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REPORT
ON

FOREST RESOURCES OF

RANCHI, GUMLA & LOHARDAGA
DISTRICTS OF
JHARKHAND

FOREST SURVEY OF INDIA
EASTERN ZONE
KOLKATA
2001

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PREFACE

The present inventory of the forest resources in Ranchi,Gumla and Lohardaga districts were carried out during the year 1994-95 and 1995-96 with the objective of evaluating the present status of forest resources with details of methodology, crop composition, extent of degradation of forest It also analyse the status of regeneration, grazing incidence and fire incidence This distnct was also surveyed under the name of Pre-investment Survey of Forest Resources, Eastern Zone during the period 1979-80 and 1980-81 The findings of the present inventory has been compared with the past inventory of 1979-81

The recorded forest area of the undivided Ranchi district is 3368.62 sq km. which is 18 44% of the geographical area. However, the green wash area as marked on the toposheet has been taken as the forest area of the district accounting 3323 12 sq km.

The survey revealed a total growing stock of 14 99 million m3 with an average volume of 46 74 m3 per ha The number of stems/ha for Sal and Miscellaneous stratum has been estimated as 232 991 and 159 808 respectively The total number of stems is 67 25 million in the district.

Officers and staff members of Eastern Zone of Forest Survey of India who were entrusted with carrying out the inventory and bringing out the report in the present form deserve appreciation. The co-operation and help extended by the State Forest Department of Bihar is thankfully acknowledged

It is hoped that the report will help the State Government in planning and provide inputs and facilitate forest resource management in the State

Dr J.K. Rawat)
Director

FOREST SURVEY OF INDIA
EASTERN ZONE
KOLKATA

Acknowledgement

This organization is extremely thankful and expresses its gratitude to the forest Officers and field staff members of State Forest Department of Bihar who rendered all possible cooperation to the field parties of our organization during the survey period without which it would not have been possible to complete the survey work in scheduled time. Sincere thanks are also conveyed to the Dy. Commissioner of Ranchi and other officials of Bihar administration who extended all possible help to our field parties. Sincere thanks is also extended to the Deputy Directors of Forest Survey of India, Eastern Zone, Kolkata who worked in the field area and also helped in final checking and publication of the report. My thanks are also expressed to all Officers and Staff members of Eastern Zone of Forest Survey of India who were entrusted with carrying out the forest inventory and bringing out the report in the present form.

(Madhawa Trivedy)
Regional Director

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PART - I

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CHAPTER I

BACKGROUND INFORMATION

1 1 INTRODUCTION .

Human existence is inseparably related to the forest, as plants protect and improve the environment in which man lives The forest is not merely an aggregation of trees but is a biological unit having a social organization of living communities at work If there is any disturbance in any species of plants, its repercussions are felt all the way through the whole kingdom of nature To the question who can protect the trees, the answer would be those the tree protects. It is the people who should step forward for the welfare of the forests To keep a healthy environment, people should take proper care of forest resources. For this purpose, a thorough assessment of the forest resources of an area is an essential pre-requisite. Keeping this in view, Forest Survey of India (E Zone) has undertaken the current study on forest resources of undivided Ranchi district in the state of Bihar during the year 1994-95

1 2 LOCATION AND BOUNDARY :

The present inventory pertains to the forest resources of the erstwhile Ranchi district of the Bihar State which has now been split into three separate districts viz Ranchi, Gumla and Lohardaga The location of these three districts are shown in the map attached The results and findings are, however, worked out on undivided Ranchi district because of similar forest compositron and vegetation status Therefore, we will focus our attention into the undivided Ranchi district while elaborating the nt-bits of inventory area The undivided Ranchi district was the largest in the state Total geographical area of the district was 18266 sq.kms It was bounded on the north by Hazanbag and small portion of Chatra district, on the east by the district of Purulia in West Bengal and part of Paschim Singhbhum, on the south by the district of Paschim Singhbhum and on the west by Palamou district and the district of Raigarh in Madhya Pradesh The district lay between 22°20' to 23°42 5' north latitude and between 84°0' to 85°55' east longitude.

1 3 PHYSICAL FEATURES

The state of Bihar is physically characterized by a huge plateau region which is full of highlands, hills, valleys and waterfalls The district of Ranchi is an ideal representation of such type of features Basically, the district consists of three broad natural divisions, viz North-western pat region, lower Chotonagpur plateau and Ranchi plateau proper.

In the north-western part of Ranchi i.e. in the south of Palamou district there are a number of lofty flat topped hills, locally called as Pats which are capped by great masses of laterite. The pat area has an altitude of 2,500 to 3,000 ft. above the sea level. The highest areas in this region are Netarhat Pat, Samiti Pat and Galgal Pat. The crest of the Netarhat pat is an undulating table and which is about 6 kms long and 4 kms. broad The lower Ranchi plateau has an average elevation of 500 to 1,000 ft. above the sea level. This region comprises a small area in the north eastern part of the Ranchi district.

The rest portion of the district, which is generally called as Ranchi plateau, has an average elevation of 2,000 ft. above the sea level The highest part of this plateau region is comprised of a ridge lying about 16 kms south west of Ranchi city. The Subarnarekha and the South Koel rivers originate from this ridge. The highest summits are found in the range of hills in the extreme western part, stretching from Birpokhar. On the northern border, the prominent hills are Oria, Bardeg, Hutar and Bulbul. The highest point in the district is Saru pahar lying in Bulbul.

In the central plateau region, some isolated hills are found . Notable among them are Marang Buru, the sacred hill of the Mundas and Ranchi hill.

1.4 SOIL STRUCTURE :

The soil structure of a place is very much significant in forest composition investigations. It has a prominent impact on forest type and vegetation cover. According to the broad classification of soils adopted by the Indian Agricultural Research Institute, the Ranchi district is covered by red soil, in general, except for a small portion in the south eastern part which consists of mixed red and black soil. Again, according to a more detailed classification done by the Directorate of Agriculture, Govt. of Bihar , the soil of this district have been divided into three categories, almost the entire eastern part of the district is comprised of red yellow light grey catenary soil, the western part is covered by upland grey yellow, grey heavy soil and a few portions of the north western part of the district is covered by hills and forest soils.

1.5 DRAINAGE SYSTEM :

The principal rivers of Ranchi district are the Subarnarekha, the south Koel and the Sankh. The Subarnarekha emanates near Ratu in Ranchi plateau. It flows towards the eastern part of the district until it descends from the Hundru plateau. Here the plateau ends abruptly giving rise to a 300 ft. long marvellous fall, the Hundu fall which is a great attraction for tourists. The south Koel river originates near Mandar in Ranchi plateau and flows towards north-western part of the district for some distance. Afterwards, it turns towards the south near Lohardaga and then enters into the Singhbhum district. The Sankh river rises in the north-western part of the district near the Rajadera plateau. It flows towards south along the western portion of the

district Another river North Koel rises at Tendar and flows towards north entering thereafter the Palamou district

1 6 CLIMATIC CONDITION ·

The district of Ranchi is well known for its healthy climate. It has got a pleasant weather in comparison to other parts of the state Its high elevation gives it a uniformly lower range of temperature throughout the year. The temperature varies from 39 7°C to 6.3°C It is only during the months of April and May that the temperature rises to a great height But since the nights are pleasant and the weather is dry, the heat is not so oppressive. The winter season starts from the beginning of November The coldest months are December and January. A strong cold wind blows throughout the month of January when the temperature reaches its minimum The mean annual temperature in Ranchi is recorded to be 23 6°C.

The monsoon breaks up usually at the end of June. During the month of July and August, the rainfall is the heaviest Normal rainfall in the district is found to be 1482.6 mm The humidity varies between 86% and 54% during the year The rainfall in September averages over 228 mm and is significant from agricultural point of view Again in the month of December and January the district receives some winter rains which gives a chill weather during these days

1.7 FLORA AND FAUNA :

The district is endowed with a good flora and fauna. A considerable portion of the district (23%) is covered by forests The forests are mostly found to be scattered throughout the district. The main type of forest is dry peninsular Sal with patches of mixed forest towards the north west and south west portions of the districts Sal trees are commonly found in this region. The other prominent trees are Terminalia tomentosa, Gmelina arborea, Anogeissus latifolia, Buchanania lanzan, Boswellia serrata, Syzygium cumini etc., Champion and Seth has grouped the forests of this district into 3b/c (82a) Northern tropical moist deciduous forests and 4b/c2 northern tropical dry deciduous forests The Madhuca latifolia trees are also widely found in the district, but these are mainly confined to the hill area.

Carnivorous animals are rarely found in the district. Tiger and Leopards are found at times, generally coming from the denser forests in the adjoining districts of Palamou and Singhbhum. Besides, the Bears, Sambhar, Chital, Kotra, Nilgai and Hares are also commonly found. Peafowls, Patridges and Quails are also available in the district Among the Reptiles, both poisonous and non-poisonous snakes are found throughout the district

1.8 MINES AND MINERALS :

The district is well recognized for its mineral resources. In the north – western parts of the district, laterite is widely found Basically, it is derived from the ancient lava of which the region was believed to be composed. In the southern parts of the district, archaean lavas and basic igneous rocks are found Besides, archaean schists including iron-ore series and also Kolhan series lie in the southern part of Ranchi district along these archaean lavas and basic igneous intrusive rocks The rest portion of the district is covered by gneisses and agranistes These are supposed to be the oldest rocks formed from the solidification of the original crust. The important minerals found in the district are Bauxite in the region of Lohardaga, limestone in Babhane, Hoyar and Khelari, and China clay to the south of Raj Barkakana section of the Eastern Railway Besides these, a considerable amount of coal, asbestos, berytes, steatite, ornamental stones and mineral pigments are also found in this district but they are of low economic value.

1.9 IRRIGATION FACILITIES :

The irrigation facility of the district is not adequate and well developed for a good agricultural crop throughout the year The cultivators of this district generally depend on a good rainfall for their crop. In the pre-independence days, the irrigation received some attention at the hands of the erstwhile Zamindars, But afterwards, the British government paid very little attention for overall development of irrigational facilities in this district. The streams of the district remain almost dry throughout the year excepting the rainy season. As a result, they could not offer as much scope for irrigation as the perennial rivers do in the hilly area That is why artificial irrigation is the only way of irrigation practised throughout the district But the facilities under such irrigation is not found to be adequate enough in this district. The only traditional sources of irrigation adopted here are wells, springs and ahars.

In the post Independence days, the government took some endeavour to implement several schemes of irrigation facilities. The important schemes executed by the Government so far are Aradih, Resa, Kuta Nandani, Buchaopa, Ranchi etc. But still the district urgently requires even more facilities of irrigation through the implementation of major, medium and minor irrigation schemes to assure a regular source of water supply for a good paddy crop and other agricultural products.

1.10 DEMOGRAPHIC PICTURE :

Demographic picture of the inventory area is reflected by the data provided by 1991 Census The population figures for the concerned three districts viz. Gumla, Lohardaga and Ranchi according to 1991 Census is presented here .

District	Total	Rural	Urban
Gumla	11,53,976	11,01,687	52,289
Lohardaga	2,88,886	2,57,125	31,761
Ranchi	22,14,048	14,83,393	7,30,655

Thus, the total population of undivided Ranchi district accounts to 36,56,910. Of these, 18,80,017 persons are males and 17,76,893 persons are females. Total rural population of the inventory area is 28,42,205 comprising 14,43,201 males and 13,99,004 females. On the contrary, total urban population of the concerned area is 8,14,705 comprising 4,36,816 males and 3,77,889 females.

The distribution of Scheduled castes and Scheduled tribes population in the individual three districts are as follows:

District	Scheduled Castes	Scheduled Tribes
Gumla	61,299	8,16,988
Lohardaga	10,919	1,62,964
Ranchi	1,23,239	9,64,422

The decennial growth rate of population of these districts in relation to the state between the period 1981 and 1991 is presented.

District	Total	Rural	Urban
Bihar	23.49	22.51	30.39
Gumla	13.40	12.80	27.44
Lohardaga	25.59	24.42	35.97
Ranchi	20.93	18.50	26.16

Literacy rate of age 7 years and above for the district of Gumla, Lohardaga and Ranchi is 39.67, 40 79 and 51.52 respectively. Total number of literate persons of age 7 years and above residing in the inventoried area accounts to 13,89,313. Among them, male literacy percentage is 66.18 and female literacy percentage is 33.82.

The main languages spoken in these areas are Hindi, Bengali and Urdu. The religion practised by the people are mainly Hinduism, Muslim, Christian, Sikh, Buddhism, Jainism etc. Of these, the proportion of Hindu population in the inventory area is highest (51.90%). The Christians (15.71%) and Muslims (8.35%) correspond comparatively less proportion of population in these areas

1.11 ECONOMIC PURVIEW :

The economic purview of a place reflects the features of well-being of general people and the various modes of development through agriculture and industry In fact, the economy of Ranchi district is supported by both agriculture and industry A large portion of land has been brought under cultivation with the gradual deforestation in the district. The cultivable land in the district is divided into two classes , viz Don and tanr. The don land are the terraced low lands on which mainly rice is grown and the tanr are the uplands useful to produce a course form of rice, millets, pulses and oil-seeds Rice is the main crop of the district Practically, it covers a considerable portion of the sown area. Wheat, on the other hand, covers only a meagre portion of the total gross area sown Among the non-food crops, oil-seeds are grown widely throughout the district From industrial side, the district is well-developed because of its rich mineral wealth. In the post independence period, there has been extensive industrial and mining activities in Ranchi district The most important among them is Heavy Engineering Corporation (H E C.), Hatia. The rapid development of the Ranchi city bears ample testimony to the powerful industrial revolution coming in the wake of exploitation of the district's vast mineral resources. Previously, the only industries in this district were the collection and manufacture of lac and the manufacture of tea. Besides, a few cottage industries were carried on by the village artisans. But now a number of small scale industries have also been set up in the district. Candles, bidi, soap, metallic pots, steel materials, etc are manufactured here In rural as well as urban areas, rice mills are established which produce rice in good quantity Poultry farms have been opened at a number of places in the district Concerted efforts are being made to improve the breed of the poultry in the district Among the large industrial establishments in this district, the notable ones are Heavy Engineering Corporation in Hatia, Associated Cement Co Ltd , Heiban Cement Works in Khelari, Indian Aluminium Co Ltd. Mun Alumina Works in Mun, Govt. Vaccine Institute in Ranchi, High Tension Insulation Factory in Namkum, Electric Equipment Factory in Tatisilvai, Usha Martin Industries Ltd in Tatisilvai, etc. Tourism has also become a profitable industry in the district at present because of its picturesque surrounding places The chief centres of trade in the district are Ranchi, Palkot, Gumla, Simdega, Lohardaga, Gobindpur and Bundu. The chief articles of export are rice, vegetables, mahua, kusum, oil seeds, lac,hide and skins, tea, bones etc The principal items of import are sugar, salt, kerosene oil, coal, wheat, tobacco etc

1.12 TRANSPORT AND COMMUNICATION

The district is well served by a network of good roads. The district has a good number of metalled roads and all the block headquarters are connected by roads Two chief roads under National Highway 33 originates from Ranchi city, viz. Ranchi Bundu Tamar Chandil Jamshedpur and Ranchi Ramgarh Hazaribagh The other main roads emanating from the Ranchi city are Ranchi Chaibasa Jamshedpur, Ranchi-Netarhat, Ranchi Daltonganj and Ranchi Gumla Simdega Rourkela. The other important roads maintained by the P W D are Ranchi Hazaribagh, Ranchi Chaibasa, Ranchi Purulia, Ranchi Birmitrapur, Gumla Chainpur, Gumla Sisai, Khunti Tamar, Simdega Kardeg, Silli Mun etc Besides, the municipal roads are maintained by the Municipal Corporation at Ranchi and the municipalities at Lohardaga and Gumla Considerable length of village roads has also been constructed through Gram Panchyats The forest department has also been taken some endeavour to construct a few forest roads.

The district is well connected by a good railway network. Ranchi is directly connected by trains from the State Capital of Patna. In fact, the opening of Purulia Ranchi branch of the South Eastern Railway brought railway to the district The Gomoh Barkakana Daltonganj section of the Eastern Railway which was started in the year 1927 runs for 26 kms. through Ranchi district It has a rail head at Ranchi road, situated about 51 kms from Ranchi city, with the opening of the Chandrapura Main Section in South Eastern Railway. Besides, all these broad gauge lines, a few narrow gauge lines run from Ranchi to Lohardaga over a distance of 87 kms. The city of Ranchi is also connected by train with the Rourkella district of Orissa.

Regarding airways connection, there is an aerodrome at Hinoo, near Ranchi city Ranchi is connected with airways with several important cities of India and there are regular flights from Ranchi to Calcutta, Patna and Delhi

CHAPTER II

DESIGN AND METHODOLOGY

2.1 GENERAL :

The present study is concerned with a large spectrum of information on forest resources of the inventoried area. For this, statistical data on different categories of parameters are collected during the study. To collect the necessary information on forest data, an approved manual of instructions for field inventory provided by the Forest Survey of India, Dehradun has been strictly followed for carrying out the survey

2.2 INVENTORY AREA :

The area selected for the inventory should obviously be a declared forest area. Following areas are treated as forest areas for the purpose of the present inventory :

i) Area shown in greed wash on the Survey of India toposheets.
ii) All such areas in which words such as thick jungle, open forests, bamboos etc. are printed.
iii) All those areas indicated by dotted line or spotted line or a pillar line as forest areas.
iv) Any other area reported to be forest area by local forest department

2.3 MAP SELECTION :

The Survey of India mapsheets are generally considered for the inventory. The following toposheets were used during the inventory of forest resources in the undivided Ranchi district :

No. of toposheets	Scale
73 A/3,4,8,10,11,14,16	1:50,000
73 B/2,3,5,6,7,9,10,11,13,14,15	
73 E/2,3,4,6,7,8,10,11,12,15,16	
73 F/1,2,3,5,9,13	
73 A/6,7,12,15	1" = 1 mile.
73 B/1	

2.4 SAMPLING DESIGN

Marking of grids:

The design is systematic with a grid size of 2 5' x 2.5' of latitude and longitude with two sample plots, each of 0.1 ha. area, selected from each grid one at random and the other linked to the first in the opposite direction at an equal distance from the grid centre. These plots form the basic sampling units. Thus, 72 plots are laid out in a toposheet with 36 grids on 1: 50,000 scale. Hence one sample plot of 0.1 ha. represents about 10 sq.km. on the ground and the intensity of sampling is 0.01%. The length of each side of the square shaped sample plot is 31 62 meters on the ground and 0.6324 mm (say 0.6 mm) on the toposheet of scale 1.50,000.

Precision and accuracy of the survey

The result of the survey would at the precision level of 95% probability with error limit of ± 10% at the state level.

Marking of plot center:

The method of marking of the plot centers of these two sample plots on the map in each grid of 2 5' x 2.5' is as follows.

1) first, the length and width of each grid are measured to the smallest convenient scale.
2) the length of the side of the plot on the map corresponding to a 0 1 ha square plot on the ground is calculated. Let **X** and **Y** be the length and width of the grid and **S** the side of the plot.
3) substract side **S** from both sides i.e. find **(X-S)** and **(Y-S)** Let these numbers be **X'** and **Y'**
4) two random numbers, one in the range of **O** to **X'** and the other in the range of **O** to **Y'** are selected. These numbers are called **x** and **y** respectively
5) half of the side of the plot **(S/2)**each are added to find **x + S/2** and **y +S/2**

6) x +S/2 and y +S/2 will be the coordinates of the center of the first plot in the grid considering the left hand bottom corner (South - West corner) of the grid as the origin of the axes
7) the center of the second plot is located by joining the center of the first plot with the grid center and extending this line in the opposite direction
8) a point at an equal distance from the grid center in the opposite direction is marked This will be the center of the second plot.

Laying out of the plot :

The plot center is the intersection of diagonals of the 0.1 ha plot. Diagonals are aligned NW-SE and NE-SW measuring 44.72 m each After having approached the plot center with the help of toposheet and reference point, corners of the plot are fixed with respect to the plot center by measuring 22.36 m. in each of the directions viz. North-West, South-East,. North-East and South-West directions from the plot center. The North, East, South and Western extremities of the plot are fixed by measuring 15.81 m. from plot center in each of these direction.

Regeneration Survey .

In each plot, a 4 mt x 4 mt square plot was chosen. Care was taken so that the center and diagonals of this plot coincided with the center and diagonals of the original plot. Regeneration of dominant and codominant species was counted and noted in the following categories:

No. of seedlings 8 or more - Adequate regeneration
No. seedlings less than 8 - Inadequate regeneration
No of seedlings 0 - Absent

2 5 DATA COLLECTION

Data from the field is collected by an inventory crew headed by a crew leader To visit a plot, a prominent reference point is selected in the vicinity of the plot center. The reference point is a clearly visible point both on the map as well as on the ground e.g a nala junction or a identifiable natural feature on the spot It is marked by a peg with appropriate markings. For collection of codified information from each sample plot, the following forms are used

Plot approach form : It gives an account of details regarding the approach to the plot All the details from camp site to the plot center are recorded A prominent reference point along with bearings is recorded which serves as an aid to reach the plot at a future date

Plot description form The description of several parameters such as topography, soil, land use class, forest type, regeneration, crop data etc are collected and recorded in this form for an area of 2 ha. around the plot

Plot enumeration form This form is filled up for each plot. The details recorded are the name of the species, its code and diameter. Trees less than 10 cm d b.h. and utility less than 70% are usually not recorded Border trees are counted "IN" when they touch NW-NE and NW-SW boundaries and considered "OUT" when they touch NE-SE and SW-SE boundary lines

Sample tree form Data for trees with diameter 10 cm. and above at breast height are collected from the North-West quadrant of the plot In this form, additional data e g. tree height, bark thickness, length of clear bole, shape of the tree etc. are recorded.

Bamboo enumeration form : This form is designed for enumeration of bamboo culms per clump Age and soundness of culms and clump size are the parameters considered. Separate forms are used for clump forming and non-clump forming bamboo

Bamboo weight form . To determine the green weight and dry weight of bamboo, this form is maintained. For each species, mature bamboo are selected from each diameter class 30 cm. long pieces from the bottom, middle and top are selected and their green weights recorded. These pieces are properly documented and kept in the base camp and weighed every 30 days till a constant (air dry) is obtained.

Since bamboo did not occur widely (over large areas or with conspicuous presence) in this distnct, data on Bamboo collected there nas not been elaborately tabulated

CHAPTER III

DATA PROCESSING AND COMPILATION

3.0 GENERAL :

Data processing was carried out in the following three phases

I Manual processing
II Input on computer and
III Processing on computer

3.1 MANUAL PROCESSING

It involves the following steps

a) Proper documentation of the field information received
b) Codification of the information in the field forms which has not already been incorporated.
c) Manual checking of the information filled in the forms
d) Reconciliation of the discrepancies with the help of the field officers

3.2 INPUT FOR THE COMPUTER

After manual checking, the information of the field forms was fed into the computer The following data is stored in the hard disk for onward processing

1 Plot description data
2 Plot enumeration data
3 Sample tree data

3.3 PROCESSING ON COMPUTER:

Processing on computer includes the following steps .

1) Verification of data for the creation of clean file and the transference of the same to hard/floppy disk.
2) Consistency checking of the data on computer
3) Correction of the data to remove discrepancies noticed during consistency checking
4) Tabulation of plot-wise stem distribution and for the district as a whole
5) Preparation of tables of volume distribution

3.4 CONSTRUCTION OF VOLUME EQUATIONS/TABLES

No trees were felled during the survey for the district. It was decided that the volume equations/tables which were used in the earlier survey and prepared by Forest Survey of India, Eastern Zone should be used for the present inventory.

Following volume equations were used to calculate the total volumes starting from 10cm D B H.(O B) and above for the standing trees:

3.4.1 GENERAL VOLUME EQUATIONS.

Following equations were developed earlier for the following species:

Species	Equation
Anogeissus latifolia	$V/D^2H = 0.45110+0.00161/D^2H$
Syzygium cumini	$V/D^2H=0.3750-0.001154/D^2+0.0077689D^2H$
Adina cordifolia	$V/D^2H=0.55615-0\ 0052355/D^2H$
Shorea robusta	$V/D^2H=0.37802+0\ 0041834/D^2H$
Boswellia serrata	$V/D^2H=0\ 43527-0.0018469/D^2+0.0057489/D^2H$
Terminalia tomentosa	$V/D^2H=0.42823-0.002149/D^2H$
Rest of species(others)	$V/D^2H=0.50894-0\ 0019764/D^2+0\ 0078117/D^2H$

Where,

V=underbark volume of trees(m^3)upto a limit of 5cm.over bark diameter

D=overbark diameter (in meter)at breast hight.

H=Height of the tree(m)

3.4.2 LOCAL VOLUME EQUATIONS :

Following local volume equations were used for volume calculations:

Species	Equation
Anogeissus latifolia	$V = 0.028653 - 0.97687D + 11.024D^2$
Syzygium cumini	$V/D^2 = 6.2214 - 0.49647/D + 0.016042D^2$
Adina cordifolia	$V/D^2 = 13.437 - 1.3527/D + 0.04472D^2$
Shorea robusta	$V/D^2 = 8.714 - 0.70158/D + 0.022585D^2$
Boswellia serrata	$V/D^2 = 10.306 - 1.124/D + 0.03356D^2$
Terminalia tomentosa	$V/D^2 = 9.4721 - 0.84158/D + 0.022389\ D^2$
Rest of species(others)	$V/D^2 = 9.5879 - 0.89224/D + 0.025584D^2$

Where,

V= Volume in m^3

D= Diameter in metre

3.4.3 VOLUME TABLE

The volume tables for the above mentioned species are calculated from the above local volume equations. The volume includes the branch wood volume down to 5 cm diameter over bark

3 5 TREE VOLUME :

Volume of each enumerated tree was estimated with the help of volume tables / equations and was used for generation of stock tables by species and diameter classes

3.6 PLOT VOLUME .

Volume of each enumerated tree in a plot when added up provided the plot volume. These plot volume figures were the basis for estimation of sampling error.

3 7 ANALYSIS OF GROWING STOCK .

Analysis of growing stock was carried out from plot data and per hectare figures worked out for each stratum by species and diameter classes Following were the important tables generated for each stratum

1 Stems/ha. for individual species and its distribution into diameter classes as 10-19 cm. , 20-29 cm . 30-39 cm. etc
2 Total stems by species and diameter classes.
3 Corresponding volume / ha by species and diameter classes.
4 Total volume by species and diameter classes

3.8 E R R O R

Statistical inference is incomplete without information on associated errors and the user of the results wants to have some control over its magnitude

For estimation of sampling error some assumption was taken into consideration The sample was considered as a systematic cluster sample having two sample plots in each cluster. While estimating the sampling error the sample was considered to be of unequal sizes and ratio method of estimate was used since in many grids only one plot was enumerated.

Standard errors have been estimated over the growing stock in each stratum and over the entire project area irrespective of the stratum

CHAPTER IV

RESULTS OF INVENTORY

4 0 GENERAL

Important and relevant findings from the present inventory were generated and presented in this chapter Data has been analysed with a view to highlight the composition and distribution of trees in the distnct

4.1 OBJECTIVES·

The main objectives of the inventory are as follows

1) Plot data analysis has been carried out on various parameters like topography, aspect, grazing incidence , fire incidence,regeneration status etc. with the distribution of the forest area

2) Growing stock of the district is also estimated on the district level and separately for each stratum on the basis of composition and distribution of the tree vegetation in the area

4 2 FOREST COVER AS PER STATE OF FOREST REPORT ·

The inventory relates to the forest resources of Ranchi, Lohardaga and Gumla distnct of Bihar State The geographical area and the extent of forest cover of the above districts are given below :

District	Geographical area (sq km)	Forest cover (sq km)			
Ranchi	16266	Dense	Open	Mangrove	Total
Source State of Forest Report, 1997, F S I publication District wise break up is not available		2095	2416	-	4511

4.2.1 RECORDED FOREST AREA·

District wise and legal status wise forest area of reserved, protected forest and unclassed forest of the 3 districts is summanzed below ·

District	Reserved Forest (ha)	Protected Forest (ha)	Unclassed Forest	Total forest	Percentage
Ranchi	30836	148618	-	179454	53.27
Gumla	12102	118717	16	130835	38.84
Lohardaga	10613	15960	-	26573	7.89
	53551	283295	16	336862	100.00

Reference: Annual Administration report for the year 1989-90 to 1992-93 Govt.of Bihar

4.2.2 INVENTORY AREA :

Area shown in green wash on the Survey of India toposheets is treated as forest area. The total forest area of the district was calculated using 'dot grid' method which comes to 332312 ha or 3323 12 sq km. Henceforth, the inventoried forest area as calculated by 'dot grid' method would be taken as the total forest area of the district i e 3323.12 sq km

4.3 STRATIFICATION·

Stratification was based on proportional distribution of forested plots as per forest composition and land use classes Two distinct strata have been formed in the district. Out of total 340 plots surveyed in undivided Ranchi district (now split into three districts as Ranchi, Lohardaga and Gumla) 224 plots were found to be Sal forest and 101 plots under miscellaneous forest whereas 2 plots are in Salai forest and 1 plot in bamboo forest which are merged with miscellaneous forests. Thus, the total no. of plots falling in miscellaneous become 104 Forested plots which are used as habitation, agricultural land and blank i.e. forested plots but non forestry use is 12 in number The abstract of the same is as under

Sl No	Stratification	No of plots	Forested area (ha)
1	Sal	224	218935
2	Misc.	104	101648
3	Non-forestry use	12	11729
	Total	340	332312

340 plots have been distributed over 332312 ha. forest area. One plot represents 977.3882 ha Forest area. Forest area covered by 12 plots had been excluded while calculating the net forest area for growing stock estimation as those plots lie in forest land but are under habitation and agricultural plots but under non forestry use. The net forest area for growing stock estimation and its distribution among the Sal and Misc. stratum is as under.

Sl No	Stratum	Forest area in ha
1	Sal	218935
2	Miscellaneous	101648
	Total	320583

4.4 ANALYSIS OF PLOT DESCRIPTION DATA:

The plot description data was analysed on various parameters of plot e g topography, aspect, soil consistency, fire incidence, regeneration, grazing incidence etc. and the required information were generated. The results of the same with distribution of the forest area is summarized in the forth coming paragraphs Though the previous Ranchi district presently spilted into three districts as mentioned in paragraph 4 3 the plot description data as well as stem/ha and volume distribution have been analysed considering the undivided Ranchi district because of similar forest composition of the three districts

4.4.1 DISTRIBUTION OF FOREST AREA BY LAND USE CLASSES.

Code	Land use	Description	No of plots	Forest area (ha)	Percen-tage
1	Dense tree forest	Forest with Canopy density 70% and above	6	5864	1.76
2	Moderately dense tree forest	Forest with Canopy density 30-69%	159	155405	46.76
3	Open tree forest	Forest with Canopy density 5-29%	144	140744	42.36
4	Scrub forest	Forest with Canopy density Less than 5%	12	11729	3.53
5	Bamboo brakes	Areas completely covered with bamboo	-	-	-
6	Shifting cultivation	Areas under current as well as previous years shifting cultivation	-	-	-
7.	Young plantation of forestry species		7	6842	2.06
8 to 10	Trees in line				
11	Barren land		1	977	0.29
12	Agricultural land Without trees				
13	Agricultural land With trees		9	8796	2.65
14	Non-forestry plantation				
15	Habitation		2	1955	0.59
16	Water bodies		-	-	-
18	Young crop of natural or artificial regeneration		-	-	-
		Total	**340**	**332312**	**100 00**

The above lable reveals that 46 76% of the forest area am moderalely dense followed by open tree forest which accounts 42.36% of the forest area. The percentage of dense tree forest is 1.76% only.

4.4.2 DISTRIBUTION OF FOREST AREA BY TOPOGRAPHY:

Number of plots and distribution of forest area by topography with percentage is furnished below :

Code	Topography	No. of plots	Forest area (ha.)	Percentage
1	Flat	3	2932	0.88
2	Gently rolling	104	101649	30.59
3	Hilly	230	224799	67.65
4	Very hilly	3	2932	0.88
	Unrecorded	-	-	-
	Total:	340	332312	100.00

Most of the forest area is under hilly forest area which constitute 67.65% whereas gently rolling forest area constitute 30.59% of the forest area. Flat area is only 0.88% and practically absent.

4.4.3 DISTRIBUTION OF FOREST AREA BY ASPECT:

The distribution of forest area by various aspect classes is given below :

Code	Aspect	No. of plots	Forest area(ha)	Percentage
1	Northern	19	18570	5.59
2	North - eastern	53	51802	15.59
3	Eastern	24	23457	7.06
4	South-eastern	56	54734	16.47
5	Southern	26	27367	8.23
6	South-western	47	45937	13.82
7	Western	38	37141	11.18
8	North-western	75	73304	22.06
9	No aspect	-	-	-
	Unrecorded	-	-	-
	Total:	340	332312	100.00

The above table reveals that forest area covers all types of aspect. The forest of the district have 22.06% of area having north-western aspect followed by south-eastern, north-eastern and south-western aspect which constitute 16.47%,15 59% and 13.82% respectively.

4.4.4 DISTRIBUTION OF FOREST AREA BY ROCKINESS:

The percentage of forest by rockiness classes is as under:

Code	Rockiness	No. of plots	Forest area (ha)	Percentage
1	High	4	3910	1.18
2	Medium	59	57666	17.35
3	Low	129	126083	37.94
4	No rock	148	144653	43.53
	Unrecorded	-	-	-
	Total:	340	332312	100.00

The above table reveals that medium to low rockiness is 55.29% whereas 43.53% forest area is under no rock zone.

4.4.5 DISTRIBUTION OF FOREST AREA BY SOIL CONSISTENCY:

The distribution of forest area by soil consistency classes is given below :

Code	Soil consistency	No. of plots	Forest area(s)	Percentage
1	Friable	41	40073	12.06
2	Slightly compact	294	287352	86.47
3	Compact	5	4887	1.47
4	Cemented	-	-	-
5	No soil	-	-	-
	Unrecorded	-	-	-
	Total:	340	332312	100.00

Soil consistency is slightly compact to the extent of 86.47% in the district. This type of soil consistency which is prevalent in most of the areas supports good forest crops. Friable and compact soil constitute 12.06% and 1.47% of the forest area respectively.

4 4.6 DISTRIBUTION OF FOREST AREA BY SOIL TEXTURE

Following table shows the distribution of soil texture.

Code	Soil texture	No. of plots	Forest area (ha)	Percentage
1	Clayey	-	-	-
2	Clayey loam	104	101648	30.59
3	Loamy	195	190591	57.35
4	Sandy loam	41	40073	12.06
5	Sandy	-	-	-
6	No soil	-	-	-
	Unrecorded	-	-	-
	Total:	340	332312	100.00

30.59% of the forest area of the district is under clayey loam whereas loamy area is 57 35% which occupy most of the forest area. The sandy loam texture occupying 12 06% of the total area. Thus, the above table indicates that in this district good texture soil prevail over majority of the area

4.4.7 DISTRIBUTION OF FOREST AREA BY SOIL EROSION

Extent of soil erosion in this district is given below

Code	Soil erosion	No. of plots	Forest area (ha)	Percentage
1	Heavy	12	11729	3.53
2	Moderate	54	52779	15.88
3	Mild	261	255098	76.77
4	No erosion	12	11729	3.53
	Unrecorded	1	977	0 29
	Total	340	332312	100.00

It is noticed that 3 53% of the forest area is heavily eroded in the district. Moderately eroded area constitute 15.88% whereas, the greater part of the district falls in the mildly eroded belts constituting 76.77% of the forest area. Soil conservation measures are to be adopted particularly in the moderately eroded areas

4.4.8 DISTRIBUTION OF FOREST AREA BY INJURIES TO CROP:

Injuries to crop as observed during inventory is as under :

Code	Injuries to crop	No. of plots	Forest area (ha)	Percentage
1	Borer attack, leaf defoliater attack or damage by other pest epidemic	-	-	-
2	Top drying	1	977	0.29
3	Girdling and illicit felling of trees	318	310809	93.54
4	Scarring of trees	-	-	-
5	Lopping for fodder	-	-	-
6	Wind damage and flood damage	1	977	0.29
7	Other injuries	3	2932	0.88
8	No injury	5	4888	1.47
	Unrecorded	12	11729	3.53
	Total:	340	332312	100.00

The inventory results indicate that the district is subjected to maximum injuries by human agencies in the form of illicit felling girdlings which constitute 93.54% of the forest area. Natural injuries due to wind damage and flood damage constitute negligible portion of the forest area. Area free from injuries constitutes only 3.53% of the forest area. It is needless to mention that damage caused by illict felling girdling reduces the value of the crop by way of retarding the growth of the crop. It is, therefore, necessary that forest areas prone to damage by various agencies should be given protection as far as possible.

4.4.9 DISTRIBUTION OF FOREST AREA BY FIRE INCIDENCE:

Percentage of forest area affected by fire incidence is given below .

Code	Item	No. of plots	Forest area (ha.)	Percentage
1	Heavy	-	-	-
2	Moderate	9	8796	2.65
3	Light	156	152473	45.88
4	No fire	164	160292	48.24
	Unrecorded	11	10751	3.23
	Total:	**340**	**332312**	**100.00**

The inventory results indicate no appreciable incidence of heavy and moderate fire in the forests. Light fire occurs in the district from time to time and constitute 45.88% of the area. Preventive measures are to be taken to reduce light fire incidence. Areas free from any fire constitute 48.24%.

4.4.10 DISTRIBUTION OF FOREST AREA BY GRAZING INCIDENCE,

Percentage of forest area damaged by grazing incidence is furnished below :

Code	Grazing	No. of plots	Forest area (ha.)	Percentage
1	Heavy	41	40073	12.06
2	Moderate	188	183749	55.29
3	Light	92	89920	27.06
4	No grazing	8	7819	2.35
	Unrecorded	11	10751	3.24
	Total:	**340**	**332312**	**100.00**

It is observed that 12.06% forest area is subjected to heavy grazing in the district. Moderate to light grazing occurs to the extent of 82.35% whereas, the areas which is completely free from grazing is only 2.35% of the forest area. Preventive measures are necessary in the moderately grazing belt areas.

4.4.11 DISTRIBUTION OF FOREST AREA BY PLANTATION POTENTIALITY :

Plantation potentiality is noticed from the following table :

Code	Plantation potentiality	No. of plots	Forest area (ha.)	Percentage
1	Plantable	132	129015	38.82
2	Unplantable	11	10751	3.24
3	Not applicable	192	187659	56.47
	Unrecorded	5	4887	1.47
	Total:	**340**	**332312**	**100.00**

It is noticed that the plantable area is 38.82% of the total forest area of the district. It is suggested that the plantable areas should be afforested as quickly as possible with choice of suitable species.

4.4 12 DISTRIBUTION OF FOREST AREA BY INTENSITY OF REGENERATION·

Intensity of regeneration is noticed from the following table :

Code	Description (No of seedlings in 4m x 4m square plot)	No of plots	Forest area (ha)	Percentage
1	Adequate(8 or more)	16	15638	4.71
2	Inadequate(less than 8)	203	198410	59.71
3	Absent (No seedling)	108	105558	31 76
	Unrecorded	13	12706	3.82
	Total.	**340**	**332312**	**100.00**

Adequate regeneration constitute only 4.71% of the total forest area It is observed that inadequate regeneration is 59.71% whereas it is absent in 31.76% of forest area Thus, the overall position of regeneration is not satisfactory

4.4.13 DISTRIBUTION OF FOREST AREA BY DEGRADATION

Degradation status of forest area is shown in the following table :

Code	Status	No of plots	Forest area (in ha)	Percentage
A	**Grazing, fire, pollarding, illicit cutting and lopping**			
11	Heavily degraded	94	91874	27.65
12	Moderately degraded	115	112400	33.83
13	Mildly degraded	120	117288	35 30
14	Not degraded	6	5864	1.76
B	**Other natural calamities such as landslides, glaciers flood, rainfall etc**			
21	Heavily degraded	-	-	
22	Moderately degraded	1	977	0.29
23	Mildly degraded	1	977	0.29
24	Not degraded	-	-	-
	Unrecorded	3	2932	0.88
	Total	**340**	**332312**	**100 00**

The survey reveals that majority of the areas are heavily or moderately degraded. It constitute 27.65%and 34.12% of the entire forest area of the distnct. A large portion of the forest area is also affected by mildly degradation which constitute 35.59% of forest area taking into consideration the degradation caused by human agencies and natural calamity. Degradation due to biotic Interference, like grazing, illicit felling etc. is 96.78% whereas degradation due to natural calamity is 0.58% only.

4.5 TREE DENSITY STUDY :

The distribution of stems/ha. by species and diameter classes in different stratum have been calculated which are given in Table No 1.1 to 1.2. (vide part II of this report). The number of stems/ha. by strata are summarized below :

Sl. No.	Stratum	No. of stems/ha.
1	Sal	232.991
2	Miscellaneous	159.808

4.5.1 TREE DENSITY-SAL STRATUM:

Salient features of this stratum are given below:

i) There are as many as 80 identifiable species in this stratum The number of stems per ha. in this stratum is 232.991

ii) Trees are mostly concentrated in 10-19cm.diameter class accounting for 77.97%, followed by 15.46% and 4.39% in diameter classes 20-29cm.and 30-39cm.respectively.

iii) Stems are found to be present in all the diameter classes up to 90-99 cm. class.

iv) Important species with stems/ha. and percentage of distribution are as follows

Species	Stems/ha.	Percentage
Shorea robusta	137.857	59.17
Buchanania lanzan	23.304	10.00
Terminalia cronulata	13.661	5.86
Diospyros melanoxylon	8.795	3.77
Madhuca latifolia	6.652	2.86

The species which could not be identified constitute 1.43% of the stems in this stratum.

4.6.2 TREE DENSITY – MISCELLANEOUS STRATUM:

Salient features of this stratum are given below:

i) The number of stems per ha in this stratum is 159.808

ii) Trees are mostly concentrated in 10-19cm diameter class accounting for 68.53%, followed by 20.34% and 6.56% in diameter classes 20-29cm.and 30-39cm.respectively.

iii) Stems are found to be present in all the diameter classes up to 90-99 cm. class but number of stems above 60cm.dia.class is 1.08%.

iv) Important species with stems/ha. and percentage of distribution are as follows:

Species	Stems/ha.	Percentage
Shorea robusta	20.769	12.99
Buchanania lanzan	16.731	10.47
Anogeissus latifolia	13.750	8.60
Terminalia crenulata	11.154	6.98
Madhuca latifolia	8.942	5.59
Diospyros melanoxylon	8.654	5.41

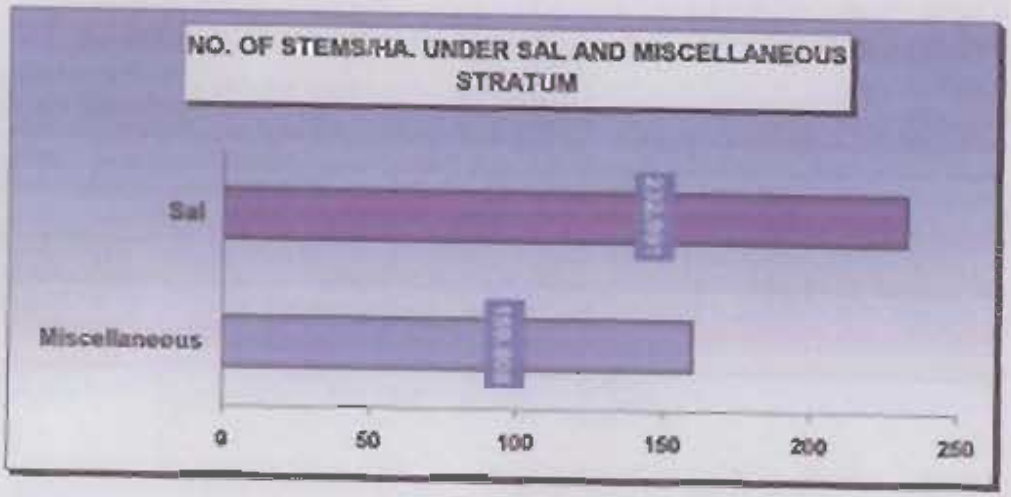
There are as many as 82 identifiable species in this stratum. The rest of the species which could not be identified constitute 5.05% of the stems in this stratum.

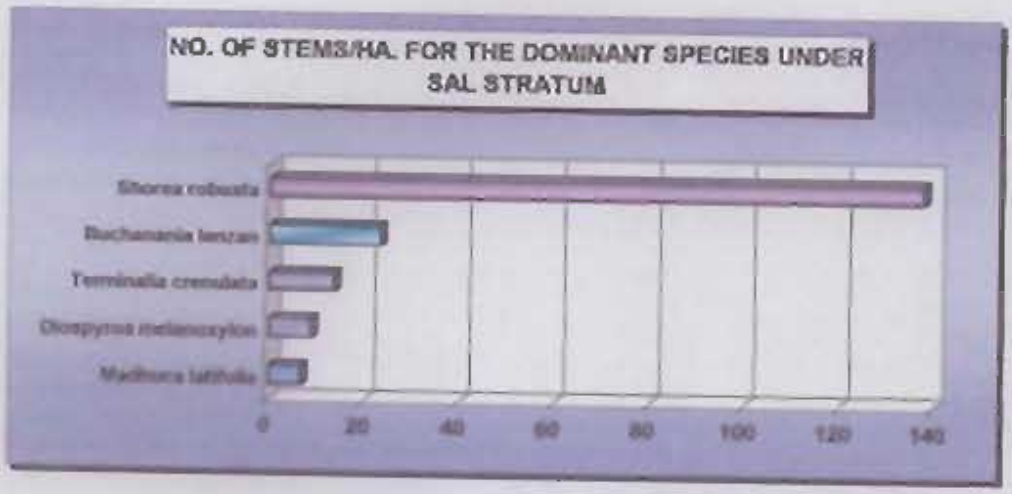
4.6 TOTAL STEMS:

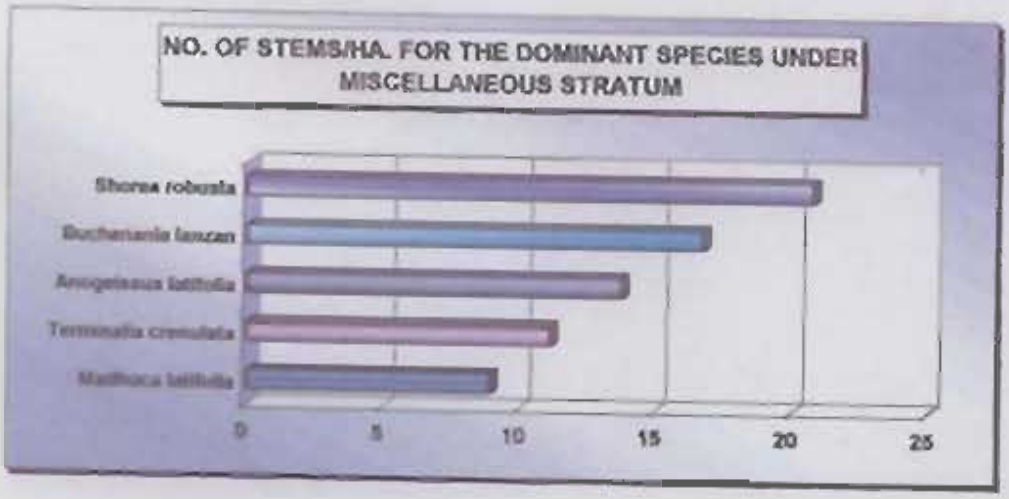
Total number of stems by species and diameter classes in different strata are given in Table No.2.1 and 2.2 (vide part II of this report) These are summarized below:

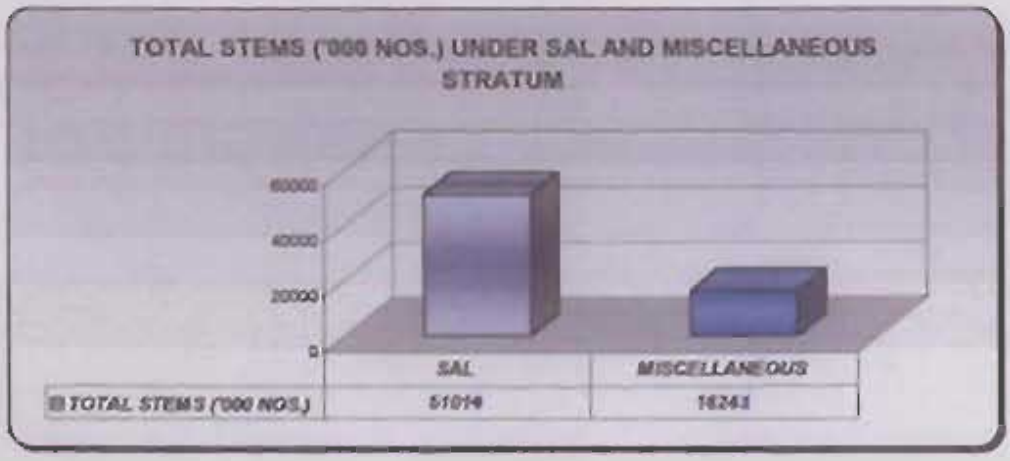
Sl. No.	Stratum	No. of stems ('000 nos.)
1	Sal	51014
2	Miscellaneous	16242
	Total:	67256

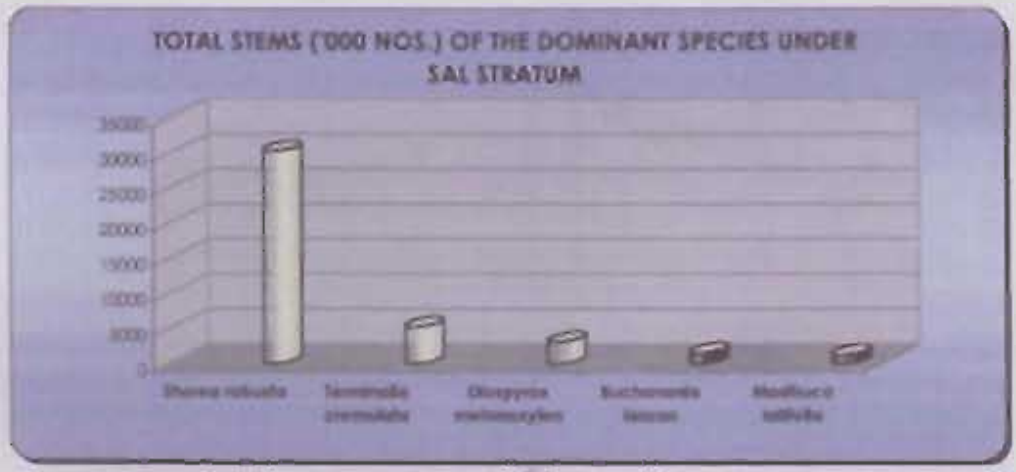
Thus, the total stems in the district is 67.25 million in number

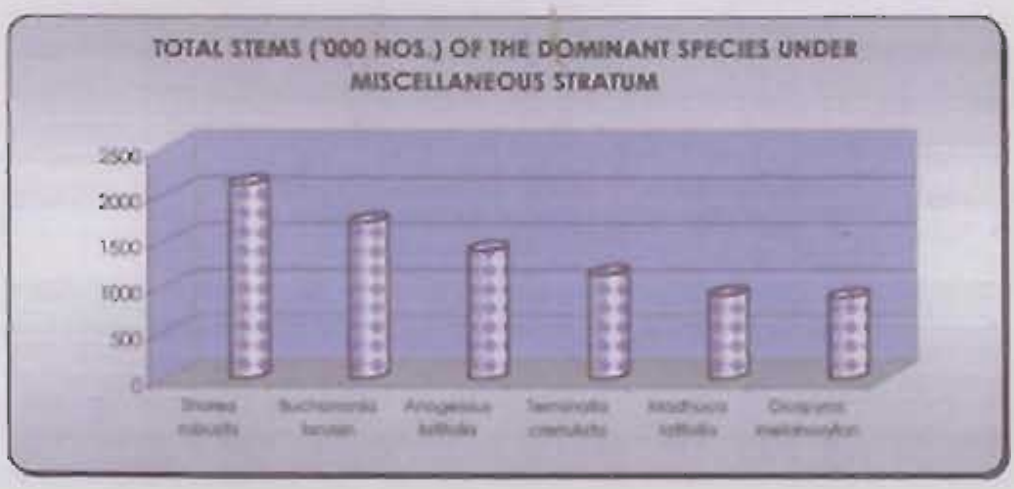

NO. OF STEMS/HA. UNDER SAL AND MISCELLANEOUS STRATUM
Sal
Miscellaneous
0
50
100
150
200
250


NO. OF STEMS/HA. FOR THE DOMINANT SPECIES UNDER SAL STRATUM
Shorea robusta
Buchanania lanzan
Terminalia crenulata
Diospyros melanoxylon
Madhuca latifolia
0
20
40
60
80
100
120
140


NO. OF STEMS/HA. FOR THE DOMINANT SPECIES UNDER MISCELLANEOUS STRATUM
Shorea robusta
Buchanania lanzan
Anogeissus latifolia
Terminalia crenulata
Madhuca latifolia
0
5
10
15
20
25


TOTAL STEMS ('000 NOS.) UNDER SAL AND MISCELLANEOUS STRATUM
60000
40000
20000
0
SAL
MISCELLANEOUS
TOTAL STEMS ('000 NOS.)
51019
16243


TOTAL STEMS ('000 NOS.) OF THE DOMINANT SPECIES UNDER SAL STRATUM


TOTAL STEMS ('000 NOS.) OF THE DOMINANT SPECIES UNDER MISCELLANEOUS STRATUM
2500
2000
1500
1000
500
0

The dominant species and number in Sal stratum is furnished below

Species	Total Stems (000 nos)
Shorea robusta	30182
Buchanania lanzan	5102
Terminalia cronulata	2991
Diospyros melanoxylon	1926
Madhuca latifolia	1456

Similarly, the dominant species and number in Miscellaneous stratum is given below ,

Species	Total Stems (000 nos)
Shorea robusta	2111
Buchanania lanzan	1701
Anogeissus latifolia	1398
Terminalia cronulata	1134
Madhuca latifolia	909

4.7 VOLUME STUDIES

The distribution of volume/ha by species and diameter classes in different stratum has been calculated and given in table No.3.1. to 3.2. (vide Part II of this report). The volume/ha.by stratum and distnct is summarized in the subsequent paragraphs.

Sl No	Stratum	Volume (m^3) / ha
1	Sal	45.958
2	Miscellaneous	48.447

4.7 1 VOLUME STUDIES, STRATUM-SAL

The analysis of the inventory data in this stratum reveals the following conclusions

a) The volume/ha in this stratum is 45 958 m3 only.
b) Most of the volume is concentrated in the 10-19 cm diameter class which accounts 33.01% followed by 26.86% and 17 68% in 20-29 cm.and 30-39 cm. diameter classes respectively

c) The Volume/ha.with percentage for some of the species are given below:

Species	Volume(m3)/ha	Percentage
Shorea robusta	24.052	52.33
Buchanania lanzan	3.045	6.63
Terminalia crenulata	2.808	6 10
Madhuca latifolia	2.724	5.93
Anogeissus latifolia	1.269	2.76

4.7 2 VOLUME STUDIES,STRATUM- MISCELLANEOUS

Salient features of this stratum is given below:

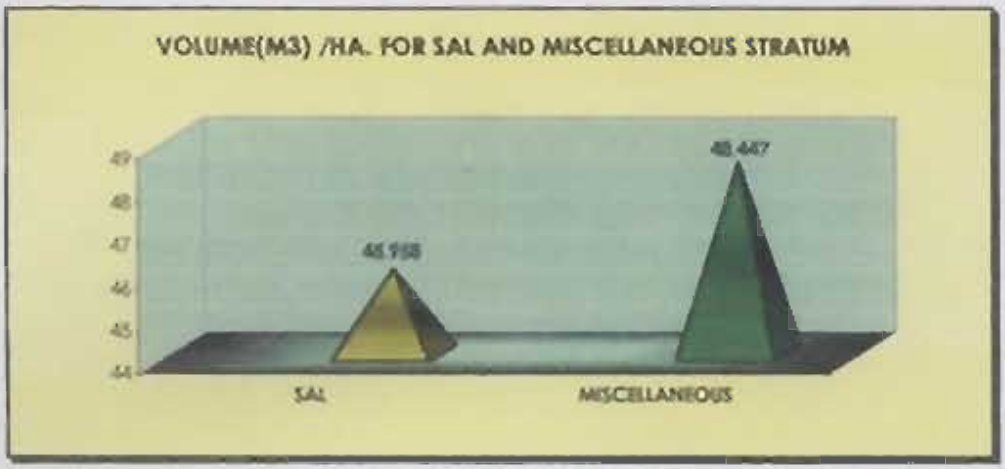
a) The volume/ha.is only 48 447 m3 in this stratum
b) Distribution of volume is observed in all the diameter classes. Maximum volume is obtained in 20-29cm.dia.class followed by 10-19cm and 30-39cm.dia classes which is 23.39%,20,07% and 18.15% respectively.
c) The volume/ha.with percentage for the volume contributing species is furnished below

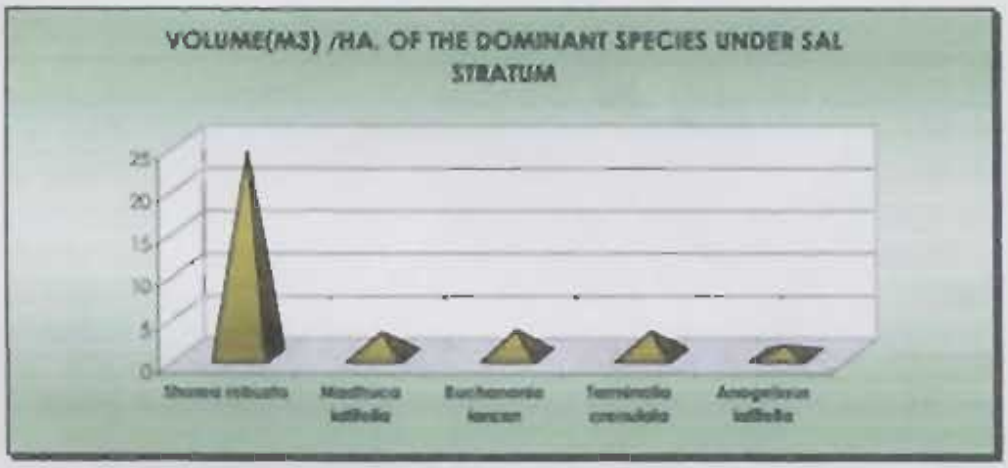
Species	Volume(m3)/ha	Percentage
Shorea robusta	4.406	9.09
Adina cordifolia	3.505	7.23
Buchanania lanzan	2.216	4.57
Terminalia crenulata	2.632	5 43
Diospyros melanoxylon	2.743	5.66
Madhuca latifolia	5.495	11.34
Schleichera trijuga	4.945	10.21

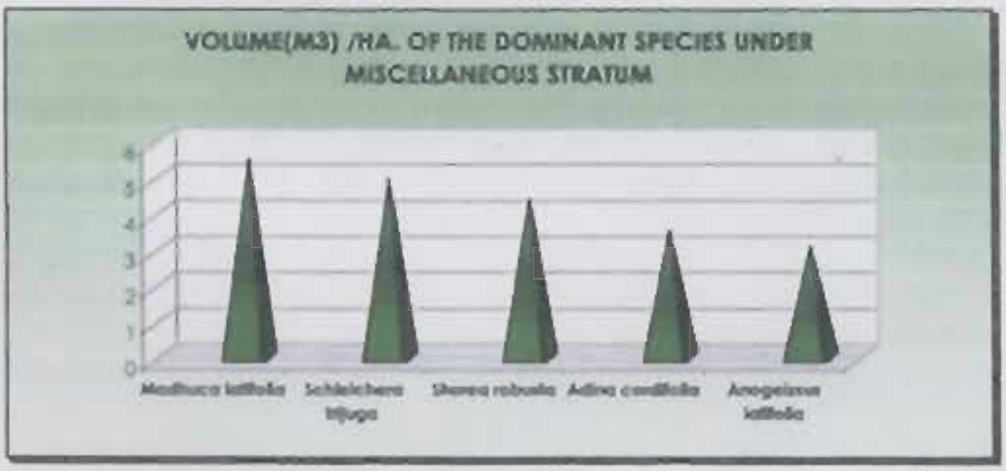
4 8 TOTAL VOLUME

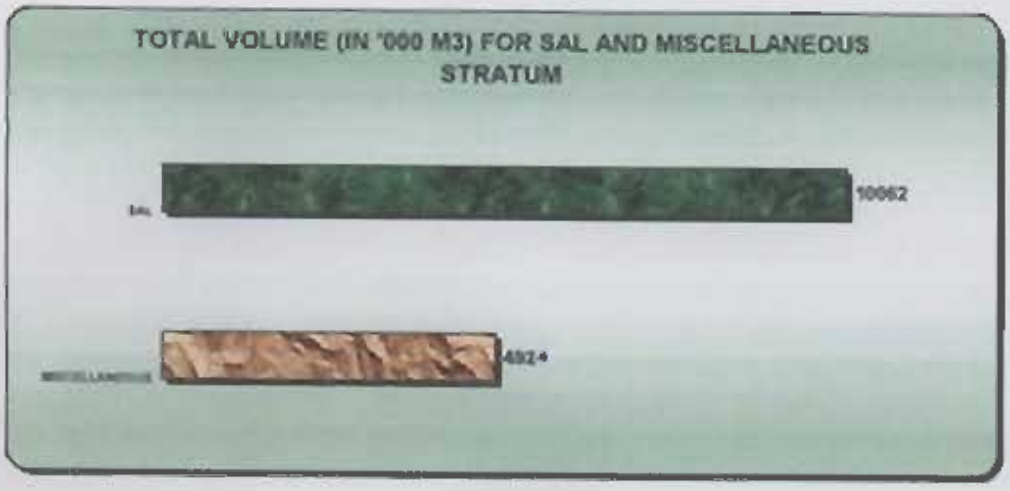
The total volume in different stratum by species and diameter classes are given in table no 4 1 and 4 2 (vide part II of this report) These are summarized below

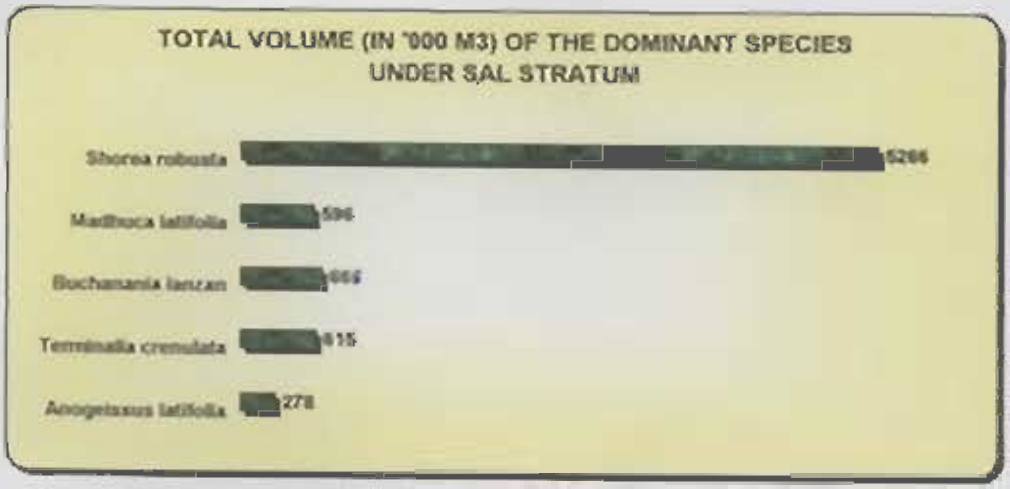
Sl No	Stratum	Total Volume (000m^3)
1	Sal	10062
2	Miscellaneous	4924
	Total	**14986**

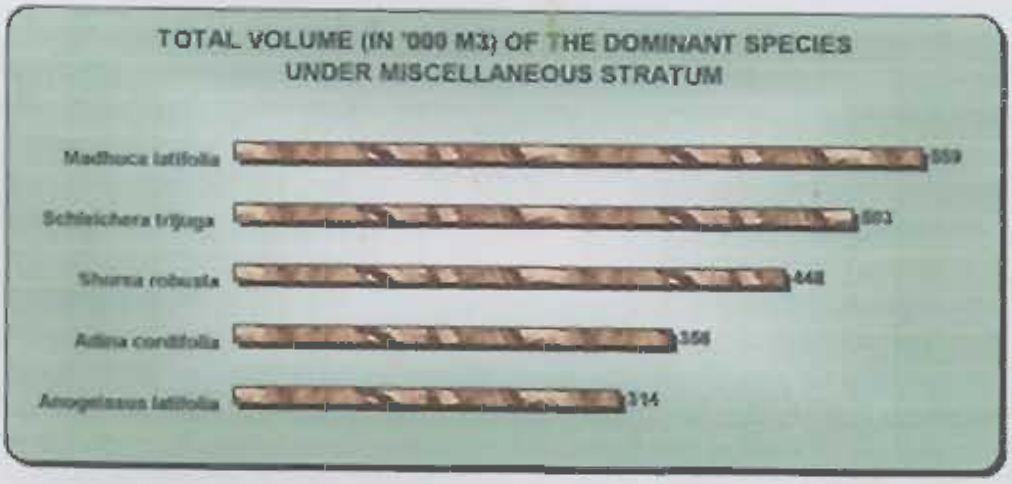

VOLUME(M3) /HA. FOR SAL AND MISCELLANEOUS STRATUM
49
48
47
46
45
44
45.918
48.447
SAL
MISCELLANEOUS


VOLUME(M3) /HA. OF THE DOMINANT SPECIES UNDER SAL STRATUM
25
20
15
10
5
0
Shorea robusta
Madhuca latifolia
Terminalia crenulata
Anogeissus latifolia


VOLUME(M3) /HA. OF THE DOMINANT SPECIES UNDER MISCELLANEOUS STRATUM
6
5
4
3
2
1
0
Madhuca latifolia
Schleichera trijuga
Shorea robusta
Adina cordifolia
Anogeissus latifolia


TOTAL VOLUME (IN '000 M3) FOR SAL AND MISCELLANEOUS STRATUM
10082
4924


TOTAL VOLUME (IN '000 M3) OF THE DOMINANT SPECIES UNDER SAL STRATUM
Shorea robusta
5266
Madhuca latifolia
596
Buchanania lanzan
Terminalia crenulata
615
Anogeissus latifolia
278


TOTAL VOLUME (IN '000 M3) OF THE DOMINANT SPECIES UNDER MISCELLANEOUS STRATUM
Madhuca latifolia
559
Schleichera trijuga
503
Shorea robusta
448
Adina cordifolia
356
Anogeissus latifolia
314

Thus, the total volume in the district is 14.99 million m^3. The dominant species in Sal stratum with total contribution is summarized below.

Species	Total Volume(000 m3)
Shorea robusta	5266
Buchanania lanzan	666
Terminalia crenulata	615
Madhuca latifolia	596
Anogeissus latifolia	278

Similarly, the dominant volume contributing species in miscellaneous stratum is given below :

Species	Total Volume(000 m3)
Madhuca latifolia	559
Schleichera trijuga	503
Shorea robusta	448
Adina cordifolia	356
Anogeissus latifolia	314
Diospyros melanoxylon	279
Terminalia crenulata	267
Buchanania lanzan	225

4.9 STANDARD ERROR :

Standard error has been calculated by ratio method of estimation for the growing stock of both Sal and Miscellaneous stratum separately and for the district as a whole which are furnished below :

Stratum	Standard error %
Sal	6.39
Miscellaneous	9.54
Total:	7.72

CHAPTER:V

SUMMARY AND CONCLUSIONS

6.1 SUMMARY

At the end of the discussions, the main points to be pondered may be summarized for understanding of various aspects of the present inventory For this, several angles of the survey have been considered and the corresponding information have been amalgamated and judged from these angles

COVERAGE AREA

- The inventory area is comprised of the forest area of Ranchi,Lohardaga and Gumla districts of Bihar State.
- The total recorded forest area is 336862 ha. The percentage of forest area to total geographical area of the undivided Ranchi district is 18 44%
- Total reserved forest in the inventoried area accounts to be 53551ha. On the other hand, the extent of protected forest and unclassed forests are 283295 ha and 16 ha. respectively.
- The forest area as estimated by dot grid method is 332312 ha. which is treated as the inventoried area of the district.

PLOT DESCRIPTION

- Plot description data indicates preponderance of moderately dense tree forest followed by open tree forest which accounts for 46.76% and 42.36% respectively Dense forest occupies only 1.76% of the inventoried area.
- Soil consistency is slightly compact to the extent of 80.47% in the district. This type of soil consistency which is prevalent in most of the areas supports good forest crops Friable and compact soil constitute 12.06% and 1.47% of the forest area respectively
- It is noticed that 3.53% of the forest area is heavily eroded in the distinct . Moderately eroded area constitute 15 88% whereas the greater part of the distinct falls in the mildly eroded belts constituting 76.77% of the forest area.
- It is revealed that no appreciable incidence of heavy and moderate fire in the forests , Light fire occurs in the district from time to time and constitute 45.88% of the area. Areas free from any fire incidence constitute 48 24% of the forest area.

- It is observed that 12.06% of forest area is subjected to heavy grazing in the district. Moderate to light grazing occurs to the extent of 82.35% whereas the areas which is completely free from grazing is 2.35% of the forest area

- Adequate regeneration constitute only 4.71% of the total forest area. It is observed that inadequate regeneration is 59.71% whereas regeneration is absent in 31.78% of forest area. Therefore, the overall position of regeneration is not satisfactory

- The data reveals that majority of the areas are heavily or moderately degraded which constitute 27.65% and 34.12% of the entire forest area of the district. A large portion of the forest area is also affected by mild degradation which constitute 35.59% forest area taking into consideration the degradation caused by human agencies and natural calamity. Degradation due to biotic interference like grazing, illicit felling etc. is 96.78% whereas degradation due to natural calamity is 0.58% only.

STEM ANALYSIS

- The number of stems per hectare under the two recognized strata viz. Sal and Miscellaneous in the coverage area are 232.991 and 159.808 respectively

- The stems under both the strata are mostly concentrated in lower diameter class i.e.10-19cm.followed by 20-29cm.and 30-39cm accordingly

- Total number of stems as estimated in the inventoried area is 67 million in the district. The two stratum Sal and Miscellaneous constitutes 51 million and 16 million number of trees separately.

VOLUME STUDIES

- Volume studies reflects that per hectare volume in the coverage area under the two strata Sal and Miscellaneous is 45.958 m^3 and 48.447 m^3 respectively.

- The total volume of trees in the inventoried area is estimated as 15 million m^3. The volume of trees under the two strata is found to be 10.062 million and 4.925 million m^3 accordingly

5.2 COMPARISON WITH THE PAST INVENTORY :

Earlier survey was carried out in undivided Ranchi district in 1979-80 and 1980-81. Findings of the previous inventory were compared with the present inventory of 1994-95 and 1995-96 so far as the stems/ha with respect to Sal and Miscellaneous stratum.

a) Number of stems/ha.by diameter class.

Diameter class (in cm.)	No.of stems/ha.Stratum-Sal Area surveyed in		No.of stems/ha.Stratum-Misc. Area surveyed in	
	1979-80 & 1980-81	1994-95 & 1995-96	1979-80&1980-81	1994-95&1995-96
10-19	153.984	181.652	157.702	109.519
20-29	36.784	36.027	35.474	32.500
30-39	8.514	10.223	7.417	10.481
40-49	3.029	3.259	2.902	4.327
50-59	1.121	0.982	0.967	1.250
60-69	0.424	0.446	0.322	0.481
70-79	0.515	0.223	0.322	0.577
80-89	0.242	0.134	0.322	0.288
90-99	0.060	0.045	0.322	0.192
100+	0.090	-	-	0.192
Total:	**204.763**	**232.991**	**205.750**	**159.808**

The comparative picture of the change in terms of stems/ha.during the course of one and half decade has indicated a substantial increases in Sal stratum to the extent of 13.78% whereas it surprisingly decreases in Miscellaneous stratum to the extent of 22.32% . It is also observed that increase or decrease of stems occur particularly in 10-19cm.diameter class only but when other diameter classes are considered the stems/ha. remains more or less same

b) Volume / ha. by diameter class:

Diameter class (in cm.)	Volume(m^3)/ha.Stratum-Sal Area surveyed in		Volume(m^3)/ha.Stratum-Misc. Area surveyed in	
	1979-80 & 1980-81	1994-95 & 1995-96	1979-80&1980-81	1994-95&1995-96
10-19	13.690	15.170	14.344	9.722
20-29	13.235	12.353	12.872	11.330
30-39	6.984	8.123	6.809	8.792
40-49	4.418	4.644	4.006	6.588
50-59	2.549	2.233	2.243	2.760
60-69	1.379	1.399	1.072	1.501
70-79	2.344	0.976	1.988	2.825
80-89	1.428	0.732	2.196	1.729
90-99	0.441	0.327	2.415	1.196
100+	1.338	-	-	2.005
Total:	48.006	45.958	47.945	48.447

There is no significant change in volume/ha. in both the stratum. The volume/ha. slightly decreases in Sal stratum due to absence of stems in 100+ diameter class The marginal increase in volume/ha. in miscellaneous stratum than 1979-81 is obviously due to presence of trees in 100+ diameter class which contribute a substantial augmentation in this stratum. However the picture is very gloomy particularly in 10-19cm.diameter class where there is a sharp decline in respect of volume/ha. is concerned. It is expected that achievement and effort taken by the Bihar Government under various schemes integrated with sound silvicultural management would boost up the growing stock position in lower diameter classes and should be reflected in the distribution of trees in all the diameter classes in miscellaneous stratum within a short period.

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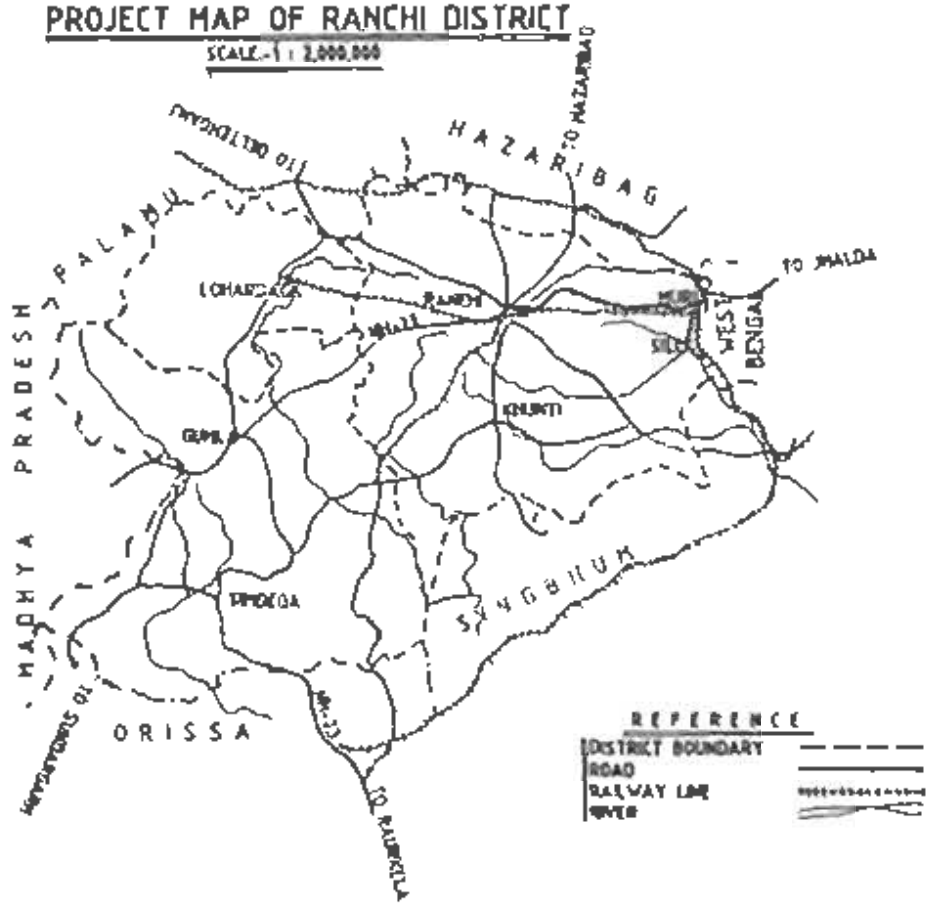
5 Final Population Totals, Series – I, Papor-1 of 1992, Vol. II, Census of India,1991.


MAP OF INDIA
PAKISTHAN
CHINA
Jammu & Kashmir
Himachal Pradesh
Punjab
Uttar Pradesh
Sikkim
Arunachal Pradesh
Rajasthan
Assam
Nagaland
Bihar
BANGLA DESH
Manipur
Gujarat
Madhya Pradesh
West Bengal
Tripura
Mizoram
Orissa
Showing Project Area
Maharastra
Kumbha
ARABIAN SEA
Andhra Pradesh
Goa
Karnataka
Tamil Nadu
BAY OF BENGAL
Nicobar Island
Andaman &


PROJECT MAP OF RANCHI DISTRICT
SCALE:- 1 : 2,000,000
TO DELTONGANJ
HAZARIBAG
TO HAZARIBAG
PALAMU
LOHARDAGA
RANCHI
TO MALDA
WEST BENGAL
KHUNTI
GUMLA
MADHYA PRADESH
SINGHBHUM
TO SUNDARGARH
ORISSA
TO RAURKELA
REFERENCE
DISTRICT BOUNDARY
ROAD
RAILWAY LINE
RIVER

FOREST SURVEY OF INDIA
INVENTORY DESIGN

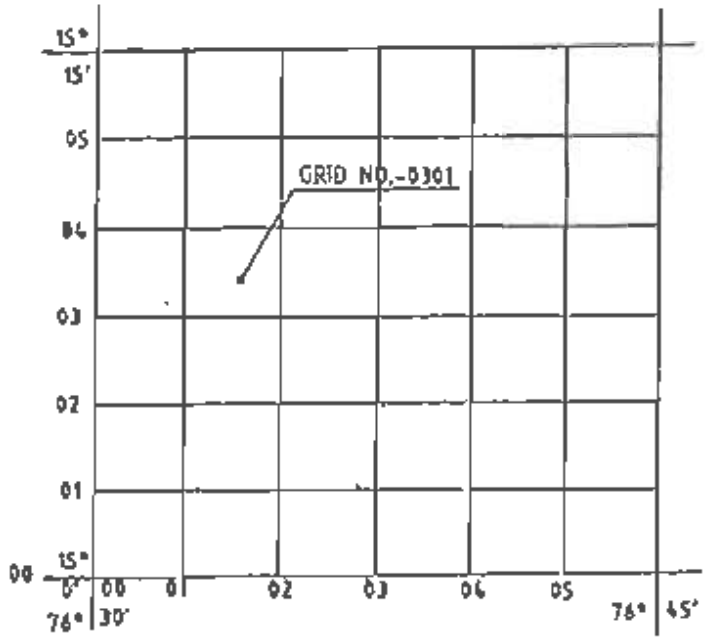
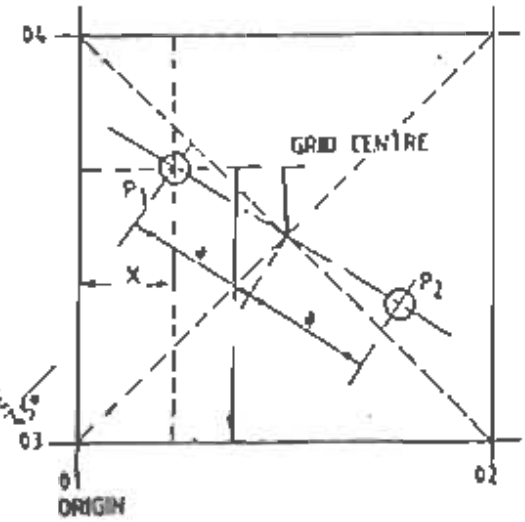


DIAGRAM-1

DIAGRAM SHOWING IDENTIFICATION OF GRIDS ON 1:50,000 OR 1:63,360 SCALE TOPO SHEETS.

DIAGRAM-2

DIAGRAM SHOWING MARKING OF PLOT IN 2 1/2 X 2 1/2 GRID 'X' & 'Y' ARE THE DISTANCES ALONG 'X' & 'Y' AXES WITH S.W. CORNER AS THE ORIGIN.



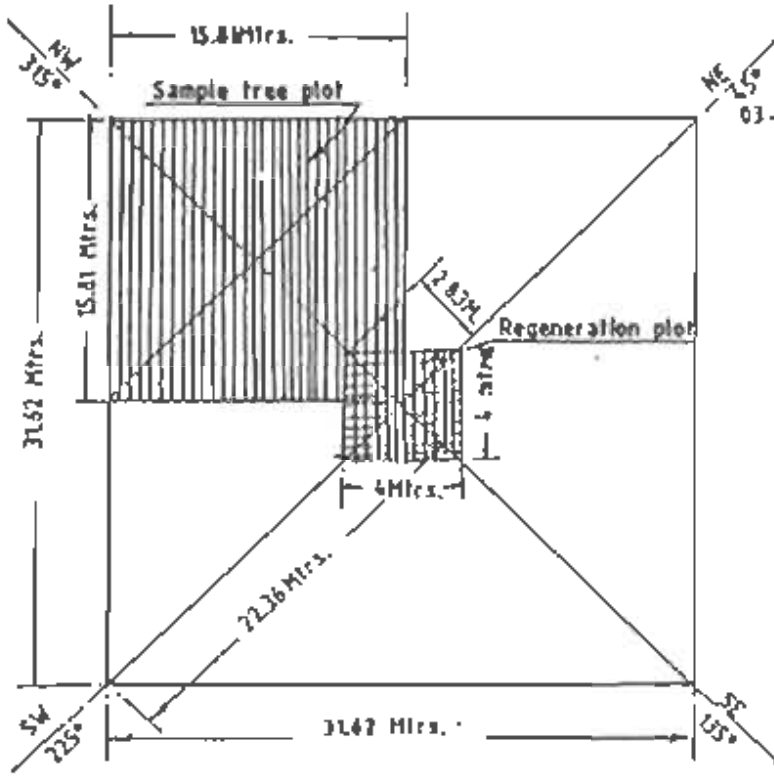
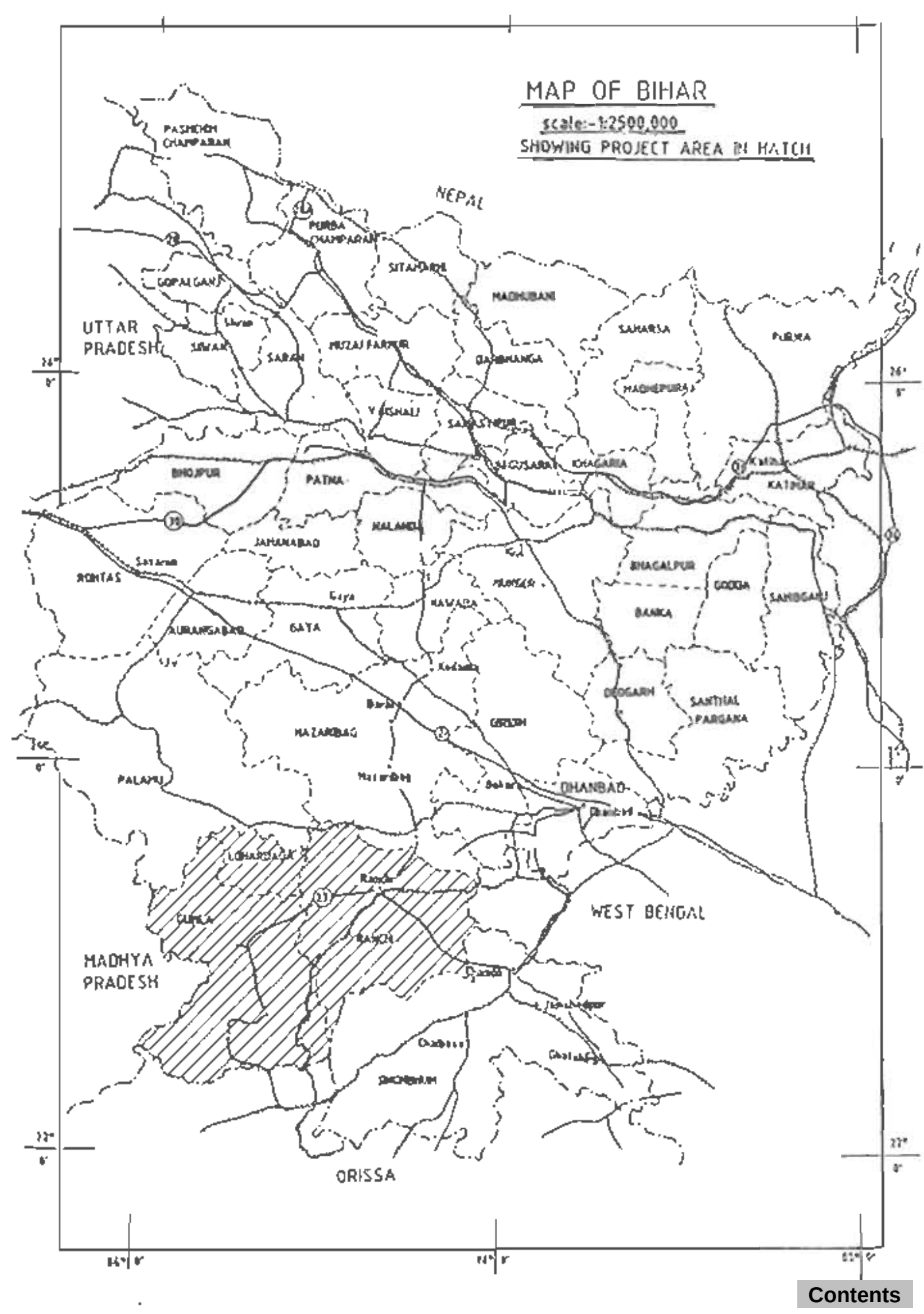


DIAGRAM-3

DIAGRAM SHOWING LAY OUT OF PLOT


MAP OF BIHAR
scale:- 1:2500,000
SHOWING PROJECT AREA IN HATCH
NEPAL
UTTAR PRADESH
WEST BENGAL
MADHYA PRADESH
ORISSA
PASHCHIM CHAMPARAN
PURBA CHAMPARAN
GOPALGANJ
SIWAN
SARAN
MUZAFFARPUR
SITAMARHI
MADHUBANI
SAHARSA
PURNIA
MADHEPURA
DARBHANGA
VAISHALI
SAMASTIPUR
BEGUSARAI
KHAGARIA
KATIHAR
BHOJPUR
PATNA
NALANDA
JAMUNABAD
ROHTAS
GAYA
AURANGABAD
NAWADA
BHAGALPUR
BANKA
GODDA
SAHIBGANJ
DEOGARH
SANTHAL PARGANA
GIRIDIH
HAZARIBAG
PALAMU
DHANBAD
LOHARDAGA
RANCHI
SINGHBHUM

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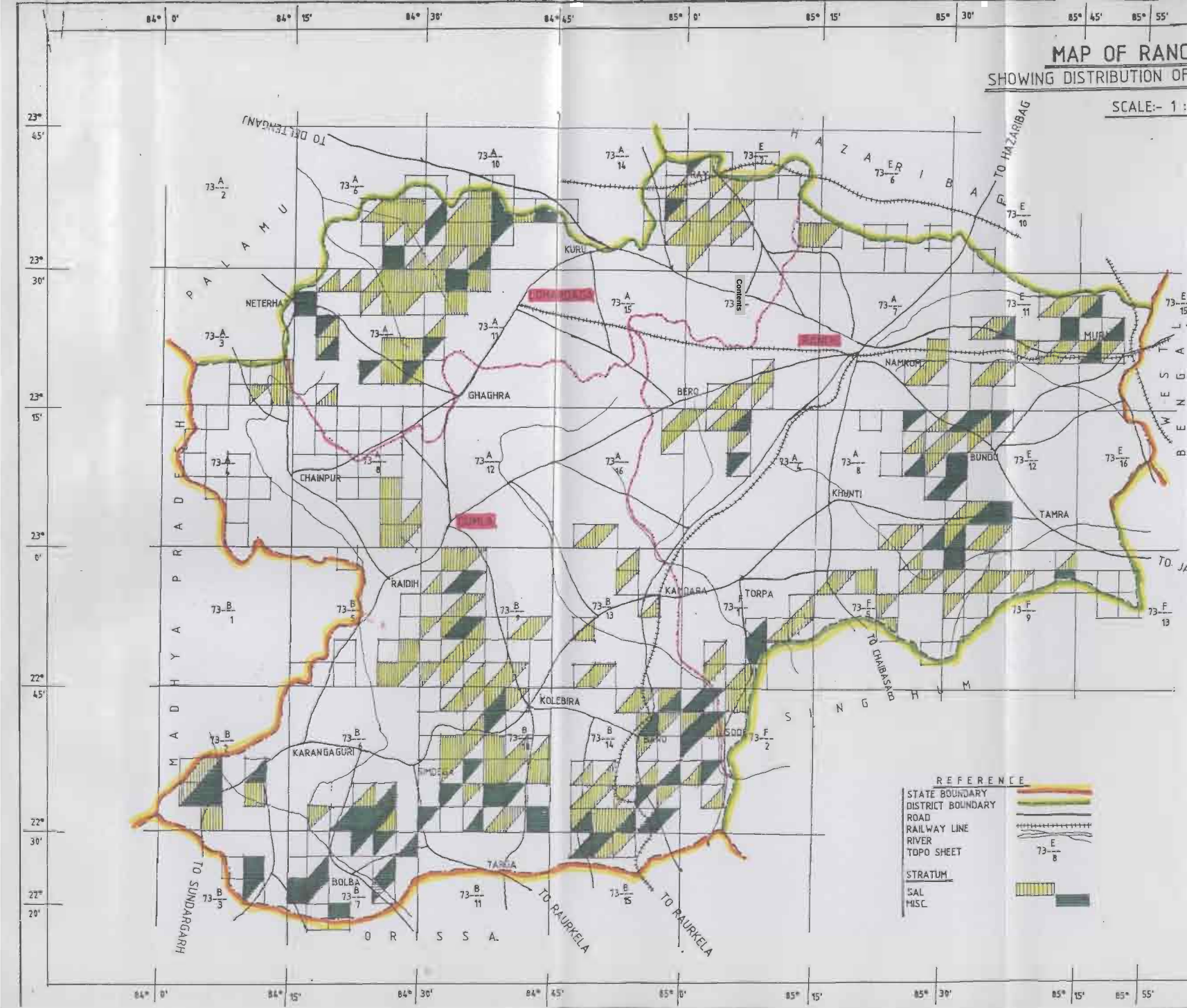
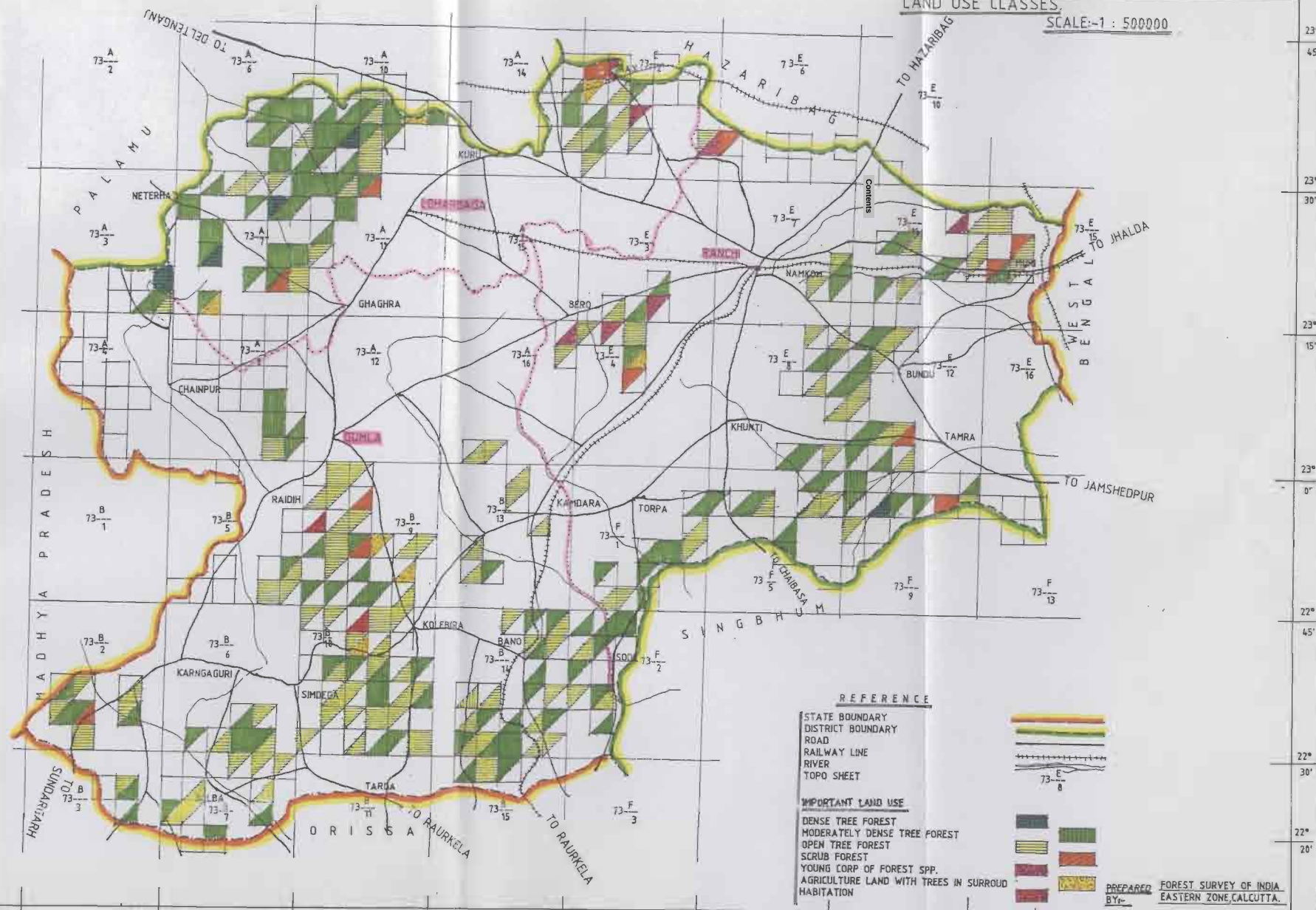

MAP OF RANC
SHOWING DISTRIBUTION OF
SCALE:- 1 :
84° 0'
84° 15'
84° 30'
84° 45'
85° 0'
85° 15'
85° 30'
85° 45'
85° 55'
23° 45'
23° 30'
23° 15'
23° 0'
22° 45'
22° 30'
22° 20'
TO DALTENGANJ
TO HAZARIBAG
HAZARIBAG
PALAMU
MADHYA PRADESH
WEST BENGAL
ORISSA
SINGHBHUM
NETERHAT
GHAGHRA
CHAINPUR
KURU
BERO
NAMKOM
BUNDU
KHUNTI
TAMRA
RAIDIH
KAMDARA
TORPA
KOLEBIRA
KARANGAGURI
BOLBA
TARUA
SODE
TO SUNDARGARH
TO RAURKELA
TO RAURKELA
TO CHAIBASA
Contents
REFERENCE
STATE BOUNDARY
DISTRICT BOUNDARY
ROAD
RAILWAY LINE
RIVER
TOPO SHEET
STRATUM
SAL
MISC

MAP OF RANCHI DISTRICT

SHOWING DISTRIBUTION OF GRIDS BY IMPORTANT LAND USE CLASSES.

SCALE:-1 : 500000



REFERENCE

- STATE BOUNDARY
- DISTRICT BOUNDARY
- ROAD
- RAILWAY LINE
- RIVER
- TOPO SHEET

IMPORTANT LAND USE

- DENSE TREE FOREST
- MODERATELY DENSE TREE FOREST
- OPEN TREE FOREST
- SCRUB FOREST
- YOUNG CORP OF FOREST SPP.
- AGRICULTURE LAND WITH TREES IN SURROUD
- HABITATION

PREPARED BY:- FOREST SURVEY OF INDIA
EASTERN ZONE, CALCUTTA.

PART - II

(STATISTICAL TABLES)

List of Tables

TABLE NO.1.1

STEMS PER HECTARE(IN NO) BY SPECIES AND DIAMETER CLASSES(IN CM.)

DISTRICT - RANCHI STRATA - SAL

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Acer laevigatum	17	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Adina cordifolia	28	1.027	.402	.223	.000	.045	.000	.000	.000	.000	.000	1 696
Aegle marmelos	32	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Agalia andamanica	35	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Albizzia procera	50	.089	.000	.000	.000	.000	.000	.000	.000	.000	.000	.089
Albizzia species	51	.223	.089	.000	.000	.000	.000	.000	.000	.000	.000	.312
Anogeissus latifolia	72	4.330	.580	.223	.089	.089	.000	.000	.000	.000	.000	5.312
Bauhinia purpurea	114	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Bauhinia retusa	116	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Bauhinia species	118	.402	.045	.000	.000	.000	.000	.000	.000	.000	.000	.446
Bombax ceiba	131	.045	.000	.000	.000	.045	.000	.000	.000	.000	.000	.089
Boswellia serrata	133	.714	.536	.179	.045	.045	.000	.000	.000	.000	.000	1.518
Bridelia retusa	138	.134	.045	.000	.000	.000	.000	.000	.000	.000	.000	.179
Buchanania lanzan	143	19.598	3.170	.446	.089	.000	.000	.000	.000	.000	.000	23.304
Butea monosperma	146	1.205	.491	.179	.000	.000	.000	.000	.045	.000	.000	1.920
Callicarpa arborea	150	.134	.000	.000	.000	.000	.000	.000	.000	.000	.000	.134
Calophyllum wightianum	160	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Careya arborea	177	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Casearia graveolens	181	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Casearia tomentosa	183	.134	.000	.000	.000	.000	.000	.000	.000	.000	.000	.134
Casearia species	185	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Cassia fistula	186	.268	.000	.000	.000	.000	.000	.000	.000	.000	.000	.268
Cassia siamea	188	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Cedrela serrata	197	.312	.000	.045	.045	.000	.000	.000	.000	.000	.000	.402
Chloroxylon swietenia	206	.089	.000	.000	.000	.000	.000	.000	.000	.000	.000	089
Cleistanthus collinus	218	.223	.000	.000	.000	.000	.000	.000	.000	.000	.000	.223
Cochlospermum religiosum	223	.357	.089	.000	.000	.000	.000	.000	.000	.000	.000	.446
Diospyros melanoxylon	285	7.411	.982	.179	.179	.000	.000	.045	.000	.000	.000	8.796

Cont. of Table No.1.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Diospyros species	292	.089	.045	.000	.000	.000	.000	.000	.000	.000	.000	.134
Emblica officinalis	325	.625	.000	.045	.000	.000	.000	.000	.000	.000	.000	.670
Erythrina variegata	341	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Eucalyptus hybrid	346	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Eugenia cymosa	350	.000	.000	.089	.045	.000	.000	.000	.000	.000	.000	.134
Eugenia formosa	352	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Eugenia species	358	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Ficus bengalensis	375	.134	.134	.000	.000	.000	.045	.000	.000	.045	.000	.357
Ficus religiosa	381	.089	.089	.045	.000	.045	.000	.045	.000	.000	.000	.313
Ficus recemosa	382	.000	.000	.000	.045	.000	.000	.000	.000	.000	.000	.045
Ficus species	385	.000	.045	.045	.045	.045	.089	.000	.000	.000	.000	.268
Flacourtia indica	389	.179	.000	.045	.000	.000	.000	.000	.000	.000	.000	.223
Garcenia resinifera	405	.223	.000	.000	.000	.000	.000	.000	.000	.000	.000	.223
Gmelina arborea	420	.580	.045	.000	.000	.000	.000	.000	.000	.000	.000	.625
Hollarrhena antidysenterica	452	.089	.000	.000	.000	.000	.000	.000	.000	.000	.000	.089
Holoptelea integrifolia	456	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Kydia calycina	501	.089	.000	.000	.000	.000	.000	.000	.000	.000	.000	.089
Lagerstroemia parviflora	505	1.027	.179	.045	.045	.000	.000	.000	.000	.000	.000	1.295
Lannea coromandelica	509	2.946	.179	.179	.000	.000	.000	.000	.000	.000	.000	3.304
Madnuca latifolia	561	3.705	1.429	.848	.536	.089	.045	.000	.000	.000	.000	6.652
Mallotus philippinensis	565	.223	.000	.000	.000	.000	.000	.000	.000	.000	.000	.223
Mangifera indica	569	.134	.179	.134	.000	.045	.045	.000	.000	.000	.000	.536
Miliusa tomentosa	605	.045	.045	.000	.000	.000	.000	.000	.000	.000	.000	.089
Mitragyna parviflora	611	.312	.045	.045	.000	.000	.000	.000	.000	.000	.000	.402
Morinda tinctoria	613	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Nyctanthes arbortristis	637	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Ougeinia dalbergoiides	653	.312	.045	.089	.000	.000	.000	.000	.000	.000	.000	.446
Pongamia pinnata	701	.223	.045	.000	.000	.000	.000	.000	.000	.000	.000	.268
Pterocarpus marsupium	722	.491	.268	.045	.000	.000	.000	.000	.000	.000	.000	.804
Saccopetalum tomentosum	770	.357	.000	.000	.000	.000	.000	.000	.000	.000	.000	.357

Cont. of Table No.1.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Schleichera trijuga	795	.714	.446	.402	.357	.179	.045	.000	.000	.000	.000	2.143
Schrebera swietenioides	796	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Semecarpus anacardium	798	3.616	.312	.089	.045	.000	.000	.000	.000	.000	.000	4.062
Shorea robusta	802	109.777	21.161	5.268	.982	.312	.134	.134	.089	.000	.000	137.857
Spondias pinnata	812	.045	.045	.000	.000	.000	.000	.000	.000	.000	.000	.089
Sterculia villosa	821	.045	.045	.000	.000	.000	.000	.000	.000	.000	.000	.089
Sterculia species	822	.089	.000	.000	.000	.000	.000	.000	.000	.000	.000	.089
Stereospermum angstifolium	823	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Stereospermum suaveolens	825	.134	.000	.000	.000	.000	.000	.000	.000	.000	.000	.134
Strychnos potatorum	832	.179	.179	.089	.000	.000	.000	.000	.000	.000	.000	.446
Symplocos crataegoides	838	.268	.000	.000	.000	.000	.000	.000	.000	.000	.000	.268
Syzygium cumini	843	1.964	1.205	.357	.134	.000	.045	.000	.000	.000	.000	3.705
Syzygium species	850	.045	.179	.000	.000	.000	.000	.000	.000	.000	.000	.223
Terminalia arjuna	860	.000	.000	.000	.045	.000	.000	.000	.000	.000	.000	.045
Terminalia belerica	861	.491	.134	.089	.045	.000	.000	.000	.000	.000	.000	.759
Terminalia bialata	862	.045	.000	.045	.000	.000	.000	.000	.000	.000	.000	.089
Terminalia chebula	864	1.295	.402	.089	.045	.000	.000	.000	.000	.000	.000	1.830
Terminalia crenulata	866	10.357	2.232	.580	.446	.045	.000	.000	.000	.000	.000	13.661
Terminalia paniculata	869	.045	.000	.000	.000	.000	.000	.000	.000	.000	.000	.045
Zizyphus mauritiana	927	.134	.045	.000	.000	.000	.000	.000	.000	.000	.000	.179
Zizyphus species	930	.134	.000	.000	.000	.000	.000	.000	.000	.000	.000	.134
Unidentified trees	944	2.812	.446	.089	.000	.000	.000	.000	.000	.000	.000	3.348
TOTAL		181.652	36.027	10.223	3.259	.982	.446	.223	.134	.045	.000	232.991

TABLE NO.1.2

STEMS PER HECTARE(IN NO) BY SPECIES AND DIAMETER CLASSES(IN CM.)

DISTRICT - RANCHI STRATA - MISCELLANEOUS

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Acer laevigatum	17	1.058	.096	.000	.000	.000	.000	.000	.000	.000	.000	1.154
Adina cordifolia	28	2.596	.481	.288	.192	.000	.000	.192	.000	.000	.096	3.846
Aegle marmelos	32	.192	.192	.000	.000	.000	.000	.000	.000	.000	.000	.385
Albizzia species	51	.577	.000	.000	.000	.000	.000	.000	.000	.000	.000	.577
Anogeissus latifolia	72	10.096	2.885	.481	.288	.000	.000	.000	.000	.000	.000	13.750
Anogeissus pendula	73	.288	.000	.000	.000	.000	.000	.000	.000	.000	.000	.288
Bauhinia purpurea	114	.000	.096	.000	.000	.000	.000	.000	.000	.000	.000	.096
Bauhinia retusa	116	.769	.192	.096	.000	.000	.000	.000	.000	.000	.000	1.058
Bauhinia species	118	.673	.192	.000	.000	.000	.000	.000	.000	.000	.000	.865
Bombax ceiba	131	.192	.000	.192	.000	.000	.000	.000	.000	.000	.000	385
Boswellia serrata	133	1.635	.769	.288	.096	.096	.000	.000	.000	.000	.000	2.885
Bridelia retusa	138	.481	.096	.288	.000	.000	.000	.000	.000	.000	.000	.865
Buchanania lanzan	143	14.327	2.019	.385	.000	.000	.000	.000	.000	.000	.000	16.731
Butea monosperma	146	2.404	1.250	.481	.192	.192	.000	.000	.000	.000	.000	4.519
Canarium resiniferum	166	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	096
Careya arborea	177	.385	.000	.000	.000	.000	.000	.000	.000	.000	.000	.385
Casearia graveolens	181	.577	.192	.000	.000	.000	.000	.000	.000	.000	.000	.769
Cassia fistula	186	1.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.250
Chloroxylon swietenia	206	2.115	.192	.096	.000	.000	.000	.000	.000	.000	.000	2.404
Chukrasia species	209	.192	.000	.000	.000	.000	.000	.000	.000	.000	.000	.192
Cleistanthus collinus	218	3.942	1.250	.192	.000	.000	.000	.000	.000	.000	.000	5.385
Cochlospermum religiosum	223	.192	.000	.000	.000	.000	.000	.000	.000	.000	.000	.192
Cryptomeria japonica	256	.000	.000	.096	.000	.000	.000	.000	.000	.000	.000	.096
Dalbergia sissoo	268	.096	.096	.000	.000	.000	.000	.000	.000	.000	.000	.192
Dalbergia species	269	.192	.192	.000	.000	.000	.000	.000	.000	.000	.000	.385
Dillenia pentagyna	278	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Diospyros melanoxylon	285	4.808	2.788	.577	.385	.096	.000	.000	.000	.000	.000	8.654
Emblica officinalis	325	.577	.096	.000	.000	.000	.000	.000	.000	.000	.000	.673
Erythrina variegata	341	.288	.000	.000	.000	.000	.000	.000	.000	.000	.000	.288
Erythrina species	342	.000	.192	.000	.000	.000	.000	.000	.000	.000	.000	.192

Contents

Cont. of Table No.1.2

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Ficus bengalensis	375	.000	.000	.096	.000	.000	.000	.000	.096	.000	.000	.192
Ficus religiosa	381	.096	.192	.000	.096	.000	.000	.000	.000	.000	.096	.481
Ficus species	385	.481	.769	.192	.096	.000	.096	.000	.000	.096	.000	1.731
Flacourtia indica	389	.288	.096	.000	.000	.000	.000	.000	.000	.000	.000	.385
Flacourtia species	391	.192	.000	.000	.000	.000	.000	.000	.000	.000	.000	.192
Fraxinus species	394	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Gardenia resinifera	405	1.154	.577	.288	.000	.000	.000	.000	.000	.000	.000	2 019
Garuça pinnata	407	.096	.000	.096	.000	.000	.000	.000	.000	.000	.000	.192
Gmelina arborea	420	.096	.096	.000	.000	.000	.000	.000	.000	.000	.000	.192
Grewia tiliaefolia	431	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Grewia species	432	.192	.000	.096	.000	.000	.000	.000	.000	.000	.000	.288
Hollarrhena antidysenterica	452	1.058	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.058
Holoptelea integrifolia	456	.192	.096	.096	.000	.000	.000	.000	.000	.000	.000	.385
Hymenodictyon excelsum	470	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Kydia calycina	501	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Lagerstroemia hypoleuca	502	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Lagerstroemia parviflora	505	3.846	.673	.192	.000	.000	.000	.000	.000	.000	.000	4.712
Lagerstroemia species	507	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Lannea coromandelica	509	6.154	1.058	.385	.000	.000	.000	.000	.000	.000	.000	7.596
Macaranga species	550	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Madhuca latifolia	561	4.615	1.827	.865	.865	.385	.192	.192	.000	.000	.000	8.942
Mallotus philippinensis	565	.481	.000	.000	.000	.000	.000	.000	.000	.000	.000	.481
Mallotus species	566	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Mangifera indica	569	.000	.192	.096	.096	.192	.000	.096	.096	.000	.000	.769
Miliusa tomentosa	605	.481	.096	.000	.000	.000	.000	.000	.000	.000	.000	.577
Mitragyna parviflora	611	.577	.096	.000	.096	.000	.000	.000	.000	.000	.000	.769
Morinda tinctoria	613	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Nyctanthes arbortristis	637	.673	.096	.000	.000	.000	.000	.000	.000	.000	.000	.769
Ougeinia dalbergoides	653	.000	.288	.096	.000	.000	.000	.000	.000	.000	.000	.385
Pongamia pinnata	701	.096	.000	.192	.000	.000	.000	.000	.000	.000	.000	.288

Cont. of Table No.1.2

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Pterocarpus marsupium	722	.192	.096	.096	.000	.000	.000	.000	.000	.000	.000	.385
Saccopetalum tomentosum	770	.288	.000	.000	.000	.000	.000	.000	.000	.000	.000	.288
Schleichera trijuga	795	.962	1.250	1.346	.865	.192	.096	.096	.096	.000	.000	4.904
Semecarpus anacardium	798	2.692	.096	.000	.000	.000	.000	.000	.000	.000	.000	2.788
Shorea robusta	802	14.231	4.904	1.154	.481	.000	.000	.000	.000	.000	.000	20.769
Spondias pinnata	812	.096	.000	.000	.000	.000	.000	.000	.000	.000	.000	.096
Sterculia villosa	821	.577	.385	.000	.000	.000	.000	.000	.000	.000	.000	.962
Stereospermum suaveolens	825	.577	.096	.000	.000	.000	.000	.000	.000	.000	.000	.673
Stereospermum xylocarpum	826	.192	.000	.000	.000	.000	.000	.000	.000	.000	.000	.192
Strychnos potatorum	832	.577	.288	.000	.000	.000	.000	.000	.000	.000	.000	.865
Symplocos crataegoides	838	.192	.000	.000	.000	.000	.000	.000	.000	.000	.000	.192
Syzygium cumini	843	.769	.288	.096	.096	.000	.000	.000	.000	.096	.000	1.346
Syzygium species	850	.000	.096	.000	.000	.000	.000	.000	.000	.000	.000	.096
Terminalia arjuna	860	.288	.385	.288	.000	.000	.096	.000	.000	.000	.000	1.058
Terminalia belerica	861	.096	.192	.000	.000	.000	.000	.000	.000	.000	.000	.288
Terminalia chebula	864	1.154	.673	.096	.096	.000	.000	.000	.000	.000	.000	2.019
Terminalia crenulata	866	7.885	2.212	.769	.192	.096	.000	.000	.000	.000	.000	11.154
Wrightia gigantea	911	.000	.096	.000	.000	.000	.000	.000	.000	.000	.000	.096
Xylia xylocarpa	919	.000	.192	.000	.000	.000	.000	.000	.000	.000	.000	.192
Zizyphus mauratiana	927	.673	.000	.096	.000	.000	.000	.000	.000	.000	.000	.769
Zizyphus species	930	.385	.192	.000	.000	.000	.000	.000	.000	.000	.000	.577
Unidentified trees	944	5.865	1.635	.385	.192	.000	.000	.000	.000	.000	.000	8.077
TOTAL		109.519	32.500	10.481	4.327	1.250	.481	.577	.288	.192	.192	159.808

TABLE NO.2.1.
TOTAL STEMS(IN NO.) BY SPECIES AND DIAMETER CLASSES(IN CM.)
DISTRICT- RANCHI STRATA: SAL

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	9852	0	0	0	0	0	0	0	0	0	9852
Acer laevigatum	17	9852	0	0	0	0	0	0	0	0	0	9852
Adina cordifolia	28	224846	88011	48822	0	9852	0	0	0	0	0	371531
Aegle marmelos	32	9852	0	0	0	0	0	0	0	0	0	9852
Agalia andamanica	35	9852	0	0	0	0	0	0	0	0	0	9852
Albizzia procera	50	19485	0	0	0	0	0	0	0	0	0	19485
Albizzia species	51	48822	19485	0	0	0	0	0	0	0	0	68307
Anogeissus latifolia	72	947988	126982	48822	19485	19485	0	0	0	0	0	1162762
Bauhinia purpurea	114	9852	0	0	0	0	0	0	0	0	0	9852
Bauhinia retusa	116	9852	0	0	0	0	0	0	0	0	0	9852
Bauhinia species	118	88011	9852	0	0	0	0	0	0	0	0	97863
Bombax ceiba	131	9852	0	0	0	9852	0	0	0	0	0	19704
Boswellia serrata	133	156319	117349	39189	9852	9852	0	0	0	0	0	332561
Bridelia retusa	138	29337	9852	0	0	0	0	0	0	0	0	39189
Buchanania lanzan	143	4290688	694023	97645	19485	0	0	0	0	0	0	5101841
Butea monosperma	146	263816	107497	39189	0	0	0	0	9852	0	0	420354
Callicarpa arborea	150	29337	0	0	0	0	0	0	0	0	0	29337
Calophyllum wightianum	160	9852	0	0	0	0	0	0	0	0	0	9852
Careya arborea	177	9852	0	0	0	0	0	0	0	0	0	9852
Casearia graveolens	181	9852	0	0	0	0	0	0	0	0	0	9852
Casearia tomentosa	183	29337	0	0	0	0	0	0	0	0	0	29337
Casearia species	185	9852	0	0	0	0	0	0	0	0	0	9852
Cassia fistula	186	58674	0	0	0	0	0	0	0	0	0	58674
Cassia siamea	188	9852	0	0	0	0	0	0	0	0	0	9852
Cedrela serrata	197	68307	0	9852	9852	0	0	0	0	0	0	88011
Chloroxylon swietenia	206	19485	0	0	0	0	0	0	0	0	0	19485
Cleistanthus collinus	218	48822	0	0	0	0	0	0	0	0	0	48822
Cochlospermum religiosum	223	78159	19485	0	0	0	0	0	0	0	0	97644
Diospyros melanoxylon	285	1622527	214994	39189	39189	0	0	9852	0	0	0	1925751

CONT. OF TABLE NO.2.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Diospyros species	292	19485	9852	0	0	0	0	0	0	0	0	29337
Emblica officinalis	325	136834	0	9852	0	0	0	0	0	0	0	146686
Erythrina variegata	341	9852	0	0	0	0	0	0	0	0	0	9852
Eucalyptus hybrid	346	9852	0	0	0	0	0	0	0	0	0	9852
Eugenia cymosa	350	0	0	19485	9852	0	0	0	0	0	0	29337
Eugenia formosa	352	9852	0	0	0	0	0	0	0	0	0	9852
Eugenia species	358	9852	0	0	0	0	0	0	0	0	0	9852
Ficus bengalensis	375	29337	29337	0	0	0	9852	0	0	9852	0	78378
Ficus religiosa	381	19485	19485	9852	0	9852	0	9852	0	0	0	68526
Ficus racemosa	382	0	0	0	9852	0	0	0	0	0	0	9852
Ficus species	385	0	9852	9852	9852	9852	19485	0	0	0	0	58893
Flacourtia indica	389	39189	0	9852	0	0	0	0	0	0	0	49041
Gardenia resinifera	405	48822	0	0	0	0	0	0	0	0	0	48822
Gmelina arborea	420	126982	9852	0	0	0	0	0	0	0	0	136834
Holarrhena antidysenterica	452	19485	0	0	0	0	0	0	0	0	0	19485
Holoptelea integrifolia	456	9852	0	0	0	0	0	0	0	0	0	9852
Kydia calycina	501	19485	0	0	0	0	0	0	0	0	0	19485
Lagerstroemia parviflora	505	224846	39189	9852	9852	0	0	0	0	0	0	283739
Lannea coromandelica	509	644982	39189	39189	0	0	0	0	0	0	0	723360
Madhuca latifolia	561	811154	312858	185656	117349	19485	9852	0	0	0	0	1456354
Mallotus philippinensis	565	48822	0	0	0	0	0	0	0	0	0	48822
Mangifera indica	569	29337	39189	29337	0	9852	9852	0	0	0	0	117567
Miliusa tomentosa	605	9852	9852	0	0	0	0	0	0	0	0	19704
Mitragyna parviflora	611	68307	9852	9852	0	0	0	0	0	0	0	88011
Morinda tinctoria	613	9852	0	0	0	0	0	0	0	0	0	9852
Nyctanthes arbortristis	637	9852	0	0	0	0	0	0	0	0	0	9852
Ougeinia dalbergoides	653	68307	9852	19485	0	0	0	0	0	0	0	97644
Pongamia pinnata	701	48822	9852	0	0	0	0	0	0	0	0	58674

CONT. OF TABLE NO.2.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Pterocarpus marsupium	722	107497	58674	9852	0	0	0	0	0	0	0	176023
Saccopetalum tomentosum	770	78159	0	0	0	0	0	0	0	0	0	78159
Schleichera trijuga	795	156319	97645	88011	78159	39189	9852	0	0	0	0	469175
Schrebera swietenioides	796	9852	0	0	0	0	0	0	0	0	0	9852
Semecarpus anacardium	798	791668	68307	19485	9852	0	0	0	0	0	0	889312
Shorea robusta	80224034028	46328831153349	214994	68307	29337	29337	19485	0	0	30181720		
Spondias pinnata	812	9852	9852	0	0	0	0	0	0	0	0	19704
Sterculia villosa	821	9852	9852	0	0	0	0	0	0	0	0	19704
Sterculia species	822	19485	0	0	0	0	0	0	0	0	0	19485
Stereospermum angstifolium	823	9852	0	0	0	0	0	0	0	0	0	9852
Stereospermum suaveolens	825	29337	0	0	0	0	0	0	0	0	0	29337
Strychnos potatorum	832	39189	39189	19485	0	0	0	0	0	0	0	97863
Symplocos crataegoides	838	58674	0	0	0	0	0	0	0	0	0	58674
Syzygium cumini	843	429988	263816	78159	29337	0	9852	0	0	0	0	811152
Syzygium species	850	9852	39189	0	0	0	0	0	0	0	0	49041
Terminalia arjuna	860	0	0	0	9852	0	0	0	0	0	0	9852
Terminalia belerica	861	107497	29337	19485	9852	0	0	0	0	0	0	166171
Terminalia bialata	862	9852	0	9852	0	0	0	0	0	0	0	19704
Terminalia chebula	864	283520	88011	19485	9852	0	0	0	0	0	0	400868
Terminalia crenulata	866	2267509	488662	126982	97645	9852	0	0	0	0	0	2990650
Terminalia paniculata	869	9852	0	0	0	0	0	0	0	0	0	9852
Zizyphus mauratiana	927	29337	9852	0	0	0	0	0	0	0	0	39189
Zizyphus species	930	29337	0	0	0	0	0	0	0	0	0	29337
Unidentified trees	944	615645	97645	19485	0	0	0	0	0	0	0	732775
TOTAL		39770834	78986585	2238602	714163	215430	98082	49041	29337	9852	0	51013996

TABLE NO.2.2.

TOTAL STEMS(IN NO.) BY SPECIES AND DIAMETER CLASSES(IN CM.)

DISTRICT- RANCHI STRATA: MISCELLANEOUS

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	9758	0	0	0	0	0	0	0	0	0	9758
Acer laevigatum	17	107543	9758	0	0	0	0	0	0	0	0	117301
Adina cordifolia	28	263878	48892	29274	19516	0	0	19516	0	0	9758	390834
Aegle marmelos	32	19516	19516	0	0	0	0	0	0	0	0	39032
Albizzia species	51	58650	0	0	0	0	0	0	0	0	0	58650
Anogeissus latifolia	72	1026238	293254	48892	29274	0	0	0	0	0	0	1397658
Anogeissus pendula	73	29274	0	0	0	0	0	0	0	0	0	29274
Bauhinia purpurea	114	0	9758	0	0	0	0	0	0	0	0	9758
Bauhinia retusa	116	78167	19516	9758	0	0	0	0	0	0	0	107441
Bauhinia species	118	68409	19516	0	0	0	0	0	0	0	0	87925
Bombax ceiba	131	19516	0	19516	0	0	0	0	0	0	0	39032
Boswellia serrata	133	166194	78167	29274	9758	9758	0	0	0	0	0	293151
Bridelia retusa	138	48892	9758	29274	0	0	0	0	0	0	0	87924
Buchanania lanzan	143	1456310	205227	39134	0	0	0	0	0	0	0	1700671
Butea monosperma	146	244361	127060	48892	19516	19516	0	0	0	0	0	459345
Canarium resiniferum	166	9758	0	0	0	0	0	0	0	0	0	9758
Careya arborea	177	39134	0	0	0	0	0	0	0	0	0	39134
Casearia graveolens	181	58650	19516	0	0	0	0	0	0	0	0	78166
Cassia fistula	186	127060	0	0	0	0	0	0	0	0	0	127060
Chloroxylon swietenia	206	214985	19516	9758	0	0	0	0	0	0	0	244259
Chukrasia species	209	19516	0	0	0	0	0	0	0	0	0	19516
Cleistanthus collinus	218	400696	127060	19516	0	0	0	0	0	0	0	547272
Cochlospermum religiosum	223	19516	0	0	0	0	0	0	0	0	0	19516
Cryptomeria japonica	256	0	0	9758	0	0	0	0	0	0	0	9758
Dalbergia sissoo	268	9758	9758	0	0	0	0	0	0	0	0	19516
Dalbergia species	269	19516	19516	0	0	0	0	0	0	0	0	39032
Dillenia pentagyna	278	9758	0	0	0	0	0	0	0	0	0	9758
Diospyros melanoxylon	285	488723	283394	58650	39134	9758	0	0	0	0	0	879659
Emblica officinalis	325	58650	9758	0	0	0	0	0	0	0	0	68408

CONT. OF TABLE NO.2.2.

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Erythrina variegata	341	29274	0	0	0	0	0	0	0	0	0	29274
Erythrina species	342	0	19516	0	0	0	0	0	0	0	0	19516
Ficus bengalensis	375	0	0	9758	0	0	0	0	9758	0	0	19516
Ficus religiosa	381	9758	19516	0	9758	0	0	0	0	0	9758	48790
Ficus species	385	48892	78167	19516	9758	0	9758	0	0	9758	0	175849
Flacourtia indica	389	29274	9758	0	0	0	0	0	0	0	0	39032
Flacourtia species	391	19516	0	0	0	0	0	0	0	0	0	19516
Fraxinus species	394	9758	0	0	0	0	0	0	0	0	0	9758
Gardenia resinifera	405	117301	58650	29274	0	0	0	0	0	0	0	205225
Garuga pinnata	407	9758	0	9758	0	0	0	0	0	0	0	19516
Gmelina arborea	420	9758	9758	0	0	0	0	0	0	0	0	19516
Grewia tiliaefolia	431	9758	0	0	0	0	0	0	0	0	0	9758
Grewia species	432	19516	0	9758	0	0	0	0	0	0	0	29274
Hollarrhena antidysenterica	452	107543	0	0	0	0	0	0	0	0	0	107543
Holoptelea integrifolia	456	19516	9758	9758	0	0	0	0	0	0	0	39032
Hymenodictyon excelsum	470	9758	0	0	0	0	0	0	0	0	0	9758
Xydia calycina	501	9758	0	0	0	0	0	0	0	0	0	9758
Lagerstroemia hypoleuca	502	9758	0	0	0	0	0	0	0	0	0	9758
Lagerstroemia parviflora	505	390938	68409	19516	0	0	0	0	0	0	0	478863
Lagerstroemia species	507	9758	0	0	0	0	0	0	0	0	0	9758
Lanhea coromandelica	509	625541	107543	39134	0	0	0	0	0	0	0	772218
Macaranga species	550	9758	0	0	0	0	0	0	0	0	0	9758
Madhuca latifolia	561	469105	185710	87925	87925	39134	19516	19516	0	0	0	908831
Mallotus philippinensis	565	48892	0	0	0	0	0	0	0	0	0	48892
Mallotus species	566	9758	0	0	0	0	0	0	0	0	0	9758
Mangifera indica	569	0	19516	9758	9758	19516	0	9758	9758	0	0	78064
Miliusa tomentosa	605	48892	9758	0	0	0	0	0	0	0	0	58650
Mitragyna parviflora	611	58650	9758	0	9758	0	0	0	0	0	0	78166
Morinda tinctoria	613	9758	0	0	0	0	0	0	0	0	0	9758
Nyctanthes arbortristis	637	68409	9758	0	0	0	0	0	0	0	0	78167
Ougeinia dalbergoides	653	0	29274	9758	0	0	0	0	0	0	0	39032
Pongamia pinnata	701	9758	0	19516	0	0	0	0	0	0	0	29274

CONT. OF TABLE NO.2.2.

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Pterocarpus marsupium	722	19516	9758	9758	0	0	0	0	0	0	0	39032
Saccopetalum tomentosum	770	29274	0	0	0	0	0	0	0	0	0	29274
Schleichera trijuga	795	97785	127060	136818	87925	19516	9758	9758	9758	0	0	498378
Semecarpus anacardium	798	273636	9758	0	0	0	0	0	0	0	0	283394
Shorea robusta	802	1446552	498481	117301	48892	0	0	0	0	0	0	2111226
Spondias pinnata	812	9758	0	0	0	0	0	0	0	0	0	9758
Sterculia villosa	821	58650	39134	0	0	0	0	0	0	0	0	97784
Stereospermum suaveolens	825	58650	9758	0	0	0	0	0	0	0	0	68408
Stereospermum xylocarpum	826	19516	0	0	0	0	0	0	0	0	0	19516
Strychnos potatorum	832	58650	29274	0	0	0	0	0	0	0	0	87924
Symplocos crataegoides	838	19516	0	0	0	0	0	0	0	0	0	19516
Syzygium cumini	843	78167	29274	9758	9758	0	0	0	0	9758	0	136715
Syzygium species	850	0	9758	0	0	0	0	0	0	0	0	9758
Terminalia arjuna	860	29274	39134	29274	0	0	9758	0	0	0	0	107440
Terminalia belerica	861	9758	19516	0	0	0	0	0	0	0	0	29274
Terminalia chebula	864	117301	68409	9758	9758	0	0	0	0	0	0	205226
Terminalia crenulata	866	801494	224845	78167	19516	9758	0	0	0	0	0	1133780
Wrightia gigantea	911	0	9758	0	0	0	0	0	0	0	0	9758
Xylia xylocarpa	919	0	19516	0	0	0	0	0	0	0	0	19516
Zizyphus mauratiana	927	68409	0	9758	0	0	0	0	0	0	0	78167
Zizyphus species	930	39134	19516	0	0	0	0	0	0	0	0	58650
Unidentified trees	944	596165	166194	39134	19516	0	0	0	0	0	0	821009
TOTAL		11131744	3302932	1064851	439520	126956	48790	58548	29274	19516	19516	16241647

TABLE NO.3.1

VOLUME(IN M3) PER HECTARE BY SPECIES AND DIAMETER CLASSES(IN CM.)

DISTRICT- RANCHI STRATA-SAL

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	.008	.000	.000	.000	.000	.000	.000	.000	.000	.000	.008
Acer laevigatum	17	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Adina cordifolia	28	084	.193	.295	000	.133	.000	.000	.000	.000	.000	.705
Aegle marmelos	32	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002
Agalia andamanica	35	006	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006
Albizzia procera	50	.004	.000	.000	.000	.000	.000	.000	.000	.000	.000	.004
Albizzia species	51	.012	.027	.000	.000	.000	.000	.000	.000	.000	.000	.038
Anogeissus latifolia	72	.412	.255	.227	.151	.223	.000	.000	.000	.000	.000	1.269
Bauhinia purpurea	114	.005	.000	.000	.000	.000	.000	.000	.000	.000	.000	.005
Bauhinia retusa	116	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001
Bauhinia species	118	.029	.015	.000	.000	.000	.000	.000	.000	.000	.000	.044
Bombax ceiba	131	.005	.000	.000	.000	.109	.000	.000	.000	.000	.000	.114
Boswellia serrata	133	.050	.164	.121	.072	.104	.000	.000	.000	.000	.000	511
Bridelia retusa	138	.009	.018	.000	.000	.000	.000	.000	.000	.000	.000	.027
Buchanania lanzan	143	1.587	1.009	.328	.120	.000	.000	.000	.000	.000	.000	3.045
Butea monosperma	146	.087	.173	.147	.000	.000	.000	.000	.277	.000	.000	.683
Callicarpa arborea	150	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Calophyllum wightianum	160	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Careya arborea	177	.006	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006
Casearia graveolens	181	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002
Casearia tomentosa	183	.012	.000	.000	.000	.000	.000	.000	.000	.000	.000	.012
Casearia species	185	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Cassia fistula	186	.014	.000	.000	.000	.000	.000	.000	.000	.000	.000	.014
Cassia siamea	188	.004	.000	.000	.000	.000	.000	000	.000	.000	.000	.004
Cedrela serrata	197	.031	.000	.028	.057	.000	.000	.000	.000	.000	.000	.115
Chloroxylon swietenia	206	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Cleistanthus collinus	218	.009	.000	.000	000	.000	.000	.000	.000	.000	.000	.009
Cochlospermum religiosum	223	.032	.032	.000	.000	.000	.000	.000	.000	.000	.000	.064
Diospyros melanoxylon	285	.566	.328	.168	.272	.000	.000	.189	.000	.000	.000	1.522
Diospyros species	292	.007	.013	.000	.000	.000	.000	.000	.000	.000	.000	.020

Contents

Cont. of Table No.3.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Emblica officinalis	325	.048	.000	.040	.000	.000	.000	.000	.000	.000	.000	.087
Erythrina variegata	341	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001
Eucalyptus hybrid	346	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002
Eugenia cymosa	350	.000	.000	.062	.070	.000	.000	.000	.000	.000	.000	.132
Eugenia formosa	352	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002
Eugenia species	358	.004	.000	.000	.000	.000	.000	.000	.000	.000	.000	.004
Ficus bengalensis	375	.014	.045	.000	.000	.000	.172	.000	.000	.327	.000	.557
Ficus religiosa	381	.010	.045	.030	.000	.109	.000	.230	.000	.000	.000	.424
Ficus recemosa	382	.000	.000	.000	.077	.000	.000	.000	.000	.000	.000	.077
Ficus species	385	.000	.018	.032	.060	.096	.272	.000	.000	.000	.000	.479
Flacourtia indica	389	.019	.000	.028	.000	.000	.000	.000	.000	.000	.000	.046
Gardenia resinifera	405	.014	.000	.000	.000	.000	.000	.000	.000	.000	.000	.014
Gmelina arborea	420	.054	.018	.000	.000	.000	.000	.000	.000	.000	.000	.072
Hollarrhena antidysenterica	452	.006	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006
Holoptelea integrifolia	456	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001
Kydia calycina	501	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Lagerstroemia parviflora	505	.079	.044	.028	.057	.000	.000	.000	.000	.000	.000	.208
Lannea coromandelica	509	.219	.070	.120	.000	000	.000	.000	.000	.000	.000	.408
Madhuca latifolia	561	.335	.516	.736	.788	.192	.156	.000	.000	.000	.000	2.724
Mallotus philippinensis	565	.017	.000	.000	.000	.000	.000	.000	.000	.000	.000	.017
Mangifera indica	569	.016	.075	.092	.000	.122	.131	.000	.000	.000	.000	.437
Miliusa tomentosa	605	.004	.010	.000	.000	.000	.000	.000	.000	.000	.000	.014
Mitragyna parviflora	611	.021	.016	.037	.000	.000	.000	.000	.000	.000	.000	.074
Morinda tinctoria	613	.004	.000	.000	.000	.000	.000	.000	.000	.000	.000	.004
Nyctanthes arbortristis	637	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Ougeinia oalbergoides	653	.032	.024	.080	.000	.000	.000	.000	.000	.000	.000	.135
Pongamia pinnata	701	.025	.020	.000	.000	.000	.000	.000	.000	.000	.000	.045
Pterocarpus marsupium	722	.044	.085	.032	.000	.000	.000	.000	.000	.000	.000	.161
Saccopetalum tomentosum	770	.033	.000	.000	.000	.000	.000	.000	.000	.000	.000	.033
Schleichera trijuga	795	.067	.184	.323	.510	.419	.136	.000	.000	.000	.000	1.639
Schrebera swienteniodes	796	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001
Semecarpus anacardium	798	.273	.094	.070	.057	.000	.000	.000	.000	.000	.000	.494

Contents

Cont. of Table No.3.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Shorea robusta	802	9.373	7.228	4.063	1.332	.626	.417	.557	.456	.000	.000	24.052
Spondias pinnata	812	.007	.022	.000	.000	.000	.000	.000	.000	.000	.000	.028
Sterculia villosa	821	.002	.012	.000	.000	.000	.000	.000	.000	.000	.000	.014
Sterculia species	822	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Stereospermum angstifolium	823	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002
Stereospermum suaveolens	825	.010	.000	.000	.000	.000	.000	.000	.000	.000	.000	.010
Strychnos potatorum	832	.016	.066	.085	.000	.000	.000	.000	.000	.000	.000	.166
Symplocos cratasgoides	838	.024	.000	.000	.000	.000	.000	.000	.000	.000	.000	.024
Syzygium cumini	843	.165	.303	.182	.121	.000	.114	.000	.000	.000	.000	.886
Syzygium species	850	.005	.067	.000	.000	.000	.000	.000	.000	.000	.000	.072
Terminalia arjuna	860	.000	.000	.000	.081	.000	.000	.000	.000	.000	.000	.081
Terminalia belerica	861	.037	.046	.090	.060	.000	.000	.000	.000	.000	.000	.253
Terminalia bialata	862	.003	.000	.028	.000	.000	.000	.000	.000	.000	.000	.031
Terminalia chebula	864	.121	.145	.096	.073	.000	.000	.000	.000	.000	.000	.435
Terminalia crenulata	866	.757	.785	.478	.688	.100	.000	.000	.000	.000	.000	2.808
Terminalia paniculata	869	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Zizyphus mauratiana	927	.016	.024	.000	.000	.000	.000	.000	.000	.000	.000	.046
Zizyphus species	930	.009	000	.000	.000	.000	.000	.000	.000	.000	.000	.009
Unidentified trees	944	.247	.165	.078	.000	.000	.000	.000	.000	.000	.000	.490
TOTAL		15.170	12.353	8.123	4.644	2.233	1.399	.976	.732	.327	.000	45.952

Contents

TABLE NO.3.2

VOLUME(IN M3) PER HECTARE BY SPECIES AND DIAMETER CLASSES(IN CM.)

DISTRICT- RANCHI STRATA-MISCELLANEOUS

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Acer laevigatum	17	.110	.035	.000	.000	.000	.000	.000	.000	.000	.000	.145
Adina cordifolia	28	.267	.196	.315	.399	.000	.000	1.162	.000	.000	1.166	3.505
Aegle marmelos	32	.022	.086	.000	.000	.000	.000	.000	.000	.000	.000	.108
Albizzia species	51	.059	.000	.000	.000	.000	.000	.000	.000	.000	.000	.059
Anogeissus latifolia	72	1.018	1.150	.498	.420	.000	.000	.000	.000	.000	.000	3.085
Anogeissus pendula	73	.010	.000	.000	.000	.000	.000	.000	.000	.000	.000	.010
Bauhinia purpurea	114	.000	.039	.000	.000	.000	.000	.000	.000	.000	.000	.039
Bauhinia retusa	116	.069	.071	.064	.000	.000	.000	.000	.000	.000	.000	.204
Bauhinia species	118	.068	.047	.000	.000	.000	.000	.000	.000	.000	.000	.115
Bombax ceiba	131	.024	.000	.129	.000	.000	.000	.000	.000	.000	000	.153
Boswellia serrata	133	.173	.263	.256	.119	.234	.000	.000	.000	.000	.000	1.044
Bridelia retusa	138	.059	.035	.204	.000	.000	.000	.000	.000	.000	.000	.298
Buchanania lanzan	143	1.238	.623	.355	.000	.000	.000	.000	.000	.000	.000	2.216
Butea monosperma	146	.245	.485	.451	.280	.397	.000	.000	.000	.000	.000	1.858
Canarium resiniferum	166	.015	.000	.000	.000	.000	.000	.000	.000	.000	.000	.015
Careya arborea	177	.022	.000	.000	.000	.000	.000	.000	.000	.000	.000	.022
Casearia graveolens	181	.048	.077	.000	.000	.000	.000	.000	.000	.000	.000	.126
Cassia fistula	186	.094	.000	.000	.000	.000	.000	.000	.000	.000	.000	.094
Chloroxylon swietenia	206	.187	.063	.064	.000	.000	.000	.000	.000	.000	.000	.314
Chukrasia species	209	.034	.000	.000	.000	.000	.000	.000	.000	.000	.000	.034
Cleistanthus collinus	218	.287	.377	.139	.000	.000	.000	.000	.000	.000	.000	.803
Cochlospermum religiosum	223	.021	.000	.000	.000	.000	.000	.000	.000	.000	.000	.021
Cryptomeria japonica	256	.000	.000	.064	.000	.000	.000	.000	.000	.000	.000	.064
Dalbergia sissoo	268	.004	.022	.000	.000	.000	.000	.000	.000	.000	.000	.026
Dalbergia species	269	.025	.060	.000	.000	.000	.000	.000	.000	.000	.000	.085
Dillenia pentagyna	278	.019	.000	.000	.000	.000	.000	.000	.000	.000	.000	.019
Diospyros melanoxylon	285	.451	.997	.524	.581	.190	.000	.000	.000	.000	.000	2.743
Emblica officinalis	325	.043	.031	.000	.000	.000	.000	.000	.000	.000	.000	.074
Erythrina variegata	341	.018	.000	.000	.000	.000	.000	.000	.000	.000	.000	.018

Cont. of Table No.3.2

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Erythrina species	342	.000	.060	.000	.000	.000	.000	.000	.000	.000	.000	.060
Ficus bengalensis	375	.000	.000	.097	.000	.000	.000	.000	.552	.000	.000	.649
Ficus religiosa	381	.017	.066	.000	.174	.000	.000	.000	.000	.000	.839	1.096
Ficus species	385	.047	.272	.129	.151	.000	.283	.000	.000	.753	.000	1.635
Flacourtia indica	389	.022	.042	.000	.000	.000	.000	.000	.000	.000	.000	.064
Flacourtia species	391	.008	.000	.000	.000	.000	.000	.000	.000	.000	.000	.008
Fraxinus species	394	.005	.000	.000	.000	.000	.000	.000	.000	.000	.000	.005
Gardenia resinifera	405	.114	.166	.224	.000	.000	.000	.000	.000	.000	.000	.505
Garuga pinnata	407	.019	.000	.080	.000	.000	.000	.000	.000	.000	.000	.099
Gmelina arborea	420	.017	.028	.000	.000	.000	.000	.000	.000	.000	.000	.045
Grewia tiliaefolia	431	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Grewia species	432	.015	.000	.064	.000	.000	.000	.000	.000	.000	.000	.079
Hollarrhena antidysenterica	452	.073	.000	.000	.000	.000	.000	.000	.000	.000	.000	.073
Holoptelea integrifolia	456	.026	.042	.069	.000	.000	.000	.000	.000	.000	.000	.138
Hymenodictyon excelsum	470	.017	.000	000	.000	.000	.000	.000	.000	.000	.000	.017
Kydia calycina	501	.010	.000	.000	.000	.000	.000	.000	.000	.000	.000	.010
Lagerstroemia hypoleuca	502	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Lagerstroemia parviflora	505	.307	.221	.139	.000	.000	.000	.000	.000	.000	.000	.667
Lagerstroemia species	507	.012	.000	.000	.000	.000	.000	.000	.000	.000	.000	.012
Lannea coromandelica	509	.485	.300	.315	.000	.000	.000	.000	.000	.000	.000	1.101
Macaranga species	550	.004	.000	.000	.000	.000	.000	.000	000	.000	.000	.004
Madhuca latifolia	561	.437	.684	.733	1.299	.912	.642	.788	.000	.000	.000	5.495
Mallotus philippinensis	565	.023	.000	.000	.000	.000	.000	.000	.000	.000	.000	.023
Mallotus species	566	.017	.000	.000	.000	.000	.000	.000	.000	.000	.000	.017
Mangifera indica	569	.000	070	.085	.158	.406	.000	.419	.581	.000	.000	1.719
Miliusa tomentosa	605	.031	.039	.000	.000	.000	.000	.000	.000	.000	.000	.069
Mitragyna parviflora	611	.055	.031	.000	.129	.000	.000	.000	.000	.000	.000	.216
Morinda tinctoria	613	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003
Nyctanthes arbortristis	637	.038	.022	.000	.000	.000	.000	.000	.000	.000	.000	.060
Ougeinia dalbergoides	653	.000	.097	.109	.000	.000	.000	.000	.000	.000	.000	.206
Pongamia pinnata	701	.005	.000	.129	.000	.000	.000	.000	.000	.000	.000	.134
Pterocarpus marsupium	722	.008	.042	.064	.000	.000	.000	.000	.000	000	.000	.115

Cont. of Table No.3.2

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Saccopetalum tomentosum	770	.021	.000	.000	.000	.000	.000	.000	.000	.000	.000	.021
Schleichera trijuga	795	.112	.484	1.136	1.481	.397	.283	.457	.596	.000	.000	4.945
Semecarpus anacardium	798	.216	.022	.000	.000	.000	.000	.000	.000	.000	.000	.239
Shorea robusta	802	1.197	1.741	.897	.571	.000	.000	.000	.000	.000	.000	4.406
Spondias pinnata	812	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
Sterculia villosa	821	.049	.107	.000	.000	.000	.000	.000	.000	.000	.000	.155
Stereospermum suaveolens	825	.036	.035	.000	.000	.000	.000	.000	.000	.000	.000	.071
Stereospermum xylocarpum	826	.019	.000	.000	.000	.000	.000	.000	.000	.000	.000	.019
Strychnos potatorum	832	.065	.075	.000	.000	.000	.000	.000	.000	.000	.000	.140
Symplocos crataegoides	838	.016	.000	.000	.000	.000	.000	.000	.000	.000	.000	.016
Syzygium cumini	843	.041	.078	.054	.087	.000	.000	.000	.000	.443	.000	.704
Syzygium species	850	.000	.051	.000	.000	.000	.000	.000	.000	.000	.000	.051
Terminalia arjuna	860	.031	.127	.274	.000	.000	.293	.000	.000	.000	.000	.725
Terminalia belerica	861	.010	.083	.000	.000	.000	.000	.000	.000	.000	.000	.094
Terminalia chebula	864	.114	.251	.085	.122	.000	.000	.000	.000	.000	.000	.572
Terminalia crenulata	866	.672	.718	.671	.346	.224	.000	.000	.000	.000	.000	2.632
Wrightia gigantea	911	.000	.039	.000	.000	.000	.000	.000	.000	.000	.000	.039
Xylia xylocarpa	919	.000	.085	.000	.000	.000	.000	.000	.000	.000	.000	.085
Zizyphus mauratiana	927	.073	.000	.060	.000	.000	.000	.000	.000	.000	.000	.133
Zizyphus species	930	.045	.054	.000	.000	.000	.000	.000	.000	.000	.000	.099
Unidentified trees	944	.538	.541	.312	.272	.000	.000	.000	.000	.000	.000	1.663
TOTAL		9.722	11.330	8.792	6.588	2.760	1.501	2.825	1.729	1.196	2.005	48.447

Contents

TABLE NO.4.1

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

STRATA-:SAL DISTRICT: RANCHI

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	1751	0	0	0	0	0	0	0	0	0	1751
Acer laevigatum	17	1532	0	0	0	0	0	0	0	0	0	1532
Adina cordifolia	28	18390	42254	64585	0	29118	0	0	0	0	0	154347
Aegle marmelos	32	437	0	0	0	0	0	0	0	0	0	437
Agalia andamanica	35	1313	0	0	0	0	0	0	0	0	0	1313
Albizzia procera	50	875	0	0	0	0	0	0	0	0	0	875
Albizzia species	51	2627	5911	0	0	0	0	0	0	0	0	8538
Anogeissus latifolia	72	90201	55828	49698	33059	48822	0	0	0	0	0	277608
Bauhinia purpurea	114	1094	0	0	0	0	0	0	0	0	0	1094
Bauhinia retusa	116	218	0	0	0	0	0	0	0	0	0	218
Bauhinia species	118	6349	3284	0	0	0	0	0	0	0	0	9633
Bombax ceiba	131	1094	0	0	0	23863	0	0	0	0	0	24957
Boswellia serrata	133	10946	35905	26491	15763	22769	0	0	0	0	0	111874
Bridelia retusa	138	1970	3940	0	0	0	0	0	0	0	0	5910
Buchanania lanzan	143	347449	220905	71810	26272	0	0	0	0	0	0	666436
Butea monosperma	146	19047	37875	32183	0	0	0	0	60644	0	0	149749
Callicarpa arborea	150	1532	0	0	0	0	0	0	0	0	0	1532
Calophyllum wightianum	160	656	0	0	0	0	0	0	0	0	0	656
Careya arborea	177	1313	0	0	0	0	0	0	0	0	0	1313
Casearia graveolens	181	437	0	0	0	0	0	0	0	0	0	437
Casearia tomentosa	183	2627	0	0	0	0	0	0	0	0	0	2627
Casearia species	185	1532	0	0	0	0	0	0	0	0	0	1532
Cassia fistula	186	3065	0	0	0	0	0	0	0	0	0	3065
Cassia siamea	188	875	0	0	0	0	0	0	0	0	0	875

Cont. of Table no.4.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Cedrela serrata	197	6786	0	6130	12479	0	0	0	0	0	0	25395
Chloroxylon swietenia	206	1532	0	0	0	0	0	0	0	0	0	1532
Cleistanthus collinus	218	1970	0	0	0	0	0	0	0	0	0	1970
Cochlospermum religiosum	223	7005	7005	0	0	0	0	0	0	0	0	14010
Diospyros melanoxylon	285	123917	71810	36781	59550	0	0	41378	0	0	0	333436
Diospyros species	292	1532	2846	0	0	0	0	0	0	0	0	4378
Emblica officinalis	325	10508	0	8757	0	0	0	0	0	0	0	19265
Erythrina variegata	341	218	0	0	0	0	0	0	0	0	0	218
Eucalyptus hybrid	346	437	0	0	0	0	0	0	0	0	0	437
Eugenia cymosa	350	0	0	13573	15325	0	0	0	0	0	0	28898
Eugenia formosa	352	437	0	0	0	0	0	0	0	0	0	437
Eugenia species	358	875	0	0	0	0	0	0	0	0	0	875
Ficus bengalensis	375	3065	9852	0	0	0	37656	0	0	71591	0	122164
Ficus religiosa	381	2189	9852	6568	0	23863	0	50355	0	0	0	92827
Ficus recemosa	382	0	0	0	16857	0	0	0	0	0	0	16857
Ficus species	385	0	3940	7005	13136	21017	59550	0	0	0	0	104648
Flacourtia indica	389	4159	0	6130	0	0	0	0	0	0	0	10289
Gardenia resinifera	405	3065	0	0	0	0	0	0	0	0	0	3065
Gmelina arborea	420	11822	3940	0	0	0	0	0	0	0	0	15762
Hollarrhena antidysenterica	452	1313	0	0	0	0	0	0	0	0	0	1313
Holoptelea integrifolia	456	218	0	0	0	0	0	0	0	0	0	218
Kydia calycina	501	656	0	0	0	0	0	0	0	0	0	656
Lagerstroemia parviflora	505	17295	9633	6130	12479	0	0	0	0	0	0	45537
Lannea coromandelica	509	47946	15325	26272	0	0	0	0	0	0	0	89543
Madhuca latifolia	561	73343	112970	161136	172520	42035	34153	0	0	0	0	596157
Mallotus philippinensis	565	3721	0	0	0	0	0	0	0	0	0	3721
Mangifera indica	569	3502	16420	20142	0	26710	28680	0	0	0	0	95454
Miliusa tomentosa	605	875	2189	0	0	0	0	0	0	0	0	3064
Mitragyna parviflora	611	4597	3502	8100	0	0	0	0	0	0	0	16199
Morinda tinctoria	613	875	0	0	0	0	0	0	0	0	0	875
Nyctanthes arbortristis	637	656	0	0	0	0	0	0	0	0	0	656
Ougeinia dalbergoiides	653	7005	5254	17514	0	0	0	0	0	0	0	29773
Pongamia pinnata	701	5473	4378	0	0	0	0	0	0	0	0	9851
Pterocarpus marsupium	722	9633	18609	7005	0	0	0	0	0	0	0	35247
Saccopetalum tomentosum	770	7224	0	0	0	0	0	0	0	0	0	7224

Cont. of Table no.4.1

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Schleichera trijuga	795	14668	40284	70716	111656	91733	29775	0	0	0	0	358832
Schrebera swietenioides	796	218	0	0	0	0	0	0	0	0	0	218
Semecarpus anacardium	798	59769	20579	15325	12479	0	0	0	0	0	0	108152
Shorea robusta	802	2052077	1582462	889532	291621	137053	91295	121946	99834	0	0	5265820
Spondias pinnata	812	1532	4816	0	0	0	0	0	0	0	0	6348
Sterculia villosa	821	437	2627	0	0	0	0	0	0	0	0	3064
Sterculia species	822	1532	0	0	0	0	0	0	0	0	0	1532
Stereospermum angstifolium	823	437	0	0	0	0	0	0	0	0	0	437
Stereospermum suaveolens	825	2189	0	0	0	0	0	0	0	0	0	2189
Strychnos potatorum	832	3502	14449	18609	0	0	0	0	0	0	0	36560
Symplocos crataegoides	838	5254	0	0	0	0	0	0	0	0	0	5254
Syzygium cumini	843	36124	66337	39846	26491	0	24958	0	0	0	0	193756
Syzygium species	850	1094	14668	0	0	0	0	0	0	0	0	15762
Terminalia arjuna	860	0	0	0	17733	0	0	0	0	0	0	17733
Terminalia belerica	861	8100	10071	19704	13136	0	0	0	0	0	0	51011
Terminalia tialata	862	656	0	6130	0	0	0	0	0	0	0	6786
Terminalia chebula	864	26491	31745	21017	15982	0	0	0	0	0	0	95235
Terminalia crenulata	866	165733	171863	104650	150627	21893	0	0	0	0	0	614766
Terminalia paniculata	869	656	0	0	0	0	0	0	0	0	0	656
Zizyphus mauritiana	927	3502	5254	0	0	0	0	0	0	0	0	8756
Zizyphus species	930	1970	0	0	0	0	0	0	0	0	0	1970
Unidentified trees	944	54076	36124	17076	0	0	0	0	0	0	0	107276
TOTAL		3321196	2704706	1778615	1017165	488876	306067	213679	160478	71591	0	10062373

TABLE NO.4.2

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

STRATA-:MISCELLANEOUS DISTRICT: RANCHI

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Acacia catechu	6	304	0	0	0	0	0	0	0	0	0	304
Acer laevigatum	17	11181	3557	0	0	0	0	0	0	0	0	14738
Adina cordifolia	28	27140	19923	32019	40557	0	0	118114	0	0	118521	356274
Aegle marmelos	32	2236	8741	0	0	0	0	0	0	0	0	10977
Albizzia species	51	5997	0	0	0	0	0	0	0	0	0	5997
Anogeissus latifolia	72	103477	116895	50620	42692	0	0	0	0	0	0	313684
Anogeissus pendula	73	1016	0	0	0	0	0	0	0	0	0	1016
Bauhinia purpurea	114	0	3964	0	0	0	0	0	0	0	0	3964
Bauhinia retusa	116	7013	7217	6505	0	0	0	0	0	0	0	20735
Bauhinia species	118	6912	4777	0	0	0	0	0	0	0	0	11689
Bombax ceiba	131	2439	0	13112	0	0	0	0	0	0	0	15551
Boswellia serrata	133	17585	26733	26021	12096	23785	0	0	0	0	0	106220
Bridelia retusa	138	5997	3557	20736	0	0	0	0	0	0	0	30290
Buchanania lanzan	143	125840	63326	36085	0	0	0	0	0	0	0	225251
Butea monosperma	146	24903	49299	45843	28461	40354	0	0	0	0	0	188860
Canarium resiniferum	166	1524	0	0	0	0	0	0	0	0	0	1524
Careya arborea	177	2236	0	0	0	0	0	0	0	0	0	2236
Casearia graveolens	181	4879	7826	0	0	0	0	0	0	0	0	12705
Cassia fistula	186	9554	0	0	0	0	0	0	0	0	0	9554
Chloroxylon swietenia	206	19008	6403	6505	0	0	0	0	0	0	0	31916
Chukrasia species	209	3456	0	0	0	0	0	0	0	0	0	3456
Cleistanthus collinus	218	29172	38321	14129	0	0	0	0	0	0	0	81622
Cochlospermum religiosum	223	2134	0	0	0	0	0	0	0	0	0	2134
Cryptomeria japonica	256	0	0	6505	0	0	0	0	0	0	0	6505

CONT. OF TABLE NO.4.2

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Dalbergia sissoo	268	406	2236	0	0	0	0	0	0	0	0	2642
Dalbergia species	269	2541	6098	0	0	0	0	0	0	0	0	8639
Dillenia pentagyna	278	1931	0	0	0	0	0	0	0	0	0	1931
Diospyros melanoxylon	285	45843	101343	53263	59057	19313	0	0	0	0	0	278819
Emblica officinalis	325	4370	3151	0	0	0	0	0	0	0	0	7521
Erythrina variegata	341	1829	0	0	0	0	0	0	0	0	0	1829
Erythrina species	342	0	6098	0	0	0	0	0	0	0	0	6098
Ficus bengalensis	375	0	0	9859	0	0	0	0	56109	0	0	65968
Ficus religiosa	381	1728	6708	0	17686	0	0	0	0	0	85282	111404
Ficus species	385	4777	27648	13112	15348	0	28766	0	0	76540	0	166191
Flacourtia indica	389	2236	4269	0	0	0	0	0	0	0	0	6505
Flacourtia species	391	813	0	0	0	0	0	0	0	0	0	813
Fraxinus species	394	508	0	0	0	0	0	0	0	0	0	508
Gardenia resinifera	405	11587	16873	22769	0	0	0	0	0	0	0	51229
Garuga pinnata	407	1931	0	8131	0	0	0	0	0	0	0	10062
Gmelina arborea	420	1728	2846	0	0	0	0	0	0	0	0	4574
Grewia tiliaefolia	431	711	0	0	0	0	0	0	0	0	0	711
Grewia species	432	1524	0	6505	0	0	0	0	0	0	0	8029
Hollarrhena antidysenterica	452	7420	0	0	0	0	0	0	0	0	0	7420
Holoptelea integrifolia	456	2642	4269	7013	0	0	0	0	0	0	0	13924
Hymenodictyon excelsum	470	1728	0	0	0	0	0	0	0	0	0	1728
Kydia calycina	501	1016	0	0	0	0	0	0	0	0	0	1016
Lagerstroemia hypoleuca	502	304	0	0	0	0	0	0	0	0	0	304
Lagerstroemia parviflora	505	31205	22464	14129	0	0	0	0	0	0	0	67798
Lagerstroemia species	507	1219	0	0	0	0	0	0	0	0	0	1219
Lannea coromandelica	509	49299	30494	32019	0	0	0	0	0	0	0	111812
Macaranga species	550	406	0	0	0	0	0	0	0	0	0	406

CONT. OF TABLE NO.4.2

SPECIES NAME	CODE	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	TOTAL
Madhuca latifolia	561	44420	69527	74507	132040	92702	65258	80098	0	0	0	558552
Mallotus philippinensis	565	2337	0	0	0	0	0	0	0	0	0	2337
Mallotus species	566	1728	0	0	0	0	0	0	0	0	0	1728
Mangifera indica	569	0	7115	8640	16060	41269	0	42590	59057	0	0	174731
Miliusa tomentosa	605	3151	3964	0	0	0	0	0	0	0	0	7115
Mitragyna parviflora	611	5590	3151	0	13112	0	0	0	0	0	0	21853
Morinda tinctoria	613	304	0	0	0	0	0	0	0	0	0	304
Nyctanthes arbortristis	637	3862	2236	0	0	0	0	0	0	0	0	6098
Ougeinia dalbergoides	653	0	9859	11079	0	0	0	0	0	0	0	20938
Pongamia pinnata	701	508	0	13112	0	0	0	0	0	0	0	13620
Pterocarpus marsupium	722	813	4269	6505	0	0	0	0	0	0	0	11587
Saccopetalum tomentosum	770	2134	0	0	0	0	0	0	0	0	0	2134
Schleichera trijuga	795	11384	49197	115472	150540	40354	28766	46453	60582	0	0	502748
Semecarpus anacardium	798	21955	2236	0	0	0	0	0	0	0	0	24191
Shorea robusta	802	121672	176969	91178	58041	0	0	0	0	0	0	447860
Spondias pinnata	812	711	0	0	0	0	0	0	0	0	0	711
Sterculia villosa	821	4980	10876	0	0	0	0	0	0	0	0	15856
Stereospermum suaveolens	825	3659	3557	0	0	0	0	0	0	0	0	7216
Stereospermum xylocarpum	826	1931	0	0	0	0	0	0	0	0	0	1931
Strychnos potatorum	832	6607	7623	0	0	0	0	0	0	0	0	14230
Symplocos crataegoides	838	1626	0	0	0	0	0	0	0	0	0	1626
Syzygium cumini	843	4167	7928	5488	8843	0	0	0	0	45030	0	71456
Syzygium species	850	0	5184	0	0	0	0	0	0	0	0	5184
Terminalia arjuna	860	3151	12909	27851	0	0	29782	0	0	0	0	73693
Terminalia belerica	861	1016	8436	0	0	0	0	0	0	0	0	9452
Terminalia chebula	864	11587	25513	8640	12401	0	0	0	0	0	0	58141
Terminalia crenulata	866	68307	72983	68205	35170	22769	0	0	0	0	0	267434
Wrightia gigantea	911	0	3964	0	0	0	0	0	0	0	0	3964
Xylia xylocarpa	919	0	8640	0	0	0	0	0	0	0	0	8640
Zizyphus mauritiana	927	7420	0	6098	0	0	0	0	0	0	0	13518
Zizyphus species	930	4574	5488	0	0	0	0	0	0	0	0	10062
Unidentified trees	944	54686	54991	31714	27648	0	0	0	0	0	0	169039
TOTAL		987985	1151651	893369	669752	280546	152572	287255	175748	121570	203803	4924251