

## Inventory of Soil Resource of Anantpur District of Andhra Pradesh State using Remote Sensing and GIS Techniques

### ABSTRACT

1. Survey area : Anantpur District, Andhra Pradesh State.
2. Geographical Extent : 76° 47' to 78° 26' East Longitude  
13° 41' to 15° 14' North Latitude
3. Agro- climatic Zone : Southern Plateau & Hill region. (X)
4. Total area mapped : 19,15,051 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 Scales  
: b) SOI Toposheets 1: 50,000 scale
7. Scale of Mapping : 1: 50,000
8. Period of Survey : January to February, 2009.
9. Distribution of Area under different soil series association mapped.

SI No	Mapping Unit	Series Association	Area	% area
01	ALb2a1	Poguru-Somedapalli	11990	0.63
02	ALb2a2	Manesamudram-Hindupur-Poguru	74055	3.87
03	ALb2a3	Poguru-Somedapalli	13642	0.71
04	ALg2a1	Kamalapadu-Hanchanihalu	12457	0.65
05	ALb2a4	Hanchanihalu-Kamalapadu	9037	0.47
06	ALd2a1	Somedapalli-Poguru	721	0.04
07	DLn8d1	Madugupalle-Madalapalle	2711	0.14
08	DLn6c1	Madalapalle-Madugupalle	10081	0.53
09	DLn6d1	Madugupalle-Madalapalle	4817	0.25
10	DLo4c1	Mutrukota-Madugupalle	9855	0.51
11	DLv3a1	Amaladini-Mugattimanapalle	6572	0.34
12	DLv2a1	Mugattimanapalle-Kristipadu	13664	0.71
13	DLv2a2	Mutrukota-Amaladini	1113	0.06
14	DLv2a3	Timmapuram-Kristipadu	3814	0.20

<b>SI No</b>	<b>Mapping Unit</b>	<b>Series Association</b>	<b>Area</b>	<b>% area</b>
15	DLv2a4	Kristipadu-Amaladini	2991	0.16
17	GGn8d1	Narsapuram-Mamillipalle	38872	2.03
18	GGn8c1	Mamillipalle-Narsapuram	97276	5.08
19	GGn6d1	Narsapuram-Mamillipalle	33142	1.73
20	GGn6c1	Mamillipalle-Narsapuram	34549	1.80
21	GGr5d1	Marutlacheruvu-Narsapuram	45215	2.36
22	GGr5a1	Narsapuram-Marutlacheruvu	52401	2.74
23	GGu4a1	Nashinpalle-Marutlacheruvu	153011	7.99
24	GGu4c1	Kondapalli-Nashinpalle	46115	2.41
25	GGv3a1	Malyavantham-Doduluru-Amohrpalli	368413	19.24
27	GGv2a1	Bodgandaddi-Kandakuru-Malyavantham	83458	4.36
28	GGv2a2	Amohrpalli-Mudiguppa	38591	2.02
29	GGv2a3	Marumu-Beluguppa	108223	5.65
30	GGv2a4	Kandakuru-Anantpur	21379	1.12
31	GGw2a1	Kandakuru-Kunuturu	45288	2.36
32	GGw1a1	Anantpur-Kandakuru	199206	10.40
33	GGw1d1	Kunuturu-Kandakuru	18653	0.97
34	GGv3a2	Mudiguppa-Malyavantham	102149	5.33
36	LSu4d1	Darga-Hajwalidarga	706	0.04
37	LSv2a1	Hajwalidarga-Darga	1293	0.07
38	QZn7d1	Daditola-Tadimiri	3518	0.18
39	QZn6c1	Tadimiri-Daditola	4306	0.22
40	QZr5c1	Daditola	4224	0.22
41	QZi3d1	Talaricheruvu	1993	0.10
42	QZp2a1	Tadpatri	2291	0.12
43	SCi4c1	Ramgiri-Siparam	6565	0.34
44	SCr6d1	Siparam-Kottalapalli	11770	0.61
45	SCv3d1	East Ramgiri-Ramgiri	14659	0.77
46	SCi3a1	Regudi-East Ramgiri	2638	0.14
47	SCv3a1	East ramgiri-Peddacpalli	2590	0.14
48	SHn6d1	Kondapuram-Mutssukota	5712	0.30
49	SHr5d1	Mutssukota-Kondapuram	5385	0.28
50	SHv3a1	Virapuram-Akampalli	14188	0.74
51	SHw2a1	Erraguntapalle-Chimalavagupalli	35139	1.83

SI No	Mapping Unit	Series Association	Area	% area
52	SHw2a2	Kamali-Erraguntapalle-Chimalavagupalli	5253	0.27
53	SHw2a3	Chimalavagupalli-Akampalli	17310	0.90
54	SHw3a1	Akampalli	1694	0.09
55	ROC	Rock out crop (Dykes)	31281	1.63
56	H	Habitation	15773	0.82
57	Q	Query and mine	654	0.03
58	RI	River/ streams	13726	0.72
59	T	Tank/ reservoir	48403	2.53
60	SUB	Submerged	521	0.03
		<b>Total</b>	<b>1915053</b>	<b>100.00</b>

10 . Distribution of Area under different soil depth.

SI No	Depth	Area(ha)	Area%
1	Very shallow	17609	0.92
2	Very shallow to shallow	28776	1.50
3	Shallow	460683	24.06
4	Shallow to moderately deep	222490	11.62
5	Moderately deep	370107	19.33
6	Moderately deep to deep	127580	6.66
7	Deep	15955	0.83
8	Deep to very deep	439593	22.95
9	Very deep	121902	6.37
10	Misc	110358	5.76
	<b>Total</b>	<b>1915053</b>	<b>100.00</b>

11. Distribution of Area under different soil erosion.

SI No	Erosion	Area(ha)	Area%
1	None to slight water erosion	341867	17.85
2	Slight to moderate erosion	305265	15.94
3	Moderate water erosion	668773	34.92
4	Moderate to severe erosion	263824	13.78
5	Severe water erosion	224966	11.75
6	Misc	110358	5.76
	<b>Total</b>	<b>1915053</b>	<b>100.00</b>

12. Distribution of Area under different management

SI No	Management	Area(ha)	Area%
1	Unmanaged(UB)	17609	0.92
2	Unmanaged(UB) to poorly managed(PB)	330333	17.25
3	Poorly managed(PB)	71209	3.72
4	Poorly managed(PB) to moderately managed(MB)	60365	3.15
5	Moderately managed(MB)	678047	35.40
6	Moderately managed(MB) to well managed(WB)	317255	16.57
7	Well managed(WB)	329877	17.23
8	Misc	110358	5.76
	<b>Total</b>	<b>1915053</b>	<b>100.00</b>

13. Distribution of Area under different slope

SI No	Slope Classes	Area(ha)	Area%
1	Nearly level	217859	11.38
2	Nearly level to very gently sloping	501709	26.20
3	Very gently sloping to gently sloping	514896	26.89
4	Gently sloping to moderately sloping	216252	11.29
5	Moderately sloping to strongly sloping	107225	5.60
6	Strongly sloping to moderately steep	104377	5.45
7	Moderately steep to steep	3518	0.18
8	Steep to very steep	138859	7.25
9	Misc	110358	5.76
	<b>Total</b>	<b>1915053</b>	<b>100.00</b>

14. Distribution of Area under different land use/land cover

SI No	Major Land use	Area(ha)	Area%
1	Agriculture	1404571	73.34
2	Forest	212971	11.12
3	Open scrub	187153	9.77
4	Misc	110358	5.76
	<b>Total</b>	<b>1915053</b>	<b>100.00</b>

## 15. Salient features:

- Most of the area comes under Granite – gneiss landscape -77.59% followed by Alluvium- 6.37%, shale- 4.42%, Dolomite-2.90%, Schist-2.00% & Quartzite-0.85%. Only 0.1% area out of the total comes under Limestone landscape.
- Survey area is dominated by very gently to gently sloping lands-26.89% followed by nearly level to very gently sloping lands (26.20%) , nearly level -11.38%, Gently sloping to moderately sloping-11.29%, steep to very steep-7.25%, moderately sloping to strongly sloping-5.60%, strongly sloping to moderately steep-5.45% and only 0.18%area comes under moderately steep to steep slope
- Majority of the area surveyed is under agriculture which accounting 73.34% , forest 11.12% area and scrub/ shrubs land occupies about 9.77 % land.
- Major area comes under shallow soil depth 24.06%, deep to very deep-22.95%, moderately deep-19.33%, shallow to moderately deep-11.62%, moderately deep to deep-6.66% and very deep-6.37%. Whereas very shallow to shallow-1.50%, very shallow-0.92% and only 0.83%area under deep soils
- Nearly 16% of area is found not suitable for irrigation, 7% of area is suffering from very severe soil limitation for sustained use under irrigation.
- 13.28% of area is of high runoff potential with 21% under moderately high runoff potential and 60% area is under low runoff potential.
- Most of the area comes under Entisols order followed by Inceptisols , Vertisols, Aridisols and Alfisols, respectively.
- Most of the area comes under moderate water erosion (34.92%) followed by slight erosion (17.85%).Moderate to severe water accounts for 13.78% and severe water erosion occupies 11.75%.