

# INVENTORY OF SOIL RESOURCES OF KOTTAYAM DISTRICT, KERALA STATE USING REMOTE SENSING TECHNIQUES

## ABSTRACT

1.	<b>Survey Area</b>	Kottayam District, Kerala State, India
2.	<b>Geographical Extent</b>	76° 23' 34" and 76° 59' 12" East Longitudes 9° 23' 51" and 9° 51' 13" North Latitudes
3.	<b>Agro-climatic Region</b>	Agro-climatic Zone-XII (West Coast Plains & Ghat Region)
4.	<b>Total Geographical Area</b>	2,20,106 ha.
5.	<b>Type of Survey</b>	Soil Resource Mapping (SRM) using Remote Sensing Techniques
6.	<b>Base Maps</b>	(i) Survey of India Toposheets (scale 1:50,000) 58C05, 58C06, 58C07, 58C09, 58C10, 58C11, 58C13, 58C14, 58C15 (ii) Geology Map (scale 1:2,50,000) of Geological Survey of India (iii) Satellite Imagery (scale 1:50,000) of LISS-III (IRS-1D)
7.	<b>Scale of Mapping</b>	1:50,000
8.	<b>Period of Survey</b>	January 2014 to February 2014.

### 9. Mapping unit wise soil association and their extent:

Sl No	Mapping Unit	Soil Association	Area	% area
1	ALg2a1	Kidangur-Monippilly	19442	8.83
2	ALg2b1	Monippilly-Kidangur	630	0.29
3	CAI2a1	Kumarakom-Madapally	30739	13.97
4	CAI2b1	Madapally-Kumarakom	8159	3.71
5	GNN6b1	Cherukkatodu-Minachil	51721	23.50
6	GNN6c1	Panakkachira-Nedungavayal	1326	0.60
7	GNN8b1	Moornilavu-Kallekulam	25125	11.41
8	GNN8c1	Pulikkampara-Kallekulam	5356	2.43
9	GNN8d1	Kurisumala-Meladukkam	4932	2.24
10	GNNp3a1	Ramapuram-Marangattupally	184	0.08
11	GNNu4b1	Kondur-Peritodu	9639	4.38
12	GNNu4c1	Karimbumtodu-Poovarani	19354	8.79
13	GNNv3b1	Marangattupally-Kanjirappally	2617	1.19
14	GNNw2a1	Ramapuram-Veliyanur	4861	2.21
15	GNNw2b1	Veliyanur-Ramapuram	861	0.39
16	LANN6b1	Meenadam-Kizhur	6228	2.83
17	LAAu4b1	Pambadi-Puthupally	13105	5.95
18	LAAv3b1	Kodanallur-Puthupally	4534	2.06
19	e	Rock Out Crops	665	0.30
20	f	Habitations	2046	0.93
21	g	Water bodies	8582	3.90
		<b>Total</b>	<b>220106</b>	<b>100.00</b>

## **SALIENT FEATURES:**

---

- ❖ The interpretative grouping on land capability class (LCC) falls under eight classes. Land capability class IV dominated accounting to 26.33 per cent, followed by class III accounting 24.31 per cent and class II accounting 11.51 per cent of the area.
- ❖ As per the soil irrigation potential, 23.04 per cent area has moderate soil limitations, 2.35 per cent under moderate to severe soil limitations whereas 51.71 per cent lands have severe soil limitations for sustained use under irrigation.
- ❖ As per the Land Irrigability Class, 26.33 per cent lands that are marginal for sustained use under irrigation because of very severe limitations followed by 24.31 per cent lands that have severe limitations for sustained use under irrigation and lands that have moderate limitations for sustained use under irrigation is 11.51 per cent.
- ❖ Eighteen mapping units have been established in the survey area, of which GNn6b1 mapping unit occupies maximum area of 23.50 per cent followed by CA12a1 (13.97 %).
- ❖ Most of the area in Kottayam district comes under Gneiss landscape (57.23%) followed by Coastal Alluvium (17.67 %) and Laterite (10.85 %).
- ❖ Most of the area of Kottayam district comes under Nearly level to Very gentle slope (29.39 %) followed by Strong to steep slope class (26.93 %).
- ❖ Deep to very deep (48.20 %) soils occupy majority of the area are followed by Very deep soils (43.84 %).
- ❖ Major area comes under Moderate erosion (40.52 %) followed by None to slight erosion (29.39 %).
- ❖ Major area comes under Moderately Managed class (63.14 %) followed by Unmanaged class (11.83 %).

## HOW TO USE SOIL RESOURCE MAPPING REPORT

---

This report embodies the results of the Soil Resource Mapping of Kottayam district of Kerala, State 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.

The report contains information on nature and kind of soil resources with its extent on landscape and interpretative grouping of soils and land resources which includes land capability classification that helps to prepare scientific land use plan for agriculture, horticulture, forestry, grassland development and providing suggestive management guidelines for crop suitability and crop recommendations. The soils of the area have also been differentiated as per soil characteristics based on Soil Taxonomy (USDA) to enable the users for scientific land use planning.

Kottayam District which spreads over an area of **2,20,106 ha** have its district headquarters at Kottayam. There are five taluks in the district viz Kottayam, Changanacherry, Vaikom, Meenachil and Kanjirapally. The district is covered by 9 numbers of Survey of India Toposheets on 1:50,000 scale and the same have been used as reference maps for the survey. Satellite data (NRSC Imagery) has been used for image interpretation and soil mapping. In the report each soil mapping unit is marked by a symbol which represent the five levels of generalization as features within mapping units *viz.*

Geology (parent material)	GN	-	Gneiss
Physiography	w	-	Lower pediplains
Slope	2	-	0-3 % Slope
Land use	a	-	Agriculture
Soils	1	-	Association of soil 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 4, 5 and Appendix-I and II.

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

The Chief soil Survey Officer,  
Soil and Land Use Survey of India  
IARI Buildings, New Delhi 110 012  
Phone: +91-11-25841263 / 25849486  
Fax : +91-11-25843811  
Email: [csso-slusi@nic.in](mailto:csso-slusi@nic.in)

The Soil Survey Officer  
Soil and Land Use Survey of India  
Survey No.207, Kodigehalli,  
Vidyaranyaपुरa (P), Bangalore - 560 097.  
Phone : 080-23640761, 080-23641119.  
Fax : 080-23640751, Email:[soilkar@nic.in](mailto:soilkar@nic.in)

**Log on to: <http://slusi.dacnet.nic.in>**