ABSTRACT

1	Survey Area	:	East Garo Hill district, Meghalaya
2	Agro climatic Zone	:	Eastern Himalayan zone (Zone No-II as per National Planning Commission)
3	Geographical location	:	25^0 24′ 45″ to 26^0 01′ 00″ N latitude and $90^0$07′00″ to $91^0$02′00″ E
4	**Base Map used**	:	i. Toposheet (1:50,000). ii. IRS ID LISS-III satellite Imageries in the scale of 1:50,000
5	Total Area	:	297774 ha
6	Period of field visit	:	November, 2010 & December, 2010
7	Type of Survey	:	Soil Resource Mapping using Remote Sensing And GIS Technique

A. Extent of area under different Mapping Unit and Association of Soil Series mapped:

Sl. No.	Map Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
1.	10.1	ACp2a1	Rongmal-Dabit bibra	1132	0.38
2.	10.2	ACp2a2	Dabit bibra-Rongmal	287	0.10
3.	11.1	ACp3a1	Rongmal-Dabit bibra	4907	1.65
4.	11.2	ACp3b1	Chisopara-1-Rongmal	3320	1.11
5.	11.3	ACp3c1	Chisopara-1-Rongmal	177	0.06
6.	2.1	ACx3a1	Bamanjuli-Tangla	5663	1.90
7.	2.2	ACx3b1	Tangla-Koramore	4866	1.63
8.	2.3	ACx3b2	Koramore-Tangla	92	0.03
9.	4.1	ACx4a1	Bamanjuli-Koramore-Tangla	759	0.25
10.	4.2	ACx4b1	Koramore-Bamanjuli	3294	1.11
11.	4.3	ACx4c1	Tangla-Koramore	82	0.03
12.	1.1	ALb2a1	Damalgiri-Nunmati	2924	0.98
13.	1.2	ALb2b1	Chimisenggiri-Nunmati	880	0.30
14.	14.1	GGn6c1	Rongru Asim-Rongkhongiri	86	0.03
15.	14.2	GGn6c2	Megonggiri-Kharukhalgin	242	0.08
16.	13.1	GGn7c1	Rongru Asim-Rongkhongiri-Megonggiri	522	0.18
17.	13.2	GGn7c2	Megonggiri-Kharukhalgin	874	0.29
18.	13.3	GGn7c3	Megonggiri-Rongkhongiri	625	0.21
19.	12.1	GGn8c1	Rongkhongiri-Megonggiri	208	0.07
20.	12.2	GGn8c2	Megonggiri-Kharukhalgin	1551	0.52
21.	12.3	GGn8c3	Megonggiri-Rongkhongiri	729	0.24
22.	15.6	GGy5a1	Upperdamalgiri	457	0.15
23.	15.1	GGy5c1	Upperdamalgiri	25	0.01
24.	15.2	GGy5c2	Upperdamalgiri	66	0.02
25.	3.6	GNi4a1	Dolwaregiri	234	0.08
26.	3.1	GNi4c1	Dolwaregiri-Nengsat	542	0.18
27.	3.2	GNi4c2	Nengsat-Dolwaregiri	2925	0.98
28.	3.3	GNi4c3	Dolwaregiri-Balong giri	404	0.14
29.	3.4	GNi4d1	Dolwaregiri-Nengsat	702	0.24
30.	6.1	GNn6c1	Dawa-1-William nagar	10755	3.61
31.	6.2	GNn6c2	Ramgap-Matmagithik	29423	9.88
32.	6.3	GNn6c3	Kharukhalgin-Rongkhongiri	13348	4.48
33.	6.5	GNn6d1	William nagar-Dawa-1	4035	1.36
34.	7.1	GNn7c1	Dobu-Dabing	17483	5.87
35.	7.2	GNn7c2	Nengkhra-Dabing-Narek	48648	16.34

Sl. No.	Map Symbol	Mapping Unit	Soil Association	Area (ha)	Area (%)
36.	7.3	GNn7c3	Darang-Narek	37293	12.52
37.	7.4	GNn7d1	Nengkhra-Dobu	8071	2.71
38.	8.1	GNn8c1	Dobu-Nengkhra	7091	2.38
39.	8.2	GNn8c2	Dawa-1-Dabing	16855	5.66
40.	8.3	GNn8c3	Darang-Narek	13134	4.41
41.	8.4	GNn8d1	Dobu-Nengkhra	1113	0.37
42.	9.1	GNo4a1	Gomnigiri	2582	0.87
43.	9.2	GNo4c1	Gomnigiri	3535	1.19
44.	5.6	GNy5a1	Balong giri-Nengsat	7676	2.58
45.	5.1	GNy5c1	Balong giri-Nengsat	7205	2.42
46.	5.2	GNy5c2	Nengsat-Balong giri	15262	5.13
47.	5.3	GNy5c3	Nengsat-Balong giri	4418	1.48
48.	5.4	GNy5d1	Balong giri-Nengsat	1127	0.38
49.	18.6	SDn6a1	Ampang giri II	135	0.05
50.	18.1	SDn6c1	Debgiri-Siju	81	0.03
51.	18.2	SDn6c2	Ampang giri-Ampang giri II	141	0.05
52.	18.3	SDn6c3	Wakcher-Ampang giri II	90	0.03
53.	17.1	SDn7c1	Siju-Debgiri	503	0.17
54.	17.2	SDn7c2	Bag-Eringiri-Masighat	104	0.03
55.	17.3	SDn7c3	Wakcher-Garo	782	0.26
56.	17.4	SDn7d1	Masighat-Rongkhandi	137	0.05
57.	16.1	SDn8c1	Debgiri-Siju	542	0.18
58.	16.2	SDn8c2	Nangal-Bag	559	0.19
59.	16.3	SDn8c3	Bagmara II-Garo	1463	0.49
60.	19.6	SDy5a1	Mindikgiri-Mindikgiri II	607	0.20
61.	19.1	SDy5c1	Mindikgiri-Mindikgiri II	47	0.02
62.	19.2	SDy5c2	Mindikgiri II-Mindikgiri	1041	0.35
63.	19.3	SDy5c3	Mindikgiri-Mindikgiri II	56	0.02
64.	HS	HS		3813	1.28
65.	WB	WB		44	0.01
Grand Total				**297774**	**100.00**

B. Extent of area under different Land use classes

Sl. No.	Land use / Land cover	Area (ha)	Area (%)
1.	Agriculture(a)	27363	9.19
2.	Plantation(b)	12452	4.18
3.	Thin/Degraded forest(c1)	48884	16.42
4.	Single Story Evergreen forest (c2)	117691	39.52
5.	Double Story Evergreen Forest(c3)	72342	24.29
6.	Open scrub(d)	15185	5.10
7.	Misc.	3857	1.30
	Total	**297774**	**100.00**

C. Extent of area under different Physiography classes

Sl. No.	Physiography	Area (ha)	Area (%)
1	Hill top	4807	1.61
2	Hill side slope	216623	72.74
3	Foot hill slope	6117	2.05
4	Rolling upland	37987	12.75
5	Piedmont plain	14756	4.96
6	Narrow hill valley	9823	3.30
7	Alluvial plain	3804	1.28
8	Misc.	3857	1.30
	Total	**297774**	**100.00**

D. Extent of area under different Erosion classes

Sl. No.	Erosion Class	Area (ha)	Area (%)
1.	None to slight erosion	9250	3.11
2.	Slight to moderate erosion	17319	5.82
3.	Moderate erosion	85831	28.82
4.	Moderate to severe erosion	121887	40.93
5.	Severe erosion	59630	20.03
6.	Misc.	3857	1.30
	Total	**297774**	**100.00**

E. Extent of area under different Depth classes

Sl. No.	Depth class	Area (ha)	Area (%)
1.	Very deep	212819	71.47
2.	Deep	80994	27.20
3.	Moderately deep	104	0.03
5.	Misc. Land	3857	1.30
	Total	**297774**	**100.00**

F. Extent of area under different Slope classes

Sl. No.	Slope class	Area (ha)	Area (%)
1.	Nearly level to very gently sloping (0-3%)	5223	1.75
2.	Very gently to gently sloping (1-5%)	19025	6.39
3.	Gently to moderately sloping (3-10%)	15059	5.06
4.	Moderately to strongly sloping (5-15%)	37987	12.76
5.	Strongly to moderately steep slope(10-25%)	58336	19.59
6.	Moderately steep to steep sloping (15-33%)	115042	38.63
7.	Very steep to extremely steep sloping (>33%)	43245	14.52
8.	Misc. Land	3857	1.30
	Total	**297774**	**100.00**

G. Extent of area under different Land Capability classes

Land Capability Classes	Area (ha)	Area (%)
II: Land suitable for cultivation, good land with minor limitations	4056	1.36
II-III: Land suitable for cultivation, moderately good land to good land with limitations	26837	9.01
III: Land suitable for cultivation, moderately good land with major limitations	3880	1.30
III-IV: Land suitable for cultivation, moderately good land to fairly good land with occasional cultivation with major limitations	5744	1.94
IV: Land suitable for cultivation, fairly good land with occasional cultivation and major limitations	5299	1.78
VI-VII: Land not suitable for cultivation, suitable for pasture and forestry with minor to major limitations.	8071	2.71
VII: Land not suitable for cultivation, suitable for pasture and forestry with major limitations.	1113	0.37
F: Forest area(including thin and degraded forest)	238917	80.23
Miscellaneous	3857	1.30
Grand Total	**297774**	**100.00**

➢ Salient Features:

i. Total 41 soil series and 65 mapping unit are found in this surveyed area.

ii. The survey area is dominated by Hill side slope (72.74 %) followed by rolling upland (12.75%) and piedmont plain (4.96%).

iii. The moderately steep to steep sloping (15-33%) of hilly terrain accounts for 38.63 % followed by Strongly to moderately steep slope(10-25%) is 19.59% and Very steep to extremely steep sloping (>33%) occupies about 14.52% area.

iv. Forest and others vegetative land occupies about 80.23 % followed by agricultural land 9.19% and about 5.10% is under open scrub land.

v. Most of the surveyed area is deep to very deep soil.

vi. Most of the areas are affected by moderate to severe erosion (40.93%), followed by moderate erosion (28.82%) and severe erosion (20.03%) which needs immediate attention to check the accelerated erosion.

vii. Soils of the area are taxonomically classified into four orders i.e. Alfisols, Entisols, Inceptisols and Ultisols. All the forty one soils series identified in the area are further classified into 8 sub-orders, 11 great groups, 17 subgroups and 26 families.

HOW TO USE SOIL SURVEY REPORT

This report embodies the results of the Soil Resource mapping of East Garo Hills district of Meghalaya and furnishes information on the geographical setting of the district, such as location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use and soils.

Other information on interpretative grouping of soil and land resources provides management guidelines on land capability classes, soil suitability grouping and recommended crops; horticulture development; forest, forage and grassland development; rehabilitation of saline, alkali and other degraded soils, water harvesting, water storage and water management. The genesis and classification of the soils of the district are also discussed.

East Garo Hills district is spread over an area of 297774 ha. The district is covered by 11 SOI topographical sheets on the scale of 1:50,000 which have been used as base maps. Each soil mapping unit is marked with symbols like GGn7c1 indicating granite-gneisses landscape. Hill top / Ridge with 3-10% slope, forest land use and soils series association which has dominance of Rongru Asim in association with Rongkhongiri and Megonggiri series. Association of soil series is in general restricted to the maximum of three soil series.

For the use of soil resource report, first it is 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 help to locate the area of interest on the map. For the detailed information on soil mapping unit in respect of soil series of the area of interest, its extent, present and proposed land uses, reference may be made to **Chapter-4, 6** and **Appendix – II.**

The symbol used in soil mapping represents the five level of mapping i.e. GGn7c1 may be referred to as:

"GG'' represents Granite gneisses Landscape, "n" represents Hill side slope,

"7" represents 15-33% Slope Class; "c" represents Forest Land Use Class,

"1" represents Association of Soil Series along with the descriptions of soils, soil erosion and their management.

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