

Inventory of Soil Resource of Vadodara District, Gujarat Using Remote Sensing and GIS Technique

ABSTRACT

1.	Survey Area	Vadodara 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	8, 23,567 ha.
5.	Kind of Survey	Soil Resource Mapping using remote sensing techniques 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.

Sl. No	Mapping Unit	Series Association	Area	Area (%)
A01	ALb2a1	Sajod-Latipura-Thasra	13895	1.69
A02	ALb2a2	Sajod-Varnol	118648	14.41
A03	ALb2a3	Varnol-Sajod	106495	12.93
A04	ALb2a4	Latipura-Varnol-Sajod	21800	2.65
A05	ALb2d1	Thasra-Kawa-Sajod	2603	0.32
A06	ALb2d2	Kawa-Sajod	17099	2.08
A07	ALg3d1	Rumalpur-Varnol	17993	2.18
A08	ALb2a5	Sajod-Latipura	22348	2.71
A09	ALh4d1	Mulad-Rumalpur	35811	4.35
A10	ALi5d1	Derol-Rumalpur	17642	2.14
A11	ALb2a6	Latipura-Rumalpur-Thasra	55592	6.75
A12	ALb3a1	Bariya-Latipura	42818	5.20
A13	ALb3a2	Borsad-Bariya	2615	0.32
A14	ALb3d1	Bariya-Borsad	2594	0.31
A15	ALb2a7	Varnol-Thasra	8442	1.03
B01	BAn8c1	Kuri-Dungra	12680	1.54
B02	BAn8c2	Dungra-Kuri	13189	1.60
B03	BAn8d1	Kuri-Dungra	6739	0.82
B04	BAn6c1	Dungra-Kavachiya	2208	0.27
B05	BAn6c2	Kavachiya-Dungra	6089	0.74
B06	BAn6a1	Dungra-Kavachiya	6845	0.83

B07	BAu5a1	Jambar-Singlvan	3144	0.38
B08	BAu4a1	Singlvan-Jambar	18970	2.30
B09	BAu4d1	Jambar-Singlvan	4267	0.52
B10	BAv3a1	Chandravan-Kadaba	11230	1.36
B11	BAw2a1	Sagbara-Chandeliya	23332	2.83
B12	BAw2a2	Chandeliya-Sagbara	5395	0.66
B13	BAG3d1	Kadaba-Chandeliya	3379	0.41
B16	BAn8c3	Kuri-Dungra	104	0.01
CA01	CAi2e1	Hansot-Sarod	4650	0.56
CA03	CAi1e1	Vansali-Nadiyad	505	0.06
CA05	CAi2a1	Nadiyad-Vansali	505	0.06
CA07	CAi2a1	Lakhigaon-Nadiyad	363	0.04
G01	GRn8c1	Dhanpur-Dungarwant	5152	0.63
G02	GRn8d1	Dungrawant-Dhanpur	7545	0.92
G03	GRn8c2	Dhanpur-Dungarwant	2997	0.36
G04	GRn6d1	Dhanpur-Dungrawant	2733	0.33
G05	GRn6c1	Dungarwant-Dhanpur	5116	0.62
G06	GRu4c1	Od-Panwad-Surkheda	12101	1.47
G07	GRu4d1	Panvad-Surkhed	13949	1.69
G08	GRu4a1	Surkhed-Dhamodi	27940	3.39
G09	GRv3a1	Od-Bardoli	24886	3.02
G10	GRw2a1	Chisadiya-Jhoj	19519	2.37
G11	GRg4d1	Od-Surkheda	3211	0.39
G12	GRv3c1	Bardoli-Od	2290	0.28
G13	GRw2a2	Jhoj-Chisadiya	4936	0.60
PH02	PHi3a1	Khajuri	52	0.01
PH03	PHn8c1	Punakota-Phulpur	2924	0.36
PH04	PHn8c2	Phulpur-Punakota	707	0.09
PH05	PHn6c1	Punakota-Phulpur	1269	0.15
PH06	PHn6a1	Phulpur-Punakota	1114	0.14
PH07	PHu4d1	Sudhiya-Lakhanpur	47	0.01
PH08	PHu4c1	Dabhda-Sudhiya	458	0.06
PH09	PHu4a1	Lakhanpur-Dabhda	4284	0.52
PH10	PHu4c1	Dabhda-Sudhiya	346	0.04
PH11	PHv3a1	Liliamba-Wakota	2374	0.29
PH12	PHw2a1	Wakota-Chamariya	1853	0.22
PH13	PHw2a2	Chamariya-Wakota	119	0.01
PH14	PHg4d1	Lakhanpur-Liliamba	498	0.06
PH15	PHv3a2	Chamariya-Salampur	793	0.10
S01	SDo6c1	Naswadi-Kothiya	120	0.01
S02	SDu4d1	Chametha-Godham	2759	0.34
S03	SDv3c1	Nanakothiya	681	0.08
S04	SDw3d1	Nanakothiya	135	0.02

Cannal	Misc.	-	823	0.10
F	Misc.	-	29440	3.57
G	Misc.	-	6252	0.76
River	Misc.	-	22311	2.71
RQ	Misc.	-	1844	0.22
		Total	823567	100.00

➤ Soils of Vadodara district, Gujarat has following physiography

Landscape	Physiography	Area (ha)	Area (%)
Alluvium	Alluvial plains	414949	50.38
	Dissected stream banks	35811	4.35
	Ravinous lands	17642	2.14
	Stream banks	17993	2.18
Coastal Alluvium	Coastal Alluvial plains	6023	0.73
Basalt	Lower plains	28727	3.49
	Narrow mountain valleys	3379	0.41
	Undulating plains	26381	3.20
	Undifferentiated hills side slope	47854	5.81
	Upper plains	11230	1.36
Granite	Lower pediplains	24455	2.97
	Narrow mountain valleys	3211	0.39
	Pediments	53990	6.56
	Undifferentiated hills side slope	23543	2.86
	Upper pediplains	27176	3.30
Phyllite	Lower pediplains	1972	0.24
	Narrow mountain valleys	498	0.06
	Pediments	5135	0.62
	Plateau plains / hill tops / mesa	52	0.01
	Undifferentiated hills side slope	6014	0.73
	Upper pediplains	3167	0.38
Sandstone	Foot hill slopes	120	0.01
	Lower pediplains	135	0.02
	Pediments	2759	0.34
	Upper pediplains	681	0.08
	Misc	60670	7.37
	Total	823567	100.00

➤ Soils of the district falls in Seven slope classes

Slope Classes	Area (ha)	Area(%)
Nearly level	505	0.06
Steep to very steep	52037	6.32
Very gently sloping to gently sloping	111840	13.58
Gently sloping to moderately sloping	124641	15.13
Moderately sloping to strongly sloping	20786	2.52
Strongly sloping to moderately steep	25494	3.10
Nearly level to very gently sloping	427594	51.92
Misc.	60670	7.37
Total	823567	100.00

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

Land Use	Area (ha)	Area (%)
Agriculture	550307	66.82
Barren land	5155	0.63
Forest	68431	8.31
Open scrub	139004	16.88
Misc.	60670	7.37
Total	823567	100.00

➤ Soils under different erosion classes.

Erosion	Area(ha)	Area(%)
None to slight water erosion	428099	51.98
Slight to moderate erosion	90468	10.98
Moderate to severe erosion	85121	10.34
Severe water erosion	80675	9.80
Severe to very severe erosion	78534	9.54
Misc.	60670	7.37
Total	823567	100.00