

Report on Soil and Land Resource inventory of Adilabad district, Telangana State using Remote Sensing and GIS Technique

ABSTRACT

1. Survey area : Adilabad District, Telangana State.
2. Geographical Extent : 18⁰41'1" to 19⁰ 54' 55" North latitude
77⁰45'40" to 79⁰58'47" East longitude
3. Agro- climatic Zone : Agro-Climatic zone no. X (Southern Plateau and Hills Region)
4. Total area mapped : 16,47,389 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 Toposheets (1: 50,000 scale)
7. Scale of Mapping : 1: 50,000
8. Period of Survey : January 2012 to June 2012

9. Distribution of area under different soil series association mapped मिट्टी श्रृंखला संयोजन मैप के तहत क्षेत्र का वितरण

SI No	Legend	Mapping Unit	Series Association	Area	% area
1	BA01	BAi3c1	Negamalli-Raghunathpuram	53714	3.26
2	BA02	BAi3a1	Paddelwada-Negamalli	136379	8.28
3	BA03	BAn8c1	Hatti-Ambari	108049	6.56
4	BA04	BAr6d2	Mannur-Ambari	64093	3.89
5	BA05	BAo4c1	Laxmipur-Ada	13824	0.84
6	BA06	BAi3d1	Laxmipur-Raghunathpuram	13128	0.80
7	BA07	BAp2a1	Dhanora-Dasanapur	9914	0.60
8	BA08	BAi2a1	Boath-Kandali	100660	6.11
9	AL01	ALb2a1	Dasampalli-Vadur	99593	6.05
10	AL02	ALb3a2	Mancherial-Vadur	9329	0.57
11	GR01	GRn8c1	Madela-Itkal	26224	1.59
12	GR02	GRn6c1	Itkal-Madela	1920	0.12
13	GR03	GRv4c1	Swarna-Mamada	30578	1.86
14	GR04	GRv3d1	Yapalguda-Swarna	20480	1.24
15	GR05	GRv3c1	Mamada-Yapalguda	114225	6.93
16	GR06	GRv3a1	Sawargaon Bhatti-Narsapur	51718	3.14
17	GR07	GRw2c1	Rali-Udampur	28036	1.70
18	GR08	GRw2a1	Tamsi-Mutempet	153795	9.34
19	SD01	SDi3c1	Gaslapet-Talamallu	3382	0.21
20	SD02	SDn8c1	Manikgarh-Girnar	31875	1.93
21	SD03	SDr6c1	Girnar-Manikgarh	23872	1.45
22	SD04	SDo6c1	Manikgarh-Girnar	21347	1.30
23	SD05	SDv4c1	Rebana-Bakkalgutta	124303	7.55
24	SD06	SDv3d1	Bakkalgutta-Gudipet	6286	0.38
25	SD07	SDv3a1	Rebana-Ankhur	2468	0.15
26	SD08	SDw2a1	Ankhur-Gudipet	72152	4.38
27	SD09	SDw2d1	Gudipet-Ankhur	9724	0.59
28	LS01	LSi3c1	Gulapuram-Morrigudem	7535	0.46

SI No	Legend	Mapping Unit	Series Association	Area	% area
29	LS02	LSi3a1	Morrigudem-Gulapuram	5862	0.36
30	LS03	LSn8c1	Malangi -Samela	11494	0.70
31	LS04	LSn6c1	Samela -Malangi	3166	0.19
32	LS05	LSv3c1	Mangalgiri-Jainad	3718	0.23
33	LS06	LSv3a1	Jainad-Mangalgiri	3183	0.19
34	LS07	LSv4a1	Bhelgaon-Jainad	18246	1.11
35	LS08	LSw2a1	Kasipet-Kothari	170787	10.37
36	SH01	SHv3a1	Surdapur-Wamkadi	4949	0.30
37	SH02	SHw2a1	Indhani-Khamana	9728	0.59
			Sub Total	1569736	95.29
38		Misc.		77653	4.71
			Grand Total	1647389	100.00

10. Distribution of area under different depth classes अलग गहराई वर्गों के तहत क्षेत्र का वितरण.

S.No	Depth	Area(ha)	Area%
1	Very deep	352367	21.39
2	Deep to very deep	434494	26.37
3	Moderately deep to deep	28160	1.71
4	Moderately deep	114225	6.93
5	Shallow to moderately deep	341311	20.72
6	Shallow	257567	15.63
7	Very shallow to shallow	41612	2.53
8	Misc.	77653	4.71
	Grand Total	1647389	100.00

11. Distribution of area under different Erosion classes विभिन्न अपरदन वर्गों के तहत क्षेत्र का वितरण.

S.No	Erosion	Area(ha)	Area%
1	Moderate to severe erosion	373768	22.69
2	Moderate water erosion	876933	53.23
3	Slight to moderate erosion	319035	19.37
4	Misc.	77653	4.71

	Grand Total	1647389	100.00
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12. Distribution of area under different management classes प्रबंधन के विभिन्न वर्गों के तहत क्षेत्र का वितरण.

S.No	Management	Area(ha)	Area%
1	Well managed(WB)	209582	12.72
2	Moderately managed(MB) to well managed(WB)	495337	30.07
3	Moderately managed(MB)	252343	15.32
4	Poorly managed(PB) to moderately managed(MB)	358915	21.79
5	Poorly managed(PB)	65882	4.00
6	Unmanaged(UB) to poorly managed(PB)	114918	6.98
7	Unmanaged(UB)	72759	4.42
8	Misc.	77653	4.71
	Grand Total	1647389	100.00

13. Distribution of area under Different slope classes विभिन्न ढलान वर्गों के तहत क्षेत्र का वितरण

S.No	Slope Classes	Area(ha)	Area%
1	nearly level to very gently sloping	654389	39.72
2	very gently sloping to gently sloping	436356	26.49
3	gently sloping to moderately sloping	186951	11.35
4	strongly sloping to moderately steep	93051	6.95
5	steep to very steep	177642	10.78
6	Misc	77653	4.71
	Grand Total	1647389	100.00

14. Distribution of area under different land use अलग भूमि का उपयोग के तहत क्षेत्र का वितरण.

S.No	Landuse	Area(ha)	Area%
1	Agriculture	848763	51.52
2	Forest	607262	36.86
3	Open scrub	113711	6.90
4	Misc.	77653	4.71
	Grand Total	1647389	100.00

15. Salient features मुख्य-मुख्य बातें:

- The area comes under six landscape dominant being Basalt(30.34%) followed by Granite (25.92%), Sandstone(17.94%) Limestone(13.61%), Alluvium(6.62%) and Shale landscape(0.89%).
- Topographics of the surveyed area is dominated by plain lands of 0-5% slope, of which 39.72% area under 0-3% slope, 26.49% area under 1-5% slope category. Other topography have their presence namely Gently to moderately sloping(3-10%) undulating lands(11.35%), steep to very steep(15-33%) sloping lands(10.78%) and strongly to moderately steep(10-25%) sloping lands(6.95%) in the descending order.
- The area of this district is under agriculture which accounts 51.52 %, it is followed by forest (36.86 %), and scrub/ shrubs land (6.90 %) of the surveyed area.
- Major area is under deep to very deep (26.37%) which is followed by very deep soil (21.39 %), Shallow to moderately deep (20.72 %), shallow soils(15.63%) and very shallow to shallow(2.53%) soil depth.
- Land capability class II having 47.76 % lands is the major part of the area followed by class IV land with 20.62% of the total area. Nearly 08.84 % of area comes under land capability class III. Hilly land comes under class VI , VII and VIII covering an area of 7.09% , 10.28% and 0.70% respectively. It indicates good resource potential for agriculture, plantation, forestry and pasture development.
- Most of the area comes under Moderate soil limitations for sustained use under irrigation of class B(43.47%) followed by 26.56% in class D, 13.89 % in Class C and 5.37% in Class E.
- Most of the area of this district is under Moderately lower run-off potential(B) which accounts 45.51 % followed by high run-off potential(D) of 29.0% of the whole survey area. This indicates stability of land form and soil for sustainable agricultural development.
- Major soil series are classified under order Entisols (24) followed by Inceptisols(15), Vertisols(6) and Alfisols(3) .
- The area is prone to moderate water erosion is 53.23 %, and that from moderate to severe erosion is spread over 22.69 % which is followed by slight to moderate erosion accounting for 19.37% highlighting the need for undertaking soil-water conservation measures for ensuring sustainable natural resource management.
- Due to different local geophysical & agroclimatic condition prevails over different parts of district, the crops such as paddy, pulses, oilseeds and commercial crops ie cotton based farming is practiced in different parts of the district. There is need for promoting integrated farming system for sustainable agriculture development.

- The soil series namely Bouth, Gudipet, Muttempet are showing sodium hazard and cultivated under intensive agriculture. There is need to neutralize the sodic hazard by application of Gypsum and other measures like avoiding uncontrolled irrigation practices

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resource Mapping of Adilabad district (Telangana.) providing information on the geographical setting of the district, such as location, extent, physiographic, relief, drainage, climate, geology, natural vegetation, agriculture, land use and 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 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

Adilabad district of Telangana is spread over an area of **16,47,389 ha**. The district is covered by 38 SOI topographical sheets on the scale of 1: 50,000 which are used as base material along with satellite imageries which is useful for soil and land resource mapping for developing scientific land use plan at macrolevel.

Initially soil resource database is developed manually using visual interpretation of satellite imageries. The soil maps along with attributes of soil feature were converted in to digital format by using Geographic Information System (GIS)

Each soil mapping unit is marked as **Alb2a1** (Alluvium; alluvial plain; 0-3% slope; agriculture land use; Soil Series Association, describing Dasampalli dominant series in association with Vadur series. Each soil association is restricted to a maximum of two soil series.

For the use of the soil resource report, first locate the area of your 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, reference may be made to Chapter -4, Pedon description along with analytical data of representative soil is presented in Appendix I. The mapping unit used in soil mapping represents the five levels of mapping i.e. Alb2a1 may be referred as follows:

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 further information or clarification, if any, the contact may be established with:

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