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REPORT ON THE FOREST RESOURCES OF CACHAR DISTRICT (ASSAM)

FOREST SURVEY OF INDIA
EASTERN ZONE
1987

Contents

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P R E F A C E

Erstwhile Cachar district of Assam is now two administrative units viz. Silchar and Karimganj. Recorded forest area of the district is 2396.20 sq.km. The forests of Cachar district in the past was the main source of timber supply to the Syhlet District and adjoining areas of undivided Bengal prior to 1947. Management of these forests in the past on the system of selection felling as per the choice of the purchasers caused substantial damage. Silviculture and regeneration aspects of important species were ignored in the process of exploitation of timber from the forests. Shifting cultivation although was practiced in the past in Cachar valley is now very much limited and it is mostly found in the north Cachar hills. Flora of Cachar Tropical evergreen and semi-evergreen forests is largely distinguished by occurrence of Cham(Artocarpus chaplasha) Bon am(Mangifera spp.), Ping(Cynometra polyandra), Gamari(Gmelina arborea) and non-clumping bamboo like Muli(Malocana bambozoides).

The present inventory report is based on a low degree of sampling and its aim is to depict the general condition of vegetation cover in the districts of Silchar and Karimganj. Occurrence of bamboo is important in the district in view of establishment of a Paper Mill at Panchgram near Badarpur by Hindusthan Paper Corporation Ltd. The stock of bamboo from Silchar and Karimganj districts and additional stock from adjoining Mizoram State might fulfil the requirement of raw Pulp material of the proposed Paper Mill. Estimation of bamboo stock on a higher degree of sampling is suggested in order to work out the measures of procuring raw Pulpwood material for the Paper Mill.

Forest based industries in the districts are not yet developed alth ough scope of running Plywood and Veneer Mills exist in t he districts. Requirement of Tea chest by the Tea Industry in the districts will increase in future because of target of higher tea produc-tion. Therefore, attention is required in the matter of production of more tea chest from the locally available timber resources.

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Exploitation of timber and fuelwood from the forests of patta land under the control of Civil administration is never carried out in a proper manner. Marking of trees does not find any importance in the whole procedure and the Divisional Forest Officer merely controls the movement of forest produces through issue of transit pass. In this process forest produces are extracted without any scientific consideration not only from patta land but also from tea garden areas. Present inventory also indicates that the total growing stock in the district of Silchar and Karimganj remains mostly unworked whereas the demand of the local people and local industries are met from supply through other sources. Import of timber from adjoining States of Manipur and Mizoram can not be considered as the chief source of meeting the demand of the people. Therefore, it is necessary to work out a rational programme of extraction of forest produc-es through departmental agencies and meet the demand of the local people as far as possible.

Development of tribals and other ba-ckward classes yet to occur. This is because lack of introduction of suitable schemes under N.R.E.P. & R.L.E.G.P. Implementation of social forestry on a very large scale is possible if more funds are available under the schemes of N.R.E.P. & R.L.E.G.P. This will not only help the improvement of vegetation cover of the district but will also help the poor and backward class of people to get an economic lift. The State Forest Department may consider the scope of implementation of the above two schemes on a larger scale.

This report has been drafted by Sri P.Sengupta, Deputy Director. Thanks are due to the staff who offered hard labour in the preparation of this inventory report. Thanks are also due to the Divisional Forest Officers and their staff of Silchar and Karimganj Forest Divisions. All co-operation obtained from Civil Authorities of Silchar and Karimganj districts are acknowledged with thanks.

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CHAPTER: I

BACKGROUND INFORMATION

1. - Need for survey :

The geographical area of undivided Cachar district of Assam is 6941 km2 and reported forest area under Forest Department is 2396.20 km2. The primary need of undertaking the present survey is to assess the forest resources of the district along with infrastructures available for forestry planning in future. Presence of a number of forest based industries in the district have impact on local employment. Current study also includes the assessment of these industries, and incorporates various data in this regard for future planning of such industries. Data presented in this report may be utilised by State Forest Department to develop a data based plan in forestry sector and monitor the changing situation in the forest cover of the dist-rict.

1.1 Catchment :

The principal river of the district is Barak which rises from the hilly tract of Nagaland and flows through the northern boundary of the district along Manipur State. This river joins Jiri river and turns towards west and flows in a tortueus course and touches Badarpur and Silchar towns. The river Barak divides into two courses namely Surna and Kushiara. The length of the river is nearly 187 km. in Cachar district.

Jiri river rises from north Cachar hills and flows about 117 km. to join Barak river. River Longkhas rises from the southern slopes of the hilly ranges near Halflong and joins Barak a little to the west of Lakhimpur village. Other important rivers are Jhatinga, Dhaleswari, Longai, Sonai, Moniarkhal, and Katakhal etc.

Jhatinga river rises south of Halflong and flows west and south through hilly tracts and joins Barak. Dhaleswari river rises from the Mizo hills and joins Barak a little to the east of Badarpur.

1.2 Locality factor :

Various locality factors are mentioned in the subsequent paragraphs.

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1.2.1. Climate:

Excessive humid climate is the characteristic of Cachar valley. The climate is opressive during summer. The rainy season is marked by heavy rainfall when atmosphere remains surcharged with moisture. Rainy season starts from the month of May and continues upto October. 74% of annual rainfall is received during this period. In October, nights are cooler but days are very hot. From November the winter sets in Cachar. Light showers in January and February make the weather cooler.

1.2.2. Temperature:

High day temperature is noticed from April and continues upto October. Showers in rainy season do not bring any appreciable change in day temperature when h umidity increases very high.

Weather reports from Kumbir gram Meterological Centre, Silchar are furnished below :-

Year	Month	Mean max. in °C	Mean min. in °C	Relative humidity in percentage(%)
1	2	3	4	5
1980	January	25.0	11.2	76
1981		25.7	12.5	78
1982		27.2	12.4	75
1983		24.6	11.0	73
1980	February	26.5	13.9	84
1981		26.3	13.9	76
1982		25.6	12.4	75
1983		27.1	12.2	69
1980	March	29.7	17.7	74
1981		29.5	16.9	73
1982		30.5	16.3	65
1980	April	32.3	20.7	78
1981		30.0	19.6	75
1982		29.1	18.9	79
1980	May	30.0	21.8	84
1981		30.9	22.0	82
1982		32.8	27.2	77
1980	June	32.5	25.3	87
1981		32.9	24.2	82
1982		32.1	24.3	86

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1	2	3	4	5
1980	July	32.5	24.8	85
1981		31.3	24.5	89
1982		31.6	23.4	90
1980	August	32.9	24.6	86
1981		32.5	24.7	87
1982		32.7	24.7	82
1980	September	32.3	24.0	87
1981		32.8	23.3	83
1982		31.9	23.8	87
1980	October	30.7	21.0	81
1981		32.4	21.7	77
1982		32.1	21.2	77
1980	November	30.9	16.0	81
1981		31.3	17.6	N.A.
1982		29.0	16.8	76
1980	December	28.0	13.0	73
1981		27.8	13.9	74
1982		26.1	12.7	78

Average maximum and minimum temperature and humidity for 1980,1981 and 1982 are f urnished hereunder:-

Year	Average max. temperature in °C	Average minimum temperature in °C	Average humidity in percentage(%)
1980	30.2	19.5	80
1981	30.2	19.6	79
1982	30.1	19.6	78

1.2.3. **Rainfall** :

Rainfall starts with light showers in January and February. Heavy rainfall occurs between May to October when nearly 74% of annual rainfall occur. Monsoon is perceptible from April and lashes on the valley from May and maximum rainfall occurs in June. The rainfall data for stations at Silchar and Kumbhigram are furnished below :-

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Rainfall data in m.m.(Silchar/Kumbhigram)

Month	Year								
	1974	1975	1976	1977	1978	1979	1980	1981	1982
January	8.26	N.A.	S.84	12.69	00	0.95	6.68	66.61	00
	7.0	NA.A	N.A.	15.50	00	00	328	56.20	00
February	11.63	37.86	40.40	52.78	1.82	6.94	76.72	49.50	38.27
	19.2	26.2	50.6	47.9	0.4	7.0	77.1	56.90	63.40
March	243.69	46.69	328.81	91.55	98.71	269.23	155.01	216.29	108.85
	218.00	17.0	341.8	82.9	75.0	325.60	166.4	228.30	106.70
April	294.55	411.16	414.71	753.32	217.30	179.13	471.15	250.31	748.36
	232.0	490.8	379.2	670.7	146.7	168.8	564.8	223.70	736.60
May	321.32	444.49	436.65	742.43	413.67	324.52	733.24	721.74	301.33
	305.5	47447	385.9	727.7	373.10	334.4	566.5	593.80	313.90
June	986.74	384.58	1056.77	524.31	532.80	373.29	782.79	605.56	650.30
	1123.80	325.0	1047.9	N.A.	495.8	373.10	709.50	188.90	603.90
July	792.56	753.68	529.37	483.51	632.37	533.79	514.66	1003.46	310.55
	797.8	816.8	599.8	N.A.	604.4	534.3	557.8	587.7	577.4
August	516.60	272.24	645.05	583.90	481.80	430.05	469.10	916.13	310.52
	463.2	286.9	587.7	N.A.	394.6	456.2	467.9	450.0	192.4
September	446.03	384.54	1380.19	154.29	380.69	540.21	539.50	1007.12	68.97
	499.4	317.7	348.6	N.A.	315.3	482.4	508.9	416.7	250.00
October	308.27	148.09	72.11	170.45	193.045	320.00	328.6	743.60	35.90
	298.7	128.3	118.8	N.A.	288.5	235.3			
November	51.07	141.53	95.05	107.26	51.65	44.34	00	17.88	9.25
	4.07	109.9	120.3	N.A.	83.7	44.6	00	28.10	56.50
December	00	00	00	28.49	00	23.87	00	8.14	N.A.
	00	00	00	00	00	28.3	00	8.6	8.70

Annual average rainfall in some selected stations are furnished below:-

Silchar :	3101.38 m.m.
Longai Valley T.E.	3710.12 m.m.
Bikrampur T.E.	4206.63 m.m.
Kailine T.E.	4541.66 mm.

Average annual rainfall in [redacted] undivided Cachar district is 3795.05 m.m. calculated on figures of last decade.

1.3. Topography :

The undivided Cachar district is a heterogenous land mass composed or high hills, valleys, level and low lands. Borail hills in the district is a conspicuous land feature in as much as this hill runs almost from south-west to the north-west across the district and forms a continuous wall of mountains. Ridges and valleys give a typical land form. Highlakandi sub-division represents typical valley area. In general, the topography represents a number of ridges in the district of which Bhuban hills may be mentioned. Bhuban hills emerge from Mizo hills and runs along the eastern boundary of the district. The topography in Karimganj and adjoining areas is gentle but number of small hillocks are found with exposure of rock outcrops. Chatachurra range is another important range whose summit is 620.87 metre. Near Badarpur the terrain is hilly. The general altitude in this part is 304mtr. above sea level. These small hillocks are known as Badarpur hills which are 30 mtrs. or more in height. There are very low hills in Highlakandi subdivision which are separated from each by considerable tract of plain land.

1.3.1. Aspect:

The tract under survey has various landforms like ridges, spurs(gentle to steep) valleys and low lands. The country as a whole is highly undulating except in Highlakandi sub-division where the land form is of valley type. All aspects were recorded from field.

1.3.2. Slope:

It may be interesting to note that the slope percentage in the project area are within slope percentage 30. Distribution of surveyed areas may be grouped according to slope percentage as follows:-

Slope upto 30%	Area : 50.27%
" 31 to 45%	: 22.25%
" 46 to 60%	: 17.34%
" above 60%	: 10.14%

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1.3.3. Drainage:

The principal river is Barak in the area rising from Nagaland and it flows westerly and southerly to Tipaimukh when it turns sharply to the north. After its junction with the Jiri river it turns again to the west and takes a zig-zag course across the middle of undivided Cachar district till Badarpur. At Hanitikar Barak is divided into Kushiara flowing into Sylhat district of Bangladesh and Surma flowing along boundary of the district. Numerous tributeries feed the Barak and these are the Jiri, the Chiri, the Jhatinga, the Sonai, the Dhaleswari, the Katakhal, the Rukhni, the Shargra. The principal tributaries of Kushiara in Karimganj sub-division are the Longai and the Singla. The rivers are hilly and water holding capacity of these rivers being limited flood occurs in many occasions.

1.4. Geology, rock and soil :

Geological formature in the area include various groups like Precambrian, Eocene sediments and Oligo-mio-pliocene sediments and unclassified older and newer alluvium.

1.4.1. Rock system:

Geological succession in the area can be classified in the following sequences:

Recent(unclassified)		Newer to low level alluvium	Clay,sand,silt, shingle
		unconformity	
Phistocene(unclassified)		Older or higher alluvium	Clay,coarse,shingle, gravel,boulder deposit
		unconformity	
Phicene	Dibang group	Dihang formation	Rebbles,silt,sandy clay,conglomerate, grit, sandstone.
		unconformity	
Miocene	Tipam group	Girnyan formation Tipam sandstone	Mottled clay,sandy shakes, Sandstone (false bidded)clay shale,conglomerate.
	Surma group	Borail formation	Shale,sandy,shale, silstone,mudstone
		Bhuban formation	Alternate of sandstone and stake.

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Oligocene	Barail group	Rengi formation	Bedderd massive sandstone
		Jenum formation	Shale, sandy shale, carboraceous shale.
		Laisong formation	Well bidded compact flaggy sandstone.
- - - - - - - - - - - - - - -		geosynctoral	shelf - - - - - - - - - -
Eocene	Disang group	Shale formation	Sylhat Sandstone, sylhat limestone:
- - - - - - - - - - - - - - -		unconformity	- - - - - - - - - - - -
Precambrian	Sterllongseres	(not classified)	Quartzites, Phyllites, schirts.
- - - - - - - - - - - - - - - - - - -		-unconformity	- - - - - - - - - -

The tertiary sediments resting over weathered precambrians are snocessmily Eocene Disang(geosynclinal)group of lower territiary sequence and it is overlying Barail, Surma and Tispam of upper territiary sequence.

1.5 People and their socio-economic condition:

The total population of Cachar district(undivided) is 17,13,318 as per 1971 Census. No census data for 1981 are available. The total population of Assam as per 1971 Census is 1,46,25,000. So, in Cachar nearly 11.71% of total population are found. The population details as per 1971 Census are furnished below:-

Year	District	Sub-division	Male	Female	Total
1971	Cachar	Silchar	4,39,434	3,94,081	8,25,515
		Karimganj	3,01,654	2,80,474	5,32,108
		Hailakandi	1,60,038	1,47,657	3,07,695
					16,65,318

Taking into consideration of 2% annual population growth, the population in the decade ending 1981 may be 20,56,000. The density of population as per 1971 Census was as follows:

Assam	:	186
Silchar	:	218
Hailakandi	:	232
Cachar	:	246
Karimganj	:	316

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It thus appears that the undivided Cachar district is densely populated compared to other parts of Assam excepting Kamrup and Nowgong districts which are also densely populated. In Cachar district(undivided) the distribution of rural and urban population as per 1971 Census was as follows:-

		Urban(%)	Rural (%)
Silchar	:	6.74	93.26
Karimganj	:	9.96	90.04
Hailakandi	:	7.20	92.80
Cachar(undivided)	:	7.93	92.07

1.6 Land holding pattern:

Land holding pattern does indicate that nearly 64.75% holding falls within the category of 0.1 to 1 hectare. So, small farmers in an agrarian economy constitute a major portion. 0.55% of the holders possess land more than 10 ha. Under such circumstances the question of under employment or unemployment in rural sector are likely to be severe. Further, cultivation of Rabi crops is limited on account of the following :

i) limitation of suitable land
ii) lack of irrigation facilities
iii) shortage of quality seeds.

The cultivation of rabi crops include the Pulses, Mustard, Potato, Wheat and winter vegetables. Programme of growing mung, Soyabean, groundnut was taken up during 1933-34. Sugarcane cultivation is also important as a cash crop. Sugar production in 1980-81, 1981-82, & 1982-83 was 17,050 quintals, 43,344qnt. and 37,455 quintals respectively. Some cultivable lands are irrigated but 70% of the area depends on rainfall. So, lack of irrigation remains as a major impediment in rural economy. Institutional device like Pani Panchyat was contemplated to foster co-operative movement among the farmers under 20 point programme. In Cachar district 82.12% holding is owned privately and only 12.77% holding is rented out for cultivation where farmers of marginal and small group may not be able to arrange proper inputs and production may not be encouraging. However, in owned holdings similar limitations do exist. Land ceiling relating to agricultural land and implementation of relevant laws by removing legal and administrative obstacles may bring a considerable change in rural economy.

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1.6.1 Land use classification:

In undivided Cachar district the land use pattern is as follows:

Category of use	Silchar(ha.)	Karimganj(ha.)	Hilakandi(ha.)
Area under forests	1,43,270	50,469	74,059
Land not available for cultivation	73,622	37,870	9,288
Permanent pasture and other grazing land	3,150	2,830	550
Land under misc. tree crops	21,410	7,941	3,525
Cultivable waste land	520	3,125	327
Total cropped area	1,36,289	1,06,604	51,328
Gross cropped area	1,26,745	96,775	54,551
Net cropped area	1,04,558	71,435	40,806
Double cropped area	22,187	25,340	13,745

Land under misc.tree crop does not come under the jurisdiction of forest department. Civil administration administer the affairs of this category of land. It would appear that occupation in livestock, fishery and forestry do contribute next to agriculture. Total farming families are 2.15 lakhs distributed over 15 development blocks. Non worker in the area are 1,220 12,20,372 nos. as per 1971 Census. This figure would be raised by 2-3% at the end of 1981.

1.7 Occupational pattern:

Occupational pattern in undivided Cachar district shows that agriculture is by far the most common occupation. There are 2.15 lakhs of farming families. Distribution of workers is as follows:

Category	No.	Percentage to total population
Cultivators	230358	13.30
Agricultural labourers.	98228	5.73
Livestock, fishery and forestry	60531	3.53
Minning & Energy	105	0.006
Clean facting other than household industry	9931	0.579
Construction	5573	0.325
Manufacturing in household industry	7917	0.462
Trade & Commerce	23835	1.39
Transport etc.	11885	0.693
Others	44543	2.60

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1.7.1 Rural employment:

Rural employment is mainly based on agriculture. The agricultural labourers constitute nearly 5.73% of the total population. Employment on this account is not always well remunerated and under employment is also noticed. Various Government schemes during Sixth Five Year Plan contributed towards rural employment. Schemes like I.R.D.P. and N.R.E.P. made a considerable rent on rural economy by generating employment particularly for weaker section. The beneficiaries under the programme of I.R.D.P. could engage themselves for dairying, poultry, piggery, sericulture, fisheries, cottage industries wherein creation of assets employment was generated. The scheme was framed to cover 25% of the rural people of 15 blocks in Silchar and Karimganj. The beneficiaries included small and marginal farmers, agricultural and non-agricultural labourers, rural artisians and craftsmen. Out of a target to cover 4500 families only 1800 families were covered by the scheme upto 1984. Improvement of agriculture and utilization of fallow lands created rural employment. However, such employment being seasonal visual effect in economy cannot be appreciated at the moment.

Under TRYSEM Scheme rural employment in various trades have been attempted. This scheme is framed to provide employment for youths after proper training in trades like Carpentry, Blacksmithy, Glazed pottery, Fishing, net making, tailoring, bamboo and Cane articles making etc. This scheme will help rural youths who are school drop out and have no specific employment opportunity in rural sector. In Cachar (undivided) district it was targetted to create 9 lakhs of mandays under N.R.E.P. Scheme only in 15 blocks. Nearly 10% of the total fund under N.R.E.P. was available for social forestry works.

Under another scheme of R.L.E.G.P.(Rural landless families Employment Guarantee) 88 Gaon Panchyats aimed to create 100 mandays of employment to 25 landless ruralworkers of 25 such families taking one form each family. The scheme of Bio-gas Programme is implemented by Agriculture Department, Khadi Village Commission. This would help the rural people to use non-conventional energy and also would help forest conservation in the long run. The gas will be source of fuel for cooking, lighting in rural area. Large quantities of animal dung, agricultural wastes plant residues will be utilized in this venture. Total livestock in the area is 1445000 nos. as per 1971 Census. Community bio-gas plants have also been contemplated.

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1.7.2 Education:

Literacy in undivided Cachar is 30.57% as against 29.14% in Assam. Scheduled tribes in Cachar include Bormans who constitute 1.75% in Silchar sub-division, 0.15% in Hailakandi sub-division and 0.10% in Karimganj Divn. Literacy among this group of Scheduled tribe(7340nos)is 30.45% in 1971. Scheduled castes in Cachar is 12.10% (1,01,124)and literacy among them is 27.64%. The literacy in general is 30.57%, so, scheduled castes and scheduled tribes are not lackingb behind in education.

1.7.3 Employment in forestry sector:

Employment in forestry sector generates on account of forestry operations in timber harvesting and afforestation works. In Silchar and Karimganj Forest Divns. forestry operations are virtually stopped. No felling of trees is carried out excepting some departmental operations taken up in selected areas. Thus employment generation in forestry sector in rural areas is virtually stopped. Departmental timber operations over 35 ha. can generate approximately 8000 mandays in a year. Since fellingis virtually closed employment on account of departmental timber hafvesting in Cachar can be nearly 20,000 mandays. Afforestation programmes in Silchar and Karimganj Divisions do not provide scope for large scale employment. It may be worthwhile to mention that employment is also generated in forestry through N.R.E.P. schemes, normal afforestation, tendingof plantations and road maintenance works. These include mostly unskilled job and annual scope of such employment is nearly 30,000. Social forestry programme is yet to take such dimension to create large scale rural employment. Schemes like I.R.D.P., R.L.E.G.P. have no big programme in forestry sector, as in state of West Bengal and others.

1.8 Classification of forest by types:

The forests in Cachar district(undivided) can be classified into two following types as per available records:

a) 1B/C3 Cachar tropical evergreen
b) 2B/C2 Cachar tropical semi-evergreen.

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These types of forests do not occur in compact blocks over extensive areas. Unregulated felling before reservation of forests and inadequate regulated felling during post reservation period: have been the causative factors in the present trend of distribution of the two forest types. Besides these, there are factors like soiland topography which also contributed enough in distribution of forest types.

1.8.1 Cachar tropical evergreen forests:

These forests are largely composed of evergreen species. The upper storey is composed of Cham(Artocarpus chaplasha) Bon Am(Mangifera spp.)Sutrong(Lophopetolum fibriatum) Moricha sundi(Alscodophene owdenii). The middle storey is represented by Jam(Eugenia fruticosa)Kurta(Calophylum polyanthum) Karol(Kayea floribunda)Ping(Cynometra polyandra)Dhuna(Canarium resinifrum)Nageswar(Mesua ferra)etc. In the lower storey Agar(Aquilaria agolocha) Chalmugra(Synocardia ordorata) are important. Bamboos are not always conspicuous but Dalu (Tainostachyum dullis) and Pache(Dendroclumus hamiltoni)occur in certain places.

1.8.2. Cachar tropical semi-evergreen forests:

These forests have both evergreen and deciduous species which occur athe tops of the ridges and hills. This forest type is characterised by deciduous species like Garjan(Dipterocarpus tarbinalis), Gamari(Gmelina arborea)Koroi(Albizzia procera) Haldu(Adina cordifolia) Gugal(Diospyros toposia). Evergreen species that occur along with deciduous species are Karol(Kayea flosibanda)Ping(Cynometra polyandra)Kurta(Catophyllum polyanthum) Rata(Amoora wallichii) etc.

1.8.3 Local variations:

Generally forests at high level i.e. on the top of ridges and hills consists of medium to dense patches of Muli(Malocona bambusoides)and widely distributed trees. The forest is open type. Records show that these areas were subjected to shifting cultivation during past. Along with bamboo trees of Gamari(Gmelina arborea)Moricha-sundi(Alscodepheni) Poma(Cedrela febrifuga) Jam(Eugenia fruticosa)Hotia(Chukrasia tabularis)Gandori(Cinnamomum ceciodophene)Ratn(Amoora wallichii)etc. are also found.

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In lower hills and ridges the forests are located along stream and river banks and tree belt is often more than 1.5 km. in length. The vegetation is rich wherever the shifting cultivation in the past did not encroach. The most important trees are Kadam(Anthocephalus cadamba) Kurta(Calophythum polyanthum)Chalta(Dillenia indica) Ramdala(Duabanga sonneratiodes) Poma(Cedrella febrifuga) Ping(Cynometra polyendra)etc.

In the plains drained by rivers Barak, Sonai,Dhaleswari, Longai etc. forests are found in patches where principal species are Simul(Bombax ceiba)and Tula(Tetramelus nudiflora) Bahera (Terminalia belerica). The forests are very open in the first storey. The second storey is rather closed and consisting of Jarul(Lagerstroemia flosreginae)Poma(Cedrela febrifuga)Cham (Artocarpus chaplasha)etc. In swampy areas this forest is characterised by presence of Ekra and Khagra. Occasional, stunted Jarul (Lagerstroemia flosraginae) may also be found.

Bamboo occurs on the understorey in various areas of the forests described already. Muli(Malocanna bambusoides) is the main varieties in this area. In some areas bamboos are dominant and has replaced the tree forests. In rich clayee and humus soil of evergreen and semi-evergreen forests cane may be found in thorny thicket in low lying areas. Cane bearing areas have been reduced appreciably due to settlement and cultivation.

1.9. Forest based industries:

No forest industries have flourished in the district excepting Saw Milling. Other forest based industries do not play any significant role in local economy. Status of such industry are also studied to give an over-all picture of them.

1.9.1 Saw Milling:

Saw Milling is the principal forest based industry in undivided Cachar district. Besides,other forest based industries include cane industry, furniture making industry, bamboo mat making industry, etc.

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In 1984 there were 42 saw milling units of which nearly 50% are located in Silchar and adjoining areas. In Karimganj there nearly 15% of the total saw mills. Balance 35% of Saw Mills are distributed in various places like Badarpur, Hilakandi Katakahal, Lala Bazar etc. All these saw milling units are privately owned and 25% of the them are registered with S.S.I. Products from these saw mills are utilized by local people but certain quantity is exported outside the district. Many saw mill owners import logs from Manipur and Mizoram to run their mills. Source of supply of logs in these saw mills indicate dual source i.e. from Government and private individuals. Locations of the saw mills also show that advantage of rail and road exists for disposal of produce. Minimum machinary installation and with least labour engagement the saw mills produce annually 500 m3 to 1500m3. Sample survey of 17 saw mills at places like Silchar, Karimganj, Badarpur indicate that a large quantity of sawn timber is exported outside the state of Assam. Various kinds of species are sawn which include Gamari(Gmelina arborea)Kurta(Calophyllum polyanthum)Rata(Amoora wallichii) Ramdala(Duabanga sonneratiooides)Jam(Eugenia fruticosa)Am(Mangifera species), Cham(Artocarpus chaplasha)Poma(Cedrela febricosa)Kadam (Anthocephalus cadamba)and others. Sources of supply of logs of various species to the mills are :-

1. Supply through brokers or crop holders at mill site this include inside and outside sources of Cachar.
2. Supply from Mizoram or Manipur by direct purchase.
3. Supply from local sources including private lands by direct purchase.
4. Supply from Government Depot.by direct purchase. This includes supply from depots of Forest Department in adjoining district. It is interesting to append the relevant information regarding proportion to utilization of various types.

Species	% to total supply input of logs in mills.
Cham(Artocarpus chaplasha)	10-15
Gamar(Gmelina arborea)	10-15
Jam (Eugenia fruticosa)	10-15
Ramdala(Duabanga sonneratioides)	10-15
Poma(Cedrela febrifuga)	10
Kerdam(Anthocephalus cadamba)	5
Rata(Amoora wallichii)	10
Kurta(Calophyllum polyanthum)	10
Others(various soft wood	20

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Products from saw mills:

Products of sawing includes scants, planks and beams. Materials exported outside Assam are despatched in the form of beams for ultimate sawing into proper size at various destination points. The working of the mills are under-rated owing to various unfavourable conditions. Tabular statement indicates the rate of under utilization of the installed capacity of saw mills.

Mill	Capacity (m3)	Actual outturn	Utilization (%)
Habid Saw Mills, Hailakandi	2571	1500	58
Cachar Saw Mills, Hailakandi	1050	750	71
Bharat Timber, Karimganj	1260	672	53
A.R.Majumdar Saw Mill, Silchar	800	650	81
Sreema Saw Mills, Silchar	1200	900	75
Eastern Saw Mills, Karimganj	1500	150	10
North Eastern Traders Saw Mills, Matijuri.	964	714	74
Surma Valley Saw Mills, Cachar	2110	1125	53
Super India Match Co. Pvt. Ltd., Silchar	2750	2200	80
Annapurna Saw Mills, Badarpur	630	500	79

1.9.3 Utilization of capacity of the Mills :

Under utilization of capacity is indication of various problems which include :-

1. Less supply of raw material like wood.
2. Labour trouble.
3. Old machinaries.
4. Lack of local market.

Supply of raw material from sources within undivided Cachar district is totally limited in view of suspension of selling coupes to the purchaser. Very little quantity may be available from sale of logs from depots. As a result of this import of logs from Manipur and Mizoram is essential to run the Saw Mills. This kind of import of logs in various mills is upto 50% of the total requirement.

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Transportation of logs from distant places may not be sufficiently remunerative for small saw mill owners who depend on local market. Export of sawn prices outside the district or State may be remunerative if the mill owners can develop such contact and develop marketing of sawn prices of Gamar (Gmelina arborea), Cham(Artocarpus chaplasha)Bonsum(Phoebe lanceolata)Teak(Tectona grandis) to fetch good price by export. Situation of supply of raw materials like wood to the saw mills indicate the following situation :-

Source of supply	% of saw mills	Remarks
Local supply of logs	30	-
Local and import of logs	40	Mizoram-40% of the total requirement Local:60%
Largely import of logs	30	Mizoram: 50-60% Manipur: 25-35% Local : 15%

Contribution of other inputs like labour, power, machinaries in the mill was as follows in 1983 :

Saw Mills/Machinaries	Power
Horizental saw = 1 No. Vertidal band saw = 1 No. Winch with trolley= 1 No.	All electrically operated No use of captive power of diesel engine.

Commonly the horizontal saw is utilized for log braking. The motive power for horizontal saw may be varying between 15 H.P. to 20 H.P. Trolley fitted with winch used for carrying the bigger sized logs for breaking by the horizontal saw. The motive power for the operation of trolley fitted with winch varies between 10 H.P. to 15 H.P. Vertidal band saws are utilized for production of planks, scants and small sized beams. The metric power in this case varies between 10-15 H.P. On average 5 H.P. or 50 H.P. is required in one saw milling unit.

Various sizes of scants, planks and beams that are produced commonly are as follows:

Planks: 15.24 cm. x 2.54 cm.
12.70 cm. x 2.54 cm.
20.32 cm. x 2.54 cm.
10.16 cm. x 2.54 cm.
22.86 cm. x 2.54cm.
30.48 cm. x 2.54 cm.

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Scants: 5.08 cm. x 5.08 cm.
5.08 cm. x 6.35 cm.
7.62 cm. x 7.68 cm.
7.62 cm. x 5.0 cm.
10.16 cm. x 5.08 cm.
10.16 cm. x 7.62 cm.
10.16 cm. x 7.68 cm.

Beams: 30. 8 cm. x 7.68 cm.
22.86 cm. x 7.68 cm.
30. .8 cm. x 7.68 cm.
28.86 cm. x 10.16 cm.

1.2.4

Saw milling wastage :

On account of production of the above sized timber the wastage of wood varies considerably. The wastage is normally 0% but it may exceed this limit. Sawing wastage in a few saw mills are furnished below :

Saw M i l l s	% of wastage of wood on survey.
Cachar Saw Mill	21.00
Cachar Timber	2.00
Deorai Saw Mill	2.00
Modanmohan Saw Mill	2.50
A.R.Mazumdar Saw Mill	33.00
Assam Timber	2.00
Ram Ram& Saw Mill	25.00
Super India Match Co.Pvt.Ltd.	17.60
N.E.Tenders Saw Mills	33.30
Bharat Timbers	2[illegible]50
Average	20.80

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1.9.5

Saw Mill Sizes :

Distribution of saw mills in various size classes as furnished below is indicative that most of the Saw Mills are small sized.

Distribution of data class-wise

Class (Actual intake)	No. of Saw Mill.	Average No.of. workers.	Average annual wastage of wood
1	2	3	4
I (Below 200 m3)	3	9	42.66 m3
II (200 - 00 m3)	4	10	150.92 m3
III (00 < 800 m3)	9	11	243.71 m3
Iv (800 m3)	26	23	566.512 m3

Total production in 42 saw - mills is 35576.77m3. Produces from these saw mills are marketted in the following manner :-

Market	% of production	% of saw mills
Local	100	70
Local	50	30
Outside district & State	50	30

1.9.6

Inputs in saw mills:

Cost analysis of the saw mill operation can be briefed as under indicating the prices of various inputs:

Category of logs	Price of logs on average(per m3)
Gamar(Gmelina arborea)	Rs. 775 - 900/-
Cham (Artocarpus chaplasha)	Rs. 635 - 840/-
Ramdak(Duabanga sonnertiodes)	Rs. 592 - 650/-
Kusta (Calophylum polyanthum)	Rs. 435 - 500/-
Tata (Amoora wallichii)	Rs. 450 - 500/-

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Labour input in the mills is normally too less in number. Usually the mills are operated by hired labourers including skilled and unskilled types. A typical establishment would constitute the following :

Office staff : 1 No.	:	Rs. 550/- per month.
Skilled labourers: 2 Nos.	:	Rs. 12/- per day.
Unskilled labourers: 9 Nos.	:	Rs. 9/- per day.
Watch & Ward staff : 1 No.	:	Rs. 320/- per month.

Usually a mill is operated 270 to 290 days in a year depending on the availability of power, logs and labourers. Normally in each day a mill runs not more than 8 hours. However, operation is directly dependent on the supply of logs. Scarcity of labour(skilled and unskilled) is normally not a bottleneck in the industry but disputes [illegible] may cause some dislocation in works. Generally local people are employed in the mills to avert the demand of shelter from the end of the labourers. In view of limited availability of timber from forests and limited production capacity of saw mills, the export of timber from various areas may be regulated to meet the local demand and control of the price rise of timber. Export of timber(sawn)from Silchar, Karimganj,Badarpur is repponsible for price hike of sawn timber and more removal of trees from Patta lands. Records show that local sowing (by hand) is permitted by DIVisional Forest Officer to the land holders for their use. The ultimate consumer of their sawn pieces is not exactly known and people may be availing the local situation and exploit trees for trading only. Handsawing in the vicinity of reserved forests may not be allowed to stop the stealthy removal of trees of Govt.forests. No account is available regarding production and end use of sawn pieces produced from Patta land. Existing acts and rules in this behalf cannot en-force any stringent measures to crub this sort of activity.

Besides sawn pieces, saw dust and off cut produced in the mills are sold in market. Saw dust is used as a fuel in rural areas. Price of saw dust varies from Rs. 2/- to Rs.5/- per quintal.

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1.97

Price of sawn timber:

The price of sawn timber of various categories are as follows as per prevailing market rates of 1983 :

Species	Price in Rs.(per m3)
Cham(Artocarpus chaplasha)	1050-1250/-
Gamar(Gmelina arborea)	1500-1600/-
Jam (Eugenia fruticosa)	700-750/-
Poma (Cedrella febrifuga)	700-800/-
Ramdala(Duabanga sonneratioides)	600-650/-
Khokan (Megua ferrea)	1425-1500/-
Kusha (Colophythum polythum)	385-425/-
Sundi (Alseodaphne spp.)	1470-1500/-
Sutrang(Lophopitohem fibriatum)	750-800/-
Rata (Amoora wallichii)	700-800/-
Bahra (Terminalia belerica)	650-700/-
Misc. soft woods	350-450/-

Locations of the saw mills are largely urban with infrastructures like power supply,road and rails. A large number of saw mills in Silchar,Badarpur, Karimganj support this observation. Only a few saw mills in Lala Bazar, Hailakandi, Matijuri comes within rural sector of the area. The proportion of rural and urban locations of saw mills may be 40:60. Productivity of urban saw mills is higher on account of reasons like better power supply, better market and easiness to export produce outside the district being nearer to rail heads. Rail heads at Silchar, Badarpur and Karimganj offer facility of export of timbers and logs in distant areas. Details of export of these and other forest produce are discussed separately.

1.98

Furniture and fixture industries:

Local consumption of sawn timber can be noticed in furniture and fixture industries. Like other places of India this industry is also disorganized and its position is rather uncertain. Sample survey of a few establishment under this category of industry was undertaken in selected areas like Silchar, Karimganj etc.

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Survey indicates the following informations:-

Strength of establishment	Annual working days.	Annual consumption in m3	Wage rate per day	Timber used
3 Nos.(including owner)	240	20	Rs.12-15/-	Gamar, Sundi, misc.wood.
2 Nos.(do-)	250	1.5	Rs.12-20/-	Cham, Gamar, Sundi.
1 Nos.(Owner)	250	1.5	Rs.600/- per month	Gamar, Sundi, Ramdala
2 Nos.(including owner)	180	7.5	Rs.15-18/-	Gamar, Ramdala, misc.wood.
3 Nos.(-do-)	240	2.4	Rs.15-25/-	Gamar, Sundi, Tula, Ramdala.

Survey indicates that owners of the furniture and fixture establishments invariably participate in working. Analysis of the collected data further indicates the following:

Annual consumption	Average strength (including Owner)	Percentage of total sampled unit.
Upto 5 m3	2 Nos.	35
5-10 m3	3-4 Nos.	50
10-15 m3	-	Nil
15-20 m3	3 Nos.	15
More than 20m3	-	Nil

A worker in this category of industry can earn on average Rs.300/- per month considering 20 days working per month.

The products including various items are locally consumed and selling prices are comparatively lower. Sawn timber is usually purchased from mill owners otherwise some people purchase logs and saw them according to their requirement.

1.9.9 Bamboo Mat industry:

Making of bamboo mat is a household industry and no detail information is available. Muli bamboo(Malocana bambusoides) is largely used in bamboo mat industry. One organized unit of this category is located at Karimganj styled as'Muli Bash Hasta Silpa Samabaya Samity Ltd! The relevant information of that co-operative unit is furnished below :-

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Requirement of bamboo	:	1,[illegible],00,000 nos.
Source of supply	:	Mizoram- 70% Cachar - 15% Karimganj- 10% Manipur- 5%
Species	:	Muli(Malocanna bambusoides)- 90% Others- 10%
Producing cost	:	0.80 p. per bamboo
Finished product	:	Darma(mat)Splitted bamboo, Mora(Bamboo stool),Toy,Tukri etc.
Employment	:	60,000 in Karimganj district /. Rs.10-15/- per day.
Consumption	:	Local: 10% Export: 90%
Export	:	Calcutta: 50% Gujrat : 10% Bihar : 5% Assam : 30%
Media of export	:	Calcutta by rail and steamer. Gujrat :by rail, Bihar :by rail, Assam :by rail,by truck, in case of non-availability of rly. wagons to various destinations.

1.9.10

Cane industry:

Cane industries in undivided Cachar district is also disorganized like furniture and fixture and bamboo mat industries. Cane is not sufficiently available from local resources and as such large quantities are imported from adjoining states of Mizoram and Manipur. Sale of Cane through broker is the common system. Major cane industries are located in places like Badarpur,Silchar,etc.

Cane industries produce items like Sofa set,Table and Chair. Usually 60% of the requirement of cane is imported from Manipur and 40% from Mizoram. In respect of a typical cane industrial establishment the following information is furnished :-

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Strength of establishment: 3 Nos.(including owner)
Number of working days per year: 200-300 days
Income of a labourer(skilled) : Rs. 15-18/-

At Silchar 35 number of shops operate. The requirement of cane is largely met by import from Manipur(60%) and Mizoram (40%). Nearly 25,000 number of canes(30.48cm. long and 1.9 cm. dia) are consumed for making cane furnitures and sale of some quantity of cane to outside by each unit is also noticed. There is export of cane to other places. Average export of cane to various places is as under :-

Calcutta: 20% Madras : 25%
Delhi : 30% Andhra Pradesh: 15%

Balance 10% is consumed in local market. Besides these, there are some brokers in Silchar who do not have any furniture making activity but to supply canes to the regular industrial units and also participating in export outside Assam. Each piece of cane is usually 4m. long and price ranges from 200 to 300/- per pc. Forest Department in Silchar and Karimganj realises royalty @ 0.04 p. per 10m.

1.9.11

Minor forest produce collection:

Evergreen and semi-evergreen forests of Cachar district yield a variety of minor forest produce. Collection of the minor forest produce from forests has impact in rural life for employment on seasonal basis. Govt. of Assam in Forest Department attach major importance in collection of minor forest produce when all other forestry operations in coupes have been closed virtually. Chief minor forest produces are:

Bamboo, Chalmugra, Cane, Tejpatta, Nageswar flower, Agar oil, Chattapata, Gandhi roots, Rema, Hartaki, Erra, Thatch, Kitapata, Stones, Boulders, sands.

Collection of the minor forest produce is organized normally by the contractor in the forests. Sand and boulders are also collected by Government Departments and Armed and other Para-military forces by their departmental labourers. Collection of the minor forest produces by cooperative agencies was not noticed. So, there are underemployment among rural folk(men/women)in this matter of collection of minor forest produce.

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A large portion of the minor forest produce so collected is transported out of the district and State. No data for actual collection of produces is available as because areas are leased and quantity of removal is not stipulated in sales.

1.9.12. Plywood industries:

Plywood industries in undivided Cachar district is under-developed although a variety of plywood species are available in the evergreen and semi-evergreen forests. Scope of expanding this industry is enough because of presence of large number of Tea Gardens in the area. Study of plywood industries indicate that the units are under-utilized and log intake is very poor. Surma valley Saw Mills Private Ltd., of Silchar and Surma Match & Ind.(Pvt.)Ltd.of Karimganj produce plywood of both I.S.I. and non-ISI type. Tea-chests are manufactured and sold to the Tea Gardens. Various types of timber used in these mills are as follows:

Mango (*Mangifera indica*)	40%
Bahera(*Terminalia bellerica*)	10%
Kadam(*Anthocephalus cadomba*)	20%
Pooma(*Cedrella febrifoga*)	5%
Rata(*Amoora wallichii*)	25- 20%
Chatian(*Alstonia scholaris*)	5- 10%
Dumboil(*Bombax ceiba*)	
Hollock(*Terminalia myriocarpa*)	

These plywood mills are not equipped with enough modern machinaries. There are only some old machinaries to run the mills. These mills are run by two categories of staff namely staff on monthly salary and workers on daily wage basis. Average rate for skilled worker on daily wage is Rs.10/- per day and that for unskilled worker is Rs. 7.50 Monthly salary of staff ranges from 300.00 to 450.00 per month depending on the nature of work.

Capacities of the mills are as follows:

Surma valley saw mills private Ltd.-2628m3/yr. The Surma Match & Industries(Pvt.)Ltd.-2520 m3/yr. Purchase of timber is usually arranged through broker and allotment is received from Government for running these industries. Production of plywood

in these two mills may be 175000 m^3 provided 90% or more of the capacity is utilized. Since the mills are under utilized, the production is far too less and units are sick in nature.

Wood wastes in these mills are utilized for running boiler or sold as fuel. Chiefly the raw materials are brought from Mizoram and Manipur as because forestry operations in Cachar is almost nil. Departmental operation in selected area are not enough to meet various local demands for supply of logs of various species.

1.8.13

Firewood retail sale:

Virtually alone firewood is used to get energy for domestic purpose. Sale of firewood in places like Karimganj, Hailakandi, Silchar and other areas can be noticed. Firewood is either obtained from local sources or brought from Manipur and Mizoram. Various miscellaneous species are used as firewood. Firewood retail sale does not provide any employment excepting the owner and earning thereof is also not highly lucrative. In Karimganj there are nearly 100 firewood retail shops. Similar number of retail shops may be found in Silchar. These units are generally small and almost all of them handle nearly 8-10m3 per year. Only owner engages himself to split the firewood and sale them. Earning from these units is too low. The owner purchases firewood from various sources at the rate of Rs.15-20 per quintal and this firewood is sold at Rs.35-40/- per quintal with only input of self labour of the owner which doubled the price. So employment of larger number of workers and handling more firewood may ensure more earning. Usually 300 days per year are availed for this kind of trade. Unskilled labourer engaged is splitting firewood can earn Rs.10/- per day. Units with handling capacity more than 50m3 per year is too less in number and most of the units handle 8-15m3 per year.

1.9.14

Bamboo retail sale:

Bamboo retail sale is also a trade in forest produce. This is noticed in selected places. The objective of the trade is to export of bamboo. Generally this category of traders are noticed in Badarpur Ghat. This category of traders do export of bamboo of nearly 10,000 numbers in a year.

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One bamboo costs on average Rs. 0.70 at Badarpur. Export of bamboo from Badarpur is arranged by rail, steamer and truck depending on the destination. Commonly wagons and trucks are availed for this purpose. Purchase of bamboo is made by the traders from the Mahaldars only. A large quantity of bamboo is exported to Calcutta by wagon. Usually a trader gains Rs. 500-600/- per thousand by sale. Nearly 18,96,000 pcs. of bamboo are exported outside the districts. Some quantities are exported to Gujrat besides Calcutta.

Bamboo consumed locally is usually sold at Rs.850-1000/- per thousand through retail outlets. Chiefly Muli Bamboo (Malocanna bambusoides) is used for making huts. Some quantity is consumed in household industry for making Umbrella handles.

1.10 Tea industry:

In Cachar district(undivided)there are 115 Tea Gardens as per the 1981-82 Statistics of Tea Board. These Tea Gardens are grouped under Tea Association of India and Surma valley Branch, Indian Tea Association. These Tea Gardens are important in local economy because the industry provides large number of skilled and unskilled employment in rural areas.

1.10.1 Tea cultivation:

Tea production in Cachar dates back long time before Independence . Gradual rise in demand of tea in local and outside country have resulted in the expansion of tea gardens. Currently tea industries occupy 32,171 ha.(area under tea cultivation)in Silchar, Karimganj and Hailakandi areas. Nearly 30% of the total population in the district is dependent on this industry. Various categories of workers are employed in tea garden which includes males, female and minors. On an average nearly 45,000 to 59,000 workers are engaged in the industry of which 30% are non-resident workers. Wage rate of non-resident workers are:

Male	: 6.28 per day
Female	: 6.18 per day
Minor	: 3.20 per day

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Tea gardens have shown a rise in tea production. Tea productions are as follows during recent yeare:

Year	Production(kg.)	Decrease(kg.)
1980	3,21,70,000	-
1981	2,99,50,000	2,220,000
1982	2,90,82,000	8,68,000
1983(upto Sept)	2,04,50,000	8,6,52,000

1.10.2

Vegetation in tea gardens:

Tea gardens cover many areas with trees of forestry species. These lands were not properly managed to get a sustained supply of forest resources like timber and fuelwood. As a result of this many areas under the control of tea gardens are now denuded with little or no vegetation. These lands under tea gardens are not utilized for tea cultivation and were brought under surplus land ceiling. The extent of such surplus land may be upto 40,000 ha. This land will be available at Silchar and Karimganj and may be utilized for raising plantations of forestry trees. Many of tea gardens are self sufficient for supply of their timber and fuelwood requirements in their gardens. Use of coal in some tea gardens is common. Coal consumption in this industry is as follows:

Year	Coal(kg.)
1980	3,53,67,000
1981	3,29,45,000
1982	3,19,90,200
1983(upto Sept)	2,24,95,000

Consumption of coal by the garden is not gradually increasing. Dependency on fuelwood as source of supply to the gardens is in the following pattern:

Fuelwood is extracted from garden forests and also by lopping of shed trees. Timber is largely obtained from garden forests and minor collections from market may be noticed.

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1.10.3 Expansion of industry:

Tea industry is likely to expand during 7th Five Year Plan when requirement of fuelwood and timber will increase. To meet the additional requirement of fuelwood in timber, Tea gardens might have to exploit their resources in view of increased price of fuelwood and timber. Immediate problem of timber and fuelwood supply may not be surfaced but in the long run sustenance on own resources by the gardens may not be possible. So, tea gardens need be encouraged to restore their own areas with fast growing species chiefly to meet the requirement of fuelwood for supply to their working people.

1.11 Stratification:

Forest area in Cachar district is 2396.20 km2 which can be stratified into two strata viz. miscellaneous and bamboo strata. The miscellaneous strata is larger in area and is characterised by the presence of various species like Cynomeria polyandra, Dysoxylon binecteriferium and Syzygium cuminii etc. Most of the trees in the strata are below 30cm. in diameter. Presence of bamboo in this strata is noticeable which includes both clumping and non-clumping varieties. The proportion of bamboo current growth is higher compared to 1 or 2 years old or more than 2 years old growth. Clump forming bamboo actually constitutes the bulk of the bamboo stock in the strata.

Bamboo strata contains both bamboo and miscel laneous trees. Among the miscellaneous trees Macaranga species are found in larger proportion. In this case, also most of the trees belong to lower diameter class(below 30cm.). Bamboo stoc k in this strata contains largely clump forming species. The proportion of current bamboo growth is nearly 30%. The ratio of clumping and non-clumping bamboo in this strata is nearly 1:1.4.

Besides the above two strata, there are certain areas which include tea garden, agricultural land, barren land and village sites within the project area of undivided Cachar district. Vil lage sites, agricultural land etc. indicate thrust of popula-tion on forest land. Barren land indicates degradation of forest which may be on account of shifting cultivation and reckle-ss cutting of trees.

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This category is actually 36912.70 ha. and represents 15.40% of the total area under forest as mentioned earlier.

1.11.1 Legal status:

As per the records available in the State Forest Department of Assam, the forest areas under the control of Forest Department are mostly reserve forests. Another c-ategory of land which are not under the control of State Forest Deptt. have some tree growth. These lands are administered by the Deputy Commissioner through the agency of Land Revenue Department These lands with miscellaneous tree growth are usually known as U.S.F. wherein people enjoy some rights and extract forest produces on obtaining permission of sawing from the Divisional Forest Officers at Silchar and Karimganj.

1.11.2 Demarcation and forest settlement:

Forests under the control of Divisional Forest Officers at Silchar and Karimganj were demarcated on the ground by boundary pillars, compartment lines and block lines. There is no evidence that the forest boundaries have been demarcated in recent past and the length of boundary is not known.

Within the forest areas forest villages were set up in the past to maintain local labour force for creation of plantation, making forest roads, extraction of timber and fuelwood. These forest villages are distributed all over the forest areas. Forest villagers are settled under certain terms and conditions for various forestry works on the basis of payment of wages. There are altogether 135 forest villages as per the information availab le in the working plan for the period 1957-58 to 1971-72. Forest villagers enjoy certain rights and concessions in respect of forest produce.

1.11.3 Rights and privileges:

General public in the district do not enjoy any right or privilege in the affairs of forest management. Some concession are allowed in respect of the forest dwellers in forest villagers. Supply of firewood, poles, thatch etc. are allowed at free of cost. In terms of Assam settlement rule lease is often given in respect of undassed State Forests for settlement and in this process certain kinds of rights are developed on the trees by the lessee. But this is being safe guarded under Section 32A of Assam Forest Regulation which stipulates that certain kinds of trees like Chalmugra, Rata, Sisoo, Ping, Amani etc. are not allowed for removal. Provision under Assam Settlement Rule is exercised by local Deputy Commissioner and as a result of which many lands with tree growth have been degraded, particularly where repeated cutting has been allowed.

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Trees like Chalmugra, Rata, Sisoo, Ping, Pandala, Khokan etc. are considered to be reserve trees and cannot be felled in the leased land a nd permits from these areas are allowed when the Forest Department does not come into picture. Permission is solicited by the local villagers from Forest Department for removal of trees from stump site or sawing of the timber. Permission is solicited from the Divisional Forest Officer whose control is very much remote. There are chances whereb y unauthorized felling of trees and its conversion by sawing which cannot be ruled out.

1.11.4 Present management:

At present the forest land under the Forest Department in Cachar district is not managed under any working plan prescription. Past method of leasing out of ~~timber~~ timber coupes as per the prescription of working plan(1957-58 to 1977-72) may not be advocated as a proper measure because of extension of lease period will endanger the removal of better growth from the forest. Further extension of lease may encourage a lessee to operate the timber bearing area evendring the growing season. Under such situation timber harvesting has been reduced to a large extent. So, timber operation is allowed on a smaller scale through Contractor's agency. Departmental timber operation in both Cachar and Karimganj Forest Divisions is carried out. There are scope for increased departmental timber operation and the same has not gained any m omentum till the timber resources of the area surveyed and assessed. Departmental operation really provide chances in the betterment of rural economy and improve situation of rural employment. Besides working fof forest coupes for timber, bamboo bearing areas are worked on lease basis for extraction of bamboo. Earlier in the Working Plan 1957-58 to 1971-72 leasing out of bamboo coupes was prescribed. The same tradition of leasing out of bamboo coupes(locally known as bamboo mahal) is continuing. In this process of management extension of time for working is granted to the lessee as a result of which chances of over cutting particularly the current growth remains. However, unless the working plan is revised and the bamboo resources is c orrectly assessed no suitable prescription can be advocated by the State Forest Department.

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1.12 Forest resources information:

Various kinds of major and minor forest produces are available in the reserve forests and other tree bearing areas of Cachar district. It will be interesting to note that at the moment only minor forest produces are worked or largely by the State Forest Department. Possibility of working in areas with tree growth is remote unless the working plans for both the forest divisions are revised and implemented.

Considering the availability of various forest resources from forest, it may be pointed out that minor forest produces like sand and stone are removed now at a very large scale from the various river beds and queries. This kind of operation if continues as such ecological imbalance cannot be ruled out. Excess removal of stones and sands from river beds may likely change the course of the river which may ultimately cause flood. Regarding removal of sand it may be pointed out that excavation of sand from queries marginal to forest land will deteriorate the ecological condition in the forest area and in this process chances of successful afforestation will be destroyed. Therefore, it is necessary to control the removal of these two produces from both Cachar and Silchar Forest Divisions.

Regarding timber operation, it may be pointed out that sort of regulations has to be developed to stop the working of the forest with more than 80% pole crop. Repeated working excess removal, destruction of better tree growth in this part of the forest caused serious damage to the forest area and availability of bamboo and timber has been reduced. Removal of various kinds of minor forest produces like Chalmugra, Agar, Rema etc. are done without any scheme of working and there is no evaluation of these resources. Working of various agencies within the reserve forest areas can be seen in respect of the above. As the manpower potential in these two forest divisions are not enough, it will be difficult to control exercise on the removal of such forest produces and chances of unregulated removal by stealthy manner may destroy the production potential of these forest produces.

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1.13 Infrastructure:

The infrastructure in the district is not developed particularly in respect of power and communication. Major items of infrastructure are furnished in subsequent paragraphs.

1.13.1 Administrative units:

Forest management in Cachar district is controlled by two Divisional Forest Officers. These two D.F.Os actually function from their Headquarters at Silchar and Karimganj. Executive staff of various categories assist the D.F.O. for management of forest.

Deputy Commissioner at Silchar and Karimganj oversee the forest management from administrative angle. Unclassed State Forests are directly controlled by them.

Economy of Cachar is based on agriculture and people primarily devote themselves in cultivation. Agricultural labourers are available but not in rainy season. The district is situated along the border of Bangladesh and as result migratory labourers are available from time to time. Population pressure on the local economy is very high, and on account of this wage rate of the ordinary labourer is higher than many other places in the State. Availability of skilled labourer is not enough. Therefore, opening of industries in any sector should have a programme of importing skilled labourer in the area.

1.13.2 Communication facilities:

Road communication in the district is yet to develop. National High ways serve the main connecting link with the adjoining States of Meghalaya and Tripura. Prevailing road in the district are Kuchha type which actually do not serve the communication purpose in the rainy season. Inner areas remain disconnection with the district and Sub-divisional Headquarters during rainy season. As the district is agro based in economy opening of better new roads will not commensurate with productivity. Railway links are available in a few places. Metre gauge railway line enters into Cachar th rough Lumbding Rly.Junction. Maj or railway links are from Badarpur.Rly.Junction. Railway link actually serve the central portion of the district and to some extent in the northern part.

Currently a scheme is going to connect Silchar with Bhairavi in Mizoram and Jirimukh in Manipur. If these two railway connections are developed not only Manipur and Mizoram will be benefited but trade and commerce activities in Silchar, Badarpur, Hailakandi and Lala will be increased to an appreciable extent.

A third line of communication in the district are the waterways. There are number of rivers in the area which connect several rural and urban areas. This mode of communication is availed by the rural population to an appreciable extent. Country-made boars, bamboo and timber rafts are the common mode of transport used by the r ural people for the journeys from one place to another. However, this mode of journey becomes really difficult during the rainy season when the river move very swiftly.

Power development in the district is very poor. Only a few places are provided with this facilities. Lack of power supply is one of the impediment in the matter of industrial development. Tea gardens usually get power from their own resources. This kind of captive power generation is not possible for small units of industries which do not earn so much of profit to sustain the cost ofgeneration of power.

Lack of infrastructure really retarding economic development in the area. Large water resources and forest resources can provide adequate base for rural industrial development. But in both the sectors of power and forestry organised and systematic development are yet to be achieved.

CHAPTER : II

INVESTIGATION AND METHODOLOGY

2.1 Objectives :

The principal objectives of the present inventory are appended below :-

i) to estimate the total growing stock of the area within an error margin of ±10% at 95% probability level,

ii) to estimate the total dry weight of growing stock of bamboo in the project area,

iii) to determine the composition of the forest and distribution of various species by size classes and volume thereof,

iv) to assess the wood consumption for domestic and industrial purpose,

v) to provide suitable data base in strategic planning for forest development.

2.2 Photointerpretation and mapping:

The entire project area is covered by aerial photo-interpretation. Ground inventory was based on the Survey Of India topographical sheets. The following topographical sheets in 1:50,000 scale were used :-

83 C/12, 83 D/4, 83 D/5, 83 D/6, 83 D/7, 83 D/8, 83 D/9, 83 D/10, 83 D/11, 83 D/12, 83 D/13, 83 D/14, 83 D/15, 83 D/16, 83 G/4, 83 H/1, 83 H/2, 83 H/3,

2.3 Inventory design:

The standard design for ground inventory work prepared by Forest Survey of India has been adopted.

2.4 Sampling design:

Each topographical mapsheets of scale 1:50,000 relating to Cachar district was divided into grids of 2½' x 2½' which formed a unit. The plot centres of two sampling plots were selected in each grid which were located in the field. A plot of .1 ha. was laid out around the plot centre and inventory of this sample plot was done.

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The plot centres of the two sample points in each grid were selected in the following manner:

Two random numbers were selected from the random number table which form the basis of X and Y coordinates of the plot centre of one sample plots with the latitude as X axis and longitude as Y axis and the south west corner of 2½' x 2½' grid as the origin. The sample plot was ploted in the grid. The location of the second sample plot was found by joining the first plot centre with the grid centre and extending it to an equal distance in the opposite direction. The point at the end will be the plot centre of the second sample plot.

2.5 Field work :

Field data were collected by Crews; each crew consisted of one Jr. Technical Assistant, one Dy.Ranger and a Fieldman. Two or three labourers were kept attached with the crew team for cutting jungles, laying out plots and blazing of trees etc.

2.5.1 Field instruction :

The plot centre of each sample plot is located in the field with the help of a reference point and a plot of .1ha. is laid out around it. According to the instruction contained in the manual, the data were collected in the relevant forms. Detailed instructions on the procedure of field work and filling the various forms according to the correct codes, are given in the field manual. Each crew was allotted with a number of grids which contained the number of sample plots to be surveyed by them according to the above procedure.

For collection of information the following forms are were issued :-

i) plot approach form,
ii) plot description form,
iii) plot enumeration form,
iv) sample tree form,
v) Herbs and shrubs data form, &
vi) bamboo enumeration forms.

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CHAPTER: III

Data Analysis

3.1 General :

A series of data processing operations are involved for disseminating various information about the condition and extent of forests in Cachar district. These included three major types of data processing operations namely manual processing, processing on unit record machine and processing on electronic computer.

3.2 Manual processing :

It involves the following steps:-

i) documentation of the field forms,
ii) coding the information in the field forms which has not already been incorporated,
iii) manual checking for validity of codes used in various columns of information and
iv) reconcilation of discrepancies, if any, in consultation with crew leaders.

3.3 Processing on unit record machine:

Following steps are carried out on unit record machine:-

i) punching the information on cards,
ii) verification of punched cards,
iii) sorting and collating the cards for proper input - to computer and
iv) listing of punched data cards.

3.4 Processing on electronic computer:

The following operations are carried out on electronic computer :-

i) loading of the data on magnetic disk pack/tapes,
ii) consistency checking of the data,
iii) correction of the data,
iv) calculation of tree and plot volume,
v) preparation of standard stock tables and
vi) preparation of growing stock tables for different types of strata.

Suitable computer programme are developed for processing the aforesaid items of work on electronic computer.

Contents

3.4.1 Calculation of area:

The area estimate is based on the figure of the Forest Department and this formed the basis of calculation of growing stock of the area.

Accordingly the area falling under different stratum is as follows:

Stratum	Area in ha.
Miscellaneous	168296.89
Bamboo	34410.15
	202707.04

The area of 36912.70 ha. could not be classified in any strata as it falls against the following heads:

Tree garden:	8758.95
Agricultural land	18143.53
Village sight	5005.11
Barren land	5005.11
	36912.70

3.5 Volume studies:

As local volume tables for most of the species of the project area was available from State Forest Department, no volume equation was developed for estimating the volume of growing stock.

VOLUME TABLE

Name of species with Code No.	Diameter classes in cm.									
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+
Anthocephalus indica(065)	0.050	0.100	0.283	1.246	1.756	2.039	2.407	2.945	-	-
Tetrameles nudiflora(688)	0.100	0.300	0.500	0.700	0.850	1.699	2.095	2.464	3.228	4.134
Syzygium cuminii (665)	0.200	0.500	0.700	0.878	1.104	1.841	1.954	2.435	2.662	2.775
Sapium baccatum (620)	0.100	0.200	0.538	0.708	1.104	1.841	1.954	2.435	2.662	2.775
Mesua ferrea (460)	0.200	0.300	0.400	0.850	1.048	1.303	1.784	2.322	-	-
Duabanga sonneratioides(251)	0.300	0.500	0.793	0.906	1.529	1.642	1.954	2.492	2.747	3.256
Cynometra polyandra (218)	0.100	0.300	0.510	0.651	0.934	1.388	1.529	1.699	1.727	-

3.5.1 Volume of trees enumerated:

With the help of the local volume table of the State Forest Department and the diameter of enumerated trees, volume of each tree was computed.

3.5.2 Plot volume:

Volume of all trees in a plot were added to obtain the plot volume.

3.6 Tree density study:

The trees enumerated in plots were separately estimated for both the strata i.e. miscellaneous and bamboo.

3.6.1 Miscellaneous stratum:

The number of stems/ha. in miscellaneous stratum is 197.446. The distribution of species by diameter is shown in table No. 1.1 A close study of the table clearly shows that unidentified species in the stratum is most dominant and is about 27% of the total stems.

About the most frequent species mentioned may be made of Cynometra polyandra(6.5%) followed by Dysoxylon bineteriforum(5%) and Syzygium cuminii(4.2%)

Among the other species the following are predominant species :

	Percentage(%)
Pyrus pashia	2.24
Macaranga peltata	2.07
Callicarpa arborea	2.02
Calophyllum polyanthum	3.33

Regarding the distribution of stems, according to diameter classes, it is observed that about 96% of the total stems are below 50cm. dia. The percentage of stems below 30cm. dia. is about 80%. Thus it may be safely concluded that although the density of the stratum is quite high, the trees mostly belong to lower diameter classes.

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3.6.2 Bamboo stratum:

The distribution of species by diameter classes in this stratum is given in table No.1.2

The number of stems per hectare in the stratum is 140.350. Thus it is clear that the density in the stratum is poor than miscellaneous stratum. It is observed that the percentage of unidentified trees in the stratum is also very high and is about 31.6% of the total stems.

About the dominant species occurring in the stratum, it is seen that Macaranga auriculata is not frequent(7%) followed by Macaranga peltata(4.4%) and Cymdmerea polyandra(4.3%).

Regarding the distribution of the species by diameter classes, it is seen that 96.2% of the total stems belong to diameter class below 50cm. Percentage of stems below 30cm.dia. is about 84%.

Among the other species, the following are important species:

	Percentage(%)
Dysoxylon binectoriforum	3.75
Lagerstroemia parviflora	3.62

Thus it may be safely concluded that the trees in the stratum are mostly in younger stage and may not be expected to give any dividend in immediate future.

3.7 Volume studies:

Volume was separately estimated for both the stratum i.e. miscellaneous and bamboo. Distribution of volume by species is appended in table No. 2.1 and 2.2

3.7.1 Miscellaneous stratum:

Volume per hectare in this stratum is only 47.816 m3.

The volume as expected is low since most of the trees pertain to younger diameter class. The dominant species in the stratum are Cynomerea polyandra(8.02%) followed by Syzygium cuminii(6.6%) Dysoxylum binectoriforum(4%) and Artocarpus chaplasha(3.7%). For detail table No. 2.1 may be referred.

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Contribution of predominant species:

	Percentage(%)
Mesua ferrea	3.00
Colophylum polyanthum	2.70
Duabanga sonneratiodes	2.11
Albizzia species	2.02
Tectona grandis	2.01

Regarding the distribution of volume by diameter class, it is observed that about 48% of the volume belongs to the dia. class below 40cm. diameter. Volume contributed by the trees over 60cm. diameter(matured trees) is about 17.6% of the total volume.

3.7.2 Bamboo strata:

The volume per hectare in the stratum is only 30.539m3 (table No. 2.2)

As expected, the concentration of bamboo in the stratum being high, the volume per hectare in the stratum is low. The dominant volume contributing species in the stratum are Artocarpus chapalasha(8.9%),followed by Duabanga grandiflora(4.6%),Sapium baccatum(4.1%) and Tetrameles nudiflora(3.8%)

Among the other species:

Cynometra polyandra	5.20%
Duabanga sonnertiodes	4.56%
Stereospermum chelonoides	4.24%
Syzygium cuminii	3.62%
Dipterocarpus macrocarpus	3.17%
Gmelina arborea	3.01%
Terminalia citrana	2.43%

Regarding the distribution of volume by diameter class, it is seen that about 23.2% of the volume belongs to diameter class(10-19cm.).

Volume belong 30cm. is about 34.5%.

Volume belonging to the matured diameter class(i.e. above 60cm.) is only 17% of the total volume.

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3.8 Volume by strata:

The total volume of the growing stock for the area has been separately estimated stratum wise both for miscellaneous and bamboo strata and are included in table No. 4.1 and 4.2

The following gives an abstract of the volume distribution over the entire area as covered in the present inventory:

Stratum	Area in ha.	Volume per ha. (m3)	Total volume (1,000 m3)
Miscellaneous	168296.89	47.816	8047.266
Bamboo	34410.15	30.539	1050.868
	202707.04 ✓	44.883 ✓	9098.134 ✓

3.9 Standard error:

Total standard error for volume per hectare is 3.3344 However, standard error for the estimates of volume per hectare for different stratum is given below :-

Stratum	Volume/ha.(in m3)	S.E. (%)
Miscellaneous	47.816	3.1623
Bamboo	30.539	5.7972

3.10 Sampling design(Bamboo):

Bamboo clump enumeration was carried out in the entire plot by clump size classes. Muli was enumerated only over 1/8th area of the plot(touching northern semi-diagonal) counting will be done only in 9.0125 ha. area i.e. north west quadrant.

3.11 Bamboo data:

Bamboo data was collected as detailed under para 1.1 In case of current years culms of both Muli and clum formers, the diameter classification was not done, as the growth of culms would not have been completed. Bamboos were enumerated according to the following diameter classes:

2 to under5om.
5 to 8cm.
8 to and over.

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Apart from counting the bamboos under 3 diameter classes, it was necessary to collect the weight data also to arrive at the green dry weight ratio. The manual of instructions for field inventory is the main guidline.

3.12 Culms per hectare:

3.12.1 Muli Bamboo:

Total number of muli culms were recorded in the northern half of each plot. These figures provided estimate of the total muli culms over the entire area.

The detailed enumerations of muli culms occurring in the northern half of N.W. quardant were done by age(current seasons, 1-2 seasons and over 2 seasons) soundness, and diameter (2-5cm.),5-8cm. and 8 cm. over) This data provided the proportion of culms in different age classes, soundness classes and diameter classes in both the miscellaneous stratum and ba.mboo stratum. The number of culms per hectare by age and soundness are given in Table No. 5.0

3.12.2 Clump forming:

The total number of clumps in each plot were anumerated alongwith tree cnumeration. Clums are then classified in detail by age(current seasons, 1 to 2 seasons and over two seasons)and soundness(green sound and decayed) and diameter(2 to 5 cms., 5 to 8 cms., 8cm. and above). The number of culms/per hectare by age and soundness are given in Table No. 5.0

3.13 Bamboo weight:

Green weight of bamboo culms in diameter classes 2-5cm. 5-8cms., 8cms. and over was available from the felled culms. The green weight of a culms was converted toair dry weight by multiplying a factor 0.6

Species	Dia.class(cm)	Green weight (in kg.)	Avr.shrinkage	Air dry weight (in kg.)
Muli	2 to 5	4.72	40%	2.83
	5 to 8	12.93		7.76
	8 and above	30.19		18.11
Non-clump	2 to 5	5.41	40%	3.25
forming	5 to 8	15.20		9.12
	8 and above	34.91		20.95

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The following weightages were given to the different conditions of the culm. for determining the weight of a culm:

Green sound	1.0
Green damaged	0.5
Dry sound	2.0
Dry damaged	1.0
Decayed	0.0

The result of bamboo dry weight/ha. by age and soundness are given in table No. 6.0

CHAPTER: IV

RESULTS OF INVENTORY

4. General:

The forest area under the control of State Forest Department of Assam in the undivided Cachar district was surveyed. According to the data availab-le from field inventory, the forest area has been classified as per the paragraph 3.4.1 into two strata namely Miscellaneous and Bamboo. Various data were collected in the field and the most pertinent items are presented in the subsequent paragraph to indicate the certain results of the present inventory which include the assessment of growing stock in the area.

4.1 i) Miscellaneous stratum:

The total forest area under the control of the State Government is 239620 ha. out of which 163296.89 ha.belong to the miscellaneous stratum. The miscellaneous stratum in Cachar valley consists of tree growth forests of varying density. In paragraph 1.8 it has been stated already that the tree growth in Cachar valley is mainly comprised of tropical evergreen and semi-evergreen types. The tropical evergreen forests is mainly composed of species like Artocarpus chaplasha, Mangifera spp.,Lophopetalum fimbriatum, Alseodophne owdenii, Callophyllum polyanthum, Canarium resniferum etc. These are all evergreen types of species, which are largely present in Cachar valley. The semi-evergreen type of species are Gmelina arborea, Adina cordifolia, Amoora wallichii, Albizzia procera etc. The local variation in these type of tree growth has also been discussed in paragraph 1.8.3 Oc-currence of these species are further presented in terms of actual data collected from the field in table No.!!.
Cedrella febrifuga, Eugenia fruticosa, Chukrassia tabularis alongwith Anthocephalus cadamba, Duabanga sonnerotioides, Cynometra polyandra are also found.

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4.2.1. Classification of miscellaneous stratum according to landuse pattern :

The miscellaneous stratum in the Cachar valley can be classified into i)dense tree forests ii)moderately dense tree forests and iii) open tree forests. The occurrence of dense tree forests in Cachar valley is very rare and the following grids and plots represent the location of dense tree forests:-

Toposheet No.	Grid/No. Plot	Volume/hectare	Stem/hectare
83 D/8	105/1	17.996	53
83 D/7	204/2	8.318	44
83 D/15	615/1	13.964	54
83 D/15	615/2	7.532	58
83 D/15	616/1	12.645	60
83 D/15	616/2	13.156	61
83 D/11	710/1	16.852	59
83 D/15	715/1	6.538	62
83 D/15	715/2	9.413	45
83 D/15	716/1	6.037	40
83 D/15	716/2	18.392	61
83 D/6	802/2	21.427	29
83 D/10	810/2	12.682	83
83 H/2	1019/1	17.242	46
83 H/2	1018/2	15.705	49
83 H/2	1118/1	27.816	59
83 H/2	1118/2	11.224	62
83 H/1	1522/1	13.572	48
83 C/12	2107/2	3.921	52
83 C/12	2108/1	11.513	41
83 C/12	2109/1	8.156	36
83 C/12	2110/2	4.649	28
83 C/12	2111/1	7.171	42
83 C/12	2112/2	18.763	45
83 C/12	2206/1 -	14.198	35
83 C/12	2209/1	19.983	45
83 C/12	2211/1	7.258	58
83 C/12	2211/2	12.205	43

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The above tabulation showing the distribution of stem/ha. and volume/ha. is indicative of the following inferences:-

1). Species like Syzygium cuminii, Dysoxylum binnectariferum, Cynometra polyandra, Dillenia pentagyna, Mesua ferra, Barringtonia spp., Kydia calycina, Lophopetalum fimbriarum are trailing behind in the competition. Most of these are in regeneration stage and some of them are not even found in pole stage i.e. ab ove 30cm. in diameter class. It is interesting that Cynometra polyandra is the commonest of all the species listed above in major grids and plots where the growth of this species is found to be even in regeneration stage.

The occurrence of dense tree forests as represented in the above list of grids and plots is not found in a continuous patch but these occur in separate patches. Difficult terrain which does not permit harvesting of timber and other produc es on various physic al barriers in the area is the main factor which has retained the present character of the vegetation.

2) Moderately dense tree forests in Cachar valley is comparatively larger in area and it is also located in various terrains where the accessibility even today is not easy for extraction of timber and other forest produces. The list of following grids and plots do indicate the locations of moderately dense tree forests alongwith other relevant information:-

Mapsheet No.	Grid/Plot No.	Volume/ha.	No.of stem/ha.
83 D/8	4/1	20.188	33
83 D/8	4/2	10.513	26
83 D/12	106/1	3.911	25
83 D/7	203/1	1.133	17
83 D/7	205/1	1.601	5
83 D	208/1	6.344	12
83 D/7	300/1	8.667	24
83 D/7	301/2	6.493	7
83 D/7	302/2	9.098	38

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1	2	3	4
83 D/11	307/2	9.427	35
83 D/7	401/2	9.396	33
83 D/7	402/1	18.505	39
83 D/11	409/2	9.966	24
83 D/7	502/2	18.326	41
83 D/11	509/1	9.303	50
83 D/15	514/2	8.393	41
83 D/7	600/1	6.745	26
83 D/7	602/2	9.459	50
83 D/11	609/1	9.814	43
83 D/15	613/1	13.144	53
83 D/15	613/2	2.966	38
83 D/15	614/1	11.245	52
83 D/15	614/2	10.452	59
83 D/1	706/1	5.651	5
83 D/11	708/1	8.930	29
83 D/11	709/1	4.062	29
83 D/11	709/2	11.724	30
83 H/2	101/2	7.580	28
83 D/10	1110/2	4.644	63
83 D/2	1119/1	19.424	69
83 D/2	1119/2	11.033	45
83 D/6	1200/1	6.428	20
83 D/6	1200/2	11.732	38
83 H/2	1219/1	14.896	30
83 H/2	1219/2	17.059	30
83 D/6	1301/1	15.274	25
83 H/2	1319/1	6.245	24
83 H/1	1420/1	3.279	23
83 D/10	910/1	1.033	5
83 D/10	910/2	4.312	37
83 D/14	913/1	11.037	28
83 H/2	918/1	11.169	36
83 H/2	919/1	11.370	47
83 H/1	1721/2	5.252	26
83 H/1	1722/2	6.451	35
83 H/1	1321/1	2.743	15
83 H/1	1823/2	17.368	42
83 D/9	1909/2	13.090	92
83 D/9	1911/1	12.756	63
83 D/13	1914/1	3.628	11

Contents

1	2	3	4
83 D/13	1915/2	3.195	19
83 D/13	1916/2	1.704	10
83 H/1	1918/1	13.631	36
83 H/1	1922/1	1.700	11
83 D/12	2009/2	16.365	41
83 D/12	2010/2	13.377	45
83 D/12	2011/1	3.249	28
83 C/16	2013/1	7.112	27
83 C/16	2013/2	9.532	43
83 C/16	2014/1	7.337	32
83 C/16	2015/1	2.279	9
83 C/16	2017/1	4.157	31
83 G/4	2018/2	3.193	29
83 G/4	2019/1	6.893	24
83 C/12	2106/1	10.892	27
83 C/12	2106/2	7.668	19
83 C/16	2112/1	7.678	39
83 C/12	2208/1	9.530	26
83 C/16	2212/2	3.249	46

In this case Cynometra polyandra is also found to have poor growth compared to other species.

Major species - diameter class thereof :

List of major species is furnished against each grid and plot showing the diameter classes:-

Grid No.	Specie s name	Diameter cla sses
1	2	3
4/1	Cynometra pölyandra	50-59
4/2	Calophyllum polyanthum	60-69
105/1	Cynometra polyandra	60-69
402/1	Dysoxylum binectariferum	50-59
409/2	Ficus spp.	100-109
502/2	Artocarpus chaplasha	80-99
516/2	Syzygium cuminii	40-49
602/2	Bischofia javanica	50-59
609/1	Michelia champaca	50-59
610/1	Terminalia chebula	60-69
614/1	Sterculia febrifuga	40-49
615/1	Cynometra polyandra	50-59

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1	2	3
616/1	Cynometra polyandra	30-39
606/2	Syzygium cuminii	10-19
709/2	Mangifera andamanica	80-89
710/1	Premna bengalensis	70-79
711/1	Artocarpus chaplasha	110-119
716/2	Syzygium cuminii	40-49
802/2	Dipterocarpus graoilis	60-69
810/2	Syzygium cuminii	10-19
108/1	Syzygium cuminii	20-29
1018/2	Syzygium cuminii	10-19
1118/1	Syzygium cuminii	20-29
1118/2	Syzygium cuminii	60-69
11 19/1	Syzygium cuminii	30-39
1119/2	Cynometra polyandra	50-59
1210/2	Dysyxylum binectariferum	60-69
1219/1	Syzygium cuminii	20-29
1219/2	Terminalia chebula	90-99
1310/1	Lophopetalum fimbriatum	70-79
1419/2	Slamalia insignis	60-69
1522/1	Eugenia species	50-59
913/1	Callophyllum polyanthum	50-59
918/1	Albizzia species	110-119
919/1	Albizzia species	50-59
1823/2	Sterculia species	50-59
1909/1	Cynometra polyandra	10-19
1911/1	Cynometra polyandra	30-39
1918/1	Sloanea asamica	50-59
2009/2	Bombax ceiba	90-99
2012/2	Ficus species	80-89
2013/2	Sterculia species	50-59
2106/1	Terminalia belerica	70-79
2108/1	Lophopetalum fimbriatum	50-59
2112/2	Cynometra polyandra	30-39
2206/1	Duabanga grandiflora	60-69
2208/1	Dysoxylum binectariferum	80-89
2211/2	Cynometra polyandra	60-69

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The frequency of occurrence of Cynometra polyandra (Ping) is very high in both the dense tree forests and moderately dense tree forests. In order to bring out an actual picture of floristic composition and volume content of these two categories of forest, following information can be furnished.

When we compare the relative proportion, of different species in miscellaneous stratum with the same species in dense tree forest areas, the following inferences can be noticed:-

1) Stem/ha. in dense tree forest areas and moderately dense tree forest areas is higher in number when compared to the average stem/ha. for miscellaneous stratum. This difference is to the tune of 255.179 number of stems/ha.

2) Cynometra polyandra(locally known as Ping)contribute a very high proportion of volume in dense tree forest areas. In dense tree forest areas, these species are found in diameter classes ranging from 10-19cm., 20-29cm.,30-39cm. and 60-69cm. Nearly 15-20% of the volume of Cynometra polyandra is represented by tree growth which are in regeneration stage i.e. 10-19cm. diameter class. Balance 80-35% of the volume of the same species can be found in case of trees of higher diameter classes of which nearly 50% of the volume is contained in the diameter class 20-29 and 30-39cm. Cynometra polyandra(Ping) is locally a good constructional timber and largely utilised by the local people for various building construction works as well as in making small bridges and culverts. Proper management of this species in the dense tree forests and even in moderately dense tree forests may help in future to obtain higher yield from these areas. Other important species in dense tree forests are Artocarpus chaplasha, Callophyllum polyanthum, Dipterocarpus gracilis, Duabanga grandiflora, Dysoxylum binectariferum, Kayea floribunda, Mesua ferrea, Syzygium cuminii. Next to Cynometra the most important species is Syzygium cuminii. In this case nearly 70% of the volume is concentrated in the diameter classes 10-19 cm. and 20-29 cm. Locally this species is also utilised for constructional purpose. Therefore, appropriate management of this species in the moderately dense tree forests and as well as in dense tree forests areas will help the future higher yield from such forests. In case of this species trees higher diameter even up to 80-39cm.can be found in some occasion.

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Cynometra polyandra and Syzygium cuminii constitutes nearly 25% of the total volume present in dense tree forests areas which is nearly 500 m3. So, management of these small patch of forests with a higher proportion of important spec ies should be aimed keeping in view the condition of the forests in rest areas in Cachar valley. If a study of accessibility of this kind of forest is noticed, it is found that these forests are located very far away from the market. A few sample data collected from the field are furnished below :-

Grid/Plot No.	Nature of forests	Distance from market
4/1	Dense tree forests	57
4/2	- do -	44
105/1	- do -	50
204/2	- do -	38
205/1	Moderately dense tree forests	105
208/1	- do -	57
302/2	- do -	65
306/2	- do -	17
307/2	- do -	70
401/2	- do -	64
402/1	- do -	65
402/2	Dense tree forests	66
409/2	Moderately dense tree forests	41
502/1	- do -	63
502/2	- do -	52
509/1	- do -	44
509/2	- do -	60
514/1	- do -	55
515/2	Dense tree forests	63
516/2	- do -	73
600/1	Moderately dense tree forests	67
602/2	- do -	68
609/1	- do -	43
613/1	- do -	55
613/2	- do -	57
614/1	- do -	54
614/2	- do -	55

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Grid/Plot No.	Nature of forests	Distance from market
615/1	Dense tree forests	50
615/2	-do-	67
616/1	-do-	63
616/2	-do-	63
706/1	Moderately dense tree forests	67
708/1	-do-	75
709/1	-do-	75
709/2	-do-	75
710/1	Dense tree forests	72
710/2	-do-	76
711/1	Moderately dense tree forests	68
714/1	Dense tree forests	50
715/1	-do-	67
715/2	-do-	51
716/1	-do-	65
716/2	-do-	65
717/1	Moderately dense tree forests	65
302/2	Dense tree forests	52
810/1	Moderately dense tree forests	80
810/2	Dense tree forests	70

The various distances as furnished in the above /plot table represent the /locations in the dense tree forests and moderately dense tree forests with respect to the market places in the district. Timber etc. from such forests are ultimately brought to the markets for disposal. Group classification of locations of dense tree forests and mod erately dense tree forests a re furnished below and t he data presented below will only pertain to the area under miscellaneous stratum :-

District in km.	Percentage	
	Dense tree forests	Moderately dense tree forests
30-45	-	14.29
46-60	25.00	33.33
61-75	68.00	47.62
More than 75	6.25	4.76
	100.00	100.00

4.1.2 Open tree forests:

Before a critical analysis of open tree forests under the miscellaneous stratum is considered, a review of dense tree forests and moderately dense tree forests in earlier paragraph is to be referred in this context.

The inventory in Cachar valley has revealed the presence of open tree forests in both the stratum of miscellaneous and bamboo. The present context of consideration lies only with respect to t he open tree areas under miscellaneous stratum. The main characteristic of the open tree forest areas is the presence of low volume and exceedingly less number of stems. An analysis of the various grids and plots under this category is furnished hereunder:-

Mapsheet No.	Grid/Plot No.	Volume per hectare(m3)	Stem per hectare
83 D/8	5/2	1.333	10
83 D/8	104/1	0.100	2
83 D/8	104/2	0.100	1
83 D/8	105/2	3.292	9
83 D/4	201/2	0.150	3
83 D/4	204/1	0.450	9
83 D/4	205/2	1.646	2
83 D/4	305/1	0.250	4
83 D/11	307/1	3.893	6
83 D/11	308/1	2.239	4
83 D/7	403/11	7.337	22
83 D/7	405/1	1.906	3
83 D/7	405/2	0.100	2
83 D/11	406/1	1.616	9
83 D/11	408/1	1.100	1
83 D/11	408/2	2.095	4
83 D/11	505/2	0.300	1
83 D/11	608/2	6.572	19
83 D/11	506/2	0.300	6
83 D/11	610/1	9.364	35
83 D/11	606/2	4.269	4
83 D/11	611/1	1.333	20

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Mapsheet No.	Grid/Plot No.	Volume/ha. (m3)	Stem/ha.
83 D/15	702/1	0.150	2
83 D/15	703/11	2.650	4
83 D/10	306/2	0.200	2
83 D/10	309/1	1.500	4
83 D/10	311/2	5.262	24
83 D/10	313/1	2.116	8
83 D/12	1019/1	2.550	22
83 D/14	1013/1	5.517	29
83 D/6	1300/1	3.107	2
83 H/1	1419/11	0.350	4
83 D/9	1507/11	6.532	28
83 D/9	1519/1	0.633	7
83 D/6	902/2	1.000	11
83 D/14	912/1	5.108	25
83 D/14	912/2	3.559	31
33 H/1	1721/11	6.141	18
83 H/1	1723/2	1.100	4
83 H/1	1819/7	0.630	7
83 D/13	1915/1	2.029	10
83 D/13	1917/2	1.666	14
83 D/12	2006/1	5.877	44
83 D/12	2006/2	3.982	35
83 D/12	2003/2	5.714	18
83 C/16	2016/1	1.250	8
83 C/16	2017/2	5.365	25
83 C/16	2019/1	6.893	24
83 C/16	2113/1	6.230	46

The floristic composition of th is type of forests indicate an interesting feature with regard to the very little occurrence of the following species:-

Albizzia lucida
Albizzia species
Bombax ceiba
Callicarpa arb-orea
Ficus species
Cynometra polyandra
Mesua ferrea
Cedrella toona
Dysoxylum binectariferum

Of the above listed species Cynometra polyandra which is less in number in open tree forests are found in higher frequency in dense tree forests and moderately dense tree forests. With regard to the accessibility of these forests, it may be stated that these are far from the market places but these can be approached easily with the existing road communication. With regard to the general terrain of these least areas, difficultues or obstructions in forest produce, extraction in the past actually caused degradation in vegetation. Degraded open tree forests are found towards the southern part of the Cachar valley, where road systems are better developed and rail heads are easily approachable. Regarding nature of degradation of open tree forests, a classified table is furnished below :-

	Particulars	Percentage
1.	Heavily degraded	27.41
2.	Moderately degraded	54.84
3.	Mildly degraded	12.91
4.	Not degraded	4.84
		100.00

It may be mentioned that many of the open tree forest areas are yet to asume the character of total degradation and it will be preserved with its present character if some rational measures in forest management policy is adopted. Incidentally, it is to mention that timber operations in Cachar valley under Silchar and Karimganj forest divisions are virtually stopped but there is no dearth of supply of timber, fuel in the market. The import of such forest produces from the States of Manipur and Mizoram can be quoted as the source of such supply in che district but there are also certain limitations in procuring such forest produces from Mizoram and Manipur.

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As there is no coal belt near the district, supply of fuelwood largely depends on the local supply from forests. This will mean higher extraction from easy accessible areas without the notice of the State Forest Department. To stop this kind of activity, some rational policy in forest management has to be adopted and the demand of the people should be met by alternative source of energy.

4.2. Bamboo stratum :

Little less than 25% of the surveyed area belong to bamboo stratum. In this stratum bamboo growth (Non-clumping) is proportionately h igher than the tree growth. The major species of bamboo is Muli (Melocana bamboosoides). Bamboo is not only distributed in this stratum but it is also found in Miscellaneous stratum where its proportion is less. A continuous tract of bamboo is found in some areas of Patharkandi Range, Lowerpoa Range. Florastic composition of bambbo stratum differs from miscellaneous stratum, some species like Macharanga denticulata, Pyrus species, Lagerstroemia parviflora etc. are conspicous here. Other associates are Callicarpa arborea, Cynometra polyendra, Dysoxylum binectariferum , Ficus species.

Study of plots in this stratum indicates that average height of 71% of bamboo stock varies between 8-12 m and 23% of the bamboo stock can be found in height class 6-8 m. The rest 6% lies in a height class below 6 m. Regarding the condition of bamboo in this stratum it may be stated that on average 50% of the green bamboo culms are damaged. The nature of distribution of green sound and green damaged bamboos along with height classes are furnished here under.

Grid No.	Plot No.	Total green sound	Total green damaged	Average height(m)	Total no. of culms.
1	2	3	4	5	6
5	1	36	20	10.4	55
5	2	55	14	10.7	87
100	2	121	50	14.1	183
101	1	115	30	10.2	205
101	2	73	14	10.0	115
104	1	134	6	9.4	206
104	2	181	8	10.4	271

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1	2	3	4	5	6
108	2	113	3	9.6	220
201	1	40	22	9.0	79
201	2	8	6	6.0	15
203	1	38	5	13.0	53
204	1	77	2	13.6	93
208	1	74	20	12.5	172
208	2	79	11	11.4	168
301	2	75	14	8.0	114
302	2	113	13	13.0	181
304	1	75	3	11.6	80
304	2	21	-	10.4	21
305	1	120	9	7.5	169
308	1	163	8	8.0	368
404	2	44	3	10.0	70
405	1	31	-	8.9	49
405	2	69	5	8.7	78
406	1	86	15	11.0	188
406	2	41	3	11.4	46
408	1	146	25	9.1	334
408	2	76	17	10.9	171
505	2	63	13	7.4	80
506	1	32	5	10.8	43
506	2	72	13	8.0	125
510	1	46	3	9.3	61
510	2	78	6	16.6	98
515	2	50	7	9.1	87
608	2	65	17	9.7	137
611	1	102	3	16.7	144
613	2	44	11	11.0	76
702	1	74	12	8.2	204
706	1	119	62	9.5	186
708	1	41	12	11.1	63
709	1	59	6	13.2	75
709	2	11	3	10.1	23
711	1	60	12	11.4	88
714	1	153	19	14.0	209
806	2	25	-	7.0	29

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1	2	3	4	5	6
810	1	7	4	10.3	18
813	1	138	7	10.0	152
906	1	13	1	9.5	17
912	1	46	7	13.7	103
913	1	19	5	10.0	24
913	2	46	8	7.0	56
917	1	37	4	11.2	42
1010	2	105	28	13.2	260
1013	1	74	1	6.6	90
1100	1	101	60	6.70	382
1300	1	123	-	7.4	179
1420	1	84	4	8.0	101
302	2	6	1	8.5	9
402	2	16	6	5.8	26
404	2	47	5	8.3	57
500	2	6	4	5.9	7
1218	2	43	-	1.0	59
1318	1	56	1	9.5	76
1318	2	22	10	3.1	32
1319	2	71	-	8.6	67
1517	2	11	-	6.6	12
1622	1	102	33	16.5	193
1622	2	24	4	13.0	34
1721	1	4	1	18.4	8
1721	2	3	-	0.6	7
1722	1	47	4	12.6	64
1819	1	-	20	1.4	38
1821	1	24	4	8.3	44
1822	1	29	5	17.5	37
1918	1	10	-	3.2	12
1921	2	23	9	5.0	38
1922	1	11	1	1.4	14
2007	2	11	2	6.0	15
2008	1	13	18	11.6	31
2009	1	23	-	3.2	23
2009	2	5	1	11.6	16
2010	1	5	7	9.0	13
2011	1	6	1	18.0	7

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1	2	3	4	5	6
2012	1	61	32	12.0	105
2012	2	4	12	9.0	24
2014	1	67	6	6.8	80
2014	2	32	13	16.7	81
2015	1	16	3	13.0	34
2015	2	39	8	10.3	52
2018	1	34	10	14.9	67
2106	2	5	1	10.9	7
2107	1	5	-	10.2	6
2108	1	11	2	12.2	15
2108	2	26	4	13.1	45
2110	1	176	32	9.6	277
2110	2	4	9	9.0	15
2113	1	48	15	5.3	79
2115	2	34	3	13.5	68
2114	1	29	2	10.2	47
2208	1	51	6	14.2	78
2210	1	91	7	16.0	138

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If the distribution of culms can be categorized according to the number of culms per hectare and classification would be as follows:-

No.of culms	Percentage of plots
Less than 400	46.37
400-800	29.71
801-1200	7.25
1201-1600	7.97
1600+	8.70
Total:-	100.00

The classification do indicates that most of the plots contain bamboo less than 400. Next to this only 30% of the plots lies in t he class 400-800. This kind of distribution of bamboo culms indicate possibilities of poor outturn from the forests. Regarding the tree volume of plots in this stratum it may be mentioned that expected outturn is likely to be very poor alth-ough there are good number of trees in t he area. This can be accounted fnnther from the data furnished below indicating the tree volume in c-ertain plots. Occurrence of 15/20 trees in a plot even contribute volume below 1 m3 indicating poor stem development.

Grid/Plot No.	Tree volume/plot in bamboo stratum (in m3)
5/1	0.533
6/2	9.313
404/2	12.369
500/2	6.047
506/1	14.051
510/1	4.239
603/2	9.493
703/2	4.292
713/1	5.072
717/2	3.266
813/2	6.227
1000/2	1.906
1012/1	3.112
1016/1	5.028
1210/2	2.550
1318/1	9.062
1318/2	0.350
1318/1	9.062
1507/2	0.550
814/2	2.400
815/2	2.596
817/2	0.500
906/1	4.102
911/1	4.769
915/1	2.550
917/1	2.050

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Grid/Plot No.	Tree volume/plot in bamboo stratum (in m3)
1619/2	0.533
1622/1	2.860
1622/2	2.750
1722/1	0.300
1822/1	1.300
1921/2	1.550
2007/2	9.473
2008/1	2.659
2009/1	3.962
2010/1	0.100
2012/2	1.296
2015/2	0.850
2018/1	3.185
2110/1	5.075
2115/1	5.564
2210/1	0.816

The distribution of volume on account of tree growth and bamboo growth are compared for miscellaneous stratum and bamboo stratum. The results are as per the tabulation:

Stratum	No.of culms per ha.		Expected dry weight per ha.		No.of trees per ha.	Expected vol./ha.
	C*	NC**	C	NC		
Miscellaneous	727	1751	3.16	5.09	197	47.81
Bamboo	736	2495	3.96	6.60	140	30.53

*C: Clumping

**NC: Non-clumping.

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4.3 Yield:

While considering yield from the forests of Silchar and Karimganj Forest Divisions, the general observations are as follows:-

The number of stems per ha. in miscellaneous stratum is 197.446 as per the table No.1.1. Number of stem in bamboo stratum is 140.350 as per table No.1.2. Close observation of these figures indic ates that presence of secondary species in both the strata is very high. In miscellaneous stratum it is 53.05 per ha. whereas in bamboo stratum it is 44.359 per ha. Some common species contribute in a significant manner and these are Calophyllun polyanthum, Callicarpa arborea, Cynometra polyandra in miscellaneous stratum. With regard to t he total yield from miscellaneous stratum it is to mention that expected growing stock is 804.265(000)m3. The study of table No.4.1 will enable to conclude the volume contribution of various species. Some of the important species contributing more than 100m3 to total growing stock are : Albizzia species, Artocarpus chaplasha, Calophylum polyanthum, Dipterocarpus gracilis, Duabanga grandiflora, Dysoxylum binectariforum, Ficus species, Kayea floribunda, Messua ferrae, Stereospermum personatum, Syzygium cuminii, Tectona grandis(Plantation origin), Tetrameles nudiflora, Cynometra polyandra.

In both the stratum of miscellaneous and bamboo the contribution of volume of secondary species is markly noticed. However, the role of secondary species is more conspicuous in bamboo stratum when it is considered in relation to total growing stock of the stratum. 44.351m3/ha. is the contribution of volume of second ary species in bamboo stratum and the total growing stock in that stratum is 190.532(000)m3. This indicates that poor soil condition in bamboo stratum compared to the soil condition in miscellaneous stratum. The total growing stock of miscellaneous in Cachar valley is 8047.265(000)m3. The extent of miscellaneous

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stratum is comparatively larger than bamboo stratum and so the volume content is more. The total growing stock in bamboo stratum is 1050.868(000)m3. Many of the areas under miscellaneous stratum will not be available for working due to a inaccessible condition of terrain. So, exploitation of timber and other forest produces in more accessible areas may cause deterioration of crop if no rational method of working is adopted. The significant action would be to avoid the agency of contractors and carry out departmental operation according to the condition of crop and terrain. Besides tree growth bamboo is also available in both the stratum. In case of both the stratum, estimation of total bamboo in terms of its dry weight is furnished below :-

Total growing stock of bamboo

Stratum	Area (in ha)	Bamboo weight in tonne/ha.		Total bamboo weight (in '000 tonne)		Total (in '000 tonne)
		Clumping	Non-clumping.	Clumping	Non-clumping	
Bamboo	34410.15	3.963	6.598	136.367	227.038	363.405
Misc.	68296.82	3.167	5.094	216.296	347.904	564.200
	102706.97	3.434	5.595	352.663	574.942	927.605

Estimation of bamboo weight as made above is based on a sample survey with a very low intensity and the reported figure may be considered as indicative. For the purpose of more reliable figure sampling at higher intensity by the State Forest Department is suggested.

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CHAPTER: V

LOGGING AND ACCESSIBILITY STUDIES

5.1 General information :

Felling, logging and transportation operations in Silchar Forest Division as well as in Karimganj Forest Division are virtually absent. Only a few coupes are operated from which bamboo and timber are extracted. Bamboo coupes are sold to the purchaser on lease basis. Timber coupes are operated departmentally by the respective Divisional Forest Officers. In addition to this, some special felling of forest areas are undertaken in the project areas for railway connection to Vhairabi in Mizoram.

The forest area in undivided Cachar district represents a variety of land masses which include plains, gently undulating country, low hills and steep rocky areas. 30% of the tract und-er consideration has slope more than 45 whereas the balance 70% areas have little or no slope.

5.2 Extraction of forest produce:

Bamboo extraction is the main activity in forestry operation in both the forest divisions. Usually bamboo is extracted by method of rafting. However, some produces are carried by truck also. Movement of forest produce by railways can be noticed in the district in the following sections:-

1. Silchar- Badarpur section,
2. Badarpur- Karimganj section,
3. Karimganj- Patharkandi section,
4. Badarpur- Hilakandi- Annaghat section,
5. Durlavcharra-Baraigram section.

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Movement of forest produce by railway is very common in Silchar-Badarpur section and Badarpur-Karimganj section. Rail heads at Silchar, Badarpur and Karimganj are very important for export of forest produce from the district. It appears from the available records that huge quantity of timber(round and sawn), bamboo and canes are transported to the rail heads by rafting and road. Cheap mode of transportation is rafting. Transportation to longer distance by river is not possible by rafting where water carriages are availed of. In this process, timbers are transported to Calcutta by river. This mode of transportation although cheapest but is not popular because it takes long time to reach the destination. Most of the forest produces are transported by road to Calcutta and to places in northern and western India. Towards the southern part of the district lies the Union Territory of Mizoram from where the forest produces are brought to rail heads like Karimganj, Badarpur and Silchar by road. However, transportation by water and by river is also noticed.

5.3 Rafting:

Considerable quantity of timber,bamboo and canes are rafted and brought to the market and railheads for its disposal. In Cachar district rivers like Barak, Sonai, Longai, Giri, Katakhol, Dhaleswari, Singla etc. are only availed for transportation of forest produces by way of rafting. The common routes of rafting are:-

1) Barak river section up to Jirimukh,
2) Giri river section up to Jirimukh,
3) Barak river section between Jirimukh-Sonai,
4) Barak river section between Sonai and Silchar,
5) Dhaleswari river section from Bhairabi (Misoram)& Kathakhal,
6) Kushiara river section from Kathakhal to Karimganj,
7) Longai river section from Kathakhal to Karimganj,
8) Kushiara river section from Karimganj to Bangladesh,
9) Singla river section from Singla to Durlabcharra.

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Commonly rafting is extensively used for carriage of bamboo from Bamboo Mahal areas in the districts. Certain quantity of timber and cane are brought to various markets and railheads by rafting. A raft is usually made of bamboo and its size depends on the quantity of produce to be carried. Rafts carrying bamboos are usually longer enough to carry the produces. Least number of people are required to be deployed for carriage of timber by rafting. In this process of rafting, investment is very little and a set of particular people are always deployed to carry the produces to the destination. There has been a growing tendency in the district to carry illicitly felled trees and bamboo by rafting. This tendency is not so high in dry periods but during the rains larger quantities of forest produces are carried by rafting which include some produces removed steelthy. In a swift flowing river, it is not possible to intercept and stop the movement of forest produces by raft and carry out some sort of checking. In Cachar district substantial quantities of timber, bamboo and cane are carried from Manipur to places like Jirimukh and Silchar by way of rafting. In this process again the forest produces are transported stealthy from the Government forests in Cachar district. A schematic representation of movement of forest produce by rafting and locations of some consumption centres are furnished in this report which would indicate the necessity of setting up some kind of checking at those points to discourage illicit transaction of forest produce.

5.4. Departmental timber operation:

Departmental timber operation in Silchar and Karimganj forest divisions is very much limited. No separate infrastructure has been developed by the Department of Forests in these two forest divisions to und ertake departmental operations of timber coupes on a large scale. Introduction of this cheme is likely to be an experimental basis and also will encourage the elimination of contractors in forest management.

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Under this system, labourers are directly engaged by the Departmental staff and all operations are carried out with the help of local labourers engaged on daily labour basis. The expenditure on felling, logging and transportation as prevailed at the time of inventory are as follows:-

1. Cost of felling, logging and debarking- ₹. 22.25/m3 where necessary,
2. Off-road transportation of the produce by way of Elephant dragging or rolling by human agency. Rs.178.00/m3
3. Conversion of the produce to standardized stock of firewood Rs. 20.00/m3

As the labourers are engaged for this purpose, they are paid on labour wage on daily bais but their outputs are to be fixed to meet the expected outturn in each day commensurating and earning to minimum of Rs. 20/- to 25/- per day. The standardized process of conversion of trees into round logs and firewoods involve conversion of 1m3 of wood and this will enable a labour to earn minimum Rs. 20/- per day. As the magnitude of work in departmental operation is very low in the districts, only 770 persons(skilled and unskilled) were employed directly in departmental operation. In direct employment about 2000 persons are employed on account of the departmental operation. Contractors rate for felling, logging and rolling etc. will be nearly 5-10% which usually marked for profit by the contractors. In the process of d epartmental operation, this profit will not go to the contractors but will be fixed by the labourers engaged for this purpose.

Sufficient labourers both skilled and unskilled are available in both the districts for future expansion of departmental timber operation scheme. Other infrastructures like road, river and market are already in existence except improved techniques of felling, logging which are to be introduced to achieve least loss of timber at the time of conversion. Introduction of power chain saws and other mechanical devices are discouraged because Racker tooth saws and Bow saws will enable the labourers to give more output on each day to earn more money. Some sort of training may be

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contemplated for the labourers who will be engaged in departmental operation. This kind of activity will also help the department of forests to build up a batch of trained personnel to assist any forestry operation in a better way. Successful implementation of departmental operation will entirely depend on the performance of the lab-ourers engaged for conversion of trees into logs and transportation of the same to the destination points in appropriate time.

CHAPTER : VI

CONSUMPTION STUDY

6.1 Introduction:

A study on the consumption pattern of wood and bamboo in the district of Cachar was undertaken alongwith forest inventory and it was conducted by Forest Survey Of India staff of Headquarters and Eastern Zone, Calcutta.

6.2 Objectives:

The study was made with the following objectives:

i) to assess existing use of wood and bamboo for house construction and to estimate annual consumption of timber and bamboo for construction purposes, and

ii) to estimate consumption of wood forfurniture, agricultural implements and domestic fuel.

6.3 Consumption by large industries:

No large industry which consumes forest produce exists in the district. Public sector undertaking H.P.C. is setting up a Paper Mill at Panchgram near Badarpur. This industry has not yet been commissioned.

6.4 Consumption by small industries:

The only wood based industry that exists in the district is Saw Milling. There are 42 Saw Mills. The sawn products are consumed locally and some quantity is exported also.

Apart fromthe Saw Mills and the proposed Paper Mill, there are one Tea Chest Industry with a capacity of 20,000 sets of Tea Chest production. Also there is one Plywood factory which has the capacity of production of 24900 sq. of ply annually.

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6.5 Household consumption:

Under this consumption of wood in four broad categories are considered. In addition to this consumption of K.oil and bamboo are also considered.

i) House consutruction,
ii) Furniture,
iii) Agricultural implements,
iv) Fuelwood,
v) K.oil(ltrs.),
vi) Bamboo.

6.5.1 Methodology:

From the Census of India(1971) a list of villages of Cachar district was prepared. Villages were selected randomly with the help of "random tables". For proper representation of the whole district, the villages were selected far and near to the forest radially.

In the second stage of sampling the randomly selected villages were stratified into rural and urban groups. Actual selection of households in both the cases was made on local enquiry and they were numbered suitably to carry out the sampling and collection of data. In rural areas, 7 forest villages and 19 revenue villages were listed out finally and sample data were collected from such villages. In urban areas the work was mostly concentrated in Silchar town and altogether 44 households were sampled and intensity of sampling was nearly.2%. The sampling intensity in rural area was...

6.5.2 Estimation of use of wood in the households:

As indicated earlier in the para 6.5, the consumption of wood in a household may be on account of various reasons like house construction, furniture making, agricultural implements making, domestic consumption of fuelwood. In addition to this, K.oil is also used in household for lighting purpose mainly.

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Calculation of consumption of wood and K.oil on account of the above reasons was arrived in the following manner:-

$$\frac{\text{x (No. of house in the district)}}{\text{N x 20*(Total production of the district)}}$$

Where = Total consumption of wood per house of all the sampled villages(rural & urban)

N = Total number of house of the sampled village/urban township in the district.

* 2 years for agricultural implements.

Life period for house construction with timber and bamboo has been taken as 20 tyears, the life period for locally available wood used in furniture making has also been taken as 20 years and finally the life period of agricultural implements made of local wood is considered as 2 years. No life period is required to be considered on account of consumption of domestic fuelwood and K.oil in both rural and urban sample areas.

On the basis of the above formula, calculations were carried out and consumption of timber, fuelwood, bamboo and K.oil on per capita basis were derived for both rural and urban population of the district.

6.6 Wood used for house construction:

Nearly 80% of the houses in the rural areas are kutcha or semi-kutcha- built with mud and bamboo wall and thatched roofs and tin roofs also. Mostly bamboo is used for making roof and walls. Wooden beams are used for supporting the roofs and bamboo frame of the house. Wood is mainly used for making doors and windows. Quantity of wood used for making wooden panels is quite large. The net wood for house construction during the survey is about 119074 m3 for rural and 190963 m3 for urban area. The per house consumption of wood is 3.538 m3. The per capita annual consumption of wood for house construction is 0.029 m3. During the survey period, no house construction activities were observed in the district. The life of houses is assumed as 20 years approximately.

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6.7 Wood requirement of furniture :

The rural people's need for furniture is very less with the comparison of urban area. The furniture items generally used by them are, wooden cots, chowkies, benches, chairs, tables etc. Sometimes wooden almirahs are also noticed while conducting the survey in some houses. The net present wood estimated for furniture items is about 346320 m^3.

To arrive at annual consumption for furniture, it is assumed that the life of the furniture would be approximately 20 years. Because all are indoor items and are less exposed to weathering, thus an average of 17316 m^3 wood is annually required for replacement of repair of furniture and per capita consumption (annually) is 0.0085 m^3.

In the urban localities where the uses of furniture is more in different items viz. sofa sets, palang cot, chair table, book-selfs racks, cloth hanging racks (towel stand) dinning table, dressing table etc. were observed and the net wood for the furniture in urban areas have been estimated to about 46662 m3. The annual wood requirement for urban areas would be about 2333 m3 yearly and per capita annual consumption will be .013 m3.

6.8 Wood requirement for agriculture implements :

Under this category all wood utilized for agricultural purposes have been considered. These include ploughs, yoke, tool handles, Dekki and dauw. All such equipments are used by rural population. The net wood used during the period of survey was about 61927 m3. As per the information collected from villagers these items are required to be replaced by 2 years life capacity i.e. 30963 m3 will require for annual usage of wood for agriculture implements in the distt. and per capita annual usage for agriculture implements will be 0.015 m3.

6.9 Wood requirement for firewood consumption :

Wood around the world is the basic raw material being utilized by mankind since the premitive age of civilization. As the day by day the scientific methods developed the other raw materials displayed the most commonly used fuelwood by kerosene oil, coal and electricity etc.

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All the developing countries presently use wood as fuel because it is readily available in a very early method. Nearly 80% of fuel requirement is met from wood and other vegetation. The extreme growth of population and extensive industrialization increased the demand of fuelwood tremendously. Thus the presence on forest increased manifolded. That is why the oondition of forests are deteriorating day by day because ruthless hacking of jungles.

The major fuel used in India are wood, coal, kerosene oil (natural gas) animal dung cakes, and elettricity. Besides these, agricultural wastes are also being used even by industries like sugar mills etc.

In the Cachar district of Assam, all the requirement of fuel energy is made by the wood. All the rural population of the villages is wholly dependent on the local forests which is easily accessible and the firewood are collected from jhum khati of the villagers which they revisit in every 4th to 7th year. The total annual consumption of fuelwood in the district is nearly 2117453 m3 (round) in rural area and 107885 m3(round) in urban area and per capita consumption of fuelwood is estimated to 1.048 m3 and 0.6211 m3 for rural and urban area respectively.

6.10 Kerosene oil requirement for consumption :

Kerosene oil is the second easily available petrolium product for use of burning, cooking and lighting purposes, which in some extent replaces the fuelwood in the urban areas. The total annual consumption of K.Oil as worked out by domestic consumption survey is approx. 27603069 litres and 4478100 litres for rural and urban area respectively. The per capita usage of k.oil is 13.7 litres and 25.8 litres fof rural and urban areas respectively.

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6.11 Bamboo requirement:

Bamboo is the poor man's timber and the conventional raw materials being utilized by the people of Cachar on every steop.

Bamboo is used for various purposes i.e. house construction furniture, agricultural implements, basket, matting, utensils, boundaries, fending etc. The main consumption of bamboo is for house construction mainly for making roof frame over which either thatched grass or tiles or tins are put. Bamboo is also used for the support of mud plaster walls. In addition to this bamboo is extensively used for fencing purposes in countryard cattle sheds and gardens. The distribution of bamboo in the district is almost even, non-clump forming bamboo muli(Melocona bambusoides) is mainly available in lower hills and in jhum kheti. Clump forming bamboo katanga(Dendrocalamus strictus) is also available in plenty in the district. The longivity of bamboo houses in the district is about 20 years. It means a house after every 20 years become new or fully repaired by replacing the new bamboo. On average it is assumed that 50% of bamboo would be annually replaced.

Tocalculate consumption of bamboo in terms of weight is very difficult because of varying sizes used. The length and diameter class of bamboo used very from 1-12 metres and 1-10cm. dia. respectively.

In Cachar district the general trend of the bamboo sizes were converted into 3cms. to 6cms. and 7cms.to 9cms. grous with the average length of 6 metres for every species. The total annual consumption of bamboo is estimated about 41737920 nos. and 24568880 nos. (3-6cms and 7-9cms.)in rural area and 7699902 nos. & 897357 nos. (3-6cms. and 7-9cms)diameter in urban area respectively.

Thus per capita annual consumption of bamboo in rural area is about 55 nos. and 12 nos. (dia.class 3-6 cms. and 7-9cms respectively)and in urban area about 46 nos. and 10 nos. (dia.class 3-6cms. and 7-9cms.respectively).

These above estimations have been carried out under the average length of 6 mtrs. of bamboo in rural and urban areas of the district.

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Bamboo is the principal raw materials for paper industry and available in surplus to meet the demand of a Paper Mill in the district. The H.P.C. has established it near Panchgram, Badarpur, Silchar road with the installed capacity of 1.0 lakh tonnes air dry bamboo for writing/ printing paper manufacturing.

6.12.1 Present per capita annual usage of wood consumption for different purposes in rural area.

Table - 1(a)

Sl.No.	Item	Per capita usage(m3)	Net estimated usage (m3)	Total
1	2	3	4	5
1.	House Construction	.029	59537.46	
2.	Furniture	.0085	17316.01	
3.	Agricultural implements	.015	30963.50	2225270.74
4.	Fuel wood	1.048	2117453.77	
5.	K.Oil (litres)	13.669	27603069.00	

6.12.2 Present per capita annual usage of bamboo in the district for construction purposes in rural area.

Table No. 1(b)

Sl.No.	Item	Diameter Class.	Per capita usege (6 mt. pieces)		Net estimated usage in 6 mts. length pieces.
1.	Construction	3 - 6 cm.	2.7	Nos.	5586896 Nos.
		7 - 9 cm.	0.608	Nos.	1228444 Nos.

6.13.1 Present per capita annual usage of wood consumption for different purposes - urban area.

Table - II(a)

Sl.No.	Item	Per capita usage(m3)	Net estimate usage in (m3)
1	2	3	4
1.	House construction	.0549	9548.16
2.	Furniture	.0134	2333.12
3.	Agricultural implements	-	-
4.	Fuelwood	0.621	197885.46
5.	K.Oil	25.782	4478100.90

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6.13.2 Present per capita annual usage of bamboo in the district for construction purposes - urban area.

Table - II(b)

Sl.No.	I t e m	Diameter Class.	Per capita usage 6 mts. piece.	Net estimated usage in 6 mts. length pieces.
1.	Construction	3 - 6 cm.	2 Nos.	384995 Nos.
		7 - 9 cm.	0.25 Nos.	44868 Nos.

6.14 Conclusion :

The findings of wood consumption survey of Cachar district indicates that the present trend of different usages of different type of woods/timber/bamboo are insufficient to the demand with the population. Hence, the growth of population is to check first then the forest department should find the possibilities to increase their resources to qualise the gap between supply and demand.

As indicated earlier (para 6.4) the certain quantity of timber is imported to the district for running saw mills mainly. After the timber is sawned local consumption is made but certain quantity is exported from the district to meet the demands of timber in other parts of the country.

Very little areas of forest in Cachar district (Silchar and Karimganj Forest Division) are worked out. Sources of supply of timber (both round and sawn) and fuelwood is very much limited. Some quantity of timber and fuelwood is available on account of extraction of trees from Patta land. This quantity is of course very small. Recorded export and import data of timber, pole and firewood from Cachar District is as follows (in m3) :-

Sl. No.	Categories	Average annual production	Average annual import	Average annual export	Average quantity available for internal consumption.	Actual annual consumption.
1.	Timber(m3)	11631	1780	11573	1838	
2.	Pole(rm)	1245	-	-	1245	2225270.74
3.	Firewood	2263	45	165	2143	

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Referring to above table and table No.1(a)under para 6.12.1, it would appear that there is huge gap between the consumption and actual supply from various resources available from recorded removal of forest produce. It is not known from which sources such huge quantity of timber and fuelwood are available for the local people to meet their demand. Actually the quantity available from recorded removal in the forest will not constitute even a meagre fraction of consumption of timber and fuelwood calculated by sampling. This indicates cases of removal from forests is continuing in an unabated manner which may ultimately cause depletion to the growing stock. However, there are possibilities of some unrecorded import of timber and fuelwood in the district but which may likely not form any significant part of the net consumption of timber, fuelwood etc. in the district as calculated in this report under para 6.12.1 and 6.13.1.

Regarding bamboo consumption for domestic purpose reference is invited to the table number 6.12.2 and 6.13.2 wherein the situation of consumption in rural and urban areas can be studied. Bamboo is chiefly used for making hutments. The net requirement of bamboo in rural and urban areas is 72.45 lakhs. The recorded removal of bamboo from the forests of undivided Cachar district is 49.37 lakhs. In addition to this nearly 19.75 lakhs of bamboo are imported from Manipur and Mizoram. This total of 69.12 lakhs of bamboo is already inadequate to meet the local demand of 72.45 lakhs as mentioned already. There is commerce and trade activities for sale of bamboo outside the Cachar district and in this process nearly 20.60 lakhs of bamboo are exported out to various parts of the country. In a nutshell, it appears that net requirement of bamboo for internal consumption and export outside the district is nearly 93.05 lakhs. As stated already the recorded production and import of bamboo is 69.12 lakhs. So, there is a huge gap in production and utilization of bamboo in the district and this calculates out to be 23.93 lakhs.

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The exact source of supply of bamboo of such huge quantity cannot be other than Government forests. Forests in the Tea Gardens and Revenue Lands are already destroyed and cannot yield such huge quantity of bamboo. In view of this situation the bamboo forests in Cachar district must have been over worked and which will ultimately destroy the potential of the forests. Special emphasis is to be given on the source of supply of 23.95 lakhs of bamboo because bamboo forests in Cachar district are to be utilized for running the Paper Mill of Hindustan Paper Corporation at Panchgram near Badarpur.

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CHAPTER: VII

ECOLOGICAL CHANGES AND STATUS OF FLORA & FAUNA

7.1 Degree of disturbance:-

The miscellaneous and bamboo forests of Cachar were subjected to various activities on account of non-scientific method of management. Initially the forests started depleting on account of shifting cultivation, raising tea gardens and settlement of population at the beginning of 20th Century. Trees bamboos and canes were extracted by the local people at free of charge for local consumption. As a result of this, trees were removed without any silvicultural consideration. Subsequently, permit system of removal of trees by traders c aused huge damage to the growing stock. Under such permit system the traders indulged removal of trees from accessible areas which led to large opening in canopies and regeneration of many species was hampered. In pre-independence period removal of produce on permit system actually depleted the growing stock. Valuable species in the high girth/diameter were removed without consideration of regeneration. Traders opposed to long term of leasing spread over a number of blocks because of poor infrastructure for extraction. As a result, forests were over worked in accessible areas when practically no checking could be imposed.

Systematic management of Cachar forests was aimed at in the Working Plan 1957-58 to 1971-72. As per Working Plan trees of higher diameter were available in forests and extent of bamboo bearing areas in the forests was estimated. The operations were suggested keeping in view of the condition of forests with an objective of sustained supply of forest produce. The system of management emphasized removal of trees by number above expolitable girth class. No clear felling was prescribed. The trees of exploitable girth classes were removed and no volume check could be applied. As a result of this situation stealthy removal from forests could not be stopped. In addition to this, the expansion of forest settlement, encroachment of forest lands, and introduction of Pan-jhum in certain areas really become the source of forest depletion. Shifting cultivation in some areas caused degradation of forests. Blanks, less productive areas, degradation of forest cover caused alarming situation during 1980 and all operations were closed except bamboo exploitation.

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7.2 Quantitative assessment:

The gradual deterioration of forests started in earlier days of 20th century when no management system was introduced with a scientific base. As a result of this, many areas were depleted to such an extent that no operation could be suggested in working. The Working Plan 1957-58 to 1971-72 located such areas in reserves of Banail, Jiri, Bhumban, Sonari, Dholai, Bhairnbi, Singla, Longari, Tilbhum and Patharia. All these reserves were accessible in earlier days and removal of trees were done in large number without considering the regeneration aspect. Extent of such areas about 30 years back was 914 sq.km. or 38.5% of the total forest area. Condition of the forests further deteriorated during last 30 years or so. Many areas located as poorly stocked and 1957-58 could not be restocked resulting in vast blank areas with poor shruby growth. Blank areas detected during this inventory represent this category and some shifting cultivation(abandoned) areas.

The proportion of distribution of trees in Cachar during 1957-58 and during 1982-84 in various girth/diameter class would reveal that growing stock was depleted during last 30 years.

Reporting Year	Percentage of trees	
	Above 60 cm.	Below 60 cm. dia.
1957-58	16-20%	80-84%
1982-83 } 1983-84 }	1.80%	98.20%

Distribution of bamboo in above reporting years are follows :-

Reporting Year	per hectare Bamboo
1957-58	4000
1982-83 } 1983-84 }	187.749

Increase in percentage of trees in lower diameter classes isindicative of removal trees of exploitable size leading to destruction of growing stock and poor yield from forests. The increase in percentage of trees of lower diameter classes is not indicative of better regeneration status because vast areas are now open forests with poor stem distribution.

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Bamboo bearing areas estimated in the Working Plan as 571 sq.k.m(approx.) under Bamboo(overlapping)Working Circle during 1957-58. The present inventory shows that bamboo bearing is at least 344 sq.km. This indicates that due to uncontrolled removal of bamboo and inadequate regeneration in forests nearly 227 sq.km. was destroyed and converted into almost blank area. Even in the bamboo outturn, there is a sharp fall. The outturn of figure estimated in 1957-58 is fairly poor when compared with current estimate.

Reporting Year	Outturn per hectare			
	Bamboo pure		Bamboo mixed with misc. species	
	No.	Wt./tone	No.	Weight/tone
1957-58	7500	35.05	4000	16.6
1982-83 1983-84	4216	15.38	2598	8.6

This situation sharply focus in the current management system and indicates scope of improvement to get a better outturn with some suitable measure.

Shrinkage of vegetation cover is also noticeable. In 1957-58 nearly 914 sq.km. was found to be extremely poor in stock due to overworking. These areas were easily accessible and excess removal of trees actually depleted the stock. Such areas constituted the protection working circle of the Working Plan (1957-58) to 1971-72). These areas at that time constituted nearly 38.5(approx.) Rest forests i.e. 61.5% of the area was good in stocking and prescriptions were laid down accordingly. The present inventory indicates the following situation compared with the status of forests:-

Reporting Year	Poor fore-sts including blank in sq.km.
1957-58	914
1982-83 1983-84	1001

Conversion of forest areas into blank and poorly stocked areas show that nearly 41.77% of total forest area is almost without any tree cover. As a result of this the shrinkage in vegetation cover is 87sq.km. which is 3.63% of the total forest area.

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914 sq.km. under Protection Working Circle(Working Plan) was partially restocked by artificial regeneration. But this failed to bring a change in the total growing and forest cover in the district. It is apparently clear that areas outside protection working circle of the Working Plan suf ferred from over felling on account of some reason and failed to get restocked by regeneration. This ultimately led to the increase in area under the category blank and poorly stocked as stated already. Some total effect of depletion of forests many marshy lands(locally known as Thal)with vegetation have disappeared and these areas are now under cultivation. Further areas were brought under cultivation in recent past by the forest villagers on account of expansion of the forest villgges.

CHAPTER:VIII

RESULTS AND CONCLUSIONS

8.1 Results :

The management of evergreen and semi-evergreen forests of Cachar valley during the pre-independence period and post-independence period have resulted into degradation of forests. The present inventory indicates the following :-

1. Although shifting cultivation has been stopped to an appreciable extent in the Cachar valley but some forest areas have been put into use othern than forestry purpose. This is chiefly on account of conversion of forest lands into permanent agricultural land. In para 3.4.1 the extent of agricultural land has been indicated. Utilization of forest land for growing fruits has been noticed in course of this inventory.

2. Degradation of forests has already been discussed in Chapter-IV of this report indicating that more than 25% of the forest areas has been degraded heavily. This may be on account of removal of forest produce without considering silvicultural aspects.

3. Process of degradation on a mild scale has been noticed only over 12.91% of the forest area.

4. In the Chapter-VI of this report, it has been indicated that huge quantity of timber, pole and fuelwood are required for consumption by the population of the district. Recorded production figure indicates that only a little portion is available from the forests of Cachar valley.

5. Extension of Tea industries in the 21st Century will create empoloyment for local people and consumption of timber, pole, fuelwood and bamboo will increase appreciably. Tea processing may be arranged through alternative sources of energy i.e. with coal. The labourers in the tea garden, as per the present practice, might have to be supplied timber, pole and fuelwood.

6. The condition of forest based industries in the district is highly disorganised.

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7. Employment through forest based industries may be increased but source of raw material for the industries will not be available with in the district unless a working scheme is introduced for forest management.

8. The present practice of importing timber, fuel and bamboo etc. from the adjoining States may not continue because of increase of demand of these items in those States. This will create not only difficulties in the industries of the districts but common people will not get fuelwood at a reasonable price from the market.

9. System of management of forests of patta land through the Deputy Commissioner of the district have to be examined. Removal of trees from Patta land is not now under the control of any agency.

10. Huge gap of demand and supply of fuelw in the district is likely to increase in near future.

11. Area planted in each year will not be enough to meet the demand of the people in future. So, plantation activity in the district is to be increased.

12. Since the Cachar valley is drained by a number of rivers, management of the f orests should be absolutely scientific to avoid soil erosion and flood. Various flood control measures taken by the district authority will not really help the local people unless the catchment areas of the rivers are managed by scientific method.

8.2 Recommendations and proposal :

In view of the status and condition of the forests in the undivided Cachar district, the following points may be considered in the management of forests :-

1. All derilict areas in the Cachar district should be planted up immediately with fuel and fodder species. This will enable the local people to get the supply of fuel and fodder and small timber.

2. Implementation of plantation schemes on a larger scale may be arranged through more input under Social Forestry.

3. Proper attention is required to be given to meet the local demand from recorded production of timber, fuelwood etc. This will enable to reduce stealthy removal of forest produce from forest areas.

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4. Forest/s areas are not now worked except in a few patche. As a result of this less quantity of timber, fuelwood, pole etc. are now avdilable for consumption of local people. So, it is necessary to consider whether more areas can be clear felled and supply of timber, pole, fuelwood etc. may be increased for local consumption. In this process, export of these forest produces may be controlled by suitable method.

5. Forest protection in Cachar valley is to be augmented to avoid removal of timber, pole etc. from both high forests and plantations. Many Teak plantations have been felled and trees have been removed without any sanction. Similarly, valuable timber species have also been removed from several areas without any authority.

6. Revision of working plan is necessary and this inventory report may form the basis of preparation of such working plan. Since the revision of working plan might take sometime, it may be consider whether a temporary working scheme may be drawn up to manage the forests of Silchar and Karimganj Forest Divisions.

7. Removal of forest produces by the Tea garden authority has been noticed to be unregulated. Many forest areas under tea gardens have been noticed to be without any use by the owner except for removal of forest produces. Surplus tea garden lands with forest cover may be resumed to the State Forest Department for appropriate management. Suitable initiations in the matter may be made by the local Divisional Forest Officers.

8. Alternative source of energy like coal,K.oil, etc. are not available in many areas. Therefore, utilization of fuelwood for domestic purpose will continue in future. Source of supply of fuelwood may also be aimed from private sources. Local people may be motivated to grow fuel, fodder in their own land to meet their demand in future. At the time of carrying out this inventory it was noticed that under Social Forestry more attention has been paid to raise strip plantations on road side. Growing of trees by the farmers and other category of people in rural areas need be consider on a priority basis.

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9. In the matter of implementation of Social Forestry more infrastructure is to be developed and participation of people should be sought.

10. Implementation of Schemes like N.R.F.P., R.L.E.G.P. schemes will enable implementation of social forestry on a larger scale.

11. In the rural development, villages in an around forests should receive priority in the matter of economic programme. In this process the demographic condition of more villages need be sampled and proposal may be prepared by the Forest Department. The proposal should be forestry oriented with the idea of creation of some assets.

B I B L I O G R A P H Y

1. Working Plan for the Forest Reserve of Cachar Division - 1957-58 to 1971-72 by Shri P.N.Mukherjee, Deputy Conservator of Forests.

2. A brief Ecological sketch of the Botany of Assam.

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TABLE NO. 1.1

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES(IN CM.)

STRATUM - MISCELLANEOUS DISTRICT - CACHAR

Species name & code	Diameter classes (in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Acer species(18)	0.074	-	-	-	-	-	-	-	-	-	-	-	0.074
Adina cordifolia(24)	0.111	0.037	0.111	-	-	-	-	-	-	-	-	-	0.260
Adina sessilifolia(25)	0.074	-	-	-	-	-	-	-	-	-	-	-	0.074
Adina oligocephla(26)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Aegle marmelos(28)	0.631	0.074	-	-	-	-	-	-	-	-	-	-	0.705
Agalia edulis(32)	0.037	0.074	0.037	-	-	0.037	-	-	-	-	-	-	0.186
Agalia species(34)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Albizia chimensis(39)	0.037	0.037	-	-	-	-	-	-	-	-	-	-	0.074
Albizzia lebbek(41)	0.074	0.148	-	-	-	-	-	-	-	-	-	-	0.223
Albizzia lucida(42)	0.223	0.297	0.111	0.111	-	0.074	0.037	-	-	-	-	-	0.853
Albizzia procera(45)	0.519	0.148	0.260	0.037	0.037	-	-	0.037	-	-	-	-	1.039
Albizzia species(46)	0.668	0.482	0.297	0.148	0.186	0.037	-	-	0.037	-	0.037	-	1.892
Alnus species(50)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Alphonsea venterices (51)	0.037	-	0.074	-	-	-	-	-	-	-	-	-	0.111
Alstonia scholaris(52)	0.148	-	-	0.037	-	0.037	-	-	-	-	-	-	0.223
Alseodaphne species(53)	0.186	0.074	0.074	0.074	-	-	-	-	-	-	-	-	0.334
Amoora wallichii(56)	0.186	0.260	0.074	0.037	-	-	-	-	-	-	-	-	0.557
Amoora species(57)	0.445	0.334	0.148	-	0.037	-	-	-	-	-	-	-	0.965
Anthocephalus cadamba (65)	0.074	0.371	0.037	0.037	0.037	-	-	-	-	-	-	-	0.557
Artocarpus chaplasha (75)	0.816	0.111	0.334	0.186	0.074	0.074	-	0.074	-	-	0.037	-	1.707
Artocarpus lakoocha (79)	0.408	0.148	0.037	0.037	-	-	-	-	-	-	-	-	0.631
Artocarpus spp.(80)	0.074	0.037	0.111	-	-	0.037	-	-	-	-	-	-	0.260
Barringtonia spp.(93)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Bauhinia purpurea(96)	0.111	-	-	-	-	-	-	-	-	-	-	-	0.111
Bauhinia species(99)	0.260	0.037	-	-	-	-	-	-	-	-	-	-	0.297
Bischofia javanica (107)	-	-	0.037	-	0.074	-	-	-	-	-	-	-	0.111
Bombax ceiba(109)	0.223	0.074	-	-	0.074	-	-	-	0.037	-	-	-	0.408
Boswellia serrata(111)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037

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Contents

Species name and code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Bridelia montana(113)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Butea species(118)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Callicarpa arborea (121)	3.525	0.334	0.111	-	0.037	-	-	-	-	-	-	-	4.007
Callophyllum polianthum (127)	3.747	1.521	0.928	0.148	0.186	0.037	-	-	0.037	-	-	-	6.604
Canarium bengalense (135)	0.037	-	0.037	-	-	-	-	-	-	-	-	-	0.074
Canarium euphyllum (136)	0.111	-	-	-	0.037	-	-	-	-	-	-	-	0.148
Canarium resiniferum (137)	0.890	0.371	0.223	0.074	-	-	0.037	-	-	-	-	-	1.595
Canarium species(139)	0.223	0.111	0.148	-	-	-	-	-	-	-	-	-	0.482
Careya arborea(143)	0.111	-	-	-	-	-	-	-	-	-	-	-	0.111
Cassia fistula(151)	0.037	-	-	0.037	-	-	-	-	-	-	-	-	0.174
Castanopsis hystrix (156)	-	0.074	-	0.037	-	-	-	-	-	-	-	-	0.111
Castanopsis indica (157)	0.223	0.186	0.037	0.037	-	-	0.037	-	-	-	-	-	0.519
Castanopsis spp.(159)	1.224	0.668	0.260	-	0.037	0.037	-	-	-	-	-	-	2.226
Cedrella toona(162)	0.223	0.074	-	0.074	0.037	-	-	-	-	-	-	-	0.408
Celtis australis(164)	-	-	-	0.037	-	-	-	-	-	-	-	-	0.037
Chukrasia velutina (171)	0.037	0.074	-	-	-	-	-	-	-	-	-	-	0.111
Cinnamomum cecidodaphne(175)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Cinnamomum tamala(176)	-	-	-	-	-	-	-	-	-	-	-	0.037	0.037
Cinnamomum species(178)	0.148	0.111	0.037	-	-	-	-	-	-	-	-	-	0.297
Cordia fragrantissima (193)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Crataeva unilocularis (203)	0.037	0.037	-	-	-	-	-	-	-	-	-	-	0.074
Cullenia excelsa(212)	-	-	-	-	0.037	-	-	-	-	-	-	-	0.037
Supressus species(215)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Cymnosperin spp.(217)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Cynomerea polyandra (218)	6.493	2.894	2.152	0.631	0.482	0.260	-	-	-	-	-	-	12.911
Dillenia indica(229)	0.223	0.111	0.111	0.111	-	-	-	-	-	-	0.037	-	0.594
Dillenia pentagyna (230)	0.18	0.074	0.186	0.074	-	-	-	-	-	-	-	-	0.519

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Diospyros melanoxylon(234)	0.111	-	-	0.037	-	-	-	-	-	-	-	-	0.148
Diospyros spp. (Kalaclua) (238)	0.037	0.148	0.037	0.037	-	-	-	-	-	-	-	-	0.260
Diospyros spp.(240)	0.928	0.557	0.371	0.037	0.037	0.037	-	-	-	-	-	-	1.966
Dipterocarpus gracilis(242)	0.074	0.148	0.074	0.037	0.111	0.074	0.037	-	-	-	-	-	0.557
Dipterocarpus macrocarpus(244)	-	-	-	-	-	0.037	-	-	-	-	-	-	0.037
Dipterocarpus tuberculatus(245)	0.297	0.223	0.297	0.037	0.037	-	-	-	-	-	-	-	0.890
Dolichandrone falcata (247)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Duabanga grandiflora (251)	0.297	0.408	0.297	0.260	0.037	0.074	0.037	-	-	-	-	-	1.410
Dysoxylum binectariferum(252)	6.084	2.078	1.076	0.297	0.223	0.037	0.037	0.074	-	-	-	-	9.906
Dysoxylum malabaricum(254)	0.074	-	-	0.037	-	-	-	-	-	-	-	-	0.111
Ehretia acuminata (255)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Elaeocarpus spp.(263)	0.482	0.037	0.074	-	-	-	-	-	-	-	-	-	0.594
Emblica officinalis (267)	0.074	0.148	-	-	-	-	-	-	-	-	-	-	0.223
Endospermum chinense(268)	0.297	0.223	0.111	0.037	0.111	0.037	0.037	-	-	-	-	-	0.853
Engelhardtia spicata(270)	0.037	0.074	-	-	-	-	-	-	-	-	-	-	0.111
Erythrina suberosa (278)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Erythrina variegata (279)	0.037	0.037	-	-	-	0.037	-	-	-	-	-	-	0.111
Eucalyptus hybrid(282)	-	-	-	0.037	-	-	-	-	-	-	-	-	0.037
Euginea cymosa(284)	1.929	0.928	0.223	0.111	0.037	-	-	-	-	-	-	-	3.228
Euginea praecox(287) grandis	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Eugenia praecox(288)	-	0.037	-	0.037	-	-	-	-	-	-	-	-	0.074

Contents

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Euginea species(289)	1.150	0.631	0.148	0.074	-	0.037	-	-	-	-	-	-	2.041
Euphoria longana(294)	0.223	0.111	-	0.037	-	-	-	-	-	-	-	-	0.371
Eurya japonica(295)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Eagara bugrunga(300)	0.111	-	-	-	-	-	-	-	-	-	-	-	0.111
Ficus bengalensis(302)	0.816	0.148	0.037	-	-	-	-	-	-	-	0.037	-	1.039
Ficus species(308)	1.595	0.371	0.297	0.111	0.037	-	0.037	0.074	-	0.037	-	-	2.560
Garcinia cowa(314)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Garcinia species(316)	0.186	0.186	0.074	0.037	-	-	-	-	-	-	-	-	0.482
Garuga pinnata(319)	0.037	-	-	-	0.037	-	-	-	-	-	-	-	0.074
Gmelina arborea(327)	0.260	0.557	0.148	0.260	0.111	-	0.074	-	-	0.037	-	-	1.417
Gordonia obtusa(328)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Gyrocarpus odoratia (342)	0.594	0.705	0.037	-	-	-	-	-	-	-	-	-	1.336
Heritiera acuminata (347)	0.482	0.334	0.074	0.111	0.037	-	-	-	-	-	-	-	1.039
Holarhena antidysenterica(353)	0.186	0.037	-	-	-	-	-	-	-	-	-	-	0.223
Hydnocarpus alpina (366)	1.781	0.890	0.297	0.037	-	-	-	-	-	-	-	-	3.005
Hydnocarpus kurzii (367)	0.223	0.260	0.037	-	-	-	-	-	-	-	-	-	0.519
Isonandra polyantha (387)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Ixora arborea(379)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Jonesia asoca(382)	2.449	0.186	0.037	-	-	-	-	-	-	-	-	-	2.671
Kayea assamica(385)	0.074	-	-	-	-	-	-	-	-	-	-	-	0.074
Kayea floribunda(386)	0.928	0.742	0.334	0.186	0.074	-	-	-	-	-	-	-	2.263
Kingiodendron pinnata(389)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Kurrimia indica(392)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Kydia calycina(393)	0.668	0.260	-	-	-	-	-	-	-	-	-	-	0.928
Lagerstroemia lanceolata(396)	-	-	-	0.037	-	-	-	-	-	-	-	-	0.037
Lagerstroemia parviflora(397)	0.445	0.594	0.074	-	-	-	-	-	-	-	-	-	1.113

Contents

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Lagerstroemia speciosa(398)	0.557	0.445	0.037	0.074	0.074	-	-	-	-	-	-	-	1.187
Lannea coromendelica (400)	0.260	0.186	0.186	0.037	0.037	-	-	-	-	-	-	-	0.705
Lophopetalum fimbriatum(422)	0.371	0.111	0.074	0.074	0.074	-	0.037	-	-	-	-	-	0.742
Lophopetalum wig htianum(423)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Maearanga denticulata (425)	0.631	0.111	0.074	-	-	-	-	-	-	-	-	-	0.816
Macaranga peltata(427)	4.007	0.074	-	-	-	-	0.037	-	-	-	-	-	4.118
Macaranga pustulata(428)	0.074	-	-	-	-	-	-	-	-	-	-	-	0.074
Mallotus philippinensis(441)	0.111	0.037	-	-	-	-	-	-	-	-	-	-	0.148
Mangifera andamanica(443)	0.037	-	-	-	-	-	-	0.037	-	-	-	-	0.074
Mangifera indica(444)	0.297	0.111	-	0.037	-	-	0.074	-	-	-	-	0.037	0.557
Mangifera sylvatica (445)	0.594	0.297	0.037	0.037	0.037	0.037	-	-	-	-	-	-	1.039
Mansonia dipke(452)	0.074	0.037	-	-	-	-	-	-	-	-	-	-	0.111
Melia azadirachta(454)	-	-	-	0.037	-	-	-	-	-	-	-	-	0.037
Mesua ferrea(460)	1.632	0.705	0.705	0.445	0.186	0.037	-	-	-	-	-	-	3.710
Michelia champaca(462)	0.148	0.111	0.037	-	0.037	-	-	-	-	-	-	-	0.334
Michelia doltisopa(463)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Michelia lanuginosa (464)	-	-	-	0.037	-	-	-	-	-	-	-	-	0.037
Michelia species(468)	0.111	0.037	-	-	-	-	-	-	-	-	-	-	0.148
Miliusa species(470)	0.260	0.148	-	-	-	-	-	-	-	-	-	-	0.408
Monsonia species(477)	0.186	0.037	0.148	0.111	-	-	-	-	-	-	-	-	0.482
Myristica spp.(490)	2.226	0.631	0.186	-	-	-	-	-	-	-	-	-	3.042
Pajanelia longifolia (510)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Palaquim palyanthum (513)	1.744	0.334	0.223 0.037	0.186	-	-	-	-	-	-	-	-	2.486
Parkia joyraca(516)	-	0.037	[illegible]	-	-	-	-	-	-	-	-	-	0.074

Contents

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Phoebe attenuata (521)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Phoebe goalparensis (523)	0.037	0.037	-	-	-	-	-	-	-	-	-	-	0.074
Padocarpus nerifolia (543)	0.148	0.074	-	0.037	-	0.037	-	-	-	-	-	-	0.297
Premna bengalensis (552)	0.890	0.445	0.111	-	-	-	0.037	-	-	-	-	-	1.484
Pterospermum acerifolium(570)	0.223	0.148	0.148	0.074	0.037	-	-	-	-	-	-	-	0.631
Pterospermum canesoens(571)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Pyrus pashia(578)	2.857	1.336	0.260	-	-	-	-	-	-	-	-	-	4.452
Quercus spp.(594)	0.111	-	-	-	-	-	-	-	-	-	-	-	0.111
Robinia pseudocacia (605)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Salmalia insignis (613)	-	-	-	0.037	-	0.037	-	-	-	-	-	-	0.074
Sapia baccatum(620)	0.519	0.371	0.223	0.111	0.074	0.037	0.037	-	-	-	-	0.037	1.410
Saurinia [illegible]nepalensis(624)	0.074	-	-	-	-	-	-	-	-	-	-	-	0.074
Saurinia panduana (625)	0.037	0.037	-	-	-	-	-	-	-	-	-	-	0.074
Schima wallichii(627)	0.705	0.816	0.668	0.037	0.074	-	-	-	-	-	-	-	2.300
Schleichera trijuga (628)	0.631	0.297	0.148	0.111	0.037	-	-	-	-	-	-	-	1.224
Sececarpus anacardium (630)	0.445	0.519	0.148	-	-	-	-	-	-	-	-	-	1.113
Shorea robusta(633)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Sloanea assamica(636)	-	-	-	-	0.037	-	-	-	-	-	-	-	0.037
Spondias pinnata(642)	0.148	0.074	0.037	0.074	0.037	-	-	-	-	-	-	-	0.371
Spondias species(643)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Stephegyne parviflora (644)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Sterculia foetida(646)	0.594	0.482	0.371	0.148	0.074	-	-	-	-	-	-	-	1.670

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Sterculia guttata (647)	0.111	-	-	-	-	-	-	-	-	-	-	-	0.111
Sterculia villosa(649)	0.223	0.186	0.037	-	0.037	-	0.037	-	0.037	-	-	-	0.519
Sterculia spp.(650)	0.557	0.297	0.074	0.074	0.074	-	-	-	-	-	-	-	1.076
Stereospermum personatum(652)	0.779	0.445	0.371	0.260	0.186	-	0.037	-	-	-	-	-	2.078
Symplocos cratacecides(662)	-	-	-	0.037	-	-	-	-	-	-	-	-	0.037
Symplocos laurina(663)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Syzygium cuminii(665)	5.083	2.078	0.594	0.408	0.148	0.037	-	0.037	-	-	-	-	8.385
Syzygium spp.(668)	0.223	0.074	0.037	-	0.037	-	-	-	-	-	-	-	0.371
Talauma phellocarpa (670)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Tectona grandis(673)	1.818	0.705	0.742	0.260	0.111	0.037	-	-	-	-	-	-	3.673
Terminalia arjuna(675)	-	0.037	-	-	-	-	-	-	-	-	-	-	0.037
Terminalia belerica (676)	0.631	0.223	0.074	0.037	0.037	0.037	0.037	-	-	-	-	-	1.076
Terminalia catappa(678)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Terminalia chebula(679)	0.260	0.186	0.297	0.074	0.111	0.037	-	-	0.037	-	-	-	1.002
Terminalia citrina(680)	0.111	0.074	-	0.037	-	-	-	-	-	-	-	-	0.223
Terminalia myriocarpa(6	0.037	-	0.037	-	-	-	-	-	-	-	-	-	0.074
Terminalia procera(685)	0.037	-	-	-	-	-	-	-	-	-	-	-	0.037
Terminalia spp.(686)	-	-	0.037	-	-	-	-	-	-	-	-	-	0.037
Tetrameles nudiflora (688)	0.186	0.223	0.223	0.148	0.223	0.074	-	0.037	-	-	-	-	1.113
Toona ciliata(691)	0.186	0.037	0.111	0.037	-	-	-	-	-	-	-	-	0.371
Trewia nudiflora(695)	0.260	0.074	0.223	0.186	0.037	-	-	-	-	-	-	-	0.779
Vitex peducularis (713)	0.928	0.371	0.186	-	0.037	0.037	-	-	0.037	-	-	-	1.595
Zanthoxylum budrunga (730)	0.074	0.111	0.037	0.074	-	-	-	-	-	-	-	0.037	0.334
UNIDENTIFIED TREES (924	35.727	10.240	4.304	1.818	0.408	0.408	0.148	-	-	-	-	-	53.053
TOTAL :	114.602	44.149	21.592	8.941	4.526	1.855	0.853	0.371	0.186	0.074	0.148	0.148	197.446

TABLE NO. 1.2

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES(IN CM.)

STRATUM: BAMBOO

DISTRICT: CACHAR

Species name and code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Adina cordifolia(24)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Agalia andamanica(31)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Albizzia lebbek(41)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Albizzia lucida(42)	-	-	0.182	-	-	-	-	-	-	-	-	-	0.182
Albizzia procera(45)	0.182	-	-	0.182	-	-	-	-	-	-	-	-	0.364
Albizzia species(46)	0.909	1.091	0.364	-	-	-	-	-	-	-	-	-	2.363
Alstonia scholaris(52)	0.182	0.182	-	-	-	-	-	-	-	-	-	-	0.364
Amoora wallichii(56)	0.182	0.182	0.364	-	-	-	-	-	-	-	-	-	0.727
Anthocephalus cadamba(65)	0.545	-	0.182	-	-	-	-	-	-	-	-	-	0.727
Artocarpus chaplasha(75)	1.636	0.727	0.364	0.364	0.182	-	-	-	-	-	-	-	3.272
Artocarpus species(80)	0.545	0.182	-	-	-	-	-	-	-	-	-	-	0.727
Bauhinia purpurea(96)	1.273	-	0.182	-	-	-	-	-	-	-	-	-	1.454
Bauhinia retusa(98)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Beilschmiedia assamica(100)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Bombax ceiba(109)	0.182	0.182	-	-	-	-	-	-	-	-	-	-	0.364
Callicarpa arborea(121)	2.363	0.545	0.182	-	-	-	-	-	-	-	-	-	3.091
Callophyllum polyanthum(127)	-	-	0.182	-	-	-	-	-	-	-	-	-	0.182
Canarium resiniferum(137)	0.364	0.182	0.182	-	-	-	-	-	-	-	-	-	0.727
Cassia nodosa(152)	-	-	0.182	-	-	-	-	-	-	-	-	-	0.182
Castanopsis indica(157)	-	0.182	0.182	-	-	-	-	-	-	-	-	-	0.364
Castanopsis species(159)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Cedrella serrata(161)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Cedrella toona(162)	0.182	-	0.182	-	-	-	-	-	-	-	-	-	0.364
Chukrasia velutina(171)	-	-	0.182	-	-	-	-	-	-	-	-	-	0.182
Cinnamomum species(178)	0.364	0.364	-	-	-	-	-	-	-	-	-	-	0.727
Cynometra polyandra(218)	3.818	0.909	0.364	0.727	-	-	0.182	-	-	-	-	-	5.999
Dillenia indica(229)	-	0.182	-	-	-	-	-	-	-	-	-	-	0.182
Dillenia pentagyna(230)	0.909	0.182	-	-	0.182	-	-	-	-	-	-	-	1.273
Diospyros species(240)	0.182	-	-	0.182	-	-	-	-	-	-	-	-	0.364
Dipterocarpus macrocarpus (244)	1.273	-	0.182	-	0.182	-	-	0.182	-	-	-	-	1.818
Duabanga grandiflora(251)	0.545	-	0.364	0.182	0.182	-	-	-	0.182	-	-	-	1.454
Dysoxylum binectariferum (252)	4.000	0.909	0.182	0.182	-	-	-	-	-	-	-	-	5.272

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Emblica officinalis(267)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Engelhardtia spicata(270)	0.364	-	0.182	0.182	-	-	-	-	-	-	-	-	0.727
Euginea cymosa(284)	0.727	0.545	0.182	-	0.182	-	-	-	-	-	-	-	1.636
Euginea species(289)	-	0.182	-	-	-	-	-	-	-	-	-	-	0.182
Ficus bengalensis(302)	1.273	-	-	-	-	-	-	-	-	-	-	-	1.273
Ficus species(308)	1.818	-	-	0.364	-	-	-	-	-	-	-	-	2.182
Garcinia species(316)	-	-	0.182	-	-	-	-	-	-	-	-	-	0.182
Garuga pinnata(319)	0.182	0.364	-	-	-	-	-	-	-	-	-	-	0.545
Gmelina arborea(327)	1.091	0.545	0.727	0.545	-	-	-	-	-	-	-	-	2.909
Grewia tieianefolia(336)	-	-	0.364	-	-	-	-	-	-	-	-	-	0.364
Gyrocarpus odoratia(342)	-	-	-	0.182	-	-	-	-	-	-	-	-	0.182
Hydnocarpus alpina(366)	0.182	-	-	0.182	-	-	-	-	-	-	-	-	0.182
Ixora cal ycina(380)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Kayea floribunda(386)	0.182	0.364	-	-	-	-	-	-	-	-	-	-	0.545
Kidia calycina(393)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Lagerstroemia parviflora(397)	3.091	1.636	0.364	-	-	-	-	-	-	-	-	-	5.090
Lagerstroemia speciosa(398)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Lannea coromendelica(400)	-	-	0.182	-	-	-	-	-	-	-	-	-	0.182
Litsaea monopetala(415)	-	0.182	-	-	-	-	-	-	-	-	-	-	0.182
Lophopetalum fimbriatum (422)	0.182	0.182	-	-	0.182	-	-	-	-	-	-	-	0.545
Macaranga denticulata(425)	9.817	-	-	-	-	-	-	-	-	-	-	-	9.817
Macranga indica(426)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Macaranga peltata(427)	5.818	0.182	0.182	-	-	-	-	-	-	-	-	-	6.181
Macaranga pustulata(428)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Mangifera indica(444)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Mansonia dipke(452)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Mesua ferrea(460)	-	0.182	0.182	0.182	-	-	-	0.182	-	-	-	-	0.727
Monsonia species(477)	0.909	0.364	0.182	0.182	-	-	-	-	-	-	-	-	1.636
Myristica species(490)	0.364	0.182	-	-	-	-	-	-	-	-	-	-	0.545
Palaquium Palyanthum(513)	1.636	0.545	-	-	0.182	-	-	-	-	-	-	-	2.363
Premna bengalensis(552)	-	-	-	-	0.182	-	-	-	-	-	-	-	0.182
Pterospermum acerifolium (570)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182

Contents

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Pyrus pashia(578)	3.272	0.182	-	-	-	-	-	-	-	-	-	-	3.454
Sapium baccatum(620)	0.545	0.182	0.182	0.545	0.727	-	-	-	-	-	-	-	2.182
Schima wallichii(627)	0.182	0.364	-	0.182	-	-	-	-	-	-	-	-	0.727
Schleichera trijuga(628)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Semecarpus anacardium(630)	0.364	-	-	0.182	-	-	-	-	-	-	-	-	0.545
Sloanea assamica(636)	-	-	-	-	-	-	-	-	-	-	0.182	-	0.182
Spondias pinnata(642)	0.182	0.182	-	0.182	-	-	-	-	-	-	-	-	0.545
Sterculia foetida(646)	-	0.182	-	-	-	-	-	-	-	-	-	-	0.182
Sterculia villosa(649)	1.091	0.182	-	-	-	-	-	-	-	-	-	-	1.273
Sterculia species(650)	0.182	0.545	0.364	-	-	-	-	-	-	-	-	-	1.091
Stereospermum personatum (652)	0.364	0.182	-	0.364	-	0.182	0.182	-	-	-	-	-	1.273
Symplocos crataegoides(662)	0.182	-	-	-	-	-	-	-	-	-	-	-	0.182
Syzygium cumini(665)	3.091	0.727	0.182	-	-	-	-	-	-	-	-	-	4.000
Syzygium species(668)	0.364	-	-	-	-	-	-	-	-	-	-	-	0.364
Tectona grandis(673)	0.727	0.182	-	-	-	-	-	-	-	-	-	-	0.909
Terminalia chebula(679)	0.182	0.364	0.182	-	-	-	-	-	-	-	-	-	0.727
Terminalia citrina(680)	-	-	-	0.182	-	-	-	-	-	0.182	-	-	0.364
Tetrameles nudiflora(688)	-	-	0.364	0.182	0.182	0.182	0.182	-	-	-	-	-	1.091
Trewia nudiflora(695)	0.182	0.182	-	-	-	-	-	-	-	-	-	-	0.364
Vitex peduncularis(713)	0.182	-	0.182	-	0.182	-	-	-	-	-	-	-	0.545
Zanthoxylum budrunga(730)	0.182	0.182	-	-	-	-	-	-	-	-	-	-	0.364
Zanthoxylum alatum(731)	-	-	-	-	-	-	-	-	-	-	-	0.182	0.182
UNIDENTIFIED TREES(924)	34.542	5.272	2.909	0.909	0.545	0.182	-	-	-	-	-	-	44.359
TOTAL :	97.445	20.362	11.090	6.181	3.091	0.545	0.545	0.364	0.182	0.182	0.182	0.182	140.350

TABLE NO. 2.1.

VOLUME PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.)

STRATUM - MISCELLANEOUS — DISTRICT - CACHAR

Species name & code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Acer species(18)	0.004	-	-	-	-	-	-	-	-	-	-	-	0.004
Adina cordifolia(24)	0.006	0.004	0.031	-	-	-	-	-	-	-	-	-	0.041
Adina sessilifolia(25)	0.004	-	-	-	-	-	-	-	-	-	-	-	0.004
Adina oligocephala(26)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Aegle marmelos(28)	0.032	0.007	-	-	-	-	-	-	-	-	-	-	0.039
Agalia edulis(32)	0.002	0.007	0.010	-	-	0.076	-	-	-	-	-	-	0. 095
Agaliaspecies (34)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Albizzia chinensis(39)	0.007	0.011	-	-	-	-	-	-	-	-	-	-	0.019
Albizzia lebbek(41)	0.007	0.045	-	-	-	-	-	-	-	-	-	-	0.052
Albizzia lucida(42)	0.011	0.030	0.031	0.139	-	0.151	0.089	-	-	-	-	-	0.452
Albizzia procera(45)	0.026	0.015	0.073	0.046	0.065	-	-	0.109	-	-	-	-	0.335
Albizzia species(46)	0.033	0.048	0.084	0.185	0.326	0.076	-	-	0.109	-	0.109	-	0.970
Alnus species(50)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.010
Alphomsea ventericos(51)	0.002	-	0.021	-	-	-	-	-	-	-	-	-	0.023
Alstonia scholaris(52)	0.007	-	-	0.046	-	0.076	-	-	-	-	-	-	0.129
Alseodaphne species(53)	0.009	0.007	0.025	-	-	-	-	-	-	-	-	-	0.042
Amoora wallichii(56)	0.009	0.026	0.021	0.046	-	-	-	-	-	-	-	-	0.102
Amoora species(57)	0.089	0.167	0.055	-	0.038	-	-	-	-	-	-	-	0.348
Anthocephalus cadamba(65)	0.004	0.037	0.010	0.046	0.065	-	-	-	-	-	-	-	0.163
Artocarpus chaplasha(75)	0.571	0.089	0.301	0.205	0.105	0.143	-	0.204	-	-	0.172	-	1.790
Artocarpus lakoocha(79)	0.020	0.015	0.010	0.046	-	-	-	-	-	-	-	-	0.092
Artocarpus species(80)	0.004	0.004	0.031	-	-	0.076	-	-	-	-	-	-	0.115
Barrinctonia species(93)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Bauhinia purpurea(96)	0.006	-	-	-	-	-	-	-	-	-	-	-	0.006
Bauhinia species(99)	0.013	0.004	-	-	-	-	-	-	-	-	-	-	0.017
Bischofia javanica(107)	-	-	0.010	-	0.130	-	-	-	-	-	-	-	0.141
Bombax ceiba(109)	0.022	0.015	-	-	0.063	-	-	-	0.137	-	-	-	0.238
Boswellia serrata(111)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Bridelia montana(113)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.010
Butea species(118)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Callicarpa arborea(121)	0.176	0.033	0.031	-	0.065	-	-	-	-	-	-	-	0.306
Callophyllum polyanthum (127)	0.187	0.152	0.262	0.185	0.326	0.076	-	-	0.109	-	-	-	1.297

Species name & code	Diameter classes (in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Canarium bengalensis(135)	0.002	-	0.010	-	-	-	-	-	-	-	-	-	0.012
Canarium euphyllum(136)	0.006	-	-	-	0.065	-	-	-	-	-	-	-	0.071
Canarium resiniferum(137)	0.045	0.037	0.063	0.092	-	-	0.089	-	-	-	-	-	0.326
Canarium species(139)	0.011	0.011	0.042	-	-	-	-	-	-	-	-	-	0.064
Careya arborea(143)	0.006	-	-	-	-	-	-	-	-	-	-	-	0.006
Cassia fistula(151)	0.002	-	-	0.046	-	-	-	-	-	-	-	-	0.048
Castanopsis hystrix(156)	-	0.007	-	0.046	-	-	-	-	-	-	-	-	0.054
Castanopsis indica(157)	0.011	0.019	0.010	0.046	-	-	0.89	-	-	-	-	-	0.176
Castanopsis species(159)	0.061	0.067	0.073	-	0.065	0.076	-	-	-	-	-	-	0.342
Cedrella toona(162)	0.045	0.022	-	0.067	0.039	-	-	-	-	-	-	-	0.172
Celtis australis(164)	-	-	-	0.046	-	-	-	-	-	-	-	-	0.046
Chukrasia velutina(171)	0.007	0.030	-	-	-	-	-	-	-	-	-	-	0.037
Cinnamomum [illegible] cecidodaphne(175)	-	0.015	-	-	-	-	-	-	-	-	-	-	0.015
Cinnamomum tanala(176)	-	-	-	-	-	-	-	-	-	-	-	0.109	0.109
Cinnamomum species(178)	0.007	0.011	0.010	-	-	-	-	-	-	-	-	-	0.029
Cordia fragrantissima(193)	0.011	-	-	-	-	-	-	-	-	-	-	-	0.011
Crataeva unilocularis(203)	0.002	0.004	-	-	-	-	-	-	-	-	-	-	0.006
Cullenia excelsa(212)	-	-	-	-	0.065	-	-	-	-	-	-	-	0.065
Cupresssus species(215)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Cymnosperin species(217)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Cynometra polyandra(218)	0.649	0.868	1.097	0.411	0.450	0.360	-	-	-	-	-	-	3.836
Dillenia indica(229)	0.011	0.011	0.031	0.139	-	-	-	-	-	-	0.109	-	0.302
Dillenia pentagyna(230)	0.009	0.007	0.052	0.092	-	-	-	-	-	-	-	-	0.162
Diospyros melanoxylon(234)	0.006	-	-	0.046	-	-	-	-	-	-	-	-	0.052
Diospyros species(240)	0.046	0.056	0.165	0.046	0.065	0.076	-	-	-	-	-	-	0.394
Dipterocarpus gracilis(242)	0.030	0.089	0.056	0.033	0.202	0.153	0.107	-	-	-	-	-	0.669
Dipterocarpus macrocarpus (244)	-	-	-	-	-	0.076	-	-	-	-	-	-	0.076
Dipterocarpus tuberculatus (245)	0.015	0.022	0.084	0.046	0.065	-	-	-	-	-	-	-	0.232
Dolichandone falcata(247)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Duabanga grandiflora(251)	0.089	0.204	0.235	0.235	0.057	0.122	0.072	-	-	-	-	-	1.015
Diospyros spp. (Kalacuca(236)	0.002	0.015	0.010	0.046	-	-	-	-	-	-	-	-	0.073

Contents

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Dysoxylum binectariferum (252)	0.304	0.208	0.304	0.370	0.391	0.076	0.089	0.219	-	-	-	-	1.961
Dysoxylum malabaricum(254)	0.004	-	-	0.046	-	-	-	-	-	-	-	-	0.050
Ehretia acuminata(255)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.010
Elaeocarpus species(263)	0.193	0.022	0.057	-	-	-	-	-	-	-	-	-	0.272
Emblica officinalis(267)	0.004	0.015	-	-	-	-	-	-	-	-	-	-	0.019
Endospermum chinense(268)	0.015	0.022	0.031	0.046	0.195	0.076	0.089	-	-	-	-	-	0.475
Engelhardtia spicata(270)	0.002	0.007	-	-	-	-	-	-	-	-	-	-	0.009
Erythrina suberosa(278)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Erythrina variegata(279)	0.002	0.004	-	-	-	0.076	-	-	-	-	-	-	0.081
Eucalyptus hybrid(282)	-	-	-	0.046	-	-	-	-	-	-	-	-	0.046
Euginea cymosa(284)	0.096	0.093	0.063	0.139	0.065	-	-	-	-	-	-	-	0.456
Euginea grandis(287)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Euginea praecox(288)	-	0.004	-	0.046	-	-	-	-	-	-	-	-	0.050
Euginea species(289)	0.058	0.063	0.042	0.092	-	0.076	-	-	-	-	-	-	0.331
Euphoria longana(294)	0.011	0.011	-	0.046	-	-	-	-	-	-	-	-	0.068
Eurya japonica(295)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Fagara budrunga(300)	0.022	-	-	-	-	-	-	-	-	-	-	-	0.022
Ficus bengalensis(302)	0.041	0.015	0.010	-	-	-	-	-	-	0.109	-	-	0.175
Ficus species(308)	0.80	0.037	0.084	0.139	0.065	-	0.089	0.219	-	0.109	-	-	0.822
Garcinia cowa(314)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Garcinia species(316)	0.009	0.019	0.021	0.046	-	-	-	-	-	-	-	-	0.095
Garuga pinnata(319)	0.002	-	-	-	0.065	-	-	-	-	-	-	-	0.067
Gmelina arborea(327)	0.052	0.167	0.059	0.118	0.076	-	0.113	-	-	0.105	-	-	0.690
Gordonia obtusa(328)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Gyrocarpus odoratia(342)	0.030	0.070	0.010	-	-	-	-	-	-	-	-	-	0.111
Heritiera acumineta(347)	0.024	0.033	0.021	0.139	0.065	-	-	-	-	-	-	-	0.282
Kollarhena antidysenterica (353)	0.009	0.004	-	-	-	-	-	-	-	-	-	-	0.013
Hydnocarpus alpina(366)	0.089	0.089	0.084	0.046	-	-	-	-	-	-	-	-	0.308
Hydnocarpus kurzii(367)	0.011	0.026	0.010	-	-	-	-	-	-	-	-	-	0.048
Isonandra polyantha(377)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Ixora arborea(379)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.010

Contents

Name of the species & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-110	110-119	120+	
Jonesia asoca(382)	0.122	0.019	0.010	-	-	-	-	-	-	-	-	-	0.151
Kayea assamica(385)	0.004	-	-	-	-	-	-	-	-	-	-	-	0.004
Kayea floribunda(386)	0.093	0.223	0.170	0.158	0.082	-	-	-	-	-	-	-	0.725
Kingiodendron pinnata(389)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Kurrimia indica(392)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Kydia calycina(393)	0.033	0.026	-	-	-	-	-	-	-	-	-	-	0.059
Lagerstroemia lanceolata K (396)	-	-	-	0.046	-	-	-	-	-	-	-	-	0.046
Lagerstroemia parviflora (397)	0.022	0.059	0.021	-	-	-	-	-	-	-	-	-	0.103
Lagerstroemia speciosa(398)	0.056	0.089	0.012	0.034	0.057	-	-	-	-	-	-	-	0.247
Lannea coromendelica(400)	0.013	0.019	0.052	0.046	0.065	-	-	-	-	-	-	-	0.195
Lophopetalum fimbriatum (422)	0.037	0.022	0.045	0.067	0.143	-	0.106	-	-	-	-	-	0.420
Lophopetalum wightianum (423)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.10
Macaranga denticulata (425)	0.032	0.011	0.021	-	-	-	-	-	-	-	-	-	0.064
Macaranga peltata(427)	0.200	0.007	-	-	-	-	0.089	-	-	-	-	-	0.297
Macaranga pustulata(428)	0.004	-	-	-	-	-	-	-	-	-	-	-	0.004
Mallotus philippinensis (441)	0.006	0.004	-	-	-	-	-	-	-	-	-	-	0.009
Mangifera andamanica(443)	0.002	-	-	-	-	-	-	0.109	-	-	-	-	0.111
Mangifera indica(444)	0.030	0.045	-	0.026	-	-	0.174	-	-	-	-	0.256	0.531
Mangifera sylvatica(445)	0.030	0.030	0.010	0.046	0.065	0.076	-	-	-	-	-	-	0.257
Mansonia dipke(452)	0.004	0.004	-	-	-	-	-	-	-	-	-	-	0.007
Melia azadirachta(454)	-	-	-	0.046	-	-	-	-	-	-	-	-	0.046
Mesua ferrea(460)	0.326	0.211	0.282	0.378	0.194	0.048	-	-	-	-	-	-	1.441
Michelia champaca(462)	0.045	0.089	0.037	-	0.063	-	-	-	-	-	-	-	0.234
Michelia doltsopa(463)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Michelia lanuginosa(464)	-	-	-	0.046	-	-	-	-	-	-	-	-	0.046
Michelia species(468)	0.006	0.004	-	-	-	-	-	-	-	-	-	-	0.009
Miliusa species(470)	0.013	0.015	-	-	-	-	-	-	-	-	-	-	0.028
Mansonia species(477)	0.009	0.004	0.042	0.139	-	-	-	-	-	-	-	-	0.194
Myristica species(490)	0.111	0.063	0.052	-	-	-	-	-	-	-	-	-	0.227
Pajanelia longifolia(510)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Palaquium polyanthum(513)	0.174	0.134	0.114	0.110	-	-	-	-	-	-	-	-	0.532
Parkia joyrica(516)	-	0.004	0.010	-	-	-	-	-	-	-	-	-	0.014
Phoebe attenuata(521)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Phoebe goalparensis(523)	0.002	0.004	-	-	-	-	-	-	-	-	-	-	0.006
Podocarpus nerifolia(543)	0.030	0.030	-	0.032	-	0.072	-	-	-	-	-	-	0.163
Premna bengalensis(552)	0.045	0.045	0.031	-	-	-	0.089	-	-	-	-	-	0.210
Pterespermum acerifolium (570)	0.011	0.015	0.042	0.092	0.065	-	-	-	-	-	-	-	0.226
Pterospermum canescens (571)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Pyrus pashia(578)	0.143	0.134	0.073	-	-	-	-	-	-	-	-	-	0.350
Quercus species(594)	0.006	-	-	-	-	-	-	-	-	-	-	-	0.006
Robinia pseudocacia(605)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Salmalia insignis(613)	-	-	-	0.046	-	0.076	-	-	-	-	-	-	0.122
Sapium baccatum(620)	0.052	0.074	0.008	0.079	0.080	0.062	0.067	-	-	-	-	0.152	0.575
Saurinia nepaulensis(624)	0.004	-	-	-	-	-	-	-	-	-	-	-	0.004
Saurinia punduana(625)	0.002	0.004	-	-	-	-	-	-	-	-	-	-	0.006
Schima wallichii(627)	0.035	0.082	0.189	0.046	0.130	-	-	-	-	-	-	-	0.482
Schleichera trijuga(628)	0.032	0.030	0.042	0.139	0.065	-	-	-	-	-	-	-	0.307
Sececarpus anacardium(630)	0.022	0.052	0.042	-	-	-	-	-	-	-	-	-	0.116
Shorea robusta(633)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Sloanea assamica(636)	-	-	-	-	0.065	-	-	-	-	-	-	-	0.065
Spondias pinnata(642)	0.007	0.007	0.010	0.092	0.065	-	-	-	-	-	-	-	0.183
Spondias species(643)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Stephegyne parviflora(644)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Sterculia foetida(646)	0.030	0.048	0.105	0.185	0.130	-	-	-	-	-	-	-	0.498
Sterculia guttata(647)	0.006	-	-	-	-	-	-	-	-	-	-	-	0.006
Sterculia villosa(649)	0.011	0.019	0.010	-	0.065	-	0.089	-	-	-	-	-	0.195
Sterculia species(650)	0.028	0.030	0.021	0.092	0.130	-	-	-	-	-	-	-	0.301
Stereospermum personatum(652)	0.039	0.045	0.105	0.324	0.326	-	0.089	-	-	-	-	-	0.927
Symplocos crataegoides (662)	-	-	-	0.046	-	-	-	-	-	-	-	-	0.046
Symplocos laurina(663)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Syzygium cuminii(665)	1.017	1.039	0.416	0.358	0.164	0.068	-	0.090	-	-	-	-	3.152

Species name & code	Diameter classes (in cm.)											&	Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Syzygium species(668)	0.011	0.007	0.010	-	0.065	-	-	-	-	-	-	-	0.094
Talauma phellocarpa(670)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.010
Tectona grandis(673)	0.091	0.070	0.210	0.324	0.195	0.076	-	-	-	-	-	-	0.966
Terminalia arjuna(675)	-	0.004	-	-	-	-	-	-	-	-	-	-	0.004
Terminalia belerica(676)	0.032	0.022	0.021	0.046	0.065	0.076	0.089	-	-	-	-	-	0.351
Terminalia catappa(678)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Terminalia chebula(679)	0.013	0.019	0.084	0.092	0.195	0.076	-	-	0.109	-	-	-	0.588
Terminalia citrina(680)	0.006	0.007	-	0.046	-	-	-	-	-	-	-	-	0.059
Terminalia myriocarpa(683)	0.002	-	0.010	-	-	-	-	-	-	-	-	-	0.012
Terminalia procera(685)	0.002	-	-	-	-	-	-	-	-	-	-	-	0.002
Terminalia species(686)	-	-	0.010	-	-	-	-	-	-	-	-	-	0.010
Tetrameles nudiflora(688)	0.019	0.067	0.111	0.104	0.189	0.126	-	0.091	-	-	-	-	0.707
Toona ciliata(691)	0.009	0.004	0.031	0.046	-	-	-	-	-	-	-	-	0.091
Trewia nudiflora(695)	0.013	0.007	0.063	0.231	0.065	-	-	-	-	-	-	-	0.380
Vitex penducularis(713)	0.046	0.037	0.052	-	0.065	0.076	-	-	0.109	-	-	-	0.386
Zanthoxylum budrunga(730)	0.004	0.011	0.010	0.092	-	-	-	-	-	-	-	0.109	0.227
UNIDENTIFIED TREES(924)	1.786	1.024	1.218	2.265	0.717	0.832	0.357	-	-	-	-	-	8.199
Total:	8.342	7.157	7.563	9.625	6.692	3.501	1.980	1.041	0.574	0.214	0.500	0.627	47.816

TABLE NO.2.2

VOLUME PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.)

STRATUM : BAMBOO | DISTRICT : CACHAR

Species name & code	Diameter classes (in cm.)											Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Adina cordifolia(24)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Aglaia andamanica(31)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Albizzia lebbek(41)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Albizzia lucida(42)	-	-	0.051	-	-	-	-	-	-	-	-	-	0.051
Albizzia procera(45)	0.009	-	-	0.227	-	-	-	-	-	-	-	-	0.236
Albizzia species(46)	0.045	0.109	0.103	-	-	-	-	-	-	-	-	-	0.257
Alstonia scholaris(52)	0.009	0.018	-	-	-	-	-	-	-	-	-	-	0.027
Amoora wallichii(56)	0.009	0.018	0.103	-	-	-	-	-	-	-	-	-	0.130
Anthocephalus cadamba(65)	0.027	-	0.051	-	-	-	-	-	-	-	-	-	0.079
Artocarpus chaplasha(75)	1.145	0.582	0.327	0.401	0.257	-	-	-	-	-	-	-	2.713
Artocarpus species(80)	0.027	0.018	-	-	-	-	-	-	-	-	-	-	0.045
Bauhinia purpurea(96)	0.064	-	0.051	-	-	-	-	-	-	-	-	-	0.115
Bauhinia retusa(98)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Beilschmiedia assamica(100)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Bombax ceiba(109)	0.018	0.036	-	-	-	-	-	-	-	-	-	-	0.055
Callicarpa arborea(121)	0.118	0.055	0.051	-	-	-	-	-	-	-	-	-	0.224
Callophyllum polyanthum(127)	-	-	0.051	-	-	-	-	-	-	-	-	-	0.051
Canarium resiniferum(137)	0.018	0.018	0.051	-	-	-	-	-	-	-	-	-	0.088
Cassia nodosa(152)	-	-	0.051	-	-	-	-	-	-	-	-	-	0.051
Castanopsis indica(157)	-	0.018	0.051	-	-	-	-	-	-	-	-	-	0.070
Castanopsis species(159)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Cedrella serrata(161)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Cedrella toona(162)	0.036	-	0.109	-	-	-	-	-	-	-	-	-	0.145
Chukrassia velutina(171)	-	-	0.091	-	-	-	-	-	-	-	-	-	0.091
Cinnamomum species(178)	0.018	0.036	-	-	-	-	-	-	-	-	-	-	0.055
Cynometra polyandra(218)	0.382	0.273	0.185	0.473	-	-	0.278	-	-	-	-	-	1.591
Dillenia indica(229)	-	0.018	-	-	-	-	-	-	-	-	-	-	0.018
Dillenia pentagyna(230)	0.045	0.018	-	-	0.319	-	-	-	-	-	-	-	0.383
Diospyros species(240)	0.009	-	-	0.227	-	-	-	-	-	-	-	-	0.236
Dipterocarpus macrocarpus (244)	0.064	-	0.051	-	0.319	-	-	0.535	-	-	-	-	0.970
Duabanga grandiflora(251)	0.164	-	0.288	0.165	0.278	-	-	-	0.499	-	-	-	1.394
Dysoxylum binectariferum (252)	0.200	0.091	0.051	0.227	-	-	-	-	-	-	-	-	0.569

Species name & code	Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Emblica officinalis(267)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.18
Engelhardtia spicata(270)	0.018	-	0.051	0.227	-	-	-	-	-	-	-	-	0.296
Euginea cymosa(284)	0.036	0.055	0.051	-	0.319	-	-	-	-	-	-	-	0.462
Euginea species(289)	-	0.018	-	-	-	-	-	-	-	-	-	-	0.018
Ficus bengalensis(302)	0.064	-	-	-	-	-	-	-	-	-	-	-	0.064
Ficus species(308)	0.091	-	-	0.0453	-	-	-	-	-	-	-	-	0.544
Garcinia species(316)	-	-	0.051	-	-	-	-	-	-	-	-	-	0.051
Garuga pinnata(319)	0.009	0.036	-	-	-	-	-	-	-	-	-	-	0.045
Gmelina arborea(327)	0.218	0.164	0.291	0.247	-	-	-	-	-	-	-	-	0.920
Grewia tieianefolia(336)	-	-	0.103	-	-	-	-	-	-	-	-	-	0.103
Gyrocarpus odoratia(342)	-	-	-	0.227	-	-	-	-	-	-	-	-	0.227
Hydnocarpus alpina(366)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Ixora calycina(380)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Kayea floribunda(386)	0.018	0.109	-	-	-	-	-	-	-	-	-	-	0.127
Kydia calycina(393)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Lagerstroemia parviflora(397)	0.155	0.164	0.1053	-	-	-	-	-	-	-	-	-	0.421
Lagerstroemia speciosa(398)	0.036	-	-	-	-	-	-	-	-	-	-	-	0.036
Lannea coromendelica(400)	-	-	0.051	-	-	-	-	-	-	-	-	-	0.051
Litsaea monopetala(415)	-	0.018	-	-	-	-	-	-	-	-	-	-	0.018
Lophopetalum fimbratum(422)	0.018	0.036	-	-	0.350	-	-	-	-	-	-	-	0.405
Maearanga denticulata(425)	0.491	-	-	-	-	-	-	-	-	-	-	-	0.491
Macaranga indica(426)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Macaranga peltata(427)	0.291	0.018	0.051	-	-	-	-	-	-	-	-	-	0.361
Macaranga pustulata(428)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Mangifera indica(444)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Mansonia dipke(452)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Mesua ferrea(460)	-	0.055	0.073	0.155	-	-	-	0.422	-	-	-	-	0.704
Mansonia species(477)	0.045	0.036	0.051	0.2227	-	-	-	-	-	-	-	-	0.360
Myristica species(490)	0.018	0.018	-	-	-	-	-	-	-	-	-	-	0.036
Palaquium polyanthum(513)	0.164	0.218	-	-	0.206	-	-	-	-	-	-	-	0.588
Premna bengalensis(552)	-	-	-	-	0.319	-	-	-	-	-	-	-	0.319
Pterospermum acerifolium (570)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Pyrus pashia(578)	0.164	0.018	-	-	-	-	-	-	-	-	-	-	0.182
Sapium baccatum(620)	0.055	0.036	0.007	0.386	0.782	-	-	-	-	-	-	-	1.266

Species name & code	66 Diameter classes(in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Schima wallichii(627)	0.009	0.036	-	0.227	-	-	-	-	-	-	-	-	0.272
Schleichera trijuga(628)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Sececerpus anacardium(630)	0.018	-	-	0.227	-	-	-	-	-	-	-	-	0.245
Sloanea assamica(636)	-	-	-	-	-	-	-	-	-	-	0.535	-	0.535
Spondias pinnata(642)	0.009	0.018	-	0.227	-	-	-	-	-	-	-	-	0.254
Sterculia foetida(646)	-	0.018	-	-	-	-	-	-	-	-	-	-	0.018
Sterculia villosa(649)	0.055	0.018	-	-	-	-	-	-	-	-	-	-	0.073
Sterculia species(650)	0.009	0.055	0.103	-	-	-	-	-	-	-	-	-	0.167
Stereospermum personatum (652)	0.018	0.018	-	0.453	-	0.371	0.438	-	-	-	-	-	1.298
Symplocos cretaegoides (662)	0.009	-	-	-	-	-	-	-	-	-	-	-	0.009
Syzygium cuminii(665)	0.618	0.364	0.127	-	-	-	-	-	-	-	-	-	1.109
Syzygium species(668)	0.018	-	-	-	-	-	-	-	-	-	-	-	0.018
Tectona grandis(673)	0.036	0.018	-	-	-	-	-	-	-	-	-	-	0.055
Terminalia chebula(679)	0.009	0.036	0.051	-	-	-	-	-	-	-	-	-	0.097
Terminalia citrina(680)	-	-	-	0.227	-	-	-	-	-	0.535	-	-	0.762
Tetrameles nudiflora(688)	-	-	0.182	0.127	0.155	0.309	0.381	-	-	-	-	-	1.153
Trewia nudiflora(695)	0.009	0.018	-	-	-	-	-	-	-	-	-	-	0.027
Vitex penducularis(713)	0.009	-	0.051	-	0.319	-	-	-	-	-	-	-	0.380
Zanthoxylum budrunga(730)	0.009	0.018	-	-	-	-	-	-	-	-	-	-	0.027
Zanthoxylum alatum(731)	-	-	-	-	-	-	-	-	-	-	-	0.535	0.535
UNIDENTIFIED TREES(924)	1.727	0.527	0.823	1.133	0.958	0.371	-	-	-	-	-	-	5.539
TOTAL :	7.090	3.454	3.944	6.258	4.582	1.050	1.096	0.958	0.499	0.535	0.535	0.535	30.539

Contents

TABLE NO.3.1.

TOTAL STEMS(IN '000 UNIT) BY SPECIES AND DIAMETER CLASSES(IN CM.)

STRATUM: MISCELLANEOUS DISTRICT : CACHAR

Species name & code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Acer spp.(18)	12.488	-	-	-	-	-	-	-	-	-	-	-	12.488
Adina cordifolia(24)	18.731	6.244	18.731	-	-	-	-	-	-	-	-	-	43.707
Adina sessilifolia(25)	12.488	-	-	-	-	-	-	-	-	-	-	-	12.488
Adina oligocephala(26)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Aegle marmelos (28)	106.145	12.488	-	-	-	-	-	-	-	-	-	-	118.632
Agalia edulis(32)	6.244	12.488	6.244	-	-	6.244	-	-	-	-	-	-	31.219
Agalia spp. (34)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Albizzia chinensis(39)	6.244	6.244	-	-	-	-	-	-	-	-	-	-	12.488
Albizzia lebbek(41)	12.488	24.975	-	-	-	-	-	-	-	-	-	-	37.463
Albizzia lucida(42)	37.463	49.951	18.731	18.731	-	12.488	6.244	-	-	-	-	-	143.608
Albizzia procera(45)	87.413	24.975	43.707	6.244	6.244	-	-	6.244	-	-	-	-	174.827
Albizzia species(46)	112.389	81.170	49.951	24.975	31.219	6.244	-	-	6.244	-	6.244	-	318.435
Alnus spp. (50)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244
Alphonsea venterices(51)	6.244	-	12.488	-	-	-	-	-	-	-	-	-	18.731
Alstonia scholaris(52)	24.975	-	-	6.244	-	6.244	-	-	-	-	-	-	37.463

Species name & code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Alseodaphne species(53)	31.219	12.488	12.488	-	-	-	-	-	-	-	-	-	56.194
Amoora wallichii(56)	31.219	43.707	12.488	6.244	-	-	-	-	-	-	-	-	93.657
Amoora spp. (57)	74.926	56.194	24.975	-	6.244	-	-	-	-	-	-	-	162.339
Anthocephalus cadamba(65)	12.488	62.438	6.244	6.244	6.244	-	-	-	-	-	-	-	93.657
Artocarpus chaplasha(75)	137.364	18.731	56.194	31.219	12.488	12.488	-	12.488	-	-	6.244	-	287.215
Artocarpus lakoocha(79)	68.682	24.975	6.244	6.244	-	-	-	-	-	-	-	-	106.145
Artocarpus species(80)	12.488	6.244	18.731	-	-	6.244	-	-	-	-	-	-	43.707
Barringtonia species(93)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Bauhinia purpurea(96)	18.731	-	-	-	-	-	-	-	-	-	-	-	18.731
Bauhinia species(99)	43.707	6.244	-	-	-	-	-	-	-	-	-	-	49.951
Bischofia javanica(107)	-	-	6.244	-	12.488	-	-	-	-	-	-	-	18.731
Bombax ceiba (109)	37.463	12.488	-	-	12.488	-	-	-	6.244	-	-	-	68.682
Boswellia serrata(111)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Bridelia montana(113)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244
Butea spp. (118)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Callicarpa arborea(121)	593.162	56.194	18.731	-	6.244	-	-	-	-	-	-	-	674.332
Callophyllum polyanthum(127)	630.625	255.996	156.095	24.975	31.219	6.244	-	-	6.244	-	-	-	1111.399
Canarium bengalensis(135)	6.244	-	6.244	-	-	-	-	-	-	-	-	-	12.488

Species name & code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	& Total
Canarium euphyllum(136)	18.731	-	-	-	6.244	-	-	-	-	-	-	-	24.975
Canarium resiniferum(137)	149.852	62.438	37.463	12.488	-	-	6.244	-	-	-	-	-	268.484
Canarium spp. (139)	37.463	18.731	24.975	-	-	-	-	-	-	-	-	-	81.170
Careya arborea(143)	18.731	-	-	-	-	-	-	-	-	-	-	-	18.731
Cassia fistula (151)	6.244	-	-	6.244	-	-	-	-	-	-	-	-	12.488
Castanopsis hystrix(156)	-	12.488	-	6.244	-	-	-	-	-	-	-	-	18.731
Castanopsis indica(157)	37.463	31.219	6.244	6.244	-	-	6.244	-	-	-	-	-	87.413
Castanopsis species(159)	206.046	112.389	43.707	-	6.244	6.244	-	-	-	-	-	-	374.629
Cedrella toona(162)	37.463	12.488	-	12.488	6.244	-	-	-	-	-	-	-	68.682
Celtis australis(164)	-	-	-	6.244	-	-	-	-	-	-	-	-	6.244
Chukrassia velutina(171)	6.244	12.488	-	-	-	-	-	-	-	-	-	-	18.731
Cinnamomum cecidodaphne(175)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Cinnamomum tanala(176)	-	-	-	-	-	-	-	-	-	-	-	6.244	6.244
Cinnamomum species(178)	24.975	18.731	6.244	-	-	-	-	-	-	-	-	-	49.951
Cordia fragrantissima(193)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Crataeva unilocularis(203)	6.244	6.244	-	-	-	-	-	-	-	-	-	-	12.488
Cullenia excelsa(212)	-	-	-	-	6.244	-	-	-	-	-	-	-	6.244

Species name & code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Supressus species(215)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Cymmosperin species(217)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Cynometra polyandra(218)	1092.668	487.018	162.141	106.145	81.170	43.707	-	-	-	-	-	-	2172.847
Dillenia indica(229)	37.463	18.731	18.731	18.731	-	-	-	-	-	-	-	-	99.901
Dillenia pentagyna(230)	31.219	12.488	31.219	12.488	-	-	-	-	-	-	-	-	87.413
Diospyros melanoxylon(234)	18.731	-	-	6.244	-	-	-	-	-	-	-	-	24.975
Diospyros (238) spp.(Kalacha)	6.244	24.975	6.244	6.244	-	-	-	-	-	-	-	-	43.707
Diospyros species(240)	156.095	93.657	62.438	6.244	6.244	6.244	-	-	-	-	-	-	330.922
Dipterocarpus gracilis(242)	12.488	24.975	12.488	6.244	18.731	12.488	6.244	-	-	-	-	-	93.657
Dipterocarpus macrocarpus(244)	-	-	-	-	-	6.244	-	-	-	-	-	-	6.244
Dipterocarpus tuberculatus(245)	49.951	37.463	49.951	6.244	6.244	-	-	-	-	-	-	-	149.852
Dolichandrone falcata(247)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Duabanga grandiflora(251)	49.951	68.682	49.951	43.707	6.244	12.488	6.244	-	-	-	-	-	237.265
Dysoxylum binectariferum (252)	1023.986	349.654	181.071	49.951	37.463	6.244	6.244	12.488	-	-	-	-	1667.099
Dysoxylum malabaricum(254)	12.488	-	-	6.244	-	-	-	-	-	-	-	-	18.731
Ehretia acuminata(255)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244
Elaeocarpus species(263)	81.170	6.244	12.488	-	-	-	-	-	-	-	-	-	99.901

Contents

Species name & code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Emblica officinalis(267)	12.488	24.975	-	-	-	-	-	-	-	-	-	-	37.463
Endospermum chinense(268)	49.951	37.463	18.731	6.244	18.731	6.244	6.244	-	-	-	-	-	143.608
Engelhardtia spicata(270)	6.244	12.488	-	-	-	-	-	-	-	-	-	-	18.731
Erythrina suberosa(278)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Erythrina variogata(279)	6.244	6.244	-	-	-	6.244	-	-	-	-	-	-	18.731
Eucalyptus hybrid(282)	-	-	-	6.244	-	-	-	-	-	-	-	-	6.244
Euginca cymosa(284)	324.678	156.095	37.463	18.731	6.244	-	-	-	-	-	-	-	543.212
Euginea grandis(287)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Euginea praecox (288)	-	6.244	-	6.244	-	-	-	-	-	-	-	-	12.488
Euginea species(289)	193.558	106.145	24.975	12.488	-	6.244	-	-	-	-	-	-	343.410
Euphoria longana(294)	37.463	18.731	-	6.244	-	-	-	-	-	-	-	-	62.438
Eurya japonica(295)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Eagara bugrunga(300)	18.731	-	-	-	-	-	-	-	-	-	-	-	18.731
Ficus bengalensis(302)	137.364	24.975	6.244	-	-	-	-	-	-	-	6.244	-	174.827
Ficus spp. (308)	268.484	62.438	49.951	18.731	6.244	-	6.244	12.488	-	6.244	-	-	430.823
Garcinia cowa(314)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Garcinia species(316)	31.219	31.219	12.488	6.244	-	-	-	-	-	-	-	-	81.170
Garuga pimata (319)	6.244	-	-	-	6.244	-	-	-	-	-	-	-	12.488

Species name & code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Gmelina arborea(327)	43.707	93.657	24.975	43.707	18.731	-	12.488	-	-	6.244	-	-	243.509
Gordonia obtusa(328)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Gyrocarpus odoratis(342)	99.901	118.632	6.244	-	-	-	-	-	-	-	-	-	224.777
Heritiera acuminata(347)	81.170	56.194	12.488	18.731	6.244	-	-	-	-	-	-	-	174.827
Holarhena antidysenterica(353)	31.219	6.244	-	-	-	-	-	-	-	-	-	-	37.463
Hydnocarpus alpina(366)	299.703	149.852	49.951	6.244	-	-	-	-	-	-	-	-	505.749
Hydnocarpus kurzi(367)	37.463	43.707	6.244	-	-	-	-	-	-	-	-	-	87.413
Isonandra polyantha(377)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Ixora arborea(379)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244
Jonesia asoca(382)	412.092	31.219	6.244	-	-	-	-	-	-	-	-	-	449.555
Kayea assamica(385)	12.488	-	-	-	-	-	-	-	-	-	-	-	12.488
Kayea floribunda(386)	156.095	124.876	56.194	31.219	12.488	-	-	-	-	-	-	-	380.873
Kingiodendron pinnata(389)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Kurrimia indica(392)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Kydia calycina(393)	112.389	43.707	-	-	-	-	-	-	-	-	-	-	156.095
Lagerstroemia lanceolata(396)	-	-	-	6.244	-	-	-	-	-	-	-	-	6.244
Lagerstroemia parviflora(397)	74.926	99.901	12.488	-	-	-	-	-	-	-	-	-	187.314
Lagerstroemia speciosa(398)	93.657	74.926	6.244	12.488	12.488	-	-	-	-	-	-	-	199.802

Species name & code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Lannea coromendelica(400)	43.707	31.219	31.219	6.244	6.244	-	-	-	-	-	-	-	118.632
Lophopetalum fim-briatum(422)	62.438	18.731	12.488	12.488	12.488	-	6.244	-	-	-	-	-	124.876
Lophopetalum wightianum(423)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244
Macaranga denticulata(425)	106.145	18.731	12.488	-	-	-	-	-	-	-	-	-	137.364
Macaranga peltata(427)	674.332	12.488	-	-	-	-	6.244	-	-	-	-	-	693.063
Macaranga postulata(428)	12.488	-	-	-	-	-	-	-	-	-	-	-	12.488
Mallotus philippinensis(441)	18.731	6.244	-	-	-	-	-	-	-	-	-	-	24.975
Mangifera andamanica(443)	6.244	-	-	-	-	-	-	6.244	-	-	-	-	12.488
Mangifera indica(444)	49.951	18.731	-	6.244	-	-	12.488	-	-	-	-	6.244	93.657
Mangifera sylvatica(445)	99.901	49.951	6.244	6.244	6.244	6.244	-	-	-	-	-	-	174.827
Mansonia dipke(452)	12.488	6.244	-	-	-	-	-	-	-	-	-	-	18.731
Melia azadirachta(454)	-	-	-	6.244	-	-	-	-	-	-	-	-	6.244
Mesua ferrea (460)	274.728	118.632	118.632	74.926	31.219	6.244	-	-	-	-	-	-	624.381
Michelia champaca(462)	24.975	18.731	6.244	-	6.244	-	-	-	-	-	-	-	56.194
Michelia doltsopa(463)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Michelia lanuginosa(464)	-	-	-	6.244	-	-	-	-	-	-	-	-	6.244
Michelia spp. (468)	18.731	6.244	-	-	-	-	-	-	-	-	-	-	24.975
Miliusa spp. (470)	43.707	24.975	-	-	-	-	-	-	-	-	-	-	68.682

Species name and code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Mansonia species(477)	31.219	6.244	24.975	18.731	-	-	-	-	-	-	-	-	81.170
Myristica spp. species(490)	374.629	106.145	31.219	-	-	-	-	-	-	-	-	-	511.993
Pajanelia longifolia(510)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Palaquium polyanthum(513)	293.459	56.194	7.463	31.219	-	-	-	-	-	-	-	-	418.336
Parkia joyrica(516)	-	6.244	6.244	-	-	-	-	-	-	-	-	-	12.488
Phoebe attenuata(521)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Phoebe goalparensis(523)	6.244	6.244	-	-	-	-	-	-	-	-	-	-	12.488
Padocarpus nerifolia(543)	24.975	12.488	-	6.244	-	6.244	-	-	-	-	-	-	49.951
Premna bengalensis(552)	149.852	74.926	18.731	-	-	-	6.244	-	-	-	-	-	249.753
Pterospermum acerifolium(570)	37.463	24.975	24.975	12.488	6.244	-	-	-	-	-	-	-	106.145
Pterospermum canescens(571)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Pyrus pashia (578)	480.774	224.777	43.707	-	-	-	-	-	-	-	-	-	749.258
Quercus spp. (594)	18.731	-	-	-	-	-	-	-	-	-	-	-	18.731
Robinia pseudocacia(605)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Salmalia insignis(613)	-	-	-	6.244	-	6.244	-	-	-	-	-	-	12.488
Sapium baccatum(620)	87.413	62.438	37.463	18.731	12.488	6.244	6.244	-	-	-	-	-	237.265
Saurinia nepalensis(624)	12.488	-	-	-	-	-	-	-	-	-	-	-	12.488
Saurinia punduana(625)	6.244	6.244	-	-	-	-	-	-	-	-	-	-	12.488

Species name and code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Schima wallichii(627)	118.632	137.364	112.389	6.244	12.488	-	-	-	-	-	-	-	387.117
Schleichera trijuga(628)	106.145	49.951	24.975	18.731	6.244	-	-	-	-	-	-	-	206.046
Semecarpus anacardium(630)	74.926	87.413	24.975	-	-	-	-	-	-	-	-	-	187.314
Shorea robusta(633)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Sloanea assamica(636)	-	-	-	-	6.244	-	-	-	-	-	-	-	6.244
Spondias pinnata(642)	24.975	12.488	6.244	12.488	6.244	-	-	-	-	-	-	-	62.438
Spondias species(643)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Stephegyne parviflora(644)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Sterculia foetida(646)	99.901	81.170	62.438	24.975	12.488	-	-	-	-	-	-	-	280.972
Sterculia guttata(647)	18.731	-	-	-	-	-	-	-	-	-	-	-	18.731
Sterculia villosa(649)	37.463	31.219	6.244	-	6.244	-	6.244	-	-	-	-	-	87.413
Sterculia spp. (650)	93.657	49.951	12.488	12.488	12.488	-	-	-	-	-	-	-	181.071
Stereospermum personatum(652)	131.120	74.926	62.438	43.707	31.219	-	6.244	-	-	-	-	-	349.654
Symplocos crataegoides(662)	-	-	-	6.244	-	-	-	-	-	-	-	-	6.244
Symplocos laurina(663)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Syzygium cuminii(665)	855.403	349.654	99.901	68.682	24.975	6.244	-	6.244	-	-	-	-	1411.102
Syzygium spp. (668)	37.463	12.488	6.244	-	6.244	-	-	-	-	-	-	-	62.438
Talauma phellocarpa(670)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244

Species name and code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Tectona grandis(673)	305.947	118.632	124.876	43.707	18.731	6.244	-	-	-	-	-	-	618.138
Terminalia arjuna(675)	-	6.244	-	-	-	-	-	-	-	-	-	-	6.244
Terminalia belerica(676)	106.145	37.463	12.488	6.244	6.244	6.244	6.244	-	-	-	-	-	181.071
Terminalia catappa(678)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Terminalia chebula(679)	43.707	31.219	49.951	12.488	18.731	6.244	-	-	6.244	-	-	-	168.583
Terminalia citrina(680)	18.731	12.488	-	6.244	-	-	-	-	-	-	-	-	37.463
Terminalia myriocarpa(683)	6.244	-	6.244	-	-	-	-	-	-	-	-	-	12.488
Terminalia procera(685)	6.244	-	-	-	-	-	-	-	-	-	-	-	6.244
Terminalia species(686)	-	-	6.244	-	-	-	-	-	-	-	-	-	6.244
Tetrameles nudiflora(688)	31.219	37.463	37.463	24.975	37.463	12.488	-	6.244	-	-	-	-	187.314
Toona ciliata (691)	31.219	6.244	18.731	6.244	-	-	-	-	-	-	-	-	62.438
Grewia nudiflora(695)	43.707	12.488	37.463	31.219	6.244	-	-	-	-	-	-	-	131.120
Vitex pend-ucularis(713)	156.095	62.438	31.219	-	6.244	6.244	-	-	6.244	-	-	-	268.484
Zanthoxylum budrunga(730)	12.488	18.731	6.244	12.488	-	-	-	-	-	-	-	6.244	56.194
UNIDENTIFIED TREES(924)	6012.793	1723.293	724.282	305.947	68.682	68.682	24.975	-	-	-	-	-	8928.655
Total:	19287.143	7430.139	3633.900	1504.760	761.745	312.191	143.608	62.438	31.219	12.488	24.975	24.975	33229.581

Contents

TABLE NO.3.2

TOTAL STEMS(IN 000 UNIT) BY SPECIES AND DIAMETER CLASSES(IN CM.)

STRATUM:BAMBOO DIST:CACHAR

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
ADINA CORDIFOLIA	24	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
AGALIA ANDAMANICA	31	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
ALBIZZIA LEBBEK	41	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
ALBIZZIA LUCIDA	42	-	-	6.256	-	-	-	-	-	-	-	-	-	6.256
ALBIZZIA PROCERA	45	6.256	-	-	6.256	-	-	-	-	-	-	-	-	[illegible] 12.512
ALBIZZIA SPECIES	46	31.279	37.535	12.512	-	-	-	-	-	-	-	-	-	81.325
ALSTONIA SCHOLARIS	52	6.256	6.256	-	-	-	-	-	-	-	-	-	-	12.512
AMOORA WALLICHII	56	6.256	6.256	12.512	-	-	-	-	-	-	-	-	-	25.023
ANTHOCEPHALUS CADAMBA	65	18.767	-	6.256	-	-	-	-	-	-	-	-	-	25.023
ARTOCARPUS CHAPLASHA	75	56.302	25.023	12.512	12.512	6.256	-	-	-	-	-	-	-	112.604
ARTICARPUS SPECIES	80	18.767	6.256	-	-	-	-	-	-	-	-	-	-	25.023
BAUHINIA PURPUREA	96	43.790	-	6.256	-	-	-	-	-	-	-	-	-	50.046
BAUHINIA RETUSA	98	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
BEILCHMIEDIA ASSAMICA	100	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
BOMBAX CEIBA	109	6.256	6.256	-	-	-	-	-	-	-	-	-	-	[illegible] 12.512
CALLICARPA ARBOREA	121	81.325	18.767	6.256	-	-	-	-	-	-	-	-	-	106.348
CALOPHYLUM POLYANTHUM	127	-	-	6.256	-	-	-	-	-	-	-	-	-	6.256
CANARIUM RESINIFERUM	137	12.512	6.256	62256	-	-	-	-	-	-	-	-	-	25.023
CASSIA NODOSA	152	-	-	6.256	-	-	-	-	-	-	-	-	-	6.256
CASTANOPSIS INDICA	157	-	6.256	6.256	-	-	-	-	-	-	-	-	-	12.512
CASTANOPSIS SPECIES	159	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
CEDRELA SERRATA	161	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
CEDRELA TOONA	162	6.256	-	6.256	-	-	-	-	-	-	-	-	-	12.512
CHUKRASIA VELLUTINA	171	-	-	6.256	-	-	-	-	-	-	-	-	-	6.256
CINNAMOMUM SPECIES	188	12.512	12.512	-	-	-	-	-	-	-	-	-	-	25.023
CYNOMEREA POLYANDRA	218	131.371	31.279	12.512	25.023	-	-	6.256	-	-	-	-	-	206.440
DILLENIA INDICA	229	-	6.256	-	-	-	-	-	-	-	-	-	-	6.256
DILLENRA PENTAGYNA	230	31.279	6.256	-	-	6.256	-	-	-	-	-	-	-	43.790
DIOSPYROS SPECIES	240	6.256	-	-	6.256	-	-	-	-	-	-	-	-	12.512
DIPTEROCARPUS MACROCARPUS	244	43.790	-	6.256	-	6.256	-	-	6.256	-	-	-	-	62.558

Contents

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
DUABANGA GRANDIFLORA	251	18767	-	12.512	6.256	6.256	-	-	-	6.256	-	-	-	50.046
DYSOXYLUM BINECTARIFORUM	252	137.627	31.279	6.256	6.256	-	-	-	-	-	-	-	-	181.417
EMBLICA OFFICINALIS	267	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
ENGELHARDTIA SPICATA	270	12.512	-	6.256	6.256	-	-	-	-	-	-	-	-	25.023
EUGINEA CYMOSA	284	25.023	18.767	6.256	-	6.256	-	-	-	-	-	-	-	56.302
EUGINIA SPECIES	289	-	6.256	-	-	-	-	-	-	-	-	-	-	6.256
FICUS BENGALENSIS	302	43.790	-	-	-	-	-	-	-	-	-	-	-	43.790
FICUS SPECIES	308	62.558	-	-	12.512	-	-	-	-	-	-	-	-	75.069
GARCINIA SPECIES	316	-	-	6.256	-	-	-	-	-	-	-	-	-	6.256
GARUGA PINNATA	319	6.256	12.512	-	-	-	-	-	-	-	-	-	-	18.767
GMELINA ARBOREA	327	37.535	18.767	25.023	18.767	-	-	-	-	-	-	-	-	100.092
GREWIA TIEIAEFOLIA	336	-	-	12.512	-	-	-	-	-	-	-	-	-	12.512
GYROCARPUS ODERATIA	342	-	-	-	6.256	-	-	-	-	-	-	-	-	6.256
HYDNOCARPUS ALPINA	366	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
IXORA CALYCINA	380	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
KAYEA FLORIBUNDA	386	6.256	12.512	-	-	-	-	-	-	-	-	-	-	18.767
KYDIA CALYCINA	393	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
LAGERSTROEMIA PARVIFLORA	397	106.348	56.302	12.512	-	-	-	-	-	-	-	-	-	175.161
LAGERSTROEMIA SPACIOSA	398	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
LANNEA COROMANDELICA	400	-	-	6.256	-	-	-	-	-	-	-	-	-	6.256
LITSAEA MONOPETALA	415	-	6.256	-	-	-	-	-	-	-	-	-	-	6.256

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
LOPHOPETALUM FIMBRIATUM	422	6.256	6.256	-	-	6.256	-	-	-	-	-	-	-	18.767
MAEARANGA DENTIDULATA	425	337.811	-	-	-	-	-	-	-	-	-	-	-	337.811
MACRAGA INDICA	426	12.512	-	-	-	-	-	-	-	-	-	-	-	12512
MACARANGA PELTATA	427	200.184	6.256	6.256	-	-	-	-	-	-	-	-	-	212.696
MACARANGA PUSTULATA	428	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
MANGIFERA INDICA	444	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
MANSONIA DIPKE	452	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
MESUA FERREA	460	-	6.256	6.256	6.256	-	-	-	6.256	-	-	-	-	25.023
MONSONIA SPECIES	477	31.279	12.512	6.256	6.256	-	-	-	-	-	-	-	-	56.302
MYRISTICA SPECIES	490	12.512	6.256	-	-	-	-	-	-	-	-	-	-	18.767
PALAQUIM PELYANTHUM	513	56.302	18.767	-	-	6.256	-	-	-	-	-	-	-	81.325
PREMMA Bengalensis	552	-	-	-	-	6.256	-	-	-	-	-	-	-	6.256
PTEROSPERMUM ACERIFOLIUM	570	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
PYRUS PASHIA	578	112.604	6.256	-	-	-	-	-	-	-	-	-	-	118.860
SAPIUM BACCATUM	620	18.767	6.256	6.256	18.767	25.023	-	-	-	-	-	-	-	75.069
SCHIMA WALLICHII	627	6.256	12.512	-	6.256	-	-	-	-	-	-	-	-	25.023
SCHLEICHERA TRIJUGA	628	6.256	-	-	-	-	-	-	-	-	-	-	-	6.256
SEMECARPUS ANACARDIUM	630	12.512	-	-	6.256	-	-	-	-	-	-	-	-	18.767
SLOANEA ASSAMICA	636	-	-	-	-	-	-	-	-	-	-	6.256	-	6.256
SPONDIAS PINNATA	642	6.256	6.256	-	6.256	-	-	-	-	-	-	-	-	18.767
STERCULIA FOETIDA	646	-	6.256	-	-	-	-	-	-	-	-	-	-	6.256

Contents

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
STERCULIA VILLOSA	649	37.535	6.256	-	-	-	-	-	-	-	-	-	-	43.790
STERCULIA SPECIES	650	6.256	18.767	12.512	-	-	-	-	-	-	-	-	-	37.535
STEREOSPERMUM PERSONATUM	652	12.512	6.256	-	12.512	-	6.256	6.256	-	-	-	-	-	43.790
SYMPLOCOIS CRATAEGOIDES	662	6.256	-	-	-	-	-	-	-	-	-	-		6.256
SYZYGIUM CUMINII	665	106.348	25.023	6-256	-	-	-	-	-	-	-	-	-	137.627
SYZYGIUM SPECIES	668	12.512	-	-	-	-	-	-	-	-	-	-	-	12.512
TECTONA GRANDIS	673	25.023	6.256	-	-	-	-	-	-	-	-	-	-	31.279
TERMINALIA CHEBULA	679	6.256	12.512	6.256	-	-	-	-	-	-	-	-	-	25.023
TERMINALIA CITRANA	680	-	-	-	6.256	-	-	-	-	-	6.256	-	-	12.512
TETRAMELES NUDIFLORA	688	-	-	12.512	6.256	6.256	6.256	6.256	-	-	-	-	-	37.535
TREWIA NUDIFLORA	695	6.256	6.256	-	-	-	-	-	-	-	-	-	-	12.512
VITEX PENDUCULARIS	713	6.256	-	6.256	-	6.256	-	-	-	-	-	-	-	18.767
ZANTHOXYLUM BUORUNGA	730	6.256	6.256	-	-	-	-	-	-	-	-	-	-	12.512
ZANTHOXYLUM ALATUM	731	-	-	-	-	-	-	-	-	-	-	-	6.256	6.256
UNIDENTIFIED TREES	9241	188.595	181.417	100.092	31.279	18.767	6.256	-	-	-	-	-	-	1526.407
TOTAL:		3353.090	700.646	381.602	212.696	106.348	18.767	18.767	12.512	6.256	6.256	6.256	6.256	4829.451

TABLE NO.4.1.

TOTAL VOLUME (IN '000M^3) BY SPECIES AND DIAMETER CLASSES(IN CM.)

STRATUM : MISCELLANEOUS DISTRICT : CACHAR

Species name & code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Acer spp.(18)	0.624	-	-	-	-	-	-	-	-	-	-	-	0.624
Adina cordifolia (24)	0.937	0.624	5.301	-	-	-	-	-	-	-	-	-	6.862
Adina sessilifolia (25)	0.624	-	-	-	-	-	-	-	-	-	-	-	0.624
Adina oligocephala(28)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Aegle marmelos (28)	5.307	1.249	-	-	-	-	-	-	-	-	-	-	6.556
Agalia edulis(32)	0.312	1.249	1.767	-	-	12.731	-	-	-	-	-	-	16.059
Agalia spp.(34)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Albizzia chinensis(39)	1.249	1-873	-	-	-	-	-	-	-	-	-	-	3.122
Albizzia lebbek(41)	1.249	7.493	-	-	-	-	-	-	-	-	-	-	8.741
Albizzia lucida(42)	1.673	4.995	5.301	23.339	-	25.462	15.029	-	-	-	-	-	76.000
Albizzia procera(45)	4.371	2.498	12.369	7.780	10.964	-	-	18.388	-	-	-	-	56.369
Albizzia spp. (46)	5.619	8.117	14.136	31.119	54.821	12.731	-	[illegible] 18.388	-	-/8.388	-		163.319
Alnus spp.(50)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
Alphonsea ventericos(51)	0.312	-	3.534	-	-	-	-	-	-	-	-	-	3.846
Alstonia scholaris(52)	1.249	-	-	7.780	-	12.731	-	-	-	-	-	-	21.760
Alseodaphne species(53)	1.561	1.249	4.246	-	-	-	-	-	-	-	-	-	7.056
Amoora wallichii(56)	1.561	4.371	3.534	7.780	-	-	-	-	-	-	-	-	17.245
Amoora spp.(57)	14.985	28.097	9.191	-	6.362	-	-	-	-	-	-	-	58.636

Contents

Species name and code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Anthocephalus cadamba(65)	0.624	6.244	1.767	7.780	10.964	-	-	-	-	-	-	-	27.379
Artocarpus chaplasha(75)	96.155	14.985	50.575	34.466	17.682	24.051	-	34.304	-	-	28.996	-	301.214
Artocarpus lakoocha(79)	3.434	2.498	1.767	7.780	-	-	-	-	-	-	-	-	15.478
Artocarpus species(80)	0.624	0.624	5.301	-	-	12.731	-	-	-	-	-	-	19.281
Barringtonia species(93)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Bauhinia purpurea(96)	0.937	-	-	-	-	-	-	-	-	-	-	-	0.937
Bauhinia species(99)	2.185	0.624	-	-	-	-	-	-	-	-	-	-	2.810
Bischofia javanica(107)	-	-	1.767	-	21.928	-	-	-	-	-	-	-	23.695
Bombax ceiba(109)	3.746	2.498	-	-	10.614	-	-	-	23.127	-	-	-	39.985
Boswellia serrata(111)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Bridelia montana(113)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
Butea spp.(118)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Callicarpa arborea(121)	29.658	5.619	5.301	-	10.964	-	-	-	-	-	-	-	51.545
Calophyllum polyanthum(127)	31.531	25.600	44.175	31.119	54.821	12.731	-	-	18.388	-	-	-	218.365
Canarium bengalensis(135)	0.312	-	1.767	-	-	-	-	-	-	-	-	-	2.079
Canarium euphyllum(136)	0.937	-	-	-	10.964	-	-	-	-	-	-	-	11.901
Canarium resiniferum(137)	7.493	6.244	10.602	15.560	-	-	15.029	-	-	-	-	-	54.927
Canarium species(139)	1.873	1.873	7.068	-	-	-	-	-	-	-	-	-	10.814
Careya arborea(143)	0.937	-	-	-	-	-	-	-	-	-	-	-	0.937

Species name and code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Cassia fistula (151)	0.312	-	-	7.780	-	-	-	-	-	-	-	-	8.092
Castanopsis hystrix(156)	-	1.249	-	7.780	-	-	-	-	-	-	-	-	9.029
Castanopsis indica(157)	1.873	3.122	1.767	7.780	-	-	15.029	-	-	-	-	-	29.571
Castanopsis species(159)	10.302	11.239	12.369	-	10.964	12.731	-	-	-	-	-	-	57.605
Cedrella toona(162)	7.493	3.746	-	11.2309	6.544	-	-	-	-	-	-	-	29.021
Celtis australis(164)	-	-	-	7.780	-	-	-	-	-	-	-	-	7.780
Chukrassia velutina(171)	1.249	4.995	-	-	-	-	-	-	-	-	-	-	6.244
Cinnamomum cecidodaphne(175)		2.498	-	-	-	-	-	-	-	-	-	-	2.498
Cinnamomum tanala(176)	-	-	-	-	-	-	-	-	-	-	-	16.388	16.388
Cinnamomum species(178)	1.249	1.873	1.767	-	-	-	-	-	-	-	-	-	4.889
Cordia fragrantissima(193)	1.873	-	-	-	-	-	-	-	-	-	-	-	1.873
Crataeva unilocularis(203)	0.312	0.624	-	-	-	-	-	-	-	-	-	-	0.937
Cullenia excelsa(212)	-	-	-	-	10.964	-	-	-	-	-	-	-	10.964
Supressus species(215)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Cymnosperin species(217)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Cymmomerea polyandra(218)	109.267	146.105	184.692	69.100	75.812	60.665	-	-	-	-	-	-	645.642
Dillenia indica(229)	1.873	1.873	5.301	23.339	-	-	-	-	-	-	18.388	-	50.775
Dillenia pentagyna(230)	1.561	1.249	8.835	15.560	-	-	-	-	-	-	-	-	27.204

Contents

Species name and code	Diameter classes (in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	
Diospyros melanoxylon(234)	0.937	-	-	7.780	-	-	-	-	-	-	-	-	8.716
Diospyros spp (Kalaeuse) (238)	0.312	2.498	1.767	7.780	-	-	-	-	-	-	-	-	12.357
Diospyros species(240)	7.805	9.366	17.670	7.780	10.964	12.731	-	-	-	-	-	-	66.316
Dipterocarpus gracilis(242)	4.995	14.985	9.366	5.482	33.941	25.812	18.032	-	-	-	-	-	112.613
Dipterocarpus macrocarpus(244)	-	-	-	-	-	12.731	-	-	-	-	-	-	12.731
Dipterocarpus tuberculatus(245)	2.498	3.746	14.136	7.780	10.964	-	-	-	-	-	-	-	39.124
Dolchandone falcata(247)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Duabanga grandiflora(251)	14.985	34.341	39.611	39.598	9.547	20.505	12.200	-	-	-	-	-	170.787
Dyzoxylum binectariferum(252)	51.199	34.965	51.243	62.238	65.785	12.731	15.029	36.776	-	-	-	-	329.967
Dyzoxylum malabaricum(254)	0.624	-	-	7.780	-	-	-	-	-	-	-	-	8.404
Ehretia acuminata(255)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
Elaeocarpus species(263)	32.468	3.746	9.553	-	-	-	-	-	-	-	-	-	45.767
Emblica officialis(267)	0.624	2.498	-	-	-	-	-	-	-	-	-	-	3.122
Endospermum chinense(268)	2.498	3.746	5.301	7.780	32.892	12.731	15.029	-	-	-	-	-	79.977
Engelhardtia spicata(270)	0.312	1.249	-	-	-	-	-	-	-	-	-	-	1.561
Erythrina suberosa(278)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Erythrina variegata(279)	0.312	0.624	-	-	-	12.731	-	-	-	-	-	-	13.668

Species name and code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Eucalyptus hybrid(282)	-	-	-	7.780	-	-	-	-	-	-	-	-	7.780
Euginea cymosa(284)	16.234	15.610	10.602	23.339	10.964	-	-	-	-	-	-	-	76.749
Euginea grandis(287)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Euginea praecox(288)	-	0.624	-	7.780	-	-	-	-	-	-	-	-	8.404
Euginea species(289)	9.678	10.614	7.068	15.560	-	12.731	-	-	-	-	-	-	55.651
Euphoria longana(294)	1.873	1.873	-	7.780	-	-	-	-	-	-	-	-	11.526
Eurya japonica(295)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Eagara bugrunga(300)	3.746	-	-	-	-	-	-	-	-	-	-	-	3.746
Ficus benegalensis(302)	6.868	2.498	1.767	-	-	-	-	-	-	-	18.388	-	29.521
Ficus spp. (308)	13.424	6.244	14.136	23.339	10.964	-	15.029	36.776	-	18.388	-	-	138.300
Garcinia cowa (314)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Garcinia spp. (318)	1.561	3.122	3.534	7.780	-	-	-	-	-	-	-	-	15.997
Garuga pinnata(319)	0.312	-	-	-	10.964	-	-	-	-	-	-	-	11.276
Gmelina arborea(327)	0.741	28.097	9.990	19.799	12.737	-	19.094	-	-	17.682	-	-	116.141
Gordonia obtusa(328)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Gyrocarpus oboretia(342)	4.995	11.863	1.767	-	-	-	-	-	-	-	-	-	18.625
Heritiera acuminata(347)	4.050	5.619	3.534	23.339	10.964	-	-	-	-	-	-	-	47.515
Holarhena antidysenterica(353)	.561	0.624	-	-	-	-	-	-	-	-	-	-	2.185

Species name and code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Hydnocarpus alpina(366)	14.985	14.985	14.136	7.780	-	-	-	-	-	-	-	-	51.886
Hydnocarpus kurzii(367)	1.873	4.371	1.767	-	-	-	-	-	-	-	-	-	8.011
Isonandra polyantha(377)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Ixora arborea(379)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
Jonesia asoca(382)	20.605	3.122	1.767	-	-	-	-	-	-	-	-	-	25.493
Kayea assamica(385)	0.624	-	-	-	-	-	-	-	-	-	-	-	0.624
Kayea floribunda(386)	15.610	37.463	28.659	28.536	13.786	-	-	-	-	-	-	-	122.054
Kingiodendron pinnata(389)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Kurrimia indica(392)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Kydia calycina(393)	5.619	4.371	-	-	-	-	-	-	-	-	-	-	9.990
Lagerstroemia lanceolata(396)	-	-	-	7.780	-	-	-	-	-	-	-	-	7.780
Lagerstroemia parviflora(397)	3.746	9.990	3.534	-	-	-	-	-	-	-	-	-	17.270
Lagerstroemia speciosa(398)	9.366	14.985	1.942	5.657	9.553	-	-	-	-	-	-	-	41.503
Lannea coromendelica(400)	2.185	3.122	8.835	7.780	10.964	-	-	-	-	-	-	-	32.886
Lophopetalum fimbriatum(422)	6.244	3.746	7.493	11.239	24.051	-	17.857	-	-	-	-	-	70.630
Lophopetalum wightianum(423)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
Macaranga denticulata(425)	5.307	1.873	3.534	-	-	-	-	-	-	-	-	-	10.714
Macaranga peltata(427)	33.717	1.249	-	-	-	-	15.029	-	-	-	-	-	49.994

Species name & code	Diameter classes(in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Macaranga pustulata(428)	0.624	-	-	-	-	-	-	-	-	-	-	-	0.624
Mallotus philippinensis(441)	0.937	0.624	-	-	-	-	-	-	-	-	-	-	1.561
Mangifera andamanica(443)	0.312	-	-	-	-	-	-	18.388	-	-	-	-	18.700
Mangifera indica(444)	4.995	7.493	-	4.421	-	-	29.346	-	-	-	-	43.139	89.393
Mangifera sylvatica(445)	4.995	4.995	1.767	7.780	10.964	12.731	-	-	-	-	-	-	43.232
Mansonia dipke(452)	0.624	0.624	-	-	-	-	-	-	-	-	-	-	1.249
Melia azadirachta(454)	-	-	-	7.780	-	-	-	-	-	-	-	-	7.780
Mesua ferrea (460)	54.946	35.590	47.453	63.687	32.718	8.136	-	-	-	-	-	-	242.528
Michelia champaca(462)	7.493	14.985	6.275	-	10.608	-	-	-	-	-	-	-	39.361
Michelia doltsopa(463)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Michelia lanuginosa(464)	-	-	-	7.780	-	-	-	-	-	-	-	-	7.760
Michelia spp. (468)	0.937	0.624	-	-	-	-	-	-	-	-	-	-	1.561
Miliusa spp. (470)	2.185	2.498	-	-	-	-	-	-	-	-	-	-	4.683
Mansonia spp. (477)	1.561	0.624	7.068	23.339	-	-	-	-	-	-	-	-	32.593
Myristica spp. (490)	18.731	10.614	8.835	-	-	-	-	-	-	-	-	-	38.181
Pajanelia longifolia(510)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Palaquium polyanthum(513)	29.346	22.478	19.106	18.575	-	-	-	-	-	-	-	-	89.505
Parkia joyrica(516)	-	0.624	1.767	-	-	-	-	-	-	-	-	-	2.391
Phoebe attenuata(521)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312

Species name and code	Diameter classes (in cm.) 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	110-119	120+	Total
Phoebe goalparensis(325)	0.312	0.624	-	-	-	-	-	-	-	-	-	-	0.937
Podocarpus nerifolia(543)	4.995	4.995	-	5.307	-	12.200	-	-	-	-	-	-	27.498
Premna bengalensis(552)	7.493	7.493	5.301	-	-	-	15.029	-	-	-	-	-	35.315
Pterospermum acerifolium(570)	1.873	2.498	7ø.068	15.560	10.964	-	-	-	-	-	-	-	37.962
Pterospermum canescens(571)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Pyrus pashia(578)	24.039	22.478	12.369	-	-	-	-	-	-	-	-	-	58.885
Quercus spp. (594)	0.937	-	-	-	-	-	-	-	-	-	-	-	0.937
Robinia pseudocacia(605)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Salmalia insignis(613)	-	-	-	7.780	-	12.731	-	-	-	-	-	-	20.511
Sapium baccatum(620)	8.741	12.488	1.424	13.262	13.437	10.433	11.314	-	-	-	-	25.637	96.735
Saurinia nepalensis(624)	0.624	-	-	-	-	-	-	-	-	-	-	-	0.624
Saurinia punduana(625)	0.312	0.624	-	-	-	-	-	-	-	-	-	-	0.937
Schima wallichii(627)	5.932	13.736	31.806	7.780	21.928	-	-	-	-	-	-	-	81.182
Schleichera trijuga(628)	5.307	4.995	7.068	23.339	10.964	-	-	-	-	-	-	-	51.674.
Semecarpus anacardium(630)	3.746	8.741	7.068	-	-	-	-	-	-	-	-	-	19.556
Shorea robusta(633)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Sloanea assamica(636)	-	-	-	-	10.964	-	-	-	-	-	-	-	10.964
Spondias pinnata(642)	1.249	1.249	1.767	15.560	10.964	-	-	-	-	-	-	-	30.788

Species name and code	Diameter classes(in cm. 10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	Total
Spondias species(643)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Stephegyne parviflora(644)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Sterculia foetida(646)	4.995	8.117	17.670	31.119	21.928	-	-	-	-	-	-	-	83.829
Sterculia guttata(647)	0.937	-	-	-	-	-	-	-	-	-	-	-	0.937
Sterculia villosa(649)	1.873	3.122	1.767	-	10.964	-	15.029	-	-	-	-	-	32.755
Sterculia spp. (650)	4.683	4.995	3.534	15.560	21.928	-	-	-	-	-	-	-	50.700
Stereospermum personatum(652)	6.556	7.493	17.670	54.459	54.821	-	15.029	-	-	-	-	-	156.027
Symplocos crataegoides(662)	-	-	-	7.780	-	-	-	-	-	-	-	-	7.780
Symplocos laurinia(663)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Syzygium suminii(665)	171.081	174.827	69.931	60.303	27.573	11.495	-	15.204	-	-	-	-	530.412
Syzygium spp.(668)	1.673	1.249	1.767	-	10.964	-	-	-	-	-	-	-	15.853
Talauma phellocarpa(670)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
Tectona grandis(673)	15.297	11.863	35.340	54.459	32.892	12.731	-	-	-	-	-	-	162.583
Terminalia arjuna(675)	-	0.624	-	-	-	-	-	-	-	-	-	-	0.624
Terminalia belerica(676)	5.307	3.746	3.534	7.780	10.964	12.731	15.029	-	-	-	-	-	59.091
Terminalia catappa(678)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Terminalia chebula(679)	2.185	3.122	14.136	15.560	32.892	12.731	-	-	18.388	-	-	-	99.014

Species name and code	Diameter classes (in cm.)												Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120 +	
Terminalia citrina(680)	0.937	1.249	-	7.780	-	-	-	-	-	-	-	-	9.965
Terminalia myriocarpa(683)	0.312	-	1.767	-	-	-	-	-	-	-	-	-	2.079
Terminalia procera(685)	0.312	-	-	-	-	-	-	-	-	-	-	-	0.312
Terminalia species(686)	-	-	1.767	-	-	-	-	-	-	-	-	-	1.767
T. trameles nudiflora(688)	3.122	11.239	18.731	17.483	31.843	21.216	-	15.385	-	-	-	-	119.020
Toona ciliata(691)	1.561	0.624	5.301	7.780	-	-	-	-	-	-	-	-	15.266
Trewia nudiflora(695)	2.185	1.249	10.602	38.899	10.964	-	-	-	-	-	-	-	63.899
Vitex peduncularis(713)	7.805	6.244	8.835	-	10.964	12.731	-	[illegible]	18.388	-	-	-	64.967
Zanthoxylum budrunga(730)	0.624	1.873	1.767	15.560	-	-	-	-	-	-	-	18.388	38.212
UNIDENTIFIED TREES(924)	300.640	172.329	204.972	381.210	120.606	140.043	60.115	-	-	-	-	-	1379.914
TOTAL :	1403.922	1204.432	1272.745	1619.802	1126.243	589.179	333.276	175.220	96.679	36.071	84.160	105.552	8047.266

TABLE NO.4.2

TOTAL VOLUME(IN 000M3) BY SPECIES AND DIAMETER CLASSES(IN CM.)

DISTRICT:CACHAR: STRATUM:BAMBOO:

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
ADINA CORDIFOLIA	24	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
AGALIA ANDAMANICA	31	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
ALBIZZIA LEBBEK	41	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
ALBIZZIA LUCIDA	42	-	-	1.770	-	-	-	-	-	-	-	-	-	1.770
ALBIZZIA PROCERA	45	0.313	-	-	7.795	-	-	-	-	-	-	-	-	8.107
ALBIZZIA SPECIES	46	1.564	3.753	3.541	-	-	-	-	-	-	-	-	-	8.858
ALSTONIA SCH OLARIS	52	0.313	0.626	-	-	-	-	-	-	-	-	-	-	0.938
AMOORA WALLICHII	56	0.313	0.626	3.541	-	-	-	-	-	-	-	-	-	4.479
ANTHOCEPHALUS CADAMBA	65	0.938	-	1.770	-	-	-	-	-	-	-	-	-	2.709
ARTOCARPUS CHAPLASHA	75	39.411	20.018	11.260	13.813	8.858	-	-	-	-	-	-	-	93.361
ARTOCARPUS SPECIES	80	0.938	0.626	-	-	-	-	-	-	-	-	-	-	1.564
BAUHINIA PURPUREA	96	2.190	-	1.770	-	-	-	-	-	-	-	-	-	3.960
BAUHINIA RETUSA	98	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
BEILSCHMIEDIA ASSAMICA	100	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
BOMBAX CEIBA	109	0.626	1.251	-	-	-	-	-	-	-	-	-	-	1.877
CALLICARPA ARBOREA	121	4.066	1.877	1.770	-	-	-	-	-	-	-	-	-	7.713
CALOPHYLLUM POLUANTHUM	127	-	-	1.770	-	-	-	-	-	-	-	-	-	1.770
CANARIUM RESINIFERUM	137	0.626	0.626	1.770	-	-	-	-	-	-	-	-	-	3.022
CASSIA NODOSA	152	-	-	1.770	-	-	-	-	-	-	-	-	-	1.770
CASTONOPSIS INDICA	157	-	0.626	1.770	-	-	-	-	-	-	-	-	-	2.396
CASTANOPSIS SPECIES	159	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
CEDRELA SERRATA	161	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
CEDRELA TOONA	162	1.251	-	3.753	-	-	-	-	-	-	-	-	-	5.005
CHUKRASIA VELLUTINA	171	-	-	3.128	-	-	-	-	-	-	-	-	-	3.128
CINNAMOMUM SPECIES	176	0.626	1.251	-	-	-	-	-	-	-	-	-	-	1.877
CYNOMEREA POLYANDRA	218	13.137	9.384	6.381	16.290	-	-	9.565	-	-	-	-	-	54.757
DILENIA INDICA	229	-	0.626	-	-	-	-	-	-	-	-	-	-	0.626
DILLENRA PENTAGYNA	230	1.564	0.626	-	-	10.985	-	-	-	-	-	-	-	13.175
DIOSPYROS SPECIES	240	0.313	-	-	7.795	-	-	-	-	-	-	-	-	8.107

Contents

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
DIPTEROCARPUS MACROCARPUS	244	2.190	-	1.770	-	10.985	-	-	18.423	-	-	-	-	33.368
DUABANGA GRAMDOF:PRA	251	5.630	-	9.922	5.668	9.565	-	-	-	17.185	-	-	-	47.969
DYSOXYLUM BINECTARIFORUM	252	6.881	3.128	1.770	7.795	-	-	-	-	-	-	-	-	19.574
EMBLICA OFFICINALIS	267	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
ENGELHARDTIA SPICATA	270	0.626	-	1.770	7.795	-	-	-	-	-	-	-	-	10.191
EUGINEA CYMOSA	284	1.251	1.877	1.770	-	10.985	-	-	-	-	-	-	-	15.883
EUGINEA SPE CIES	289	-	0.626	-	-	-	-	-	-	-	-	-	-	0.626
FICUS BENGALENSIS	302	2.190	-	-	-	-	-	-	-	-	-	-	-	2.190
FICUS SPECIES	308	3.128	-	-	15.589	-	-	-	-	-	-	-	-	18.717
GARCINIA SPECIES	316	-	-	1.770	-	-	-	-	-	-	-	-	-	1.770
GARUGA PINNATA	319	0.313	1.251	-	-	-	-	-	-	-	-	-	-	1.564
GMELINA ARBOREA	327	7.507	5.630	10.009	8.502	-	-	-	-	-	-	-	-	31.648
GREWIA TIEIANEFOLIA	336	-	-	3.541	-	-	-	-	-	-	-	-	-	3.541
GYROCARPUS OOERATIA	342	-	-	-	7.795	-	-	-	-	-	-	-	-	7.795
HYDNOCARPUS ALPINA	366	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
IXORA CALYCINA	380	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
KAYEA FLORIBUNDA	386	0.626	3.753	-	-	-	-	-	-	-	-	-	-	4.379
KYDIA CALYCINA	393	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
LAGERSTROEMIA PARVIFLORA	397	5.630	3.541	-	-	-	-	-	-	-	-	-	-	14.488
LAGERSTROEMIA SPACIOSA	398	1.251	-	-	-	-	-	-	-	-	-	-	-	1.251
LANNEA COROMANDELICA	400	-	-	1.770	-	-	-	-	-	-	-	-	-	1.770
LITSAEA MONOPETALA	415	-	0.626	-	-	-	-	-	-	-	-	-	-	0.626
LOPHOPETALUM FIMBRIATUM	422	0.626	1.251	-	-	12.049	-	-	-	-	-	-	-	13.925
MAEARANGA DENTICULATA	425	16.891	-	-	-	-	-	-	-	-	-	-	-	16.891
MACARANGA INDICA	426	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
MACARANGA PELTATA	427	10.009	0.626	1.770	-	-	-	-	-	-	-	-	-	12.405
MACARANGA PUSTULATA	428	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
MANGIFERA INDICA	444	0.626	-	-	-	-	-	-	-	-	-	-	-	0.626
MANSONIA DIPKE	452	0.313	-	-	-	-	-	-	-	-	-	-	-	0.313
MESUA FERREA	460	-	1.877	2.502	5.317	-	-	-	14.526	-	-	-	-	24.222
MONSONIA SPECIES	477	1.564	1.251	1.770	7.795	-	-	-	-	-	-	-	-	12.380

SPECIES NAME	CODE	DIAMETER CLASSES(IN CM.)												
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120+	TOTAL
MYRISTICA SPECIES	490	0.626	0.626	-	-	-	-	-	-	-	-	-		1.251
PALAQUIM PELYANTHUM	513	5.630	7.507	-	-	7.088	-	-	-	-	-	-		20.225
PREMNA BENGALENSIS	552	-	-	-	-	10.985	-	-	-	-	-	-		10.985
PTEROSPERMUM ACERIFOLIUM	570	0.313	-	-	-	-	-	-	-	-	-	-		0.313
PYRUS PASH IA	578	5.630	0.626	-	-	-	-	-	-	-	-	-		6.256
SAPIUM BACCATUM	620	1.877	1.251	0.238	13.287	26.925	-	-	-	-	-	-		43.578
SCHIMA WALLICHII.	627	0.313	1.251	-	7.795	-	-	-	-	-	-	-		9.359
SCHLEICHERA TRIJUGA	628	0.313	-	-	-	-	-	-	-	-	-	-		0.313
SEMECARPUS ANACARDIUM	630	0.626	-	-	7.795	-	-	-	-	-	-	-		8.420
SLONEA ASSAMICA	636	-	-	-	-	-	-	-	-	-	18.423	-		18.423
SPONDIAS PINNATA	642	0.313	0.626	-	7.795	-	-	-	-	-	-	-		8.733
STERCULIA FOETIDA	646	-	0.626	-	-	-	-	-	-	-	-	-		0.626
STERCULIA VILLOSA	649	1.877	0.626	-	-	-	-	-	-	-	-	-		2.502
STERCULIA SPECIES	650	0.313	1.877	3.541	-	-	-	-	-	-	-	-		5.730
STEREOSPERMUM PERSONATUM	652	0.626	0.626	-	15.589	-	12.756	15.058	-	-	-	-		44.654
SYMPLOCOIS CRATAEGOIDES	662	0.313	-	-	-	-	-	-	-	-	-	-		0.313
SYZYGIUM CUMINII	665	21.270	12.512	4.379	-	-	-	-	-	-	-	-		38.160
SYZYGIUM SPECIES	668	0.626	-	-	-	-	-	-	-	-	-	-		0.626
TECTONA GRANDIS	673	1.251	0.626	-	-	-	-	-	-	-	-	-		1.877
TERMINALIA CHEBULA	679	0.313	1.251	1.770	-	-	-	-	-	-	-	-		3.334
TERMINALIA CITRINA	680	-	-	-	7.795	-	-	-	-	18.423	-	-		26.218
TETRAMELES NUDIFLORA	686	-	-	6.256	4.379	5.317	10.629	13.106	-	-	-	-		39.687
TREWIA NUDIFLORA	695	0.313	0.626	-	-	-	-	-	-	-	-	-		0.938
VITEX PENDUCULARIS	713	0.313	-	1.770	-	10.985	-	-	-	-	-	-		13.068
ZANTHOXYLUM BUDRUNGA	730	0.313	0.626	-	-	-	-	-	-	-	-	-		0.938
ZANTHOXYLUM ALATUM	731	-	-	-	-	-	-	-	-	-	-	-	18.423	18.423
UNIDENTIFIED TREES	924	59.430	18.142	28.326	38.973	32.955	12.756	-	-	-	-	-	-	190.582
TOTAL:		243.975	118.860	135.725	215.355	157.683	36.140	37.729	32.949	17.185	18.423	18.423	18.423	1050.868

TABLE NO. 5.8 [1]

DISTRIBUTION OF NO. OF CULMS/HA. BY AGE AND SOUNDNESS (Misc. Stratum)

	Current Year	Green Sound Culms						Current Year	Green Damaged Culms					
		One or two years old			Over two years old				One to two years old			Over two years old		
		2<5 cms.	5<8 cms.	8 + Cms.	2<5 cms.	5<8 cms.	8 + Cms.		2<5 cms.	5<8 cms.	8 + cms.	2<5 cms.	5<8 cms.	8+ cms.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Clump forming Bamboo	130.2	82.5	31.2	3.3	133.2	39.3	14.7	14.4	19.5	9.9	0.3	21.3	12.0	5.7
Percentage	17.9	11.4	4.3	0.4	18.3	5.4	2.0	1.9	2.7	1.4	0.1	2.9	1.6	0.8
Non-clump forming Bamboo.	357.0	261.3	39.3	0.6	369.9	66.3	12.3	31.2	59.4	3.0	-	81.6	8.7	-
Percentage	20.5	15.0	2.2	-	21.3	3.8	0.7	1.8	3.4	0.2	-	4.7	0.5	-

Dry sound culms			Dry Damaged Culms			Decayed culms.	Total No. of culms
2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5<8 cms.	8+ cms.		
16	17	18	19	20	21	22	23
24.9	7.5	2.1	42.9	11.7	6.6	114.0	727.2
3.4	1.0	0.3	5.9	1.6	0.9	15.8	100.0
58.8	15.3	-	107.4	9.3	0.6	259.8	1741.5
3.4	0.9	-	6.2	0.5	-	14.9	100.0

TABLE NO. 5.2.

DISTRIBUTION OF NO. OF CULMS/HA. BY AGE AND SOUNDNESS - BAMBOO STRATUM

	Current Year	Green Sound Culms						Current Year	Green Damaged Culms					
		One or two years old			Over two years old				One to two years old			Over two years old		
		2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5<8 cms.	8+		2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5<8 cms.	8+ cms.
Clump forming bamboo	148.5	90.2	38.9	10.0	103.7	69.1	20.0	15.9	17.3	15.7	2.7	14.6	12.1	6.2
Percentage	20.2	12.2	5.3	1.3	14.1	9.4	2.7	2.2	2.4	2.1	0.4	2.0	1.6	0.8
Non-clump forming bamboo	567.0	372.6	34.2	1.8	477.0	64.8	18.9	72.0	116.1	3.6	0.9	82.8	4.5	1.8
Percentage	22.8	14.9	1.4	-	19.2	2.6	0.7	2.9	4.6	0.1	-	3.3	0.2	0.1

Dry Sound Culms			Dry Damaged Culms			Decayed culms	Total no. of culms
2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5<8 cms.	8+ cms.		
26.2	8.4	5.9	32.1	15.6	5.9	77.5	736.5
3.6	1.1	0.8	4.4	2.1	0.8	10.5	100.0
84.6	4.5	5.4	151.2	5.4	6.3	419.4	2494.8
3.4	0.2	0.2	6.1	0.2	0.2	16.9	100.0

TABLE NO. 6.1.

BAMBOO DRY WEIGHT/H.A IN TONNES - MISC. STRATUM

	Current Year	Green Sound Culms						Current year	Green Damaged Culms					
		One or two years old			Over two years old				One to two years old			Over two years old		
		2 <- 5 cms	5 <8 cms.	8+ cms.	2 <5 cms.	5 <8 cms.	8+ cms.		2 <5 cms.	5 <8 cms.	8+ cms.	2 <5 cms.	5 <8 cms.	8+ cms.
Clump forming bamboo	0.423	0.268	0.284	0.070	0.433	0.358	0.308	0.023	0.032	0.045	0.003	0.034	0.055	0.060
Percentage	13.444	8.462	8.967	2.210	13.672	11.304	9.725	0.726	1.010	1.421	0.009	1.073	1.736	1.894
Non-clump forming bamboo	1.010	0.739	0.303	0.005	1.047	0.514	0.095	0.088	0.168	0.023	-	0.115	0.034	-
Percentage	19.827	14.507	5.987	0.098	20.558	10.090	1.865	1.727	3.298	0.451	-	2.257	0.667	-

Dry Sound Culms			Dry Damaged Culms			Total
2 <5 cms.	5 <8 cms.	8+ cms.	2 <5 cms.	5 <8 cms.	8+ cms.	
0.162	0.137	0.088	0.139	0.107	0.138	3.167
5.115	4.326	2.779	4.389	3.378	4.357	100.00
0.333	0.237	-	0.304	0.072	0.005	5.094
6.537	4.652	-	5.968	1.413	0.098	100.00

TABLE NO. 6.2.

BAMBOO DRY WEIGHT/H.A. IN TONNES - BAMBOO STRATUM

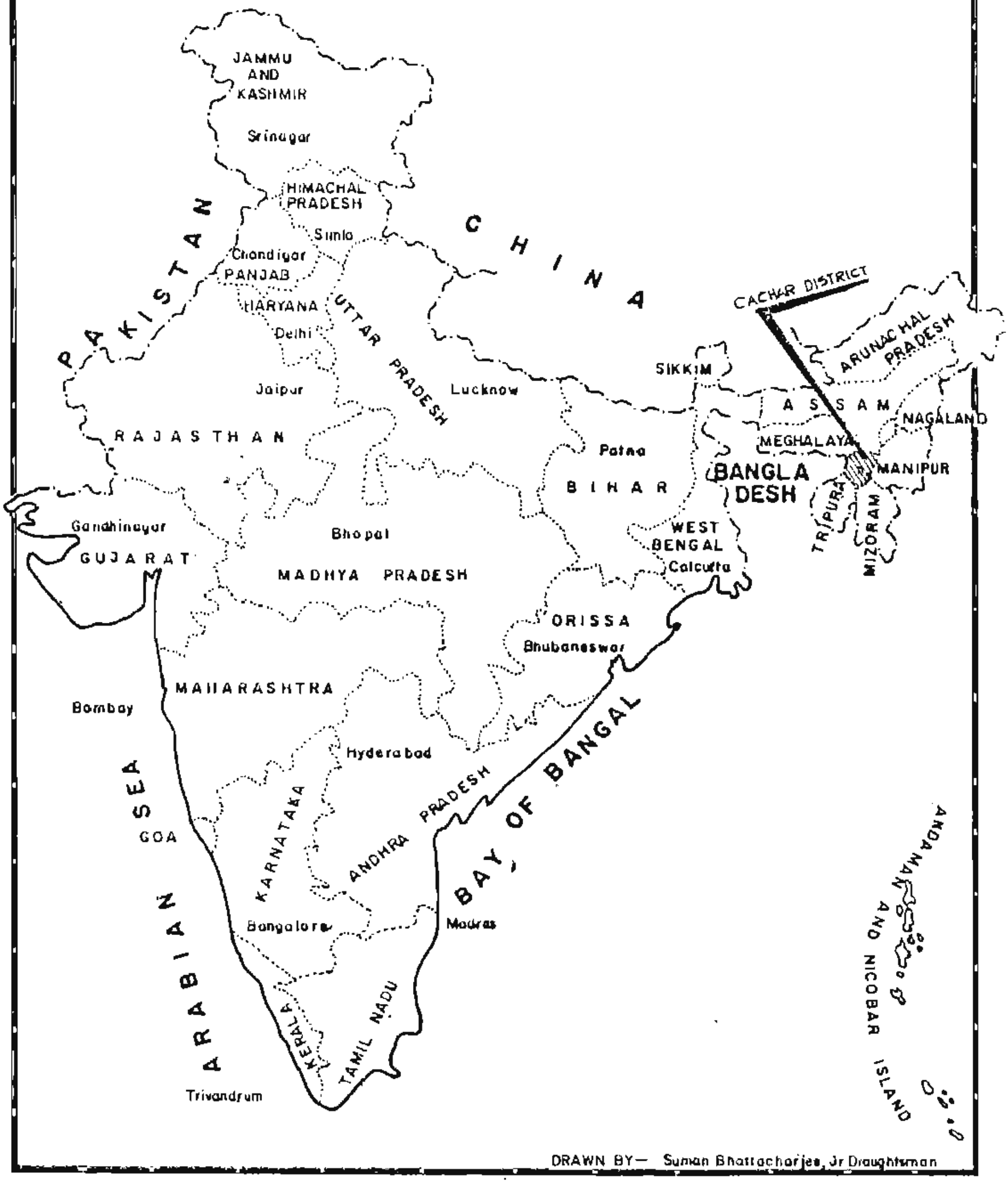
	Current Year	Green Sound Culms						Current Year	Green Damaged Culms					
		One or two years old			Over two years old				One to two years old			Over two years old		
		2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5 8 cms.	8+ cms.		2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5<8 cms.	8+ cms.
Clump forming bamboo	0.483	0.293	0.355	0.209	0.337	0.630	0.419	0.026	0.028	0.071	0.028	0.024	0.055	0.065
Percentage	12.187	7.393	8.958	5.274	8.504	15.897	10.575	0.656	0.706	1.791	0.706	0.606	1.387	1.640
Non-clump forming bam-boo.	1.604	1.053	0.265	0.014	1.350	0.503	0.147	0.006	0.328	0.028	0.007	0.117	0.017	0.007
Percentage	24.312	15.959	4.016	0.212	20.461	7.623	2.228	0.091	4.971	0.424	0.106	1.773	0.258	0.106

Dry Sound Culms			Dry Damaged Culms			Total
2<5 cms.	5<8 cms.	8+ cms.	2<5 cms.	5<8 cms.	8+ cms.	
0.170	0.153	0.247	0.104	0.142	0.124	3.963
4.290	3.861	6.233	2.624	3.583	3.129	100.00
0.479	0.070	0.084	0.428	0.042	0.049	6.598
7.260	1.061	1.273	6.487	0.636	0.743	100.00

MAP OF INDIA

SHOWING PROJECT AREA IN CACHAR DIST.(ASSAM)

SCALE :- 1: 15000 000



DRAWN BY— Suman Bhattacharjee, Jr Draughtsman

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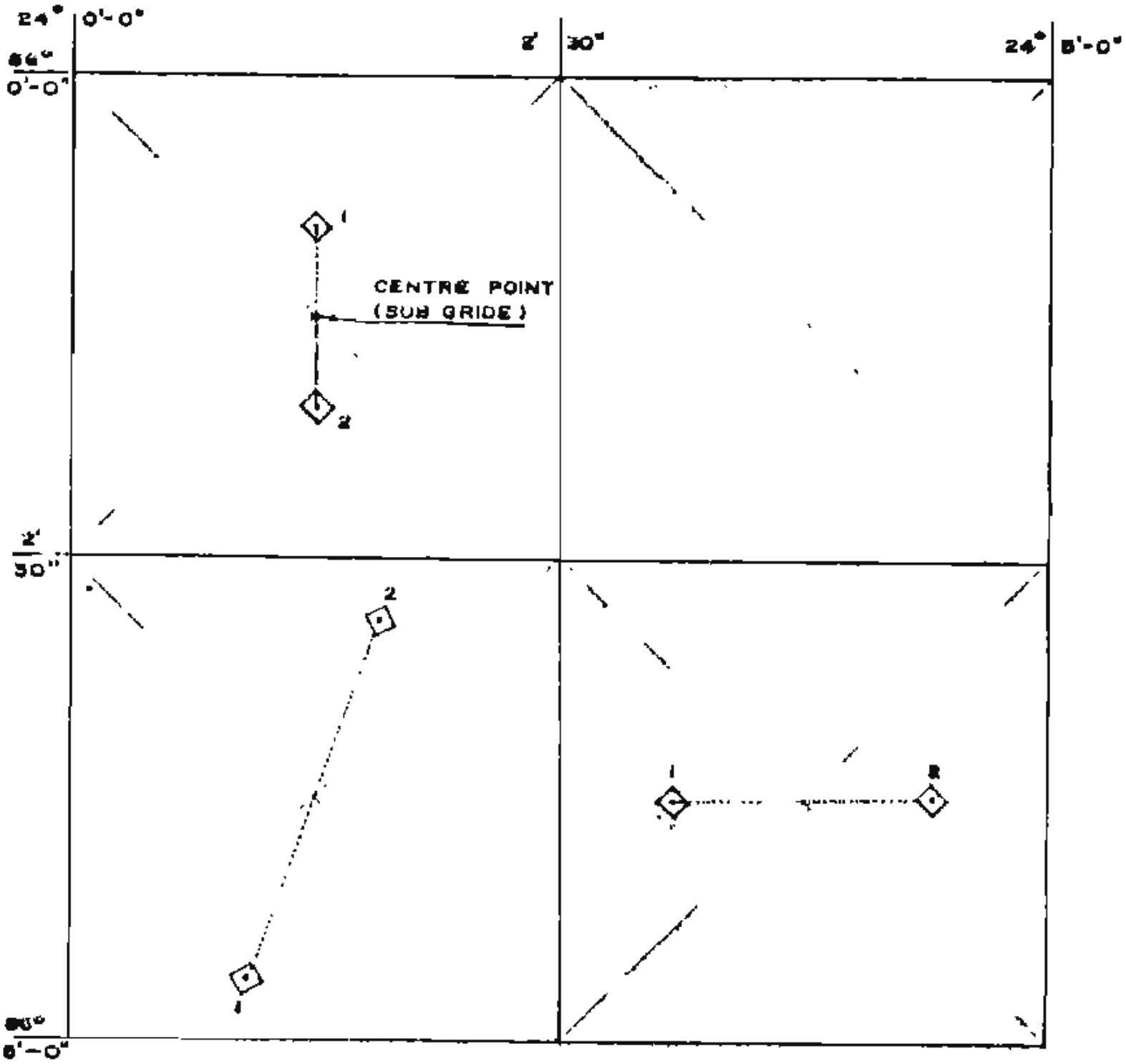
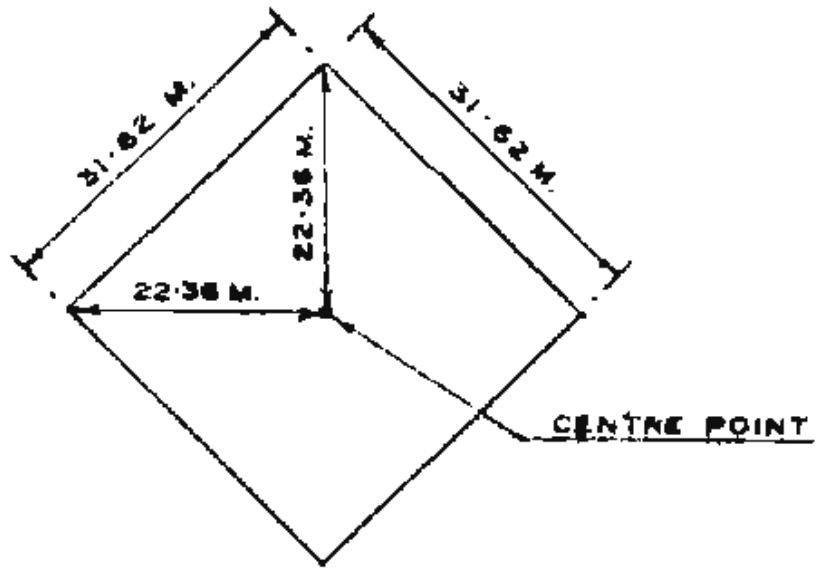
FOREST SURVEY OF INDIA

INVENTORY DESIGN



FIRST PLOT IS SELECTED RANDOMLY AND THE SECOND PLOT IS SITUATED AT AN EQUAL DISTANCE FROM THE CENTRE OF THE FIRST PLOT TO THE CENTRE OF 2'-30"x 2'-30" SUB GRID AND IS JUST IN THE OPPOSIT DIRECTION.



DETAILS OF PLOT

DRAWN BY - SUMAN BHATTACHARJEE, Jr. D/man

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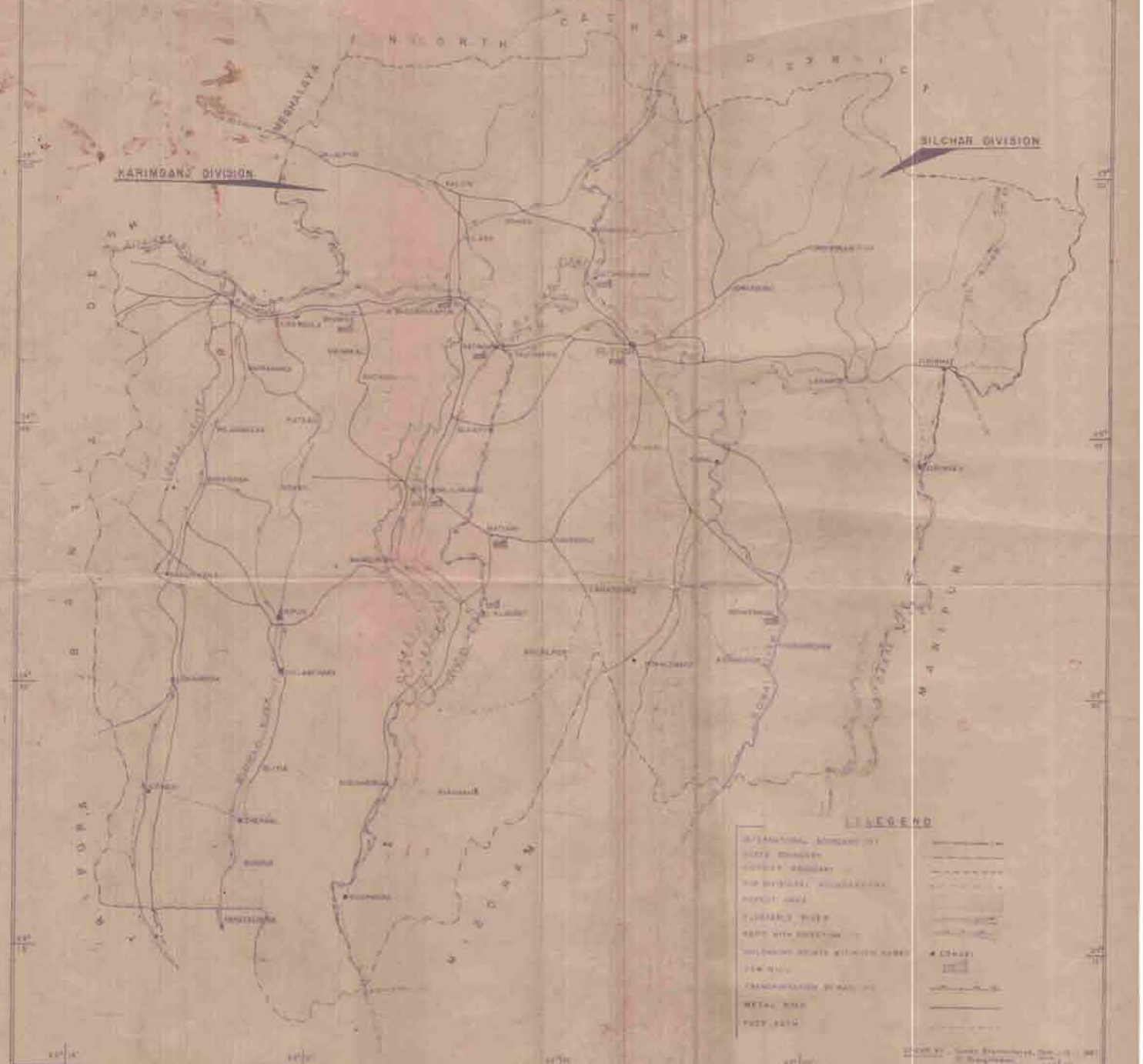
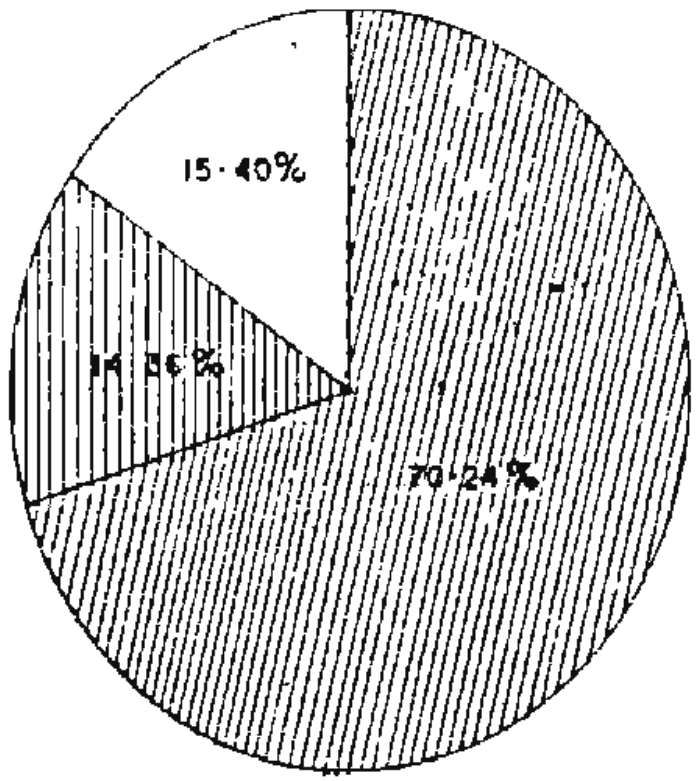
CACHAR DISTRICT

TIMBER RRAFTING IN CACHAR DISTTRICT

(ASSAM)



STRATIFICATION OF RECORDED FOREST



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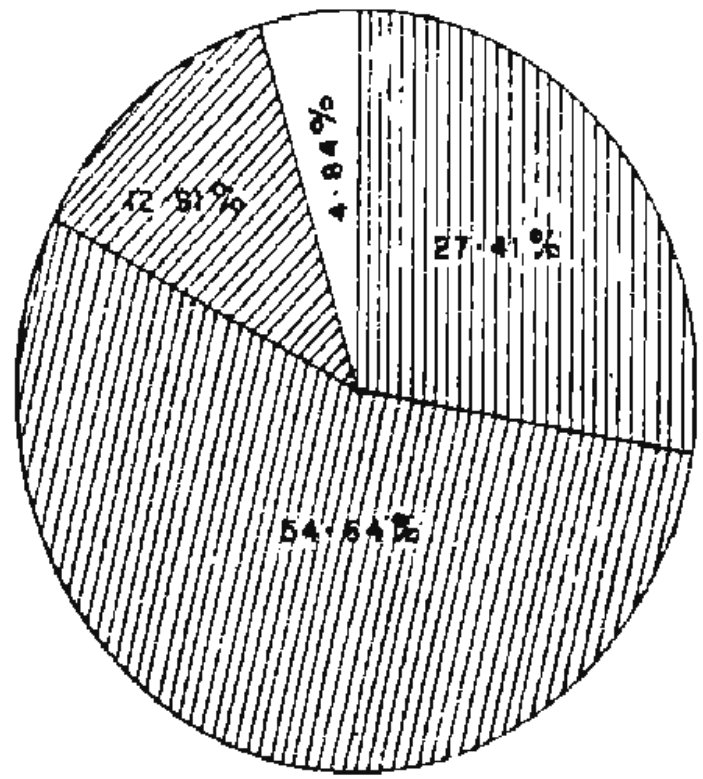
- MISCELLANEOUS FOREST
- BAMBOO FOREST
- NON-CLASSIFIED AREA

DEGRADATION OF FOREST



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- HEAVILY DEGRADED FOREST
- MODERATELY DEGRADED FOREST
- MILOLY DEGRADED FOREST
- NON-DEGRADED FOREST

DRAWN BY.. Suman Bhattacharya, 5-1-87.

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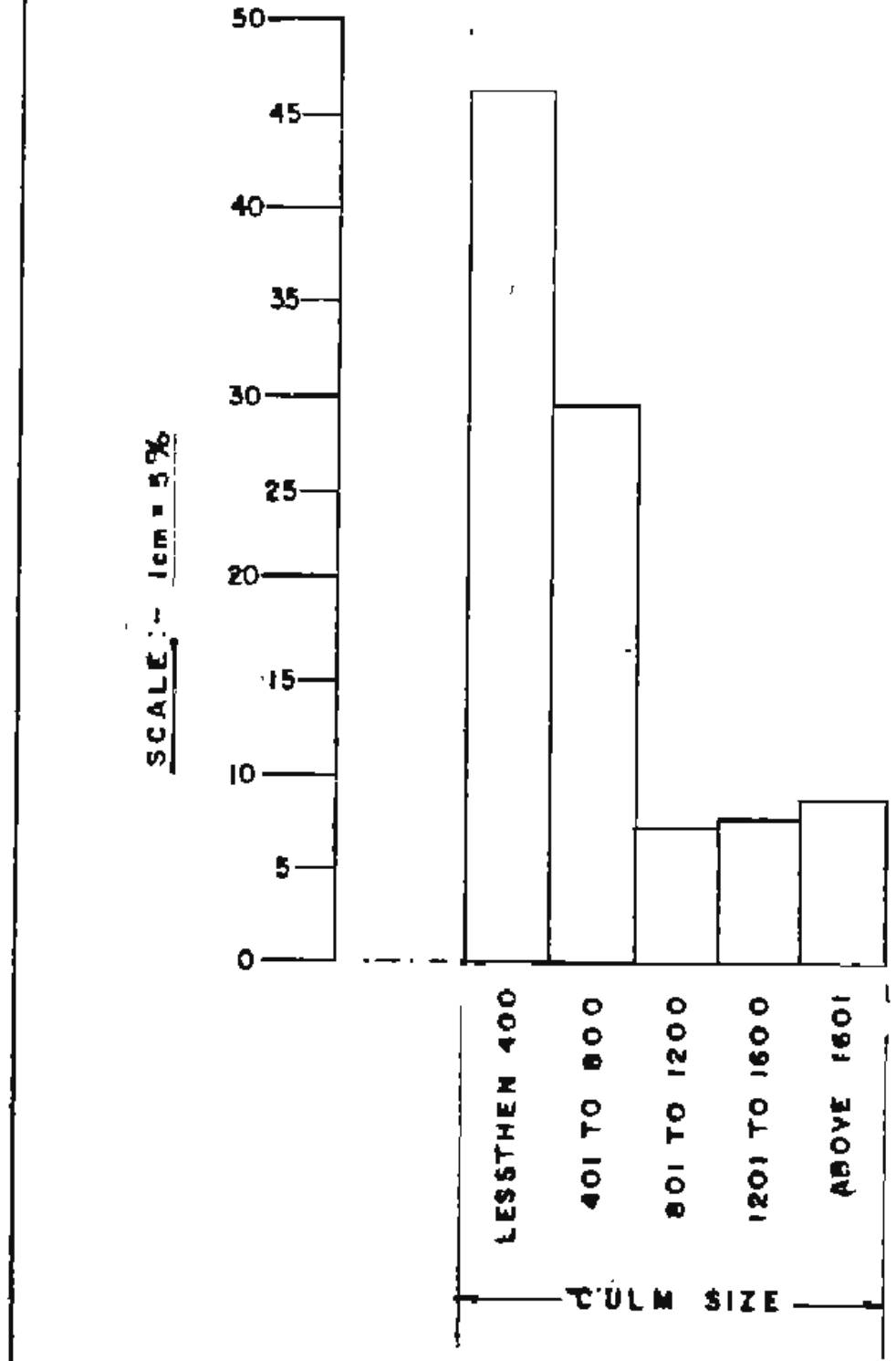
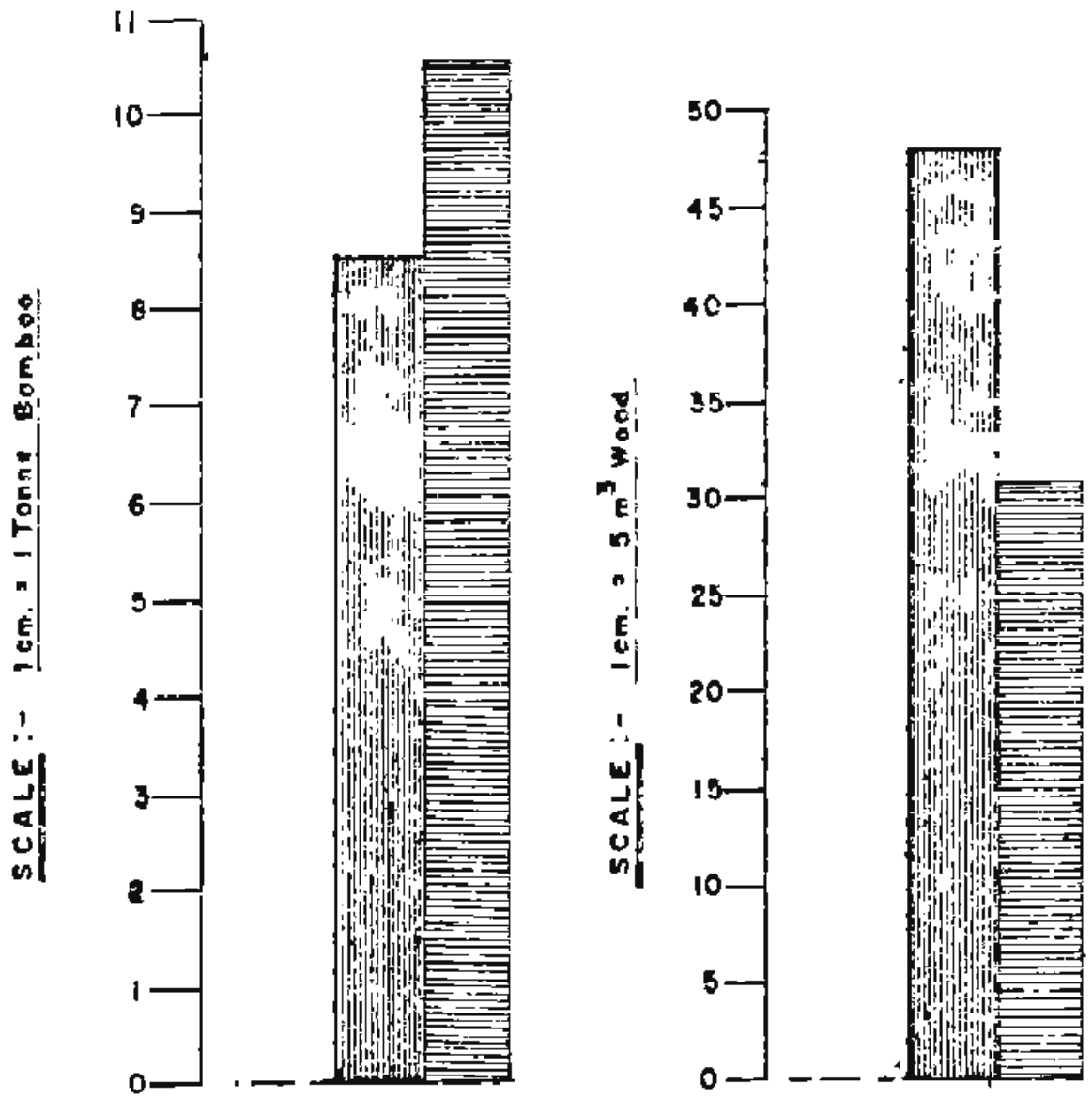
PERCENTAGE DISTRIBUTION OF BAMBOO CULM BY CULM SIZES



BAMBOO WEIGHT & TREE VOLUME PER HA. BY STRATUM



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MISCELLANEOUS STRATUM

BAMBOO STRATUM

DRAWN BY.. Suman Bhattacharyc, Dt. 6·1·1987

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