

Inventory of Soil and Land Resources of Cuddapah District, Andhra Pradesh State Using Remote Sensing Technique

ABSTRACT

1. Survey Area : Cuddapah District, Andhra Pradesh State
2. Geographical Extent : 77⁰55' to 79⁰29' East longitude
13⁰43' and 15⁰14' North latitude
3. Agro-climatic Region : Southern Plateau and Hill region (X)
4. Total Area : 1540411 ha.
5. Kind of Survey : Soil Resource Mapping using Remote Sensing Technique
6. Base Maps : i) Survey of India Toposheets (Scale 1:50,000)
(ii) Geology Map (Scale 1:2,50,000) of Geological Survey of India
(iii) Satellite Imagery (Scale 1:50,000) of LISS-III (IRS-1-D)
7. Scale of Mapping : 1:50,000
8. Period of Survey : March, 2010 to April, 2010

9. Mapping unit wise Soil association and their extent

Mapping Symbol	Mapping Unit	Soil Series Name	Area (ha)
1	ALg2a1	Nakkala Dinne, Venkatayapalle	106214
2	DLn6d1	Rachagunta Palle, Pulivendla	6099
3	DLn8c1	Vempallipuram, Pulivendla	17862
4	DLn8d1	Nandimandalam, Pulivendla	6754
5	DLu4a1	Velamavaripalle, Rasapalle	1275
6	DLu4c1	Kamalapuram, Bhoomagari Palle	2232
7	DLu4d1	Bhoomagari Palle, Kamalapuram	5866
8	DLv3a1	Tipparajupalle, Chinnadasari Palle	12777
90	DLv3d1	Rasapalle, Bhoomagari Palle	2712
10	DLw2a1	Chinnadasari Palle, Tipparajupalle	8479
11	GRn6c1	Payalopalle, Varikonda	6305
12	GRn6d1	Kesireddipalle, Ramapuram	9952
13	GRn8c1	Varikonda, Payalopalle	23597
14	GRn8d1	Ramapuram, Kesireddipalle	11046
15	GRu4a1	Gurappavari Palle, Reddivaripalle	737
16	GRu4c1	Polemera Palle, Rachi Palle	6794
17	GRu4d1	Reddivaripalle, Gurappavari Palle, Polemera Palle	15107
18	GRv3a1	Nallaguttapalle, Jangam Palle, Benju Palle	85815
19	GRv3d1	Jangam Palle, Nallaguttapalle	6716
20	GRw2a1	Benju Palle, Nallaguttapalle	46683
21	LSv3a1	Erraguntla, Talapunuru	60811
22	LSv3d1	Talapunuru, Erraguntla	1904
23	LSw2a1	Appayapalle, Talapunuru, Erraguntla	25042
24	QZn6c1	Lingareddi Palle, Giddanki Palle	34554
25	QZn6d1	Damana Palle, Mudireddi Palle	4261
26	QZn8c1	Giddanki Palle, Lingareddi Palle	209796
27	QZn8d1	Mudireddi Palle, Damana Palle	10368

Mapping Symbol	Mapping Unit	Soil Series Name	Area (ha)
28	QZu4c1	Kosinapalle, Vajral	39860
29	QZu4d1	Vajral, Kosinapalle	22154
30	QZv3a1	Chintagunta, Komanapalle	7410
31	QZv3c1	Komanapalle, Akkireddi Palle	7850
32	QZv3d1	Akkireddi Palle, Komanapalle	17161
33	QZw2a1	Rasi Palle, Komanapalle, Chintagunta	2571
34	SHi4c1	Tummala Bailu, Jammlamadugu	12763
35	SHi4d1	Balan Gudda, Tummala Bailu, Badugunte Palle	1111
36	SHn6c1	Sheshachelam, Motirasa Palle	13208
37	SHn6d1	Gondala Palle, Siddavatam	6441
38	SHn8c1	Motirasa Palle, Sheshachelam, Siddavatam	86787
39	SHn8d1	Siddavatam, Gondala Palle	25148
40	SHu4c1	Racha Palle, Animelu	37207
41	SHu4d1	Badugunta Palle, Tummala Bailu	36549
42	SHv3a1	Kammadoddi , Kasinayanapalle	225185
43	SHv3c1	Kasinayanapalle, Gangaya Palle	19946
44	SHv3d1	Mitta Palle, Gangaya Palle	47139
45	SHw2a1	Kammadoddi, Gangaya Palle, Kottauppalu	131129
46	SHw2d1	Kottauppalu, Kammadoddi	2403
47	f	Habitation, Built-up area etc.	12249
48	e	Uncultural waste, ROC etc.	4623
49	g	Waterbodies	51759
TOTAL			1540411

10. Salient Features

- ❖ Most of the area in Cuddapah district comes under Geology Shale accounting 41.21 percent followed by Quartzite 23.77 percent & Granite accounting 13.82 percent.
- ❖ The survey area is dominated by gently sloping lands covering 32.12 percent followed by very steep sloping area of 25.36 percent.
- ❖ Major physiography is under upper pediplain (32.1%) followed by hill side slopes (30.7%) and lower pediplain (14.04%).
- ❖ Agriculture is the main occupation of the district occupying about 46.36 percent of the total area followed by forest 33.67 percent and open scrub 15.51 percent respectively.
- ❖ Soils of the district is mainly very deep accounting 37 percent, followed by moderately deep 27.30 percent and shallow soils covering an area of 20.37 percent.
- ❖ Nearly 37.44 percent of the area is affected by moderate to severe erosion followed by slight to moderate erosion 31.33 percent and 26.77 percent area is affected by moderate erosion.
- ❖ Nearly 40.13 percent of the area is under unmanaged to poorly manage followed by poorly to moderately managed (39.74 %) and only 13.87 percent area is moderately managed.
- ❖ About 39.70 percent of the area is under land capability class III, 12.70 percent under land capability class II followed by Land capability class IV, VI and VII.
- ❖ About 64.9 percent area is potentially good for a variety of crops with suitable agronomic practices.
- ❖ 33.74 percent of the area comes under moderate soil limitations for sustained use under irrigation and 222.52 percent under severe soil limitations and 4.48 percent not suitable for sustained use under irrigation
- ❖ 43.02 percent of the area comes under the lands that have severe limitations for sustained use under irrigation followed by an area of 8.27 percent comprising the lands that have moderate limitations for sustained use under irrigation.
- ❖ Nearly 41.37 percent of the area has high run-off potential and 15 percent of the area lower run-off potential.

How to use Soil Resource Mapping Report

This report contains the results of the Soil Resource mapping of Cuddapah district and furnishes information on the geographical setting of the state vis-à-vis location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use and soils.

Other information provided in this report comprises interpretative grouping of soils and land resource provides suggestive management related guidelines on land capability classes; soil suitability groupings and recommended crops; horticulture development; forest, forage and grassland development; water harvesting, water storage and water management. The soils of the area have also been differentiated as per soil characters to enable the users for scientific land use planning and classified based on soil Taxonomy (USDA).

Cuddapah spreads over an area of 1540411 hectare. The District is covered by 32 SOI top sheets on the scale of 1:50,000 and the same have been used as reference maps for the survey. IRS 1D LISS - III satellite data has been used for soil mapping as base. In this report each of soil mapping unit is marked by symbol i.e. QZn6c1 (Quartzite Geology; Hill side slope physiography; 10-25 % slopes; forest land use; soil series association 1, which mean the area has dominance of Venkatayapalle series in association with Nakkaladinne series). Each soil association is restricted to a maximum of three soil series found within concerned soil mapping unit.

For the use of the soil resource report, first user needs to locate the area of 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 will help user to locate the area of interest on the map. For the detailed information on soil mapping unit in respect of soil series in the area of interest, its extent, present and proposed land uses reference may be made to chapter-3, 4, 5 and Appendix-I and II.

The symbols used in the soil mapping unit represents the five levels of mapping i.e. Alb2a1 may be referred as follows:

AL	Alluvium	:	Landscape
b	Flood plain	:	Physiography
2	0-3 % Slope	:	Slope classes
a	Agriculture	:	Land use
1	Soil series association		

Any comments or suggestions on the report are welcome. For any additional information, and clarification, further correspondence or personal contact may be established with –

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