

Report on Detailed Soil Survey and Land Use of 4G1E3a3, a9, b2, b5, d1, d3, d4, d5, d6, d7, f2, f3, f5, f6, g1, g2, g5, g6, g7, g8, g9, h2, h3, h4, h5, h6, h7, h9, k4, p6, t1, t4, and u1 Micro Watersheds of 4G1 Catchment (Delta mouth to Hirakud dam catchment) of Mahanadi Basin, Blocks- Baliguda, Daringbarhi, Nuagaon and Rajkia, District- Kandhamal (Phulbani) of Odisha state

Abstract

1	Survey area	:	Report on Detailed Soil Survey and Land Use of 4G1E3a3, a9, b2, b5, d1, d3, d4, d5, d6, d7, f2, f3, f5, f6, g1, g2, g5, g6, g7, g8, g9, h2, h3, h4, h5, h6, h7, h9, k4, p6, t1, t4, and u1 Micro Watersheds of 4G1 Catchment (Delta mouth to Hirakud dam catchment), Mahanadi Basin, Blocks-Baliguda, Daringbarhi, Nuagaon and Rajkia, District-Kandhamal (Phulbani) of Odisha state
2	Geographical location	:	Lies between 19°58'16" to 20°16'16" North Latitude and between 83°55'58" to 84 ° 12'24" East Longitude
3	Type of survey	:	Detailed Soil Survey using GIS and Remote Sensing technique
4	Base Map used	:	Satellite imageries of 1:12,500 scale SOI toposheets(1:50000 scale)
5	Total area mapped	:	34,421.40 ha
6	Agro climatic Region	:	Zone No.7(Eastern Plateau and Hills) as per National Planning Commission
7	Period of survey	:	May, 2012 to June,2012

8. Name of Soil series and their areal extent mapped in different micro watersheds.

Series name	No. of Mapping Units	Area(ha)	Area(%)
Balipadar	4	769.3	2.23
Balliguda	3	511	1.48
Bandebazu	3	67.3	0.20
Dharampur	4	260.8	0.76
Jamapadar	6	21743.6	63.17
Kalipen	3	153.8	0.45
Kilupada	5	4687.8	13.62
Laribari	3	256.5	0.75
Lengumaha	3	1518.6	4.41
Paibarisahi	3	3255.4	9.46
Sainiparha	3	317.6	0.92
Surusur	3	692.9	2.01
Misc.	2	186.8	0.54
Total		34421.40	100

9. Distribution of area under different depth classes

Sl.No.	Depth class	Area(ha)	Percentage
1	Moderately deep	21810.90	63.36
2	Deep	3255.40	9.46
3	Very deep	9168.30	26.64
4	Misc.	186.80	0.54
	Total	34421.40	100

10. Distribution of area under different Soil erosion classes

Sl.No.	Erosion class	Area(ha)	Percentage
1.	None to slight water erosion	2756.60	8.01
2	Moderate water erosion	3486.00	10.13
3	Severe water erosion	27759.80	80.65
4	very severe water erosion	232.20	0.67
5	Misc.	186.80	0.54
	Total	34421.40	100

11. Distribution of area under different Soil Slope classes

Slope Classes	Area(ha)	Percentage
Very gently sloping	452	1.31
Very gently sloping, terraced to nearly level(0-1%)slope	1091.7	3.17
Gently sloping	5845	16.98
Gently sloping, terraced to nearly level(0-1%)slope	1664.9	4.84
Moderately sloping	3437.4	9.99
Strongly sloping	1516.1	4.40
Moderately steep sloping	420.8	1.22
Steep sloping	5823.1	16.92
Very steep sloping	13983.6	40.62
Misc.	186.80	0.54
Total	34421.40	100

12. Distribution of area under different Land capability classes

Sl.No.	Land capability class	Area (ha)	Percentage
1.	II	3208.6	9.32
2	III	3034	8.81
3.	IV	2928.8	8.51
4.	VI	3319.6	9.64
5.	VII	21743.6	63.17
6.	Misc. Area	186.80	0.54
	Total	34421.40	100

13. Salient features of the area:-

☞ The survey area is dominated by moderately deep soils covering an area of 21810.90 ha 63.36 %, followed by very deep soils covering an area of 9168.30 ha 26.64 % and deep soils cover 3255.40 ha 9.46 %.

☞ Steep to very steep slopes cover major area i.e.19806.70 ha 57.54% followed by strongly sloping to moderately steep 1936.90 ha 5.62 % gentle to moderate slopes cover an area of 9282.40 ha 26.97 % very gentle slope 452 ha 1.31% whereas nearly level land occupies 2756.60 ha 8.01% of the total area.

☞ About 27759.8 ha (80.65%) is susceptible to severe and 232.2 ha (0.67%) very severe water erosion hazards. This reflect problem of management of soil health and requires immediate attention of soil conservation measures.

☞ About 3486 ha 10.13 % is susceptible to moderate erosion hazard.

☞ Only 2756.60 ha 8.01% is terraced land and have none to slight erosion and under paddy cultivation.

☞ An area of 1075.50 ha 3.12 % is under seasonal water logging.

☞ An area of 27157.4 ha 78.90 % is under forest

☞ An area of 7077.20 ha 20.56 % is under cultivation

☞ Approx 25066.30 ha 72.82 % area is under stony and rocky phases.

How to Use Soil Survey Report

The present report furnishes a detailed account of various characteristics of the surveyed area like physiography, relief, geology, climate, natural vegetation, land use and soils. Detailed descriptions of soils series recognized in the area and interpretation of different soil mapping units for various applied aspects of agricultural development, such as land use planning, soil and water management, soil conservation, are given in relevant chapters. Different problems of the area have been depicted and corrective measures have also been suggested.

In order to use the report, the user may locate the area of his interest on the soil map appended with the report. On the map, each soil mapping unit has been delineated and represented by symbolic expression. The abbreviated symbol of mapping unit reflects information about the name of soil series, soil depth, surface texture, land slope and gradient erosion status. The soil mapping unit is demarcated as JP3kH3SR where 'JP' represents for 'Jamapadar' Soil Series, '3' for moderately deep soil depth, 'k' for sandy clay loam surface texture, 'H' for very steep sloping (33-50%), '3' for severe water erosion and SR for slightly stony and slightly rocky (15-30% surface cover).

The detailed of the soil mapping units, their description and multipurpose interpretative groupings have been shown in **Appendix-I** (Guide to Soil Mapping Units). The differentiating characteristics of Soil Series are furnished in **Table-6** and the Typifying Pedon of the Soil Series are described in **Appendix-II**. Microwatershed-wise mapping units along with their area extent, present land use and management status are given in **Appendix -IV**.

The symbols used in the report and the analytical methods used for soil analysis are also illustrated in **Appendix-III & V** respectively.

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