

Detailed Soil Survey and Land Use Plan of, 3C2G3b3, b5, b6, b7, d2, d3, d4, d5, d6, d7 & d8, 3C2G3f5 and 3C2G4f5, f7, f8 & j3 microwatersheds of Brahmaputra Basin, North Tripura districts, Tripura Using Remote Sensing and GIS Techniques

Abstract

1.	Survey area	3C2G3b3, b5, b6, b7, d2, d3, d4, d5, d6, d7 & d8, 3C2G3f5, and 3C2G4f5, f7, f8 & j3 microwatersheds of Brahmaputra Basin, Unakoti and North Tripura districts, Tripura
2.	Geographical location	24°10'20" to 24°21'0" North Latitude 92°02'45" to 92°09'30" East Longitude
3.	Type of Survey	Detailed Soil Survey using Remote Sensing Technique
4.	Base Map used	i. Toposheet (enlarged 1:12,500). ii High Resolution Satellite data on 1:12,500 scale
5.	Total map area	14,459 ha
6.	Agro-climatic region	Eastern Himalayan region-II as per National Planning Commission(1989)
7.	Period of Survey	December, 2013 to January, 2014.

Soil series mapped and their area extent

Sl. No.	Soil Series	No. of mapping units	Area (ha)	Area (%)
1.	Balidhum	6	3,280	22.68
2.	Bhagwanpur	3	504	3.49
3.	Deorachhara	4	243	1.68
4.	Dharmanagar	1	97	0.67
5.	Harinmara	6	962	6.65
6.	Jubarajnagar	7	3,655	25.28
7.	Kailasahar	3	1,306	9.03
8.	Murabari	5	1,034	7.15
9.	North Tripura	3	717	4.96
10.	Pecharthal	1	5	0.03

Sl. No.	Soil Series	No. of mapping units	Area (ha)	Area (%)
11.	Rautkhola	4	270	1.87
12.	Sadarbari	4	1,558	10.78
13.	Tilthaibari	3	259	1.79
14.	Unakoti	3	199	1.38
15.	Misc. (Settlement, Temple, Brick kiln and river)	4	370	2.56
	Total	57	14,459	100.00

Distribution of Area under different Soil Erosion Classes.

Sl. No.	Erosion classes	Area (ha)	Area (%)
1.	None to slight water erosion	1,435	9.92
2.	Moderate water erosion	1,390	9.61
3.	Severe water erosion	11,230	77.67
4.	Very severe water erosion	34	0.24
5.	Misc.	370	2.56
	Total	14,459	100

Distribution of Area under different Slope Classes.

Sl. No.	Slope Classes	Area (ha)	Area (%)
1.	Very gently(1-3%) sloping, terraced to nearly level(0-1%)	1,267	8.76
2.	Gently(3-5%) sloping, terraced to nearly level (0-1%)	168	1.16
3.	Gently (3-5%) sloping	131	0.91
4.	Moderately (5-10%) sloping	1,304	9.02
5.	Strongly (10-15%) sloping	17	0.12
6.	Moderately steep (15-25%) sloping	3,565	24.66
7.	Steep (25-33%) sloping	4,120	28.49
8.	Very steep (33-50%) sloping	1,654	11.44
9.	Extremely steep (>50%) sloping	1,863	12.88
10.	Misc.	370	2.56
	Total	14,459	100

Distribution of Area under different land Capability Classes

Sl. No.	LCC	Area (ha)	Area (%)
1.	II	507	3.51
2.	III	2,196	15.19
3.	IV	167	1.15
4.	VII	11,219	77.59
5.	Misc.	370	2.56
	Total	14,459	100.00

Salient Features of the area:-

1. Most of the survey area is covered by forest and forest plantation.
2. Total 14 soil series are found in the survey area.
3. About 4120 ha (28.49%) area falls under steep sloping, 3565ha (24.66%) area falls under moderately steep sloping and 3517ha (24.32%) area falls under very steep to extremely steep sloping hill side slope, 1435 ha(9.93%) area is under gently to moderately sloping upland and the remaining 1267 ha(8.76%) area is under nearly level to very gently sloping valleys.
4. About 11264 ha(77.91%) area is suffering from severe to very severe water erosion as well as poorly to unmanaged and requires Integrated Soil-water Conservation measures urgently.
5. Nearly 1435 ha(9.92%) area is well managed and covered under agriculture which needs assured irrigation besides effective agronomic practices.
6. Most of the area are very deep soil 8328ha(57.60%) followed by moderately deep soil 3655ha (25.28%) and deep soil 1970ha (13.19%). Shallow soils are found in few area of 199ha (1.38%).
7. Land not suitable for cultivation, suitable for pasture and forestry with major limitations i.e LCC VII covers the maximum area 11219 ha (77.59%) followed by III (15.19%) and II (3.51%)
8. Soils of the area are taxonomically classified into two orders i.e. Inceptisols and Ultisols. All the 14 soils series identified in the area are further classified into 3 sub-orders, 3 great groups, 6 subgroups and 8 families.
9. Soils are strongly acidic in nature and low in fertility needs recommended doses of fertilizer in addition to lime application for sustained increase in agriculture production.
10. Soils on hillock/ low hills are good potentials for orchard plantation specially Pineapple.

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 description of soil 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 RT5kC(A)1 where 'RT' represents for 'Rautkhola' Soil Series, '5' for very deep soil depth, 'k' for sandy clay loam surface texture, 'C(A)' for gently sloping (1-5%) bunded with nearly level to level(0-1%), '1' for none to slight water erosion.

The details of the soil mapping units, their description and interpretative groupings have been shown in **Appendix-I** (Guide to Soil Mapping Units). The differentiating morphological characteristics of Soil Series are furnished in **Table-9** and the Pedon Description of the soil series are described in **Appendix-II**. Micro-watershed-wise mapping units along with their area extent, present land use and management status are given in **Appendix -III**.

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

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