49
MF	Mud flat	8920	2.97
N	Nala	200	0.07
R	River	8814	2.93
SP	Salt pan	847	0.28
WB	Water bodies	1120	0.37
Total		**3,00,612**	**100.00**

10. Salient Features:

➢ Total 16 soil series have been mapped in Valsad district of Gujarat.
➢ Soils of the district are mostly under very deep followed by moderately deep and moderately deep to deep
➢ Soils of the district , are mainly under seven physiography
- Hill Top-21426 ha. (7.13%)
- Hill Side slope-88660 ha. (29.49%)
- Hillocks/Hummocks-10630 ha (3.54%)
- Upper pediplain-69415 ha. (23.09%)
- Lower pediplain-72197 ha. (24.01%)
- Narrow hill valley-1379 ha. (0.46%)
- Coastal alluvium plains-12533 ha. (4.17%)

➢ Soils of the district falls in five slope classes

- Nearly level to very gently sloping-81388 ha. (27.07%)
- Very gently to gently sloping-95562 ha. (31.79%)
- Moderately to strong sloping -10630 ha. (3.54%)
- Strong sloping to moderate sloping-25804 ha. (8.58%)
- Very steep slope to very very steep sloping-62856 ha. (20.91%)

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

- Cultivated lands-164099 ha. (54.59%)
- Forest lands-103207 ha. (34.33%)
- Plantation-4213 ha. (1.40%)
- Waste land-4721 ha. (1.57%)
- Miscellaneous lands-24372 ha. (8.11%)

➢ Soils of the area are taxonomically classified in to three orders that are Entisols, Inceptisols and Vertisols. All the 16 soils series identified in the area are further classified in to 4 suborders, 4 great groups, 9 sub groups and 11 families

➢ **Soils of the district have.**

Erosion	Area (ha)	Area (%)
None to slight erosion	59156	19.68
Slight to moderate erosion	117794	39.18
Severe erosion	99290	33.03
Misc. (Habitation, Mud flat, Nala, River, Salt pan and Water bodies)	24372	8.11
Total	**300612**	**100**

➢ **Soil under different Land capability classes.**

LCC	Area (ha)	Area (%)
II	66968	22.28
II-III	83835	27.89
III	17509	5.82
IV	4721	1.57
Forest	103207	34.33
Misc. (Habitation, Mud flat, Nala, River, Salt pan and Water bodies)	24372	8.11
Total	**300612**	**100**