



For Official Use Only

Forest Resources Survey
Of
Upper Subansiri
District

(ARUNACHAL PRADESH)

INVENTORY RESULTS

FOREST SURVEY OF INDIA

NORTHERN ZONE

SHIMLA-1

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P R E F A C E

This report presents the forest inventory results of Upper Subansiri district of Arunachal Pradesh. Field work in the district was carried out during October 1989 to February, 1990.

The data has been processed and analysed, for the first time, by the Northern Zone using the facility of newly installed personal computer.

The total geographical area of the district is 7032 km^2 . The inventory was made over an area of 4358.12 km^2 which is forested.

Bamboo occurs in pure form over an area of 52.33 km^2 and as understorey over an area of 450.69 km^2 . The clumps are in very poor shape over an area of 84.22 km^2 .

Three forest types have been identified in the area. These are Upland Hardwood, Conifers mixed with Hardwood and Miscellaneous forest types. Amongst these types, the "Upland Hardwood" has been assessed to be having the best average stocking of 236.13 m^3 per hectare. The lowest average stock per hectare is that for "Conifers mixed with hardwood" which has only 63.15 m^3 stock per hectare. The overall average growing stock per hectare is 220.98 m^3 .

The total growing stock standing in the accessible tree forest area has been assessed at 45.40 million cubic metres.

It is hoped that the report will be of use to the State forest department and other organisations engaged in forest resources management planning. The inventory was made by the staff of Northern Zone of Forest Survey of India, Shimla who deserves commendation for this work.

(JAGIR SINGH)
Director

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SUMMARY

1. The forest inventory survey has been carried out in the Upper Subansiri district of Arunachal Pradesh during October 1989 to February 1990.

2. The objectives of the survey were to assess the forest resources of the district and changes therein, so as to focus attention on the critical aspects, thereby helping in the development planning.

3. The total geographical area of the district is 7032 Sq.Km. Of this the maps were available only in respect of 4996 Sq.Km. having forest area (green wash) of 4435 Sq.Km. (88.77 %) in the reference year 1963.

4. Survey work for forest inventory was taken up over the forest area of 4358 Sq.Km. (after excluding the area of Kamla Reserve Forest) and the present (1989) status of this area is summarized below:

Status	Area (Sq.Km.)	Percentage
(a) Inaccessible area	1214.87	27.88
(b) Area permanently diverted to non-forestry uses. (1983 to 1989)	82.89	2.13
(c) Area under scrub / grassland (degraded forest)	34.83	0.80
(d) Area under current and last year's shifting cultivation.	478.99	10.99
(e) Area under Bamboo Brakes.	52.33	1.20
(f) Assessed tree forest area.	2484.21	57.00
Total	4358.12	100.00

The assessed tree forest area includes assessment of those tree forest areas which have been identified on the basis of vicinity visits only. After excluding this category the accessible tree forest has been assessed as 2054.28 Sq.Km.

The assessment of the forest inventory is for the accessible tree forest and area under bamboo brakes

only.

5. The overall average canopy density - over the entire assessed tree forest area of 2484.21 Sq.Km. - is 57.54 %.

6. The soil depth is adequate over most of the assessed forest area and only 0.45 % area has been assessed to be suffering from moderate or heavy erosion.

7. Only 69.67 Sq.Km. of the assessed forest area is potentially plantable.

8. Natural regeneration - of economically important species - is inadequate or absent over most of the area.

9. Bamboo occurs in pure form (i.e. as bamboo brakes) over an area of 52.33 Sq.Km. and as understorey with the tree forest over an area of 450.89 Sq.Km. Out of this total bamboo bearing area of 503.02 Sq.Km., 84.22 Sq.Km. has been assessed to be of the category "Bamboo present but completely hacked".

10. The total non-hacked bamboo area of 418.80 Sq.Km. bears 58.22 million equivalent sound culms of clump-forming bamboo. The dry weight of this bamboo stock has been assessed to be 572.18 thousand tonnes.

11. Three forest types have been identified in the survey area. The assessment of average stock (volume per hectare) and stand (no. of stems per hectare) in respect of these forest types is as under:-

Forest type	Total area (hectares)	vol/hect. cu.m.	stems/hect. no.
Upland Hardwood	75829.59	236.13	296.25
Conifers mixed with Hardwood	3483.27	63.15	60.00
Miscella- neous.	126115.20	216.23	338.21
Total(all F.Types)	205428.06	220.98	316.78

12. The total growing stock, in the accessible tree forest area - is assessed at 45.40 million cubic metres corresponding to 65.07 million stems.

Chapter 1

THE BACKGROUND

1.1 Introduction

On the recommendations of National Commission on agriculture the erstwhile PISFR organization was converted into Forest Survey of India(FSI) w.e.f. 1-6-1981. The main objectives of Forest Survey of India were to monitor periodically the changing situation of land and forest resources and to present the data for serving the needs of development planning. The forest inventory of resources was undertaken to provide area and volumetric information on forest land and its resources using statistically designed methodology which was evolved in consultation with the Central Statistical Organization (CSO).

After a critical review of the activities of Forest Survey of India, the Government of India has redefined its objectives w.e.f. 30-6-1986. The forest inventory activity is required to achieve one of these freshly defined objectives viz "To undertake work in regard to the preparation of forest inventory in selected states/UTs on agency basis".

As per the reorganization of Forest Survey of India, on 30-6-1986, the forest inventory activity is to be confined to the North Eastern region, Haryana, Punjab and Orissa states only and the forest inventory of Upper Subansiri (Arunachal Pradesh) was taken up accordingly by the North Zone at the request of North East council.

Prior to 1914 the area (Upper Subansiri district) was part of Lakhimpur district of Assam. During 1914 western section of North East Frontier Tract was constituted and later on renamed as Balipara Frontier Tract. This was further divided into Sela sub Agency and Subansiri area renamed as Subansiri Frontier Division. This Division was converted into Subansiri district which was further divided into Upper Subansiri district with district headquarter at Daporijo and Lower Subansiri district with headquarter at Zero

during May 1980.

The entire district of Upper Subansiri is land locked territory of lofty hills with climate most suitable to a large variety of vegetation. This entire district lies on both sides of the Subansiri river and is interspersed with small nullahs which divide the district into small sub valleys. Most of the villages are situated along this river or its tributaries. The district has two sub-divisions; viz. Daporijo and Nacho' and ten revenue circles. The altitude varies from 170 meters above msl. at the south eastern portion on the bank of river Subansiri to 5500 meters above msl. in the northern most portion along the China border. Though the intention was to cover the entire area by the forest inventory but due to the non availability of the Survey Of India Toposheets numbering 82 H/3,6,10,14 forest area of 920.45 sq.km. has to be left out of the forest inventory survey.

The forest inventory survey work was started in the area in October 1989 and completed in February 1990. Therefore the year of forest inventory is taken as 1989.

1.2 Location and boundaries.

The survey area i.e. the Upper Subansiri district lies between 93 degrees 13 minutes to 94 degrees 36 minutes east and 27 degrees 45 minutes to 28 degrees 42 minutes north. It is bound on the North and West by China (Tibet), East by West Siang district and South by Lower Subansiri district. The entire area is being drained by Subansiri river which is the tributary of Brahmaputra river.

1.3 Climate

The climate of the area is tropical in the lower heights along the Subansiri river in the South-East. It is subtropical to an elevation of 1800 m. temperate from 1800 m. to 3600 m. and extremely cold above that. The higher reaches above 5000 m. are under permanent snow cover. In fact the terrain above 4500 m is totally unsuitable for tree growth. The district experiences prolonged rainy season which extends over more than six months from April to October. The humidity during these months is generally around 90 %. Even during rest of the period the area is covered with fog. The valley is under the fog during morning. This fog invariably changes into clouds in the afternoon, and it rains within a few days interval. The overall climate is extremely suitable for the vegetation growth. The average annual rainfall in the area is given below:-

1978	1979	1980	1981
------	------	------	------

70.45cm 158.00cm 190.00cm 143.46cm
 (source: Forest statistics 1985 published by the
 forest department , Arunachal Pradesh)

1.4 Physical Features

Rugged terrain with deep valleys and sub-valleys and perennial rivers with many tributaries are the main features of the area. The Upper area slopes towards east and in the lower reaches the slope is towards south. The entire area is lush green and carries a very vast variety of vegetation. The middle heights have a number of grassy blanks created by the removal of trees. Upper reaches are comparatively less steep and bear conifers along with many broadleaved species.

1.5 Socioeconomic Conditions Of The People

While the total Geographical area of the district is 7032 Sq.Km. the population is only 38410 persons i.e. population density of 6 persons per Sq.Km. as compared to the national average of 216 persons per Sq.Km. (1981 census). Three major tribes inhabit the area. These are the Tagins, the Hill-Miris and the Gallong. Almost the entire population (91.68 %) belongs to these tribes notified as scheduled tribes. The literacy rate is very low i.e. 20.28 % among the males and only 5.29 % among the females. About 84% of the population depends upon the Agriculture. In the entire state of Arunachal Pradesh there is no land tenure system or tenancy laws. Land is being used by the people according to their customary laws either individually or collectively. Jhum cultivation (Shifting cultivation) has been the traditional system of cultivation. Hill paddy and millet are the main crops. Fruits like pine-apple and oranges are also being grown mostly for local consumption. There is very large number of live stock consisting of Mithun, Pig, Goats and cattle. The livestock is reared only for meat. (Source: District census handbook for Upper Subansiri district).

In Upper Subansiri district the life of the tribal population is very closely linked with the forest. The people enjoy the customary rights recognized under Assam Forest Regulation over collection of minor forest produce for their bonafide domestic requirements. For house construction purposes each family is entitled to 8.5 cum. (300cft.) of round timber free of royalty etc. Other benefits enjoyed by the people are:

(i) Permit for trees for trade purposes are issued only to the local people in order to improve

their economy and inculcate business skills.

(ii) 7.5% concessions in the award of lease and contracts pertaining to forestry and other works.

(iii) Preferential treatment in the matter regarding issue of licences for forest based industries.

(iv) Preference in employment in Government services.

Transport is the main bottleneck in Upper Subansiri district. There is only one road along the main valley connecting the interior area with the district headquarter Daporijo which is connected to state capital Itanagar viz. Ziro and to the plains of Assam viz. Likabali.

1.6 Forests

Classification of the area into forests types has been done on the basis of occurrence of the species. The following forest types have been found in the forest area.

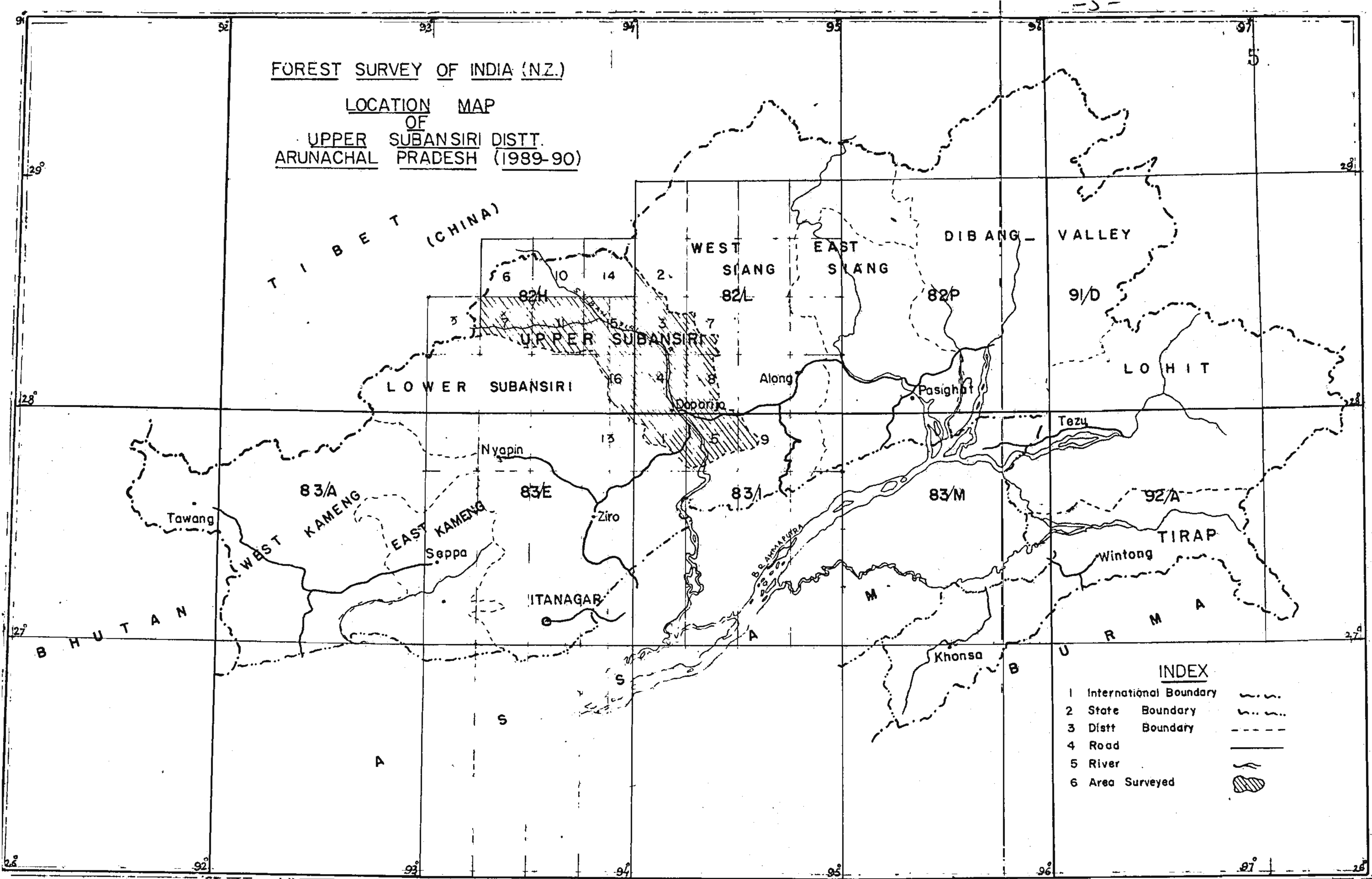
(i) Upland hardwood forests:- Broadleaved spp. constitute more than 50% of the crop in the upper zone i.e. above 1500 mtrs. altitude.

(ii) Bamboo forest:- Forests where the crop is almost pure bamboo.

(iii) Hardwoods mixed with conifers or conifers mixed with hardwoods forests:- Forests where the conifers and the broadleaved spp. occur more or less in the same proportion.

(iv) Miscellaneous forests:- Tree forests which could not be classified into any of the above types.

FOREST SURVEY OF INDIA (N.Z.)
LOCATION MAP
OF
UPPER SUBANSIRI DISTT.
ARUNACHAL PRADESH (1989-90)



Chapter 2

2.1 Design and Methodology of the Forest Inventory Survey

The 'forest areas' marked on 1:50,000 scale, Survey of India Toposheet's were used as the basis of forest inventory. The year of survey and publication, of the maps used in survey, are given in Appendix-I.

2.2 Definition of forest area

The following are treated as 'Forest Areas' for carrying out the forest inventory and for the purpose of this report.

(i) All those areas shown in 'green wash' on Survey of India Toposheets on 1:50,000 scale.

(ii) All those areas indicated by dotted line or broken line or a pillar line as 'forest areas' on Survey of India Toposheets.

2.3 Sampling design

1:50,000 scale Survey of India Toposheets were divided into grids of 1'x1' of latitudes and longitudes. All the intersection points of these 1' x 1' grids, falling within the "green wash" and /or demarcated forest areas (as shown on S.O.I. topo sheets) were given serial numbers. A total of 1428 intersections were thus marked in the district. As the forest department of Arunachal Pradesh desired a higher intensity of sampling in Reserve Forest than that of "Unclassed Forest" for achieving higher accuracy, it was decided to select all the intersection points (1' x 1') falling within R.F. as centres of sample plots. In respect of "U.F." only as many sample plot locations were selected randomly so as to make the overall intensity of sampling in the region / district at par or more than the earlier design of 2 plots per 2.5' x 2.5' grid. This modified design was as per the guidance provided by C.S.O.

The forest inventory data was collected from square plots of .1 hect. each which were laid out at each of these selected intersections.

2.3.1 Method of selection of plot centres.

As mentioned in para 2.3 above a total of 1428 grids intersection points (1' x 1') were marked in the "green wash" area of the available topo sheets. Out of these 1428 intersections, 126 intersections were fall-

ing in the R.F. All these 128 intersections were selected as plot centres. In the U.F. 350 intersections were randomly selected out of the available 1302 intersections. This makes the overall intensity of sampling slightly higher than the regular design which provide for 2 sample plots in each grid of 2.5' x 2.5'.

2.4 Field methodology

The field data is collected by a crew, consisting of one Junior Technical Assistant (crew leader), a Deputy Ranger, Two fieldmen, a Khalasi and unskilled labourers hired locally wherever necessary. The crew leader is provided with a list of sample plots to be surveyed by his crew during the season along with a set of Survey of India Toposheets with location of sample plots already marked. A set of measuring instruments viz. Silva compass Haga/Blumme Liess hypsometer, Callipers measuring tapes and ranging rods etc. are provided.

After deciding the plot and the grid number to be surveyed on a particular day from a camp spot the crew leader reaches a prominent physical feature (also called starting reference point as near to the sample plot as possible) which is depicted on the Survey of India Toposheet and can also be identified on the ground. Usually the following features are selected as reference point:

- (i) Bench mark.
 - (ii) Triangulation points.
 - (iii) Village trijunction points.
 - (iv) Bridges and culverts.
 - (v) Temples, mosques and churches.
 - (vi) Crossing of rail tract with roads, rivers or streams.
 - (vii) Junctions of rivers or streams with roads.
 - (viii) Junctions of streams.
 - (ix) Junction of roads.
 - (x) Prominent bends in roads, rivers and streams.
 - (xi) Ponds and wells.
 - (xii) Springs
 - (xiii) Prominent topographical features in hilly region such as spurs, knolls etc.
 - (xiv) Miles or Kilometer stones.
 - (xv) Boundary pillars (of international, state, district and forest boundaries).
- Having located a prominent physical feature (reference point) both on the ground as well as on the

Survey of India Toposheet, the distance and the bearing of the sample plot from this physical feature is measured from the map. The bearing is measured with the help of protractor or the Silva compass. At this reference point the crew leader records the reference feature used, the bearing and the distance of the sample plot centre from the reference feature and the name of the camping spot, the time taken to complete the work etc. in the "Plot approach Form". Information recorded in this form is used in the time and cost study for the forest inventory and helping to relocate the sample plot at a future date. Specimen of this form is given in Appendix-III. From the reference point crew leader traverses the distance in the direction and measured on the map to reach the sample plot. A wooden peg is fixed at this location which is the centre sample plot, a square sample plot of .1 ha. area with diagonals measuring 44.72 metres in the NE-SW and NW-SE directions is laid out on the ground by marking its four corners by pegs at the end of the diagonals. Regeneration data is collected from a sub plot measuring 4 m. x 4 m. and herb-shrub data from a sub plot of 2 m. x 2 m. size (see diagram).

After laying the sample plot the crew leader with the help of other crew members collects the forest inventory data in the following field forms:

- (i) Sample plot description form.
- (ii) Sample plot enumeration form.
- (iii) Sample tree form.
- (iv) Bamboo enumeration form (Clump forming).
- (v) Bamboo enumeration form (Non clump forming).
- (vi) Bamboo weight form.
- (vii) Herbs and Shrubs data form.

Samples of the above field forms may be seen in Appendix-III. They are briefly described below:

- (i) Sample plot description Form (PDF)

Qualitative data such as land use, crop composition of tree crop and its density, intensity of erosion in the area, fire and grazing incidence, regeneration status etc. are recorded in this form. The basis of assessment is ocular, by examining a surrounding area of about 2 ha. around the plot center.

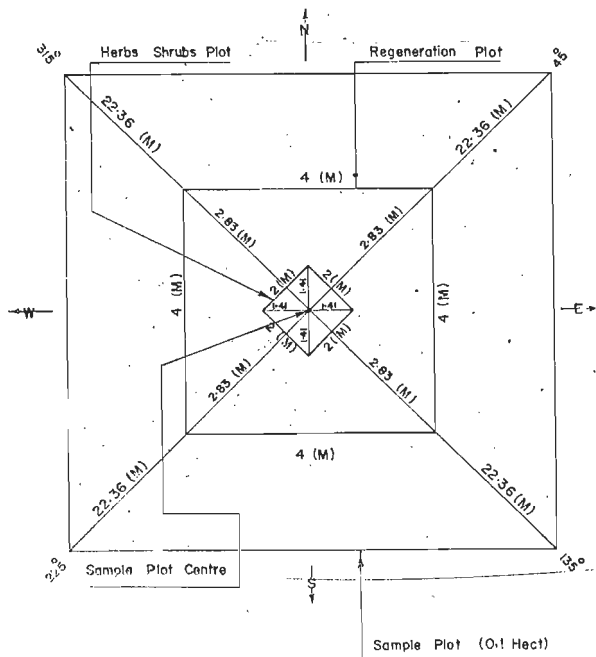
- (ii) Sample plot enumeration Form (PEF)

In this form the trees and bamboo clumps in the sample plot are enumerated and recorded with their species and diameter at breast height .

- (iii) Sample tree Forms (STF)

The data in this form is collected from northern quarter of the sample plot. Name of the tree

9



species, its diameter at breast height, twice bark thickness, dominance status, length of the clear bole, and height etc. of each tree is enumerated in the quadrant is recorded. The data from this form helps in developing the local volume equations for the species in the survey area. Under bark volume is also derived from the local volume equations by using the bark thickness data.

(iv) & (v) Bamboo enumeration Forms (Clump & Non clump forming variety)

These forms are used wherever bamboo clumps, whether of clump or non clump forming variety, are encountered in sample plots. Data such as culms in each clump, their size, maturity condition, length etc. are recorded.

(vi) Bamboo Weight Forms (BWF)

For determining the co-relation between green and dry weight of the utilizable length of bamboo culm, data on weight are recorded in this form.

(vii) Herbs and Shrubs data Form

In this form names and other details of all identifiable species of herbs and shrubs are recorded. In case of the species that could not be identified in field, the number of such species only are noted.

The above is a brief description of the design and methodology of forest inventory survey. The details are given in the 'Manual of instructions for field inventory' of Forest Survey of India.

Chapter 3

DATA PROCESSING

3.0 Processing the data on computer

After completion of field work, the field forms of the region surveyed were consolidated and checked for any inconsistencies and coding mistakes. The coded data was then transferred to the data files in the personal computer using suitable softwares like dbaseIIIplus and Lotus release3 and analyzed in the office of north zone, Shimla. After analyzing the data it was rearranged in tabular forms in spreadsheets to obtain the results in the desired format.

3.1 Area Computation

The area of forest land on the 1:50,000 scale, topographical maps was calculated using closely spaced dot grid template where one dot represented one hectare. Further distribution of forest area under various classes such as land use, accessible tree forest area, forest types, soil erosion status, grazing incidence, fire incidence, canopy density classes etc. was arrived at proportionately using ratio estimator. However it may be noted that area tables are based on limited sample plots and therefore, should be considered as indicative only and used with caution.

3.2 Volume Estimation

Collection of felled tree data by zones, for developing volume equations, has been discontinued now. However during the earlier forest inventory survey in Arunachal Pradesh (1976) the General Volume Equations were developed using felled tree data. These equations have been used in the current report. Using height-diameter data of the sample-trees measured in the field, equations were developed for estimating the heights by regression analysis. These equations for estimating the heights when used along with the available General Volume Equations, provided the relationship between the diameter and volume i.e. the Local Volume Equations.

The details of Volume Equations used in the report are ;

GENERAL VOLUME EQUATIONS USED IN THE REPORT ARE:

- =====
- 1 *Terminalia myriocarpa*:
 $V = -.04433 + .00090475 D^2 + .000004031 D^2 H$
 - 2 *Miscellaneous spp.*:
 $V = -.1368 + .00318 D + .01424 H + .0000176 D^2 H$
 $D = \text{DIAMETER IN CM}$ $D^2 = \text{SQUARE OF THE DIAMETER}$
 $H = \text{HEIGHT IN MTS}$
 $V = \text{VOLUME IN CU.M.}$

LOCAL VOLUME EQUATIONS:

- =====
- On the basis of height- diameter data collected from the sample plots, regression relations were developed, for different spp., for height and diameter. The regression equations are given below:
- 1 *Terminalia myriocarpa*:
 $H = 6.343834 + .516261 D - .00216 D^2$
 - 2 *Quercus spp.*:
 $H = 8.769733 + .516752 D - .00246 D^2$
 - 3 *Sapium spp.*:
 $H = 8.800047 + .511741 D - .00224 D^2$
 - 4 *Kydia calycina*:
 $H = 9.59679 + .387252 D - .00262 D^2$
 - 5 *Gmelina arborea*:
 $H = 3.763199 + .340258 D + .016862 D^2$
 NOTE: THE EQUATION IS VALID FOR SMALL DIAS ONLY
 AS HIGHER DIACLASSES WERE NOT RECORDED IN OUR SAMPLES.
 - 6 *Castonopsis indica*:
 $H = 3.469247 + .729728 D - .00389 D^2$
 - 7 *Altingia excelsa*:
 $H = 7.469649 + .740791 D - .00551 D^2$
 - 8 *Miscellaneous spp.*:
 $H = .237642 + .047585 D - .00973 D^2$

In the above equations H stands for height in mt. and
 D stands for diameter in cm.

Note:--- These equations were used for estimating the
 height of each enumerated tree. The values of
 these heights and corresponding diameters
 were then substituted in the general volume
 equations for estimating the volume.

=====

3.3 Stand and Stock Tables

As explained in the note above, the height of each enumerated tree was estimated on the basis of regression relation developed from our sample tree form data. This estimated height and the corresponding diameter (over bark and at breast height) measurement was used for estimating the volume of each tree using the relevant General Volume Equation. These volume figures were stored in the tree/plot volume files together with species code, diameter of the tree, plot number etc. The elements of information stored in the above files were utilized to classify the tree related data by species and diameter. Estimates of number of stems and volume per hectare and total by species and diameter classes were obtained for different strata viz. forest category, forest types etc.

3.4 Sampling Error

The sampling error has been calculated for the estimation of volume per hectare. Estimate of the standard error of volume per hectare has been arrived at using the formulae applicable for simple random sampling.

Standard Error(vol.per hect.) = standard Deviation / (number of samples)^{0.5}

The Standard error percent has been calculated using the formula:

S.E.% = S.E. * 100 / mean(vol.per hect.)

Chapter - 4

FOREST INVENTORY RESULTS

4.0 In this chapter, the results of forest inventory and the critical aspect of forest resources as evident therefrom, in survey area, are presented. This is a low intensity survey (0.01 percent) Its results are therefore reliable for the entire district. The standard deviation and the standard error both for "reserve" and the "unclassified" state forest have been calculated and discussed in the previous chapter.

4.1 FOREST AREA

Forest area has been defined in chapter 2. This is an essential component of forest inventory and is computed from the Survey of India Toposheets on 1:50,000 scale. These sheets form the basis of inventory survey and are used in computing the forest area and estimation of growing stock by ground surveys.

The survey area is covered by 17 Survey of India Toposheets of 1:50,000 scale viz. 82 H/3,8,7,10,11,14,15 & 16 ; 82 L/2,3,4,7 & 8 ; 83 E/13 ; 83 I/1,5 & 9. Each of these sheets, along with the respective year of survey, has been listed vide appendix-I.

The year of survey of the Survey of India Toposheets, used for marking the forest areas, are from 1961-62 to 1970-79. Major portion of the area is covered by the sheets having year of survey 1961-62 to 1963-64. Therefore 1963 is taken to be the base year for monitoring changes in the forest area till 1989 (year of survey).

The total forest area (in the year 1963) as defined in para 2.2-identified on the available maps- was computed to be 4435 Sq.Km. This however does not include the forest area falling in the Survey of India Toposheets Nos. 82 H/3,8,10 & 14 -due to their non availability from Survey of India-and is excluded from the purview of the present forest inventory. The extent of this excluded forest area is assessed at 920

Sq.Km.(On the basis of vegetation maps prepared by F.S.I). The breakup of the remaining forest area(4435 Sq.Km.), into various categories, is given in the following chapters. A total of 476 sample plots were marked on the maps in this forest area (4435 Sq.Km.). However 26 of these sample plots had to be excluded subsequently as the local tribals did not permit entry of survey parties in this area which forms part of Kamla reserve forest. Out of the total forest area of 4435 Sq.Km. taken up for forest inventory, 371 Sq.Km. is reserve forest and remaining 4064 Sq.Km. is unclassified forest. The breakup is given in the following table 4.1 .

TABLE 4.1

Distribution of forest area (in the base year 1963) and number of sample plots marked for survey therein.

S.No	Forest status	Forest area Sq.Km. (1963)	No of sample plots	Weightage of each plot Sq.Km.per plot
01	Reserve forests	370.82	126	2.943
02	Unclassed forests	4063.81	350	11.611
Total area		4434.63	476	9.316

Distribution of the area, in all the tables that follow, has been worked out on the basis of ratio estimator.

Out of total geographical area of 7032 Sq.Km. maps were available only in respect of 4896 Sq.Km. and out of this 4435 Sq.Km. has been shown as greenwash area. This works out to be 88.77 % (Of geographical area) under forest cover in the reference year 1963.

4.1.1 Distribution of the forest area by land use classes.

As already explained in para 4.1 above a total of 476 sample plots were marked for survey in the entire forest area of 4435 Sq.Km. After excluding 76.52 Sq.Km. of Kamla R.F., the net area taken up for Survey is 4358 Sq.Km. The breakup of this area is 294 Sq.Km. under " reserve forest" and 4064 Sq.Km. under " Unclassed forest".

The distribution of the present status of forest area (1989) in the district both for Reserve and Unclassed forest is given in the following table 4.1.1

TABLE NO.4.1.1
DISTRIBUTION OF FOREST AREA(TREE COVER SHOWN BY GREENWASH
AND OF DEMARCATED BLANK ON TOPO-SHEETS) AND NUMBER OF
SAMPLE PLOTS INVENTORIED THERIN BY LAND USE
UPPER-SUBANSIRI DISTRICT

S.NO.	LAND USE	RESERVE--FOREST		UNCLASSIFIED FOREST:		TOTAL	
		NO.OF S.PLOTS	AREA SQ.KMS.	NO.OF S.P	AREA SQ.KMS.	NO.OF S.P	AREA SQ.KMS.
1	TREE FOREST	59	173.837	198	2310.569	258	2484.206
2	PLANTATION	:	:	:	:	:	:
3	BANBOO BRAKES	2	5.886	4	46.4436	6	52.3296
4	SCRUB FOREST	:	:	3	34.8327	3	34.8327
5	AGRICULTURAL LAND	:	:	6	69.6654	6	69.6654
6	SHIFTING CULT.	1	2.943	41	478.0469	42	478.9899
7	WATER BODIES	:	:	1	11.6109	1	11.6109
8	HABITATION	:	:	1	11.6109	1	11.6109
9	INACCESSIBLE	38	111.834	95	1103.035	133	1214.869
TOTAL		100	294.3	350	4063.815	450	4358.115

RESULTS

1	ASSESSED FOREST AREA(1to4&6)	62	182.466	247	2887.892	309	3050.358
2	ASSESSED FOREST AREA(EXCLUDING) SHIFT.CULT.)	61	179.523	208	2391.845	267	2571.388
3	ASSESSED TREE FOREST(1&2)	59	173.637	199	2310.569	258	2484.208
4	FOREST-AREA PE-- RMANENTLY DIV. TO NON FOREST {5,7&8}	:	:	8	92.8872	8	92.8872
5	FOREST-AREA DE- GRADED TO SCRUB {4}	:	:	3	34.8327	3	34.8327

The following conclusions can be drawn from the results tabulated above in table 4.1.1:-

(a) Out of 4358.11 Sq.Km. of forest area (1963) taken up for forest inventory survey, 3050.36 Sq.Km. (69.89 %) is under the category "assessed forest area" now (1989). Out of remaining 1307.76 Sq.Km. (30.01 %), 92.69 Sq.Km. (2.13 %) stands permanently diverted to non forestry uses and 1214.87 Sq.Km. (27.88 %) is inaccessible.

(b) Even out of 3050.36 Sq.Km. of assessed forest area, an area of 478.99 Sq.Km. is under current and last year's shifting cultivation and 34.83 Sq.Km. is under scrub only, 2536.53 Sq.Km. is under assessed tree forest and bamboo brakes now (1989).

(c) The assessed tree forest area is 2484.20 Sq.Km. and assessed area under bamboo forest/brakes is 52.33 Sq.Km.

(d) The area under shifting cultivation (current and last year's) has been assessed at 476.99 Sq.Km. Assuming an average cycle of 6 years the total area affected by shifting cultivation is assessed at 476.99×3 i.e. 1436.97 Sq.Km. in the surveyed area. LM 1.50"

Note; The assessed forest area includes all those areas which were surveyed and described and also those areas which could not be visited but were identified on the basis of vicinity visited. In such cases as many attributes as possible were recorded on the basis of vicinity visit, and rest of the attributes which could not be assessed were clubbed under category unrecorded.

4.1.2 Distribution of assessed forest area by soil depth.

Out of total assessed forest area (excluding area undercurrent and last year's shifting cultivation) of 2571.37 Sq.Km. 15.84% (407.35 Sq.Km.) has a soil depth of 90 cm or more and only 31.95% (821.58 Sq.Km.) area has a soil depth less than 30cm. The distribution by soil depth classes is given in the following table no. 4.1.2.

TABLE 4.1.2

Assessed forest area : 2571.37 Sq.km.

(Excluding current & last year shifting cultivation)

Distribution of assessed forest area by soil depth.

Code	Soil Depth	Reserve forest Nos.of Area Sample Sq.Km. plots	Unclassed forest Nos.of Area Sample Sq.Km. plots	Total Nos.of Area Sample Sq.Km. plots
01	No soil	---	---	---
02	>15cm.	1 2.943	10 116.109	11 119.052
03	>30cm.			
	but >15cm	2 5.888	60 696.654	62 702.540
04	<90cms.			
	but >30cm	27 79.481	71 824.374	98 903.835
05	> = 90cms	24 70.832	28 336.716	53 407.348
06	*unre- -orded	7 20.801	36 417.992	43 438.593
Total		81 178.523	206 2391.845	267 2571.368

* Unrecorded relates to those plots where information could not be collected.

4.1.3 Distribution of assessed forest area by soil texture

A high percentage of 72.55 % (1865.40 Sq.Km.) of the total assessed forest area (excluding current and last year's shifting cultivation) has a clayey loam texture followed by 7.57 % (194.77 Sq.Km.) having loam texture, 2.37 % (61.00 Sq.Km.) having sandy loam texture, 0.45 % (11.61 Sq.Km.) having clayey texture. The distribution by soil texture classes is given on the next page in table number 4.1.3

TABLE 4.1.3
Assessed forest area :2571.37 Sq.km.
(Excluding current & last year's shifting cultivation)
Distribution of assessed forest area by soil texture

S.No	SOIL TEXTURE	Reserve forest		Unclassified forest		Total	
		Nos.of Sample plots	Area Sq.Km.	Nos.of Sample plots	Area Sq.Km.	Nos.of Sample plots	Area Sq.Km.
01	Clayey	-	-	1	11.611	1	11.611
02	Clayey loam	48	135.378	149	1730.024	195	1865.402
03	Loam	7	20.601	15	174.164	22	194.765
04	Sandy loam	1	2.943	5	58.054	6	60.997
05	Sandy	-	-	-	-	-	-
06	No soil	-	-	-	-	-	-
07	* Unre- -corded	7	20.601	36	417.892	43	438.593
Total		61	178.523	208	2391.845	267	2571.368

* Unrecorded relates to those plots where information could not be collected.

4.1.4 Distribution of assessed forest area by soil erosion

82.49 % (2121.16 Sq.Km.) of the total assessed forest area (excluding current and last year's shifting cultivation) has almost no soil erosion or slight erosion (only surface erosion present). Only 0.45 % (11.61 Sq.Km.) area is having moderate erosion i.e. having small gullies and rills on the top surface of the soil. The distribution by soil erosion status is given in the table number 4.1.4.

TABLE 4.1.4
Assessed forest area : 2571.37 Sq.km.
(Excluding current & last year shifting cultivation)

Distribution of assessed forest area by soil erosion status.

S.No	Erosion Status	Reserve forest Nos.of Sample plots	Area Sq.Km.	Unclassed forest Nos.of Sample plots	Area Sq.Km.	Total Nos.of Sample plots	Area Sq.Km.
01	Mild erosion	54	158.922	169	1862.242	223	2121.164
02	Moderate erosion	-	-	1	11.611	1	11.611
03	Heavy erosion	-	-	-	-	-	-
04	* Unre-corded	7	20.601	36	417.992	43	438.593
Total		61	179.523	206	2391.845	287	2571.368

* Unrecorded relates to those plots where information could not be collected.

Note:-

Mild erosion means no erosion or slight erosion, where only surface erosion has taken place.
Moderate erosion means where small gullies and rills are formed on the top surface of the soil.
Heavy erosion means area has deep gullies, ravines and land slips etc.

4.1.5 Distribution of assessed forest area by grazing incidence classes

Only 0.90% (23.22 sq.km.) of the total assessed forest area (excluding current and last year's shifting cultivation) is suffering from heavily grazing followed by 2.37% (61 sq.km.) area having medium grazing incidence, 19.89% (511.36 sq.km.) having light grazing incidence and 59.78% (1537.19 sq.km.) having no grazing incidence. The distribution by grazing incidence classes is given below in table no. 4.1.5

TABLE 4.1.5
Assessed forest area : 2571.37 Sq.km.
(Excluding current & last year shifting cultivation)

Distribution of assessed forest area by grazing incidence classes

S.No	Grazing incidence	Reserve forest		Unclassed forest		Total	
		Nos.of Sample plots	Area Sq.Km.	Nos.of Sample plots	Area Sq.Km.	Nos.of Sample plots	Area Sq.Km.
01	Heavy grazing	--	--	2	23.222	2	23.222
02	Medium grazing	1	2.943	5	58.054	6	60.997
03	Light grazing	12	35.318	41	476.047	53	511.383
04	No grazing	41	120.883	122	1416.530	163	1537.193
05	* Unre-recorded	7	20.601	38	417.992	43	438.593
Total		61	179.523	206	2391.845	267	2571.388

* Unrecorded relates to those plots where information could not be collected and includes the sample plots falling in "barren land" for which this attribute was not recorded.

4.1.6 Distribution of assessed forest area by plantation potential

75.71% (1947.00 Sq.Km.) of the total assessed forest area (excluding current and last year's shifting cultivation) does need further stocking by way of plantation. 4.52% (118.11 Sq.Km.) area has been assessed as unplantable due to poor soil cover or other adverse conditions and in 2.71% (69.87 Sq.Km.) area there is scope for undertaking afforestation or augmentation of stocking by plantation. The distribution by plantation potential is given below in table no.4.1.6.

TABLE 4.1.6
Assessed forest area : 2571.37 Sq.km.
(Excluding current & last year's shifting cultivation)

Distribution of assessed forest area by plantation potential

S.No	Plantation potential	Reserve forest Nos.of Sample plots	Area Sq.Km.	Unclassed forest Nos.of Sample plots	Area Sq.Km.	Total Nos.of Sample plots	Area Sq.Km.
01	Plantable	-	-	6	68.665	6	68.665
02	Un- -plantable	-	-	10	116.109	10	116.109
03	Not- applicable	54	158.922	154	1766.079	208	1947.001
04	* Unre- -recorded	7	20.801	38	417.992	43	438.593
Total		61	179.523	208	2391.645	267	2571.388

* Unrecorded relates to those plots where information could not be collected.

Explanatory note:

Plantation potential was assessed only at those sample plots having tree crown cover density of less than 30 %. Plantable / Unplantable potential was determined by giving due consideration to aspect, soil depth, drainage crop in surrounding area and other biotic and climatic factors. The maximum permissible slope upto which plantation can be raised was kept 40 degree and minimum soil depth as 20 cms. Sample plots having crown density of 30 % or more were categorized as not applicable since plantation potential of such area, from afforestation point of view, is not of any significance.

4.1.7 Distribution of assessed forest area by fire incidence classes.

In our sample data no incidence of "very heavy" or "frequent" fire was observed. Even "occasional" fire was assessed only over 5.85% (145.22 Sq.Km.) of the total assessed forest area. Remaining forest area is either having "no fire" or data could not be collected there. The distribution by fire incidence-classes is given below in table no. 4.1.7.

TABLE 4.1.7

Assessed forest area : 2571.37 Sq.km.

(Excluding current & last year shifting cultivations)

Description of assessed forest area by fire incidence classes

S.No	Fire Incidence	Reserve forest Nos.of Area Sample Sq.Km. plots	Unclassed forest Nos.of Area Sample Sq.Km. plots	Total Nos.of Area Sample Sq.Km. plots
01	Heavy	- -	- -	- -
02	Frequent	- -	- -	- -
03	Occasional	2 5.888	12 139.331	14 145.217
04	No fire	52 153.038	158 1834.522	210 1987.558
05	* Unre- -corded	7 20.601	36 417.992	43 438.593
Total		61 179.523	206 2391.845	267 2571.368

* Unrecorded relates to those plots where information could not be collected.

4.1.8 Distribution of assessed tree forest area by size classes

Total assessed tree forest area is 2484.21 Sq.Km. 10.53% (261.65 Sq.Km.) is under "pole crop", 26.30% (653.48 Sq.Km.) is under "small timber", 34.96% (868.36 Sq.Km.) is under "big timber", 11.02% (273.74 Sq.Km.) is under "mixed size class". The distribution by crop size class is given in the following table no.4.1.8

TABLE 4.1.8
Assessed tree forest area : 2484.21 Sq.km.

Distribution of assessed tree forest area by size classes.

S.No	Crop Com- -position	Reserve forest Nos.of Area Sample Sq.Km. plots	Unclassed forest Nos.of Area Sample Sq.Km. plots	Total Nos.of Area Sample Sq.Km. plots
01	Regene- -ration	-	-	-
02	Pole crop	10 29.430	20 232.218	30 261.640
03	Small timber	9 26.487	54 626.989	63 653.476
04	Big timber	11 32.373	72 835.985	83 868.358
05	Mixed size classes	22 64.746	18 208.996	40 273.742
05	* Unre- -corded	7 20.601	35 406.381	42 426.982
Total		58 173.637	199 2310.569	258 2484.206

* Unrecorded relates to those plots where information could not be collected.

Explanatory note :

Regeneration is the forest crop where trees below 10 cm. diameter predominate.

Pole crop is the forest crop with trees between 10 to 20 cm. diameter predominating.

Small timber is the forest crop with trees 20cm.to30cm. diameter predominating.

Big timber is the forest crop where trees with diameter 30cm. and over predominate.

Mixed size is the tree crop with no marked domination of any diameter class.

4.1.9 Distribution of assessed tree forest area by regeneration status.

Only 0.12% (2.943 Sq.Km.) of assessed tree forest area is having "inadequate regeneration". 82.81% (2057.22 Sq.Km.) area the regeneration (of economically important tree spp.s.) is "absent". The distribution by regeneration status is given the following table no. 4.1.9

TABLE 4.1.9

Assessed tree forest area : 2484.21 Sq.km.

Distribution of assessed tree forest area by regeneration status

S.No	Regene- -ration Status	Reserve forest Nos.of Area Sample Sq.Km. plots	Unclassed forest Nos.of Area Sample Sq.Km. plots	Total Nos.of Area Sample Sq.Km. plots
01	Profuse	- -	- -	- -
02	Adequate	- -	- -	- -
03	Inadequate	1 2.943	- -	1 2.943
04	Absent	52 153.036	164 1904.188	218 2057.224
05	* Unre- -corded	6 17.658	35 406.381	41 424.039
Total		59 173.637	199 2310.569	258 2484.206

* Unrecorded relates to those plots where information could not be collected.

Explanatory note :

Adequate regeneration : Means where 8 or more than 8 seedlings (having diameter > 2 cms. but < 10 cms.) of economically important species. were found in a regeneration plot of 16 Sqm. area.
Inadequate regeneration : Means where less than 8 seedlings (having diameter > 2 cms. but < 10 cms. of economically important species were found in regeneration plot of 16 Sqm. area.

4.1.10 Distribution of assessed tree forest area by type of injury to crop

12.04% (299.102 Sq.Km.) of assessed tree forest area is affected by unnatural/man made injuries and 4.09% (101.716 Sq.Km.) by natural injuries. Injury to crop is absent in 86.92% (1862.292Sq.Km.) area. The distribution by type of injury to forest crop is given in the following table no. 4.1.10

TABLE 4.1.10

Assessed tree forest area : 2484.21 Sq.km.

Distribution of assessed tree forest area by type of injury to the crop

S.No	Type of injuries to the crop.	Reserve forest Nos.of Sample plots	Area Sq.Km.	Unclassed forest Nos.of Sample plots	Area Sq.Km.	Total Nos.of Area Sample Sq.Km. plots
01	Natural	3	8.829	8	92.887	11 101.718
02	Un-natural	3	8.829	25	290.273	28 299.102
03	Absent	48	144.264	131	1521.028	179 1862.292
04	* Unre- -corded	5	14.715	35	406.381	40 421.098
Total		59	178.637	199	2310.569	258 2484.206

* Unrecorded relates to those plots where information could not be collected.

Explanatory note :

Injury to the crop was judged by ocular estimation in two hectare area around the center of the plot, provided the effected trees formed at least 10 % of the crop.

Natural injury to the crop means injuries by wind or snow or flood, climber lightning, wildlife, borer attack, leaf defoliator or other pests. Manmade /Unnatural means injury to the crop by girdling, illicit felling, scarring by fire, lop-ping.

4.1.11 Distribution of assessed tree forest area by forest types

The assessed tree forest area of 2484.208 Sq.Km. has been classified into three forest types, on the basis of predominant tree spp.s. (refer para 1.8). 54.40% (1351.418 Sq.Km.) area bears "Miscellaneous forest type", 40.00% (993.457 Sq.Km.) area is under "Upland-hardwood" and 5.60% (139.331 Sq.Km.) area is under "Hardwood mixed with conifers". The distribution of forest types is given in the following table no.4.1.11

TABLE 4.1.11

Assessed tree forest area : 2484.208 Sq.km.

Distribution of assessed tree forest area by Forest types.

S.No	Forest types	Reserve forest Nos. of Sample plots	Area Sq.Km.	Unclassified forest Nos. of Sample plots	Area Sq.Km.	Total Nos. of Sample plots	Area Sq.Km.
01	Hardwood mixed with conifers	--	----	12	139.331	12	139.331
02	Upland hardwood	18	52.974	81	940.483	99	993.457
03	Miscella- neous	41	120.663	106	1230.755	147	1351.418
Total		59	173.637	199	2310.569	258	2484.208

Note:-

The assessed forest area includes those areas which have been described - in respect of the land use and crop-composition etc.-on the basis of vicinity visit only. After excluding such sample plots (which could not be visited being inaccessible) the remaining area is considered accessible and the assessment of the growing stock relates to the "accessible tree forest area" only. The extent of such "accessible tree forest area" is 150.09 Sq.Km. in R.F. and 1904.19 Sq.Km. in U.F. totalling to 2054.28 Sq.Km. for the district. All the stand and stock tables, given in para 4.2, relate to this area.

4.1.12 Distribution of assessed tree forest area by forest types and canopy-density classes.

Out of the total assessed tree forest area of 2484.21 Sq.Km. in the district, 1086.34 Sq.Km. (43.73%) is under moderately dense forest with canopy density of 30 to 89 % followed by 953.70 Sq.Km. (38.38 %) under dense tree forest with canopy density of 70 % and above. Only 444.16 Sq.Km. (17.88 %) bears open tree forest with canopy density of 5 to 29 %.

The overall average canopy density is assessed at 57.54 %. The category wise (R.F. and U.F.) distribution by forest types and canopy density classes is given in the following table no. 4.1.12.

The average canopy density for Reserve Forest has been assessed at 73.17 % and for Unclassed Forest it has been assessed at 56.36 %.

Amongst the forest types "Hardwood mixed with conifers" or "Conifers mixed with hardwood" has been assessed to be bearing only open tree forest (canopy density 5 to 29 %).

Note: The appendix III incorporates the list of location of centres of sample plots. This list also incorporates the important data like land use classification, forest type, number of trees enumerated and volume per hectare assessed at each sample plot. This information can be used for growing stock assessment with different area stratification or for assessment of change over a time period.

TABLE NO. 4, 1~12

DISTRIBUTION OF ASSESSED TREE FOREST AREA BY FOREST TYPES AND
CANOPY DENSITY UPPER SUBANSIRI AREA== 2484.21 SQ. KM:

SNO	CATEGORY	CANOPY DENSITY CLASS	FOREST TYPES	TOTAL	DENSITY
:	:	:	HARDWOOD UPLAND MISCELLANEOUS	:	:
:	:	:	MIXEDWITH HARD CONIFERS WOOD	:	:
1	RESERVE FOREST	70% AND ABOVE 30 TO 69% 5 TO 29%	47.09 5.89	70.63 47.09 2.94	117.72 52.97 2.94
2	UNCLASS-EDFOREST	70% AND ABOVE 30 TO 69% 5 TO 29%	385.16 336.72 139.33	452.83 696.65 81.28	835.98 1033.37 441.21
3	TOTAL	70% AND ABOVE 30 TO 69% 5 TO 29%	430.25 342.60 139.33	523.46 743.74 84.22	953.70 1086.34 444.16
GRAND TOTAL			139.33	993.46	1351.42
DENSITY %			17.00	57.83	61.50

4.2 Stand and stock tables

Distribution of total stems and stems per hectare as well as total volume and volume per hectare have been estimated separately for R.F. and U.F., in respect of the accessible tree forest area i.e. 205428.06 hectares. These are included as nos. 1V.2.1 to 1V.2.26.

For the accessible tree forest area, the distribution of total stems is given forest type wise in table nos. IV.2.1&2 for R.F. and in table nos. IV.2.11, 12&13 for U.F. The distribution of total volume is given in table nos. IV.2.6&7 for R.F. and in table nos. IV.2.18, 19&20 for U.F.

The overall position of all the forest types combined, for the district, is given in the table nos. IV.2.25 and IV.2.26.

The abstract of forest type wise stand and stock tables is given below:

Accessible tree forest area: 205428.06 Hect.

S.No	Forest types	Forest area (hect.)	Vol/ha (cum/ha)	Stems/ha.
01	Upland hardwood	75829.59	236.13	296.25
02	Conifers mixed with hardwood	3483.27	63.15	60.00
03	Miscellaneous	126115.20	216.23	336.21
Total		205428.06	220.98	316.78

The overall average figure is 316.78 stems per hectare corresponding to 220.98 cum. per hectare.

4.2.1 Growing stock in forest types and its critical aspects

(i) Upland hardwood forest type

Out of the total accessible tree forest area of 2054.28 Sq.Km., this forest type occurs over an area of 758.30 Sq.Km. The average growing stock is 236.13 cum. per hectare (296.25 stems per hectare). Quercus spp. accounts for 43.87 % of the total growing stock (volume), corresponding to 31.04 % of total

stems, in this forest type. The overall average canopy density has been estimated as 57.83 %.

(ii) Conifers mixed with hardwood

This forest type occurs only over an area of 34.83 Sq.Km. i.e. 1.70 % of the total accessible tree forest area. The average canopy density has been estimated as 17 %.

The average growing stock has been estimated 63.15 cum. per hectare (60.00 stems per hectare). By volume the largest single group of spps. is Quercus spps. contributing 32.31 % of the growing stock (11.11 % by stems) followed by 12.82 % of Tsuga dumosa (27.78 % by stems) and 9.62 % of Pinus excelsa (27.78 % by stems). The tract bearing this forest type is largely inaccessible and the estimate of growing stock is based on a very small sample and may therefore be considered indicative only.

(iii) Miscellaneous forest type

Amongst the three forest types this one occupies the largest proportion i.e. 81.39 % (1261.15 Sq.Km.) of the total accessible tree forest. Average canopy density has been estimated as 61.50 %. Average growing stock has been estimated as 220.98 cum. per hectare (316.78 stems per hectare).

For all the forest types combined i.e. over the entire accessible tree forest area, Miscellaneous spps. account for an estimated 45.56 million stems having volume of 27.18 million cum. followed by Quercus spps. with 10.82 million stems having volume of 11.91 million cum. and Ficus spps. with 1.11 million stems having volume of 0.56 million cum.

Note: The appendix III incorporates the list of location of centres of sample plots. This list also incorporates the important data like landuse classification, forest type, number of trees enumerated and volume per hectare assessed at each sample plot. This information can be used for growing stock assessment with different area stratification or for assessment of change over a time period.

4.3 Bamboo area and Inventory

In the district under survey, the total area under bamboo has been assessed in the form of bamboo brakes and also as understorey in the tree forest - to be 503.03 Sq. Km. As per our sample survey this whole area bears clump forming bamboo.

4.3.1. The distribution of bamboo bearing area as bamboo brakes or overlapping the tree forest is given below in table 4.3.1.

Table No. 4.3.1

Category	Bamboo-Brakes		OverlappingBamboo		Total	
	No.of S.Plots	Area Sq.Km	No.of S.Plots	Area Sq.km.	No.of S.Plots	Area Sq.Km
Reserve Forest	2	5.886	19	55.817	21	61.803
Unclass Forest	4	46.444	34	394.770	38	441.214
Total	6	52.330	53	450.687	59	503.017

4.3.2 In respect of 503.02 sq.km. area bearing clump forming bamboo the distribution of bamboo area by bamboo site quality classes is given below in table no. 4.3.2.

Table No. 4.3.2

Quality class	ReservedForest		Unclassified-Forest		Total	
	No.of S.Plots	Area Sq.Km	No.of S.Plots	Area Sq.km.	No.of S.Plots	Area Sq.Km
I	17	50.031	27	313.494	44	363.525
II	1	2.943	2	23.222	3	26.165
III	3	8.829	8	92.887	11	101.716
IV			1	11.611	1	11.611
Total	21	61.803	38	441.214	59	503.017

Bamboo quality classes

Quality	Description
I	Average culm height 8 metres or more for <i>Dendrocalamus strictus</i> and 14 metres or more for <i>Bambusa arundinacea</i> .
II	Average culm height 4 metres or more

- but less than 6 metres for *Dendrocalamus strictus* and 10 metres or more but less than 14 metres for *Bambusa arundinacea*.
- III Average culm height of 2 metres or more but less than 4 metres for *Dendrocalamus strictus* and 2 metres or more but less than 10 metres for *Bambusa arundinacea*.
- IV Regeneration crop.

4.3.3 Out of 305.02 sq. km. area under bamboo, an area of 84.22 sq. km. has been assessed to be of completely hacked category(i.e. bamboo present but completely hacked) and therefore does not contribute towards the bamboo inventory of the district. The balance area of 418.80 sq. km. is the area solely contributing to the bamboo inventory of the district. Distribution of the bamboo area into "Hacked" and "Nonhacked" categories is given below in table no. 4.3.3.

Table No. 4.3.3

Distribution of Bamboo area into "Hacked" and "Nonhacked" categories

Category	Reserved Forest		Unclassed-Forest		Total	
	No. of S.Plots	Area Sq.Km	No. of S.Plots	Area Sq.km.	No. of S.Plots	Area Sq.Km
Hacked	1	2.943	7	81.276	8	84.219
Non-hacked	20	58.880	31	359.938	51	418.798
Total	21	61.803	38	441.214	59	503.017

4.3.4 Mean number of clumps per hectare

The clump size-class wise distribution of number of clumps per hectare for non-hacked bamboo area is given below in table no. 4.3.4.

Table No. 4.3.4
The size class wise distribution of number of clumps per hectare for non hacked bamboo area.

Category	Clump Size Classes			Total Clumps Per Hectare.
	1	2	3	
Reserve Forest	8.000	27.000	44.500	79.500
Unclass Forest	5.181	19.355	41.290	65.806
Total	5.560	20.429	41.741	67.730

The overall average figures for the number of clumps per hectare over the non-hacked bamboo area of reserve and unclassified forests are 79.50 and 65.81 respectively.

The overall average figures for the number of clumps per hectare over the entire district for non-hacked bamboo area of 418.80 Sq.Km. is 67.73.

Clump size class

Description

- | | |
|---|--|
| 1 | Small: All clumps with less than 1 metre average diameter. |
| 2 | Medium: Clumps of average diameter 1m to less than 2m. |
| 3 | Large: Clumps of average diameter 2m and over. |

4.3.5 Total number of clumps by clump size classes

The distribution of total number of clumps in the non-hacked bamboo area - by clump size classes is given below in table no.4.3.5.

Table No. 4.3.5

Category	Clump Size Classes			Total Clumps
	1	2	3	
Reserve Forest	47088	158922	281927	467937
Unclass Forest	185764	696680	1486184	2368608
Total	232852	855582	1748111	2836545

Thus over the entire non-hacked bamboo area of 418.80 Sq.Km. the total number of clumps have been assessed to be 2.37 million.

4.3.6 Mean number of culms per clump by clump size classes.

The mean number of culms per clump vary according to the size class of the clump and these have been assessed for the non-hacked bamboo area as under.

Category	Mean number of culms/clump (Rounded to whole number)		
	1	2	3
Reserve Forest	8	17	38
Unclass Forest	10	23	47
Total	9	21	43

Note:-This assessment is however based on analysis of a few randomly selected clumps within the sample plots. The number of such samples was very low in respect of clump-size class 1 and 2.

Further analysis of total number of culms by age, soundness and culmsize classes, given in the following tables, is only in respect of non-hacked, clump forming bamboo area of 418.81 Sq.Km. (Including reserve and unclassified forest)

4.3.7 Clump size-class wise distribution of total number of culms (in 000) by age and culm size classes is given in table 4.3.7. In this tabulation all the culms except decayed culms have been converted into equivalent sound culms. For arriving at the equivalent sound culms the number of damaged culms (dry as well as green) has been halved and added to the total number of green sound and dry sound culms.

Table No. 4.3.7

Category	Cl. Size Cls	Equivalent Sound Culms.				Decay. Culms	Total Culms.
		Current Year's	2to< 5cm	5to< 8cm	8cm& above		
Reserve Forest	1	47	271				318
	2	800	1377	18	247	247	2490
	3	1240	3875	1271	1803	855	8944
	Tot R.F	1888	5323	1289	2050	1202	11752
Unclass Forest	1	372	743	418		279	1811
	2	3774	6734	1884		2787	14978
	3	10047	13108	10106	16764	14030	64055
	Tot U.F	14192	20586	12208	16764	17085	80844
Total For The District	1	419	1014	418		279	2129
	2	4374	8112	1701	247	3034	17488
	3	11287	16783	11377	18567	14985	72989
	Tot Dis	16078	25908	13496	18814	18287	92596

4.3.8 Culm size class wise distribution of total number of culms(in 000)--excluding current year's culms and decayed culms--by soundness and also the equivalent sound culms has been tabulated below in table no. 4.3.8.

Table No. 4.3.8.

Distribution of total number of culms (in 000) by soundness (excluding current year's culms and decayed culms)

Culm size class	Green sound	Green Damage	Dry sound	Dry Damage	Total Culms	Total Equivalent sound culms
2 to <5cm	20721	3174	1894	3412	29201	25908
5to <8cm	10141	2258	293	3868	16559	13496
8cm & >	16278	1570	894	1715	20457	18814
Total	47140	7002	3081	8994	66217	58219

Thus over the entire nonhacked bamboo area the total number of equivalent sound culms has been assessed at 58.22 million.

Note:-- For working out the number of equivalent sound culms the following criteria has been adopted:

- (i) Dry culms are equal to the green culms.
- (ii) Decayed culms are considered to contribute nothing to the bamboo inventory.
- (iii) Each damaged culm is treated equivalent to 1/2 sound culm.

4.3.9. Average green weight and dry weight of culms and dry weight of the bamboo stock is given below in table no. 4.3.9.

Table No. 4.3.9

Culm size class	Average Greenwt per culm	Average Driage	Average Dry wt. per culm	No. of Equiv Sound culms (in 000)	Dry wt. of Bamboo stock (Tonnes)
2 to <5cm	6.711	0.57.	3.825	25908	99098
5to <8cm	16.782	0.58	8.901	13496	133624
8cm & >	29.101	0.62	18.043	18814	339461
Total				58219	572183

T.H.P.
947-863
Green wgt.

4.3.10 Total bamboo stock in tonnes

In the non hacked bamboo area of 418.80 sq.km. the total number of culms have been assessed at 88.22 million (equivalent sound culms= 58.22 million) having a gross dry weight of 572.18 thousand tonnes.

Upper Subansiri

4.4 Sampling Error

As has been explained above random samples were selected separately in the Reserve Forest and Unclassed Forest. For each of these categories standard error of the estimates have been calculated for volume per hectare.

The Standard Error percent of the estimated growing stock is as under :--

<u>Category</u>	<u>Total Volume</u>	<u>S.E.Percent</u>
R.F.	3767.93Thous.CuM.	10.45
U.F.	41627.70Thous.CuM.	4.56
<hr/>		
Total for		
District	45,395.63Thous.CuM.	4.38

TABLE IV.2.1
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
FOR UPLAND-HARDWOOD FOREST TYPE (R.F.) AREA= 5003.10 HECTARES

NAME OF SPSS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100:	TOTAL	% AGE
Sapum spp.	20.60		5.89		2.94					2.94	32.37	3.04
Quercus spp.	11.77	11.77	14.71	8.83				2.94	2.94		52.97	4.97
Ficus spp.	5.89	2.94	5.89								14.71	1.38
Ehretia												
acuminata	17.66	2.94									20.60	1.97
Cinnamomum spp.	2.94							2.94			5.89	0.55
Castanopsis												
indica	50.03	17.66	2.94								70.63	6.83
Altingia												
excelsa	32.37	8.83	11.77	5.89		2.94					61.80	5.80
Misc. spp.	453.22	158.92	70.63	52.97	26.49		8.83	17.66	2.94	14.71	806.38	75.49
TOTAL	594.49	203.07	111.83	67.69	29.43	2.94	8.83	23.54	5.89	17.66	1065.37	100.00

TABLE IV.2.2
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
FOR MISCELLANEOUS FOREST TYPE (R.F.) AREA=10006.20 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	AGE
<i>Wrightia</i>												
<i>toxentosa</i>	5.89										5.89	0.13
<i>Treia</i>												
<i>orientalis</i>	58.86		2.94								61.80	1.36
<i>Terminalia</i>												
<i>myriocarpa</i>	32.37	14.71	8.83	2.94			2.94		5.89	11.77	79.46	1.75
<i>Sapium</i> spp.	20.60	8.83	8.83			2.94	5.89	2.94			50.03	1.10
<i>Quercus</i> spp.	55.92	23.54	23.54	38.26	26.49	29.43	2.94		2.94	8.83	211.90	4.67
<i>Machilus</i> spp.	5.89										5.89	0.13
<i>Kydia calycina</i>		5.89	2.94	8.83		2.94			2.94		23.54	0.52
<i>Baelina arborea</i>	64.75	20.60	5.89		2.94						94.18	2.08
<i>Ficus</i> spp.	61.80	23.54	8.83	2.94							97.12	2.14
<i>Ehretia</i>												
<i>acuminata</i>	23.54	8.83	5.89								38.26	0.84
<i>Cinnamomum</i> spp.	2.94										2.94	0.06
<i>Castanopsis</i>												
<i>indica</i>	17.66	11.77	2.94								32.37	0.71
<i>Canarium</i> spp.	2.94	2.94	2.94					2.94	2.94		14.71	0.32
<i>Altingia</i>												
<i>excelsa</i>		8.83	5.89								14.71	0.32
<i>Albizia</i> spp.	14.71										14.71	0.32
Misc. spp.	2116.02	818.15	344.33	164.81	135.38	91.23	55.92	32.37	17.66	14.71	3790.58	83.53
TOTAL	2483.89	947.65	423.79	217.78	164.81	126.55	67.69	38.26	32.37	35.32	4538.11	100.00

TABLE IV.2.3
DISTRIBUTION OF STEMS PER HECT. BY SPECIES AND DIAMETER CLASSES
FOR UPLAND-HARDWOOD FOREST TYPE (R.F.) AREA= 5003.10 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100:	TOTAL	% AGE
Sapine spp.	4.12		1.18		0.59					0.59	6.47	3.04
Quercus spp.	2.35	2.35	2.94	1.76				0.59	0.59		10.59	4.97
Ficus spp.	1.18	0.59	1.18								2.94	1.38
Ehretia												
acuminata	3.53	0.59									4.12	1.93
Cinnamomum spp.	0.59							0.59			1.18	0.55
Castanopsis												
indica	10.00	3.53	0.59								14.12	6.63
Altingia												
excelsa	6.47	1.76	2.35	1.18		0.59					12.35	5.80
Misc. spp.	90.59	31.76	14.12	10.59	5.29		1.76	3.53	0.59	2.94	161.18	75.69
TOTAL	118.82	40.59	22.35	13.53	5.88	0.59	1.76	4.71	1.18	3.53	212.94	100.00

TABLE IV.2.4
DISTRIBUTION OF STEMS PER HECT. BY SPECIES AND DIAMETER CLASSES
FOR MISCELLANEOUS FOREST TYPE (R.F.) AREA==10006.20 HECTARES

NAME OF SPFS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia tomentosa	0.59										0.59	0.13
Trema orientalis	5.88		0.29								6.18	1.36
Terminalia myriocarpa	3.24	1.47	0.88	0.29			0.29		0.59	1.18	7.94	1.75
Sapium spp.	2.06	0.88	0.88			0.29	0.59	0.29			5.00	1.10
Quercus spp.	5.59	2.35	2.35	3.82	2.65	2.94	0.29		0.29	0.88	21.18	4.67
Machilus spp.	0.59										0.59	0.13
Kydia calycina		0.59	0.29	0.88		0.29			0.29		2.35	0.52
Gaellina arborea	6.47	2.06	0.59		0.29						9.41	2.08
Ficus spp.	6.18	2.35	0.88	0.29							9.71	2.14
Ehretia acuminata	2.35	0.88	0.59								3.82	0.84
Cinnamomum spp.	0.29										0.29	0.06
Caslanopsis indica	1.76	1.18	0.29								3.24	0.71
Canarium spp.	0.29	0.29	0.29					0.29	0.29		1.47	0.32
Altingia excelsa		0.88	0.59								1.47	0.32
Albizzia spp.	1.47										1.47	0.32
Misc. spp.	211.47	81.76	34.41	16.47	13.53	9.12	5.59	3.24	1.76	1.47	378.82	83.53
TOTAL	248.24	94.71	42.35	21.76	16.47	12.85	6.76	3.82	3.24	3.53	453.53	100.00

TABLE IV.2.5
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
AND STEMS PER HECT. BY DIA. CLASSES. RF AREA=15009.30 HECTARES ALL F. TYPES

NAME OF SPES.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia tomentosa		5.89									5.89	0.11
Trema orientalis			58.86	2.94							61.80	1.10
Terminalia myriocarpa	32.37	14.71	8.83	2.94			2.94		5.89	11.77	79.46	1.42
Sapium spp.	41.20	8.83	14.71		2.94	2.94	5.89	2.94	2.94		82.40	1.47
Quercus spp.	67.69	35.32	38.26	47.09	26.49	29.43	2.94		5.89	8.83	264.87	4.73
Machilus spp.	5.89										5.89	0.11
Kydia calycina		5.89	2.94	8.83		2.94			2.94		23.54	0.42
Gmelina arborea	64.75	20.60	5.89		2.94						94.18	1.68
Ficus spp.	67.69	26.49	14.71	2.94							111.83	2.00
Ehretia acuminata	41.20	11.77	5.89					2.94			58.86	1.05
Cinnamomum spp.	5.89										8.83	0.16
Castanopsis indica	64.75	29.43	5.89								100.06	1.79
Canarium spp.	2.94	2.94	2.94						2.94	2.94	14.71	0.26
Altingia excelsa	32.37	17.66	17.66	5.89		2.94					76.52	1.37
Albizia spp.	14.71										14.71	0.26
Misc. spp.	2572.18	977.08	414.96	217.78	161.86	91.23	64.75	50.03	20.60	29.43	4599.91	82.09
TOTAL	3078.38	1150.71	535.63	285.47	194.24	129.49	76.52	61.80	38.26	52.97	5603.47	100.00
STEMS PER HECT.	205.10	76.67	35.69	19.02	12.94	8.63	5.10	4.12	2.55	3.53	373.33	
% D.Classes	54.94	20.54	9.56	5.09	3.47	2.31	1.37	1.10	0.68	0.95	100.00	

TABLE IV.2.6
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
FOR UPLAND-HARDWOOD FOREST TYPE (R.F.) AREA==5003.10 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Sapium spp.	3.77		5.31		5.65					22.88	37.61	5.15
Quercus spp.	1.79	4.48	12.63	11.21				16.01	18.27		64.38	8.81
Ficus spp.	0.88	1.79	4.57								7.24	0.99
Ehretia												
acuminata	2.33	0.96									3.28	0.43
Cinnamomum spp.	0.70							11.21			11.91	1.63
Castanopsis												
indica	7.25	7.45	2.20								16.90	2.31
Altingia												
excelsa	5.81	4.63	11.36	7.21		8.22					37.23	5.09
Misc. spp.	54.75	66.82	58.92	72.51	51.08		28.92	75.74	13.84	129.87	552.45	75.57
TOTAL	77.27	86.13	94.99	90.93	56.73	8.22	28.92	102.96	32.11	152.76	731.01	100.00

TABLE IV.2.7
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
FOR MISCELLANEOUS FOREST TYPE (R.F.) AREA===10006.20 HECTARES

NAME OF SPES.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia											0.42	0.01
lomentosa	0.42											
Ireca											10.19	0.34
orientalis	7.20		2.99									
Terminalia							18.48		57.90	233.95	335.05	11.03
myriocarpa	4.00	6.48	9.17	5.07		9.29	22.98	14.29				
Sapium spp.	3.59	4.47	8.00						17.88	80.95	336.55	11.08
Quercus spp.	9.45	10.42	19.30	48.68	54.53	83.16	12.18				0.81	0.03
Machilus spp.	0.81											
Kydia calycina		2.59	1.92	9.00		7.12			11.71		32.34	1.07
Gmelina arborea	5.89	9.94	6.85		16.51						39.19	1.29
Ficus spp.	7.36	9.96	6.48	3.29							27.10	0.89
Ehretia											11.19	0.37
acuminata	3.01	3.43	4.75								0.15	0.00
Cinnamomum spp.	0.15											
Castanopsis											10.17	0.34
indica	2.68	5.68	1.81									
Canarium spp.	0.27	1.14	2.99					13.02	14.68		32.10	1.06
Altingia											8.91	0.29
excelsa		4.22	4.69								2.16	0.07
Albizia spp.	2.16											
Misc. spp.	281.61	345.41	286.80	215.75	255.96	228.53	117.27	133.01	89.01	114.61	2127.95	70.07
TOTAL	328.61	403.75	355.75	281.79	327.00	328.10	239.90	160.32	191.19	429.51	3036.92	100.00

TABLE IV.2.B
DISTRIBUTION OF VOLUME PER HECT. BY SPECIES AND DIAMETER CLASSES IN CU.M.
FOR UPLAND-HARDWOOD FOREST TYPE (R.F.) AREA=5003.10 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Sapium spp.	0.75		1.06		1.13			3.20	3.65	4.57	7.52	5.15
Dugercus spp.	0.36	0.90	2.52	2.24							12.87	8.81
Ficus spp.	0.18	0.36	0.91								1.45	0.99
Ehretia											0.66	0.45
acuminata	0.47	0.19						2.24			2.38	1.63
Cinnamomum spp.	0.14											
Castanopsis											3.38	2.31
indica	1.45	1.49	0.44								7.44	5.09
Allingia						1.64						
excelsa	1.16	0.93	2.27	1.44			5.78	15.14	2.77	25.96	110.42	75.57
Misc. spp.	10.94	13.36	11.78	14.49	10.21							
TOTAL	15.44	17.22	18.99	18.17	11.34	1.64	5.78	20.58	6.42	30.53	146.11	100.00

TABLE IV.2.9
DISTRIBUTION OF VOLUME PER HECT. BY SPECIES AND DIAMETER CLASSES IN C.U.M.
FOR MISCELLANEOUS FOREST TYPE (R.F.) AREA===10006.20 HECTARES

NAME OF	SPFS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia													
loesentosa	:	0.04										0.04	0.01
Trema													
orientalis	:	0.72		0.30								1.02	0.34
Terminalia													
myriocarpa	:	0.40	0.65	0.92	0.51			1.85		5.79	23.38	33.48	11.03
Sapium spp.	:	0.36	0.45	0.80			0.93	2.30	1.43			6.26	2.06
Quercus spp.	:	0.94	1.04	1.93	4.87	5.45	8.31	1.22		1.79	8.09	33.63	11.08
Nachilus spp.	:	0.08										0.08	0.03
Kydia calycina	:		0.26	0.19	0.90		0.71			1.17		3.23	1.07
Gmelina arborea	:	0.59	0.99	0.68		1.65						3.92	1.29
Ficus spp.	:	0.74	1.00	0.65	0.33							2.71	0.89
Ehretia													
acuminata	:	0.30	0.34	0.47								1.12	0.37
Cinnamomum spp.	:	0.01										0.01	0.00
Castanopsis													
indica	:	0.27	0.57	0.18								1.02	0.34
Canarium spp.	:	0.03	0.11	0.30					1.30	1.47		3.21	1.06
Altingia													
excelsa	:		0.42	0.47								0.89	0.29
Aibizzia spp.	:	0.22										0.22	0.07
Misc. spp.	:	28.14	34.52	28.66	21.56	25.58	22.84	17.72	13.29	8.90	11.45	212.66	70.07
TOTAL	:	32.84	40.35	35.55	29.16	32.68	32.79	23.08	16.02	19.11	42.92	303.50	100.00

TABLE IV.2.10
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CUM.
AND VOLUME PER HECT. BY DIA. CLASSES. R.F. AREA==15009.30 HECTARES ALL F. TYPES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia tomentosa		0.42									0.42	0.01
Trema orientalis	7.20		2.99								10.19	0.27
Terminalia myriocarpa	4.00	6.48	9.17	5.07			18.49		57.90	233.95	335.05	8.89
Sapium spp.	7.36	4.47	13.31		5.65	9.29	22.98	14.30		22.88	100.23	2.66
Quercus spp.	11.24	14.90	31.92	59.89	54.53	83.16	12.18	16.01	36.15	80.95	460.93	10.64
Machilus spp.	0.81										0.81	0.02
Kydia calycina		2.59	1.92	9.00		7.12			11.71		32.35	0.86
Gmelina arborea	5.89	9.94	6.95		18.51						39.19	1.04
Ficus spp.	8.24	11.75	11.06	3.29							34.33	0.91
Ehretia acuminata	5.34	4.39	4.75					11.21			14.47	0.38
Cinnamomum spp.	0.85										12.06	0.32
Castanopsis indica	9.59	13.13	4.01								26.74	0.71
Canarium spp.	0.27	1.14	2.99					15.02	14.68		32.10	0.85
Altingia excelsa	5.81	8.85	16.05	7.21		8.22					46.15	1.22
Albizia spp.	2.16										2.16	0.06
Misc. spp.	336.69	412.24	345.72	289.25	307.04	228.53	206.18	208.75	102.85	244.48	12680.74	71.15
TOTAL	405.88	489.88	450.74	372.72	383.73	336.39	259.82	263.29	225.30	581.73	3767.93	100.00
VOL PER HECT	27.04	32.64	30.03	24.83	25.57	22.41	17.31	17.54	14.88	38.76	251.04	
% OF DIA CLAS	10.77	13.00	11.96	9.89	10.18	8.93	6.99	6.99	5.93	15.44	100.00	

TABLE IV.2.11
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
FOR UPLAND-HARDWOOD FOREST TYPE (U.F.) AREA==70826.49 HECTARES

NAME OF SPES.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
<i>Irenea</i>												
orientalis	92.89	46.44	34.83	11.61							185.77	0.87
Sapium spp.	23.22	11.61	23.22	11.61		11.61					81.28	0.38
Quercus spp.	2589.23	1428.14	905.65	719.88	336.72	290.27	290.27	162.55	81.28	116.11	6920.10	32.34
Nachilus spp.	23.22	11.61	46.44		11.61	11.61					104.50	0.49
Kydia calycina	34.83	11.61									46.44	0.22
Ficus spp.	116.11	34.83	46.44		11.61						209.00	0.98
<i>Ehretia</i>												
acuminata	11.61										11.61	0.05
Cinnamomum spp.	23.22	46.44	34.83		11.61	11.61	11.61				139.33	0.65
<i>Castanopsis</i>												
indica	69.67	46.44						11.61	11.61		139.33	0.65
Canarium spp.		11.61	23.22	34.83	11.61	46.44	11.61				139.33	0.65
Alnus spp.	23.22	11.61									34.83	0.16
Albizia spp.	267.05	69.67	69.67	81.28	11.61	11.61					510.88	2.39
Misc. spp.	6095.72	3251.05	1439.75	1041.98	394.77	232.22	127.72	139.33	34.83	116.11	12876.49	60.17
TOTAL	9346.77	4992.69	2612.45	1915.80	801.15	603.77	452.83	313.49	127.72	232.22	21398.89	100.00

TABLE IV.2.12
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
FOR MISCELLANEOUS FOREST TYPE(U.F.) AREA==116109.00 HECTARES

NAME OF SPGS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia												
tondensa	162.55	46.44									209.00	0.55
Vitex spp.	174.16	46.44		11.61	11.61						243.83	0.64
Trema												
orientalis	174.16	34.83	11.61	11.61							232.22	0.61
Terminalia												
myriocarpa	58.05	34.83				23.22	11.61	23.22	11.61	34.83	197.39	0.52
Sapium spp.	383.16	197.39	127.72	46.44	34.83	69.67	34.83	23.22		11.61	928.87	2.45
Quercus spp.	1103.04	905.65	603.77	429.60	232.22	104.50	104.50	81.28	34.83	11.61	3619.99	9.54
Machilus spp.	69.67	69.67	11.61								150.94	0.40
Pieris												
ovalifolia	278.66	34.83									313.49	0.83
Kydia calycina	209.00	58.05	23.22		11.61						301.88	0.80
Gmelina												
arborea	499.27	162.55	23.22	11.61			11.61				708.26	1.87
Ficus spp.	441.21	185.77	46.44	58.05	34.83	11.61				11.61	789.54	2.09
Ehretia												
acuminata	568.93	150.94	23.22			11.61					754.71	1.99
Cinnamomum spp.	139.33	58.05	11.61								209.00	0.55
Castanopsis												
indica	255.44	69.67	69.67	58.05			11.61			11.61	476.05	1.26
Canarium spp.	11.61	23.22								11.61	46.44	0.12
Altingia												
excelsa	185.77	58.05	23.22	11.61	11.61	11.61					301.88	0.80
Alnus spp.	11.61	46.44	34.83	81.28	23.22	11.61					209.00	0.55
Albizia spp.	92.89	34.83	23.22	11.61							162.55	0.43
Misc. spp.	15895.32	5898.34	2577.62	1265.59	789.54	545.71	429.60	220.61	116.11	278.66	28017.10	74.00
TOTAL	20713.85	8116.02	3610.99	1997.07	1149.48	789.54	603.77	348.33	162.55	371.55	37863.14	100.00

TABLE IV.2.13
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
FOR CONIFER MIXED WITH H.WOOD FORESTTYPE(U.F.) AREA==== 3403.27 HECTARES

=====																
NAME OF SPPS.:	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	:	1	466	:	

Tsuga dumosa :		46.44	11.61									:	58.05	:	27.78	:
Quercus spp. :						11.61	11.61					:	23.22	:	11.11	:
Pinus excelsa :	11.61	46.44										:	58.05	:	27.78	:
Misc. spp. :	34.83	11.61					11.61	11.61				:	69.67	:	33.33	:

TOTAL :	46.44	104.50	11.61			11.61	23.22	11.61				:	209.00	:	100.00	:

TABLE IV.2.14
DISTRIBUTION OF STEMS PER HECT. BY SPECIES AND DIAMETER CLASSES
FOR UPLAND-HARDWOOD FOREST TYPE(U.F.) AREA==70826.49 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
<i>Trema</i>											2.62	0.87
<i>orientalis</i>	1.31	0.66	0.49	0.16							1.15	0.38
<i>Sapium</i> spp.		0.33	0.16	0.33	0.16		0.16				97.70	32.34
<i>Quercus</i> spp.	36.56	20.16	12.79	10.16	4.75	4.10	4.10	2.30	1.15	1.64	1.48	0.49
<i>Nachilus</i> spp.	0.33	0.16	0.66		0.16	0.16					0.66	0.22
<i>Kydia calycina</i>	0.49	0.16									2.95	0.98
<i>Ficus</i> spp.	1.64	0.49	0.66		0.16							
<i>Ehretia</i>											0.16	0.05
<i>acuminata</i>		0.16									1.97	0.65
<i>Cinnamomum</i> spp.	0.33	0.66	0.49		0.16	0.16	0.16					
<i>Castanopsis</i>									0.16	0.16		1.97
<i>indica</i>		0.98	0.66								1.97	0.65
<i>Canarium</i> spp.		0.16	0.33	0.49	0.16	0.66	0.16				0.49	0.16
<i>Alnus</i> spp.	0.33	0.16									7.21	2.39
<i>Albizia</i> spp.	3.77	0.98	0.98	1.15	0.16	0.16					181.80	60.17
Misc. spp.	86.07	45.90	20.33	14.75	5.57	3.28	1.80	1.97	0.49	1.64		
TOTAL	131.97	70.49	36.89	27.05	11.31	8.52	6.39	4.43	1.80	3.28	302.13	100.00

TABLE IV.2.15
DISTRIBUTION OF STEMS PER HECT. BY SPECIES AND DIAMETER CLASSES
FOR MISCELLANEOUS FOREST TYPE(U.F.) AREA==116109.00 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
<i>Wrightia</i>												
<i>tomentosa</i>	1.40	0.40									1.80	0.55
<i>Vitex</i> spp.	1.50	0.40		0.10	0.10						2.10	0.64
<i>Trema</i>												
<i>orientalis</i>	1.50	0.30	0.10	0.10							2.00	0.61
<i>Terminalia</i>												
<i>myriocarpa</i>	0.50	0.30				0.20	0.10	0.20	0.10	0.30	1.70	0.52
<i>Sapium</i> spp.	3.30	1.70	1.10	0.40	0.30	0.60	0.30	0.20		0.10	8.00	2.45
<i>Quercus</i> spp.	9.50	7.80	5.20	3.70	2.00	0.90	0.90	0.70	0.30	0.10	31.10	9.54
<i>Machilus</i> spp.	0.60	0.60	0.10								1.30	0.40
<i>Pieris</i>												
<i>ovalifolia</i>	2.40	0.30									2.70	0.83
<i>Kydia calycina</i>	1.80	0.50	0.20		0.10						2.60	0.80
<i>Saellina</i>												
<i>arborea</i>	4.30	1.40	0.20	0.10			0.10				6.10	1.87
<i>Ficus</i> spp.	3.80	1.60	0.40	0.50	0.30	0.10				0.10	6.80	2.09
<i>Ehretia</i>												
<i>acuminata</i>	4.90	1.30	0.20			0.10					6.50	1.99
<i>Cinnamomum</i> spp.	1.20	0.50	0.10								1.80	0.55
<i>Castanopsis</i>												
<i>indica</i>	2.20	0.60	0.60	0.50			0.10			0.10	4.10	1.26
<i>Canarium</i> spp.	0.10	0.20								0.10	0.40	0.12
<i>Altingia</i>												
<i>excelsa</i>	1.60	0.50	0.20	0.10	0.10	0.10					2.60	0.80
<i>Alnus</i> spp.	0.10	0.40	0.30	0.70	0.20	0.10					1.80	0.55
<i>Albizia</i> spp.	0.80	0.30	0.20	0.10							1.40	0.43
Misc. spp.	136.90	50.80	22.20	10.90	6.80	4.70	3.70	1.90	1.00	2.40	241.30	74.00
TOTAL	178.40	69.90	31.10	17.20	9.90	6.80	5.20	3.00	1.40	3.20	328.10	100.00

TABLE IV.7.16
DISTRIBUTION OF STEMS PER HECT. BY SPECIES AND DIAMETER CLASSES
FOR CONIFER MIXED WITH H. WOOD FORESTTYPE(U.F.) AREA== 3483.27 HECTARES

NAME OF SPPS.:	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100 :	TOTAL :	% AGE :
<i>Tsuga dumosa</i> :		13.33	3.33								16.67	27.78 :
<i>Quercus</i> spp. :						3.33	3.33				6.67	11.11 :
<i>Pinus excelsa</i> :	3.33	13.33									16.67	27.78 :
Misc. spp :	10.00	3.33					3.33	3.33			20.00	33.33 :
TOTAL :	13.33	30.00	3.33			3.33	6.67	3.33			60.00	100.00 :

TABLE IV.2.17
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
AND STEMS PER HECT. FOR ALL FOREST TYPES COMBINED
'FOR U.F. AREA===190418.76 HECTARES

NAME OF SPSS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia												
tomentosa	162.55	46.44									209.00	0.35
Vitex spp.	174.16	46.44		11.61	11.61						243.83	0.41
Tsuga densa		46.44	11.61								58.05	0.10
Trema												
orientalis	267.05	81.28	46.44	23.22							417.99	0.70
Terminalia												
myriocarpa	58.05	34.83				23.22	11.61	23.22	11.61	34.83	197.39	0.33
Sapium spp.	383.16	220.61	139.33	69.67	46.44	69.67	46.44	23.22		11.61	1010.15	1.70
Quercus spp.	3692.27	2333.79	1509.42	1149.48	568.93	406.38	406.38	243.83	116.11	127.72	10554.31	17.75
Pinus excelsa	11.61	46.44									58.05	0.10
Pieris												
ovalifolia	278.66	34.83									313.49	0.53
Machilus spp.	92.89	81.28	58.05		11.61	11.61					255.44	0.43
Kydia calycina	243.83	69.67	23.22		11.61						348.33	0.59
Gmelina												
arborea	499.27	162.55	23.22	11.61			11.61				708.26	1.19
Ficus spp.	557.32	220.61	92.89	58.05	46.44	11.61				11.61	998.54	1.68
Ehretia												
acuminata	580.54	150.94	23.22			11.61					766.32	1.29
Cinnamomum spp.	162.55	104.50	46.44		11.61	11.61	11.61				348.33	0.59
Castanopsis												
indica	325.11	116.11	69.67	58.05			11.61	11.61	11.61	11.61	615.38	1.03
Canarium spp.	11.61	34.83	23.22	34.83	11.61	46.44	11.61			11.61	185.77	0.31
Altingia												
excelsa	185.77	58.05	23.22	11.61	11.61	11.61					301.88	0.51
Ainus spp.	34.83	58.05	34.83	81.28	23.22	11.61					243.83	0.41
Albizia spp.	359.94	104.50	92.89	92.89	11.61	11.61					673.43	1.13
Misc. spp.	22025.88	9161.00	4017.37	2310.57	1184.31	777.93	568.93	371.55	150.94	394.77	40963.26	68.88
TOTAL	30107.06	13213.20	6235.05	3912.87	1950.63	1404.92	1079.81	673.43	290.27	603.77	59471.05	100.00
STEMS PER HECT.	158.11	69.39	32.74	20.55	10.24	7.38	5.67	3.54	1.52	3.17	312.52	
% D.Classes	50.62	22.22	10.48	6.58	3.28	2.36	1.82	1.13	0.49	1.02	100.00	

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TABLE IV.2.18
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
FOR UPLAND-HARDWOOD FOREST TYPE(U.F.) AREA===70826.49 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
<i>Trema</i>												
<i>orientalis</i>	13.58	22.18	30.88	13.58							80.23	0.47
<i>Sapium</i> spp.		11.73	9.17	35.53	23.22		42.73				122.38	0.71
<i>Quercus</i> spp.	488.93	647.66	723.48	945.82	668.21	839.47	1123.24	798.13	512.04	1043.70	7790.68	45.36
<i>Machilus</i> spp.	2.90	5.34	39.01		22.06	30.07					99.39	0.58
<i>Kydia calycina</i>	6.39	4.76									11.15	0.06
<i>Ficus</i> spp.	19.97	14.75	43.31		25.54						103.57	0.60
<i>Ehretia</i>												
<i>acuminata</i>	2.44										2.44	0.01
<i>Cinnamomum</i> spp.	5.34	22.87	27.17		23.45	30.07	35.65				144.56	0.84
<i>Castanopsis</i>												
<i>indica</i>	11.73	18.23						61.54	74.66		166.15	0.97
<i>Canarium</i> spp.		4.88	20.32	45.98	20.09	119.01	35.06				245.34	1.43
<i>Alnus</i> spp.	4.88	6.62									11.49	0.07
<i>Albizia</i> spp.	34.81	28.91	53.99	101.36	21.36	30.88					271.35	1.58
Misc. spp.	863.73	1424.43	1173.05	1380.77	744.03	595.64	407.66	572.77	176.25	787.45	8129.77	47.31
TOTAL	1454.73	2212.34	2120.38	2523.05	1547.97	1645.15	1644.34	1432.44	762.95	1831.16	17174.49	100.00

TABLE IV.2.19
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
FOR MISCELLANEOUS FOREST TYPE(U.F.) AREA====116109.00 HECTARES

FOR HUSBANDRY													
NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE	
Wrightia											42.61	0.18	
tomentosa	26.01	16.60									79.63	0.33	
Vitex spp.	24.62	16.60		13.58	24.85								
Yucca											60.03	0.23	
orientalis	21.48	15.91	8.48	14.17									
Terminalia						100.20	65.37	184.96	102.52	474.77	953.14	3.93	
oxylocarpa	10.22	15.09						129.35		111.70	976.71	4.03	
Sapium spp.	73.15	86.27	109.08	61.07	72.68	186.59	150.83			90.68	3643.50	15.04	
Quercus spp.	228.73	420.09	479.88	606.55	472.56	302.58	418.92	404.29	219.21		54.69	0.23	
Machilus spp.	13.12	29.72	11.84										
Pteris											45.86	0.19	
ovalifolia	35.53	10.33			24.85						96.37	0.40	
Kydia calycina	33.56	20.20	17.76								353.55	1.46	
Goelina								149.66			78.84	425.31	1.76
arbores	72.22	69.32	29.26	33.09			31.70						
Ficus spp.	64.44	74.77	40.99	69.78	64.79								
Ehretia						30.88					183.57	0.76	
acuminata	76.52	56.31	19.85								49.46	0.20	
Cinnamomum spp.	14.75	24.03	10.68										
Castanopsis								46.21		246.96	479.18	1.98	
indica	30.42	24.27	56.08	75.24						77.44	88.71	0.37	
Canarium spp.	2.21	9.06											
Altingia											154.31	0.64	
excelsa	38.32	29.03	17.88	13.93	24.50	30.65					226.99	0.94	
Alnus spp.	2.79	22.29	25.66	107.63	41.45	27.17					66.88	0.28	
Albizia spp.	13.93	15.91	19.62	17.42									
Misc. spp.	2113.30	2467.20	2127.47	1710.98	1508.26	1377.17	1373.80	886.96	592.27	2095.30	16252.71	67.07	
TOTAL	2895.29	3473.01	2970.53	2725.45	2233.94	2086.94	2204.79	1605.56	914.01	3175.70	24233.23	100.00	

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TABLE IV.2.20
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
FOR CONIFER MIXED WITH H.WOOD FORESTTYPE(U.F.) AREA=== 3483.27 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% ARE
Tsuga dumosa		19.76	8.00								27.76	12.62
Quercus spp.					30.51	40.56					71.07	32.31
Pinus excelsa	3.09	18.07									21.16	9.62
Misc. spp.	4.96	4.51				42.30	48.23				99.99	45.46
TOTAL	8.05	42.33	8.00		30.51	82.86	48.23				219.98	100.00

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TABLE IV.2.21
DISTRIBUTION OF VOLUME PER HECT. BY SPECIES AND DIAMETER CLASSES IN C.U.N.
FOR UPLAND-HARDWOOD FOREST TYPE(U.F.) AREA==70826.49 HECTARES

NAME OF SPES.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Trema											1.13	0.47
orientalis	0.19	0.31	0.44	0.19							1.73	0.71
Sapium spp.		0.17	0.13	0.50	0.33		0.60					
Quercus spp.	6.90	9.14	10.21	13.35	9.43	11.85	15.86	11.27	7.23	14.74	110.00	45.36
Machilus spp.	0.04	0.08	0.55		0.31	0.42					1.40	0.58
Kydia calycina	0.09	0.07									0.16	0.06
Ficus spp.	0.28	0.21	0.61		0.36						1.46	0.60
Ehretia											0.03	0.01
acuminata	0.03										2.04	0.84
Cinnamomum spp.	0.08	0.32	0.38		0.33	0.42	0.50					
Castanopsis								0.87	1.05		2.35	0.97
indica	0.17	0.26									3.46	1.43
Canarium spp.		0.07	0.29	0.65	0.28	1.68	0.50				0.16	0.07
Alnus spp.	0.07	0.09									3.85	1.58
Albizia spp.	0.49	0.41	0.76	1.43	0.30	0.44						
Misc. spp.	12.20	20.11	16.56	19.50	10.50	8.41	5.76	8.09	2.49	11.12	114.73	47.31
TOTAL	20.54	31.24	29.94	35.62	21.86	23.23	23.22	20.22	10.77	25.85	242.49	100.00

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TABLE IV.2.22
DISTRIBUTION OF VOLUME PER HECT. BY SPECIES AND DIAMETER CLASSES IN CU.M.
FOR MISCELLANEOUS FOREST TYPE(U.F.) AREA====116109.00 HECTARES

NAME OF SPGS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia											0.37	0.18
tonantosa	0.22	0.14									0.69	0.33
Vitex spp.	0.21	0.14		0.12	0.21							
Trema											0.52	0.25
orientalis	0.18	0.14	0.07	0.12								
Terminalia												
myriocarpa	0.09	0.13				0.86	0.56	1.59	0.88	4.09	8.21	3.93
Sapium spp.	0.63	0.74	0.91	0.53	0.63	1.61	1.30	1.11		0.96	8.41	4.03
Quercus spp.	1.97	3.62	4.13	5.22	4.07	2.61	3.61	3.48	1.89	0.78	31.38	15.04
Nachilus spp.	0.11	0.26	0.10								0.47	0.23
Pteris												
ovalifolia	0.31	0.09									0.40	0.19
Kydia calycina	0.29	0.17	0.15		0.21						0.83	0.40
Gaellina												
arborea	0.62	0.60	0.25	0.29			1.29				3.04	1.46
Ficus spp.	0.55	0.64	0.35	0.60	0.56	0.27				0.68	3.66	1.76
Ehretia												
acuminata	0.66	0.48	0.17			0.27					1.58	0.76
Cinnamomum spp.	0.13	0.21	0.09								0.43	0.20
Castanopsis												
indica	0.26	0.21	0.48	0.65			0.40			2.13	4.13	1.98
Canarium spp.	0.02	0.08								0.67	0.76	0.37
Altingia												
excelsa	0.33	0.25	0.15	0.12	0.21	0.26					1.33	0.64
Alnus spp.	0.02	0.19	0.22	0.93	0.36	0.25					1.95	0.94
Albizia spp.	0.12	0.14	0.17	0.15							0.58	0.28
Misc. spp.	18.20	21.25	18.32	14.74	12.99	11.86	11.83	7.64	5.10	18.05	139.98	67.07
TOTAL	24.94	29.48	25.58	23.46	19.24	17.97	18.99	13.83	7.87	27.35	208.71	100.00

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TABLE IV.2.23
DISTRIBUTION OF VOLUME PER HECT. BY SPECIES AND DIAMETER CLASSES IN CU.M.
FOR CONIFER MIXED WITH H.WOOD FORESTTYPE(U.F.)AREA== 3483.27 HECTARES

NAME OF SPPS.:	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
<i>Tsuga dumosa</i> :		5.67	2.30								7.97	12.62
<i>Quercus</i> spp. :						8.76	11.64				20.40	32.31
<i>Pinus excelsa</i> :	0.89	5.19									6.07	9.62
Misc. spp. :	1.42	1.29					12.14	13.85			28.71	45.46
TOTAL :	2.31	12.15	2.30			8.76	23.79	13.85			63.15	100.00

TABLE IV.2.24
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
AND VOLUME PER HECT, BY DIA. CLASSES, (U.F.) AREA==190418.76 HECTARES

NAME OF SPPS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100	TOTAL	ALL F. TYPES
Wrightia tomentosa	26.01	16.60										: 42.61 : 0.10
Vitex spp.	24.62	16.60		13.58	24.85							: 79.65 : 0.19
Tsuga dumosa		19.76	8.00									: 27.76 : 0.07
Trema orientalis	35.06	38.08	39.36	27.75								: 140.26 : 0.34
Terminalia myriocarpa	10.22	15.09				100.20	65.37	184.96	102.52	474.77	953.14	: 2.29
Sapium spp.	73.15	98.00	114.25	96.60	95.91	186.59	193.55	129.35		111.70	1099.09	: 2.64
Quercus spp.	717.67	1067.74	1203.35	1552.38	1140.77	1172.56	1582.72	1202.42	731.25	1134.38	11505.25	: 27.64
Pinus excelsa	3.09	18.07										: 21.16 : 0.05
Pieris ovalifolia	35.53	10.33										: 45.86 : 0.11
Machilus spp.	16.02	35.06	50.86		22.06	30.07						: 154.09 : 0.37
Kydia calycina	39.94	24.96	17.76		24.85							: 107.51 : 0.26
Galearia arborea	72.22	69.32	29.26	33.09			149.66					: 353.55 : 0.85
Ficus spp.	84.41	89.52	84.30	69.78	90.33	31.70				78.84	528.89	: 1.27
Ehretia acuminata	78.95	56.31	19.85			30.89						: 186.01 : 0.45
Cinnamomum spp.	20.09	46.91	37.85		23.45	30.07	35.65					: 194.02 : 0.47
Castanopsis indica	42.15	42.50	56.08	75.24			46.21	61.54	74.66	246.96	645.33	: 1.55
Canarium spp.	2.21	13.93	20.32	45.98	20.09	119.01	35.06			77.44	334.05	: 0.80
Allingia excelsa	38.32	29.03	17.88	13.93	24.50	30.65						: 154.31 : 0.37
Alnus spp.	7.66	28.91	25.66	107.63	41.45	27.17						: 238.49 : 0.57
Albizzia spp.	48.77	44.82	73.61	118.78	21.36	30.88						: 338.23 : 0.81
Misc. spp.	2981.99	3896.13	3300.51	3091.75	2252.28	1972.81	1823.76	1507.95	768.53	2882.75	24478.47	: 58.80
TOTAL	4358.07	5677.68	5098.92	5246.50	3781.90	3762.61	3931.98	3086.22	1676.96	5006.85	41627.70	: 100.00
VOL PER HECT.	22.89	29.82	26.78	27.55	19.86	19.76	20.65	16.21	8.81	26.29	218.61	:
% OF DIA CLASS	10.47	13.64	12.25	12.60	9.05	9.04	9.45	7.41	4.03	12.03	100.00	:

TABLE IV.2.25
DISTRIBUTION OF TOTAL STEMS BY SPECIES AND DIAMETER CLASSES IN THOUSANDS
AND STEMS PER HECT. FOR ALL FOREST TYPES COMBINED
FOR UPPER SUBANSIRI AREA====205428.06 HECTARES

NAME OF SPSS.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia												
'tomentosa :	168.44	46.44									214.88	0.33 :
Vitex spp.	174.16	46.44		11.61	11.61						243.83	0.37 :
Tsuga dumosa :		46.44	11.61								58.05	0.09 :
Trema												
orientalis :	325.91	81.28	49.39	23.22							479.80	0.74 :
Terainialia												
nyriocarpa :	90.43	49.55	8.83	2.94		23.22	14.55	23.22	17.50	46.60	276.85	0.43 :
Sapium spp.	424.36	229.44	154.05	69.67	49.39	72.61	52.33	26.16		14.55	1092.55	1.68 :
Quercus spp.	3759.96	2369.11	1547.68	1196.57	595.42	435.81	409.32	246.77	122.00	136.55	10819.18	16.63 :
Pinus excelsa :	11.61	46.44									58.05	0.09 :
Pieris												
ovalifolia :	278.66	34.83									313.49	0.48 :
Machilus spp.	98.77	81.28	58.05		11.61	11.61					261.33	0.40 :
Kydia calycina :	243.83	75.55	26.16	8.83	11.61	2.94			2.94		371.87	0.57 :
Gaellina												
arborea :	564.01	183.15	29.11	11.61	2.94		11.61				802.44	1.23 :
Ficus spp.	625.01	247.09	107.60	61.00	46.44	11.61				11.61	1110.37	1.71 :
Ehretia												
acuminata :	621.75	162.71	29.11			11.61					825.18	1.27 :
Cinnamomum spp.	168.44	104.50	46.44		11.61	11.61	11.61	2.94			357.16	0.55 :
Castanopsis												
indica :	389.85	145.54	75.55	58.05			11.61	11.61	11.61	11.61	715.44	1.10 :
Canarium spp.	14.55	37.78	26.16	34.83	11.61	46.44	11.61	2.94	2.94	11.61	200.49	0.31 :
Altingia												
excelsa :	218.15	75.71	40.88	17.50	11.61	14.55					378.40	0.58 :
Alnus spp.	34.83	58.05	34.83	81.28	23.22	11.61					243.83	0.37 :
Albizia spp.	374.65	104.50	92.89	92.89	11.61	11.61					688.15	1.06 :
Misc. spp.	24598.06	10138.08	4432.33	2528.35	1346.18	869.16	633.68	421.58	171.54	424.20	45563.16	70.02 :
TOTAL	33185.44	14363.91	6770.68	4198.34	2144.87	1534.41	1156.33	733.24	328.53	656.74	165074.50	100.00 :
STEMS PER HECT.	161.54	69.92	32.96	20.44	10.44	7.47	5.63	3.58	1.60	3.20	316.78	:
% D.Classes	51.00	22.07	10.40	6.45	3.30	2.36	1.78	1.13	0.50	1.01	100.00	:

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TABLE IV.2.26
DISTRIBUTION OF TOTAL VOLUME BY SPECIES AND DIAMETER CLASSES IN THOUSAND CU.M.
AND VOLUME PER HECT. BY DIA. CLASSES. AREA==205428.06 HECTARES
ALL FOREST TYPES COMBINED FOR UPPER SUBANSIRI

NAME OF SPES.	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	>100	TOTAL	% AGE
Wrightia											43.03	0.09
tomentosa	26.43	16.60									79.65	0.18
Vitex spp.	24.62	16.60		13.58	24.85						27.76	0.06
Tsuga dumosa		19.76	8.00									
Ireeda											150.45	0.33
orientalis	42.27	38.08	42.35	27.75								
Terminalia												
myriocarpa	14.21	21.57	9.17	5.07		100.20	83.85	184.96	160.43	108.72	1288.19	2.84
Sapium spp.	80.50	102.47	127.56	96.60	101.55	195.88	216.53	143.64		134.98	1199.32	2.64
Quercus spp.	728.91	1082.64	1235.28	1612.27	1195.30	1255.72	1594.89	1218.44	767.40	1215.33	11906.18	26.23
Pinus excelsa	3.09	18.07									21.16	0.05
Pieris											45.86	0.10
ovalifolia	35.53	10.33									154.89	0.34
Machilus spp.	16.84	35.06	50.86		22.06	30.07					159.86	0.31
Kydia calycina	39.94	27.55	19.69	9.00	24.85	7.12			11.71			
Gmelina											392.75	0.87
arborea	78.11	79.26	36.11	33.09	16.51		149.66				78.84	563.21
Ficus spp.	92.65	101.27	95.35	73.07	90.33	31.70						1.24
Ehretia												
acuminata	84.29	60.70	24.60			30.88					200.48	0.44
Cinnamomum spp.	20.94	46.91	37.85		23.45	30.07	35.65	11.21			206.08	0.45
Castanopsis												
indica	51.74	59.63	60.09	75.24			46.21	61.54	74.66	246.96	672.07	1.49
Canarium spp.	2.48	15.08	23.31	45.98	20.09	119.01	35.06	13.02	14.68	77.44	366.15	0.81
Allingia												
excelsa	44.13	37.88	33.93	21.15	24.50	38.87					200.45	0.44
Alnus spp.	7.66	28.91	25.66	107.63	41.45	27.17					238.49	0.53
Albizzia spp.	50.93	44.82	73.61	118.78	21.36	30.88					340.39	0.75
Misc. spp.	3318.69	4308.37	3646.24	3380.01	2559.32	2201.34	2029.94	1716.70	871.37	3127.24	27159.21	59.83
TOTAL	4763.95	6167.56	5549.65	5619.22	4165.63	4098.92	4191.81	3349.51	1900.26	5589.12	45395.63	100.00
VOL. PER HECT.	23.19	30.02	27.02	27.35	20.28	19.95	20.41	16.31	9.25	27.21	220.98	
% OF DIA CLASS	10.49	13.59	12.23	12.38	9.18	9.03	9.23	7.78	4.19	12.31	100.00	

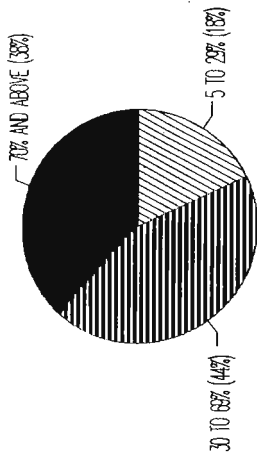
APPENDIX--1

Year of survey and publication of survey of India topo
Maps used for forest inventory in Upper Subansiri
District.

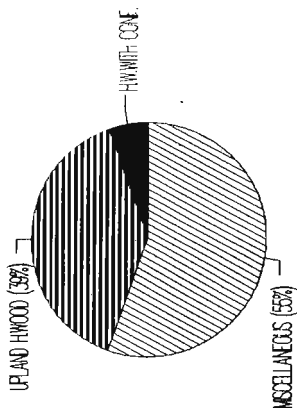
Topo sheet No.	Year of survey	Year of publication
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82H/6	1911-38	-
82H/7	1968-69	1972
82H/10	1911-38	-
82H/11	1961-62	-
	1963-64	1972
	1968-69	-
82H/14	-	-
82H/15	1961-62	1962
82H/16	1962-63	1966
82L/2	1968-70	1970
82L/3	1961-62	1962
82L/4	1961-62	1962
82L/7	1963-64	1967
82L/8	1963	1967
83I/1	1978-79	1985
83I/5	1963-64	1965
83I/9	1963-64	1967
83E/13	1962-63	1964

Note:- Topo sheet No. 82H/3,6,10 & 14 are not avail-
-able for use their year of survey has been
taken from S.O.I. Map Catalogue edition 1962

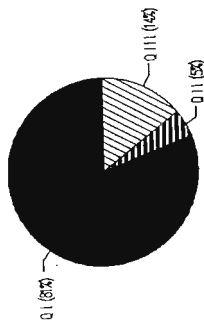
AREA DISTRIBUTION OF DENSITY CLASSES



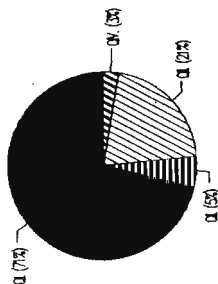
AREA DISTRIBUTION OF FOREST TYPES



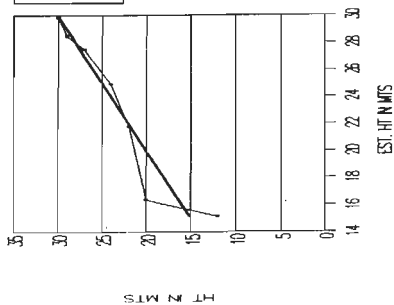
PIE CHART FOR BAMBOO
QUAL.DISTR.FOR R.F.



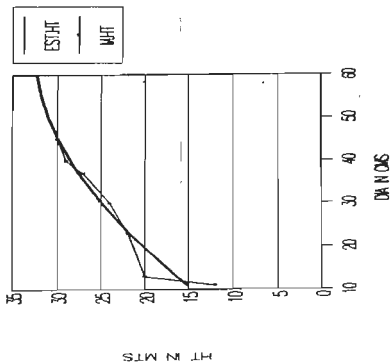
PIE CHART FOR BAMBOO
QUAL.DISTR.FOR U.F.



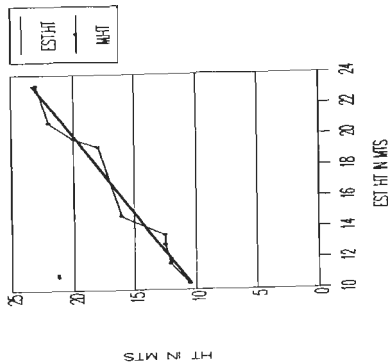
REG. FOR HEIGHT

Altingia excelsa

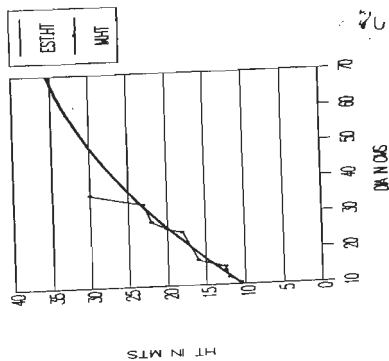
HT. DIA. RELATION

Altingia excelsa

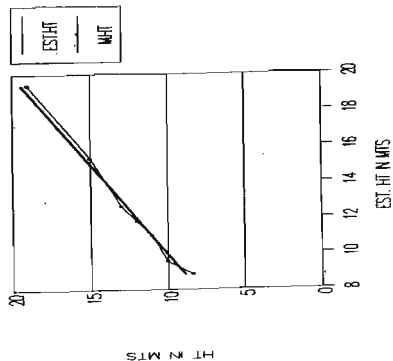
REC. FOR HEIGHT

Castonopsis spp.

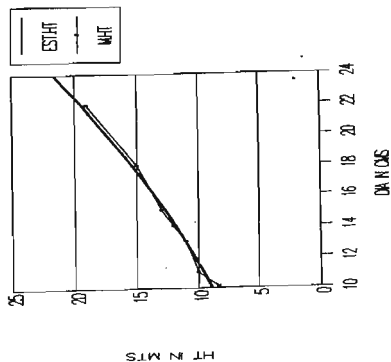
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Castonopsis spp.

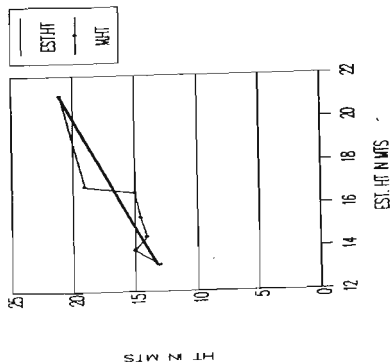
REC FOR HEIGHT

Gmelina arborea

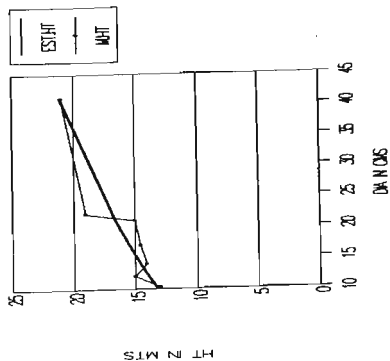
HT DIA RELATION

Gmelina arborea

REC.FOR HEIGHT

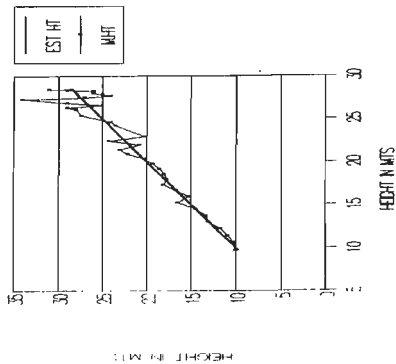
Kydia calycina

HT.DIA RELATION

Kydia calycina

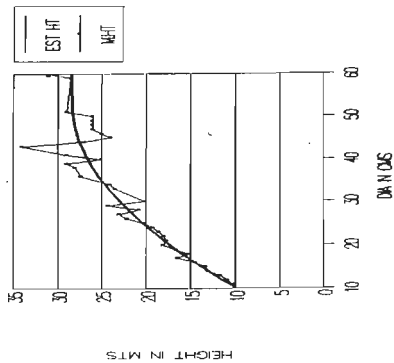
REC. FOR HEIGHT

Miscellaneous spp.



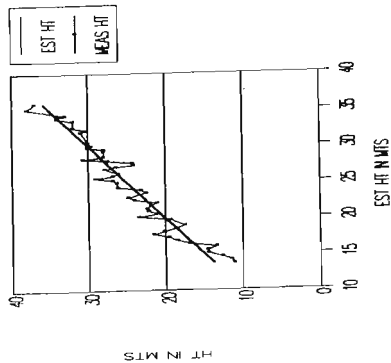
HT. DIA RELATION

Miscellaneous spp.



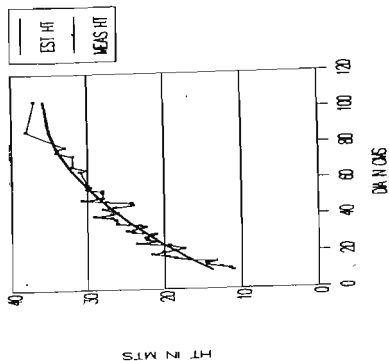
REG. FOR HEIGHT

Quercus spp.

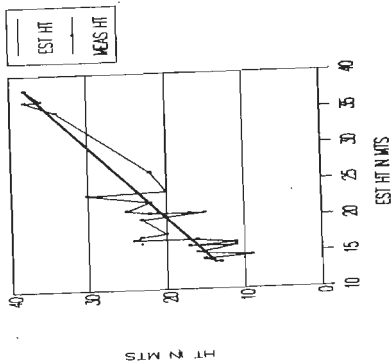


• HT. DIA RELATION

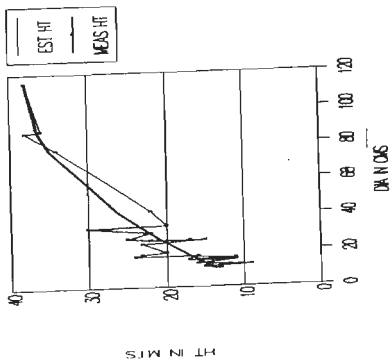
Quercus spp.



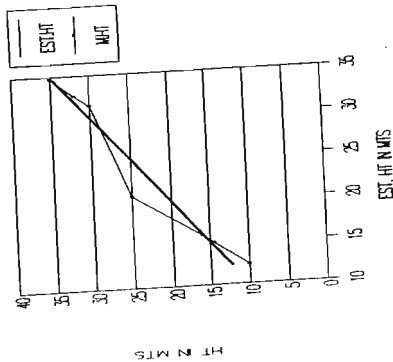
REC. FOR HEIGHT

Sapium spp.

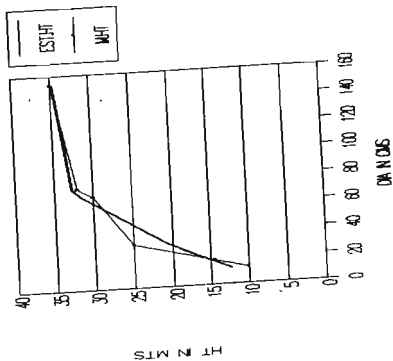
HT/DIA RELATION

Sapium spp.

REC. FOR HEIGHT

Terminalia myriocarpa

HT-DIA RELATION

Terminalia myriocarpa

71

LOCATION OF CENTRE OF SAMPLE PLOTS VISITED FOR
FOREST INVENTORY (RESERVED FOREST)

District:- Upper Subansiri

Map sheet coverage : 82 H/16, 82 I/4,8 , 83 I/1,5,9

Total:- 6 sheets.

Longitude E Latitude N of plot centre			Forest Division code	Land use code	Forest type code	No. of trees enumerated in sample plot of .1 ha.	Volume (m ³) in sample plot of .1ha.
Degree	Minute	Second					
1			2	3	4	5	6

Map sheet No. 82 H/16

93	53	00	13	-	-	-	-
28	07	00					
93	54	00	13	-	-	-	-
28	07	00					
93	55	00	13	-	-	-	-
28	07	00					
93	55	00	13	02	20	-	-
28	06	00					
93	55	00	13	01	09	047	37.131
28	05	00					
93	56	00	13	-	-	-	-
28	07	00					
93	56	00	13	02	09	-	-
28	06	00					
93	56	00	13	01	20	029	27.531
28	05	00					
93	57	00	13	-	-	-	-
28	07	00					
93	57	00	13	02	20	-	-
28	06	00					
93	57	00	13	01	20	013	8.004
28	05	00					
93	58	00	13	-	-	-	-
28	08	00					
93	58	00	13	-	-	-	-
28	07	00					
93	58	00	13	01	20	-	-
28	06	00					
93	58	00	13	01	20	013	17.344
28	05	00					
93	59	00	13	-	-	-	-
28	07	00					
93	59	00	13	01	09	044	65.488
28	06	00					

1	2	3	4	5	6
93 59 00	13	01	09	048	45,135
28 05 00					
94 00 00	13	-	-	-	-
28 06 00					
94 00 00	13	01	09	-	-
28 05 00					

Map sheet No. 82 L/4

94 01 00	13	01	09	042	45,520
28 05 00					
94 03 00	13	01	20	014	12,273
28 00 00					
94 04 00	13	01	20	056	22,613
28 01 00					
94 04 00	13	01	09	062	43,179
28 00 00					
94 05 00	13	01	09	029	25,865
28 00 00					
94 06 00	13	01	20	-	-
28 00 00					
94 07 00	13	-	-	-	-
28 00 00					
94 08 00	13	-	-	-	-
28 00 00					
94 11 00	13	02	20	052	14,133
28 00 00					
94 14 00	13	05	12	003	2,729
28 04 00					
94 15 00	13	03	20	021	2,198
28 04 00					
94 15 00	13	01	20	017	15,722
28 03 00					

Map sheet No. 82 L/8

94 24 00	13	01	09	040	38,747
28 01 00					
94 25 00	13	01	20	058	13,006
28 01 00					

Map sheet No. 83 I/1

94 01 00	13	-	-	-	-
27 59 00					
94 01 00	13	-	-	-	-
27 58 00					
94 02 00	13	-	-	-	-
27 59 00					
94 02 00	13	-	-	-	-
27 58 00					

1			2	3	4	5	6
Map sheet No. 83 1/1 (Contd)							
94	03	00	13	-	-	-	-
27	59	00					
94	03	00	13	-	-	-	-
27	58	00					
94	04	00	13	-	-	-	-
27	59	00					
94	04	00	13	-	-	-	-
27	58	00					
94	04	00	13	-	-	-	-
27	57	00					
94	04	00	13	01	20	-	-
27	56	00					
94	04	00	13	01	09	-	-
27	55	00					
94	04	00	13	01	09	039	39.395
27	54	00					
94	04	00	13	01	09	047	34.655
27	53	00					
94	04	00	13	-	-	-	-
27	52	00					
94	05	00	13	-	-	-	-
27	59	00					
94	05	00	13	-	-	-	-
27	58	00					
94	05	00	13	-	-	-	-
27	57	00					
94	05	00	13	01	20	065	113.335
27	55	00					
94	05	00	13	01	20	040	21.624
27	54	00					
94	05	00	13	01	20	031	34.196
27	53	00					
94	05	00	13	-	-	-	-
27	52	00					
94	06	00	13	-	-	-	-
27	59	00					
94	06	00	13	-	-	-	-
27	58	00					
94	06	00	13	-	-	-	-
27	57	00					
94	06	00	13	01	20	026	18.367
27	54	00					
94	06	00	13	01	20	062	47.587
27	53	00					
94	06	00	13	-	-	-	-
27	52	00					

1	2	3	4	5	6
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Map sheet No. 83 I/1 (Contd)

94	07	00	13	-	-	-	-
27	59	00					
94	07	00	13	02	09	008	0.808
27	58	00					
94	07	00	13	02	20	018	9.774
27	57	00					
94	08	00	13	06	-	-	-
27	55	00					
94	08	00	13	01	20	020	13.598
27	54	00					
94	08	00	13	-	-	-	-
27	53	00					
94	08	00	13	-	-	-	-
27	52	00					
94	09	00	13	01	20	058	38.466
27	59	00					
94	09	00	13	-	-	-	-
27	55	00					
94	09	00	13	02	20	008	17.479
27	54	00					
94	09	00	13	-	-	-	-
27	53	00					
94	10	00	13	01	20	079	39.760
27	59	00					
94	10	00	13	01	20	022	4.705
27	56	00					
94	10	00	13	01	20	008	10.859
27	55	00					
94	10	00	13	02	20	005	9.730
27	54	00					
94	10	00	13	01	09	038	28.161
27	53	00					
94	10	00	13	01	09	059	34.534
27	52	00					
94	10	00	13	01	09	032	38.637
27	51	00					
94	11	00	13	01	20	057	25.114
27	59	00					
94	11	00	13	01	09	059	9.325
27	55	00					
94	11	00	13	-	-	-	-
27	54	00					
94	11	00	13	01	09	040	24.127
27	53	00					

Contd.....P/ 81

			81					
			1	2	3	4	5	6
<u>Map sheet No. 83 I/1 (Contd)</u>								
94	11	00	13	01	20	038	27,991	
27	52	00						
94	11	00	13	-	-	-	-	
27	51	00						
94	12	00	13	-	-	-	-	
27	55	00						
94	12	00	13	-	-	-	-	
27	54	00						
94	12	00	13	01	20	034	23,125	
27	53	00						
94	15	00	13	02	20	010	0,956	
27	50	00						
94	50	00	13	01	20	029	28,723	
27	49	00						
<u>Map sheet No. 83 I/5</u>								
94	23	00	13	05	12	003	2,319	
28	00	00						
94	24	00	13	02	20	056	5,766	
28	00	00						
94	24	00	13	02	20	021	4,132	
27	59	00						
94	25	00	13	02	20	049	11,961	
28	00	00						
94	30	00	13	02	20	054	26,005	
27	56	00						
94	30	00	13	02	20	036	15,977	
27	55	00						
<u>Map sheet No. 83 I/9</u>								
94	31	00	13	02	20	042	31,709	
27	56	00						
94	31	00	13	02	20	049	14,338	
27	55	00						
94	32	00	13	02	20	044	20,763	
27	57	00						
94	32	00	13	02	20	036	20,731	
27	56	00						

LOCATION OF CENTRE OF SAMPLE PLOTS VISITED FOR
FOREST INVENTORY (UNCLASSIFIED FOREST)

District : Upper Subansiri

Map sheet coverage : 82 H/7, 11, 15, 16
82 L/2, 3, 4, 7, 8
83 E/13
83 I/1, 5, 9 Total:- 13 sheets.

Longitude E			Forest	Land	Forest	No. of	Volume (m ³)
Latitude N			Divi-	use	type	trees	in sample
of plot centre			sion	code	code	enumera-	plot of
			code			ted in	.1 ha.
Degree	Minute	Second				sample	
						plot of	
						.1 ha.	
1	2	3	4	5	6		

Map sheet No. 82 H/7

93	24	00	13	03	09	-	-
28	23	00					
93	28	00	13	03	09	-	-
28	30	00					
93	28	00	13	03	09	008	12,186
28	26	00					
93	29	00	13	03	09	005	12,477
28	24	00					
93	30	00	13	03	09	008	5,696
28	22	00					
93	15	00	13	-	-	-	-
28	25	00					
93	16	00	13	-	-	-	-
28	27	00					
93	17	00	13	-	-	-	-
28	24	00					
93	18	00	13	03	08	-	-
28	25	00					
93	19	00	13	03	07	-	-
28	27	00					
93	19	00	13	03	08	-	-
28	25	00					
93	19	00	13	-	-	-	-
28	22	00					
93	20	00	13	-	-	-	-
28	27	00					
93	20	00	13	03	08	-	-
28	26	00					
93	22	00	13	-	-	-	-
28	28	00					

1	2	3	4	5	6
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Map sheet No. 82 H/7 (Contd)

93	22	00	13	03	08	006	1.458
28	25	00					
93	22	00	13	-	-	-	-
28	23	00					
93	24	00	13	03	08	-	-
28	25	00					
93	24	00	13	-	-	-	-
28	21	00					
93	25	00	13	-	-	-	-
28	25	00					
93	25	00	13	-	-	-	-
28	22	00					
93	26	00	13	03	08	-	-
28	24	00					
93	27	00	13	03	08	-	-
28	26	00					
93	29	00	13	-	-	-	-
28	27	00					
93	29	00	13	15	-	-	-
28	20	00					
93	30	00	13	-	-	-	-
28	29	00					

Map sheet No. 82 H/11

93	31	00	13	03	09	-	-
28	22	00					
93	31	00	13	03	09	-	-
28	20	00					
93	32	00	13	03	09	-	-
28	22	00					
93	34	00	13	12	-	-	-
28	22	00					
93	35	00	13	03	09	-	-
28	24	00					
93	37	00	13	03	09	005	9.757
28	21	00					
93	38	00	13	03	09	-	-
28	23	00					
93	38	00	13	03	09	006	14.246
28	20	00					
93	39	00	13	-	-	-	-
28	30	00					

Contd..... P/84

		1	2	3	4	5	6
<u>Map Sheet No. 82 H/11 (Contd)</u>							
93	39	00	13	-	-	-	-
28	25	00					
93	39	00	13	03	09	-	-
28	24	00					
93	41	00	13	-	-	-	-
28	30	00					
93	41	00	13	-	-	-	-
28	29	00					
93	42	00	13	02	09	022	21,713
28	28	00					
93	42	00	13	-	-	-	-
28	25	00					
93	42	00	13	02	09	017	18,610
28	23	00					
93	43	00	13	02	20	011	9,275
28	27	00					
93	43	00	13	03	20	012	15,464
28	25	00					
93	43	00	13	03	09	014	15,039
28	23	00					
93	44	00	13	-	-	-	-
28	29	00					
93	44	00	13	-	-	-	-
28	28	00	-	-	-	-	-
93	44	00	13	03	09	-	-
28	26	00					
93	44	00	13	03	20	015	9,012
28	24	00					
93	44	00	13	02	20	011	12,390
28	23	00					
93	44	00	13	-	-	-	-
28	22	00					
93	45	00	13	-	-	-	-
28	26	00					
93	32	00	13	04	-	-	-
28	23	00					
93	32	00	13	03	08	-	-
28	20	00					
93	33	00	13	03	07	006	1,794
28	24	00					
93	34	00	13	-	-	-	-
28	20	00					

Contd.....P/ 85

1	2	3	4	5	6
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Map sheet No. 82 H/11 (Contd)

93	35	00	13	-	-	-	-
28	20	00					
93	36	00	13	-	-	-	-
28	26	00					
93	36	00	13	-	-	-	-
28	25	00					
93	37	00	13	-	-	-	-
28	26	00					
93	38	00	13	-	-	-	-
28	19	00					
93	39	00	13	-	-	-	-
28	27	00					
93	39	00	13	03	08	006	14,402
28	21	00					
93	41	00	13	-	-	-	-
28	27	00					
93	41	00	13	-	-	-	-
28	26	00					
93	41	00	13	03	08	-	-
28	21	00					
93	42	00	13	-	-	-	-
28	22	00					
93	45	00	13	-	-	-	-
28	28	00					
93	45	00	13	-	-	-	-
28	22	00					
93	45	00	13	-	-	-	-
28	21	00					

Map sheet No. 82 H/15

93	47	00	13	06	-	-	-
28	26	00					
93	47	00	13	06	-	-	-
28	25	00					
93	47	00	13	02	09	017	8,869
28	23	00					
93	47	00	13	02	09	-	-
28	22	00					
93	48	00	13	03	09	-	-
28	27	00					
93	48	00	13	06	-	-	-
28	24	00					

1	2	3	4	5	6
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Map sheet No. 82 H/15 (Contd)

93	48	00	13	03	09	-	-
28	23	00					
93	48	00	13	02	09	009	31.600
28	22	00					
93	49	00	13	02	09	016	15.558
28	23	00					
93	49	00	13	02	09	010	23.431
28	22	00					
93	50	00	13	06	-	-	-
28	27	00					
93	50	00	13	03	09	010	9.671
28	23	00					
93	50	00	13	02	09	014	27.282
28	22	00					
93	50	00	13	-	-	-	-
28	20	00					
93	51	00	13	-	-	-	-
28	28	00					
93	51	00	13	-	-	-	-
28	27	00					
93	51	00	13	02	09	-	-
28	25	00					
93	52	00	13	06	-	-	-
28	21	00					
93	53	00	13	-	-	-	-
28	26	00					
93	53	00	13	12	-	-	-
28	20	00					
93	53	00	13	-	-	-	-
28	19	00					
93	54	00	13	-	-	-	-
28	26	00					
93	54	00	13	02	20	016	41.178
28	22	00					
93	54	00	13	03	09	-	-
28	21	00					
93	55	00	13	-	-	-	-
28	26	00					
93	55	00	13	02	20	030	33.436
28	22	00					
93	55	00	13	06	-	-	-
28	20	00					
93	55	00	13	02	09	019	30.566
28	19	00					

1	2	3	4	5	6
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Map sheet No. 82 H/15 (Contd)

93	56	00	13	-	-	-	-
28	27	00					
93	56	00	13	-	-	-	-
28	26	00					
93	56	00	13	-	-	-	-
28	25	00					
93	56	00	13	02	09	023	29.336
28	18	00					
93	56	00	13	-	-	-	-
28	16	00					
93	57	00	13	06	-	-	-
28	21	00					
93	58	00	13	12	-	-	-
28	22	00					
93	59	00	13	02	09	014	2.202
28	23	00					
93	59	00	13	03	20	-	-
28	21	00					
94	00	00	13	-	-	-	-
28	24	00					
93	46	00	13	-	-	-	-
28	30	00					
93	48	00	13	-	-	-	-
28	28	00					
93	50	00	13	-	-	-	-
28	47	00					
93	52	00	13	-	-	-	-
28	27	00					
93	52	00	13	-	-	-	-
28	16	00					
93	54	00	13	-	-	-	-
28	17	00					
93	54	00	13	-	-	-	-
28	16	00					
93	55	00	13	-	-	-	-
28	29	00					
93	55	00	13	-	-	-	-
28	28	00					
93	56	00	13	-	-	-	-
28	29	00					
93	59	00	13	-	-	-	-
28	29	00					

1	2	3	4	5	6
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Map sheet No. 82 H/15 (Contd)

93	59	00	13	-	-	-	-
28	27	00					
94	00	00	13	-	-	-	-
28	29	00					
94	00	00	13	-	-	-	-
28	27	00					
94	00	00	13	-	-	-	-
28	16	00					

Map sheet No. 82 H/16

93	52	00	13	-	-	-	-
28	14	00					
93	53	00	13	-	-	-	-
28	15	00					
93	53	00	13	-	-	-	-
28	13	00					
93	53	00	13	-	-	-	-
28	12	00					
93	53	00	13	01	09	-	-
28	08	00					
93	54	00	13	01	20	-	-
28	11	00					
93	55	00	13	01	09	025	12.730
28	09	00					
93	55	00	13	01	20	034	26.278
28	04	00					
93	56	00	13	06	-	-	-
28	12	00					
93	56	00	13	06	-	-	-
28	11	00					
93	56	00	13	01	09	025	21.546
28	09	00					
93	57	00	13	01	09	049	32.401
29	09	00					
93	58	00	13	01	20	034	21.885
28	04	00					
93	58	00	13	02	20	026	14.031
28	03	00					
93	59	00	13	06	-	-	-
28	12	00					
93	59	00	13	06	-	-	-
28	10	00					
93	59	00	13	-	-	-	-
28	08	00					

1	2	3	4	5	6
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Map sheet No. 82 H/16 (Contd)

94	00	00	13	-	-	-	-
28	14	00					
94	00	00	13	01	09	-	-
28	13	00					
94	00	00	13	01	09	028	32.570
28	12	00					
94	00	00	13	16	-	-	-
28	10	00					
94	00	00	13	-	-	-	-
28	08	00					
94	00	00	13	-	-	-	-
28	07	00					

Map sheet No. 82 L/2

94	01	00	13	-	-	-	-
28	31	00					
94	01	00	13	-	-	-	-
23	32	00					
94	02	00	13	-	-	-	-
28	32	00					
94	03	00	13	-	-	-	-
28	31	00					

Map sheet No. 82 L/3

94	01	00	13	02	20	011	19.559
28	22	00					
94	01	00	13	01	-	-	-
28	17	00					
94	02	00	13	02	09	060	36.226
28	25	00					
94	02	00	13	05	12	002	-
28	20	00					
94	02	00	13	06	-	-	-
28	18	00					
94	02	00	13	01	20	-	-
28	17	00					
94	03	00	13	06	-	-	-
28	24	00					
94	04	00	13	01	20	058	32.953
28	28	00					
94	04	00	13	06	-	-	-
28	26	00					

1	2	3	4	5	6
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Map sheet No. 82 L/3 (Contd)

94	04	00	13	01	20	064	37.945
28	16	00					
94	05	00	13	06	-	-	-
28	24	00					
94	05	00	13	01	20	026	22.969
28	23	00					
94	05	00	13	01	09	044	15.161
28	21	00					
94	05	00	13	02	20	018	15.715
28	17	00					
94	06	00	13	02	09	042	32.058
28	22	00					
94	06	00	13	-	-	-	-
28	20	00					
94	06	00	13	02	20	045	38.278
28	19	00					
94	06	00	13	06	-	-	-
28	16	00					
94	07	00	13	06	-	-	-
28	16	00					
94	08	00	13	-	-	-	-
28	22	00					
94	08	00	13	02	20	019	2.448
28	17	00					
94	10	00	13	02	09	043	17.414
28	20	00					
94	10	00	13	01	09	054	38.720
28	19	00					
94	10	00	13	02	20	018	6.100
28	18	00					
94	11	00	13	02	09	040	25.731
28	23	00					
94	11	00	13	02	09	054	29.139
28	22	00					
94	12	00	13	01	20	041	17.538
28	22	00					
94	12	00	13	02	09	046	25.041
28	21	00					
94	13	00	13	01	09	057	23.832
28	21	00					
94	14	00	13	01	09	033	19.557
28	17	00					

ContdP/ 91

1	2	3	4	5	6
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Map sheet No. 82 L/3 (Contd)

94	15	00	13	01	09	046	26,310
28	19	00					
94	15	00	13	02	09	042	17,641
28	18	00					
94	01	00	13	-	-	-	-
28	28	00					
94	01	00	13	-	-	-	-
28	27	00					
94	01	00	13	-	-	-	-
28	26	00					
94	02	00	13	-	-	-	-
28	28	00					
94	06	00	13	-	-	-	-
28	28	00					
94	07	00	13	-	-	-	-
28	28	00					
94	09	00	13	-	-	-	-
28	22	00					
94	10	00	13	-	-	-	-
28	25	00					
94	10	00	13	-	-	-	-
28	24	00					
94	13	00	13	-	-	-	-
28	24	00					

Map sheet No. 82 L/4

94	01	00	13	01	20	059	18,456
28	04	00					
94	01	00	13	02	20	026	11,864
28	01	00					
94	00	00	13	01	09	047	17,754
28	00	00					
94	02	00	13	06	-	-	-
28	08	00					
94	02	00	13	02	20	026	17,320
28	07	00					
94	02	00	13	01	09	039	27,074
28	05	00					
94	03	00	13	01	09	033	24,555
28	05	00					
94	03	00	13	06	-	-	-
28	04	00					
94	03	00	13	06	-	-	-
28	01	00					

1	2	3	4	5	6
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Map sheet No. 82 L/4 (Contd)

94	04	00	13	02	20	-	-
28	14	00					
94	04	00	13	01	09	033	34.486
28	05	00					
94	05	00	13	02	20	025	10.795
28	13	00					
94	05	00	13	02	09	009	10.250
28	05	00					
94	05	00	13	01	20	032	27.275
28	01	00					
94	06	00	13	06	-	-	-
28	07	00					
94	06	00	13	01	09	080	15.075
28	05	00					
94	07	00	13	06	-	-	-
28	03	00					
94	07	00	13	01	20	026	28.199
28	02	00					
94	08	00	13	01	20	025	13.274
28	13	00					
94	08	00	13	02	20	027	3.550
28	12	00					
94	09	00	13	01	20	026	14.250
28	09	00					
94	08	00	13	06	-	-	-
28	07	00					
94	09	00	13	02	20	009	19.668
28	12	00					
94	09	00	13	01	20	051	29.962
28	09	00					
94	09	00	13	01	20	047	27.416
28	08	00					
94	09	00	13	01	20	073	31.504
28	02	00					
94	09	00	13	02	20	034	10.513
28	01	00					
94	09	00	13	06	-	-	-
28	00	00					
94	10	00	13	02	20	029	7.075
28	05	00					
94	11	00	13	02	20	014	2.959
28	13	00					
94	11	00	13	02	20	009	6.879
28	01	00					

1	2	3	4	5	6
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Map sheet No. 82 L/4 (Contd)

94	12	00	13	02	20	027	19.207
28	14	00					
94	12	00	13	02	20	016	8.977
28	09	00					
94	12	00	13	02	20	023	13.903
28	07	00					
94	12	00	13	02	20	036	5.004
28	06	00					
94	12	00	13	01	20	051	12.957
28	05	00					
94	12	00	13	06	-	-	-
28	00	00					
94	13	00	13	02	20	031	52.163
28	07	00					
94	13	00	13	05	12	002	-
28	03	00					
94	14	00	13	01	20	039	34.720
28	14	00					
94	14	00	13	01	09	043	29.994
28	12	00					
94	14	00	13	01	20	031	23.761
28	11	00					
94	14	00	13	01	20	032	35.880
28	09	00					
94	14	00	13	02	20	025	3.249
28	08	00					
94	14	00	13	05	12	004	-
28	00	00					
94	00	00	13	01	09	035	34.534
28	11	00					
94	00	00	13	-	-	-	-
28	09	00					
94	00	00	13	02	20	013	13.291
28	08	00					
94	00	00	13	01	20	038	26.994
28	06	00					

Map sheet No. 82 L/7

94	16	00	13	02	09	-	-
28	24	00					
94	16	00	13	01	09	-	-
28	23	00					
94	17	00	13	01	09	032	12.627
28	20	00					

1	2	3	4	5	6
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Map sheet No. 82 L/7 (Contd)

94	17	00	13	02	09	015	20.133
28	17	00					
94	17	00	13	01	09	037	31.536
28	15	00					
94	19	00	13	01	09	034	34.268
28	15	00					
94	20	00	13	01	09	034	31.421
28	16	00					
94	22	00	13	-	-	-	-
28	19	00					
94	22	00	13	-	-	-	-
28	18	00					
94	17	00	13	02	09	-	-
28	25	00					
94	17	00	13	02	09	-	-
28	24	00					
94	19	00	13	02	09	012	17.550
28	17	00					
94	21	00	13	-	-	-	-
28	17	00					

Map sheet No. 82 L/8

94	16	00	13	01	09	027	22.822
28	14	00					
94	16	00	13	02	09	024	35.040
28	06	00					
94	16	00	13	05	12	009	-
28	02	00					
94	17	00	13	01	09	032	51.239
28	14	00					
94	17	00	13	01	09	036	34.609
28	12	00					
94	17	00	13	-	-	-	-
28	07	00					
94	17	00	13	02	20	011	17.396
28	06	00					
94	17	00	13	01	20	038	64.310
28	05	00					
94	17	00	13	02	20	049	63.617
28	01	00					
94	18	00	13	02	09	025	22.541
28	14	00					
94	18	00	13	01	09	039	34.477
28	13	00					

Contd.....P/ 95

1	2	3	4	5	6
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Map sheet No. 82 L/8 (Contd)

94	18	00	13	01	09	025	34.134
28	08	00					
94	19	00	13	01	09	018	52.750
28	08	00					
94	19	00	13	01	20	032	66.363
28	07	00					
94	19	00	13	01	20	040	22.092
28	04	00					
94	20	00	13	01	09	028	37.256
28	12	00					
94	20	00	13	-	-	-	-
28	10	00					
94	20	00	13	01	09	043	49.566
28	09	00					
94	20	00	13	01	20	045	26.950
28	06	00					
94	21	00	13	-	-	-	-
28	14	00					
94	21	00	13	01	20	025	27.778
28	08	00					
94	21	00	13	12	-	-	-
28	07	00					
94	21	00	13	02	20	029	27.629
28	06	00					
94	21	00	13	02	20	022	6.520
28	04	00					
94	22	00	13	01	20	054	44.154
28	08	00					
94	22	00	13	01	20	017	23.478
28	07	00					
94	22	00	13	04	-	-	-
28	04	00					
94	23	00	13	01	20	031	34.981
28	05	00					
94	23	00	13	02	20	020	14.085
28	02	00					
94	23	00	13	01	09	032	22.917
28	01	00					
94	26	00	13	01	20	034	17.088
29	01	00					
94	22	00	13	-	-	-	-
28	14	00					

1	2	3	4	5	6
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Map sheet No. 83 E/13

93	58	00	13	01	09	052	21.292
28	00	00					
93	59	00	13	01	09	036	16.260
28	00	00					
94	00	00	13	01	20	-	-
28	00	00					

Map sheet No. 83 I/1

94	05	00	13	02	09	027	30.402
27	56	00					
94	06	00	13	01	20	034	14.218
27	55	00					
94	08	00	13	01	20	020	2.771
27	57	00					
94	08	00	13	06	-	-	-
27	56	00					
94	09	00	13	06	-	-	-
27	58	00					
94	09	00	13	06	-	-	-
27	57	00					
94	11	00	13	06	-	-	-
27	58	00					
94	11	00	13	06	-	-	-
27	57	00					
94	11	00	13	06	-	-	-
27	56	00					
94	12	00	13	06	-	-	-
27	57	00					
94	12	00	13	01	20	055	12.485
27	56	00					
94	13	00	13	02	20	032	20.519
27	52	00					
94	14	00	13	01	20	023	7.272
27	57	00					
94	14	00	13	02	20	021	13.940
27	55	00					
94	15	00	13	01	20	034	4.666
27	57	00					
94	15	00	13	04	-	-	-
27	56	00					
94	15	00	13	02	20	019	6.881
27	55	00					

Contd.....P/

1	2	3	4	5	6
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Map sheet No. 83 I/5

94	16	00	13	02	20	028	16.483
27	54	00					
94	17	00	13	02	20	051	19.217
27	56	00					
94	17	00	13	01	20	081	17.656
27	52	00					
94	18	00	13	02	20	039	15.645
27	54	00					
94	18	00	13	03	20	007	0.766
27	52	00					
94	19	00	13	06	-	-	-
28	00	00					
94	19	00	13	12	-	-	-
27	57	00					
94	20	00	13	02	20	052	9.871
27	58	00					
94	20	00	13	13	-	-	-
27	51	00					
94	21	00	13	-	-	-	-
27	06	00					
94	21	00	13	03	20	34	3.627
27	54	00					
94	21	00	13	02	20	50	33.561
27	48	00					
94	22	00	13	02	20	41	18.200
27	58	00					
94	22	00	13	02	20	44	7.034
27	54	00					
94	22	00	13	02	20	36	29.609
27	52	00					
94	23	00	13	06	-	-	-
27	55	00					
94	24	00	13	06	-	-	-
27	50	00					
94	24	00	13	06	-	-	-
27	48	00					
94	25	00	13	02	20	27	7.905
27	58	00					
94	25	00	13	02	20	34	20.732
27	54	00					
94	26	00	13	03	20	55	6.730
28	00	00					
94	26	00	13	06	-	-	-
27	54	00					

1	2	3	4	5	6
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Map sheet No. 83 I/5 (Contd)

94	26	00	13	02	20	014	14.250
27	50	00					
94	27	00	13	06	-	-	-
28	00	00					
94	27	00	13	06	-	-	-
27	59	00					
94	27	00	13	02	20	029	28.060
27	55	00					
94	27	00	13	02	20	053	22.540
27	53	00					
94	28	00	13	06	-	-	-
27	58	00					
94	29	00	13	03	20	001	0.965
28	00	00					
94	29	00	13	-	-	-	-
27	54	00					
94	29	00	13	02	20	042	31.510
27	52	00					
94	30	00	13	02	20	033	27.063
27	57	00					
94	30	00	13	02	20	065	23.621
27	54	00					
94	30	00	13	02	20	049	36.023
27	52	00					
94	30	00	13	02	20	055	20.245
27	51	00					

Map sheet No. 83 I/9

94	31	00	13	06	-	-	-
28	00	00					
94	31	00	13	02	20	055	20.046
27	53	00					
94	31	00	13	02	09	029	12.200
27	52	00					
94	32	00	13	02	20	053	18.976
27	55	00					
94	32	00	13	02	20	030	25.378
27	54	00					
94	33	00	13	02	20	026	11.023
27	54	00					
94	33	00	13	02	20	027	18.715
27	53	00					
94	34	00	13	02	20	023	26.151
27	53	00					
94	35	00	13	02	20	035	19.703
27	53	00					

PLOT APPROACH FORM

- 1) Plot Approach Form must be filled in while the journey is in progress.
- 2) While recording date, it is essential to record month and year also.
- 3) If a plot is visited on more than one day, a separate form for each visit shall be filled up.

1. State and Code
2. Division and Code
3. District and Code
4. Map-sheet and Code
5. Grid Code
5. (a) Plot No.
6. Crew Leader (name)
7. Name of Camp
8. Time (hrs.) at which Left the camp
9. Distance covered by vehicle (km.)
10. Time taken in journey by vehicle

Hours	Minutes
-------	---------
11. Name of the place up to which journey was performed by vehicle.
(describe in brief)
12. Conspicuous features observed during the journey by vehicle (describe in brief)
13. Time at which started on foot
14. Direction and distance covered on foot up to the reference point (km.)
15. Conspicuous features observed during the journey on foot (describe in brief)
16. Time (hrs.) at which arrived at the reference point.
17. Description of the reference point
(Describe in details)
18. Compass bearing from reference point to the plot approached for commencing survey (please give the Plot No. also) if any
19. Distance of the plot Centre from reference point (Mtr)

20. Date and time at which arrived at the Plot
21. Time (hrs) of Leaving the Plot
22. Time (hrs) at which returned to the Camp.
23. Compassing done by
24. Distance measured by
25. Plots laid out by
26. Tree Enumeration done by
27. Height measurements taken by
28. B. T. and other measurements taken by
29. Bamboo enumeration done by
30. Bamboo Weight taken by
31. References in the field written by
32. Remarks

1st Plot*

2nd Plot*.

1st Plot*

2nd Plot*.

Dated :

Signature of the Crew Leader

Diagrams etc.

A

B

N.B. *Strike out unwanted one.

PLOT DESCRIPTION FORM

Field Form 2

Job No.	Cord Design	State	District	Forest Division	Map Sheet No.	Grid No.	Plot No.	Legal Status	Land Use	
1-3	4-5	6	7-8	9-10	11-12	13-18	19-22	23	24	25-26

Terrain Data		Soil Data		Crop Data										Bamboo Data		River distance to markers (miles)					Plot Status	Status of Forest																								
General Topography	SLOPE	Position on Slope	Altitude	Aspect	Moisture	Soil Colour	Soil Consistency	Soil Texture	Coarse Fragments	Soil Depth	Soil Erosion	Origin of Stand	Crop Composition	Canopy Layer or Storey	Top Height	Size Class	Intensity of regeneration	Important Species under	Injury to Crop	Fire Incidence	Grazing Incidence	Presence of weeds	Presence of Grass	Bamboo density	Bamboo quality	Bamboo Flowering	Bamboo regeneration	Plantation Potential	Distance to road	Distance to Mule Path	Distance to River/stream	Kachia road Distance	Pucca road Distance	River distance to markers (miles)	Obstacles	Plot Status	Status of Forest									
27-28-30-31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46-47	48-49	50	51	52	53	54-55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

100

Signature of Crew Leader

Name of crew Leader

Dated

PLOT ENUMERATION FORM

Job No.	Card design	Map Sheet No.	Grid No.	Plot No.
1-3	4-5	6-11	12-15	16

Total No. of bamboo clumps	71-73
Total No. of trees	74-76

[illegible]

Date

Signature of Crew Leader

Name of Crew Leader.....

SAMPLE TREE FORM

Job No.	Card design	Map Sheet No.	Grid No.	Plot No.
1-3	4-5	6-11	12-15	16

Total No. of trees	55-56
--------------------	-------

[illegible]

Date

Signature of Crew Leader...

Name of Crew Leader.....

Job No.	Card Design	Map Sheet No.	Grid No.	Plot No.
1-3	4-5	6-11	12-15	16

[illegible]

Date _____

Signature of the Crew Leader _____

Name of the Crew Leader

BAMBOO WEIGHT FORM

Job Number	Card Design
1-3	4-5

Map sheet Number	Grid No.	Plot Number
8-11	12-15	16

Species Code	Green Weight of cum																														Green weight of sub-sample \pm 22 weighed with dry weight																																																				
	DIAMETER CLASS																																																																																		
	2 to under 5 cm										5 to under 8 cm																																																																								
	Diameter	Total length in dm	Utilizable length in dm		Weight in Grams	Diameter	Total length in dm	Utilizable length in dm		Weight in Grams	Diameter	Total length in dm	Utilizable length in dm		Weight in Grams																																																																				
			Up to 1cm	Up to 2cm				Up to 1cm	Up to 2cm				Up to 1cm	Up to 2cm		Up to 1cm	Up to 2cm																																																																		
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Date _____

Signature of Crew Leader.....

Name of Crew Leader	Room	Address	City	State	Zip

