

RESULTS OF PLANTATION INVENTORY IN  
DARJEELING AND KALIMPONG DIVISIONS  
OF  
WEST BENGAL



**FOREST SURVEY OF INDIA**  
EASTERN ZONE  
**1987**

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## P R E F A C E

The plantation inventory work in Darjeeling and Kalimpong Division of West Bengal was carried out during the period 1981-82-83 under the supervision of S/Shri J.N. Bhattacharjee & B.M. Dev, Assistant Directors. The methodology and statistical design followed had been given by the Statistical Unit of the FSI at the Headquarters(Dehradun). The inventory survey was confined to the plantation areas of the two forest divisions falling under the West Bengal Forest Development Corporation and aimed at estimating the total growing stock of the plantations. The data collected in the field were processed electronically at the Regional Computer Centre, Calcutta by the Statistical Section of the Eastern Zone. The inventory report has been written by Shri P.Senupta, Deputy Director under the guidance of Shri S.C.Dey, Joint Director who also scrutinised the report and edited the same.

The results of the plantation inventory indicate that some plantations have deteriorated and require immediate protection. While the conversion of the high forest into plantations in Darjeeling Division has increased the volume of the stand to the extent of 1½ times besides introducing a number of more valuable species. The results for Kalimpong Division are not yet conclusive. The average volume of stand per hectare in Darjeeling Division has worked out to  $97.65\text{ m}^3$  while that for Kalimpong Division to  $90.12\text{ m}^3$ . The average volume per hectare of plantations raised prior to 1925 in Darjeeling and Kalimpong Divisions is  $198\text{ m}^3/\text{ha}$ . and  $103\text{ m}^3/\text{ha}$ . respectively.

The results presented in this report regarding the volume of growing stock in the survey areas in question indicate wide variance from those of the forest resources survey of plantations carried out in the same areas by the State Forest Department during 1973 and 1975. During the course of the present plantation inventory in the Darjeeling and Kalimpong Divisions, it has been noticed that in the Darjeeling Division, the growing stock is only  $930.145(1000\text{ m}^3)$  which is much lower than the estimate of  $1370.4277(1000\text{ m}^3)$  as arrived at by the State Forest Department in 1973.

....contd....

It is hoped that the results presented in this report will help the State Forest Department to have a complete picture of the plantations in the area according to age groups besides the success and failure of the individual species. This will also give them a picture of the damage suffered by the various plantations, showing the vulnerable age groups and species. The observations made in the report will help them to take suitable corrective measures in the various areas and plan their future plantation programmes in a more fruitful manner.

The field staff of Eastern Zone has worked hard to complete the inventory within a short period in a hilly and difficult terrain. In completing this work, the staff of Statistical Section as well as the Stenographers also contributed substantially. They all deserve to be complimented for this work. I thank the Chief Conservator Of Forests, West Bengal, Managing Director, West Bengal Forest Development Corporation Limited, the Divisional Forest Officers concerned and also the Civil authorities in the Darjeeling and Kalimpong Sub-Divisions who extended all cooperation to FSI in carrying out the plantation inventory work smoothly and successfully.

Sd/-  
(N.K.AGRAWALA )  
DIRECTOR

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## C H A P T E R - I.

### BACKGROUND INFORMATION

#### 1.1. Introduction:

Plantation inventory work was carried out in the project area of West Bengal Forest Development Corporation Limited situated in the Darjeeling District of West Bengal as per the special request of the Chief Conservator Of Forests, West Bengal. Plantations are situated in hilly terrain at various altitudes from 100 m. in the foot hills of Kalimpong civil sub-division to higher hills ranging up to 3700 m. at Sandakphu-Phalut ranges lying in Darjeeling civil sub-division. Plantation activities in these areas date back to as early as 1869 when indigenous Oaks and exotics like Cedrus deodara and Cryptomeria japonica were tried near Jorebungalow. Subsequently, plantations were raised in places like Rangbul, Dochteria, Rangirum, Poomong lying in Darjeeling Division only. Regeneration plans at that time aimed at the introduction of Cryptomeria and various other indigenous species like Toona(Cedrela toona), Pipil(Bucklandia populnea), Oaks (Quercus spp.), Kawla (Machilus species) with an objective to produce building timber, furniture wood, box planking and fuelwood. Between 1920 and 1935 hundreds of hectares were planted with pure Dhupi(Cryptomeria japonica). Subsequently, it was noticed that Dhupi(Cryptomeria japonica) was unsuitable as a source of timber and there was a decline in creation of Dhupi plantations. From 1949 Dhupi (Cryptomeria japonica) was re-introduced as a source of pulpwood. It is stated that Cryptomeria japonica can yield 15 to 20 tonnes per annum per hectare (Source: West Bengal Forests, Centenary Commemoration Volume, 1964).

Introduction of Teak(Tectona grandis) and Sal (Shorea robusta) in early 1930 is very important. Currently Teak(Tectona grandis) is planted in the project area of West Bengal Forest Development Corporation Ltd. to an appreciable extent. Sal(Shorea robusta) plantations are found mostly within the limits of erstwhile Kalimpong Forest Division.

1.2. Location:

The present area of study falls within the territorial limits of erstwhile Darjeeling and Kalimpeng Forest Divisions. The locations of the forest divisions are as follows:-

<u>Forest Division</u>	<u>Location</u>
Darjeeling	87° 59' and 88° 28' E.Longitude 26° 56' and 27° 4' N.Latitude
Kalimpeng	88° 56' and 88° 28' E.Longitude 27° 12' and 26° 05' N.Latitude

1.3. Physical setting:

Darjeeling District is a tangled mass of hilly country having a very rugged topography. Steep slopes, knife edged ridges, concave and deep gorges are not uncommon.

Rivers like Tista, Lish, Ghish, Neera, Murti, Jaldhaka, Chel, Little and Great Rangit are flowing from the Darjeeling Himalayas. The entire forest and plantations of the area under West Bengal Forest Development Corporation, Ltd. form the catchment area of the above mentioned rivers. These rivers are not navigable in the hilly tract and are extremely bouldery.

1.4. Climate:

The Civil Sub-divisions of Darjeeling and Kalimpeng experience heavy rainfall and severe winter. But weather is attractive between March to May and October to November when tourists move to Darjeeling and Kalimpeng in large numbers. Meteorological data for Darjeeling can be perused from the following table:-

Av. mean max. temper- ature in °C.	Average mean temper- ature in °C.	Average minimum temperature in °C.	Average relative humidity. (in %)	Average annual rainfall in mm.
16.7	10.2	82		2812.2

1.5. High Forests:

High forests in the hilly tracts under study can be grouped into:-

1. Lower hill forests upto 1000 m.
2. Middle hill forests from 1000 m. to 1800 m.
3. Upper hill forests from 1800 m. to 3200 m.

The lower hill forests occupy considerable portion in erstwhile Kalimpong Division where Sal (Shorea robusta) is conspicuously present along ridges. Along with Sal (Shorea robusta) other important species are Paccasaj (Terminalia tomentosa), Chilauni (Schima wallichii), Toon (Cedrela toona), Panisaj (Terminalia myriocarpa), Lampati (Dubanga sonneratiioides), Gamari (Gmelina arborea) etc.

The middle hill forests are distributed in both the Divisions but is more extensive in Kalimpong portion. The chief species are Alder or Utia (Alnus nepalensis) Birch or Saur (Betula alnoides) Chestnut (Castanopsis spp.) Lekh toon (Cedrela febrifuga) Angare (Phoebe spp.) Mahwa (Engelhardtia spp.) etc.

Upper hill forests are characterised by over-mature Oaks, Laurels and Magnolias. The Oaks are Buk (Quercus lamellosa) Phalant (Quercus lineata), Sungre Katus (Quercus pachyphylla). Katus (Castanopsis hystrix), Kapasi (Acer spp.), Ranichamp (Michelia excelsa), Kawla (Machilus spp.), Ghoge champ (Magnolia campbellii) etc. are also common.

It appears from available records that yield of timber from the high forests of Darjeeling Division can be up to 126.00 m<sup>3</sup> (Source: West Bengal Forests, Centenary Commemoration Volume, 1964) per hectare on an average when clearfelled as against 150 m<sup>3</sup>/ha. in Kalimpong Division. Poor yield from forests and less availability of commercially important species made it necessary to convert the forests into plantations with species of economic importance.

1.6. Plantations:

In Darjeeling Forest Division Shorea robusta, Dusabanga sonneratoides, Terminalia myriocarpa, Tectona grandis, Gmelina arborea are raised up to an altitude of 1000 m. in Sambhong and Simlighora Extn. Blocks. Plantations of Tectona grandis in Riang and Geil Blocks also fall within this altitude Zone. Beyond 1000 m. and upto 2200 m. Misc. Hard woods spp. are raised along with conifers like Cryptomeria japonica and Cupressus kashmiriana. Misc. hardwood species occur largely in plantations of Rongbong, Rambi, Rishap, Sonada, Dooteria blocks lying in the altitude zone from 1000 to 2200 m. Misc. hardwood include various species of Quercus like Quercus lanellosa, Quercus lineata; and species of Machilus are represented by Machilus odoratissima, Machilus edulis. Besides these other species like Alnus nepalensis, Acer spp., Bucklandia populnea, Castanopsis species are also found within this altitude zone. Pure plantations of Cryptomeria japonica can be seen in Lopchu, Pumong, Majhidura, Sukhia-Pokhri, Poobong, Tomsong & Ghumsimana blocks.

(Some

Beyond 2200 m. proportion of conifers decreases and that of misc. hardwood increases. Plantation in Darjeeling Division can be seen up to 3600 m. in Sandakphu, Phalut & Sabarkum blocks where Hemlock and Abies densa were planted. Miscellaneous hardwood up to 3600 m. include species of Quercus, Betula, Machilus, Michelia, Prunus, Magnolia, Alnus etc. Besides Cryptomeria japonica, there are other conifers in this zone which include Tsuga brumeniana and Pinus patula. In North Rimbik block plantations of Tsuga brumeniana can be seen beyond 2200 m.. In Ramam block there are very good plantations of Pinus patula in this zone. Cryptomeria japonica occurs in higher altitude of even upto 3000 m. in Sabarkum and Sandakphu blocks along with Alnus, Betula and Hemlock.

Plantations of Kalimpong Division are located in various physiography which starts from almost plain areas of Mongpong, Mal & Khumani blocks and adjoining areas having altitude of 300 m. Misc. hardwoods are commonly found in this zone which

include, Terminalia tomentosa, Dubanga sonneratoides, Schima wallichii, Albizzia species, Tectona grandis, Cassia siamia, Shorea robusta, Bombax ceiba, Michelia champaca, Anthocephalus cadamba, Arocarpus fraxinifolius, Ailanthus grandis etc. Gradually the terrain becomes steep through Ghel, Lish, Churanti, Dalimkote, Ambick, Mongpong, Sakam & Eastmar Blocks. The characteristics plantations of foot hills continues up to an elevation of 650 m. to 700 m. approximately. Plantations of Shorea robusta under Kalimpong Range fall in the foot hills. Similarly Tectona grandis also occur largely in this zone.

Zone. Above 650 to 700 m. (various hard wood species are found. This situation continues up to 1800 m. and species like Machilus, Alcimandra cathartii, Bucklandia populnea, Quercus lineata, Schima wallichii, Alnus nepalensis, Betula alnoidea, Terminalia myriocarpa are found in plantations of this zone.

Various hard wood species continues up to 2100 m. and they are found in plantations of Rissum, Itchey, Paingaon, Upper Sangser, Damsong, Merong blocks. In this case Conifer like Cryptomeria japonica is less in occurrence which can be seen in the plantations of Rissum, Lava, Khompong, Merong, Kolbong, Bokhim and Chumang blocks mainly. In fact Cryptomeria japonica bearing areas in Kalimpong Division are found largely in altitude zone of 2100 m or more. In this altitudinal level miscellaneous hard wood like Alnus nepalensis, Acer campbelli, Michelia excelsa, Castanopsis spp. can be seen also.

#### 1.7. Forest administration:

Prior to the creation of West Bengal Forest Development Corporation Ltd. only two forest divisions existed in the area.

<u>Forest Division</u>	<u>Area in sq. km.</u>
Darjeeling	294.02
Kalimpong	528.18

After creation of West Bengal Forest Development Corporation Ltd. the above two forest divisions have been reorganised in the following manner:

<u>Administrative units</u>	<u>Headquarters</u>
Darjeeling (General Division)	Darjeeling
Darjeeling (Special Division)	Darjeeling
Kalimpong (General Division)	Kalimpong.
Kalimpong (Special Division)	Kalimpong.

All these forest divisions are working with a common aim to convert the overmature forests into plantations of economic importance. Working units like ranges and beats have been made smaller in size to tackle the programme of increased clearfelling, departmental operation and subsequent activities of raising plantations.

C H A P T E R - II  
INVESTIGATION AND METHODOLOGY

**2.1. Design:**

Plantations were selected for sampling with probability proportional to the size of the plantations since individual plantation under each species varies considerably in area in a year. Two plots were randomly considered in case of each plantations selected for sampling.

**2.2. Selection of plantations:**

Two random numbers were selected from random number tables; one in the range of total number of plantations in a group or stratum and the other in the range of maximum area of a plantation in that group. If the area of the plantation corresponding to the first selected number is greater than the second selected number, the plantation is included in the sample otherwise second pair of random numbers are selected and the same process is continued till the required number of Plantations are selected for sampling.

**2.3. Lay out of plots:**

Three types of plots were laid for sampling in the plantations depending on the age of plantations. For this purpose plantations were stratified as indicated hereunder. Plot sizes in each sampling unit in various strata are furnished below:-

<u>Stratum</u>	<u>Year of plantations</u>	<u>Plot sizes(ha.)</u>
I	Upto 1925	0.1
II	From 1926 to 1945	0.05
III	From 1946 to 1955	0.05
IV	From 1956 to 1965	0.025
V	From 1965 to 1975	0.025

2.3.1. Plot size 0.1 ha.:

The plot centre represents intersection of two diagonals. Diagonals measure 44.72 m. in N-S and E-W directions. Each side of square is 31.62 m. From the plot centre horizontal distance of 22.36 m. were measured in the directions N, S, E and W where the corners of the plots were found.

2.3.2 Plot size 0.03 ha.:

Each side of the square is 22.36 m. Laying out of plot was done in the procedure mentioned in para 2.3.1; corner of the plots were found by measuring 15.81 m. from plot centre in N, S, E & W directions.

2.3.3 Plot size 0.025 ha.:

Each side of the plot measuring 15.81 m. Laying out plot was done as stated in para 2.3.1 by taking horizontal distance of 11.18 m. in N, S, E & W directions from plot centre.

2.4. Area statement by stratum:

The project area under consideration was stratified as follows:-

District	Sub-divisions	Stratum	Area in ha.
Darjeeling	Darjeeling	I	742.53
		II	1988.70
		III	1376.96
		IV	2208.71
		V	<u>3165.90</u>
		Total:	9482.80
Darjeeling	Kalimpong	I	683.48
		II	2575.20
		III	1287.21
		IV	2568.89
		V	<u>3324.35</u>
		Total:	10439.13

2.5. Slope study in plantations:

Areas under study cover plantations raised after clearfelling of high forests. Slope study in Darjeeling and Kalimpong plantation areas indicate nature of terrain tackled for plantation activities in past and in recent years. The position is as follows:-

Slope %	% Area under Plantations	
	Darjeeling	Kalimpong
Upto 30	23	64
30 to 45	27	20
46 to 60	28	11
Above 60	22	5

Plantations are located in easier topography in Kalimpong Division whereas in Darjeeling Division many plantations(50%) are located in steep areas. Felling of forests and planting in slopes above 60% may be detrimental from ecological point of view. However, such clearfelling and planting activities were more in earlier years in the period between 1908 to 1950. Presently plantation activities are confined to less steep areas. Working of these plantations in future may be decided with due caution to avoid soil erosion, occurrence of landslides and slips which are serious problems in the hilly terrain of Darjeeling District.

2.6. Soil depth and humus in plantations:

Study of soil depth and humus formation in the plantations of Darjeeling and Kalimpong divisions indicate the following:-

- (i) Soil in general is deep in Darjeeling division.
- III) Soil is deep to medium in Kalimpong Division.

Distribution of sampling units in various categories of soil depth and humus in plantation areas of Darjeeling and Kalimpong divisions may be summarised as below:-

Division	Humus	Percentage of sampling units				
		No soil humus	Very shallow	Shallow	Medium	Deep
Darjeeling	Shallow	Nil	0.4	0.8	2.2	54.3
	Medium	0.4	Nil	Nil	1.1	34.0
	Deep	Nil	Nil	Nil	Nil	1.1
	No humus	0.4	Nil	Nil	0.8	4.5
Kalimpong	Shallow	Nil	0.2	2.9	49.4	39.3
	Medium	Nil	Nil	Nil	2.4	4.6
	Deep	Nil	Nil	Nil	Nil	0.8
	No humus	0.2	Nil	0.2	Nil	Nil

Humus formation in Darjeeling Division is largely shallow but medium humus formation is also noticed. These categories represent more than 88% of the area in Darjeeling Division sampled during survey. In Kalimpong division also humus formation is largely shallow. More than 88% of the area sampled during survey indicate the shallow nature of humus formation.

Regarding depth of soil, it is noticed that soil depth is better in Darjeeling compared to the same in Kalimpong.

2.7. Aspect:

Plantations in Darjeeling and Kalimpong divisions were raised in all aspects. Major plantations are, however, located on the following aspects:

Aspect with major plantations.	As % of total plantation area		Remarks
	Darjeeling	Kalimpong	
Northern	12.7	- 0	A, B does
North Eastern	15.3	- 0 B	not represent
Eastern	13.8	- 0	plantation
South Eastern	14.6	15.9	area.
Southern	16.1	23.5	
South Western	- 0 A	19.9	
North Western	- 0	13.00	
Total:	72.5%	72.3%	

C H A P T E R - III

DATA ANALYSIS.

3.1. General:

Field data were collected from the sample plots of selected plantations in Darjeeling and Kalimpong Divisions. 682 sample plots were laid in the plantations in the following manner:-

Stratum	No. of sample plots	
	Darjeeling	Kalimpong
I	31	24
II	87	126
III	60	46
IV	64	112
V	13	119

The field data collected from plantations of various strata were processed in Electronic Computer. Actually the data processing involved manual checking, processing in Unit Record Machine and processing by Electronic Data Processing System.

3.2. Manual processing:

Manual processing of data collected in field forms includes following steps:-

1. Documentation in field forms were checked with reference to the instructions contained in the manual of Forest Survey Of India.
2. All codes used in field forms were checked and discrepancies were rectified.

3.3. Processing in Unit Record Machine:

This include following steps:-

- 1) Punching of field data on cards.
- 2) Verification of all the punched cards.
- 3) Sorting and collating the cards for proper input to Electronic Computer.
- 4) Rectification of omissions and duplication in punched cards before actual data processing.

#### 3.4. Electronic Data Processing:

In this stage the data are sent for processing which includes following steps:-

1. Loading the data in magnetic disk pack.
2. Detection of invalid character.
3. Consistency checking of input data and doing necessary corrections.
4. Actual processing of data for:-
  - (a) Stand table preparation.
  - (b) Calculation of tree volume.
  - (c) Preparation of stock tables.
  - (d) Developing suitable volume equations in respect of some important species for preparation of the volume tables.

#### 3.5. General volume equations:

General volume equations were developed for Cryptomeria japonica, Shorea robusta and Tectona grandis from available felled tree data. In this context it may be mentioned that felled tree data for Cryptomeria japonica were collected by F.S.I. by actual felling of trees at the time of inventory. However, in case of Shorea robusta and Tectona grandis data were collected from the records maintained in the Office of the Divisional Forest Officer, Silviculture Division(North) Darjeeling.

The general volume equations developed in this case are:

$$\text{Cryptomeria japonica} : V = 0.0069 + 0.08259 D^2 H + 1.8946 D^2.$$

$$\text{Shorea robusta} : V/D^2 = 0.7781 + 0.02924 H - 0.331556/D^2.$$

$$\text{Tectona grandis} : V/D^2 H = 0.22875 + 0.00176/D^2 H$$

V = Volume (o.b.) in  $m^3$

D = Diameter(o.b.) at breast height in m.

H = Height of the tree in m.

3.6. Local volume equations:

Local volume equations for Cryptomeria japonica, Tectona grandis and Shorea robusta as developed from General volume equations are as follows:-

Species name	Equations developed	R	S.E.
<u>Cryptomeria japonica</u>	$V = -0.01097 + 5.30991 D^2$	0.99876	0.00916
<u>Shorea robusta</u>	$V/D^2 = 9.78645 - 0.32546/D^2$	0.98073	0.52547
<u>Tectona grandis</u>	$V/D = -0.65623 + 0.00341/D + 7.881 D$	0.97641	0.1926

R = Multiple Regression co-efficient.

SE = Standard Error

V = Volume in  $m^3$ .

D = Diameter in cm.

The volume is calculated on diameter over bark in confirmity with the practice in the State Forest Department. Actually with the help of local volume equations, the volume of trees in various diameter classes were computed on Electronic Computer. This provided the basis of volume calculation of the three species mentioned above which are the most important species in the plantations of the area.

3.7. Volume calculation by volume tables:

Calculation of volume for other species was done on the basis of volume tables of the State Forest Department.

*↳ be* Trees below 10 cm. diameter could not/accounted for volume calculation as the volume tables provided by State Forest Department do not include trees below 30 cm. girth(10,cm. diameter roughly) for the purpose of any volumetric calculation. Thus this report does not include any volumetric information for trees below 10 cm. diameter or 30 cm. girth.

3.8. Cull volume study:

*↳ volume* No cull/study was undertaken for any species.

3.9. Bark volume:

No bark volume study was undertaken for any species.

3.10 Processing of thinning marking data:

Immediately after the completion of plantation inventory the State Forest Department carried out thinning marking in the present area of study in Darjeeling and Kalimpong Divisions. As a result of this marking and subsequent removal of trees from plantations, there will be some reduction of stems and volume in each stratum. This variation has been accounted in this report. Data in respect of thinning marking of plantations were collected from the office of the Divisional Forest Officer, Cultural Operation Division, Siliguri and was processed on Electronic Computer.

3.11 Data analysis:

Processed data of inventory have been analysed and reported in Chapters IV - VII of this report. The analysis indicates various critical points in plantation management and present status of plantation.

Cryptomeria japonica constitutes a bulk portion of the crop in Darjeeling Division whereas the same does not constitute significantly in Kalimpong Division.

Tectona grandis and Shorea robusta are the most important species in Kalimpong Division. In Darjeeling Division monoculture of Cryptomeria japonica is a point of critical discussion. In Kalimpong Division plantations are mostly composed of many miscellaneous species which may be suited better in present context of timber demand.

Processed data of thinning marking have been analysed in Chapter VIII & IX of this report indicating nature of removal of stems and volume removal thereof. It may be pointed out that no plantation of Cryptomeria japonica was marked for thinning removal during this phase.

3.12 Error:

Errors for volume calculations in Darjeeling and Kalimpong Divisions were estimated separately irrespective of stratum and species. The error estimate indicate the percentage of standard error for stem timber and small wood separately, which

are given below:-

Division	Standard error %	
	Stem timber	Small wood
Darjeeling	± 8.2192	± 4.8778
Kalimpong	± 5.1206	± 3.7032

Estimates of above standard error percentage stands at 95% probability level. Further, the standard error % for total wood in the two divisions is as under:-

Division	Standard error %	
Darjeeling		3.893
Kalimpong		2.919

C H A P T E R - IV.

PLANTATION CROP ANALYSIS -  
DARJEELING DIVISION

4.1. Crop composition in Darjeeling Division by stratum:

Composition of crop in the plantations of Darjeeling Division varies considerably in different stratum. In stratum-I plantations have species like Terminalia benthamiae, Fagraea ciliata, Schima wallichii, Prunus species, Machilus species, Michelia species, Dysoxylum somereticoides and Cryptomeria japonica. Occurrence of Cryptomeria japonica is maximum in this stratum.

In stratum-II Cryptomeria japonica and Tsuga brunoniana constitute 37% of the total crop. These species occur in association with Castanopsis species, Michelia species, Terminalia myriocarpa and Tectona grandis. Introduction of Tectona grandis in those days was on experimental basis and occurrence of this species is nearly 3% of the total crop.

In stratum-III also Cryptomeria japonica occurs and it alone constitutes 26% of the total crop. Other important species in the stratum are Michelia species, Machilus species, Bucklandia populnea and Schima wallichii. Tsuga brunoniana and Shorea robusta is also found to occur in this stratum.

In stratum-IV Cryptomeria japonica constitutes 37% of the crop. Other species like Shorea robusta, Tectona grandis, Quercus species, Tsuga brunoniana etc. occur depending on the condition of soil and altitude of various plantations.

In stratum-V, Tectona grandis and Cryptomeria japonica are principal species. These species constitute 86% of the total crop composition. Alnus nepalensis also occurs in this stratum.

It may be worthwhile to mention that raising of a large number of species in the plantations have /in virtually been discontinued/the recent years from /be 1965/1966. Whatever/the prescription of working plan,

the results in the field in current years largely indicate trend towards monoculture.

Introduction of Alnus nepalensis on a large scale may be noticed in Stratum-V. It is relatively easier to raise the species and its survival percentage is also high. In stratum-IV also Alnus nepalensis occurs but its growth is not appreciable. Nearly 60% of the total stock of Alnus nepalensis in this stratum is below 30 cm. diameter. Introduction of Tectona grandis during 1930-40 is significant in Teesta valley range of Darjeeling Division. Tectona grandis seems to be growing well and the development of stands is also good. Species of Michelia and Machilus were planted with emphasis in earlier days. In recent years these species though not discarded are seen to be raised only sporadically. Species of Machilus and Michelia have registered poor growth and as a result 60% of the Michelia and Machilus species belong to lower diameter classes in stratum-I, II & III. Growth of conifers like Tsuga brunoniana and Pinus patula are encouraging but in recent plantations these are not found in any appreciable extent.

In general, attention in recent years has been given to raise fast growing species keeping in view the industrial requirement. Misceplanecus species found in older plantations are many in number and it may not be possible to suggest a correct silvicultural treatment for them to induce faster growth in field. Apart from this, miscellaneous species in Darjeeling Division really do not contribute much in crop composition and volume. Undernoted tabulation for a few species indicates their contribution by percentage to total crop in terms of number of stems:-

Stratum	Name of species	Percentage to total
I	<u>Acrocarpus fraxinifolius</u>	0.68
	<u>Acer spp.</u>	0.85
	<u>Bucklandia populnea</u>	0.68
	<u>Gmelina arborea</u>	1.20
	<u>Prunus spp.</u>	3.40
	<u>Shorea robusta</u>	0.34
	<u>Chukrasia tabularis</u>	0.54
II	<u>Magnolia spp.</u>	0.34
	<u>Prunus spp.</u>	1.08
	<u>Pinus patula</u>	2.78
	<u>Betula alnoides</u>	1.61
III	<u>Cinnamomum spp.</u>	2.15
	<u>Chukrasia tabularis</u>	0.54
	<u>Prunus spp.</u>	0.65
IV	<u>Betula alnoides</u>	0.27
	<u>Juglans regia</u>	0.54
	<u>Prunus spp.</u>	0.53

In stratum V, there are only a few species like Cryptomeria japonica, Tectona grandis, Alnus nepalensis etc. which are important and these species are raised gregariously depending on altitude.

#### 4.2. Contribution of important species:

Contribution of various species in different stratum can be studied from the information given below. It will appear that Cryptomeria japonica constitutes in most significant manner in all the strata. Tsuga brunoniana is also significant in stratum II, III & IV. Maximum occurrence of Cryptomeria japonica may be noticed in stratum-V.

The predominance of important species over all the five strata may be studied from the following table:-

Species	Stratum (Occurrence by %)				
	I	II	III	IV	V
<u>Alnus nepalensis</u>	2.00	-	4.00	-	11.00
<u>Bucklandia populnea</u>	-	7.00	3.00	-	-
<u>Castanopsis spp.</u>	-	2.10	-	3.00	-
<u>Cryptomeria japonica</u>	33.02	26.27	26.00	10.70	64.00
<u>Dubabanga sonneretiioides</u>	6.00	-	1.20	-	-
<u>Michelia spp.</u>	9.00	15.00	9.00	3.00	-
<u>Machilus spp.</u>	9.00	4.00	9.00	-	-
<u>Quercus spp.</u>	-	-	4.00	7.00	-
<u>Symplocos spp.</u>	-	3.25	3.00	3.00	-
<u>Shorea robusta</u>	-	-	7.00	4.00	-
<u>Schima wallitchii</u>	4.00	-	4.00	-	-
<u>Tsuga brunoniana</u>	-	17.00	3.00	6.00	-
<u>Terminalia myriocarpa</u>	3.42	2.00	-	-	-
<u>Tectona grandis</u>	-	3.00	-	22.00	22.00

4.3. Conifers and non-conifers:

The species listed above include both conifers and non-conifers. Proportion of conifers to non-conifers in the stratum can be summarised as below:-

Stratum      Rate of conifer to non-conifer stands

I	0.50
II	0.35
III	0.34
IV	0.67
V	1.7

Unit of non-conifer stand taken as 1.

It thus appears that in recent years much attention has been given to raise conifers in Darjeeling Division. Cryptomeria japonica is now planted on a very large scale. It may be recalled that Cryptomeria japonica is considered to be suitable as pulpwood and it alone constitutes 44% of the total stock of stand in Darjeeling Division, when considered irrespective of stratum. Besides this,

other important species are Tectona grandis and Shorea robusta. These species are considered to be highly important from economic point of view. Occurrence of these species along with Cryptomeria japonica constitute as much as 60.5% of the total stock of stands.

<u>Shorea robusta</u>	2.0%
<u>Tectona grandis</u>	14.5%
<u>Cryptomeria japonica</u>	44.0%

#### 4.4. Distribution by diameter classes

Study of distribution of main species by diameter class indicates that some species have registered poor growth. Cryptomeria japonica is found to occur in higher diameter classes in all stratum. Species studied are :-

1. Alnus nepalensis
2. Cryptomeria japonica
3. Castanopsis spp.
4. Dubabanga sonneratiioides
5. Machilus spp.
6. Michelia spp.
7. Pinus patula
8. Quercus spp.
9. Schima wallichii
10. Shorea robusta
11. Symplocos spicata
12. Tectona grandis
13. Toona ciliata
14. Tsuga brunoniana
15. Terminalia myriocarpa

DISTRIBUTION OF COMMERCIALY IMPORTANT SPECIES BY DIAMETER CLASS ( BY PERCENTAGE )

Stratum	Diameter classes(cm.): Occurrence by percentage					
	05-09	10-19	20-29	30-39	40-49	50-59
IV	-	-	-	-	-	-
V	-	-	-	-	-	-
<i>Machilus spp.</i>	-	32.00	32.00	30.00	6.00	-
I	-	56.00	36.00	7.00	1.00	-
II	-	71.00	29.00	-	-	-
III	-	100.00	-	-	-	-
IV	-	-	-	-	-	-
V	-	-	-	-	-	Absent
<i>Michelia spp.</i>	-	25.00	40.00	24.00	11.00	-
I	-	58.00	37.00	5.00	-	-
II	-	68.00	32.00	-	-	-
III	-	100.00	-	-	-	-
IV	-	-	-	-	-	-
V	-	-	-	-	-	Absent
<i>Pinus patula</i> :	-	-	-	-	-	Absent
I	-	37.00	63.00	-	-	-
II	-	-	-	-	-	-
III	-	-	-	-	-	Absent
IV	-	-	-	-	-	Absent
V	-	-	-	-	-	Absent
<i>Quercus spp.</i>	-	-	-	-	-	-
I	-	-	-	-	-	Insignificant in occurrence
II	-	-	-	-	-	Insignificant in occurrence
III	-	73.00	18.00	9.00	-	-



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Stratum	Diameter classes(cm.): Occurrence by percentage					
	05-09	10-19	20-29	30-39	40-49	50-59
IV	-	79.00	21.00	-	-	-
V	-	96.00	-	4.00	-	-

*Toona ciliata:*

I	-	-	-	50.00	50.00	-
II	-	-	-	-	-	-Insignificant in occurrence
III	-	-	-	-	-	Absent
IV	-	-	-	-	-	Absent
V	-	-	-	-	-	Absent

*Tsuga bruniiana:*

I	-	-	-	-	-	-Insignificant in occurrence
II	-	12.00	54.00	27.00	5.00	2.00
III	-	8.00	70.00	22.00	-	-
IV	-	57.00	32.00	11.00	-	-
V	-	-	-	-	-	Absent



Remarks in the tabulation include (i) insignificant and (ii) Absent. By insignificant occurrence it means that species occurs in the stratum but its frequency of occurrence is too insignificant. When it is marked as 'absent', it would mean that the species was absent in the sampling units in a particular stratum.

4.5. Crop height and diameter:

Sample tree data on analysis reveal crop height and diameter of some important species. For Cryptomeria japonica, some observed heights and diameters against age of plantations are furnished hereunder:

Diameter and height relationship for Cryptomeria japonica.

Sl.No.	Year of plantation	Stratum	Crop dia. (cm.)	Crop Ht. (metre)
1	1913	I	44	26
2	1924		43	25
3	1926	II	40	28
4	1930		42	24
5	1933		39	18
6	1940		39	24
7	1941		39	24
8	1942		37	22
9	1944		36	18
10	1946	III	31	18
11	1948		31	19
12	1949		32	15
13	1950		32	14
14	1951		28	15
15	1953		25	13
16	1958	IV	21	10
17	1959		18	12
18	1960		22	15
19	1961		18	13
20	1963		21	14
21	1964		20	11
22	1966	V	12	08
23	1970		13	11
24	1973		11	07

Like Cryptomeria japonica in higher hills, importance is attached to Tectona grandis in the lower hills of Darjeeling Division. The introduction of Tectona grandis on large scale being very recent, the major crop of Tectona grandis belongs to the lower diameter classes. The height and diameter relationship for the species is given below:-

Diameter class(cm.)	Height(metre)
---------------------	---------------

21-30	21
31-40	23
41-50	25
51-60	31

Third in importance is the occurrence of Shorea robusta in Darjeeling Division. Presence of this species in the plantation stratum is, however, erratic and it is not adequately present in various plantations. Available information collected from field in this regard can be summarised as below:-

Sl.No.	Year of plantation	Stratum	Dia.(cm.)	Height (m)
1	1939	II	21	19
2	1948	III	20.8	19
3	1949	III	20	17
4	1951	III	30	25
5	1961	IV	17	23
6	1963	IV	26	18

\* The results indicate that growing of Shorea robusta in the older plantations are not satisfactory.

Other miscellaneous species occurring in the plantations of Darjeeling Division can not be discussed at length. Most of these species occur in insignificant manner and have little effect on the total stock. Such species collectively may play significant role. However, the diameter and height of a few miscellaneous species are furnished hereunder:-

Species name	Stratum	H(Height in metre) & D(Diameter in cm.) in diameter classes								60+	
		10-19		20-29		30-39		40-49			
		H	D	H	D	H	D	H	D		
<u>Bucklandia populnea</u>	III	17.00	19.00	23.00	22.00	-	-	-	-	50-59	
	IV	09.00	13.00	-	-	-	-	-	-		
<u>Castanopsis spp.</u>	I	-	-	-	-	16.00	25.00	-	-	60+	
	II	-	-	15.00	20.00	20.00	30.00	-	-		
<u>Duaranga sonneretoides</u>	III	13.00	10.00	-	-	-	-	-	-	60+	
	IV	12.00	14.00	-	-	-	-	-	-		
<u>Juglans regia</u>	V	07.00	11.00	-	-	-	-	-	-	60+	
	IV	13.00	16.00	15.00	26.00	-	-	-	-		
<u>Machilus spp.</u>	I	-	-	17.00	22.00	21.00	34.00	-	-	60+	
	II	08.00	12.00	17.50	22.50	-	-	21.00	42.00		
<u>Michelia spp.</u>	III	13.00	14.60	17.00	24.00	18.00	38.00	-	-	60+	
	IV	10.50	16.00	-	-	-	-	-	-		
<u>Myrsinaceae spp.</u>	I	18.00	18.00	26.00	25.00	23.00	35.00	-	-	60+	
	II	15.00	16.00	19.00	22.00	15.00	33.00	-	-		
<u>Psychotria spp.</u>	III	17.00	15.00	-	-	-	-	-	-	60+	
	IV	10.00	12.00	-	-	-	-	-	-		

Species name	Stratum	H(Height in metre) & D (Diameter in cm.) in diameter classes						60+	
		10-19		20-29		30-39			
		H	D	H	D	H	D		
<i>Prunus spp.</i>	I	14.50	13.50	-	-	-	-	-	
	II	-	-	18.00	31.00	-	-	-	
	III	-	-	22.00	24.00	-	-	-	
<i>Symplocos spicata</i>	I	11.00	14.00	16.00	25.00	-	-	-	
	II	12.00	14.00	-	-	-	-	-	
	III	12.00	16.00	-	-	-	-	-	

4.6. Crop distribution by stratum and diameter classes!

Distribution of crop by percentage in different stratum in Darjeeling Division(before thinning) is tabulated in the table furnished below:

Stratum	Diameter classes(in cm.)						Total	Remarks
	10-19	20-29	30-39	40-49	50-59	60-69		
I	0.56	0.70	0.92	0.88	0.55	0.29	0.09	0.05
II	5.63	6.40	3.89	2.49	0.74	0.24	0.05	0.01
III	5.68	3.73	2.04	0.69	0.07	0.05	0.03	-
IV	19.19	8.40	1.67	0.12	0.04	-	0.05	-
V	33.44	1.12	-	-	-	-	-	0.16
Total:	64.30	20.35	8.52	4.18	1.40	0.58	0.22	0.06

Occurrence of 85% of trees in lower diameter class i.e. below 30 cm. rules out the possibility of immediate large yield of timber from Darjeeling Division. This includes trees belonging to various stratum of which trees in Stratum II & III constitute nearly 21% and attracts attention indicating that certain species are trailing behind in achieving proper growth in plantations. Little more than 35% of the trees are more than 30 years or nearly 30 years in age, put a substantial portion of the crop i.e. nearly 65% fall in the lower diameter class indicating deficiencies in the plantation management. This situation may be averted if serious effort is made to improve the local condition including protection aspect.

/aforesaid

From the Table it would appear that nearly 64% of the total stock belongs to stratum IV and V which is spread over 5374.61 ha. Balance 35% of the total stock belongs to stratum I, II & III being spread over 4108.19 ha.

Accumulation of trees in lower diameter classes in stratum II and III is unusual. Species like Michelia, Machilus, Symplocos spicata, Schima wallichii, Terminalia myriocarpa, Quercus spp. are confined largely in lower diameter classes.

In stratum I a considerable number of trees are found below 30cm. diameter class. This may be significant in view of the age of the plantations in stratum I. Yield of timber from these plantations may not be at expected level compared to the age of the plantations. Castanopsis spp., Michelia spp. and Machilus spp. are largely confined in lower diameter classes.

Trees in 10-19 cm. diameter class in stratum-V are largely Alnus nepalensis. This species is considered as a source of fuelwood in the hills but timber is also available from large sized trees.

4.7. Crop dispersion:

Spacing of trees in some plantations was studied and results are tabulated below. The spacing indicated may be further verified in the field to decide the thinning in future.

Stratum	Year of planta- tion	Major crop	Spacing	Remarks
I	1913	<u>Cryptomeria</u> <u>japonica</u>	5.8 M x 4 M	None
	1915	<u>Cryptomeria</u> <u>japonica</u>	7 M. x 4 M.	
	1912-20	Miscellaneous with <u>Cryptomeria</u> <u>japonica</u>	7 M x 4 M	
	1924	Miscellaneous crop	9 M x 5 M	
II	1927	<u>Michelia</u> spp.	4 M x 5 M	Open stock
	1928	<u>Cryptomeria</u> <u>japonica</u>	11 M x 5 M	

Stratum	Year of planta- tion	Major crop	Spacing	Remarks
II	1930	<u>Cryptomeria</u> <u>japonica</u>	10 M x 5 M	Open stock
	1931	Misc. crop	6 M x 4 M	
	1933	<u>Bucklandia</u> <u>populnea</u>	6.6 M x 5 M	None
	1936	<u>Cryptomeria</u> <u>japonica</u>	5 M x 5 M	
	1937	<u>Bucklandia</u> <u>populnea</u>	9.8 M x 5 M	Open stock
	1940	<u>Bucklandia</u> <u>populnea</u>	6 M x 5 M	None
III	1948	<u>Cryptomeria</u> <u>japonica</u>	8 M x 6.25 M	
	1949	<u>Cryptomeria</u> <u>japonica</u>	6 M x 4.90 M	
	1950	<u>Cryptomeria</u> <u>japonica</u>	12 M x 7 M	Poorly stocked.
	1951	<u>Michelia</u> spp.& <u>Machilus</u> spp.	5 M x 7 M	Over stocked
IV	1958	<u>Cryptomeria</u> <u>Japonica</u>	6.25 x 5 M.	
	1959	<u>Cryptomeria</u> <u>japonica</u>	8 M x 5 M	None
	1960	<u>Cryptomeria</u> <u>japonica</u>	8 M x 5.2 M.	
	1961	Misc. spp.	10 M x 6.3 M	Poorly stocked.
	1962	Misc. spp.	4 M x 3.8 M.	Over stocked.
	1962	Misc. spp.	8 M x 6.25 M	Under stocked.
V	1963	Misc. spp.	10 M x 5 M	Poorly stocked.
	1965	<u>Cryptomeria</u> <u>japonica</u>	4 M x 5 M	None
	1966	Misc. crop	10 M x 8.3 M	Poorly stocked.
	1968	Misc. crop	10 M x 8 M	-do-
	1970	<u>Cryptomeria</u> <u>japonica</u>	3 M x 3 M	Well stocked
	1971	<u>Cryptomeria</u> <u>japonica</u>	6 M x 4 M	None
	1973	<u>Cryptomeria</u> <u>japonica</u>	10 M x 5 M	Poorly stocked

Spacing of trees in different stratum indicate that some plantations are poorly stocked. The reason of such poor stocking may be attributed to illegal removal of trees by local people. In view of this special attention may perhaps be required for carrying out thinning operations in future.

Particular attention is required in the plantations of Takdah Range which have been largely damaged by unrecorded removal of trees by local people. Trees are widely dispersed and outturn is likely to be poor. In case of such miscellaneous plantations no thinning may be carried out in near future (last thinning done during 1981-82). Wide spacing of trees in younger plantations can be tackled, if necessary by enrichment planting of some selected and fast growing species to avoid large blank. Supply of large scale timber from such plantations will not be possible in near future and hence the crop may be managed with adequate protection and thinning carried out with proper selection only considering current gap in the plantations. The spacing of trees tabulated in the paragraph relates to pre-thinning period. Thinning marking was carried out during 1981-82 & 1982-83 after completion of plantation inventory by our teams, hence after thinning of stand the spacing of trees will be naturally more.

C H A P T E R - V.

PLANTATION CROP ANALYSIS - KALIMPONG DIVISION.

5.1. Crop composition in Kalimpong Division:

Composition of crop in plantations of Kalimpong Division indicates that various miscellaneous species were planted from time to time. In Stratum-I species like Alnus nepalensis, Duabanga sonneretiioides and Schima wallichii constitute 48% of the total crop. Associated with these species are Terminalia tomentosa, Amoora wallichii, Michelia champaca and Shorea robusta.

Compared to Stratum-I, in Stratum-II a large number of species are noted. These species are mainly miscellaneous but also include conifer like Cryptomeria japonica. This indicates that Cryptomeria japonica was introduced in Kalimpong Division at a later date. The list of miscellaneous species is exhaustive but some of the important species are Tectona grandis, Shorea robusta, Terminalia myriocarpa, Duabanga sonneretiioides, Michelia champaca, Lagerstroemia speciosa and Alnus nepalensis. These species constitute nearly 66% of the total crop. Less important species in Stratum-II are Castanopsis indica, Terminalia tomentosa and Ailanthus grandis.

In Stratum-III Aphanomixis polystachya accounts for nearly 30% of the total crop. Other important species are Tectona grandis, Toona ciliata and Schima wallichii.

In stratum-IV Tectona grandis and Shorea robusta occur in higher frequency. Conifers like Cryptomeria japonica and Cupressus kashmiriana also occur in this stratum. Shorea robusta is chiefly found along the foot hills. Most of the plantations of Shorea robusta occurs in Kalimpong range.

In Stratum-V, Tectona grandis and Ailanthus grandis occur in pure patches. However, Tectona grandis is found to occur in association with Bombax ceiba,

Michelia champaca, Terminalia tomentosa. Pure plantations of Cryptomeria japonica occur in higher altitudes in Lava, Bokhim and other places. The plantations in foot hills of Kalimpong Division include considerable areas under pure crop of Ailanthus grandis, Anthocephalus cadamba and Cassia grandis siamea.

Results of planting Ailanthus grandis, Cassia siamea and Anthocephalus cadamba have been found to be discouraging. Growth of these species have been found to be poor. Ailanthus grandis, Cassia siamea also occur appreciably in Stratum III and IV. These two species are found largely confined to diameter classes 10-19 cm. and 20-29 cm. Cassia siamea in stratum-IV (1956-65) is very poorly developed and nearly 78% of the crop belongs to dia. classes 10-19 cm. This species can be considered for yield of small wood only because stem development is extremely poor.

Ailanthus grandis was introduced largely in Kalimpong Division from 1960. This species occurs appreciably in stratum-V. Nearly 90% of the stems of Ailanthus grandis belong to 10-19 cm. diameter class. Ailanthus grandis was introduced as a fast growing species but could not prove such ultimately. Anthocephalus cadamba another species said to be fast growing also proved unworthy in stratum-V. Nearly 90% of the stems of Anthocephalus cadamba belong to 10-19 and 20-29 cms. diameter classes. However, compared to Cassia siamea and Ailanthus grandis, the growth is better in Anthocephalus cadamba. Dubanga sonnereticoides is present in all the stratum and its growth is better. Michelia champaca is found to be trailing behind in Darjeeling Division but it is growing well in Kalimpong Division. Economically important species like Shorea robusta and Tectona grandis have been found to be growing well. Shorea robusta in Stratum-I can be found in diameter class of 60-69 cm. and height of 45 meter representing 12% of the total Sal stems in the stratum. Introduction of Tectona grandis between the period 1926 to 1945 has resulted in well developed crop along foot hills. This species is present in Stratum-II, III & IV. Better growth is seen in Stratum-II where stems of 50-59 cm.

diameter class and 35 metre height are found.

Similarly in stratum III & IV trees of Tectona grandis belonging 50-59 cm. diameter class may be found. However, in stratum IV nearly 85% of the stems lie in 10-19 cm. and 20-29 cm. diameter classes and these stems represent the bulk of the stock of Tectona grandis in Kalimpong. Various species discussed so far represent the major part of growing stock in Kalimpong Division. However, these are a few species which may not occur in higher frequency but important from commercial point of view. A list of such species along with their percentage occurrence are given below:-

Stratum	Species contribution to total crop(%)
I	<u>Amoora wallichii</u> 2.76
	<u>Acrocarpus fraxinifolius</u> 1.08
	<u>Betula alnoides</u> 0.34
	<u>Gmelina arborea</u> 0.34
II	<u>Albizia spp.</u> 0.41
	<u>Betula alnoides</u> 0.72
	<u>Callicarpa arborea</u> 0.92
	<u>Jambosu formosa</u> 0.92
	<u>Toona ciliata</u> 0.92
III	<u>Albizzia spp.</u> 0.98
	<u>Amoora spp.</u> 1.14
	<u>Macaranga peltata</u> 0.93
	<u>Populus spp.</u> 1.48
	<u>Tetrameles nudiflora</u> 1.16
IV	<u>Amoora spp.</u> 0.54
	<u>Bombax ceiba</u> 1.50
	<u>Betula alnoides</u> 1.99
	<u>Chukrassia tabularis</u> 0.54
	<u>Syzygium cumini</u> 0.36
V	<u>Betula alnoides</u> 0.55
	<u>Callicarpa arborea</u> 0.58
	<u>Garuga pinnata</u> 0.45
	<u>Macaranga peltata</u> 0.55
	<u>Quercus spp.</u> 0.45

In Kalimpong Division many species were tried in the past in the plantations as in Darjeeling Division. The same trend of planting for many species continues currently also excepting in upper hills where pure plantations of Cryptomeria japonica can be found in stratum-V in appreciable extent.

5.2. Contribution of major species:

Contribution of important species (to the total stock) by stratum is furnished below:-

Species name	Stratum (%)				
	I	II	III	IV	V
<u>Alnus nepalensis</u>	11.00	5.00	9.00	2.00	-
<u>Anthocephalus cadamba</u>	-	1.00	-	1.00	4.50
<u>Ailanthus grandis</u>	-	1.00	-	-	11.00
<u>Aphanamixis polystachya</u>	-	-	28.00	2.00	-
<u>Cryptomeria japonica</u>	-	12.00	0.16	4.00	7.26
<u>Chukrasia tabularis</u>	-	4.00	2.50	4.00	2.40
<u>Cassia siamea</u>	-	-	5.00	10.41	-
<u>Cupressus kashmiriana</u>	-	-	-	1.20	0.50
<u>Dubanga sonneretiioides</u>	18.00	6.00	10.00	3.00	3.50
<u>Lagerstroemia</u> spp.	-	10.00	1.00	1.00	-
<u>Michelia champaca</u>	-	5.90	-	2.70	2.60
<u>Shorea robusta</u>	6.00	8.40	-	14.70	8.50
<u>Schima wallichii</u>	14.00	2.56	2.60	11.00	14.30
<u>Tectona grandis</u>	-	6.67	1.80	22.20	2.60
<u>Terminalia myriocarpa</u>	10.00	6.00	14.00	4.30	6.00

5.3. Conifers and non-conifers:

The species listed above include both conifers and non-conifers. Proportion of conifers and non-conifers in the stratum can be summarised as below:-

Stratum	Ratio of conifers to non-conifers stands
I	0.00 (conifers absent)
II	0.13
III	0.00 (Conifers insignificant frequency)
IV	0.10
V	0.09

The conifers are less in number in Kalimpong Division and represent nearly 12% of the total stands irrespective of stratum. Majority of coniferous plantations are found in stratum III, IV & V and Cryptomeria japonica is the main species. Cryptomeria japonica although tried in earlier years in Kalimpong Division but could not be planted on larger scale till plantation activities were taken up in higher altitudes. As a result many coniferous plantations are very young and have not yet attained 10 cm. diameter and did not fall under our survey. However, this does not prevent to write the fact that miscellaneous plantations have larger coverage of area in Kalimpong Division compared to that in Darjeeling Division. Major plantation activities in Kalimpong Division can be noticed in the foot hills where various species including Tectona grandis, Shorea robusta, Michelia champaca are grown. These three species constitute fairly a large percentage of total stands. Tectona grandis in stratum V of Kalimpong Division alone represents 26% of total stand compared to 2.4% of Cryptomeria japonica. This indicates that in Kalimpong Division in recent years, the plantation activities are largely restricted in foot hills for growing Teak. Raising of plantations of Cryptomeria japonica are seen in Lava, Bokhem and Pankhasari Ranges around 2000 meter altitude on moderate scale.

5.4. Distribution by diameter classes:

The frequency of occurrence of certain important species in different diameter classes in various stratum can be studied from the table given below:-

Important species by diameter classes(cm.)

Species name	Stratum	Dia. classes in cm. showing % of stands					
		10-19	20-29	30-39	40-49	50-59	60-69
<u>Alnus nepalensis</u>	I	81.83	-	12.10	6.07	-	-
	II	-	7.85	31.36	27.45	23.52	9.82
	III	5.55	25.94	42.58	22.21	3.72	-
	IV	3.74	40.90	45.46	9.9	-	-
	V	-	-	Absent	-	-	-
<u>Allanthus grandis</u>	I	-	-	Absent	-	-	-
	II	-	-	Absent	-	-	-
	III	100.00	-	-	-	-	-
	IV	100.00	-	-	-	-	-
	V	29.90	10.10	-	-	-	-
<u>Amoora wallichii</u>	I	37.50	37.50	12.50	12.50	-	-
	II	-	-	Absent	-	-	-
	III	33.35	50.03	16.62	-	-	-
	IV	66.66	16.67	16.67	-	-	-
	V	-	-	Absent	-	-	-
<u>Anthocephalus cadamba</u>	I	-	-	-	100.00	-	-
	II	-	16.67	24.94	41.61	8.38	8.38
	III	-	-	Absent	-	-	-
	IV	16.66	41.66	25.00	8.34	8.34	-
	V	-	-	Absent	-	-	-

Species name	Stratum	Dia. classes in cm. showing % of stand						
		10-19	20-29	30-39	40-49	50-59	60-69	70-79
<u>Cryptomeria japonica</u>	I	-	-	-	Absent	-	-	-
	II	0.84	16.00	35.29	31.09	15.22	1.56	-
	III	-	-	-	100.00	-	-	-
	IV	40.32	20.41	39.27	-	-	-	-
	V	74.24	24.24	1.52	-	-	-	-
<u>Chukrasia tabularis</u>	I	-	-	-	Absent	-	-	-
	II	2.46	11.53	36.86	34.40	7.37	7.38	-
	III	40.00	46.67	13.33	-	-	-	-
	IV	53.58	43.84	2.58	-	-	-	-
	V	95.45	4.55	-	-	-	-	-
<u>Cananga solomon</u>	I	-	-	-	Absent	-	-	-
	II	-	-	-	Absent	-	-	-
	III	93.05	6.95	-	-	-	-	-
	IV	78.26	21.74	-	-	-	-	-
	V	87.50	12.50	-	-	-	-	-
<u>Dusabanga sonneratoides</u>	I	-	3.85	30.76	40.38	19.23	5.78	-
	II	-	8.34	44.99	28.32	11.66	6.69	-
	III	16.40	37.43	29.50	16.38	0.29	-	-
	IV	8.57	28.56	28.57	17.14	11.43	2.86	2.87
	V	31.24	28.11	18.75	21.90	-	-	-
<u>Michelia champaca</u>	I	-	-	-	Absent	-	-	-
	II	-	26.82	33.91	26.78	8.93	3.56	Insig- nifi- cant.
	III	-	-	-	Absent	-	-	-
	IV	30.00	40.00	23.34	6.66	-	-	-
	V	91.66	8.34	-	-	-	-	-

Species name	Stratum	Dia. classes in cm. showing % of stand						
		10-19	20-29	30-39	40-49	50-59	60-69	70-79
<u>Shorea robusta</u>	I	11.77	-	17.36	52.93	5.88	12.06	-
	II	-	15.87	53.65	24.39	4.87	-	1.22
	III	-	-	-	Absent	-	-	-
	IV	70.99	25.31	3.70	-	-	-	-
	V	100.00	-	-	-	-	-	-
<u>Schima wallichii</u>	I	7.38	17.51	20.00	22.49	17.49	9.99	5.14
	II	28.02	22.62	27.98	15.99	-	2.69	2.70
	III	40.00	26.67	13.32	20.01	-	-	-
	IV	52.89	35.53	10.75	0.83	-	-	-
	V	84.25	14.96	0.79	-	-	-	-
<u>Tectona grandis</u>	I	-	-	Absent	-	-	-	-
	II	10.79	4.62	35.38	41.53	7.68	-	-
	III	27.27	18.18	36.35	9.1	9.1	-	-
	IV	44.49	42.03	11.02	1.63	0.83	-	-
	V	74.04	22.12	3.84	-	-	-	-
<u>Terminalia myriocarpa</u>	I	-	16.67	43.31	36.65	3.37	-	-
	II	-	14.56	52.70	20.00	9.09	3.65	-
	III	27.06	35.30	11.75	4.70	1.19	-	-
	IV	40.42	53.19	4.25	2.14	-	-	-
	V	88.53	11.47	-	-	-	-	-

Remarks:- Absent denotes absence of species in sampling unit.

With a view to evaluate the total stock position by stratum, the percentage of crop by strata is furnished in the following table:-

5.5. Crop distribution by stratum and diameter classes!

Distribution of crop by percentage in different stratum in Kalipong Division(before thinning)  
is furnished in the Table below:-

Stratum	Diameter classes(in cm.)					Total					
	10-19	20-29	30-39	40-49	50-59						
I	0.43	0.50	0.79	0.75	0.25	0.13	0.03	0.01	-	-	2.89
II	1.13	2.97	5.19	3.06	1.13	0.37	0.07	0.06	-	-	13.98
III	5.56	3.78	1.49	0.84	0.20	0.04	0.02	-	-	-	11.93
IV	18.01	12.76	3.64	0.71	0.32	0.03	0.10	-	-	-	35.57
V	28.14	6.28	0.36	0.27	0.04	-	-	-	-	0.04	35.63
Total:	53.27	26.29	11.97	5.63	1.94	0.57	0.22	0.07	-	0.04	100.00

Inferences on the above distribution of stands are:-

- (1) In stratum I and II, maximum accumulation of stands is in diameter classes 30-39 cm. and 40-49 cm. represented largely by species like Dubanga sonneratoides, Michelia champaca, Shorea robusta, Tectona grandis, Cryptomeria japonica and Terminalia myriocarpa. These species are found in the foot hills of Kalipong Division.
- (2) Overall development of stands of various species is found to be good in stratum-I whereas species like Laportea is trailing behind in lower diameter classes.
- (3) In stratum-III, Terminalia myriocarpa occur profusely but remains in lower diameter classes 1.0-10-19 cm. and 20-29 cm. Dubanga sonneratoides can be found in higher diameter classes.

- (4) In stratum-IV, Tectona grandis, Schima wallichii are found to occur in higher diameter classes to an appreciable extent. Duabanga sonnereticoides also occurs in higher diameter classes.
- (5) In Stratum-V, Duabanga sonnereticoides and Tectona grandis are found in higher diameter classes. Ailanthus grandis stock is entirely in lower dia. class(10-19 cm.). Similar is the condition with Cassia siamea.

5.6. Spacing of stand in plantations:-

Plantations raised from time to time have been subjected to various thinning, marking, felling of trees. Biotic influence could not also be avoided in some of the plantations. Many trees have either been removed or hacked attributing present condition of stand distribution on the ground. Collection of data in the field indicate various types of spacing in the miscellaneous plantations of Kalimpong Division.

Terminalia myriocarpa, Ailanthus grandis, Chukrassia tabularis, Duabanga sonnereticoides, Shorea robusta, Schima wallichii, Tectona grandis and Michelia champaca are the major species in the composition of crop. These species occur in almost all the stratum with varying frequency. Some examples of spacing of a few plantations are furnished below:-

Stratum	Year of plantation	Name of species	Spacing (meter) x meter	Remarks
I	1920	Mixture of <u>Terminalia myriocarpa</u> , <u>Duabanga sonnereticoides</u> , <u>Michelia champaca</u> .	12 x 12	Well stocked
II	1925	-do-	12 x 4	-do-
II	1928	<u>Cryptomeria japonica</u>	4 x 3	Very well stocked.
II	1932	<u>Michelia champaca</u> , <u>Bucklandia populnea</u> .	15 x 8	Not well stocked.
II	1933 & 1935	<u>Terminalia myriocarpa</u> , <u>Michelia champaca</u> , <u>Duabanga sonnereticoides</u>	10 x 5 & 8 x 5	-do-
II	1945	<u>Michelia champaca</u> , <u>Alnus nepalensis</u> .	13 x 7	Poorly stocked

Stratum	Year of plantation	Name of species	Spacing (meter) x meter	Remarks
III	1946	<u>Terminalia myriocarpa</u> , 10 x 8 <u>Michelia champaca</u> , <u>Lagerstroemia species</u>		Poorly stocked.
V	1969	<u>Tectona grandis</u> , <u>Michelia champaca</u> , <u>Chukrassia tabularis</u>	3.25x2	Well stocked.
V	1970	<u>Tectona grandis</u> , <u>Michelia champaca</u>	4 x 4	Very/well stocked.
V	1971	<u>Tectona grandis</u> , <u>Michelia champaca</u> , <u>Chukrassia tabularis</u> .	4 x 4	Well stocked
V	1972	<u>Ailanthus grandis</u> , <u>Bombax ceiba</u> , <u>Michelia champaca</u> .	6 x 6	Not well stocked.

5.7. Crop height and diameter:

Study of height and diameter in case of a few species indicate the following:-

Species name	Av. height(m) against diameter classes(cm.)					
	10-19	20-29	30-39	40-49	50-59	60-69
<u>Alnus nepalensis</u>	11.00	35.00	25.00	33.00	46.00	33.00

Observations from individual plantations does indicate inconsistency in the height growth in case of Alnus nepalensis. In 1920, plantation growth is poor and diameter recorded are 10 cm. and 11 cm. with heights of 11 m. and 12 m. respectively. Similarly in 1925, plantation height of 25 m. has been registered against diameter of 35 cm. The situation is further improved in 1942 plantation where trees of height 31 m. to 33 m. can be seen with diameter ranging from 42 cm. to 66 cm.

Duabanga sonnereticoides:

In case of Duabanga sonnereticoides height dia. development can be perused from the undernoted information:-

Species	Av. height(m) against diameter classes(cm.)						
	10-20-29	30-39	40-49	50-59	60-69	70-79	80-89
	19						
<u>Duabanga sonnereticoides</u>	-	20	25	26	40	33	-

Observations from individual plantations do indicate that in 1919 plantation height and diameter growth is best. Similarly height and diameter growth in 1918 plantation is good. In these two plantations height development of 33-34 m can be seen whereas diameter growth is very good only in 1919 plantation. In 1925 plantation growth of this species is fairly good showing height of 25 m. There is a good trend in height and diameter development in case of Duabanga sonnereticoides.

Cryptomeria japonica:

Plantations of Cryptomeria japonica are less in number and the species was not grown largely in the past. It is grown now to a larger extent, the height and diameter growth in case of this species is as follows:-

Species name	Av. height(m) against diameter classes(cm.)						
	20-29	30-39	40-49	50-59	60-69	70-79	80-89
<u>Cryptomeria japonica</u>	15	29	26	35	-	-	-

In 1928 plantation height noted is 37 m against diameter of 55 cm.

Terminalia myriocarpa:

The height and diameter development in case of Terminalia myriocarpa is as follows:-

Species name	Av. height(m) against diameter classes(cm.)						
	20-29	30-39	40-49	50-59	60-69	70-79	80-89
<u>Terminalia myriocarpa</u>	31	26	30	35	-	-	-

Diameter and height growth can be found but in 1929 plantation and growth of this species is comparable with other species like Duabanga sonneretioide Tectona grandis etc.

Tectona grandis:

Study of height and diameter growth in case of Tectona grandis indicates as follows:-

Species name	Av. height(m) against diameter classes(cm.)						
	20-29	30-39	40-49	50-59	60-69	70-79	80-89
<u>Tectona grandis</u>	20	28	23	28	31	-	-

Study of individual plantations indicates height growth of 32 m in 1920 plantation with diameter growth of 47 cm. only. In 1942 plantation, the height growth is 30 m against a dia. of 26 cm. Most of the plantation indicate good height growth.

Shorea robusta:

In case of Shorea robusta, the height and dia. growth is as follows:-

Species name	Av. height(m) against diameter classes(cm.)						
	20-29	30-39	40-49	50-59	60-69	70-79	80-89
<u>Shorea robusta</u>	26	31	33	35	-	-	-

Individual study of plantations indicate height growth of 34 m in 1934 plantation. However, good height growth can be seen in 1942 plantation registering 32 m height in 40 years. In 1940 plantation, the height of growth upto 30 m can be found. The overall situation of growth of the Sal crop is found to be fairly good.

In younger plantations height and diameter growth is not so pronounced and does not really throw any indication of trend. As a result of this, the present study is confined for the plantations of age 35 years or more.

C H A P T E R - VI.

VOLUME STUDY - DARJEELING DIVISION.

6.1. Volumetric composition of crop(before thinning)  
Stem timber and small wood: Darjeeling Division:

Study of volume of various species in different stratum indicates that Cryptomeria japonica contributes most significantly. Species like Alnus nepalensis, Duabanga sonneretiioides, Schima wallichii, Tectona grandis, Shorea robusta, Michelia spp. and Machilus spp. are also important for volume contribution.

6.1.1. Volume (Stratum-I):

In stratum-I the total volume is as follows before thinning:-

	<u>Stem timber</u>	<u>Small wood</u>	<u>Total</u>
	153.790 m <sup>3</sup> /ha.	44.516 m <sup>3</sup> /ha.	198.306 m <sup>3</sup> /ha.

A study of the table No.4.1.1 and 5.1.1 of this report indicates the distribution of volume into stem wood and small wood as given below:-

Species name	Stem timber m <sup>3</sup> /ha.	Smallwood S.W. m <sup>3</sup> /ha.	% to total S.T.	Total volume in the stratum
<u>Alnus nepalensis</u>	5.982	1.055	0.176	3.55
<u>Cryptomeria japonica</u>	76.654	22.657	0.295	50.07
<u>Duabanga sonneretiioides</u>	18.336	3.960	0.215	11.24
<u>Machilus spp.</u>	2.091	2.590	0.285	5.89
<u>Michelia spp.</u>	4.179	2.366	0.568	3.29
<u>Schima wallichii</u>	5.641	1.402	0.248	3.55

S.W. = Small wood

S.T. = Stem Timber.

The above species contribute volume in different classes in the following manner:-

Species name & Vol./ha.	% of volume per ha. in diameter classes(cm.) (inclusive of S.T. & S.W. - before thinning)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<u>Ainus nepalensis</u> (7.037 m <sup>3</sup> /ha.)	-	-	10.08	34.62	12.50	42.80	-	-	100.00
<u>Cryptomeria japonica</u> (99.311 m <sup>3</sup> /ha.)	-	2.95	7.90	28.52	36.70	18.59	5.34	-	100.00
<u>Duabanga sonnereticoides</u> (22.296 m <sup>3</sup> /ha.)	-	1.18	0.87	3.42	16.68	18.34	32.30	22.21	100.00
<u>Michelia spp.</u> (6.52 m <sup>3</sup> /ha.)	6.82	48.33	44.85	-	-	-	-	-	100.00
<u>Machilus spp.</u> (11.687 m <sup>3</sup> /ha.)	2.25	9.61	39.90	38.31	9.93	-	-	-	100.00
<u>Schima wallichii</u> (7.043 m <sup>3</sup> /ha.)	-	4.93	16.57	31.11	37.71	9.68	-	-	100.00

The above percentage distribution clearly show that Duabanga sonnereticoides is represented over all the diameter classes followed by Cryptomeria japonica. It is interesting to note that in this oldest group of plantation - more than 70% of Duabanga sonnereticoides pertain to the dia. class above 60 cm., while in case of Cryptomeria japonica it is only above 23%.

#### 6.1.2. Volume (Stratum-II):

In Stratum-II volumetric composition is as follows before thinning:

Stem timber	Small wood	Total volume
127.276 m <sup>3</sup> /ha.	50.586 m <sup>3</sup> /ha.	177.862 m <sup>3</sup> /ha.

Study of table No.4.1.2 and 5.1.2 indicates the following contribution by some of the main species:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	% to total vol. in stratum
<u>Cryptomeria japonica</u>	62.294	20.665	0.332	46.64
<u>Michelin spp.</u>	6.547	6.697	1.023	7.44
<u>Tsuga brunoniana</u>	14.849	6.653	0.448	12.09
<u>Terminalia myriocarpa</u>	4.048	1.172	0.289	2.93
<u>Tectona grandis</u>	5.561	1.184	0.212	3.79

S.W. = Small wood - S.T. = Stem Timber.

Volumetric contribution of the species in various diameter classes was as follows:-

Species name & Vol./ha.	% of volume per ha. in diameter classes(cm.) (inclusive of S.T. & S.W. - before thinning)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<u>Cryptomeria japonica</u> (82.959 m <sup>3</sup> /ha.)	0.29	6.89	23.95	33.56	23.60	10.74	0.97	-	100.00
<u>Michelia spp.</u> (13.234 m <sup>3</sup> /ha.)	22.94	52.91	13.13	-	-	-	11.02	-	100.00
<u>Tsuga brunoniana</u> (21.503 m <sup>3</sup> /ha.)	3.01	37.95	42.52	13.48	3.04	-	-	-	100.00
<u>Tectona grandis</u> (6.745 m <sup>3</sup> /ha.)	-	22.18	52.36	25.46	-	-	-	-	100.00
<u>Terminalia myriocarpa</u> (5.22 m <sup>3</sup> /ha.)	-	13.03	37.18	23.89	2.98	-	-	-	16.92 100.00

The aforesaid table indicates that Cryptomeria japonica is the only species that is evenly distributed over all the dia. class, Michelia spp. although present over 70 cm. dia. shows gaps in intermediate diameter groups between 40 cm. to 69 cm.

#### 6.1.3. Volume (Stratum-III):

In Stratum-III before thinning volumetric composition was as follows:-

Stem timber	Small wood	Total volume
66.006 m <sup>3</sup> /ha.	38.254 m <sup>3</sup> /ha.	104.26 m <sup>3</sup> /ha.

Study of Table No. 4.1.3 and 5.1.3 indicates the following contribution by major species:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	% of total volume in stratum
<u>Alnus nepalensis</u>	4.452	2.113	0.475	6.30
<u>Betula alnoides</u>	2.429	0.670	0.276	2.97
<u>Cryptomeria japonica</u>	35.185	11.862	0.337	45.12
<u>Dubabanga sonneratiioides</u>	2.532	0.653	0.258	3.05
<u>Shorea robusta</u>	4.018	3.805	0.947	7.50

S.W. = Small wood - S.T. = Stem timber

Volume contribution of these species in various diameter classes was as follows:-

Species name & vol./ha.	% of volume per ha. in diameter classes(cm.) (inclusive of S.T. & S.W.-before thinning)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<u>Alnus</u> <u>nepalensis</u> (6.565 m <sup>3</sup> /ha.)	4.84	15.83	61.44	18.69	-	-	-	-	100.00
<u>Betula</u> <u>alnoidea</u> (3.099 m <sup>3</sup> /ha.)	2.42	45.40	52.18	-	-	-	-	-	100.00
<u>Cryptomeria</u> <u>japonica</u> (47.047 m <sup>3</sup> /ha.)	1.01	20.31	43.74	23.19	3.17	6.64	1.94	-	100.00
<u>Duabanga</u> <u>sonneratoides</u> (3.185 m <sup>3</sup> /ha.)	-	8.44	6.31	50.77	34.98	-	-	-	100.00
<u>Shorea</u> <u>robusta</u> (7.823 m <sup>3</sup> /ha.)	9.06	55.68	21.45	13.81	-	-	-	-	100.00

Cryptomeria japonica is the only species that covers all the dia. classes. Betula & Alnus though fast growing, but occur in lower diameter classes.

#### 6.1.4. Volume(Stratum-IV):

In stratum-IV, volumetric composition was as follows before thinning:-

	<u>Stem timber</u>	<u>Small wood</u>	<u>Total volume</u>
	43.202 m <sup>3</sup> /ha.	43.589 m <sup>3</sup> /ha.	86.791 m <sup>3</sup> /ha.

Study of Table No.4.1.4 and 5.1.4 indicates

the following situation of major contributing species:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	% of total volume in stratum
<u>Cryptomeria</u> <u>japonica</u>	29.498	19.805	0.673	56.74
<u>Shorea</u> <u>robusta</u>	1.489	2.809	1.887	4.95
<u>Tectona</u> <u>grandis</u>	5.143	6.969	1.355	13.96
<u>Tsuga</u> <u>brunonianana</u>	3.290	2.559	0.778	6.74

S.W. = Small wood

S.T. = Stem timber

Volume contribution of these species in various diameter classes was as follows:-

Species name & vol./ha.	% of volume per ha. in diameter classes(cm.) (inclusive of S.T. & S.W. before thinning)								Total 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<u>Cryptomeria</u> <u>japonica</u> (49.243 m <sup>3</sup> /ha.)	12.93	53.75	28.37	2.46	2.49	-	-	-	100.00
<u>Shorea robusta</u> (4.298 m <sup>3</sup> /ha.)	23.22	62.02	14.76	-	-	-	-	-	100.00
<u>Tectona grandis</u> (12.112 m <sup>3</sup> /ha.)	36.77	63.23	-	-	-	-	-	-	100.00
<u>Tsuga brunoniana</u> (5.849 m <sup>3</sup> /ha.)	19.23	40.26	6.44	-	-	-	34.07	-	100.00

Tsuga brunoniana is present in 70-79 dia. class, but shows intermediate gap between 40 cm. to 69 cm. dia. class. The existence of Tsuga brunoniana over 70 cm. is perhaps due to retention of high forest trees in the plantation area.

#### 6.1.5 Volume (Stratum-V):

In stratum-V before thinning volumetric composition was as follows:-

	Stem timber	Small wood	Total volume
	1.716 m <sup>3</sup> /ha.	28.348 m <sup>3</sup> /ha.	30.564 m <sup>3</sup> /ha.

Study of Table No.4.1.5 and 5.1.5 indicate the following situation of major contributing species:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	Total volume m <sup>3</sup> /ha.
<u>Alnus nepalensis</u>	-	1.483	-	14.67
<u>Cryptomeria japonica</u>	0.954	18.240	19.119	62.80
<u>Tectona grandis</u>	0.575	4.914	8.546	17.96

S.W. = Small wood

S.T. = Stem timber

Volume contribution of the above species in various diameter classes was as follows:-

Species name & vol/ha.	% of volume per ha. in diameter classes(cm.) (inclusive of S.T. & S.W. before thinning)					Total
	10-19	20-29	30-39	40-49	50-59	
<u>Alnus</u> <u>nepalensis</u> (5.483 m <sup>3</sup> /ha.)	87.31	12.69	-	-	-	100.00
<u>Cryptomeria</u> <u>japonica</u> (19.194 m <sup>3</sup> /ha.)	91.50	8.50	-	-	-	100.00
<u>Tectona</u> <u>grandis</u> (5.489 m <sup>3</sup> /ha.)	83.07	16.93	-	-	-	100.00

The table above will indicate that in higher areas Cryptomeria & Alnus are the main species of plantation in recent years and in lower hills and plains the main species is teak. Thus, monoculture has been a trend in recent years.

#### 6.2. Contribution of volume by Cryptomeria japonica in different strata:

Cryptomeria japonica is the main volume contributing species in Darjeeling. Its significance in the plantations is very important as it is an exotic in the area. The species yields structural timber in Japan Islands but in Darjeeling it grows too fast and can not yield structural timber. Locally the timber is used for various purposes and its utility as pulpwood is yet to be tested on the production of quality paper.

A comparative statement on the volume contribution of this species in various stratum is furnished below:-

Stratum	Total volume/ha.	% of total volume of the stratum
I	99.311 m <sup>3</sup>	50.07
II	82.959 "	46.64
III	47.047 "	45.12
IV	49.243 "	56.74
V	19.194 "	62.80

S.W. = Small wood

S.T. = Stem timber

6.3. Total volume in Darjeeling Division at the time of inventory:

The volume contribution by various stratum in Darjeeling Division and the total volume can be perused from the summary given below:-

Division: Darjeeling (Tables 8.1.1 to 8.1.5 and 9.1.1 to 9.1.5)

Stratum	Total volume ('000 m <sup>3</sup> )	
	Stem timber	Small wood
I	114.079	32.969
II	252.805	100.374
III	90.674	52.570
IV	94.654	96.031
V	4.841	91.148
	557.053	373.092

The total stock of 147.048 ('000 m<sup>3</sup>) will thus be available by felling of plantations in Stratum-I in Darjeeling Division over an area of 742.53 ha. Thus on an average the volume outturn from the plantations of Stratum-I is 198 m<sup>3</sup>/ha. This yield from the plantations would include species Cryptomeria japonica on a very large scale, other important species are Alnus nepalensis, Duabanga sonneratoides, Nicelia spp., Machilus spp., Schima wallichii and Terminalia myriocarpa.

C H A P T E R - VII.

VOLUME STUDY - KALIMPONG DIVISION

7.1. Volumetric composition of crop(before thinning) Stem timber and small wood Kalimpong Division:

Study of volume contribution of different species in various stratum indicates that Tectona grandis, Shorea robusta, Michelia champaca, Duabanga sonneretiioides, Schima wallichii are important. These species occur significantly in various stratum and their diameter and height development are good.

7.1.1. Volume(stratum-I):

In Stratum-I, the volumetric composition before thinning was as follows:-

	<u>Stem timber</u>	<u>Small wood</u>	<u>Total</u>
	81.371 m <sup>3</sup> /ha.	21.304 m <sup>3</sup> /ha.	102.675 m <sup>3</sup> /ha.

A study of the Table numbers 4.2.1 and 5.2.1 of this report indicates the volume contribution of the various species as below:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	% to the total vol. in the stratum Ratio
<u>Alnus</u> <u>nopaleensis</u>	2.875	1.684	0.585	4.44
<u>Duabanga</u> <u>sonneretiioides</u>	18.034	4.198	0.232	21.65
<u>Michelia</u> <u>champaca</u>	4.757	1.153	0.242	5.75
<u>Shorea</u> <u>robusta</u>	11.248	1.916	0.170	12.82
<u>Schima</u> <u>wallichii</u>	14.055	3.451	0.245	17.04
<u>Terminalia</u> <u>myriocarpa</u>	7.087	1.871	0.264	8.72

S.W. = Small wood

S.T. = Stem timber

Species name & Vol./ha.	% of volume/ha. in different dia. class(cm.) Total (inclusive of S.T. & S.W.-before thinning)							Total 100.00
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<u>Alnus nepalensis</u> (14.559 m <sup>3</sup> /ha.)	26.14	-	40.20	33.66	-	-	-	100.00
<u>Duabanga sonneretiioides</u> (22.232 m <sup>3</sup> /ha.)	-	1.00	18.10	38.17	30.86	11.87	-	100.00
<u>Michelia champaca</u> (5.910 m <sup>3</sup> /ha.)	-	1.90	38.25	6.83	23.21	29.81	-	100.00
<u>Shorea robusta</u> (13.164 m <sup>3</sup> /ha.)	0.50	-	12.25	54.62	2.51	24.12	-	100.00
<u>Schima wallichii</u> (17.506 m <sup>3</sup> /ha.)	0.54	4.47	11.48	20.78	27.44	20.11	15.18	100.00
<u>Terminalia myriocarpa</u> (8.958 m <sup>3</sup> /ha.)	-	6.25	36.47	49.62	7.66	-	-	100.00

It is pertinent to note that in contrast to Darjeeling Division, where Cryptomeria japonica forms the principal species in Stratum-I, Schima wallichii is the main species covering all the dia. classes in Kalimpong Division.

Shorea robusta although practically absent in Darjeeling Division shows marked prominence in the stratum. This is due to the fact that the hill soil of Kalimpong Division is more dry and rocky and foot hill forest extend over much larger area in Kalimpong Division.

#### 7.1.2. Volume(Stratum-II):

In Stratum-II, the volumetric composition was as follows before thinning:

Stem timber	Small wood	Total volume
104.671 m <sup>3</sup> /ha.	27.995 m <sup>3</sup> /ha.	132.666 m <sup>3</sup> /ha.

Study of Table numbers 4.2.2 and 5.2.2 indicate the following volume contribution of some major species:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. in stratum	% to Total Vol.
<u>Alnus nepalensis</u>	12.472	2.194	0.175	11.05
<u>Cryptomeria japonica</u>	13.532	4.074	0.301	13.27
<u>Chukrasia tabularis</u>	4.499	1.107	0.243	4.23
<u>Duabanga sonneretiioides</u>	6.906	1.679	0.243	6.47
<u>Michelia champaca</u>	5.318	1.536	0.264	5.54
<u>Shorea robusta</u>	13.938	4.181	0.300	13.65
<u>Schima wallichii</u>	1.851	0.573	0.309	1.82
<u>Tectona grandis</u>	8.974	1.268	0.241	7.72
<u>Terminalia myriocarpa</u>	5.381	1.406	0.261	5.11

S.W. = Small wood = S.T. Stem timber

Volumetric composition of the above species in various diameter classes was as follows:-

Species name & vol./ha.	% of volume/ha. in different dia. class(cm.) inclusive of S.T. & S.W. before thinning								Total 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<u>Alnus nepalensis</u> (14.666 m <sup>3</sup> /ha.)	-	0.79	19.05	27.89	35.42	16.85	-	-	100.00
<u>Cryptomeria japonica</u> (6.230 m <sup>3</sup> /ha.)	-	6.39	25.73	35.26	28.79	3.81	-	-	100.00
<u>Chukrasia tabularis</u> (5.606 m <sup>3</sup> /ha.)	0.21	3.79	25.59	38.44	14.00	17.97	-	-	100.00
<u>Dubabanga sonneretiioides</u> (8.585 m <sup>3</sup> /ha.)	-	2.48	30.09	30.48	21.32	15.63	-	-	100.00
<u>Michelia ch-ampaca</u> (77.354 m <sup>3</sup> /ha.)	-	8.70	24.72	31.39	17.78	9.11	-	8.30	100.00
<u>Shorea robusta</u> (18.119 m <sup>3</sup> /ha.)	0.07	6.69	45.98	32.74	9.72	-	4.80	-	100.00

The table above indicates that most of the important species have got a good representation in almost all the diameter classes.

#### 7.1.3. Volume (Stratum-III):

In Stratum-III, volumetric composition was as follows before thinning:

Stem timber	Small wood	Total volume
61.873 m <sup>3</sup> /ha.	20.572 m <sup>3</sup> /ha.	97.445 m <sup>3</sup> /ha.

Study of table numbers 4.2.3 and 5.2.3 indicate the following situation of volume contribution by major species in the stratum:

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	% to total vol. in the stratum
<u>Alnus nepalensis</u>	19.639	4.598	0.234	26.50
<u>Dubabanga sonneretiioides</u>	9.730	3.418	0.351	14.37
<u>Schima wallichii</u>	12.860	0.979	0.342	4.19
<u>Tectona grandis</u>	2.529	0.481	0.190	3.29
<u>Terminalia myriocarpa</u>	7.162	4.087	0.569	12.32

S.W. = Small wood    S.T. = Stem timber

Volumetric composition of the above species in various diameter classes is indicated hereunder:-

Species name & vol./ha.	% to volume per ha. in different dia. class(cm) Total inclusive of S.T. & S.W.- before thinning)							10-19	20-29	30-39	40-49	50-59	60-69	70-79	
	10-19	20-29	30-39	40-49	50-59	60-69	70-79								
<u>Alnus nepalensis</u> (24.237 m <sup>3</sup> /ha.)	0.59	4.64	45.07	39.62	9.78	-	-								100.00
<u>Duabanga sonneretiioides</u> (13.148 m <sup>3</sup> /ha.)	2.48	18.68	35.88	32.07	10.89	-	-								100.00
<u>Schima wallichii</u> (3.839 m <sup>3</sup> /ha.)	5.11	12.19	13.64	32.95	-	-	-								36.11 100.00
<u>Tectona grandis</u> (3.01 m <sup>3</sup> /ha.)	2.48	11.32	45.81	16.81	23.58	-	-								100.00

Most of the important species in the stratum shows even distribution in various diameter classes except Schima wallichii. The sudden occurrence of Schima wallichii in dia. classes (70-79) cm. is perhaps due to retention of mother trees in the plantation area due to silvicultural reason.

#### 7.1.4. Volume (Stratum-IV):

In stratum-IV, the volumetric composition before thinning was as follows:-

	<u>Stem timber</u>	<u>Small wood</u>	<u>Total volume</u>
	66.398 m <sup>3</sup> /ha.	42.261 m <sup>3</sup> /ha.	108.659 m <sup>3</sup> /ha.

A study of Table Nos. 4.2.4 and 5.2.4 of this report indicates the volume contribution of the various species as below:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. %	S.T. %	of total vol. in the stratum
<u>Alnus nepalensis</u>	4.440	1.435	0.32	5.40	
<u>Cryptomeria japonica</u>	4.572	2.566	0.56	6.56	
<u>Duabanga sonneretiioides</u>	7.424	2.095	0.28	8.76	
<u>Shorea robusta</u>	5.051	7.596	1.50	11.64	
<u>Tectona grandis</u>	17.803	8.003	0.45	23.75	

S.W. = Small wood

S.T. = Stem timber

In Stratum-IV, the volumetric composition of the above species in various diameter classes is indicated hereunder:-

Species name & vol./ha.	% of volume per ha. in different dia. classes (cm.) inclusive of S.T. & S.W. before thinning							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<u>Alnus nepalensis</u> (5.875 m <sup>3</sup> /ha.)	0.67	10.12	66.84	22.37	-	-	-	100.00
<u>Cryptomeria japonica</u> (7.128 m <sup>3</sup> /ha.)	11.77	59.02	29.21	-	-	-	-	100.00
<u>Duabanga sonneretiioides</u> (9.519 m <sup>3</sup> /ha.)	0.85	10.09	22.61	21.84	24.72	7.93	11.96	100.00
<u>Shorea robusta</u> (12.647 m <sup>3</sup> /ha.)	24.68	55.40	19.92	-	-	-	-	100.00
<u>Tectona grandis</u> (25.806 m <sup>3</sup> /ha.)	3.60	53.02	26.66	6.78	4.94	-	-	100.00

Duabanga sonneretiioides evenly covers all the diameter classes in the strata which indicate luxuriant growth of the species in the strata.

#### 7.1.5. Volume (Stratum-V):

In Stratum-V, the volumetric composition before thinning was as follows:-

	Stem timber	Small wood	Total volume
	18.694 m <sup>3</sup> /ha.	25.251 m <sup>3</sup> /ha.	43.945 m <sup>3</sup> /ha.

Study of Table nos. 4.2.5 and 5.2.5 of this report indicates the volume contribution of various species as below:-

Species name	Stem timber m <sup>3</sup> /ha.	Small wood m <sup>3</sup> /ha.	S.W. S.T.	% of total vol. in the stratum
<u>Cryptomeria japonica</u>	1.421	2.215	1.55	8.27
<u>Duabanga sonneretiioides</u>	3.296	1.268	0.38	10.39
<u>Terminalia myriocarpa</u>	0.260	1.427	5.49	3.84
<u>Tectona grandis</u>	8.09	5.764	0.71	31.53

S.W. = Small wood - S.T. Stem timber

Species name & vol./ha.	% of Vol. per ha. in different dia. classes (cm.) (inclusive of S.T. & S.W. before thinning)						Total 100+
	10-19	20-29	30-39	40-49	50-59	60-69	
<u>Cryptomeria</u> <u>japonica</u> (3.626 m <sup>3</sup> /ha.)	42.57	50.88	6.55	-	-	-	100.00
<u>Duabanga</u> <u>sonneretiioides</u> (4.564 m <sup>3</sup> /ha.)	5.52	17.84	26.64	50.00	-	-	100.00
<u>Terminalia</u> <u>myriocarpa</u> (1.687 m <sup>3</sup> /ha.)	73.21	26.79	-	-	-	-	100.00
<u>Tectona</u> <u>grandis</u> (13.86 m <sup>3</sup> /ha.)	24.07	45.20	14.65	-	-	16.08	100.00

Duabanga sonneretiioides shows faster growth than any other species in the stratum. The existence of Tectona grandis in the dia. class 100 cm.+ is perhaps due to inclusion of roadside teak planted in earlier years which fell in the plantation area.

#### 7.2. Volume contribution by various stratum:

Volume contribution by various stratum in Kalimpong Division indicates that plantations in Stratum-I are likely to yield only 102.675 m<sup>3</sup>/ha. and these plantations are sufficiently old and may be felled. This yield from plantation is lower than the yield attained from high forests. Proportionate decrease in yield in comparison to high forests in respect of Stratum-I is nearly 33%. In comparison to Darjeeling Division, the volume in Stratum-I in Kalimpong Division is poor. Yield in Kalimpong Division is only 50% of Stratum-I in Darjeeling Division.

Miscellaneous hardwood species trend in stratum-I have not registered good growth and plantations have been eroded in many places. Ratio of well stocked and eroded plantations in Kalimpong Division is 46 : 54. The situation in Darjeeling division is different and the same ratio is 39: 61. So plantation management in Kalimpong Division need be reoriented to improve the existing conditions and justify the need of raising plantations. Plantations of Stratum-II, III, IV & V are better and yield from these plantations is comparatively higher on account of species like Duabanga sonneretiioides, Schima

wallichii and Shorea robusta. Alnus nepalensis and Tectona grandis are also important next to the above mentioned species.

7.3. Total volume in Kalimpong Division at the time of inventory:

The volume contribution by various stratum in Kalimpong Division and aggregate of volume can be perused from the summary given below:-

Division: Kalimpong (Tables 8.2.1 to 8.2.5 and 9.2.1 to 9.2.5)

<u>Stratum</u>	<u>Total volume ('000 m<sup>3</sup>)</u>	
	<u>Stem timber</u>	<u>Small timber</u>
I	54.703	14.348
II	267.717	71.735
III	79.037	37.968
IV	170.172	108.370
V	62.631	83.694
	<hr/>	<hr/>
	633.66	316.115
	<hr/>	<hr/>

The situation is indicating that the plantations in Stratum-I are eroded and should not be kept as such. This has been already analysed in paragraph 7.2.6. Miscellaneous species like Alnus nepalensis, Duabanga sonneretiioides, Shorea robusta, Schima wallichii, Terminalia myriocarpa, are available from the plantations of stratum-I.

C H A P T E R - VIII.

STUDY OF THINNING REMOVAL & DARJEELING DIVISION

8.1. Thinning by stratum: Darjeeling Division:

Immediately after plantation inventory in Darjeeling Division, thinning marking was undertaken in plantations by State Forest Department. If the marked trees are actually felled and removed, the inventory results would be changed to certain extent. The extent of thinning marking done by the State Forest Department was as follows:-

<u>Stratum in years.</u>	<u>Area in hectare</u>
I (Up to 1925)	50.80
II (1926-45)	232.40
III (1946-55)	43.20
IV (1956-65)	125.20
V (1966-75)	102.00

8.2. Stem removal by thinning:

Plantations in various stratum were marked for thinning in Darjeeling Division. Extent of such marking in various stratum have been indicated in para 8.1. Trees marked in plantations belong to various diameter classes, the situation of marking can be studied from Table No.2.1.1 to 2.1.5. However, the concentration of thinning marking in certain dia. classes(in various stratum) is important and the same is indicated hereunder:-

TABLE SHOWING THINNING(BY %) PER HA. IN MAJOR DIA.CLASSES

Stratum	Dia. class(cm.)	% of thinning(in terms of no. of stems marked)
I	30-39	38.2
	40-49	33.9
	50-59	14.8
II	10-19	23.8
	20-29	24.6
	30-39	27.4
	40-49	17.2
III	10-19	21.3
	20-29	24.3
	30-39	34.3
	40-49	16.0

Stratum	Dia. class(cm.)	% of thinning(in terms of no. of stems marked)
IV	10-19	76.9
	20-29	21.4
V	10-19	41.2
	20-29	14.3
	30-39	27.2

8.3. Volume to be removed by stratum on account of thinning:

Removal of stem timber and small wood on account of thinning operation would be as follows in various stratum if the felling of trees are done

Stratum	Area thinned(ha.)	Volume removal(m <sup>3</sup> )	
		Stem timber	Small wood
I	50.80	587.00	104.00
II	232.40	2147.00	487.00
III	43.20	176.00	41.00
IV	125.20	158.00	65.00
V	102.00	296.00	65.00

8.3.1. Volume contribution of stem timber by species:

Volume contribution of the following species is important in case of thinning removal of stem timber:

Stratum	Name of the species	Vol.(%)
I	<u>Castanopsis spp.</u>	20.95
	<u>Dubanga sonneretiioides</u>	16.18
	<u>Erythrina spp.</u>	6.98
	<u>Schima wallichii</u>	4.77
	<u>Terminalia myriocarpa</u>	3.74
II	<u>Dubanga spp.</u>	22.31
	<u>Shorea robusta</u>	18.30
	<u>Terminalia myriocarpa</u>	10.99
	<u>Tectona grandis</u>	15.46

Stratum	Name of the species	Vol.(%)
III	<u>Duabanga spp.</u>	46.59
	<u>Gemelina arborea</u>	7.39
	<u>Tectona grandis</u>	9.66
IV	<u>Tectona grandis</u>	80.38
V	<u>Erythrina spp.</u>	7.09
	<u>Shorea robusta</u>	27.36
	<u>Schima wallichii</u>	12.50

8.4. Volume retained after thinning by stratum:

On completion of removal of trees marked for thinning the stem and small wood volume of various species in different stratum would be as follows in Darjeeling Division:

Stratum	Volume (000 m <sup>3</sup> ) retained	
	Stem timber	Small wood
I	113.492	32.865
II	250.658	99.887
III	90.498	52.529
IV	94.496	95.966
V	4.545	91.083
<b>Total:</b>	<b>553.689</b>	<b>372.330</b>

In Darjeeling Division total volume of growing stock standing after thinning will be 926.019(000 m<sup>3</sup>) including stem timber and small wood. Average volume per ha. (irrespective of stratum) works out to be 97.65 m<sup>3</sup> after completion of thinning operations in various plantations. Out of the total of 97.65 m<sup>3</sup>/ha. stem timber constitutes nearly 58.39 m<sup>3</sup>/ha.

Plantations in Stratum-I over 742.53 ha. may be considered in mature stage with a growing stock of 198.00 m<sup>3</sup>/ha.

C H A P T E R - IX.

STUDY OF THINNING REMOVAL - KALIMPONG DIVISION

9.1. Thinning by stratum: Kalimpong Division:

After the completion of plantation inventory in Kalimpong Division, thinning marking was carried out by the State Forest Department. If the trees marked for thinning are removed, the inventory results would be changed to some extent. The extent of thinning marking in Kalimpong Division by the State Forest Department was as follows:-

Stratum/Years	Area(ha.)
I (Up to 1925 )	58.80
II (1926-45)	476.00
III (1946-55)	118.80
IV (1956-65)	602.08
V (1966-75)	184.00

9.2 Stem removal by thinning:

Plantations in various stratum were marked for thinning in Kalimpong Division. Extent of such marking in various stratum have been indicated in para 9.1. Trees marked in plantations belong to various diameter classes. The nature of stands marked for thinning may be studied from Table numbers 2.2.1 to 2.2.5.

However, concentration of thinning marking in certain dia. classes(in various stratum) is important and the same is indicated hereunder:-

TABLE SHOWING THINNING (BY%) PER HA. IN MAJOR DIA.CLASS

Stratum	Dia. class(cm.)	% thinning(in terms of no.of stems marked)
I	30-39	55.9
	40-49	28.3
II	10-19	14.5
	20-29	26.3
	30-39	38.7
III	20-29	25.6
	30-39	58.3

Stratum	Dia. class(cm.)	% thinning(in terms of no. of stem marked)
IV	10-19	35.8
V	20-29	25.1
	30-39	22.9
	10-19	74.7

9.3.1. Volume to be removed by stratum on account of thinning:

Removal of stem timber and small wood on account of thinning operation would be as follows in various stratum if the felling of trees are done:-

Stratum	Area thinned(ha.)	<u>Vol. of removal by thinning</u>	
		Stem timber (m <sup>3</sup> )	Small wood (m <sup>3</sup> )
I	58.80	532	146
II	476.00	2529	1139
III	118.80	224	88
IV	602.08	2254	838
V	184.00	134	120

9.3.2. Volume contribution of stem timber by species:

Volume contribution of the following species is important in case thinning removal of stem timber:-

Stratum	Name of the species	Vol.(%)
I	<u>Alnus spp.</u>	13.53
	<u>Dubanga sonneretioides</u>	13.72
	<u>Shorea robusta</u>	65.60
	<u>Cryptomeria japonica</u>	58.44
II	<u>Shorea robusta</u>	34.40
	<u>Dubanga sonneretioides</u>	25.89
	<u>Shorea robusta</u>	25.00
	<u>Toona serrata</u>	5.80
III	<u>Tetrameles nudiflora</u>	17.86
	<u>Alangium spp.</u>	37.75
	<u>Shorea robusta</u>	8.03
	<u>Tectona grandis</u>	42.36
IV	<u>Tectona grandis</u>	98.51
V		

9.4. Volume retained after thinning by stratum:

On completion of felling of marked trees during thinning the volumetric composition in various stratum would be as follows:-

Stratum	Volume ('000 m <sup>3</sup> ) retained	
	Stem timber	Small wood
I	54.171	14.202
II	265.188	70.596
III	78.813	37.880
IV	167.918	107.532
V	61.477	83.574
<b>Total:</b>	<b>627.587</b>	<b>313.784</b>

In Kalimpong Division the volume of total growing stock after thinning including stem timber and small wood would be 941.377 ('000 m<sup>3</sup>) which is comparable with total growing stock of stem timber and small wood in Darjeeling which is 926.019('000 m<sup>3</sup>). Average volume per ha. in Kalimpong Division (irrespective of stratum) works out to be 90.17 m<sup>3</sup>. The proportion of stem timber will be nearly 60.12 m<sup>3</sup>/ha. after thinning operation in various plantations.

Plantations in Stratum-I over 683.48 ha. may be considered in mature stage and can yield 100 m<sup>3</sup>/ha. These plantations are rather poor and need not be kept for future considering expectation value of land.

C H A P T E R - X

DEFECTIVE STEMS

10.1. Damage to crop:

Damage to plantation crops were studied from available data of thinning marking carried out by the State Forest Department. Damage due to biotic factors are present but other damages in the plantation have also been noticed in all the stratum in Kalimpong and Darjeeling Forest Divisions.

10.2. Nature of defects:

Various defects were noticed at the time of thinning marking which can be codified for the purpose of present study as follows:-

<u>Nature of defects in the trees</u>	<u>Code</u>
Sound	1
Forked	2
Bend	3
Top broken	4
Dry	5
Top drying	6
Crooked	7
Hollow	8
Top bending	9

10.3. Distribution of defective stems by stratum:

Above mentioned defects have been noticed in both Kalimpong and Darjeeling Divisions. The distribution of defective stems/ha. under various categories can be represented on per hectare basis as follows:-

Project area	No. of defective stems per hectare- Stratumwise				
	I	II	III	IV	V
Darjeeling	3.428	3.752	1.224	2.064	1.288
<b>&amp; Kalimpong Divisions.</b>					

Considering reported plantation areas under various stratum, the anticipated number of total defective stems in the plantations of Darjeeling and Kalimpong Divisions may be as follows:-

Stratum	Anticipated No. of defective trees
I	4844
II	17124
III	3208
IV	9861
V	8489
Total:	43526

#### 10.4 Stem defects in stratum:

In stratum-I, many trees are drying, nearly 45% of the defective stems in this stratum will fall under this category. Species like Duabanga sonnereticoides, Castanopsis spp., Chukrassia tabularis, Toona ciliata, Terminalia myriocarpa are found to be top drying and they constitute nearly 33% of the total defective stems/ha. In this stratum, defects like drying and top drying are very common and these two defects combined constitute 78% of the total defective stems/ha.

In Stratum II, occurrence of defective stems is highest. Here also the major defect is drying of stands which constitute nearly 34% of the total defective stems/ha. Further about 17% of the total defective stems are top broken. The other category of defects noticed in the stem in this stratum is top drying which constitute 20% of the total defective stems/ha. Thus these three defects combined constitute nearly 71% of the total defective stems/ha. in this stratum. Shorea robusta has been largely affected by the defect of top breaking whereas species like Duabanga sonnereticoides is largely drying up in this stratum. Besides these defects, Tectona grandis is found to be forked like Shorea robusta. This defect is also high in Stratum-II being nearly 12% of the total defective stems/ha.

In Stratum-III, besides drying and top drying hollowing and top breaking of stems have been noticed. These defects largely occur in case of species like Duabanga sonneretiioides which constitute nearly 59% of the defective stems/ha. Shorea robusta in this stratum constitute 5% of the defective stems/ha and the nature of defect in this case is top drying mainly.

In Stratum-IV, Tectona grandis has suffered from defects like forking, bending, top breaking. Distribution of such defective stems in Stratum-IV in respect of Tectona grandis are furnished below:-

Defects	Code	Stems/ha.	% to total defective stems/ha.
Forking	2	0.439	21.27
Bending	3	0.553	26.79
Top broken	4	0.602	29.16
Total:		1.694	77.22

Since Tectona grandis is important from commercial point of view, silvicultural causes of forking, bending may be traced out and remedial action to be taken in time.

In Stratum-V, forking, top breaking and drying are the major defects. These defects constitute nearly 78% of the total defective stems/ha.

Defects like top drying, hollowness and drying are found to occur frequently compared to other defects. These categories of defects have been all noticed in the stratum and they account for a substantial part of the defective stems in the plantations of Darjeeling and Kalimpong Divisions. Occurrence of these defects in combined areas of Darjeeling and Kalimpong Divisions are furnished below:-

Stratum	% of defective stems under code numbers 5,6&8 to the total defective stems in unit/ha.
I	86
II	59
III	70
IV	15
V	46

Considering the intensity of hollowing of stems, drying and top drying of various species, it may be necessary to consider removal of stems of a few species raised during earlier years at the time of thinning by giving preference to other species. Dry and hollowness etc. of stems in various stratum as accounted above require also some change in the selection of species in the plantations. For example planting of Duabanga sonneretiioides may be discouraged in view of the high percentage of defects like drying, hollowness of stems in that species. It appears that mortality of stems depends not only on age but also on locality factors. Following species are commonly found to either dry up or develop hollowness in various stratum:-

Stratum	Name of the species
I	<u>Castanopsis indica</u> <u>Duabanga sonneretiioides</u> <u>Toona serrata</u> <u>Terminalia myriocarpa</u>
II	<u>Castanopsis indica</u> <u>Duabanga sonneretiioides</u> <u>Schima wallichii</u> <u>Toona serrata</u> <u>Terminalia myriocarpa</u>
III	<u>Duabanga sonneretiioides</u> <u>Gmelina arborea</u>
IV	<u>Tectona grandis</u>
V	<u>Castanopsis indica</u>

10.5

Sound stems marked during thinning:

An account of sound stems marked during thinning in various stratum is furnished below:-

Stratum	No. of sound stems marked during thinning (stems/ha.)
I	10.715
II	15.938
III	8.960
IV	18.958
V	5.866

The removal of stems (both sound and defective) on account of thinning will ultimately bring a change in the volumetric composition of growing stock. This has been considered while calculating the volumetric composition of growing stock in Darjeeling and Kalimpong Divisions in the Chapters VIII & IX. Species marked in sound condition in various stratum in Kalimpong and Darjeeling Divisions during thinning are furnished below:-

Stratum	Species marked as sound trees
I	<u>Alnus nepalensis</u> <u>Castanopsis indica</u> <u>Castanopsis aronata</u> <u>Chukrassia tabularis</u> <u>Erythrina spp.</u> <u>Gmelina arborea</u> <u>Toona serrata</u> <u>Toona ciliata</u> <u>Terminalia myriocarpa</u> <u>Tetrameles nudiflora</u>
II	<u>Amoora species</u> <u>Bombax ceiba</u> <u>Canarium resiniferum</u> <u>Chukrassia tabularis</u> <u>Dua-banga sonneretiioides</u> <u>Gmelina arborea</u> <u>Shorea robusta</u> <u>Toona serrata</u> <u>Tectona grandis</u>
III	<u>Albizzia spp.</u> <u>Amoora spp.</u> <u>Castanopsis spp.</u> <u>Duabanga sonneretiioides</u> <u>Shorea robusta</u> <u>Terminalia tomentosa</u> <u>Terminalia myriocarpa</u> <u>Tectona grandis</u>

Stratum	Species marked as sound trees
IV	<u>Cinnamomum tamala</u> <u>Cordya spp.</u> <u>Duabanga sonneratiioides</u> <u>Shorea robusta</u> <u>Tectona grandis</u> <u>Terminalia myriocarpa</u> <u>Castanopsis spp.</u> <u>Cinnamomum tamala</u> <u>Gmelina arborea</u> <u>Shorea robusta</u> <u>Tectona grandis</u> <u>Terminalia beccariana</u> <u>Terminalia myriocarpa</u>

No thinning marking was carried out in the plantations of Cryptomeria japonica and as such coniferous plantations in Darjeeling/Kalimpong Divisions could not be taken into account for the purpose of present study of defective stems. However, felled tree data of Cryptomeria japonica indicates that the stems are largely sound and do not bear any defect to appreciable extent.

C H A P T E R - XI.

VARIATION WITH PAST STUDIES.

**11.1. Forest Resources Survey:**

Forest Resources Survey works were carried out by the State Forest Department in early seventies in respect of plantations in Darjeeling and Kalimpong Divisions. Reports in this regard were published from Planning & Statistical Cell of Chief Conservator of Forests, West Bengal during 1973 and 1975. Plantations up to 1970 were surveyed in Darjeeling Division. Similarly plantations up to 1971 were surveyed in Kalimpong Division. Current plantation inventory includes survey of plantations up to 1972 and the survey work was carried out during 1981-82 & 1982-83.

**11.2 Comparative volume study during resources survey carried out by the State & Forest Survey Of India:**

Study of tree volume was carried out during resources survey by the State Forest Deptt. and results are available in the published reports. It appears from such published reports that trees below 30 cm. dia. were considered only for calculation of small wood. In this current report of plantation inventory, trees below 20 cm. diameter have been considered for estimation of small wood only. There is a gap of approximately 10 years between the current study and the resources survey carried out by the State Forest Department. The gap between the two estimates of growing stock has been analysed here:-

Reporting year	Division	Stem timber ('000 m <sup>3</sup> )	Small/fuelwood ('000 m <sup>3</sup> )
1973(State)	Darjeeling	491.8046	878.6231
1985(F.S.I.)	Darjeeling	557.053	373.092
1975(State)	Kalimpong	314.4616	542.2268
1985(F.S.I.)	Kalimpong	633.2600	316.1150

(Reporting year 1973 & 1975: State Forest Department)

(Reporting year 1985 : Forest Survey Of India)

It may be interesting to compare the total volumetric assessment(stem timber & small wood/fuelwood) in Darjeeling and Kalimpong Divisions as furnished below:-

Reporting year	Division	Total growing stock ('000 m <sup>3</sup> )
1973(State)	Darjeeling	1370.4277
1985(F.S.I.)	Darjeeling	930+145
1975(State)	Kalimpong	856.6884
1985(F.S.I.)	Kalimpong	949.375

The composition of results of the two surveys indicates that there has been some increase in the total growing stock of plantations in Kalimpong Division; but there is a great fall in the total growing stock of plantations in Darjeeling Division. The fall of growing stock in Darjeeling Division is primarily due to illicit removal of sizeable stems from middle aged and older plantations, and manufacture of charcoal from some of these plantations in the name of improvement felling.

It is stated already that the trees below 30 cm. dia. constitute small/fuelwood only in the report of State Forest Department. In this context, contribution of volume of trees between 20-30 cm. as found during current survey is given below:-

Trees between 20-30 cm. <sub>2</sub> dia.	Division	Stem timber in ('000 m <sup>3</sup> )
All species taken together including conifers.	Darjeeling	131.023
	Kalimpong	138.622

If these volume of stem timber of 131.023 ('000 m<sup>3</sup>) and 138.622('000 m<sup>3</sup>) in Darjeeling and Kalimpong Divisions respectively are accounted as small/fuelwood, the volume of stem timber and small/fuelwood in this report will change and the position will stand as follows:-

Reporting year	Division	Stem timber ('000 m <sup>3</sup> )	Small/fuelwood ('000 m <sup>3</sup> )
1973(State)	Darjeeling	491.8046	878.6231
1985(F.S.I.)	Darjeeling	426.0300	504.115
1975(STATE)	Kalimpong	314.4616	542.2268
1985(F.S.I.)	Kalimpong	494.6380	454.7370

Consequently the ratio of stem timber and small wood would be as under:-

Reporting year	Division	Stem timber: Fuelwood
1973(State)	Darjeeling	1: 1.8
1985(F.S.I.)	Darjeeling	1: 1.2
1975(STATE)	Kalimpong	1: 1.7
1985(F.S.I.)	Kalimpong	1: 0.9

Fuelwood/small wood ratio as calculated in this report indicates that a large number of trees are lying in lower diameter class and they contribute very largely towards smallwood. This has been elaborately analysed in earlier chapters which indicate that many species have not yet crossed the optimum diameter limit to yield higher proportion of stem timber. Contributions of some species towards total volume as per State Resources Survey Report are compared with relevant figures of this report and furnished below:-

Species name	Division	Reporting year	Contribut- ion % (stem timber)
<u>Alnus nepalensis</u>	Darjeeling	1973(State) 1985(F.S.I.)	9.61 2.61
<u>Cryptomeria japonica</u>	Darjeeling	1973(State) 1985(F.S.I.)	70.23 56.24
<u>Dubanga sonneretiioides</u>	Darjeeling	1973(State) 1985(F.S.I.)	2.52 3.87
<u>Michelia spp.</u>	Darjeeling	1973(State) 1985 (F.S.I.)	4.94 3.33
<u>Nachilus spp.</u>	Darjeeling	1973 (State) 1985 (F.S.I.)	4.74 2.18

Species name	Division	Reporting year	Contribution % (stem timber)
<u>Shorea robusta</u>	Darjeeling	1973 (State)	2.23
		1985 (F.S.I.)	2.12
<u>Tectona grandis</u>	Darjeeling	1973 (State)	0.64
		1985 (F.S.I.)	4.46
<u>Ailanthus grandis</u>	Kalimpong	1975 (State)	0.59
		1985 (F.S.I.)	1.10
<u>Alnus nepalensis</u>	Kalimpong	1975 (State)	23.89
		1985 (F.S.I.)	11.17
<u>Cryptomeria japonica</u>	Kalimpong	1975 (State)	1.47
		1985 (F.S.I.)	4.50
<u>Duabanga sonneretiioides</u>	Kalimpong	1975 (State)	6.23
		1985 (F.S.I.)	11.47
<u>Michelia champaca</u>	Kalimpong	1975 (State)	11.79
		1985 (F.S.I.)	3.91
<u>Shorea robusta</u>	Kalimpong	1975 (State)	4.82
		1985 (F.S.I.)	8.93
<u>Schima wallichii</u>	Kalimpong	1975 (State)	3.08
		1985 (F.S.I.)	5.66
<u>Tectona grandis</u>	Kalimpong	1975 (State)	6.17
		1985 (F.S.I.)	15.63
<u>Terminalia myriocarpa</u>	Kalimpong	1975 (State)	7.52
		1985 (F.S.I.)	5.36

Estimates of contribution of stem timber of some species of State Resources Survey report indicate large variation in Darjeeling & Kalimpong Divisions when compared with current findings:-

Species indicating large variation in volume contribution	Name of Division	Remarks
<u>Alnus nepalensis</u>	Kalimpong	Fall in % contribution
<u>Cryptomeria japonica</u>	Darjeeling	Rise in % contribution
	Kalimpong	Fall in -do-
<u>Duabanga sonneretiioides</u>	Kalimpong	Rise in -do-
<u>Michelia champaca</u>	Kalimpong	Fall in -do-
<u>Shorea robusta</u>	Kalimpong	Rise in -do-
<u>Tectona grandis</u>	Darjeeling	Rise in -do-
	Kalimpong	Rise in -do-

It can be seen from the table that conspicuous increase in volume has been observed over the decade, in both the Divisions, with respect to Tectona grandis only. With respect to other species, the increase in volume is either marginal or there is some rise in one Division and fall in other Division. The most notable feature is the sharp fall of volume over the decade with respect to Cryptomeria in Darjeeling and Nicelia champaca in Kalimpong Division, and Alnus in both the Divisions.

Reported volume for plantations as per the data of State Forest Resources Survey in 1971 and 1973 have been compared with the figures of plantations from the inventory data of Forest Survey Of India during 1981-82 and 1982-83. This does not indicate a prosperous situation with respect to the growing stock in the plantations.

In general, the plantations in Darjeeling Division have better volume content compared to that of Kalimpong Division. Nearly 57.43% of the total plantation area in Darjeeling Division i.e. 5495.86 ha. contain poorly stocked plantations. The figure for Kalimpong Division is 56.31% i.e. 5878.23 hectare. The plantations of Stratum-I in Kalimpong Division are eroded and its average volume per hectare is only  $103 \text{ m}^3$  which is quite low. The figure for Darjeeling Division is  $198 \text{ m}^3 / \text{ha}$ . The volume composition of some of the plantations in Stratum-V in Darjeeling Division indicates that those are stocked with fairly high number of stems/ha. The condition is also the same in Stratum-IV in Darjeeling Division. In Kalimpong Division also some plantations in Stratum-IV are overstocked suggesting removal of stands by thinning.

Detailed study of volume and stem distribution/ha. in various stratum for Darjeeling and Kalimpong Divisions are summarised below:-

DARJEELING DIVISION

Stratum	Well stocked area in ha.	Poorly stocked area in ha.	Av. stems/ ha.	Av.vol. per ha.	Stem/ha. in well stocked area	Stem/ha. in poorly stocked area
I	467.79	274.74	190	198.306	288	86
II	795.48	1193.22	340	177.86	555	166
III	633.40	743.56	300	104.26	435	193
IV	905.57	1303.14	480	86.791	760	217
V	1234.70	1931.20	360	30.564	712	115

KALIMPONG DIVISION

I	-	683.48	120	102.675	-	120
II	11,58.84	1416.36	160	132.666	251	94
III	630.73	656.48	260	87.451	450	135
IV	976.18	1592.71	400	108.659	694	231
V	1795.15	1529.20	320	43.945	476	162

The above tables indicate that plantations in stratum IV & V in Kalimpong division have better growth compared to that of Darjeeling division, whereas the growth and stock of plantations in Stratum I, II & III are better in Darjeeling Division. In Kalimpong division Stratum-IV represents more than 21% of the total well stocked area. Though the number of stems per hectare in stratum IV & V in Kalimpong Division is less than Darjeeling yet the volume per hectare in these two strata in Kalimpong Division is higher due to better height growth and stem development. In Darjeeling Division, Stratum-V represents more than 33% of the total well stocked area and stratum IV 22% of the total well stocked plantations. In a nutshell the distribution of well stocked & poorly stocked plantations as % of total plantation area of the said forest divisions are as under:-

Divisions	Stratum(area in %)				
	I	II	III	IV	V
Darjeeling well stocked area.	63	40	46	41	39
Poorly stocked area.	37	60	54	59	61
Kalimpong well stocked area	-	45	49	38	54
Poorly stocked area.	100	55	51	62	46

It transpires clearly from above table that many areas are poorly stocked in both Darjeeling & Kalimpong Divisions. In Kalimpong Division there is hardly any good plantation in Stratum-I.

It is found from the present study that volume increment in the plantations is varying from 2.50 to 4.35 m<sup>3</sup>/ha. per annum. This does not include the intermediate removal from the plantations made from time to time. Many plantations have been eroded on account of removal of trees due to illicit felling and which can not be accounted for calculating the increment of growing stock.

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

1. Study of the Forest Resources of Darjeeling Forest Division; Part-III Plantation, Planning & Statistical Cell, Chief Conservator Of Forests, West Bengal.
2. A study of the Forest Resources of Kalimpong Forest Division, Part-III Plantations, Planning & Statistical Cell, Chief Conservator Of Forests, West Bengal.
3. Tenth Working Plan for the Darjeeling Forest Division(Part II and Appendices XV to XX); Northern Circle 1967-68 to 1976-77, Government Of West Bengal, Directorate Of Forests.
4. Draft VIII th Working Plan for the Kalimpong Forest Division, West Bengal.
5. Draft XIth Working Plan for the Darjeeling Forest Division, West Bengal.
6. Centenary commemoration, volume West Bengal Forests, 1964.
7. Local volume table for plantation species in Northern Circle West Bengal - P.Guhathakurta & A.S.Anvari, 1971.

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TABLE NO. 1.1.1  
STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

STRATUM - I - DIVISION - DARJEELING.

Species name	Diameter class (In cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100 +	
<i>Albizia lebbeck</i>	0.645	0.000	-	-	0.323	-	-	-	-	-	0.645
<i>Anthocephalus cadamba</i>	-	-	0.323	-	-	-	-	-	-	-	0.323
<i>Acer niveum</i>	-	-	0.323	0.323	-	-	-	-	-	-	0.323
<i>Ailanthus altissima</i>	-	-	0.323	0.323	-	-	-	-	-	-	0.645
<i>Acer species</i>	0.645	-	0.968	-	-	-	-	-	-	-	1.613
<i>Alnus nepalensis</i>	-	0.323	0.645	1.290	0.323	0.968	-	-	-	-	3.549
<i>Acrocarpus fraxinifolius</i>	-	-	-	-	0.323	0.968	-	-	-	-	1.290
<i>Abies webbiana</i>	-	-	-	-	-	0.323	-	-	-	-	0.323
<i>Bombax ceiba</i>	0.323	-	-	-	-	-	-	-	-	-	0.645
<i>Buxus wallichiana</i>	0.323	0.968	0.645	-	-	-	-	-	-	-	1.936
<i>Castanopsis species</i>	0.645	-	1.613	0.323	-	-	-	-	-	-	2.581
<i>Cinnamomum species</i>	-	1.290	0.968	0.323	-	-	-	-	-	-	2.581
<i>Callicarpa arborea</i>	-	-	0.323	-	-	-	-	-	-	-	0.323
<i>Callicarpa species</i>	-	-	0.645	-	-	-	-	-	-	-	0.645
<i>Castanopsis ferox</i>	-	-	0.323	0.323	0.323	-	-	-	-	-	0.645
<i>Castanopsis indica</i>	0.323	0.323	0.968	0.323	0.323	-	-	-	-	-	2.258
<i>Dubabang sonneratoides</i>	-	0.969	0.323	1.096	2.258	1.936	2.258	1.290	0.323	0.323	11.614
<i>Diospyros binectariferum</i>	-	-	-	-	0.323	-	-	-	-	-	0.323
<i>Eurya japonica</i>	1.936	0.323	-	-	-	0.323	-	-	-	-	2.258
<i>Erythrina indica</i>	0.323	-	-	-	-	0.323	-	-	-	-	0.645
<i>Bucida buceras</i>	0.645	0.323	-	-	-	0.323	-	-	-	-	1.290
<i>Gmelina arborea</i>	-	-	0.323	0.645	0.645	0.645	-	-	-	-	2.258
<i>Laportea canescens</i>	-	-	0.323	-	-	-	-	-	-	-	0.323
<i>Litsea spp.</i>	1.290	0.968	1.290	0.645	-	-	-	-	-	-	4.194
<i>Michelia spp.</i>	4.194	8.288	3.871	-	-	-	-	-	-	-	16.453
<i>Machilus spp.</i>	2.581	3.871	6.775	3.549	0.645	-	-	-	-	-	17.420
<i>Malotus philippinensis</i>	0.323	-	0.645	-	-	-	-	-	-	-	0.968
<i>Morus laevigata</i>	-	0.323	1.290	0.323	0.323	-	-	-	-	-	2.258

Species name	Diameter class (in cm.)						Total				
	10-19	20-29	30-39	40-49	50-59	60-69					
<i>Prunus</i> spp.	4.194	1.290	0.645	0.323	-	-	6.452				
<i>Quercus</i> spp.	0.968	-	-	0.645	0.645	0.323	2.581				
<i>Shorea robusta</i>	-	-	-	0.645	-	-	0.545				
<i>Sterculia alata</i>	-	-	-	0.645	-	-	0.968				
<i>Symplocos panicata</i>	2.903	1.613	0.323	-	0.323	0.323	4.839				
<i>Syzygium cumini</i>	0.323	-	-	-	-	-	0.323				
<i>Sapindus mukorossi</i>	-	0.323	-	-	-	-	0.323				
<i>Schima wallichii</i>	-	1.290	1.936	2.258	1.613	0.323	7.420				
<i>Tsuga brunoniana</i>	-	0.645	1.936	0.323	-	-	2.903				
<i>Toona ciliata</i>	-	-	0.323	0.323	-	-	0.645				
<i>Terminalia myriocarpa</i>	-	0.645	2.258	2.903	-	0.645	6.452				
<i>Cryptomeria japonica</i>	0.645	6.452	8.323	21.614	16.775	6.452	62.323				
Others	3.226	2.258	2.581	1.290	0.645	0.645	10.646				
Total:	26.131	32.905	42.906	40.970	25.808	13.549	4.194	1.613	0.323	0.323	188.721

TABLE NO. 1.1.2

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
 STRATUM - II - DIVISION - DARJEELING,

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i>	0.230	-	-	-	-	-	0.230
<i>Amoora wallichii</i>	0.230	-	-	-	-	-	0.230
<i>Ailanthus altissima</i>	1.149	1.379	0.230	-	-	-	2.759
<i>Acer species</i>	0.460	0.230	-	-	-	-	0.690
<i>Alnus nepalensis</i>	-	0.230	0.690	0.460	-	-	1.609
<i>Acrocarpus fraxinifolius</i>	-	-	0.230	0.230	-	-	0.460
<i>Abies pindrow</i>	1.149	0.230	-	-	-	-	1.279
<i>Alnus species</i>	-	-	0.230	-	-	-	0.230
<i>Areca triandra</i>	-	-	0.230	-	-	-	0.230
<i>Bombax ceiba</i>	-	-	0.230	-	-	-	0.460
<i>Bauhinia purpurea</i>	0.230	-	0.230	-	-	-	0.460
<i>Bursera serrata</i>	-	-	-	0.230	-	-	0.230
<i>Chukrasia tabularia</i>	0.460	0.230	0.690	0.230	0.230	-	1.839
<i>Castanopsis species</i>	0.920	4.138	1.609	0.230	-	-	7.127
<i>Cinnamomum species</i>	2.759	0.460	-	-	-	-	3.219
<i>Callicarpa species</i>	0.230	0.230	-	-	-	-	0.460
<i>Castanopsis hystrix</i>	-	0.230	-	-	-	-	0.220
<i>Castanopsis indica</i>	1.699	1.379	0.690	0.690	-	-	4.368
<i>Dubabanga sonneratoides</i>	-	0.460	0.690	1.150	0.460	-	2.759
<i>Eurya japonica</i>	8.736	0.690	-	-	-	-	9.426
<i>Evodia roxburghiana</i>	0.230	-	-	-	-	-	0.230
<i>Bucania populnea</i>	4.598	12.415	4.598	0.920	0.230	0.230	22.990
<i>Garuga pinnata</i>	0.460	-	0.230	-	-	-	0.690
<i>Jambosa formosa</i>	0.460	-	0.230	-	-	-	0.590
<i>Litsea spp.</i>	0.690	0.230	-	-	-	-	0.920
<i>Michelia spp.</i>	28.737	18.622	2.299	-	-	-	49.388
<i>Machilus spp.</i>	6.897	4.598	0.920	0.230	-	-	12.645
<i>Mallotus philippinensis</i>	0.460	-	-	-	-	-	0.460
<i>Macaranga indica</i>	-	0.230	-	-	-	-	0.230
<i>Machilus macrantha</i>	0.230	-	-	-	-	-	0.230
<i>Magnolia species</i>	0.460	0.690	-	-	-	-	1.150

Species name	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Prunus</i> species	2.300	1.150	0.230	-	-	-	-	-	-	3.678
<i>Pterospermum acerifolium</i>	0.230	-	-	-	-	-	-	-	-	0.230
<i>Quercus laungiusa</i>	0.460	0.690	0.230	-	0.230	-	-	-	-	1.609
<i>Quercus</i> spp.	2.300	1.839	0.460	0.690	-	-	-	-	-	5.288
<i>Rhododendron</i> spp.	0.230	-	-	-	-	-	-	-	-	0.230
<i>Shorea robusta</i>	-	0.230	-	-	-	-	0.230	-	-	0.460
<i>Symplocos spicata</i>	9.655	1.379	-	-	-	-	-	-	-	11.035
<i>Semecarpus anacardium</i>	1.609	-	-	-	-	-	-	-	-	1.609
<i>Schima wallichii</i>	1.379	0.920	0.460	-	-	-	-	-	-	2.759
<i>Tsuga brunoniana</i>	7.126	30.347	15.173	2.989	0.460	-	-	-	-	56.096
<i>Tectona grandis</i>	-	3.219	4.268	1.379	-	-	-	-	-	8.966
<i>Trevia nudiflora</i>	-	-	0.460	-	-	-	-	-	-	0.460
<i>Toona ciliata</i>	-	0.689	1.150	0.690	-	-	-	-	-	2.529
<i>Terminalia tomentosa</i>	-	-	-	-	0.230	-	-	-	-	0.460
<i>Terminalia myriocarpa</i>	-	2.528	3.219	1.379	0.230	-	-	-	-	7.587
<i>Terminalia citrina</i>	-	-	-	-	0.230	-	-	-	-	0.230
<i>Tetrameles nudiflora</i>	0.230	-	-	-	-	-	-	-	-	0.230
<i>Cephaelostachyum</i>	-	-	0.230	-	-	-	-	-	-	0.230
<i>Pergracil</i>	-	-	-	-	-	-	-	-	-	89.202
<i>Cryptomeria japonica</i>	2.758	13.794	27.588	30.806	11.575	3.448	0.230	-	-	70.127
Others	3.908	1.609	1.150	0.230	-	-	0.230	-	-	9.426
<i>Pinus patula</i>	3.446	5.977	-	-	-	-	-	-	-	0.920
<i>Phoebe attenuata</i>	0.460	0.460	-	-	-	-	-	-	-	0.230
<i>Elaeocarpus sikkimensis</i>	0.230	-	-	-	-	-	-	-	-	-
Total:	98.167	111.502	68.510	42.761	12.874	4.138	0.920	0.230	-	0.460 339.562

TABLE NO. 1-1-2.

**STATIONS - III - DIVISION - DARJEELING**

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Machilus</i> spp.	19.331	7.792	0.667	-	-	-	27.997
<i>Maceranga indica</i>	0.333	0.333	1.000	0.333	-	-	2.000
<i>Morus laevigata</i>	1.999	1.332	-	-	-	-	3.333
<i>Magnolia</i> species	0.333	-	-	-	-	-	0.333
<i>Prunus</i> spp.	1.666	0.333	-	-	-	-	2.000
<i>Quercus</i> spp.	7.999	1.298	0.667	0.333	-	-	10.999
<i>Shorea robusta</i>	95.332	8.991	1.667	0.667	-	-	20.665
<i>Sterculus alata</i>	-	-	-	0.333	-	-	0.333
<i>Symplocos spicata</i>	2.999	0.666	-	-	-	-	10.666
<i>Schima wallichii</i>	6.332	4.329	1.333	-	-	-	11.999
<i>Stereospermum cheloides</i>	0.333	-	-	-	-	-	0.333
<i>Syzygium</i> spp. <i>shampif-</i> <i>hylli</i>	-	0.333	-	-	-	-	0.333
<i>Taxus baccata</i>	0.333	-	-	-	-	-	0.333
<i>Tsuga brunniana</i>	0.999	6.327	2.000	-	-	-	9.332
<i>Terminalia bell erica</i>	-	0.333	-	-	-	-	0.333
<i>Tectona grandis</i>	0.333	0.999	0.333	-	-	-	1.667
<i>Terminalia myriocarpa</i>	0.333	1.665	1.000	0.333	-	-	3.333
<i>Cryptomeria japonica</i>	5.666	29.000	21.663	10.999	0.667	1.000	79.325
Others	13.332	2.997	0.667	-	-	-	16.998
Total:-	142.986	93.991	31.328	17.332	1.667	1.333	309.302

TABLE NO. 1.1<sup>4</sup>

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## STEMS PER ACRE IN SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

## STRATUM - IV - DIVISION - DARJEELING

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i>	0.000	0.000	0.625	0.000	0.000	0.000	0.625
<i>Acer species</i>	1.250	-	-	-	-	-	1.250
<i>Alnus nepalensis</i>	2.500	0.525	-	-	-	-	3.125
<i>Alnus species</i>	1.250	1.250	-	-	-	-	2.500
<i>Bauhinia species</i>	0.625	-	1.250	-	-	-	1.875
<i>Betula alnoidea</i>	0.625	-	-	-	-	-	0.625
<i>Bursera serratum</i>	-	-	-	0.625	0.625	-	1.250
<i>Castanopsis species</i>	10.000	1.875	-	-	-	-	11.875
<i>Cinnamomum species</i>	8.125	0.625	-	-	-	-	8.750
<i>Careya arborea</i>	0.625	-	-	-	-	-	0.625
<i>Castanopsis indica</i>	7.500	0.625	-	-	-	-	8.125
<i>Duabanga sonneratoides</i>	-	-	0.625	-	-	-	0.625
<i>Eucalyptus hybrid</i>	1.250	0.625	-	-	-	-	1.875
<i>Evodia roxburghiana</i>	0.625	-	-	-	-	-	0.625
<i>Bucplandia populnea</i>	8.125	-	-	-	-	-	8.125
<i>Juglans regia</i>	1.875	0.625	-	-	-	-	2.500
<i>Michelia spp.</i>	13.750	-	-	-	-	-	13.750
<i>Machilus species</i>	6.875	-	-	-	-	-	6.875
<i>Polyalthia ceresioides</i>	-	-	0.625	-	-	-	0.625
<i>Prunus species</i>	2.500	-	-	-	-	-	2.500
<i>Quercus spp.</i>	33.125	1.250	-	-	-	-	34.375
<i>Shorea robusta</i>	13.125	6.250	0.625	-	-	-	20.000
<i>Symplocos spicata</i>	11.875	0.625	-	-	-	-	12.500
<i>Teuga brunoniana</i>	15.000	8.750	0.625	-	-	-	26.250
<i>Tectona grandis</i>	78.125	21.875	-	-	-	-	100.000
<i>Fernmlia tomentosa</i>	0.625	-	-	-	-	-	0.625
<i>Cryptomeria japonica</i>	78.125	86.875	21.250	1.250	0.625	-	189.375
Others	3.750	-	-	-	-	-	3.750
Total:	301.250	131.875	26.250	1.875	0.625	-	2.500
						-	465.000

TABLE NO. 1.1.5  
STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

STRATUM - V - DIVISION-DARJEELING

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Alnus nepalensis</i>	36.924	3.077	-	-	-	-	40.000
<i>Bursera serratum</i>	3.077	-	-	-	-	-	3.077
<i>Castanopsis indica</i>	6.154	-	-	-	-	-	6.154
<i>Quercus</i> spp.	3.077	-	-	-	-	-	3.077
<i>Tectona grandis</i>	80.002	3.077	-	-	-	-	83.076
<i>Terminalia myriocarpa</i>	3.077	-	-	-	-	-	3.077
<i>Cryptomeria japonica</i>	233.852	6.154	-	-	-	-	240.000
Total:	366.151	12.306	-	-	-	-	378.459

TABLE NO. 1.2.1

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
STRATUM - I - DIVISION - KALIMPONG

Species name	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Anthocleista cadamba</i>	-	-	-	-	-	0.333	-	-	-	0.833
<i>Aphanamixis polystachya</i>	0.417	1.251	-	-	0.417	-	-	-	-	2.083
<i>Amoora wallichii</i>	1.251	1.251	0.417	0.417	-	-	-	-	-	3.222
<i>Alnus nepalensis</i>	11.259	-	1.666	0.833	-	-	-	-	-	13.0748
<i>Acrocarpus fraxinifolius</i>	-	-	0.417	1.250	-	-	-	-	-	1.666
<i>Amoora species</i>	-	-	0.833	-	-	-	-	-	-	0.833
<i>Betula alnoidea</i>	-	-	-	-	0.417	-	-	-	-	0.417
<i>Betischmidia assamica</i>	-	0.417	-	-	-	-	-	-	-	0.417
<i>Cinnamomum cecidophyllum</i>	-	-	-	-	0.417	0.417	-	-	-	0.833
<i>Castanopsis species</i>	0.417	-	-	-	0.417	-	-	-	-	0.417
<i>Cinnamomum species</i>	-	-	0.833	1.666	-	-	-	-	-	2.500
<i>Callicarpa arborea</i>	-	-	-	1.250	-	-	-	-	-	1.250
<i>Callicarpa species</i>	0.417	-	-	-	-	-	-	-	-	0.417
<i>Castanopsis indica</i>	-	-	-	-	-	-	-	-	-	0.417
<i>Dubanga sonneratoides</i>	-	0.834	6.666	8.749	4.166	1.250	-	-	-	21.663
<i>Engelhardtia spicata</i>	-	-	0.417	-	-	-	-	-	-	0.417
<i>Gmelina arborea</i>	-	-	0.417	-	-	-	-	-	-	0.417
<i>Hollardia antidyserterica</i>	0.417	0.417	-	-	-	-	-	-	-	0.833
<i>Jambosa formosa</i>	-	0.417	0.417	-	-	-	-	-	-	0.833
<i>Lagerstroemia parviflora</i>	-	0.417	-	-	-	-	-	-	-	0.417
<i>Litsaea spp.</i>	0.417	0.417	0.417	-	-	-	-	-	-	1.250
<i>Michelia spp.</i>	-	1.251	1.250	0.417	-	-	-	-	-	2.916
<i>Morus laevigata</i>	-	0.417	-	-	-	-	-	-	-	0.417
<i>Michelia champaca</i>	-	0.417	3.749	0.417	0.833	0.833	-	-	-	6.249
<i>Prunus spp.</i>	0.417	-	0.417	-	-	-	-	-	-	0.833
<i>Phoebe attenuata</i>	-	0.834	3.033	0.417	-	0.417	-	-	-	4.999
<i>Schleichera trijuga</i>	-	0.417	-	-	-	-	-	-	-	0.417
<i>Shorea robusta</i>	0.834	-	1.250	3.749	0.417	0.833	-	-	-	7.082
<i>Symplocos spicata</i>	-	0.417	-	-	-	-	-	-	-	0.417

Species name	Diameter class (in cm.)						Total				
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
<i>Setima wallichii</i>	1.251	2.919	3.333	3.749	2.916	1.666	0.833	-	-	-	16.664
<i>Terminalia belerica</i>	0.834	0.417	0.417	-	-	-	-	-	-	-	1.366
<i>Toona ciliata</i>	-	-	-	0.833	0.417	-	-	-	-	-	1.250
<i>Terminalia tomentosa</i>	0.417	0.834	0.417	0.417	-	-	-	-	-	-	2.083
<i>Terminalia myriocarpa</i>	-	2.085	5.016	4.563	0.417	-	-	-	-	-	12.498
<i>Tetrameles nudiflora</i>	-	0.417	-	-	-	0.417	-	-	-	-	0.833
<i>Wrightia tomentosa</i>	-	-	-	0.417	-	-	-	-	-	-	0.417
Others	-	5.004	0.833	0.833	-	-	-	-	-	-	6.666
Total:	17.914	20.830	32.911	31.245	10.415	5.416	1.250	0.417	-	-	120.397

TABLE No. 1.2.2

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

## STRATUM - III - DIVISION KALIMONG

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i>	-	-	0.159	-	-	-	0.159
<i>Albizia procera</i>	-	-	0.159	-	-	-	1.904
<i>Anthocedphalus cadamba</i>	-	0.318	0.476	0.794	0.159	0.159	0.159
<i>Acacia sundra</i>	-	-	0.159	-	-	0.159	0.159
<i>Artocarpus chaplasha</i>	-	-	-	-	-	-	0.476
<i>Alstonia scholaris</i>	-	0.318	0.159	-	-	-	0.317
<i>Aphanesmixis polystachya</i>	0.159	0.159	-	-	-	-	0.476
<i>Albizia lucida</i>	-	-	0.794	0.635	0.476	-	2.063
<i>Ailanthus altissima</i>	-	-	2.539	2.222	1.904	0.794	8.094
<i>Alnus nepalensis</i>	-	0.636	-	-	-	-	0.952
<i>Acrocercopis fraxinifolius</i>	-	-	0.476	0.476	-	-	0.635
<i>Albizia species</i>	-	0.159	0.159	0.317	-	-	1.111
<i>Betula alnoides</i>	-	-	0.635	-	0.476	-	0.476
<i>Bombax ceiba</i>	-	-	0.317	-	-	-	6.507
<i>Chukrasia tabularis</i>	0.159	0.795	2.381	2.222	0.476	0.476	0.794
<i>Cinnamomum cecidodaphne</i>	-	-	-	0.476	0.159	0.159	1.746
<i>Castanopsis species</i>	-	0.477	0.159	0.635	0.159	0.159	2.539
<i>Cinnamomum species</i>	-	-	1.587	0.794	-	-	1.428
<i>Callicarpa arborea</i>	0.795	0.318	0.159	0.159	-	-	0.317
<i>Careya arborea</i>	0.318	-	-	-	-	-	0.794
<i>Castanopsis indica</i>	-	0.159	-	0.159	0.159	0.159	0.159
<i>Castanopsis aronata</i>	-	-	0.154	0.285	0.111	0.635	9.522
<i>Duabanga sonneratiioides</i>	-	0.795	0.154	0.317	-	-	0.476
<i>Eysoxyllum binectiferum</i>	-	-	-	-	-	-	0.476
<i>Eurya japonica</i>	0.795	0.154	-	-	-	-	0.476
<i>Engelhardtia spicata</i>	0.318	0.159	-	-	-	-	0.476
<i>Eugenia species</i>	0.159	-	-	-	-	-	0.476
<i>Emblica officinalis</i>	-	0.159	-	0.159	-	-	0.476
<i>Erythrina spp.</i>	-	-	-	-	-	-	0.476
<i>Ficus spp.</i>	-	2.385	1.428	-	-	-	4.126
<i>Bucuplandia populnea</i>	0.318	-	-	-	-	-	-

Species name	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Garuga pinnata</i>	-	-	0.159	-	-	-	-	0.159
<i>Holarhena antidysenterica</i>	-	0.159	-	-	-	-	-	0.159
<i>Jambosa formosa</i>	0.795	0.477	0.159	-	-	-	-	1.428
<i>Lagerstroemia parviflora</i>	-	0.318	0.317	-	-	-	-	0.635
<i>Lophopetalum weightianum</i>	-	-	-	-	0.159	-	-	0.159
<i>Lagorstroemia spaciosa</i>	2.544	6.837	5.396	0.952	-	-	-	15.711
<i>Lagorstroemia florreginae</i>	0.159	0.318	0.159	-	-	-	-	0.635
<i>Michelia spp.</i>	0.318	2.703	2.381	0.476	-	-	-	5.872
<i>Machilus spp.</i>	0.159	0.159	-	-	-	-	-	0.317
<i>Macaranga indica</i>	-	-	0.317	0.159	-	-	-	0.476
<i>Michelia champaca</i>	-	2.385	3.015	2.381	0.794	0.317	-	9.046
<i>Magnolia species</i>	-	0.159	-	-	-	-	-	0.159
<i>Ostodes paniculatus</i>	-	0.159	-	-	-	-	-	0.159
<i>Phoebe heinestiana</i>	-	-	0.159	0.159	-	-	-	0.317
<i>Prunus cornuta</i>	-	0.159	-	-	-	-	-	0.159
<i>Prunus spp.</i>	0.159	0.318	0.476	-	-	-	-	0.952
<i>Phoebe attenuata</i>	-	0.159	1.587	0.317	-	-	-	2.063
<i>Spondias pinnata</i>	-	0.159	0.159	-	-	-	-	0.317
<i>Shorea robusta</i>	0.159	1.908	6.983	3.174	0.635	-	-	13.013
<i>Syzygium cumini</i>	-	0.636	-	-	-	-	-	0.635
<i>Semecarpus anacardium</i>	0.159	-	-	-	-	-	-	0.159
<i>Schima wallichii</i>	1.113	0.795	1.111	0.635	-	0.159	0.159	3.968
<i>Terminalia crassifolia</i>	-	0.159	-	-	-	-	-	0.476
<i>Tectonia grandis</i>	1.113	0.477	3.650	4.285	0.794	-	-	10.316
<i>Trema nudiflora</i>	-	-	0.476	-	-	-	-	0.159
<i>Toona ciliata</i>	-	0.318	0.635	-	0.317	0.159	-	1.428
<i>Terminalia tomentosa</i>	0.477	0.159	0.794	0.794	0.159	-	-	2.381
<i>Terminalia myriocarpa</i>	-	1.272	4.602	1.746	0.794	0.317	-	8.728
<i>Tetrameles nudiflora</i>	-	0.159	-	0.159	0.317	0.159	-	0.794
<i>Wrightia tomentosa</i>	-	-	0.159	-	-	-	-	0.159
<i>Daemonorops jenkinsii</i>	-	-	-	-	-	-	-	0.159
<i>Cryptomeria japonica</i>	0.159	3.021	6.666	5.872	2.857	0.317	-	18.885
Others	2.226	2.385	1.746	0.476	-	0.159	-	6.983
Total:	12.537	32.651	57.449	33.644	12.537	4.626	0.794	154.574

TABLE NO. 1.2.3  
STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

Species name	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia lebbek</i>	-	0.435	-	-	-	-	-	0.435
<i>Alistonia scholaris</i>	0.435	-	-	-	-	-	-	0.435
<i>Albizia stipulata</i>	0.435	-	-	-	-	-	-	0.435
<i>Aphananixis polystachya</i>	50.895	20.445	1.739	1.304	-	-	-	74.334
<i>Amoora wallichii</i>	0.870	1.305	0.435	-	-	-	-	2.608
<i>Allanthus altissima</i>	0.435	-	-	-	-	-	-	0.435
<i>Alnus nepalensis</i>	1.205	6.090	9.998	5.216	0.869	-	-	23.474
<i>Albizia species</i>	0.435	0.435	0.869	0.435	0.435	-	-	2.608
<i>Amoora species</i>	3.045	-	-	-	-	-	-	3.045
<i>Chukrasia tabularis</i>	2.610	3.045	0.869	-	-	-	-	6.521
<i>Cinnamomum decidodaphne</i>	-	-	0.435	0.869	-	-	-	1.304
<i>Castanopsis species</i>	0.435	0.435	-	-	-	-	-	0.869
<i>Cinnamomum species</i>	0.435	-	-	-	-	-	-	0.435
<i>Callicarpa arborea</i>	-	0.435	-	-	-	-	-	0.435
<i>Callicarpa species</i>	0.435	-	-	-	-	-	-	0.435
<i>Cassia siamea</i>	11.745	0.870	-	-	-	-	-	12.606
<i>Castanopsis indica</i>	0.870	0.870	-	-	-	-	-	1.739
<i>Dubanga sonneratoides</i>	4.350	9.135	7.825	4.347	0.869	-	-	26.517
<i>Dysoxylum binectariferum</i>	-	0.435	-	-	-	-	-	0.435
<i>Engelhardtia spicata</i>	-	-	0.435	-	-	-	-	0.435
<i>Emblica officinalis</i>	-	0.435	-	-	-	-	-	0.435
<i>Gmelina arborea</i>	-	0.435	-	-	1.304	-	-	1.739
<i>Jambosa formosa</i>	0.870	-	-	-	-	-	-	0.869
<i>Lagerstroemia parviflora</i>	0.670	-	-	-	-	-	-	0.869
<i>Lagerstroemia speciosa</i>	~.610	0.435	-	-	-	-	-	3.043
<i>Lagerstroemia florreginei</i>	-	0.435	0.435	-	-	-	-	0.869
<i>Macaranga indica</i>	-	2.610	1.739	0.435	-	-	-	4.782
<i>Mitchella doltsopa</i>	1.305	-	-	-	-	-	-	1.304

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Morus laevigata</i>	3.045	-	-	-	-	-	3.043
<i>Nacaranga peltata</i>	-	1.305	0.869	0.435	-	-	2.608
<i>Ostodes paniculatus</i>	5.655	1.305	-	-	-	-	6.955
<i>Podocarpus nerifolia</i>	-	0.870	-	-	-	-	0.869
<i>Prunus</i> spp.	-	0.435	-	-	-	-	0.435
<i>Populus</i> spp.	3.045	0.870	-	-	-	-	3.912
<i>Pterospermum acerifolium</i>	-	0.435	-	-	-	-	0.435
<i>Syzygium cumini</i>	0.435	0.425	-	-	-	-	0.869
<i>Schima wallichii</i>	2.610	1.740	0.869	1.304	-	-	6.955
<i>Trewia nudiflora</i>	-	0.435	-	-	-	-	0.435
<i>Tectona grandis</i>	1.305	0.870	1.739	0.435	0.435	-	4.782
<i>Toona ciliata</i>	5.655	1.740	-	-	-	-	7.390
<i>Terminalia myriocarpa</i>	10.005	20.445	4.634	4.47	1.739	0.435	36.950
<i>Trema orientalis</i>	-	-	0.435	-	-	-	0.435
<i>Tetrameles nudiflora</i>	-	0.870	-	0.435	0.869	0.869	3.043
<i>Cryptomeria japonica</i>	-	-	-	0.435	-	-	0.435
Others	6.960	3.480	-	-	0.435	-	10.868

STUDY AREA: 37.32 HECTARES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
STRATUM-IV: DIVISION-KALIMPONG

Species Name	Diameter-class (in cm.)										99	90+	100+	TOTAL
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-	89					
<i>Albizia lebbek</i>	-	0.357	-	-	0.357	-	-	-	-	-	-	-	-	0.714
<i>Anthocephalus cadamba</i>	0.714	1.785	1.071	0.357	0.357	-	-	-	-	-	-	-	-	4.285
<i>Albizia stipulata</i>	-	-	0.357	-	-	-	-	-	-	-	-	-	-	0.357
<i>Aporanthes polystachya</i>	2.856	4.998	1.071	-	-	-	-	-	-	-	-	-	-	8.928
<i>Morinda wallichii</i>	1.428	0.357	0.357	-	-	-	-	-	-	-	-	-	-	2.143
<i>Ailanthus altissima</i>	1.785	-	-	-	-	-	-	-	-	-	-	-	-	1.786
<i>Alnus nepalensis</i>	0.357	3.213	3.571	0.714	-	-	-	-	-	-	-	-	-	7.856
<i>Anoora species</i>	2.142	-	-	-	-	-	-	-	-	-	-	-	-	2.143
<i>Betula utilis</i>	0.714	4.998	2.143	-	-	-	-	-	-	-	-	-	-	7.356
<i>Bombax ceiba</i>	1.071	0.714	1.071	1.071	0.357	-	-	-	-	-	-	-	-	4.285
<i>Buxus wallichiana</i>	1.428	1.071	-	-	-	-	-	-	-	-	-	-	-	2.500
<i>Chukrasia tabularis</i>	7.854	6.426	0.357	-	-	-	-	-	-	-	-	-	-	14.641
<i>Cinnamomum deciduodaphne</i>	1.785	0.357	-	-	-	-	-	-	-	-	-	-	-	2.143
<i>Cistanoopsis species</i>	0.714	0.357	-	-	-	-	-	-	-	-	-	-	-	1.071
<i>Callicarpa arborea</i>	0.714	-	-	-	-	-	-	-	-	-	-	-	-	0.714
<i>Cassia stamea</i>	32.130	8.925	-	-	-	-	-	-	-	-	-	-	-	41.067
<i>Dillenia pentagyna</i>	0.357	-	-	-	-	-	-	-	-	-	-	-	-	0.357
<i>Duooungia sonneratoides</i>	1.071	3.570	3.571	2.143	1.428	0.357	0.357	-	-	-	-	-	-	12.499
<i>Dalbergia sissoo</i>	0.357	-	-	-	-	-	-	-	-	-	-	-	-	0.357
<i>Eucalyptus hybrid</i>	0.357	0.357	-	-	-	-	-	-	-	-	-	-	-	0.714
<i>Evodia roxburghiana</i>	0.357	0.357	-	-	-	-	-	-	-	-	-	-	-	0.357
<i>Garuga pinnata</i>	-	0.357	-	-	-	-	-	-	-	-	-	-	-	0.357
<i>Lagerstroemia parviflora</i>	0.357	-	-	-	-	-	-	-	-	-	-	-	-	0.357
<i>Lagerstroemia speciosa</i>	1.071	2.499	0.357	-	-	-	-	-	-	-	-	-	-	3.923
<i>Lagerstroemia florreginei</i>	2.142	0.714	0.357	-	-	-	-	-	-	-	-	-	-	3.214
<i>Michelia spp.</i>	-	1.071	1.428	-	-	-	-	-	-	-	-	-	-	2.500
<i>Michelia doltsopa</i>	3.570	0.714	0.714	-	-	-	-	-	-	-	-	-	-	4.999

Species Name	Diameter class (in cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
<i>Michelia champaca</i>	3.213	4.284	2.500	0.714	-	-	-	-	-	-	10.713
<i>Prunus spp.</i>	0.714	0.357	-	-	-	-	-	-	-	-	1.071
<i>Snorea robusta</i>	41.055	14.637	2.143	-	-	-	-	-	-	-	57.850
<i>Sterculia villosa</i>	-	0.357	-	-	-	-	-	-	-	-	0.357
<i>Sterculia urens</i>	-	0.357	-	-	-	-	-	-	-	-	0.357
<i>Symplocos spicata</i>	-	0.357	-	-	-	-	-	-	-	-	0.357
<i>Syzygium cumini</i>	0.714	0.357	-	-	-	-	-	-	-	-	1.428
<i>Sapindus mukorossi</i>	0.357	-	-	-	-	-	-	-	-	-	0.357
<i>Sageretia oppositifolia</i>	1.785	1.071	-	-	-	-	-	-	-	-	2.857
<i>Scinima wallichii</i>	22.848	15.351	4.642	0.357	-	-	-	-	-	-	43.209
<i>Tectona grandis</i>	38.913	36.771	9.642	1.428	0.714	-	-	-	-	-	87.490
<i>Toona ciliata</i>	0.357	0.357	-	-	-	-	-	-	-	-	0.714
<i>Terminalia tomentosa</i>	0.357	1.071	1.071	-	-	-	-	-	-	-	2.500
<i>Terminalia myriocarpa</i>	6.783	8.925	0.714	0.357	-	-	-	-	-	-	16.784
<i>Tetrameles nudiflora</i>	0.357	-	-	0.357	-	-	-	-	-	-	1.071
<i>Cryptomeria japonica</i>	8.925	10.353	2.857	-	-	-	-	-	-	-	22.140
<i>Capressus kasimiriana</i>	3.570	0.714	0.357	-	-	-	-	-	-	-	4.642
Others	4.284	2.856	-	-	0.357	-	-	-	-	-	7.856
Total:	199.619	141.412	40.352	7.856	3.571	0.357	1.071	-	-	-	394.238

TABLE NO. 1.2.5

## STRATUM - V - DIVISION : KALIMPONG

Species name	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i>	-	0.336	-	-	-	-	0.336
<i>Anthocephalus cederba</i>	7.392	6.048	0.672	-	-	-	14.116
<i>Ailanthus altissima</i>	29.904	3.360	-	-	-	-	33.274
<i>Artocarpus integrifolia</i>	0.336	-	-	-	-	-	0.336
<i>Acrocarpus fraxinifolius</i>	0.672	0.336	-	-	-	-	1.008
<i>Albizia species</i>	0.336	-	-	-	-	-	0.336
<i>Betula alnoides</i>	0.336	1.344	-	-	-	-	1.681
<i>Betula utilis</i>	0.672	0.336	0.336	-	-	-	1.344
<i>Bombax ceiba</i>	2.016	2.352	0.336	-	-	-	4.705
<i>Chukrasia tabularis</i>	2.336	0.336	-	-	-	-	7.394
<i>Castanopsis species</i>	7.058	-	-	-	-	-	-
<i>Cinnamomum species</i>	0.672	-	-	-	-	-	0.672
<i>Callicarpa arborea</i>	0.336	0.336	-	-	-	-	0.681
<i>Cassia siamea</i>	1.008	0.336	0.336	-	-	-	2.689
<i>Cupressus torulosa</i>	2.352	0.336	-	-	-	-	3.336
<i>Cornus macrophylla</i>	0.336	-	-	-	-	-	0.336
<i>Dubabanga sonneratoides</i>	3.360	3.024	2.017	2.353	-	-	10.755
<i>Dalbergia sissoo</i>	5.376	0.672	-	-	-	-	6.050
<i>Evodia romburghiana</i>	0.336	-	-	-	-	-	0.336
<i>Emblica officinalis</i>	0.336	-	-	-	-	-	0.336
<i>Ducplandia populnea</i>	0.672	-	-	-	-	-	0.672
<i>Garuga pinnata</i>	1.344	-	-	-	-	-	1.344
<i>Gmelina arborea</i>	0.336	0.336	-	-	-	-	0.672
<i>Mallotus paniculatus</i>	0.336	-	-	-	-	-	0.336
<i>Lagerstroemia parviflora</i>	1.008	-	-	-	-	-	1.008
<i>Litssea spp.</i>	0.336	-	-	-	-	-	0.336
<i>Lagerstroemia speciosa</i>	1.344	-	-	-	-	-	1.344

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Michelia</i> spp.	4.032	-	-	-	-	-	4.032
<i>Machilus</i> spp.	0.326	-	-	-	-	-	0.326
<i>Mitragyna parviflora</i>	0.326	-	-	-	-	-	0.326
<i>Macaranga peltata</i>	0.672	1.008	-	-	-	-	1.681
<i>Michelia chempaca</i>	7.392	0.672	-	-	-	-	8.066
<i>Quercus</i> spp.	1.344	-	-	-	-	-	1.344
<i>Shorea robusta</i>	25.872	-	-	-	-	-	25.880
<i>Sageretia oppositifolia</i>	0.326	-	-	-	-	-	0.326
<i>Schima wallichii</i>	35.952	6.384	0.326	-	-	-	43.021
<i>Trewia nudiflora</i>	0.6272	-	-	-	-	-	0.672
<i>Tectona grandis</i>	58.464	17.472	3.025	-	-	-	0.336
<i>Terminalia tomentosa</i>	0.236	-	-	-	-	-	0.320
<i>Terminalia myriocarpa</i>	16.464	1.680	-	-	-	-	18.149
<i>Tetrameles nudiflora</i>	"	0.326	-	-	-	-	0.326
<i>Cryptomeria japonica</i>	16.464	5.376	0.326	-	-	-	22.183
<i>Capressus kashmiriana</i>	0.627	1.008	-	-	-	-	1.681
Others	3.024	0.326	-	-	-	-	3.061
Total:	240.984	53.776	7.394	2.353	0.336	-	0.336 305.179

TABLE 2 NO. 2, 1-1.

CLASS VEC SEES PRACTICE IN SCIENCE AND TECHNOLOGY CLASS (THE 10th). MARCH 2013

PINELE NC., 2.0102.

WANTED FOR MURDER OF HENRY WILSON, JR., AND ASSAULT ON CLASSEN, (MURDERER).

SYSTEMIC PRACTICING - II - INTRODUCTION

Species name	Diameter class (in cm.)						Total			
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+
<i>Albizia species</i>	-	0.021	-	0.021	0.021	-	-	-	-	0.063
<i>Bassia malabarica</i>	-	-	0.021	-	-	-	-	-	-	0.021
<i>Betispermum meirantha</i>	-	-	0.021	-	-	-	-	-	-	0.021
<i>Bombax ceiba</i>	-	-	0.084	0.021	-	-	-	-	-	0.105
<i>Castanopsis species</i>	-	0.063	0.357	0.126	0.021	-	-	-	-	0.567
<i>Cedrela toona</i>	-	0.021	0.149	0.084	0.042	0.021	-	-	-	0.315
<i>Cedrela serrata</i>	-	-	0.168	0.126	-	0.042	-	-	-	0.336
<i>Chukrasia vellutina</i>	-	0.147	0.504	0.189	-	-	-	-	-	0.840
<i>Cinnamomum species</i>	-	-	0.042	0.021	-	-	-	-	-	0.063
<i>Cordia angustifolia</i>	-	-	0.021	-	-	-	-	-	-	0.021
<i>Duenbanga grandiflora</i>	-	0.142	1.239	1.827	0.567	0.231	-	-	-	2.969
<i>Dryobalanus species</i>	-	-	0.021	0.042	0.021	-	-	-	-	0.084
<i>Erythroxylon monogynum</i>	-	-	-	0.021	-	-	-	-	-	0.021
<i>Gmelina arborea</i>	-	-	0.042	-	0.063	-	-	-	-	0.105
<i>Lagerstroemia spp.</i>	-	0.042	-	-	-	-	-	-	-	0.042
<i>Michelia champaca</i>	-	-	0.084	-	0.021	-	-	-	-	0.105
<i>Morus leavigata</i>	-	-	0.147	0.021	-	-	-	-	-	0.163
<i>Saurinaria nepaulensis</i>	-	-	0.021	-	-	-	-	-	-	0.021
<i>Schima wallichii</i>	-	0.021	0.189	0.021	-	-	-	-	-	0.231
<i>Semecarpus anacardium</i>	0.021	-	-	-	-	-	-	-	-	0.021
<i>Shorea robusta</i>	3.759	4.074	1.113	0.273	0.021	0.021	-	-	-	9.261
<i>Stereospermum</i>	-	0.021	-	-	-	-	-	-	-	0.021
<i>Tectona grandis</i>	1.008	0.189	-	-	-	-	-	-	-	1.197
<i>Terminalia crenulata</i>	-	-	0.021	0.021	0.021	-	-	-	-	0.063
<i>Terminalia myriocarpa</i>	-	0.042	0.398	0.294	0.084	0.021	-	-	-	0.819
<i>Tetrameles nudiflora</i>	-	-	0.063	0.021	-	0.021	-	-	-	0.105
Others	-	0.252	0.819	0.336	0.063	0.021	-	-	-	1.512
Total:	4.788	4.935	5.502	3.465	0.945	0.378	-	0.042	-	20.097

TABLE 2.1.2.

STEM PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY

## STRATUM-II - DIVISION DARJEELING

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia</i> spp.	0.061	0.061	0.061	-	-	-	0.183
<i>Amora wallichii</i>	0.061	-	-	-	-	-	0.061
<i>Anthocephalus cedamba</i>	0.061	0.061	0.061	-	-	-	0.183
<i>Betula alnoides</i>	-	0.183	-	-	-	-	0.183
<i>Castanopsis</i> spp.	0.083	-	-	-	-	-	0.183
<i>Chukrasia</i> <i>velutina</i>	0.061	0.183	-	-	-	-	0.244
<i>Diploknema butyracea</i>	-	0.061	-	-	-	-	0.061
<i>Dubanga grandiflora</i>	0.244	1.403	1.037	0.183	0.061	-	2.926
<i>Erythrina</i> spp.	0.183	0.183	0.061	-	-	-	0.488
<i>Gmelina arborea</i>	-	0.183	0.061	0.122	-	-	0.366
<i>Grewia flavaescens</i>	0.061	-	-	-	-	-	0.061
<i>Schima wallichii</i>	-	0.061	-	-	-	-	0.061
<i>Shorea robusta</i>	1.891	0.793	0.061	-	-	-	2.945
<i>Tectona grandis</i>	0.244	0.732	0.122	0.122	-	-	1.220
<i>Terminalia crenulata</i>	-	0.122	-	-	-	-	0.122
<i>Terminalia myriocarpa</i>	-	0.061	0.427	-	-	-	0.488
<i>Tetrameles nudiflora</i>	-	-	0.061	-	-	-	0.061
Others	-	-	0.488	0.183	-	-	0.671
Total:	2.196	2.501	3.538	1.647	0.305	0.061	10.309

STRATON - IV - REVISTON : PUBLISLING

TABLE NO. 2.1.5.

STEM PER SECTORS BY SPECIES AND PLANT CLASS (IN CM.) MARKED FOR TWINKLING AND INVENTORY

REGULATING - A - HUMANIS

Species name	Diameter class (in cm.)						Total			
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+
<i>Albizia</i> spp.	-	0.028	-	-	-	-	-	-	-	-
<i>Anthocephalus cedamba</i>	-	-	0.056	-	-	-	-	-	-	-
<i>Canthium decoccum</i>	-	-	-	0.028	-	-	-	-	-	-
<i>Cassia nodesa</i>	-	0.028	0.056	-	-	-	0.026	-	-	-
<i>Gastanopsis</i> spp.	-	0.112	0.644	0.336	0.112	0.028	-	-	-	-
<i>Connarum</i> spp.	-	0.028	-	0.056	-	-	-	-	-	-
<i>Dubanga grandiflora</i>	-	0.084	0.168	0.056	-	-	-	-	-	-
<i>Erythrina</i> spp.	-	-	0.084	0.112	0.056	-	-	-	-	-
<i>Gmelina arborea</i>	-	-	0.084	-	-	0.028	-	-	-	-
<i>Ilex excelsa</i>	0.028	-	-	-	-	-	-	-	-	-
<i>Saurinia nepaulensis</i>	-	-	0.028	0.028	-	-	-	-	-	-
<i>Schima wallichii</i>	-	0.084	0.308	0.196	-	0.028	-	-	-	-
<i>Shorea robusta</i>	0.168	0.336	0.364	0.140	-	-	0.028	-	-	-
<i>Tectone grandis</i>	2.940	0.336	0.028	-	-	-	-	-	-	-
<i>Terminalia belerica</i>	-	-	0.028	-	-	-	-	-	-	-
<i>Terminalia crenulata</i>	-	-	0.028	-	-	-	-	-	-	-
<i>Terminalia myriocarpa</i>	-	-	0.028	-	-	-	-	-	-	-
<i>Tetrameles nudiflora</i>	-	-	0.056	-	-	-	-	-	-	-
<i>Xyilia dolabiformia</i>	0.056	0.112	0.028	0.028	-	-	-	-	-	-
Total:	3.136	1.092	2.072	0.980	0.196	0.112	0.028	-	-	7.616

TABLE Xc, 2e2e1

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES ( IN CR.) MARKED FOR TEINING AFTER INVENTORY

Species name	Diameter class (in cm.)						Total		
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
<i>Shorea robusta</i>	0.02	0.72	2.05	1.49	0.23	0.05	-	-	5.56
<i>Duebania grandiflora</i>	-	0.07	0.99	0.65	0.07	0.05	-	0.02	1.85
<i>Schima wallichii</i>	-	-	0.02	-	-	-	-	-	0.02
Others	-	-	-	0.02	-	-	-	-	0.02
<i>Tetrameles nudiflora</i>	-	-	-	0.05	-	0.02	0.02	-	0.09
<i>Terminalia myriocarpa</i>	-	-	-	0.07	0.07	-	-	0.02	0.16
<i>Michelia languinosa</i>	-	-	0.58	0.05	0.02	-	-	-	0.65
<i>Alnus nepalensis</i>	-	-	0.58	0.32	0.05	0.02	-	-	1.00
<i>Cedrela serrata</i>	-	-	0.02	-	-	-	-	-	0.02
Total :	0.02	0.79	5.24	2.65	0.44	0.17	0.02	0.02	9.37

TABLE NO. 2.2.2

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY

Species name	Diameter class (in cm.)						Total			
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Shorea robusta</i>	0.78	1.53	1.47	0.12	-	-	-	-	-	3.90
Others	-	-	0.08	0.04	-	-	-	-	-	0.12
<i>Tectona grandis</i>	0.48	0.28	0.04	-	-	-	-	-	-	0.80
<i>Schinus mollellchii</i>	-	-	0.04	-	-	-	-	-	-	0.04
<i>Dipterocarpus grandiflorus</i>	-	-	0.04	0.04	0.04	-	-	-	-	0.12
Others	-	-	0.04	-	-	-	-	-	-	0.04
<i>Totrameles undiflora</i>	-	-	0.04	-	-	-	-	-	-	0.04
<i>Cedrela serrata</i>	-	-	0.04	-	-	-	-	-	-	0.04
<i>Cryptomeria japonica</i>	-	0.48	1.62	0.75	0.75	-	-	-	-	3.60
Total:	1.26	2.29	3.37	0.99	0.79	-	-	-	-	8.70

TABLE NO. 2.2.3  
STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
STRATUM - III - KALIMPONG DIVISION

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Shorea robusta</i>	0.32	1.02	0.13	0.06	-	-	1.53
<i>Duabanga grandiflora</i>	-	0.06	0.64	0.12	0.06	-	0.88
<i>Cedrela serrata</i>	-	-	0.24	-	-	-	0.24
<i>Terminalia tomentosa</i>	-	-	0.06	-	-	-	0.06
<i>Tetrameles nudiflora</i>	-	-	0.54	-	0.06	-	0.60
<i>Albizia odoratissima</i>	0.12	-	0.06	-	-	-	0.18
<i>Terminalia belerica</i>	-	-	0.06	-	-	-	0.06
<i>Gmelina arborea</i>	-	-	0.12	0.06	-	-	0.18
<i>Schima wallichii</i>	-	-	0.06	-	-	-	0.06
<i>Garuga pinnata</i>	-	-	0.06	-	-	-	0.06
Others	-	-	0.30	-	-	-	0.30
<i>Careya arborea</i>	-	-	0.06	-	-	-	0.06
<i>Lagerstroemia</i> spp.	-	-	0.13	-	-	-	0.13
Total:	0.32	1.08	2.46	0.24	0.12	-	4.22

TABLE NO.2.24

STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR TRAINING AFTER INVENTORY

Species name	Stratum - IV - KALYFONG DIVISION								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Shorea robusta</i>	2.41	0.86	0.09	-	-	-	-	-	3.36
<i>Terminalia myriocarpa</i>	-	-	-	0.01	-	-	-	-	0.01
<i>Tectona grandis</i>	1.55	2.76	0.91	0.05	-	-	-	-	5.27
<i>Dubabanga grandiflora</i>	-	-	0.17	0.07	0.01	-	-	-	0.25
<i>Terminalia tomentosa</i>	-	-	0.03	-	-	-	-	-	0.03
<i>Tetrameles nudiflora</i>	-	-	-	0.03	-	-	-	-	0.03
<i>Anthocephalus edembra</i>	-	-	-	0.01	-	-	-	-	0.01
<i>Cedrela serrata</i>	0.01	-	0.04	-	-	-	-	-	0.05
<i>Lagerstroemia species</i>	-	-	0.05	-	-	-	-	-	0.05
<i>Schima wallichii</i>	-	-	0.03	-	-	-	-	-	0.03
<i>Dalbergia sissoo</i>	0.01	0.01	-	-	0.01	-	-	-	0.03
<i>Michelia spp.</i>	0.01	0.36	0.16	0.03	-	-	-	-	0.56
<i>Alnus nepalensis</i>	-	0.12	1.03	0.23	0.04	-	-	-	1.42
<i>Albizzia odoratissima</i>	-	-	0.01	-	-	-	-	-	0.01
<i>Garuga pinnata</i>	-	-	0.03	-	-	-	-	-	0.03
Total:	3.99	4.11	2.55	0.44	0.05	-	-	-	11.14

DIAMETER CLASS (in cm.)

TABLE NO. 2.2.5  
STEMS PER HECTARE BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
STRATUM = V - KALIMPONG DIVISION

Species name	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Coccolesprium goessyppium</i>	-	-	-	-	-	-	0.09
<i>Shorea robusta</i>	0.09	-	-	-	-	-	0.09
<i>Tectone grandis</i>	6.70	2.28	-	-	-	-	8.98
<i>Chukrasia vellutina</i>	-	-	0.02	-	-	-	0.02
Total:	6.79	2.28	0.02	-	-	-	9.09

SOMALI PLANTS (EN CULTURE) BY SPECIES AND DIA. SIZE CLASSES (in cm.) AT THE TIME OF INVENTORY  
DIVISION. - DAJAWING

STATA - 1

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i> (005)	0.478	-	-	-	-	-	-
<i>Anthonothalpus cedarava</i> (013)	-	-	-	0.240	-	-	0.478
<i>Acer nivale</i> (025)	-	-	0.240	-	-	-	0.240
<i>Ailanthus altissima</i> (30)	-	-	0.240	0.240	-	-	0.479
<i>Acer species</i> (035)	0.476	-	0.719	-	-	-	1.198
<i>Alnus nepalensis</i> (037)	-	0.259	0.479	0.958	0.240	0.719	2.635
<i>Acrocarpus fraxinifolius</i> (041)	-	-	-	-	0.240	0.719	0.958
<i>Abies webbiana</i> (048)	-	-	-	-	0.240	-	0.240
<i>Bombax ceiba</i> (073)	0.259	-	-	-	-	-	0.240
<i>Buxus wallichiana</i> (077)	0.259	0.718	0.479	-	-	-	1.437
<i>Castanopsis species</i> (100)	0.478	-	1.198	0.240	-	-	1.916
<i>Cinnamomum species</i> (105)	-	0.257	0.719	0.240	-	-	1.916
<i>Callicarpa arborea</i> (112)	-	-	0.240	-	-	-	0.240
<i>Callicarpa species</i> (119)	-	-	0.479	-	-	-	0.479
<i>Castanopsis fissa</i> (122)	-	-	-	0.240	0.240	-	0.479
<i>Castanopsis indica</i> (123)	0.239	0.259	0.719	0.240	0.240	-	1.677
<i>Dubanga sonneratoides</i> (170)	-	0.719	0.240	1.437	1.677	0.958	0.240
<i>Dysoxylum binectariferum</i> (171)	-	-	-	0.240	-	-	0.240
<i>Eurya japonica</i> (192)	1.436	0.259	-	-	-	-	1.677
<i>Erythrina indica</i> (201)	0.239	-	-	0.240	-	-	0.479
<i>Fucplandia populnea</i> (238)	0.239	1.221	0.240	-	-	-	0.958

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Gmelina arborea</i> (246)	-	-	0.240	0.479	0.479	-	-	1.677
<i>Laportea cerulea</i> (300)	-	-	0.240	-	-	-	-	0.240
<i>Litsea species</i> (308)	0.957	0.718	0.958	0.479	-	-	-	3.114
<i>Michelia species</i> (323)	3.114	6.228	2.874	-	-	-	-	12.217
<i>Machilus species</i> (325)	1.916	2.874	5.030	2.635	0.479	-	-	12.935
<i>Mallotus philippensis</i> (330)	0.239	-	0.479	-	-	-	-	0.719
<i>Morus laevigata</i> (34)	-	0.239	0.958	0.240	0.240	-	-	1.677
<i>Prunus species</i> (409)	3.114	0.957	0.479	0.240	-	-	-	4.791
<i>Quercus species</i> (446)	0.718	-	-	0.479	0.479	0.240	-	1.916
<i>Shorea robusta</i> (462)	-	-	-	0.479	-	-	-	0.479
<i>Sterculia elata</i> (464)	-	-	-	0.240	0.240	0.240	-	0.719
<i>Symplocos paniculata</i> (468)	2.155	1.197	0.240	-	-	-	-	3.593
<i>Syzygium cumini</i> (469)	0.239	-	-	-	-	-	-	0.240
<i>Safindus mukorossi</i> (471)	-	0.239	-	-	-	-	-	0.240
<i>Schima wallachii</i> (476)	-	0.957	1.437	1.677	1.198	0.240	-	5.509
<i>Bauhinia blakeana</i> (504)	-	0.478	1.437	0.240	-	-	-	2.156
<i>Toona ciliata</i> (512)	-	-	0.240	0.240	-	-	-	0.479
<i>Ternstroemia myriocarpa</i> (517)	-	0.478	1.577	2.156	-	0.479	-	4.791
<i>Cryptomeria japonica</i> (596)	0.478	1.791	7.666	16.047	12.456	4.791	1.437	47.649
Others (600)	2.395	1.676	1.916	0.958	0.479	0.479	-	7.005

Total : 19.405 24.433 31.859 30.422 19.163 10.061 3.114 1.198 0.240 0.240 140.131

TABLE NO. 3.1.2.

TOTAL STEMS (L. 000 Q.U. IT) BY SPECIES AND DIAMETER CLASSES (D. C.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Magnolia species (364)	0.914	1.372	-	-	-	-	-	-	-	2.286
Prunus species (409)	4.574	2.287	0.457	-	-	-	-	-	-	7.515
Pterospermum acerifolium (419)	0.457	-	-	-	-	-	-	-	-	0.457
Quercus leungiose (441)	0.914	1.372	0.457	-	-	-	-	-	-	3.200
Quercus species (446)	4.574	3.657	0.914	1.372	-	-	-	-	-	10.516
Rhododendron species (449)	0.457	-	-	-	-	-	-	-	-	0.457
Shorea robusta (462)	-	0.457	-	-	-	-	-	-	-	0.914
Symplocos spi-ata (468)	19.200	2.742	-	-	-	-	-	-	-	21.946
Semecarpus anacardium (472)	3.199	-	-	-	-	-	-	-	-	3.200
Schima wallichii (476)	2.742	1.829	0.914	-	-	-	-	-	-	5.486
Tsuga brunonianus (504)	14.171	60.351	30.175	5.944	0.914	-	-	-	-	111.557
Trewia nudiflora (509)	-	-	0.914	-	-	-	-	-	-	0.914
Tectona grandis (510)	-	6.401	6.687	2.743	-	-	-	-	-	17.831
Toona ciliata (512)	-	1.370	2.286	1.372	-	-	-	-	-	5.029
Terminalia tomentosa (516)	-	-	-	-	0.457	-	-	-	-	0.914
Terminalia myriocarpa (517)	-	5.027	6.401	2.743	0.457	-	-	-	-	15.088
Terminalia citrina (518)	-	-	-	-	0.457	-	-	-	-	0.457
Terminalia nudiflora (523)	0.457	-	-	-	-	-	-	-	-	0.457
Cephaelostachyum pergraciatum (569)	-	-	0.457	-	-	-	-	-	-	0.457
Cryptomeria japonica (596)	5.484	27.432	30.632	33.832	10.973	4.115	0.457	-	-	102.413
Others (600)	7.771	3.199	2.286	0.457	-	-	0.457	-	-	14.173
Pinus petulue (602)	6.857	11.386	-	-	-	-	-	-	-	18.745
Angere (603)	0.914	0.914	-	-	-	-	-	-	-	1.829
Bhadarsi (604)	0.457	-	-	-	-	-	-	-	-	0.457

Total : 195.225 221.743 136.246 85.040 25.603 8.230 1.829 0.457 - 0.914 675.288



Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Litsea Polyantha</i> (302)	-	-	0.459	-	-	-	-	-	-	0.459
<i>Litsea</i> species (308)	5.506	-	0.459	-	-	-	-	-	-	5.966
<i>Michelia</i> species (325)	26.159	11.932	-	-	-	-	-	-	-	38.092
<i>Machilus</i> species (325)	26.618	10.729	0.918	-	-	-	-	-	-	38.551
<i>Maeranga</i> indiss. (341)	0.458	0.458	1.377	0.459	-	-	-	-	-	2.754
<i>Morus laevigata</i> (349)	2.752	1.834	-	-	-	-	-	-	-	4.589
<i>Magnolia</i> species (364)	0.458	-	-	-	-	-	-	-	-	0.459
<i>Prunus</i> species (409)	2.294	0.458	-	-	-	-	-	-	-	2.754
<i>Quercus</i> species (446)	11.014	2.751	0.918	0.459	-	-	-	-	-	15.145
<i>Shorea robusta</i> (462)	12.849	12.380	2.295	0.916	-	-	-	-	-	28.454
<i>Sterculia alata</i> (464)	-	-	-	0.459	-	-	-	-	-	0.459
<i>Symplocos</i> spicata (468)	13.768	0.917	-	-	-	-	-	-	-	14.686
<i>Schima wallichii</i> (476)	8.718	5.960	1.836	-	-	-	-	-	-	16.522
<i>Stereospermum chelonoides</i> (476)	0.458	-	-	-	-	-	-	-	-	0.459
<i>Syzygium</i> species (492)	-	0.458	-	-	-	-	-	-	-	0.459
<i>Taxus baccata</i> (503)	0.458	-	-	-	-	-	-	-	-	0.459
<i>Tsuga brunoniæ</i> (504)	1.375	8.712	2.754	-	-	-	-	-	-	12.850
<i>Terminalia belerica</i> (506)	-	0.458	-	-	-	-	-	-	-	0.459
<i>Tectona grandis</i> (510)	0.458	1.375	0.459	-	-	-	-	-	-	2.295
<i>Terminalia myricarpa</i> (517)	0.458	2.292	1.377	0.459	-	-	-	-	-	4.589
<i>Cryptomeria japonica</i> (596)	7.801	39.931	43.598	15.145	0.918	1.377	0.459	-	-	109.227
Others (600)	18.357	4.130	0.918	-	-	-	-	-	-	23.406
Total :	196.886	129.421	70.677	23.865	2.295	1.836	0.918	-	-	425.897

TABLE NO. 3.1.4.

-116-

TOTAL STS. (IN 000 UNIT) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARINGITING

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lucida</i> (026)	-	-	1.380	-	-	-	-	-	-	1.360
<i>Acer species</i> (035)	2.760	-	-	-	-	-	-	-	-	2.761
<i>Alnus nepalensis</i> (037)	0.521	1.380	-	-	-	-	-	-	-	6.902
<i>Alnus species</i> (055)	2.760	2.760	-	-	-	-	-	-	-	5.522
<i>Bauhinia species</i> (069)	1.380	-	2.761	-	-	-	-	-	-	4.141
<i>Betula alnooides</i> (10)	1.380	-	-	-	-	-	-	-	-	1.360
<i>Bursera serratum</i> (093)	-	-	1.380	1.380	-	-	-	-	-	2.761
<i>Cestanopsis species</i> (100)	22.087	4.141	-	-	-	-	-	-	-	26.228
<i>Cinnamomum species</i> (105)	17.945	1.380	-	-	-	-	-	-	-	19.326
<i>Careya arborea</i> (116)	1.380	-	-	-	-	-	-	-	-	1.380
<i>Cestanopsis indica</i> (123)	16.565	1.380	-	-	-	-	-	-	-	17.946
<i>Duebangia sonneratoides</i> (170)	-	-	1.380	-	-	-	-	-	-	1.380
<i>Eucalyptus hybrid</i> (206)	2.760	1.380	-	-	-	-	-	-	-	4.141
<i>Evodia roxburghiana</i> (211)	1.380	-	-	-	-	-	-	-	-	1.380
<i>Bucania pannulnea</i> (238)	17.945	-	-	-	-	-	-	-	-	17.946
<i>Juglans regia</i> (290)	4.141	1.380	-	-	-	-	-	-	-	5.522
<i>Mitchelia species</i> (323)	30.369	-	-	-	-	-	-	-	-	30.370
<i>Macillus species</i> (325)	15.184	-	1.380	-	-	-	-	-	-	15.184
<i>Polyalthia corasoidea</i> (396)	-	-	-	-	-	-	-	-	-	1.380
<i>Prunus species</i> (409)	5.521	-	-	-	-	-	-	-	-	5.522
<i>Quercus species</i> (446)	75.163	2.760	-	-	-	-	-	-	-	75.924
<i>Shorea robusta</i> (462)	26.989	13.804	1.380	-	-	-	-	-	-	44.174
<i>Symplocos spicata</i> (468)	26.228	1.380	-	-	-	-	-	-	-	27.609
<i>Tsuga brunoniana</i> (504)	33.130	19.326	1.380	-	-	-	-	-	-	57.979
<i>Tectona grandis</i> (510)	172.555	48.315	-	-	-	-	-	-	-	220.671
<i>Terminalia tomentosa</i> (516)	1.380	-	-	-	-	-	-	-	-	1.380
<i>Cryptomeria japonica</i> (596)	172.555	191.881	46.295	2.761	1.380	-	-	-	-	2.761
Others (600)	8.282	-	-	-	-	-	-	-	-	8.283
Total :	665.374	291.274	57.979	4.141	1.380	-	1.360	-	-	5.522 1027.050

TABLE No. 3.1.5.

TOTAL STEMS (1,000 UNIT) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORIES  
DIVISION - DARBELING

Species name with code	Diameter classes (in cm.)						STRATA - 5	Total
	10-19	20-29	30-39	40-49	50-59	60-69		
<i>Alnus nepalensis</i> (037)	116.897	9.741	-	-	-	-	-	126.635
<i>Bursera serratum</i> (193)	9.741	-	-	-	-	-	-	9.741
<i>Castanopsis indica</i> (123)	19.482	-	-	-	-	-	-	19.482
<i>Quercus</i> species (446)	9.741	-	-	-	-	-	-	9.741
<i>Tectona grandis</i> (510)	253.278	9.741	-	-	-	-	-	263.011
<i>Terminalia myriocarpa</i> (517)	9.741	-	-	-	-	-	-	9.741
<i>Cryptomeria japonica</i> (596)	740.352	19.482	-	-	-	-	-	759.834
Total :	1159.198	38.965	-	-	-	-	-	1198.162

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Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Anthocephalus cadamba</i> (013)	-	-	-	-	0.569	-	-	-
<i>Aphananixis polystachya</i> (022)	0.285	0.855	-	-	0.285	-	-	0.569
<i>Agaura wallichii</i> (023)	0.855	0.855	0.285	-	-	-	-	1.424
<i>Aleurites nepalensis</i> (037)	7.695	-	1.139	0.569	-	-	-	2.276
<i>Acrocarpus fraxinifolia</i> (041)	-	-	0.285	0.854	-	-	-	1.396
<i>Amoora species</i> (063)	-	-	0.569	-	-	-	-	0.569
<i>Betula alnoidea</i> (070)	-	-	-	-	0.285	-	-	0.285
<i>Jequeachmeia sessilis</i> (085)	-	0.285	-	-	-	-	-	0.285
<i>Cinnamomum cecropodaphne</i> (099)	-	-	-	-	0.265	0.285	-	0.569
<i>Cestanopsis species</i> (100)	-	-	0.569	-	0.265	-	-	0.285
<i>Cinnamomum species</i> (105)	-	-	0.569	1.139	-	-	-	1.708
<i>Callicarpa arborea</i> (112)	-	-	-	0.854	-	-	-	0.854
<i>Callicarpa species</i> (119)	0.285	-	-	-	0.265	-	-	0.285
<i>Castanopsis indica</i> (123)	-	-	-	-	-	-	-	0.285
<i>Dunbaria sonneratoides</i> (170)	-	0.570	4.556	5.919	2.847	0.654	-	14.506
<i>Angelhardtia syringaefolia</i> (200)	-	-	0.285	-	-	-	-	0.285
<i>Grewia arborea</i> (246)	-	-	0.265	-	-	-	-	0.285
<i>Solarina acutidens</i> (260)	0.285	-	-	-	-	-	-	0.569
<i>Jambosa formosa</i> (268)	-	0.285	0.285	-	-	-	-	0.569
<i>Lauritroenia serviflora</i> (299)	-	0.285	-	-	-	-	-	0.285
<i>Litsea species</i> (300)	0.285	0.265	0.265	-	-	-	-	0.54
<i>Nicella species</i> (323)	-	0.055	0.54	0.265	-	-	-	1.375
<i>Norus laevigata</i> (349)	-	0.285	-	-	-	-	-	0.285
<i>Nicella championae</i> (362)	-	0.285	2.563	0.265	0.569	0.569	-	4.271

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Fructus Specie (409)	0.285	-	0.285	-	-	-	-	-	-	0.569
Zhoebe attenuata (423)	-	0.570	2.278	0.285	-	0.285	-	-	-	3.417
Schleicheria trijuga (461)	-	0.285	-	-	-	-	-	-	-	0.285
Shorea robusta (462)	0.570	-	0.554	2.563	0.285	0.569	-	-	-	4.841
Symplocos siccata (468)	-	0.285	-	-	-	-	-	-	-	0.285
Schinia welllichei (476)	0.855	1.995	2.276	2.563	1.993	1.131	0.569	-	-	11.390
Terminalia bellierica (506)	0.570	0.285	0.25	-	0.569	0.285	0.000	-	-	1.439
Toona ciliata (512)	-	-	-	-	-	-	-	-	-	0.854
Terminalia tomentosa (516)	0.285	0.570	0.285	0.285	-	-	-	-	-	1.424
Terminalia myriocarpa (517)	-	1.425	3.702	3.132	0.285	-	-	-	-	8.542
Tetrameles audiiflora (523)	-	0.285	-	-	-	-	0.285	-	-	0.569
Kwrightia tomentosa (538)	-	-	-	0.285	-	-	-	-	-	0.285
Others (600)	-	3.420	0.569	0.569	-	-	-	-	-	4.556

Total :	12.244	14.237	22.494	21.355	7.118	3.702	0.854	0.285	-	82.269
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TOTAL STEMS (IN 100 UNIT) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE END OF INVENTORY  
DIVISION - KALIYUG

-120-

Species name with code	Diameter classes(in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lebbek</i> (005)	-	-	0.409	-	-	-	-	-	-	0.409
<i>Albizia procera</i> (006)	-	-	0.409	-	-	-	-	-	-	0.409
<i>Anthocephalus cadamba</i> (013)	-	0.818	1.226	2.043	0.409	0.409	-	-	-	4.904
<i>Acacia sindra</i> (016)	-	-	0.409	-	-	-	-	-	-	0.409
<i>Artocarpus chaplasha</i> (017)	-	-	-	0.409	-	-	-	-	-	0.409
<i>Alstonia scholaris</i> (019)	-	0.818	0.409	-	-	-	-	-	-	1.226
<i>Aphanamixis polystachya</i> (022)	0.409	0.409	-	-	-	-	-	-	-	0.617
<i>Albizia lucida</i> (026)	-	-	0.409	0.817	-	-	-	-	-	1.226
<i>Allianthus altissima</i> (30)	-	-	2.043	1.635	1.226	-	-	-	-	5.313
<i>Alnus nepalensis</i> (037)	-	1.637	6.539	5.722	4.904	2.043	-	-	-	20.843
<i>Acrocarpus fraxinifolius</i> (041)	-	-	1.226	1.226	-	-	-	-	-	2.452
<i>Albizia</i> species (054)	-	0.409	0.409	0.817	-	-	-	-	-	1.635
<i>Betula alnoidea</i> (070)	-	-	1.635	-	1.226	-	-	-	-	2.861
<i>Bombax ceiba</i> (073)	-	-	0.817	-	-	-	-	-	-	1.226
<i>Chukrasia tabularis</i> (098)	0.409	2.047	6.130	5.722	1.226	1.226	-	-	-	16.756
<i>Cinnamomum oecidophloeum</i> (099)	-	-	-	1.226	0.409	0.409	-	-	-	2.043
<i>Cestanopsis</i> species (100)	-	1.226	0.409	1.635	0.409	0.409	0.409	-	-	4.496
<i>Cinnamomum</i> species (105)	-	-	4.087	2.043	-	-	0.409	-	-	6.539
<i>Cellisierps arborea</i> (112)	2.047	0.818	0.409	0.409	-	-	-	-	-	3.678
<i>Careya arborea</i> (116)	0.818	-	-	-	-	-	-	-	-	0.817
<i>Cestanopsis</i> <i>indice</i> (123)	-	0.409	-	0.409	0.409	0.409	-	0.409	-	2.043
<i>Cestanopsis aronata</i> (124)	-	-	-	0.409	-	-	-	-	-	0.409

Species name with code	Diameter class (in cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
<i>Draudtia sonneratoides</i> (170)	-	2.047	11.034	6.948	2.861	1.635	-	-	-	-	24.521
<i>Dysoxyllum binectariferum</i> (171)	-	0.346	0.817	-	-	-	-	-	-	-	1.226
<i>Surya japonica</i> (192)	2.047	0.346	-	-	-	-	-	-	-	-	2.452
<i>Engelhardtia spicata</i> (200)	0.318	0.409	-	-	-	-	-	-	-	-	1.226
<i>Inga species</i> (210)	0.409	-	-	-	-	-	-	-	-	-	0.409
<i>Entelea officinalis</i> (222)	-	0.409	-	-	-	-	-	-	-	-	0.409
<i>Syzygium species</i> (223)	-	-	-	0.409	-	-	-	-	-	-	0.409
<i>Ficus species</i> (233)	-	-	-	-	-	-	-	-	-	-	0.409
<i>Bucida buceras</i> (238)	0.818	6.141	3.676	30.000	-	-	-	-	-	-	10.626
<i>Garuga pinna</i> (239)	-	-	0.409	-	-	-	-	-	-	-	0.409
<i>Holarrhena antidyseatica</i> (266)	-	0.409	-	-	-	-	-	-	-	-	0.409
<i>Jambosa formosa</i> (288)	2.047	1.228	0.409	-	-	-	-	-	-	-	3.678
<i>Lagerstroemia parviflora</i> (299)	-	0.815	0.817	-	-	-	-	-	-	-	1.635
<i>Lophopetalum weightianum</i> (310)	-	-	-	-	-	-	-	-	-	-	0.409
<i>Lagerstroemia speciosa</i> (313)	6.551	18.000	13.895	2.452	-	-	-	-	-	-	40.460
<i>Lagerstroemia floribunda</i> (318)	0.409	0.618	0.409	-	-	-	-	-	-	-	1.635
<i>Mitchella species</i> (323)	0.318	6.960	6.130	1.226	-	-	-	-	-	-	15.121
<i>Nachilus species</i> (325)	0.409	0.409	-	-	-	-	-	-	-	-	0.817
<i>Naceranga indica</i> (341)	-	-	0.817	0.409	-	-	-	-	-	-	1.226
<i>Nichelia champaca</i> (362)	-	6.141	7.765	6.130	2.043	0.817	-	-	-	-	23.295
<i>Megnolia species</i> (364)	-	0.409	-	-	-	-	-	-	-	-	0.409
<i>Ostodes paniculatus</i> (377)	-	0.409	-	-	-	-	-	-	-	-	0.409
<i>Phoebe haemisiana</i> (389)	-	-	0.409	0.409	0.409	-	-	-	-	-	0.817
<i>Prunus cornuta</i> (407)	-	0.409	-	-	-	-	-	-	-	-	0.409
<i>Prunus species</i> (409)	0.409	0.818	1.226	-	-	-	-	-	-	-	2.452
<i>Phoebe attenuata</i> (423)	-	0.409	4.087	0.817	-	-	-	-	-	-	5.313

Species name with code	Diameter class (in cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79.	80-89	90-99	100+	
<i>Spondias pinnata</i> (460)	-	0.409	0.409	-	-	-	-	-	-	-	0.817
<i>Syzygium robusta</i> (462)	0.409	4.913	17.982	8.174	1.635	-	0.409	-	-	-	33.512
<i>Syzygium cumini</i> (469)	-	1.637	-	-	-	-	-	-	-	-	1.635
<i>Seneocarpus enanckodium</i> (472)	0.409	-	-	-	-	-	-	-	-	-	0.409
<i>Schinia wellichii</i> (476)	2.866	2.047	2.861	1.635	-	0.409	0.409	-	-	-	10.217
<i>Terminalia crenulata</i> (502)	-	-	1.226	-	-	-	-	-	-	-	1.226
<i>Trewia nudiflora</i> (509)	-	0.409	-	-	-	-	-	-	-	-	0.409
<i>Tectona grandis</i> (510)	2.866	1.226	9.400	11.034	2.043	-	-	-	-	-	26.564
<i>Toona ciliata</i> (512)	-	0.818	1.635	-	0.817	-	0.409	-	-	-	3.678
<i>Terminalia tomentosa</i> (516)	1.228	0.409	2.043	2.045	0.409	-	-	-	-	-	6.150
<i>Terminalia myriocarpa</i> (517)	-	3.275	11.852	4.496	2.043	0.817	-	-	-	-	22.476
<i>Tetrameles nudiflora</i> (523)	-	0.409	-	0.409	0.817	0.409	-	-	-	-	2.043
<i>Wrightia tomentosa</i> (538)	-	-	0.409	-	-	-	-	-	-	-	0.409
<i>Daemonorops jenkinsianus</i> (593)	-	-	-	-	0.409	-	-	-	-	-	0.409
<i>Cryptomeria japonica</i> (596)	0.409	7.779	17.164	15.121	7.357	0.817	-	-	-	-	48.633
Others (600)	6.141	6.000	4.496	1.226	-	0.409	-	-	-	-	17.982
Total :	32.286	84.598	147.944	86.641	32.286	10.626	2.043	1.635	-	-	398.058

TABLE NO. 3.2.3.

TOTAL STUMPS (IN 000 UNIT) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

STRATA-III

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizzia lebbek</i> (005)	0.559	0.559	-	-	-	-	0.560
<i>Alstonia scholaris</i> (019)	0.559	-	-	-	-	-	0.560
<i>Albizzie stipulata</i> (021)	0.559	-	-	-	-	-	0.560
<i>Aphananixis polystachya</i> (022)	65.512	26.317	2.238	1.679	-	-	95.683
<i>Aroeore wallichii</i> (023)	1.119	1.079	0.560	-	-	-	3.357
<i>Allanthus altissima</i> (030)	0.559	-	-	-	-	-	0.560
<i>Alnus nepalensis</i> (037)	1.679	7.839	12.870	6.715	1.119	-	30.216
<i>Albizzia species</i> (054)	0.559	0.559	1.119	0.560	0.560	-	3.357
<i>Amoora species</i> (063)	3.919	-	-	-	-	-	3.917
<i>Chukrasia tabularis</i> (098)	3.359	3.919	1.119	-	-	-	8.393
<i>Cinnamomum cecigodaphne</i> (099)	-	-	0.560	1.119	-	-	1.679
<i>Castanopsis species</i> (100)	0.559	0.559	-	-	-	-	0.560
<i>Cinnamomum species</i> (105)	0.559	-	-	-	-	-	1.119
<i>Callicarpa arborea</i> (112)	-	-	0.559	-	-	-	0.560
<i>Callicarpa species</i> (119)	0.559	-	-	0.559	-	-	10.560
<i>Cassia siamea</i> (120)	15.118	1.119	-	-	-	-	15.227
<i>Castanopsis indica</i> (123)	1.119	1.119	-	-	-	-	2.238
<i>Duabanga sonneratoides</i> (170)	5.599	11.758	10.072	5.596	1.119	-	34.133
<i>Dysosyrum binectariferum</i> (171)	-	0.559	-	-	-	-	0.560
<i>Engelhardtia spicata</i> (200)	-	-	0.560	-	-	-	0.560
<i>Embelica officinalis</i> (222)	-	0.559	-	-	-	-	0.560
<i>Gmelina arborea</i> (246)	-	0.559	-	1.679	-	-	2.238
<i>Jambosa formosa</i> (288)	1.119	-	-	-	-	-	1.119
<i>Lagerstroemia parviflora</i> (299)	1.119	-	-	-	-	-	1.119

Species name with code	Diameter classes (in cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-74	80-84	90+	100+	
<i>Lagerstroemia speciosa</i> (313)	3.359	0.559	-	-	-	-	-	-	-	-	3.917
<i>Lagerstroemia florreginei</i> (318)	-	0.559	0.560	-	-	-	-	-	-	-	1.119
<i>Macaranga indica</i> (341)	-	3.359	2.236	0.560	-	-	-	-	-	-	6.155
<i>Michelia doltsopa</i> (345)	1.679	-	-	-	-	-	-	-	-	-	1.679
<i>Morus laevigata</i> (349)	3.919	-	-	-	-	-	-	-	-	-	3.917
<i>Macaranga peltata</i> (352)	-	1.679	1.119	0.560	-	-	-	-	-	-	3.257
<i>Ostodes paniculatus</i> (377)	7.279	1.679	-	-	-	-	-	-	-	-	8.953
<i>Podocarpus nerifolia</i> (397)	-	1.119	-	-	-	-	-	-	-	-	1.119
<i>Prunus species</i> (409)	-	0.559	-	-	-	-	-	-	-	-	0.560
<i>Populus spp.</i> (410)	2.914	1.119	-	-	-	-	-	-	-	-	5.036
<i>Pterospermum acerifolium</i> (419)	-	0.559	-	-	-	-	-	-	-	-	0.560
<i>Syzygium cumini</i> (469)	0.559	0.559	-	-	-	-	-	-	-	-	1.119
<i>Schima wallichii</i> (476)	3.359	2.239	1.119	1.679	-	-	-	-	-	-	8.953
<i>Trewia nudiflora</i> (509)	-	0.559	-	-	-	-	-	-	-	-	0.560
<i>Tectona grandis</i> (510)	1.079	1.119	2.238	0.560	-	-	-	-	-	-	6.155
<i>Toona ciliata</i> (512)	7.279	2.239	-	-	-	-	-	-	-	-	9.512
<i>Terminalia myriocarpa</i> (517)	12.878	26.317	5.546	2.238	0.560	-	-	-	-	-	47.562
<i>Trema orientalis</i> (519)	-	-	0.560	-	-	-	-	-	-	-	0.560
<i>Tetrameles nudiflora</i> (523)	-	1.119	-	0.560	1.119	1.119	-	-	-	-	3.917
<i>Cryptomeria japonica</i> (596)	-	-	-	0.560	-	-	-	-	-	-	0.560
Others(600)	8.958	4.479	-	-	0.560	-	-	-	-	-	13.989
Total:	158.353	107.434	42.526	24.061	5.596	1.119	0.560	-	-	-	339.647

TABLE NO. 3.2.4.

TOTAL STEMS (IN 1,000 UNIT) OF SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY

DIVISION: KALIMONG

STRATUM-4

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i> (005)	0.917	0.917	0.917	0.917	0.917	0.917	1.835
<i>Anthocephalus cadamba</i> (c. 3)	4.585	2.752	0.917	0.917	0.917	0.917	11.008
<i>Albizia stipulata</i> (021)	-	0.917	-	-	-	-	0.917
<i>Aphanamixis polystachya</i> (22)	7.336	12.839	2.752	-	-	-	22.934
<i>Amoora wallichii</i> (23)	3.668	0.917	0.917	-	-	-	5.504
<i>Allanthus altissima</i> (030)	4.585	-	-	-	-	-	4.587
<i>Alnus nepalensis</i> (037)	0.917	8.253	9.174	1.835	-	-	20.182
<i>Ammoora species</i> (063)	5.502	-	-	-	-	-	5.504
<i>Betula utilis</i> (71)	1.834	12.839	5.504	-	-	-	20.182
<i>Bombax ceiba</i> (073)	2.751	1.834	2.752	2.752	0.917	-	11.008
<i>Burmus wallachiana</i> (077)	3.668	2.751	-	-	-	-	6.421
<i>Chukrasia tabularis</i> (098)	20.176	15.507	0.917	-	-	-	37.611
<i>Cinnamomum cecropodaphne</i> (099)	4.585	0.917	-	-	-	-	5.504
<i>Csanatopsis species</i> (100)	1.834	0.917	-	-	-	-	1.835
<i>Callicarpa-arborea</i> (112)	1.834	-	-	-	-	-	1.835
<i>Cassia siamea</i> (120)	82.538	22.927	-	-	-	-	105.495
<i>Dillenia pentagyna</i> (164)	0.917	-	-	-	-	-	0.917
<i>Dubanga sonneratoides</i> (170)	2.751	9.170	9.174	5.504	3.669	0.917	32.107
<i>Dalbergia sissoo</i> (181)	0.917	-	-	-	-	-	0.917
<i>Eucalyptus hybrid</i> (206)	0.917	0.917	-	-	-	-	1.835
<i>Erodia roxburghiana</i> (211)	0.917	0.917	-	-	-	-	1.835
<i>Garuga pinnata</i> (239)	-	0.917	-	-	-	-	0.917
<i>Lagerstroemia parviflora</i> (299)	0.917	-	-	-	-	-	0.917
<i>Lagerstroemia speciosa</i> (313)	2.751	6.419	0.917	-	-	-	10.091

Species name with code	Diameter classes (in cm.)						Total				
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
<i>Lagerstroemia florreginei</i> (318)	5.502	1.834	0.917	-	-	-	-	-	-	-	8.256
<i>Michelia spp.</i> (223)	-	2.751	3.669	-	-	-	-	-	-	-	6.421
<i>Michelia doltsopa</i> (345)	0.170	1.834	1.835	-	-	-	-	-	-	-	12.842
<i>Michelia champaca</i> (362)	8.253	11.003	6.421	1.835	-	-	-	-	-	-	27.521
<i>Prunus spp.</i> (409)	1.834	0.917	-	-	-	-	-	-	-	-	2.752
<i>Shorea robusta</i> (462)	105.465	37.600	5.504	-	-	-	-	-	-	-	148.611
<i>Sterculia villosa</i> (463)	-	0.917	-	-	-	-	-	-	-	-	0.917
<i>Sterculia urens</i> (465)	-	0.917	-	-	-	-	-	-	-	-	0.917
<i>Symplocos spicata</i> (468)	-	0.917	-	-	-	-	-	-	-	-	0.917
<i>Syzygium cumini</i> (469)	-	1.834	0.917	0.917	-	-	-	-	-	-	3.669
<i>Sapindus mukorossi</i> (471)	0.917	-	-	-	-	-	-	-	-	-	0.917
<i>Sageretia oppositifolia</i> (474)	4.585	2.751	-	-	-	-	-	-	-	-	7.339
<i>Schima wallichii</i> (476)	58.693	39.435	11.926	0.917	-	-	-	-	-	-	110.999
<i>Tectona grandis</i> (510)	99.963	94.460	24.768	3.669	1.835	-	-	-	-	-	224.751
<i>Toona ciliata</i> (512)	0.917	0.917	-	-	-	-	-	-	-	-	1.835
<i>Terminalia tomentosa</i> (516)	0.917	2.751	2.752	-	-	-	-	-	-	-	6.421
<i>Terminalia myriocarpa</i> (517)	17.424	22.927	1.835	0.917	-	-	-	-	-	-	43.115
<i>Tetrameles nudiflora</i> (523)	0.917	-	0.917	-	-	-	-	-	-	-	2.752
<i>Cryptomeria japonica</i> (596)	22.927	26.595	7.338	-	-	-	-	-	-	-	56.875
<i>Cupressus kashmiriana</i> (596)	9.170	*1.834	0.917	-	-	-	-	-	-	-	11.926
Others(600)	11.005	7.336	-	-	0.917	-	-	-	-	-	20.182
Total:	512.799	363.271	145.061	20.182	9.174	0.917	2.752	-	-	-	1012.755

TABLE NO. 3.2.5.

TOTAL STMS (IN '000 UNIT) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY.

## STRATUM - 5

## DIVISION: KALIMPONG

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia leobek</i> (005)	-	-	-	-	-	-	-	1.117
<i>Anthoclethrus cadamba</i> (C.)	24.573	20.105	2.035	-	-	-	-	46.927
<i>Ailanthus altissima</i> (030)	99.411	11.169	-	-	-	-	-	110.614
<i>Artocarpus integrifolia</i> (038)	1.116	-	-	-	-	-	-	1.117
<i>Acrocarpus fraxinifolius</i> (041)	2.233	1.116	-	-	-	-	-	3.352
<i>Albizia species</i> (054)	1.116	-	-	-	-	-	-	1.117
<i>Betula alnoidea</i> (070)	1.116	4.467	-	-	-	-	-	5.587
<i>Betula utilis</i> (071)	2.233	1.116	1.117	-	-	-	-	4.469
<i>Bombax ceiba</i> (073)	6.701	7.818	1.117	-	-	-	-	15.642
<i>Chukkrasia tabularis</i> (098)	23.463	1.116	-	-	-	-	-	24.581
<i>Castanopsis species</i> (100)	2.233	-	-	-	-	-	-	2.235
<i>Cinnamomum species</i> (105)	1.116	1.116	-	-	-	-	-	2.235
<i>Callicarpa arborea</i> (112)	3.350	1.116	1.117	-	-	-	-	5.587
<i>Cassia siamea</i> (120)	7.818	1.116	-	-	-	-	-	8.939
<i>Cupressus torulosa</i> (145)	1.116	-	-	-	-	-	-	1.117
<i>Cornus macrophylla</i> (151)	1.116	-	-	-	-	-	-	1.117
<i>Dubahanga sonneratoides</i> (170)	11.169	10.052	6.704	7.821	-	-	-	35.754
<i>Dalbergia sissoo</i> (181)	17.871	2.233	-	-	-	-	-	20.112
<i>Evodia roxburghiana</i> (211)	1.116	-	-	-	-	-	-	1.117
<i>Emblica officinalis</i> (222)	1.116	-	-	-	-	-	-	2.235
<i>Buciplenia populnea</i> (238)	2.233	-	-	-	-	-	-	4.469
<i>Garruga pinnata</i> (239)	4.434	-	-	-	-	-	-	4.469
<i>Gmelina arborea</i> (246)	1.116	1.116	-	-	-	-	-	2.235
<i>Holarrhena antidysenteric</i> (266)	1.116	-	-	-	-	-	-	1.117
<i>Lagerstroemia parviflora</i> (299)	1.350	-	-	-	-	-	-	3.352
<i>Litsea species</i> (308)	1.116	-	-	-	-	-	-	1.117
<i>Lagerstroemia speciosa</i> (313)	4.467	-	-	-	-	-	-	4.469

Species name with code	Diameter classes(in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Mitchelia</i> spp. (223)	13.403	-	-	-	-	-	13.408
<i>Machilus</i> spp. (325)	1.116	-	-	-	-	-	1.117
<i>Mitragyna parvifolia</i> (311)	1.116	-	-	-	-	-	1.117
<i>Macaranga peltata</i> (352)	2.233	3.350	-	-	-	-	5.587
<i>Michelia champaca</i> (362)	24.573	2.293	-	-	-	-	26.816
<i>Quercus</i> spp. (446)	4.467	-	-	-	-	-	4.469
<i>Shorea robusta</i> (662)	86.007	-	-	-	-	-	86.033
<i>Sageretia oppositifolia</i> (474)	1.116	-	-	-	-	-	1.117
<i>Schima wallichii</i> (476)	119.517	21.222	1.117	-	-	-	143.016
<i>Trewia nudiflora</i> (509)	2.233	-	-	-	-	-	2.235
<i>Tectona grandis</i> (510)	194.354	58.083	10.056	-	-	-	263.686
<i>Terminalia tomentosa</i> (516)	1.116	-	-	-	-	-	1.117
<i>Terminalia myricarpa</i> (517)	54.732	5.584	-	-	-	-	60.335
<i>Tetrameles nudiflora</i> (523)	-	1.116	-	-	-	-	1.117
<i>Cryptomeria japonica</i> (596)	54.732	17.871	1.117	-	-	-	73.743
<i>Cupressus kashmiriana</i> (599)	2.084	3.350	-	-	-	-	5.587
Others(600)	10.052	1.116	-	-	-	-	11.6173
Total:	801.114	178.770	24.5801	7.821	1.117	-	1014.521

STEM TIMBER VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING  
STRATA - I

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Machilus</i> species (325)	-	0.662	3.692	3.751	0.986	-	9.091
<i>Mallotus philippensis</i> (330)	-	-	0.304	-	-	-	0.304
<i>Morus laevigata</i> (349)	-	0.050	0.608	0.257	0.431	-	1.346
<i>Prunus</i> species (409)	-	0.225	0.397	0.351	-	-	0.973
<i>Quercus</i> species (446)	-	-	-	0.515	0.861	0.574	1.950
<i>Shorea robusta</i> (462)	-	-	-	1.132	-	-	1.132
<i>Sterculia elata</i> (464)	-	-	-	0.257	0.431	0.574	1.262
<i>Symplocos</i> spicata (468)	-	0.250	0.152	-	-	-	0.402
<i>Sepindus makroissi</i> (471)	-	0.050	-	-	-	-	0.050
<i>Schima wellcomei</i> (476)	-	0.200	0.912	1.802	2.153	0.574	5.641
<i>Tsuga brunniana</i> (504)	-	0.100	0.912	0.257	-	-	1.269
<i>Toona ciliata</i> (512)	-	-	0.152	0.257	-	-	0.409
<i>Terminalia myriocarpa</i> (517)	-	-	1.064	2.317	-	1.147	4.628
<i>Cryptomeria japonica</i> (596)	-	2.140	6.320	22.575	26.683	13.631	76.654
Others (600)	-	0.350	1.216	1.030	0.861	1.147	4.604
Total :	-	6.720	23.224	40.928	39.312	27.086	153.790

TABLE NO. 4.1.2.  
STEM TIMBER VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

Species name with code	Diameter classes (in cm.)					Total
	10-19	20-29	30-39	40-49	50-59	
Ailanthus altissima(030)	-	0.214	0.108	-	-	-
Acer species(035)	-	0.036	-	-	-	0.322
Alnus nepalensis(037)	-	0.636	0.739	-	0.607	0.036
Acrocarpus fraxinifolius(41)	-	0.108	0.183	-	-	1.982
Abies pindrow(047)	-	0.036	-	-	-	0.292
Alnus species(055)	-	0.108	-	-	-	0.036
Areca friandise(065)	-	0.108	-	-	-	0.108
Bombax ceiba(073)	-	0.108	-	-	0.409	0.108
Bauhinia purpurea(082)	-	0.108	-	-	-	0.517
Bursera serratum(093)	-	0.183	-	-	-	0.108
Chukrasia tabularis(098)	-	0.036	0.325	0.183	0.307	0.183
Castanopsis species(100)	-	0.641	0.758	0.183	-	0.851
Cinnamomum species(105)	-	0.077	-	-	-	0.077
Callicarpa species(119)	-	0.036	-	-	-	0.036
Castanopsis blystrix(122)	-	0.038	-	-	-	0.038
Castanopsis indica(123)	-	0.214	0.325	0.550	-	1.089
Dubabanga sonneratoides(170)	-	0.071	0.325	0.917	0.614	1.927
Eurya japonica(192)	-	0.107	-	-	-	0.107
Buciplandia populnea(238)	-	1.924	2.166	0.734	0.307	5.539
Garuga pinnata(239)	-	0.108	-	-	-	0.108
Jambosa formosa(288)	-	0.108	-	-	-	0.108
Litsea species(288)	-	0.036	-	-	-	0.036
Michelia species(323)	-	3.836	1.444	-	-	6.547
Machilus spp.(325)	-	0.786	0.501	0.243	-	1.530

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Macaranga indica</i> (341)	-	0.036	-	-	-	-	-	-	-	0.036
<i>Magnolia species</i> (346 {364})	-	0.107	-	-	-	-	-	-	-	0.107
<i>Prunus species</i> (409)	-	0.200	0.142	-	-	-	-	-	-	0.342
<i>Quercus leungirsis</i> (441)	-	0.107	0.108	-	0.307	-	-	-	-	0.522
<i>Quercus species</i> (446)	-	0.285	0.217	0.550	-	-	-	-	-	1.052
<i>Schorea robusta</i> (462)	-	0.055	-	-	-	-	-	-	-	1.082
<i>Symplocos paniculata</i> (468)	-	0.214	-	-	-	-	-	-	-	0.214
<i>Schinia wallieana</i> (476)	-	0.143	0.217	-	-	-	-	-	-	0.359
<i>Tsuga brunoniana</i> (504)	-	4.704	7.147	2.365	0.614	-	-	-	-	14.849
<i>Pinus nudiflora</i> (509)	-	-	0.217	-	-	-	-	-	-	0.217
<i>Tectona grandis</i> (510)	-	1.126	2.925	1.510	-	-	-	-	-	5.561
<i>Toone ciliata</i> (512)	-	0.107	0.541	0.550	-	-	-	-	-	1.199
<i>Terminalia tomentosa</i> (516)	-	-	-	-	0.307	-	0.603	-	-	0.910
<i>Terminalia myriocarpa</i> (517)	-	0.392	1.516	1.101	0.307	-	0.732	-	-	4.048
<i>Terminalia citrina</i> (518)	-	-	-	-	0.307	-	-	-	-	0.307
<i>Cephaelostachyum pergracile</i> (569)	-	-	-	0.183	-	-	-	-	-	0.183
<i>Cryptomeria japonica</i> (596)	-	4.002	15.502	20.475	15.042	6.657	0.612	-	-	62.294
Others (600)	-	1.247	0.541	0.183	-	0.603	-	-	-	2.575
Total :-	-	20.811	36.417	38.856	18.111	8.082	2.846	0.732	-	1.267 127.276

TABLE NO. 4.1.3.

STEM TIMBER VOLUME PER HA. (IN cu.) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

STRATA - 2

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lebbek</i> (005)	-	0.052	-	0.266	-	-	-	-	-	0.318
<i>Anthocephalus cadamba</i> (013)	-	0.052	0.314	-	-	-	-	-	-	0.366
<i>Ailanthus altissima</i> (030)	0.052	-	-	-	-	-	-	-	-	0.052
<i>Acer species</i> (035)	0.052	-	-	0.157	-	-	-	-	-	0.157
<i>Alnus nepalensis</i> (037)	-	-	3.380	1.071	-	-	-	-	-	4.452
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.157	-	-	-	-	-	-	0.157
<i>Abies pindrow</i> (047)	-	0.207	0.157	-	-	-	-	-	-	0.364
<i>Albizia species</i> (054)	-	-	-	-	-	-	-	-	-	0.874
<i>Betula elnoides</i> (070)	-	-	1.099	1.330	-	-	-	-	-	2.429
<i>Bombax ceiba</i> (073)	-	-	-	0.266	-	-	-	-	-	0.266
<i>Bogenlia serrata</i> (091)	0.052	-	-	-	-	-	-	-	-	0.052
<i>Chukrasia tabularis</i> (098)	0.052	0.314	-	-	-	-	-	-	-	0.366
<i>Catapa species</i> (100)	0.310	-	-	-	-	-	-	-	-	0.310
<i>Cinnamomum species</i> (105)	0.111	0.179	-	-	-	-	-	-	-	0.290
<i>Cllicarpus arborea</i> (112)	0.052	-	-	-	-	-	-	-	-	0.052
<i>Careya arborea</i> (116)	0.052	-	-	-	-	-	-	-	-	0.052
<i>Castanopsis indica</i> (123)	0.103	-	-	-	-	-	-	-	-	0.103
<i>Cleistanthus collinus</i> (133)	0.052	-	-	-	-	-	-	-	-	0.052
<i>Dubabanga sonneratoides</i> (170)	0.155	0.157	1.330	0.890	-	-	-	-	-	2.532
<i>Burya japonica</i> (192)	0.103	-	-	-	-	-	-	-	-	0.103
<i>Evodia ruxburghiana</i> (211)	0.103	-	-	-	-	-	-	-	-	0.103
<i>Ficus species</i> (233)	-	0.157	-	-	-	-	-	-	-	0.157
<i>Bucplandia populea</i> (238)	0.362	0.157	-	-	-	-	-	0.593	-	1.111

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Garuga pinnata</i> (259)	-	0.052	-	-	-	-	0.052
<i>Litsea polyantha</i> (302)	-	-	0.157	-	-	-	0.157
<i>Litsea</i> species (308)	-	-	0.157	-	-	-	0.157
<i>Michelia</i> species (323)	1.785	-	-	-	-	-	1.785
<i>Machilus</i> species (325)	1.36	0.363	-	-	-	-	1.731
<i>Nearanga indica</i> (341)	0.052	0.471	0.266	-	-	-	0.789
<i>Morus laevigata</i> (349)	0.207	-	-	-	-	-	0.207
<i>Prunus</i> species (409)	0.058	-	-	-	-	-	0.058
<i>Quercus</i> species (446)	0.510	0.314	0.266	-	-	-	0.890
<i>Shorea robusta</i> (462)	2.052	1.113	0.853	-	-	-	4.018
<i>Streblus alata</i> (464)	-	-	-	0.445	-	-	0.445
<i>Symplocos</i> species (468)	0.103	-	-	-	-	-	0.103
<i>Schima wallichii</i> (476)	0.672	0.628	-	-	-	-	1.300
<i>Syzygium</i> species (492)	0.052	-	-	-	-	-	0.052
<i>Tsuga brunoniana</i> (504)	0.962	0.942	-	-	-	-	1.923
<i>Terminalia bellierica</i> (506)	0.052	-	-	-	-	-	0.052
<i>Tectona grandis</i> (510)	0.236	0.222	-	-	-	-	0.456
<i>Terminalia myriocarpa</i> (513)	0.258	0.471	0.266	-	-	-	0.995
<i>Cryptomeria japonica</i> (596)	6.265	15.649	9.204	0.967	2.186	0.913	35.185
Others (600)	0.465	0.14	-	-	-	-	0.779

Total : - 16.635 27.029 15.119 2.302 2.779 1.787 - - - 66.006

TABLE NO. 4.1.4.

STEM TIMBER VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

## STRATA - 4

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
Albizia lucidia (026)	-	-	0.294	-	-	-	-
Alnus species (055)	-	0.194	-	-	-	-	0.294
Bauhinia species (069)	-	-	0.589	-	-	-	0.194
Bursera serratum (093)	-	-	0.294	0.499	-	-	0.589
Castanopsis species (100)	-	0.291	-	-	-	-	0.793
Cinnamomum species (105)	-	0.104	-	-	-	-	0.291
Castanopsis <i>n</i> indica (121)	-	0.097	-	-	-	-	0.104
Dubanga sonneratoides (170)	-	-	0.194	-	-	-	0.097
Eucalyptus hybrid (206)	-	0.097	-	-	-	-	0.294
Juglans regia (290)	-	0.097	-	-	-	-	0.097
Polyalthia cerasoides (396)	-	-	0.294	-	-	-	0.097
Quercus species (446)	-	0.194	-	-	-	-	0.294
Shorea robusta (462)	-	1.066	0.423	-	-	-	0.194
Symplocos spicata (468)	-	0.097	-	-	-	-	1.489
Tsuga bruniiana (504)	-	1.356	0.294	-	-	-	0.097
Tectona grandis (510)	-	5.143	-	-	-	-	3.290
Cryptomeria japonica (596)	-	16.902	10.765	0.998	0.834	-	5.143
Total :	-	25.637	13.248	1.496	0.834	-	29.498
						-	42.202

TABLE NO. 4.1.5.

STEM TIMBER VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

## STRATA - 5

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
Cryptomeria japonica (596)	-	0.954	-	-	-	-	0.954
Tectona grandis (510)	-	0.575	-	-	-	-	0.575
Total :	-	1.529	-	-	-	-	1.529

TABLE NO. 4.2.1.

STEM TIMBER VOLUME PER HA. (IN 1.5) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION KALINONG

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Anthoclelus cedambe</i> (013)	-	-	-	0.665	-	-	-	-	-	0.665
<i>Aphanemixis polystachya</i> (022)	0.194	-	0.332	-	-	-	-	-	-	0.526
<i>Annoore wallichii</i> (023)	0.1c.	0.196	0.332	-	-	-	-	-	-	0.722
<i>Alnus nepalensis</i> (037)	-	-	1.536	1.339	-	-	-	-	-	2.875
<i>Acrocarpus freziniifolius</i> (041)	-	-	0.196	0.997	-	-	-	-	-	1.194
<i>Anoora species</i> (063)	-	-	0.392	-	-	-	-	-	-	0.392
<i>Betula alnoides</i> (070)	-	-	-	0.556	-	-	-	-	-	0.556
<i>Bellschmidia assamica</i> (085)	0.065	-	-	-	-	-	-	-	-	0.065
<i>Cinnamomum accidodaphne</i> (099)	-	-	-	0.556	0.741	-	-	-	-	1.297
<i>Castanopsis species</i> (100)	-	-	0.447	2.010	-	-	-	-	-	0.556
<i>Cinnamomum species</i> (105)	-	-	-	0.997	-	-	-	-	-	2.457
<i>Callicarpa arborea</i> (112)	-	-	-	-	-	-	-	-	-	0.997
<i>Castanopsis indica</i> (123)	-	-	-	-	-	-	-	-	-	1.327
<i>Dubanga sonneratoides</i> (170)	0.129	3.139	6.981	5.562	2.222	-	-	-	-	18.034
<i>Engelhardtia spicata</i> (200)	-	0.196	-	-	-	-	-	-	-	0.196
<i>Gmelina arborea</i> (246)	-	0.196	-	-	-	-	-	-	-	0.196
<i>Hollarrhena antidyseptica</i> (266)	0.065	-	-	-	-	-	-	-	-	0.065
<i>Jambosa formosa</i> (283)	0.065	0.196	-	-	-	-	-	-	-	0.261
<i>Legerstroemia parviflora</i> (299)	0.065	-	-	-	-	-	-	-	-	0.065
<i>Litsea species</i> (308)	-	0.065	0.196	-	-	-	-	-	-	0.261

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Micrelia species</i> (325)	-	0.257	0.765	0.457	-	-	-	1.499
<i>Morus laevigata</i> (349)	-	0.065	-	-	-	-	-	0.065
<i>Nichelia chaquacs</i> (362)	-	0.065	1.766	0.332	1.112	1.481	-	4.757
<i>Prunus species</i> (409)	-	-	0.257	-	-	-	-	0.257
<i>Phoebe attenuata</i> (423)	-	0.12	1.570	0.332	-	0.741	-	2.772
<i>Schliccheria trijuga</i> (461)	-	0.065	-	-	-	-	-	0.065
<i>Shorea robusta</i> (462)	-	-	1.189	5.915	0.967	3.177	-	11.248
<i>Symplocos spicata</i> (468)	-	0.065	-	-	-	-	-	0.065
<i>Schima wallichii</i> (476)	-	0.452	1.570	2.992	3.593	2.963	2.185	14.055
<i>Terminalia belerica</i> (506)	-	0.365	0.196	-	-	-	-	0.261
<i>Toona ciliata</i> (512)	-	-	-	0.665	0.556	-	-	1.221
<i>Terminalia tomentosa</i> (516)	-	0.129	0.196	0.332	-	-	-	0.658
<i>Terminalia myriocarpa</i> (517)	-	0.323	2.551	3.657	0.556	-	-	7.087
<i>Tetrameles nudiflora</i> (523)	-	0.065	-	-	-	-	-	1.157
<i>Wrightia tomentosa</i> (538)	-	-	-	-	0.332	-	-	0.332
Others (600)	0.775	-	0.392	0.665	-	-	-	1.832

Notes

3.292 17.165 29.334 14.315 11.325 3.278 1.327

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**STIM. TIGER VOLUME PER HA. BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
STRATA - DIVISION - KALIBONG**

Species name with code	Diameter class (in cm.)								Total	
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89		
Jambosa formosa (286)	-	0.074	0.075	-	-	-	-	-	0.149	
Lagerstroemia parviflora (299)	-	0.049	0.149	-	-	-	-	-	0.199	
Lophopetalum weightianum (310)	-	-	-	-	0.212	-	-	-	0.212	
Lagerstroemia Speciosa (313)	-	1.058	2.541	0.760	-	-	-	-	4.359	
Lagerstroemia floribunda (318)	-	0.049	0.075	-	-	-	-	-	0.124	
Michelia species (323)	-	0.556	1.495	0.522	-	-	-	-	2.573	
Machilus species (325)	-	0.027	-	-	-	-	-	-	0.027	
Macaranga indica (341)	-	-	0.149	0.127	-	-	-	-	0.276	
Michelia champaca (362)	-	0.369	1.420	1.900	1.059	0.564	-	-	5.816	
Magnolia species (364)	-	0.025	-	-	-	-	-	-	0.025	
Ostodes paniculatus (377)	-	0.025	-	-	-	-	-	-	0.025	
Phoebe heineana (389)	-	-	0.075	0.127	-	-	-	-	0.201	
Prunus cornuta (407)	-	0.025	-	-	-	-	-	-	0.025	
Prunus species (409)	-	0.055	0.293	-	-	-	-	-	0.349	
Phoebe attenuata (423)	-	0.025	0.747	0.253	-	-	-	-	1.025	
Spondias pinnata (460)	-	0.025	0.075	-	-	-	-	-	0.099	
Shorea robusta (462)	-	0.723	5.964	4.858	1.524	-	-	-	13.938	
Syzygium cumini (469)	-	0.098	-	-	-	-	0.869	-	0.098	
Schima wallichii (476)	-	0.123	0.523	0.507	-	-	-	-	1.851	
Terminalia crenulata (505)	-	-	0.224	-	-	-	-	-	0.224	
Trevia nudiflora (509)	-	0.025	-	-	-	-	-	-	0.025	
Tectona grandis (510)	-	0.192	2.652	4.845	1.286	-	-	-	6.974	
Toona ciliata (512)	-	0.049	0.299	-	0.424	-	0.416	-	1.168	
Terminalia tomentosa (516)	-	0.025	0.374	0.633	0.212	-	-	-	1.243	
Terminalia myriocarpa (517)	-	0.197	2.168	1.393	1.059	0.564	-	-	5.381	
Tetrameles nudiflora (523)	-	0.025	-	0.127	0.424	0.282	-	-	0.857	
Wrightia tomentosa (538)	-	-	0.075	-	-	-	-	-	0.075	
Dsemocarpus jenkinsianus (593)	-	-	-	-	0.212	-	-	-	0.212	
Cryptomeria japonica (596)	-	0.775	3.433	4.880	3.880	0.564	-	-	13.532	
Others (600)	-	0.369	0.822	0.380	-	0.282	-	-	1.853	
Total :	-	5.993	32.653	33.055	19.629	8.022	2.586	2.022	-	104.671

TABLE NO. 4.2.3  
STEM VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER (IN CM.) AT THE TIME OF INVENTORY  
DIVISION: KALIMPONG

Species name with code	Diameter class (In cm.)									TOTAL
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lebbeck</i> (5)	-	0.067	-	-	-	-	-	-	-	0.067
<i>Aphanamixis polystachya</i> (22)	-	3.167	0.819	1.041	-	-	-	-	-	5.026
<i>Amoora wallichii</i> (26)	-	0.202	0.205	-	-	-	-	-	-	0.407
<i>Alnus nepalensis</i> (37)	-	-	9.218	8.383	2.038	-	-	-	-	19.639
<i>Albizzia species</i> (54)	-	0.067	0.409	0.347	0.580	-	-	-	-	1.404
<i>Chukrasia tabularis</i> (98)	-	0.472	0.409	-	-	-	-	-	-	0.881
<i>Cinnamomum cecigodaphne</i> (99)	-	-	0.205	0.694	-	-	-	-	-	0.899
<i>Castanopsis species</i> (100)	-	0.067	-	-	-	-	-	-	-	0.067
<i>Callicarpa arborea</i> (112)	-	0.067	-	-	-	-	-	-	-	0.135
<i>Cassia siamea</i> (120)	-	0.135	-	-	-	-	-	-	-	0.135
<i>Castanopsis indica</i> (123)	-	0.135	-	-	-	-	-	-	-	0.135
<i>Duabanga sonneratoides</i> (170)	-	1.415	3.685	3.469	1.161	-	-	-	-	9.730
<i>Dysoxylum bin-striatum</i> (171)	-	0.067	-	-	-	-	-	-	-	0.067
<i>Engelhardtia spicata</i> (200)	-	-	0.205	-	-	-	-	-	-	0.205
<i>Emblica officinalis</i> (222)	-	0.067	-	-	-	-	-	-	-	0.067
<i>Gmelina arborea</i> (246)	-	0.067	-	1.041	-	-	-	-	-	1.108
<i>Lagerstroemia speciosa</i> (313)	-	0.067	-	-	-	-	-	-	-	0.067
<i>Lagerstroemia florreginei</i> (318)	-	0.067	0.205	-	-	-	-	-	-	0.272
<i>Macaranga indica</i> (341)	-	0.404	0.819	0.347	-	-	-	-	-	1.570
<i>Macaranga peltata</i> (352)	-	0.202	0.409	0.347	-	-	-	-	-	0.959

Species name with code	Diameter class(in cm.)									TOTAL
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Ostodes paniculatus(377)	-	0.202	-	-	-	-	-	-	-	0.202
Podocarpus nerifolia(397)	-	0.135	-	-	-	-	-	-	-	0.135
Prunus species(409)	-	0.076	-	-	-	-	-	-	-	0.076
Populus species(410)	-	0.125	-	-	-	-	-	-	-	0.135
Pterospermum acerifolium(419)	-	0.067	-	-	-	-	-	-	-	0.067
Syzygium cumini(469)	-	0.067	-	-	-	-	-	-	-	0.067
Schima wallitchii(476)	-	0.270	0.409	1.041	-	-	-	-	-	2.860
Trewia nudiflora(509)	-	0.067	-	-	-	-	-	-	-	0.067
Tectona grandis(510)	-	0.241	1.137	0.441	0.710	-	-	-	-	2.529
Toona ciliata(512)	-	0.270	-	-	-	-	-	-	-	0.270
Terminalia myriocarpa(517)	-	3.167	2.047	1.388	0.560	-	-	-	-	7.182
Trema orientalis(519)	-	-	0.205	-	-	-	-	-	-	0.205
Tetrameles nudiflora(523)	-	0.135	-	0.347	1.161	1.546	-	-	-	3.188
Cryptomeria japonica(596)	-	-	-	0.527	-	-	-	-	-	0.527
Others(600)	-	0.539	-	-	0.580	-	-	-	-	1.119
<b>TOTAL</b>	-	12.108	20.388	19.410	6.810	1.546	1.140	-	-	61.875

TABLE NO. h.2.4

STEM TAPER VOLUME PER HA. (IN CM.) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
 DIVISION: KALIMPONG

STRATA: 4

Species name with code	Diameter class (in cm.)							TOTAL
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia lebbek</i> (3) (005)	-	0.055	-	-	0.477	-	-	-
<i>Anthocephalus cadamba</i> (013)	-	0.277	0.505	0.285	0.477	-	-	0.532
<i>Albizia stipulata</i> (021)	-	-	0.168	-	-	-	-	1.543
<i>Aphanamixis polystachya</i> (C.-)	-	0.775	0.505	-	-	-	-	0.168
<i>Amoora wallichii</i> (023)	-	0.055	0.168	-	-	-	-	1.279
<i>Alnus nepalensis</i> (037)	-	-	0.292	1.148	-	-	-	0.224
<i>Betula utilis</i> (071)	-	0.775	1.009	-	-	-	-	4.440
<i>Bombax ceiba</i> (073)	-	0.111	0.505	0.855	0.477	-	-	1.784
<i>Buxus wallichiana</i> (077)	-	0.166	-	-	-	-	-	0.166
<i>Chukrasia tabularis</i> (098)	-	0.996	0.168	-	-	-	-	1.165
<i>Cinnamomum cecigedeaphne</i> (099)	-	0.055	-	-	-	-	-	0.055
<i>Cestanopsis species</i> (100)	-	0.055	-	-	-	-	-	0.055
<i>Cassia siamea</i> (120)	-	1.284	-	-	-	-	-	1.384
<i>Dubanga sunneratiooides</i> (170)	-	0.554	1.682	1.710	1.907	0.635	0.937	7.424
<i>Eucalyptus hybrid</i> (206)	-	0.055	-	-	-	-	-	0.055
<i>Evodia roxburghiana</i> (211)	-	0.055	-	-	-	-	-	0.055
<i>Geruga pinnata</i> (239)	2	0.055	-	-	-	-	-	0.055
<i>Lagerstroemia speciosa</i> (313)	-	0.387	0.168	-	-	-	-	0.556
<i>Lagerstroemia floribunda</i> (318)	-	0.111	0.168	-	-	-	-	0.279
<i>Michelia species</i> (323)	-	0.221	0.897	-	-	-	-	1.118
<i>Michelia doltsopa</i> (345)	-	0.111	0.326	-	-	-	-	0.447
<i>Michelia champaca</i> (362)	-	0.664	1.477	0.570	-	-	-	2.411
<i>Prunus species</i> (409)	-	0.062	-	-	-	-	-	0.062
<i>Shorea robusta</i> (462)	-	3.259	1.792	-	-	-	-	5.051

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Sterculia villosa</i> (463)	-	0.055	-	-	-	-	0.055
<i>Sterculia urens</i> (465)	-	0.055	-	-	-	-	0.055
<i>Symplocos spicata</i> (468)	-	0.055	-	-	-	-	0.055
<i>Syzygium cumini</i> (469)	-	0.055	-	0.285	-	-	0.340
<i>Sageretia oppositifolia</i> (474)	-	0.166	-	-	-	-	0.166
<i>Schima wallichii</i> (476)	-	2.380	2.187	0.285	-	-	4.852
<i>Tectona Grandis</i> (510)	-	9.454	5.542	1.536	1.272	-	17.803
<i>Toona ciliata</i> (512)	-	0.055	-	-	-	-	0.055
<i>Terminalia tomentosa</i> (516)	-	0.166	0.505	-	-	-	0.671
<i>Terminalia myriocarpa</i> (517)	-	1.384	0.336	0.285	-	-	2.005
<i>Tetracera nudiflora</i> (523)	-	-	-	0.285	-	-	1.222
<i>Cryptomeria Japonica</i> (596)	-	3.057	1.515	-	-	-	4.572
<i>Cupressus kashmiriana</i> (599)	-	0.111	0.168	-	-	-	0.279
Others (601)	0.443	-	-	-	0.477	-	1.856

EST. TUES NO. 4.2.5.

DATA - TELEGRAM RECEIVED AT NO. (TELEGRAM) BY SOCIES ET CO. AT THE OF INTENDANCY  
STRAUSS - 2

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lebbek</i> (005)	-	0.052	-	-	-	-	-	-	-	0.052
<i>Anthocephalus cadamba</i> (013)	-	0.938	0.317	-	-	-	-	-	-	1.254
<i>Allanthus altissima</i> (030)	-	0.521	-	-	-	-	-	-	-	0.521
<i>Acrocarpus fraxinifolius</i> (041)	-	0.052	-	-	-	-	-	-	-	0.052
<i>Betula alnoidea</i> (070)	-	0.258	-	-	-	-	-	-	-	0.210
<i>Betula utilis</i> (071)	-	0.052	0.158	-	-	-	-	-	-	0.523
<i>Dombax ceiba</i> (073)	-	0.365	0.158	-	-	-	-	-	-	0.052
<i>Quadrangularia tabularis</i> (098)	-	0.052	-	-	-	-	-	-	-	0.056
<i>Cinnamomum species</i> (105)	-	0.056	-	-	-	-	-	-	-	0.210
<i>Callicarpa arborea</i> (112)	-	0.052	0.158	-	-	-	-	-	-	0.052
<i>Cassia siamea</i> (120)	-	0.052	-	-	-	-	-	-	-	3.296
<i>Dubabanga sonneratoides</i> (170)	-	0.469	0.950	1.877	-	-	-	-	-	0.104
<i>Dalbergia sissoo</i> (181)	-	0.104	-	-	-	-	-	-	-	0.052
<i>Gmelina arborea</i> (246)	-	0.052	-	-	-	-	-	-	-	0.156
<i>Macaranga F. Itata</i> (352)	-	0.156	-	-	-	-	-	-	-	0.104
<i>Michelia champaca</i> (362)	-	0.104	-	-	-	-	-	-	-	1.597
<i>Schima wallichii</i> (476)	-	0.990	0.158	-	-	-	-	-	-	8.C.6
<i>Tectona grandis</i> (510)	-	4.255	1.611	-	-	-	-	-	-	2.23
<i>Terminalia myriocarpa</i> (517)	-	0.260	-	-	-	-	-	-	-	0.260
<i>Tetrameles nudiflora</i> (523)	-	0.052	-	-	-	-	-	-	-	0.052
<i>Cryptomeria japonica</i> (596)	-	1.253	0.168	-	-	-	-	-	-	1.421
<i>Cupressus kashmiriane</i> (599)	-	0.156	-	-	-	-	-	-	-	0.156
Others (600)	-	0.052	-	-	-	-	-	-	-	0.052
Total :	-	10.305	2.678	1.877	0.449	-	-	-	-	18.65



Species name with code	Diameter classes (in cm.)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Mitchelia spp.</i> (323)	0.445	1.426	0.496	-	-	-	-	-	2.366
<i>Machilus spp.</i> (525)	0.263	0.461	0.969	0.724	0.173	-	-	-	2.590
<i>Mallotus philippensis</i> (330)	0.024	-	0.085	-	-	-	-	-	0.109
<i>Morus laevigata</i> (349)	-	0.037	0.170	0.055	0.101	-	-	-	0.363
<i>Prunus spp.</i> (409)	0.436	0.187	0.119	0.081	-	-	-	-	0.824
<i>Quercus spp.</i> (446)	0.073	-	-	0.111	0.201	0.108	-	-	0.493
<i>Shorea robusta</i> (462)	-	-	-	0.219	-	-	-	-	0.219
<i>Sterculia alata</i> (464)	-	-	-	0.055	0.101	0.103	-	-	0.264
<i>Symplocos spicata</i> (468)	0.218	0.184	0.043	-	-	-	-	-	0.444
<i>Syzygium cumini</i> (469)	0.024	-	-	-	-	-	-	-	0.024
<i>Sapindus mukorossi</i> (471)	-	0.037	-	-	-	-	-	-	0.037
<i>Schima wallichii</i> (476)	-	0.147	0.255	0.388	0.503	0.108	-	-	1.402
<i>Tesuga brunoniiana</i> (504)	-	0.074	0.255	0.055	-	-	-	-	0.385
<i>Tocca ciliata</i> (512)	-	-	0.043	0.055	-	-	-	-	0.088
<i>Terminalia eryticarpa</i> (517)	-	0.074	0.298	0.499	-	0.216	-	-	1.087
<i>Cryptomeria japonica</i> (596)	0.054	0.730	1.535	5.750	9.763	4.826	1.819	-	22.657
Others(600)	0.242	0.257	0.341	0.222	0.201	0.216	-	-	1.479
Total:	2.287	4.331	6.003	9.503	12.611	7.334	3.097	1.053	44.516

TABLE NO. 5.1.2

-147-

SMALL WOOD VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

STRATA - 2

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia lebbeck</i> (005)	0.017	-	-	-	-	-	-	0.017
<i>Amoora wellichii</i> (023)	0.017	-	-	-	-	-	-	0.017
<i>Ailanthus altissima</i> - <i>Grandis</i> (030)	0.086	0.157	0.050	-	-	-	-	0.274
<i>Acer species</i> f. sp. 254(035)	0.034	0.026	-	-	-	-	-	0.061
<i>Alnus nepalensis</i> (037)	-	0.043	0.125	0.108	-	0.108	-	0.381
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.030	0.040	-	-	-	0.070
<i>Abies pindrow</i> (047)	0.036	0.026	-	-	-	-	-	0.112
<i>Alnus species</i> (055)	-	-	0.030	-	-	-	-	0.030
<i>Arace triandra</i> (065)	-	-	0.030	-	-	-	-	0.030
<i>Bonduc ceiba</i> ( 73)	-	-	0.030	-	-	-	-	0.107
<i>Betulinus purpurea</i> (082)	0.017	-	0.030	-	-	-	-	0.048
<i>Bursera serratum</i> (093)	-	-	-	0.040	-	-	-	0.04
<i>Chukrasia tabularis</i> (098)	0.034	0.026	0.091	0.040	0.072	-	-	0.263
<i>Cestanopsis species</i> (100)	0.069	0.472	0.212	0.040	-	-	-	0.793
<i>Cinnamomum species</i> (105)	0.281	0.064	-	-	-	-	-	0.346
<i>Callicarpa species</i> (119)	0.017	0.026	-	-	-	-	-	0.043
<i>Cestanopsis hastatrix</i> (122)	-	0.035	-	-	-	-	-	0.035
<i>Cestanopsis indica</i> (123)	0.121	0.157	0.091	0.119	-	-	-	0.488
<i>Dusabangs sonneratoides</i> (170)	-	0.052	0.091	0.198	0.143	-	-	0.485
<i>Eurya japonica</i> (192)	0.655	0.079	-	-	-	-	-	0.734
<i>Evodia roxburghiana</i> (211)	0.017	-	-	-	-	-	-	0.017
<i>Euplandia populnea</i> (238)	0.345	1.415	0.607	0.158	0.072	0.077	-	2.674
<i>Grewia pinnata</i> (239)	0.034	-	0.030	-	-	-	-	0.065
<i>Jamboosa formosa</i> (288)	0.034	-	0.030	-	-	-	-	0.065
<i>Litsea species</i> (308)	0.052	0.026	-	-	-	-	-	0.078
<i>Michelia species</i> (323)	3.046	3.166	0.294	-	-	-	-	6.697
<i>Machilus species</i> (325)	0.703	0.547	0.132	0.047	-	-	-	1.429
<i>Mallotus philippinus</i> (330)	0.034	-	-	-	-	-	-	0.034
<i>Macaranga indica</i> (341)	-	0.026	-	-	-	-	-	0.026
<i>Machilus macrocarpa</i> (351)	0.017	-	-	-	-	-	-	0.017

SMALL WOOD VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - HARVESTING -

Species name with code	Diameter class (in cm.)						Total				
	10-19	20-29	30-39	40-49	50-59	60-69					
Magnolia species (364)	0.034	0.079	-	-	-	-	0.113				
Prunus species (409)	0.239	0.167	0.043	-	-	-	0.448				
Pterosper -um acerifolium(419)	0.017	-	-	-	-	-	0.017				
Quercus laungios (441)	0.034	0.079	0.030	-	-	-	0.215				
Quercus species (446)	0.172	0.210	0.061	0.119	-	-	0.561				
Rhododendron species (449)	0.017	-	-	-	-	-	0.017				
Shorea robusta (462)	-	-	0.059	-	-	-	0.059				
Syzyloco. cratoegoides(468)	0.724	0.157	-	-	-	-	0.881				
Senecarpus anacerdium (472)	0.121	-	-	-	-	-	0.121				
Schima wallichii (476)	0.103	0.105	0.061	-	-	-	0.269				
Tsuga brunoniana (504)	0.555	3.460	2.003	0.514	0.143	-	6.653				
Trileia nudiflora (509)	-	-	0.061	-	-	-	0.061				
Tectons grandis (510)	-	0.370	0.607	0.207	-	-	1.184				
Toona ciliata (512)	-	0.079	0.152	0.119	-	-	0.349				
Terminalia tomentosa(516)	-	-	-	-	-	-	0.202				
Terminalia myriocarpa (517)	-	0.288	0.425	0.237	0.072	-	1.172				
Terminalia citrina (518)	-	-	-	-	0.07	-	0.072				
Tetramele nudiflora (525)	0.017	-	-	0.040	-	-	0.017				
Cephalostu 'nigra' pergracite (569)	-	-	-	-	-	-	0.040				
Cryptomeria japonica(596)	0.242	1.549	4.270	7.213	4.519	2.240	20.665				
Others (600)	0.293	0.183	0.152	0.040	-	0.130	0.798				
Pinus patula (602)	0.259	0.68	-	-	-	-	0.940				
Phoebe attenuata (603)	0.034	0.052	-	-	-	-	0.057				
Bleescarpus sikkimensis(604)	0.017	-	-	-	-	-	0.017				
Total :	8.616	13.862	9.748	9.274	5.738	2.502	0.390	0.150	-	0.191	50.586

TABLE NO. 5.1.3

SMALL WOOD VOLUME PER HA. (IN  $m^3$ ) BY SPECIES AND DIAM. CLASSES (IN CM.) AT THE TIME OF INVENTORY.

## DIVISION: DARJEELING

Species code with name	STRATA - 2									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lebbek</i> (005)	0.100	0.038	-	-	-	-	-	-	-	0.195
<i>Anthocephalus cadamba</i> (013)	-	0.038	0.068	-	-	-	-	-	-	0.126
<i>Ailanthus altissima</i> (030)	-	0.038	-	-	-	-	-	-	-	0.038
<i>Aer species</i> (025)	0.175	-	0.044	-	-	-	-	-	-	0.219
<i>Alnus nepalensis</i> (037)	0.318	0.987	0.653	0.156	-	-	-	-	-	2.113
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.044	-	-	-	-	-	-	0.044
<i>Abies pindrow</i> (047)	0.500	0.152	0.044	-	-	-	-	-	-	0.695
<i>Albizia species</i> (054)	-	-	-	-	-	-	0.189	-	-	0.189
<i>Betula alnoidea</i> (070)	0.075	-	-	0.308	0.287	-	-	-	-	0.670
<i>Bombax ceiba</i> (073)	-	-	-	-	0.057	-	-	-	-	0.057
<i>Bogenlia serrata</i> (091)	-	-	0.038	-	-	-	-	-	-	0.038
<i>Chukrasia tabularis</i> (098)	0.050	0.038	0.088	-	-	-	-	-	-	0.176
<i>Castanopsis species</i> (100)	0.375	0.228	-	-	-	-	-	-	-	0.603
<i>Cinnamomum species</i> (105)	0.578	0.093	0.059	-	-	-	-	-	-	0.731
<i>Callicarpa arborea</i> (112)	-	0.038	-	-	-	-	-	-	-	0.038
<i>Craya arborea</i> (116)	-	0.038	-	-	-	-	-	-	-	0.038
<i>Castanopsis inc. ca</i> (123)	0.025	0.076	-	-	-	-	-	-	-	0.101
<i>Cleistostomus collinus</i> (133)	-	0.038	-	-	-	-	-	-	-	0.038
<i>Dubanga sonneratoides</i> (170)	-	0.114	0.044	0.287	0.208	-	-	-	-	0.653
<i>Eurya japonica</i> (192)	0.475	0.076	-	-	-	-	-	-	-	0.551
<i>Evodia roxburghiana</i> (211)	0.125	0.076	-	-	-	-	-	-	-	0.201
<i>Ficus spp.</i> (232)	-	-	0.044	-	-	-	-	-	-	0.044
<i>Bucida populnea</i> (238)	0.325	0.266	0.044	-	-	-	-	-	-	0.747
<i>Garuga pinnata</i> (239)	0.050	0.038	-	-	-	-	-	-	-	0.088
<i>Jimbosa formosa</i> (288)	0.150	-	-	-	-	-	-	-	-	0.150
<i>Juglans regia</i> (290)	0.025	-	-	-	-	-	-	-	-	0.025
<i>Litssea polyantha</i> (302)	-	-	0.044	-	-	-	-	-	-	0.044
<i>Litssea species</i> (308)	0.300	-	-	0.044	-	-	-	-	-	0.344

## Species name with code

Diameter classes (in cm.)

10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99 100-109

	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	Total
<i>Michelia species</i> (323)	2.014	1.473	-	-	-	-	-	-	-	-	3.467
<i>Machilus species</i> (325)	1.972	0.952	0.095	-	-	-	-	-	-	-	3.019
= <i>Macaranga indica</i> (341)	0.025	=0.03	=0.132	0.057	-	-	-	-	-	-	0.252
<i>Morus laevigata</i> (349)	0.150	0.152	-	-	-	-	-	-	-	-	0.302
<i>Magnolia species</i> (364)	0.025	-	-	-	-	-	-	-	-	-	0.025
<i>Prunus species</i> (409)	0.173	0.048	-	-	-	-	-	-	-	-	0.222
<i>Quercus species</i> (446)	0.600	0.228	0.088	0.057	-	-	-	-	-	-	0.973
<i>Shorea robusta</i> (462)	0.709	2.304	0.565	0.227	-	-	-	-	-	-	3.805
<i>Sterculia alata</i> (464)	-	-	-	-	0.104	-	-	-	-	-	0.104
<i>Symplocos spicata</i> (46)	0.750	0.076	-	-	-	-	-	-	-	-	0.826
<i>Schima wallichii</i> (476)	0.475	0.494	0.176	-	-	-	-	-	-	-	1.145
<i>Stereospernum cheloneoides</i> (478)	0.025	-	-	-	-	-	-	-	-	-	0.025
<i>Syzygium species</i> (492)	-	0.038	-	-	-	-	-	-	-	-	0.038
<i>Taxus baccata</i> (503)	0.025	-	-	-	-	-	-	-	-	-	0.025
<i>Tsuga bruniiana</i> (504)	0.075	0.722	0.264	-	-	-	-	-	-	-	1.051
<i>Fernandina belerica</i> (506)	-	0.038	-	-	-	-	-	-	-	-	0.038
<i>Tectona grandis</i> (510)	0.019	0.115	0.046	-	-	-	-	-	-	-	0.180
<i>Terminalia myriocarpa</i> (517)	0.025	0.190	0.132	0.057	-	-	-	-	-	-	0.404
<i>Cryptomeria japonica</i> (596)	0.476	3.292	4.459	2.122	0.520	0.925	-	-	-	-	11.862
Others(600)	1.000	0.342	0.088	-	-	-	-	-	-	-	1.430

Total:

12.183 12.911 7.593 3.434 0.832 1.037 0.169 - - -

38.24

TABLE NO. 5.1.4.

SMALL LOG VOLUME PER HA. (IN cu.m.) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DIAZELLINE

## STRATA - 4

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia luoida</i> (226)	-	-	-	-	-	-	-	0.083
<i>Acer species</i> (035)	0.094	-	-	-	-	-	-	0.094
<i>Alnus nepalensis</i> (037)	0.265	0.116	-	-	-	-	-	0.381
<i>Alnus species</i> (055)	0.094	0.143	-	-	-	-	-	0.236
<i>Bauhinia species</i> (069)	0.047	-	-	-	-	-	-	0.212
<i>Betula elnoides</i> (070)	0.047	-	-	-	-	-	-	0.047
<i>Bursera serrataum</i> (093)	-	-	-	-	-	-	-	0.190
<i>Castanopsis species</i> (103)	0.750	0.214	-	-	-	-	-	0.964
<i>Cinnamomum species</i> (105)	0.829	0.088	-	-	-	-	-	0.916
<i>Careya arborea</i> (116)	0.047	-	-	-	-	-	-	0.047
<i>Castanopsis indica</i> (123)	0.563	0.071	-	-	-	-	-	0.634
<i>Draebangia sonneratoides</i> (170)	-	-	-	-	-	-	-	0.083
<i>Eucalyptus hybrid</i> (206)	0.094	0.071	-	-	-	-	-	0.165
<i>Bucida Roxburghiana</i> (211)	0.047	-	-	-	-	-	-	0.047
<i>Ficus populus</i> (238)	0.609	-	-	-	-	-	-	0.609
<i>Juglans regia</i> (290)	0.141	0.071	-	-	-	-	-	0.212
<i>Michelia species</i> (323)	1.458	-	-	-	-	-	-	1.458
<i>Machilus species</i> (325)	0.701	-	-	-	-	-	-	0.701
<i>Polyalthia ceraboides</i> (396)	-	-	-	-	-	-	-	0.083
<i>Prunus species</i> (409)	0.260	-	-	-	-	-	-	0.260
<i>Quercus species</i> (446)	2.484	0.143	-	-	-	-	-	2.627
<i>Shorea robusta</i> (462)	0.998	1.600	0.212	-	-	-	-	2.809
<i>Symplocos spicata</i> (468)	0.891	0.071	-	-	-	-	-	0.962

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Zelkova brunnescens</i> (504)	1.125	0.998	0.063	-	-	-	0.354
<i>Lecteria grandis</i> (510)	4.453	2.516	-	-	-	-	-
<i>Terminalia tomentosa</i> (516)	0.047	-	-	-	-	-	-
<i>Cryptomeria japonica</i> (596)	6.769	9.840	3.184	0.215	0.195	-	-
Others (600)	0.281	-	-	-	-	-	-
Total :	22.693	15.940	3.974	0.323	0.195	-	0.354
						-	-
						-	43.589

SMALL WOOD VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARMESLING  
STATA - 5

TABLE NO. 5.1.2.

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Alnus nepalensis</i> (037)	3.914	0.569	-	-	-	-	-	-
<i>Bursera serratum</i> (093)	0.231	-	-	-	-	-	-	4.483
<i>Castanopsis indica</i> (123)	0.462	-	-	-	-	-	-	0.231
<i>Quercus</i> species (446)	0.231	-	-	-	-	-	-	0.462
<i>Tectona grandis</i> (510)	4.560	0.354	-	-	-	-	-	0.231
<i>Terminalia myriocarpa</i> (517)	0.231	-	-	-	-	-	-	4.914
<i>Cryptomeria japonica</i> (596)	17.539	0.702	-	-	-	-	-	0.231
								18,240
Total :	27.166	1.625	-	-	-	-	-	28.848

TABLE NO. 5.2.1.

SMALL HOOD VOLUME PER H.A. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - YALIFONG

Species name with code	Diameter class (in cm.)								Total
	10-19	20-29	30-59	40-49	50-59	60-69	70-79	80-89	
<i>Anthocephalus cadamba</i> (013)	-	-	-	-	0.143	-	-	-	0.143
<i>Apranamiris polystachya</i> (022)	0.031	0.142	-	-	0.072	-	-	-	0.245
<i>Amoore wallitchii</i> (025)	0.094	0.142	0.055	0.072	-	-	-	-	0.365
<i>Alnus nepalensis</i> (037)	1.192	-	0.297	0.195	-	-	-	-	1.684
<i>Acrocarpus frexinifolius</i> (041)	-	-	0.055	0.215	-	-	-	-	0.270
<i>Amoors species</i> (063)	-	-	0.110	-	-	-	-	-	0.110
<i>Betula alnoidea</i> (070)	-	-	-	-	-	0.130	-	-	0.130
<i>Beilschmiedia assamica</i> (085)	-	0.047	-	-	-	-	-	-	0.047
<i>Cinnamomum cecropodaphne</i> (099)	-	-	-	-	0.150	0.140	-	-	0.270
<i>Cestenopsis species</i> (100)	-	-	-	-	0.150	-	-	-	0.150
<i>Cinnamomum species</i> (105)	-	-	0.148	0.547	-	-	-	-	0.695
<i>Callicarpa arborea</i> (112)	-	-	-	0.215	-	-	-	-	0.215
<i>Callicarpa species</i> (119)	0.031	-	-	-	-	-	-	-	0.031
<i>Cestenopsis mindica</i> (125)	-	-	-	-	-	-	-	-	0.272
<i>Duebergia unnerstiooides</i> (170)	-	0.095	0.980	1.505	1.300	0.419	-	-	4.198
- <i>Engelhardtia spicata</i> (200)	-	-	0.055	-	-	-	-	-	0.055
<i>Gmelina arborea</i> (246)	-	-	0.055	-	-	-	-	-	0.072
- <i>Holoptelea antidysenterica</i> (266)	0.034	0.047	-	-	-	-	-	-	0.102
<i>Jambosa formosa</i> (288)	-	0.047	0.055	-	-	-	-	-	-

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Lagerstroemia nerviflora</i> (299)	-	0.047	-	-	-	-	-	-
<i>Litsea</i> species (308)	0.051	0.047	0.055	-	-	-	-	-
<i>Michelia</i> species (323)	-	0.212	0.160	0.075	-	-	-	0.134
<i>Morus</i> leucocarpa (349)	-	0.047	-	-	-	-	-	0.447
<i>Michelia champaca</i> (362)	-	0.047	0.495	0.072	0.260	0.279	-	0.047
<i>Prunus</i> species (409)	0.043	-	0.077	-	-	-	-	1.153
<i>Phoebe attenuata</i> (425)	-	0.095	0.440	0.072	-	0.140	-	0.120
<i>Schliechera trijuga</i> (441)	-	0.047	-	-	-	-	-	0.746
<i>Shorea robusta</i> (462)	0.063	-	0.424	1.275	0.154	-	-	0.077
<i>Symplocos spicata</i> (468)	-	0.047	-	-	-	-	-	1.916
<i>Schima wallichii</i> (476)	0.094	0.332	0.440	0.645	0.910	0.558	0.472	0.047
<i>Terminalia beccariana</i> (506)	0.062	0.047	0.055	-	-	-	-	3.451
<i>Toops ciliata</i> (512)	-	-	-	0.143	0.130	-	-	0.165
<i>Terminalia tomentosa</i> (516)	0.031	0.095	0.055	0.072	-	-	-	0.273
<i>Terminalia myriocarpa</i> (517)	-	0.237	0.715	0.788	0.130	-	-	0.253
<i>Pterocarpus audiiflora</i> (523)	-	0.047	-	-	-	0.236	-	1.871
<i>Wrightia urophylla</i> (538)	-	-	-	0.072	-	-	-	0.283
Others (619)	-	0.570	0.110	0.143	-	-	-	0.072
								0.623

Total:	1.705	2.445	4.735	6.319	3.274	1.535	0.707	0.272	7	-	-	21.304
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(Fig. 32) 27 SPECIES AND DIAGNOSTIC CLASSES (In C.). AT THE TIME OF INVITATION  
SANTA - 2

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Gerruga pinnata</i> (239)	-	-	-	-	-	-	-	-	-	0.021
<i>Holarhynchus antidyserterica</i> (266)	-	-	-	-	-	-	-	-	-	0.018
<i>Jambose formosa</i> (288)	0.060	0.054	0.021	-	-	-	-	-	-	0.135
<i>Lagerstroemia perflora</i> (299)	-	0.036	0.042	-	-	-	-	-	-	0.078
<i>Lophopetalum weightianum</i> (510)	-	-	-	-	-	0.050	-	-	-	0.050
<i>Lagerstroemia speciosa</i> (313)	0.190	0.776	0.712	0.164	-	-	-	-	-	1.844
<i>Lagerstroemia floribundum</i> (318)	0.012	0.036	0.021	-	-	-	-	-	-	0.069
<i>Ficellie species</i> (323)	0.034	0.459	0.305	0.086	-	-	-	-	-	0.883
<i>Machilus species</i> (325)	0.016	0.019	-	-	-	-	-	-	-	0.035
<i>Macaranga indica</i> (341)	-	-	0.042	0.027	-	-	-	-	-	0.069
<i>Michelia champaca</i> (362)	-	-	0.271	0.398	0.409	0.248	0.106	-	-	1.536
<i>Megmilia species</i> (364)	-	0.018	-	-	-	-	-	-	-	0.018
<i>Ostodes paniculatus</i> (377)	-	0.016	-	-	-	-	-	-	-	0.018
<i>Phoebe heinseiana</i> (389)	-	-	0.021	0.027	-	-	-	-	-	0.048
<i>Prunus cornuta</i> (407)	-	0.018	-	-	-	-	-	-	-	0.018
<i>Prunus species</i> (409)	0.017	0.046	0.086	-	-	-	-	-	-	0.151
<i>Phoebe attenuata</i> (423)	-	0.018	0.209	0.055	-	-	-	-	-	0.282
<i>Spondias pinnata</i> (460)	-	0.018	0.021	-	-	-	-	-	-	0.039
<i>Syzygium robusta</i> (462)	0.012	0.488	2.367	1.079	0.235	-	-	-	-	4.181
<i>Syzygium c. minii</i> (469)	-	0.072	-	-	-	-	-	-	-	0.072
<i>Semecka annocardium</i> (472)	0.012	-	-	-	-	-	-	-	-	0.012
<i>Schima wallichii</i> (476)	0.083	0.090	0.147	0.109	-	0.053	0.090	-	-	0.573
<i>Terminalia crassulae</i> (505)	-	-	0.063	-	-	-	-	-	-	0.063
<i>Trewia undiflora</i> (509)	-	0.018	-	-	-	-	-	-	-	0.018
<i>Tectonia grandis</i> (510)	0.063	0.055	0.507	0.643	-	-	-	-	-	1.268
<i>Toone ciliata</i> (512)	-	0.036	0.084	-	0.099	-	0.090	-	-	0.309
<i>Terminalia tomentosa</i> (516)	0.036	0.018	0.105	0.136	0.050	-	-	-	-	0.345
<i>Terminalia myriocarpa</i> (517)	-	0.145	0.608	0.300	0.248	0.106	-	-	-	1.406
<i>Petremales nudiflora</i> (523)	-	0.018	-	0.027	0.099	0.053	-	-	-	0.198
<i>Wrightia tomentosa</i> (538)	-	-	0.021	-	-	-	-	-	-	0.021
<i>Cryptomeria japonica</i> (596)	0.012	0.340	1.097	1.331	1.188	0.106	-	-	-	4.074
Others (600)	0.167	0.271	0.230	0.082	-	0.053	-	-	-	0.803
Total :	0.939	4.218	9.477	6.813	4.135	1.489	0.415	-	-	27.995

TABLE NO. 5.2.2.  
S. ALL WOOD VOLUME PER HA. (IN cu.m.) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE FIFTH OF INVENTORY  
DEVISICHI - KALI PUG

-158-  
STRATA - 2

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
Albizia lebbeck (005)	-	0.050	-	-	-	-	-
Alstonia scholaris (019)	0.053	-	-	-	-	-	0.050
Albizia stipulata (021)	0.053	-	-	-	-	-	0.033
Aphramomixis polysachys (022)	3.814	2.329	0.230	0.224	-	-	6.597
Anocra welllichi (023)	0.065	0.149	0.057	-	-	-	0.271
Ailanthus altissima (031)	0.033	-	-	-	-	-	0.033
Alnus nepalensis (057)	0.138	1.126	1.780	1.221	0.534	-	4.598
Albizia species (054)	0.033	0.050	0.115	0.075	0.136	-	0.407
Amoore species (063)	0.228	-	-	-	-	-	0.228
Chukrasia tabularis (098)	0.196	0.347	0.115	-	-	-	0.657
Cinnamomum cecigodaphne (099)	-	-	0.057	0.150	-	-	0.207
Cestanopsis species (100)	0.033	0.050	-	-	-	-	0.082
Cinnamomum species (105)	0.044	-	-	-	-	-	0.044
Callicarpa eriocalyx (112)	-	0.050	-	-	-	-	0.050
Callicarpa species (119)	0.033	-	-	-	-	-	0.033
Crassia siamesa (120)	0.089	0.099	-	-	-	-	0.979
Castanopsis indica (123)	0.065	0.099	-	-	-	-	0.164
Dusanga sonneratoides (170)	0.326	1.041	1.053	0.748	0.271	-	3.418
Dysoxylum binectariforum (171)	-	0.050	-	-	-	-	0.050
Engelhardtia spicata (200)	-	-	0.057	-	-	-	0.057
Emblema officinalis (222)	-	0.050	-	-	-	-	0.050
Gmelina eriocalyx (246)	-	0.050	-	0.224	-	-	0.274
Jambosa formosa (288)	0.065	-	-	-	-	-	0.065

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Lagerstroemia parviflora</i> (299)	0.065	-	-	-	-	-	-	-	-	0.065
<i>Lagerstroemia speciosa</i> (315)	0.196	0.050	-	-	-	-	-	-	-	0.245
<i>Lagerstroemia florregimel</i> (318)	-	0.050	0.057	-	-	-	-	-	-	0.107
<i>Naceranga indica</i> (341)	-	0.297	0.230	0.075	-	-	-	-	-	0.602
<i>M. cheilata dolosope</i> (345)	-	0.098	-	-	-	-	-	-	-	0.098
<i>Morus laevigata</i> (349)	-	0.228	-	-	-	-	-	-	-	0.228
<i>Macaranga peltata</i> (352)	-	0.149	0.115	0.075	-	-	-	-	-	0.338
<i>Ostodes paniculatus</i> (377)	0.424	0.149	-	-	-	-	-	-	-	0.572
<i>Podocarpus nerifolia</i> (397)	-	0.099	-	-	-	-	-	-	-	0.099
<i>Prunus species</i> (409)	-	0.063	-	-	-	-	-	-	-	0.063
<i>Populus species</i> (410)	0.228	0.099	-	-	-	-	-	-	-	0.327
<i>Pterospermum acerifolium</i> (419)	-	0.050	-	-	-	-	-	-	-	0.050
<i>Syzygium cumini</i> (459)	0.033	0.050	-	-	-	-	-	-	-	0.082
<i>Schima wallichii</i> (476)	0.196	0.196	0.115	0.224	-	-	-	-	-	0.979
<i>Trewia nudiflora</i> (509)	-	0.050	-	-	-	-	-	-	-	0.050
<i>Tectonia grandis</i> (510)	0.074	0.100	0.242	0.065	-	-	-	-	-	0.481
<i>Toona ciliata</i> (512)	0.424	0.196	-	-	-	-	-	-	-	0.622
<i>Terminalia lysiorrhiza</i> (517)	0.750	2.329	0.574	0.299	0.136	-	-	-	-	4.087
<i>Trema orientalis</i> (519)	-	-	0.057	-	-	-	-	-	-	0.057
<i>Tetrameles nudiflora</i> (523)	-	0.099	-	0.075	0.271	0.291	-	-	-	0.736
<i>Cryptomeria japonica</i> (596)	-	-	-	0.173	-	-	-	-	-	0.173
Others (600)	0.522	0.396	-	-	0.138	-	-	-	-	1.054
Total :	9.255	9.961	4.853	3.627	1.283	0.291	0.246	-	-	29.572

TABLE NO. 5.2.4.

SMALL WOOD VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAM. CLASSES (IN CM.) AT THE TIME OF INVENTORY.

## DIVISION: KALIMPONG

Species name with code	Diameter classes (in cm.)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Albizia lebbeck</i> (065)	-	0.041	-	-	0.111	-	-	-	0.152
<i>Anthocephalus cadamba</i> (013)	0.054	0.204	0.141	0.061	0.111	-	-	-	0.571
<i>Albizia stipulata</i> (021)	-	-	0.047	-	-	-	-	-	0.047
<i>Aphaniotis polystachys</i> (022)	0.214	0.570	0.141	-	-	-	-	-	0.926
<i>Amoeora wallichii</i> (023)	0.107	0.041	0.047	-	-	-	-	-	0.195
<i>Allanthon altissima</i> (030)	0.134	-	-	-	-	-	-	-	0.134
<i>Alnus nepalensis</i> (037)	0.038	0.595	0.636	0.167	-	-	-	-	1.435
<i>Amoeora species</i> (062)	0.161	-	-	-	-	-	-	-	0.161
<i>Betula utilis</i> (071)	0.054	0.570	0.283	-	-	-	-	-	0.906
<i>Bombax ceiba</i> (073)	0.080	0.681	0.141	0.184	0.111	-	-	-	0.599
<i>Buxus wallichiana</i> (077)	0.107	0.122	-	-	-	-	-	-	0.229
<i>Chukrassia tabularis</i> (098)	0.559	0.733	0.047	-	-	-	-	-	1.369
<i>Cinnamomum zeylanicum</i> (099)	0.134	0.041	-	-	-	-	-	-	0.175
<i>Castanea</i> is species(100)	0.054	0.041	-	-	-	-	-	-	0.094
<i>Callicarpa arborea</i> (112)	0.054	-	-	-	-	-	-	-	0.054
<i>Cassia siamea</i> (120)	2.410	1.018	-	-	-	-	-	-	3.428
<i>Dillenia pentagyna</i> (164)	0.027	-	-	-	-	-	-	-	0.027
<i>Dubabenga sonneratoides</i> (170)	0.080	0.407	0.471	0.367	0.446	0.120	0.262	-	2.095
<i>Dalbergia sissoo</i> (181)	0.027	-	-	-	-	-	-	-	0.027
<i>Eucalyptus</i> , hybrid(206)	0.027	0.041	-	-	-	-	-	-	0.067
<i>Eyodia roxburghiana</i> (211)	0.027	0.041	-	-	-	-	-	-	0.067
<i>Garuga pinnata</i> (239)	-	0.041	-	-	-	-	-	-	0.041
<i>Lagerstroemia parviflora</i> (299)	0.027	-	-	-	-	-	-	-	0.027
<i>Lagerstroemia speciosa</i> (313)	0.060	0.285	0.047	-	-	-	-	-	0.412
<i>Lagerstroemia florrecimel</i> (318)	0.161	0.081	0.047	-	-	-	-	-	0.289

Species name + lith. code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Mitchelia species</i> (323)	-	0.182	0.183	-	-	-	0.365
<i>Mitchelia doltsopa</i> (345)	0.268	0.31	0.094	-	-	-	0.444
<i>Mitchelia champaca</i> (362)	0.241	0.1	0.330	0.123	-	-	1.182
<i>Zrunus species</i> (409)	0.074	0.0	-	-	-	-	0.126
<i>Shorea robusta</i> (52)	3.121	3.7	0.726	-	-	-	7.596
<i>Sterculia villosa</i> (463)	-	0.041	-	-	-	-	0.041
<i>Sterculia urens</i> (465)	-	0.041	-	-	-	-	0.041
<i>Symplocos spicata</i> (468)	-	0.041	-	-	-	-	0.041
<i>Syzygium cumini</i> (469)	0.054	0.041	-	-	-	-	0.156
<i>Sapindus mukorossi</i> (471)	0.027	-	-	-	-	-	0.027
<i>Sageretia oppositifolia</i> (474)	0.134	0.122	-	-	-	-	0.256
<i>Scialma wallichii</i> (476)	1.714	1.751	0.613	0.061	-	-	4.139
<i>Tectona grandis</i> (510)	2.219	4.230	1.340	0.214	-	-	8.003
<i>Toona ciliata</i> (512)	0.027	0.041	-	-	-	-	0.067
<i>Terminalia omentosa</i> (516)	0.027	0.122	0.141	-	-	-	0.290
<i>Terminalia sylvestris</i> (517)	0.509	1.013	0.094	0.061	-	-	1.682
<i>Tetrameles nudiflora</i> (523)	0.027	-	0.061	-	-	-	0.290
<i>Cryptomeria japonica</i> (596)	0.839	1.150	0.567	-	-	-	2.556
<i>Cupressus kashmiriana</i> (599)	0.268	0.081	0.047	-	-	-	0.396
<i>Others</i> (600)	0.268	0.265	-	0.111	-	-	0.866
<i>Pinus species</i> (601)	0.054	0.041	-	-	-	-	0.094
<b>Total:</b>	14.513	16.505	6.186	1.364	0.891	0.120	42.261

TENTATIVE 25% •

CL. 3335 (E. 2.) AT THE TIME OF INVENTORY

NATIONALISTS

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Litsaea</i> species(308)	0.025	-	-	-	-	-	-	0.025
<i>Lagerstroemia speciosa</i> (312)	0.101	-	-	-	-	-	-	0.101
<i>Michelia</i> species(322)	0.428	-	-	-	-	-	-	0.428
<i>Nachilus</i> species(325)	0.034	-	-	-	-	-	-	0.034
<i>Mitracyna parvifolia</i> (31)	0.025	-	-	-	-	-	-	0.025
<i>Macaranga peltata</i> (352)	0.050	0.115	-	-	-	-	-	0.165
<i>Michelia champaca</i> (362)	0.555	0.077	-	-	-	-	-	0.631
<i>Quercus</i> spp.(446)	0.101	-	-	-	-	-	-	0.101
<i>Shorea robusta</i> (462)	1.96*	-	-	-	-	-	-	1.967
<i>Segeretia oppositifolia</i> (474)	0.025	-	-	-	-	-	-	0.025
<i>Schima wallichii</i> (476)	2.697	0.728	0.044	-	-	-	-	3.574
<i>Trewia nudiflora</i> (509)	0.050	-	-	-	-	-	-	0.050
<i>Tectona grandis</i> (510)	3.233	2.010	0.420	-	-	-	-	5.764
<i>Terminalia tomentosa</i> (516)	0.025	-	-	-	-	-	-	0.025
<i>Terminalia cyrtocarpa</i> (517)	1.235	0.192	-	-	-	-	-	1.427
<i>Tetrameles nudiflora</i> (523)	-	0.038	-	-	-	-	-	0.038
<i>Cryptomeria japonica</i> (596)	1.548	0.597	0.070	-	-	-	-	2.215
<i>Cupressus kashmirensis</i> (599)	0.050	0.115	-	-	-	-	-	0.165
Others(600)	0.202	0.038	-	-	-	-	-	0.240
<i>Pinus</i> species(601)	0.025	-	-	-	-	-	-	0.025
Total:	7.503	5.141	1.023	0.405	0.105	-	-	25.251

TABLE NO. 6.1.1.

STEM TINER VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAM. CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY.

## DIVISION 1: DARJEELING

## STRATA-1

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Albizia species(054)	-	-	0.029	0.024	0.041	0.054	-	-	-	0.148
Bombax ceiba(07)	-	-	0.014	-	-	-	-	-	-	0.014
Castanopsis brystrix(122)	-	-	0.016	-	-	-	-	-	-	0.016
Castanopsis indica(123)	-	0.005	0.187	0.779	0.692	0.163	-	-	-	1.905
Castanopsis arata(124)	-	0.043	0.804	0.925	0.326	0.325	-	-	-	2.423
Toona serrata(11)	-	0.014	-	0.041	-	-	-	-	-	0.055
Tecoma ciliata(512)	-	-	-	-	-	-	0.080	0.097	-	0.177
Chukka assia tabularis(098)	0.005	0.014	0.024	-	0.05	-	-	-	-	0.098
Cinnamomum tamala(150)	-	0.049	0.147	0.217	-	0.050	-	-	-	0.503
Dubanga grandiflora(184)	-	0.172	0.706	0.529	0.217	0.240	-	-	-	1.864
Erythrina species(280)	0.009	0.215	0.316	0.204	0.054	-	-	-	-	0.799
Gmelina arborea(246)	-	0.029	0.122	0.081	0.054	-	-	-	-	0.286
Nachilus species(325)	-	-	-	0.047	-	-	-	-	-	0.047
Morus laevis gata(349)	-	0.057	0.170	0.041	-	-	-	-	-	0.269
Saurauia nepaulensis(502)	-	-	0.024	-	-	-	-	-	-	0.024
Schima wallichii(476)	0.009	0.172	0.292	0.081	-	-	-	-	-	0.555
Shorea robusta(462)	-	0.033	-	-	-	-	-	-	-	0.033
Terminalia tomentosa(516)	-	0.014	-	-	-	-	-	-	-	0.014
Terminalia myriocarpa(517)	0.015	0.187	0.195	0.041	-	-	-	-	-	0.441
Tetrameles nudiflora(523)	0.005	-	0.024	0.041	-	0.080	0.097	-	-	0.247
Theespesia populnea(689)	-	-	0.024	-	-	-	-	-	-	0.024
Others(600)	0.038	0.359	0.487	0.489	0.054	0.080	0.097	-	-	1.604
Total:	-	0.132	2.368	4.260	2.870	0.976	0.650	0.291	-	12.346

TABLE No. 6.1.2.

STEM VOLUME PER HA. (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASS 3 (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
DIVISION - DRAFTING STRATA-2

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Adina sessilifolia</i> (020)	-	-	0.004	-	-	-	0.004
<i>Ailanthus altissima</i> (035)	-	-	-	0.006	-	-	0.006
<i>Albizia species</i> (054)	-	0.001	0.007	0.018	0.020	-	0.067
<i>Bessia latifolias</i> (068)	-	-	0.004	-	-	-	0.004
<i>Betisoporum elertha</i> (092)	-	-	0.004	-	-	-	0.004
<i>Bombax ceiba</i> (075)	-	0.001	0.007	0.006	0.041	0.027	0.082
<i>Boswellia serrata</i> (074)	-	-	0.004	-	-	-	0.004
<i>Canarium resiniferum</i> (102)	-	-	0.004	-	-	-	0.004
<i>Carallia baracaiata</i> (141)	-	-	0.004	-	-	-	0.004
<i>Castanopsis ericacea</i> (124)	-	0.006	0.097	0.079	0.020	-	0.202
<i>Toune serrata</i> (511)	-	0.004	0.122	0.182	0.041	0.041	0.388
<i>Zocea ciliata</i> (512)	-	0.006	0.086	0.075	0.030	0.014	0.209
<i>Chukrasia tabularis</i> (098)	0.020	0.193	0.079	0.010	0.014	-	0.316
<i>Cinnamomum timula</i> (150)	-	0.008	-	-	-	-	0.008
<i>Dusonane grandiflora</i> (184)	0.004	0.344	0.813	0.487	0.270	0.020	2.010
<i>Brytris species</i> (280)	-	0.004	0.024	0.030	-	-	0.058
<i>Brytnoxylon nonogynum</i> (203)	-	-	0.006	-	-	-	0.006
<i>Ficus semicordata</i> (230)	0.001	-	-	-	-	-	0.001
<i>Gmelina arborea</i> (246)	-	0.021	0.024	0.061	0.054	0.020	0.181
<i>Grewia fissaescens</i> (250)	0.001	-	-	-	-	-	0.001
<i>Hix species</i> (281)	0.002	-	0.006	-	-	-	0.008
<i>Juglans regia</i> (290)	0.001	0.007	-	-	-	-	0.008

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Lagerstroemia pertiflora</i> (299)	-	0.002	0.004	-	0.010	-	-	-	-	0.016
<i>Michelia champaca</i> (362)	-	-	0.014	-	0.010	-	-	-	-	0.024
<i>Morus laevigata</i> (349)	-	0.002	0.115	0.091	0.020	-	-	-	-	0.228
<i>Nearhinia negalemis</i> (502)	-	0.001	0.007	0.006	-	-	-	-	-	0.014
<i>Schinus wallidii</i> (476)	-	0.002	0.064	0.018	-	-	-	-	-	0.085
<i>Shorea robusta</i> (462)	-	0.748	0.589	0.216	0.072	0.024	-	-	-	1.649
<i>Stereospernum suyseolense</i> (73)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Talauma thallocarpa</i> (522)	-	0.004	-	-	-	-	-	-	-	0.004
<i>Tectone grandis</i> (510)	-	0.563	0.643	0.151	0.037	-	-	-	-	1.393
<i>Terminalia belerica</i> (500)	-	-	-	-	-	-	0.020	-	-	0.020
<i>Terminalia tomentosa</i> (516)	-	-	0.011	0.018	0.010	-	-	-	-	0.039
<i>Terminalia myriocarpa</i> (517)	-	0.058	0.494	0.291	0.101	0.027	0.020	-	-	0.991
<i>Tetrameles nudiflora</i> (523)	-	0.001	0.032	0.136	0.010	0.041	-	0.024	-	0.145
Others (600)	-	0.041	0.336	0.255	0.101	0.068	0.020	-	-	0.821

Total : - 1.468 3.250 2.399 1.113 0.578 0.120 0.097 - - 9.475

TABLE NO. 6-12.

DIVISION: TAPPELING  
NEW TAPPELED VINE PER HA. (IN  $\frac{1}{3}$ ) BY SPECIES AND DIAM. CLASSES (IN CM.) WORKED FOR THINNING AFTER INVENTORY.

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia</i> species(054)	-	-	0.00	-	0.096	-	-	0.106
<i>Anogeissus</i> species(063)	-	-	0.009	-	-	-	-	0.009
<i>Anthocephalus cadamba</i> (065)	-	-	0.009	0.028	0.048	-	-	0.086
<i>Betula alnoidea</i> (070)	-	-	0.085	-	-	-	-	0.085
<i>Casta cypsis aronata</i> (124)	-	0.028	-	-	-	-	-	0.028
<i>Chukrasia tabularis</i> (098)	-	0.009	0.085	-	-	-	-	0.095
<i>Madhuca latifolia</i> (J25)	-	-	-	-	0.048	-	-	0.048
<i>Dubeanga grandiflora</i> (184)	-	0.037	0.596	-	0.914	0.242	0.107	1.897
<i>Erythrina</i> species(260)	-	0.028	0.057	-	0.096	-	-	0.181
<i>Gmelina arborea</i> (246)	-	-	0.085	-	0.048	0.161	-	0.294
<i>Schima wallichii</i> (476)	-	0.009	-	-	-	-	-	0.009
<i>Shorea robusta</i> (462)	-	0.121	0.049	-	-	-	-	0.169
<i>Calamus eriagrinicus</i> (570)	-	0.15	0.075	-	0.123	-	-	0.397
<i>Terminalia tomentosa</i> (516)	-	-	0.057	-	-	-	-	0.057
<i>Terminalia myriocarpa</i> (517)	-	0.009	0.199	-	-	-	-	0.208
<i>Tetrameles nudiflora</i> (522)	-	-	0.028	-	-	-	-	0.028
Others(600)	-	0.227	-	0.144	-	-	-	0.372

Total: - 0.469 1.572 1.518 0.403 0.107 - - - - 4.540

ST. 1. TIR. VOL. S PER HA. (IN M<sup>2</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR HAVING AFTER INVENTORY  
DIVISION - DARJEELING  
STATA - 9

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Bombax ceiba (073)	-	-	0.023	-	0.022	-	-	-	-	0.045
Teone serrata (511)	-	0.003	-	-	-	-	-	-	-	0.003
Cinnamomum tamala (150)	-	-	0.020	-	-	-	-	-	-	0.003
Cordia species (138)	-	-	0.008	-	-	-	-	-	-	0.008
Dubanga grandiflora (184)	-	-	0.039	-	-	-	-	-	-	0.039
Ilex species (281)	-	0.003	-	-	-	-	-	-	-	0.003
Shorea robusta (462)	-	0.05	0.025	-	-	-	-	-	-	0.092
Tectonia grandis (510)	-	0.931	0.062	-	-	-	-	-	-	1.013
Terminalia myriocarpa (517)	-	0.310	0.008	0.015	-	-	-	-	-	0.021
Others (600)	-	0.310	0.00	-	-	-	-	-	-	0.018

Total : - 1.011 0.156 0.072 0.022 - - - - - 1.15

TABLE NO. 6,1.5.

-169-

STEM TIMBER VOLUME PER H.A. (IN C.M.) BY SPECIES AND DIAMETER CLASSIS (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
STRATA 5.  
DAYS N - D DELAY

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia le. scies</i> (054)	-	0.004	-	-	-	-	-	-	-	0.004
<i>Arcos triandra</i> (065)	-	-	0.026	-	-	-	-	-	-	0.026
<i>Carallia intermedia</i> (107)	-	-	-	0.022	-	-	-	-	-	0.022
<i>Cassia nodosa</i> (152)	-	0.004	0.026	-	-	-	-	-	-	0.081
<i>Cestanopsis aromata</i> (174)	-	0.017	0.291	0.292	0.150	0.050	-	-	-	0.800
<i>Cinnamomum tamala</i> (150)	-	0.005	-	0.068	-	-	-	-	-	0.072
<i>Dusabanga grandiflora</i> (184)	-	0.013	0.079	0.045	-	-	-	-	-	0.137
<i>Erythrina species</i> (280)	-	-	0.040	0.090	0.075	-	-	-	-	0.204
<i>Gmelina erbores</i> (246)	-	-	0.040	-	-	0.050	-	-	-	0.05
<i>Saurauia nepaulensis</i> (502)	-	-	0.013	0.022	-	-	-	-	-	0.030
<i>Schima wallichii</i> (476)	-	0.015	0.15	0.157	-	0.050	-	-	-	0.366
<i>Shorea robusta</i> (462)	-	0.090	0.549	0.254	-	-	0.137	-	-	0.790
<i>Tectona grandis</i> (510)	-	0.072	0.016	-	-	-	-	-	-	0.088
<i>Terminalia bellierica</i> (506)	-	-	0.013	-	-	-	-	-	-	0.013
<i>Terminalia tomentosa</i> (516)	-	-	0.013	-	-	-	-	-	-	0.013
<i>Terminalia myriocarpa</i> (517)	-	-	0.013	-	-	-	-	-	-	0.015
<i>Terminalia ruvindiflora</i> (523)	-	-	0.026	-	-	-	-	-	-	0.026
Others (60C)	-	0.009	0.053	0.022	0.038	-	-	-	-	0.122
Total :	-	0.227	1.106	0.972	0.263	0.200	0.137	-	-	3.703

TABLE NO. 6.2.1.  
STEM THINNING VOLUME PER HA. MARKED FOR THINNING BY SPECIES AND DIAMETER CLASSES (IN CM.)

T-81

9.045  
-  
=

$Z$  (in  $m^2$ )

TABLE NO. 6.2.2

STEM TIMBER VOLUME P.R.H.A. MARKED FOR THINNING BY SPECIES AND DIAMETER CLASSES (IN CM.)  
DIVISION: KALIMPONG  
STRATA: 2

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Zoone betreata</i> (511)	-	0.019	-	-	-	-	-	-	-	0.019
<i>Dusanga grandiflora</i> (18)	-	0.019	0.032	0.053	-	-	-	-	-	0.104
<i>S. aurea robusta</i> (462)	-	0.401	1.235	0.194	-	-	-	-	-	1.828
<i>Pectona grandis</i> (510)	-	0.088	0.029	-	-	-	-	-	-	0.117
<i>Cryptomeria japonica</i> (596)	-	0.147	1.004	0.780	1.174	-	-	-	-	3.106
<i>Schima wallacii</i> (476)	-	-	0.019	-	-	-	-	-	-	0.019
<i>Tetrameles nudiflora</i> (523)	-	-	0.032	-	-	-	-	-	-	0.032
Others(600)	-	0.057	0.032	-	-	-	-	-	-	0.088
Total:	-	0.637	2.379	1.069	1.227	-	-	-	-	5.313

STEM IMBUP VOLUME PER HA. NEEDED FOR THINNING  
DIVISION - KALIMONG

TABLE NO. 6.2.3.

STEM IMBUP VOLUME PER HA. NEEDED FOR THINNING BY SPECIES AND DIAMETER CLASSES (IN CM.)

STATA - 2

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia coriacea</i> (044)	-	-	0.028	-	-	-	-	-	-	0.028
<i>Toona ciliata</i> (511)	-	-	0.113	-	-	-	-	-	-	0.113
<i>Caryer arborea</i> (116)	-	-	0.028	-	-	-	-	-	-	0.028
<i>Dubanga grandiflora</i> (184)	-	0.009	0.301	0.096	0.080	-	-	-	-	0.487
<i>Garuga pinnata</i> (21)	-	-	0.028	-	-	-	-	-	-	0.028
<i>Gmelina arborea</i> (246)	-	-	0.057	0.048	-	-	-	-	-	0.104
<i>Lagerstroemia speciosa</i> (313)	-	-	0.051	-	-	-	-	-	-	0.061
<i>Shorea robusta</i> (462)	-	0.267	0.109	0.097	-	-	-	-	-	0.473
<i>Sciodia wallichii</i> (476)	-	-	0.026	-	-	-	-	-	-	0.028
<i>Terminalia bellierica</i> (506)	-	-	0.028	-	-	-	-	-	-	0.028
<i>Terminalia gentilis</i> (16)	-	-	0.028	-	-	-	-	-	-	0.028
<i>Tetrameles nudiflora</i> (523)	-	-	0.254	-	0.080	-	-	-	-	0.334
Others (..0)	-	-	0.141	-	-	-	-	-	-	0.141
Total :	-	0.277	1.207	0.240	0.16	-	-	-	-	1.884

/(m3)

STEM TUMER VOL. PER HA./MARKED FOR THINN. ? BY SPECIES AND DIA. CLASSES ( IN CM.)

DIVISION: KALIMPONG

STRAITA - 4.

STEM TUMER VOL. PER HA./MARKED FOR THINN. ? BY SPECIES AND DIA. CLASSES ( IN CM.)

TABLE NO. 6.2.4.

Species name with code	Diameter class <sup>1</sup> in cm.						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Alangium salviifolium</i> (037)	-	-	-	0.950	0.370	0.094	-
<i>Albizia odoratissima</i> (044)	-	-	-	0.005	-	-	1.413
<i>Arthocarpus cadamba</i> (065)	-	-	-	-	0.003	-	0.005
<i>Toona ciliata</i> (511)	-	-	-	-	0.019	-	0.008
<i>Dalbergia sissoo</i> (161)	-	-	0.002	-	0.006	-	0.019
<i>Dubanga grandiflora</i> (184)	-	-	-	0.080	0.056	0.013	0.140
<i>Garcinia pinnata</i> (232)	-	-	-	0.074	-	-	0.074
<i>Lagerstroemia speciosa</i> (313)	-	-	0.22	0.024	-	-	0.024
<i>Shorea robusta</i> (462)	-	-	-	0.076	-	-	0.076
<i>Hitchellia species</i> (523)	-	-	0.056	0.075	0.024	-	0.301
<i>Tectona grandis</i> (510)	-	-	-	0.872	0.651	0.064	1.055
<i>Schima wallacei</i> (476)	-	-	-	-	0.014	-	0.014
<i>Terminalia tomentosa</i> (516)	-	-	-	-	0.014	-	0.014
<i>Terminalia myriocarpa</i> (517)	-	-	-	-	0.038	-	0.038
<i>Tetrameles nudiflora</i> (523)	-	-	-	-	0.024	-	0.024
Total:	-	-	-	-	-	-	3.744

DIVISION: KALIMPONG

STRAITA - 4.

TABLE NO. 6.2.5

Species name with code	Diameter class <sup>1</sup> in cm.						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Chukrasia tabularis</i> (098)	-	-	-	0.010	-	-	-
<i>Tectona grandis</i> (510)	-	-	-	0.726	-	-	0.720
Total:	-	-	-	0.720	0.010	-	0.730

TABLE NO. 7.01.

Species name with code	Diameter classes (in cm.)										PER INVENTORY
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-107	
STRATA - 1	Total										STRATA - 1
Albizzi species(054)	-	-	0.007	0.007	0.005	0.010	-	-	-	-	C.026
Bombax ceiba(673)	-	-	0.003	-	-	-	-	-	-	-	0.003
Castanopsis hystrix(122)	-	-	0.005	-	-	-	-	-	-	-	0.005
Castanopsis incisa(123)	-	0.002	0.045	0.129	0.089	0.029	0.010	-	-	-	0.304
Castanopsis ericata(124)	-	0.021	0.195	0.153	0.042	0.057	-	-	-	-	0.467
Tecoma serrata(511)	-	-	0.003	-	0.005	-	-	-	-	-	0.009
Tecoma ciliata(512)	-	-	-	-	-	-	-	0.010	0.017	-	0.027
Chukrasia tabularis(098)	-	0.002	0.003	0.001	-	0.016	-	-	-	-	0.019
Cinnamomum t. ziae(150)	-	-	0.013	0.022	0.040	-	0.0	-	-	-	0.091
Dubanga grandiflora(16)	-	-	0.012	0.117	0.062	0.038	0.031	-	-	-	0.315
Erythrocarpus sphaerocarpa(260)	-	0.005	0.052	0.052	0.026	0.010	-	-	-	-	0.145
Gmelina arborea( )	-	-	0.007	0.020	0.010	0.010	-	-	-	-	0.047
Machilus speci s(325)	-	-	-	-	0.006	-	-	-	-	-	C.006
Norfolkia laevigata(349)	-	-	0.014	0.028	0.005	-	-	-	-	-	0.047
Saurauia r. pedunculata(502)	-	-	-	0.004	-	-	-	-	-	-	0.034
Schima w. lichit(476)	-	0.005	0.042	0.048	0.010	-	-	-	-	-	0.105
S. rea robusta(462)	-	-	0.008	-	-	-	-	-	-	-	0.008
Terminalia torontosa(516)	-	-	0.003	-	-	-	-	-	-	-	C.003
Terminalia myriocarpa(517)	-	0.002	0.045	0.032	0.005	-	-	-	-	-	0.092
Tetrameles nudiflora(523)	-	0.002	-	0.004	0.005	-	-	-	-	-	0.039
Theespesia populnea(689)	-	-	-	0.004	-	-	-	-	-	-	0.004
Others(600)	-	0.018	0.007	0.081	0.063	0.010	0.010	0.017	-	-	1.265
Total:	-	0.064	0.575	0.702	0.382	0.171	0.088	0.052	0.020	-	2.185

TABLE NO. 7.1.2  
SPRING 1962 VALUE, PC (%) OF (T-1) BY SPECIES AND DIA. Cuts '78 (in cm.) RECENT CUTTING THINNING AMOUNTS  
DIA'S : 10-19 20-29 30-39 40-49 50-59 60-69 70-75 80-89 90-99 100-109  
Species name with code

	Species name with code	Dia. str. classes (in cm.)										Total
		10-19	20-29	30-39	40-49	50-59	60-69	70-75	80-89	90-99	100-109	
Aldina sessilifolia(020)	-	-	0.011	-	-	-	-	-	-	-	-	0.006
Acer species(035)	-	-	-	0.001	0.001	-	-	-	-	-	-	0.001
Albizia species(041)	-	-	-	0.002	0.002	-	-	-	-	-	-	C.010
Bassia latifolia(042)	-	-	-	0.001	-	-	-	-	-	-	-	0.001
Betula ermanii(092)	-	-	-	0.001	0.001	-	-	-	-	-	-	0.001
Bocax ceiba(073)	-	-	0.001	-	0.001	-	-	-	-	-	-	0.001
Bellia serrata(074)	-	-	-	0.001	-	-	-	-	-	-	-	0.001
Canarium resiniferum(162)	-	-	-	0.003	0.003	-	-	-	-	-	-	0.001
Croton oblongifolius(141)	-	-	-	0.001	0.001	-	-	-	-	-	-	0.001
Castanopsis aronata(124)	-	-	0.003	0.003	0.003	-	-	-	-	-	-	0.042
Toona serrata(511)	-	-	0.001	0.001	0.001	-	-	-	-	-	-	C.014
Toura ciliata(512)	-	-	0.003	0.003	0.003	-	-	-	-	-	-	C.012
Clubressia tuberculata(098)	-	-	0.001	0.001	0.001	-	-	-	-	-	-	C.073
Cinnamomum camphora(150)	-	-	0.002	0.002	0.002	-	-	-	-	-	-	C.022
Dubabanga grandiflora(184)	-	-	0.002	0.002	0.002	-	-	-	-	-	-	0.035
Hydnocarpus wightianus(280)	-	-	0.001	0.001	0.001	-	-	-	-	-	-	C.039
Erythroxylon monogynum(203)	-	-	0.001	0.001	0.001	-	-	-	-	-	-	C.001
Grewia pinnata(237)	-	0.001	-	-	-	-	-	-	-	-	-	0.001
Gmelina arborea(246)	-	-	0.005	0.005	0.005	-	-	-	-	-	-	0.029
Grindelia frutescens(250)	-	0.001	-	-	-	-	-	-	-	-	-	C.001
Jonesia esculca(257)	-	0.001	-	0.001	-	-	-	-	-	-	-	C.002

Species name with code	Diameter classes(in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Juglans regia</i> (290)	-	0.001	0.002	-	-	-	-	-	-	0.002
<i>Lagerstroemia parviflora</i> (299)	-	0.001	0.001	-	0.001	-	-	-	-	0.003
<i>Michelia champaca</i> (362)	-	-	0.003	-	0.001	-	-	-	-	0.005
<i>Morus lavigata</i> (349)	-	0.001	0.028	0.015	0.003	-	-	-	-	0.047
<i>Saurauia napaensis</i> (502)	-	0.001	0.002	0.001	-	-	-	-	-	0.003
<i>Schinus wallichii</i> (476)	-	0.001	0.016	0.003	-	-	-	-	-	0.020
<i>Shorea robusta</i> (462)	-	0.248	0.200	0.049	0.010	0.003	-	-	-	0.623
<i>Stereospermum suaveolens</i> (173)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Talauma pheilocarpa</i> (522)	-	-	0.001	-	-	-	-	-	-	0.001
<i>Tectona grandis</i> (510)	0.007	0.111	0.124	0.020	0.003	-	-	-	-	0.266
<i>Terminalia belerica</i> (506)	-	-	-	-	-	-	-	-	-	0.003
<i>Terminalia tomentosa</i> (516)	-	-	0.003	0.003	0.001	-	-	-	-	0.007
<i>Terminalia myriocarpa</i> (517)	-	0.028	0.120	0.048	0.013	0.005	-	-	-	0.216
<i>Pterocarpus mudiciflora</i> (523)	-	0.001	0.008	0.006	0.001	0.007	0.004	-	-	0.027
Others(600)	-	0.020	0.081	0.042	0.013	0.012	0.003	-	-	0.171
<b>Total:</b>	0.119	0.435	0.808	0.405	0.143	0.100	0.015	0.017	-	2.157

**TABLE NO. 7.1.3.**  
**SMALL LEOP-TEMED IN H.A. (IN  $m^3$ ) BY SPECIES AND DIA. CLASSES (IN CM.) AFTER TINNING AFTER  
 STRATA)**

**DISSITION: DAY JEEING**

Species name with code	Diameter classes (in cm.)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Albizia</i> species(054)	-	0.005	-	-	-	-	-	-	0.020
<i>Amoora</i> species(063)	-	0.005	-	-	-	-	-	-	0.005
<i>Areca triandra</i>	-	0.005	0.007	0.008	-	-	-	-	0.019
<i>Betula alnoides</i> (070)	-	-	0.021	-	-	-	-	-	0.021
<i>Castanopsis aronata</i> (2124)	-	0.014	-	-	-	-	-	-	0.014
<i>Chukrassia tabularis</i> (098)	-	0.005	0.021	-	-	-	-	-	0.025
<i>Madhuca latifolia</i> (226)	-	-	-	0.008	-	-	-	-	0.008
<i>Dubabang grandiflora</i> (184)	-	0.018	0.144	0.151	0.021	0.019	-	-	0.364
<i>Hydnocarpus wightiana</i> (230)	-	0.014	0.014	0.016	-	-	-	-	0.043
<i>Grewina arborea</i> (246)	-	-	0.021	0.008	0.021	-	-	-	0.049
<i>Schima welllichei</i> (476)	-	0.005	-	-	-	-	-	-	0.005
<i>Shorea robusta</i> (462)	0.079	0.060	0.015	-	-	-	-	-	0.154
<i>Tectona grandis</i> (510)	0.002	0.041	0.014	0.017	-	-	-	-	0.074
<i>Terminalia tomentosa</i> (516)	-	-	0.014	-	-	-	-	-	0.014
<i>Terminalia myriocarpa</i> (517)	-	0.005	0.043	-	-	-	-	-	0.053
<i>Petramelos undiflora</i> (523)	-	-	0.007	-	-	-	-	-	0.007
Others(600)	-	-	0.055	0.024	-	-	-	-	-0.079
Total:	0.081	0.173	0.380	0.248	0.052	0.019	-	-	1.066

TABLE NO. 7-1

SMALL WOOD VOLUME PER H.A. (IN  $m^3$ ) BY SPECIES AND DYM. CLASSES (IN CM.) MARKED FOR TITANING AFTER INVENTORY

## DIVISION: APPENDIX

## STRATA - 4

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Bombax ceiba</i> (073)	-	-	-	-	-	-	-
<i>Foona serrata</i> (511)	-	-	0.001	-	0.003	-	-
<i>Cinnamomum tamala</i> (150)	-	-	-	-	-	-	0.006
<i>Cordia</i> species(138)	-	-	0.002	-	0.003	-	0.003
<i>Dubabanga grandiflora</i> (184)	-	-	-	0.006	-	-	0.002
<i>Ilex</i> species(281)	-	0.001	-	-	-	-	0.006
<i>Shorea robusta</i> (462)	0.051	0.028	0.008	-	-	-	0.001
<i>Tectona grandis</i> (510)	0.148	0.233	0.019	-	-	-	0.088
<i>Terminalia myricarpa</i> (517)	-	-	0.002	0.002	-	-	0.399
Others(600)	-	0.005	0.002	-	-	-	0.004
	-	-	-	-	-	-	0.007
Total:	0.199	0.269	0.038	0.012	0.003	-	-
	-	-	-	-	-	-	0.595

TABLE NO. 7.1.2.  
SMALL FOOD VOLUME FOR FA. (IN  $m^3$ ) BY SPECIES AND AGE, CLASSES (IN CM.) BASED FOR FOLLOWING AFTER INVENTORY

## DIVISION: FATING

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia</i> species(054)	-	0.002	-	-	-	-	-	-	-	0.002
<i>Areca triandra</i> (065)	-	-	0.006	-	-	-	-	-	-	0.006
<i>Carallia integriflora</i> (107)	-	-	-	0.004	-	-	-	-	-	0.004
<i>Cocculus laurifolius</i> (152)	-	0.002	0.006	-	-	-	-	-	-	0.017
<i>Castanopsis aromata</i> (124)	-	0.008	0.070	0.048	0.019	0.009	-	-	-	0.155
<i>Cinnamomum tamala</i> (150)	-	0.003	-	0.010	-	-	-	-	-	0.013
<i>Dubanga grandiflora</i> (184)	-	0.006	0.019	0.007	-	-	-	-	-	0.033
<i>Hydnocarpus wightiana</i> (280)	-	-	0.010	0.015	0.010	-	-	-	-	0.034
<i>Camellia arborea</i> (246)	-	-	0.010	-	-	0.009	-	-	-	0.018
<i>Saurinia nepaulensis</i> (502)	-	-	0.003	0.004	-	-	-	-	-	0.007
<i>Schima wallichii</i> (476)	-	0.006	0.005	0.026	-	0.009	-	-	-	0.076
<i>Shorea robusta</i> (462)	0.007	0.026	0.094	0.048	-	-	-	-	-	0.174
<i>Tecton grandis</i> (510)	0.030	0.019	0.003	-	-	-	-	-	-	0.052
<i>Terminalia belerica</i> (506)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Terminalia tomentosa</i> (516)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Terminalia myriocarpa</i> (517)	-	-	0.003	-	-	-	-	-	-	-0.003
<i>Tetrameles nudiflora</i> (522)	-	0.006	0.013	0.004	0.005	-	-	-	-	0.006
Others(170)	-	0.004	-	-	-	-	-	-	-	0.026
Total:	0.037	0.077	0.286	0.165	0.034	0.025	-	-	-	0.576

TABLE NO. 7.2.1

SMALL (CCD) VCL. PFTN HA. ( $M^2$ ) MEASURED FOR THINNING BY SPECIES AND DATA CLASS (IN C'')

FITTESTON: KALTYONG

STPATA-1

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Alangium salvifolium</i> (037)	-	-	0.103	0.075	0.019	0.009	-
<i>Toona serrata</i> (511)	-	-	0.003	-	-	-	0.207 0.003
<i>Dubanga grandiflora</i> (184)	-	0.008	0.131	0.112	0.022	0.017	0.013 -
<i>Shorea robusta</i> (462)	0.002	0.184	1.034	0.507	0.085	-	0.302 1.811
<i>Michelia languiuosa</i> (464)	-	-	0.077	0.009	0.006	-	0.091
<i>Schima wallichii</i> (476)	-	-	0.003	-	-	-	0.003
<i>Terminalia myriocarpa</i> (517)	-	-	-	0.012	0.022	-	0.034
<i>Tetrameles nudiflora</i> (523)	-	-	-	0.009	-	0.007	0.014 -
Others(600)	-	-	-	0.003	-	-	0.027 0.003
Total:	0.002	0.102	1.350	0.726	0.154	0.033	0.011 0.013 - 2.481

TABLE NO. 2.2

SIGHT COUNTS, NUMBER OF SPOTS AND SPOT-SIZES IN STRATA-1 AND STRATA-2

Sp. & s. name with code	Diameter classes(in cm.)					Total
	0-1	1-2	2-3	3-4	4-5	
" <i>coena serrata</i> (511)	-	-	0.035	-	-	0.005
" <i>Quabanga grandiflora</i> (34)	-	-	0.005	0.007	0.012	0.022
" <i>shorea robusta</i> (462)	0.050	0.792	0.406	0.041	-	0.990
" <i>Tectona grandis</i> (510)	0.027	0.032	0.006	-	-	0.065
" <i>Cnidottemerda Japonica</i> (596)	0.053	0.27	0.298	0.585	-	1.273
" <i>Schima wallichii</i> (476)	-	0.005	-	-	-	0.005
" <i>Tetrameles nudiflora</i> (522)	-	-	0.016	0.007	-	0.023
Others(600)	-	-	-	-	-	-
Total:	0.087	0.477	0.477	0.359	0.567	2.393

TABLE NO. 7.2.3.

SMALL GOOD VOL. PER HA. ( $m^3$ ) MARKED FOR THINNING BY SPECIES AND DIA. CLASSES (IN CM.)

DIVISION: MALT. CMC

SPRATA-1

Species names with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia odoratissima</i> (641)	0.009	-	0.008	-	-	-	-	0.017
<i>Careya arborea</i> (116)	-	-	0.008	-	-	-	-	0.008
<i>Toona serrata</i> (511)	-	-	0.032	-	-	-	-	0.032
<i>Dubanga grandiflora</i> (184)	-	0.007	0.084	0.021	0.019	-	-	0.131
<i>Garuga pinnata</i> (239)	-	-	0.008	-	-	-	-	0.008
<i>Gmelina arborea</i> (246)	-	-	0.016	0.010	-	-	-	0.026
<i>Lagerstroemia speciosa</i> (313)	-	-	0.017	-	-	-	-	0.017
<i>Shorea robusta</i> (462)	0.024	0.261	0.044	0.020	-	-	-	0.350
<i>Schima wallitchii</i> (476)	-	-	0.008	-	-	-	-	0.008
<i>Terminalia belerica</i> (506)	-	-	0.008	-	-	-	-	0.008
<i>Terminalia tomentosa</i> (516)	-	-	0.008	-	-	-	-	0.008
<i>Tetrameles n. diffiore</i> (523)	-	-	0.071	-	0.019	-	-	0.090
Others(601)	-	-	0.040	-	-	-	-	0.040
Total:	0.033	0.268	0.352	0.051	0.037	-	-	0.742

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TABLE NO. 7,2.4,

SMALL TROPICAL WOODS AND CLASSES OF WOODS AND CLASSES OF WOODS.

## DIVISION: VITIENONG

specie	name	code	19	20	30-39	40-49	50-59	60-79	80-89	90-100	100+
<i>Albizia odoratissima</i> (14)											
<i>Alnus nepalensis</i> (037)			0.022	0.183	0.054	0.015					0.001
<i>Anthoclethrus cadamba</i> (15)					0.002						0.275
<i>Toona serrata</i> (511)			0.001		0.005						0.002
<i>Dalbergia sissoo</i> (181)			0.001			0.002					0.006
<i>Draebenga grandiflora</i> (184)					0.022	0.012	0.003				0.004
<i>Garuga pinnata</i> (239)					0.004						0.007
<i>Lagerstroemia speciosa</i> (313)					0.007						0.434
<i>Shorea robusta</i> (462)			0.183	0.220	0.031						0.058
<i>Nichelia species</i> (323)			0.001	0.041	0.021	0.005					0.007
<i>Tectona grandis</i> (510)			0.088	0.317	0.126	0.007					0.540
<i>Schima williamsii</i> (476)					0.004						0.004
<i>Terminalia tormentosa</i> (316)					0.204						0.004
<i>Terminalia myriocarpa</i> (517)					0.002						0.002
<i>Petramoles nudiflora</i> (523)					0.005						0.005
Total:											1.392
			0.274	0.602	0.469	0.089	0.018				

TABLE NO. 7.2.5.

SMALL WOOD VOL. PER H.A. ( $m^3$ ) MATERIALIZED FOR TREATMENT BY SPECIES AND H.A. CLASSES (IN AC.)

DIVISION: KALITPONG

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
Chukk. sis tabularis (098)	-	-	0.003	-	-	-	0.003
Shore robusta (462)	0.007	-	-	-	-	-	0.007
Tectona grandis (510)	0.382	0.262	-	-	-	-	0.644
Total:	~	0.389	0.262	0.003	-	-	0.654

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### VERTICAL STEM TIMBER :COLUMN (IN OCON)

DIVISION: FAPJEDLING

Species name with code	Diameter classes(in cm.)							Total			
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	
<i>Morus laurigata</i> (349)	0.037	0.451	0.191	0.320	-	-	-	-	-	-	0.999
<i>Prunus species</i> (409)	0.167	0.295	0.261	-	-	-	-	-	-	-	0.723
<i>Quercus species</i> (446)	-	-	0.382	0.640	0.426	-	-	-	-	-	1.448
<i>Shorea robusta</i> (462)	-	-	0.840	-	-	-	-	-	-	-	0.840
<i>Sterculia alata</i> (464)	-	-	0.191	0.320	0.426	-	-	-	-	-	0.937
<i>Symplocos spicata</i> (468)	0.186	0.113	-	-	-	-	-	-	-	-	0.298
<i>Sapindus Mukrossi</i> (471)	0.037	-	-	-	-	-	-	-	-	-	0.037
<i>Schima wallichii</i> (476)	0.149	0.677	1.338	1.599	0.426	-	-	-	-	-	4.188
<i>Tsuga brunoniana</i> (504)	0.074	0.677	0.191	-	-	-	-	-	-	-	0.942
<i>Toona ciliata</i> (512)	-	0.113	0.191	-	-	-	-	-	-	-	0.304
<i>Terminalia myriocarpa</i> (517)	0.074	0.790	1.720	-	-	-	-	-	-	-	3.436
<i>Cryptomeria japonica</i> (596)	1.589	4.693	16.763	19.813	10.121	3.939	-	-	-	-	56.918
Others(600)	0.260	0.903	0.765	0.640	0.852	-	-	-	-	-	3.418
Total:	-	4.990	17.244	30.390	29.191	20.112	8.337	3.815	-	-	114.079

TABLE NO. 8.1.2.  
TOTAL/VOLUME ( IN 000 M<sup>3</sup>) BY SPECIES AND DIAM. CLASSES (IN CM.) AT THE TIME OF INVENTORY.

## DIVISION: DARJEELING

## STRATA-2.

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Ailanthus altissima</i> (030)	-	0.425	0.215	-	-	-	-	-	-	0.641
<i>Aer species</i> (035)	-	0.071	-	-	-	-	-	-	-	0.071
<i>Alnus nepalensis</i> (037)	-	-	1.265	1.469	-	-	-	-	-	3.942
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.205	0.365	-	-	-	-	-	0.580
<i>Abies pindrow</i> (047)	-	0.071	-	-	-	-	-	-	-	0.071
<i>Alnus species</i> (055)	-	-	0.215	-	-	-	-	-	-	0.215
<i>Areca triandra</i> (065)	-	-	0.215	-	-	-	-	-	-	0.215
<i>Bombax ceiba</i> (073)	-	-	0.215	-	-	-	-	-	-	1.028
<i>Bauhinia purpurea</i> (82)	-	-	0.215	-	-	-	-	-	-	0.215
<i>Bursera serratum</i> (093)	-	-	-	0.365	-	-	-	-	-	0.365
<i>Chukrassia tabularis</i> (098)	-	0.071	0.646	0.365	0.610	-	-	-	-	1.692
<i>Castanopsis species</i> (100)	-	1.276	1.507	0.365	-	-	-	-	-	3.148
<i>Cinnamomum species</i> (105)	-	0.153	-	-	-	-	-	-	-	0.153
<i>Callicarpa species</i> (119)	-	0.071	-	-	-	-	-	-	-	0.071
<i>Castanopsis hystrix</i> (122)	-	0.076	-	-	-	-	-	-	-	0.076
<i>Castanopsis indica</i> (123)	-	0.425	0.646	1.095	-	-	-	-	-	2.166
<i>Dubabanga sonneratoides</i> (170)	-	0.142	0.646	1.824	1.221	-	-	-	-	3.833
<i>Eurya japonica</i> (192)	-	0.213	-	-	-	-	-	-	-	0.213
<i>Bucplandia populnea</i> (238)	-	3.827	4.307	1.459	0.610	0.813	-	-	-	11.016
<i>Garuga pinnata</i> (239)	-	-	0.215	-	-	-	-	-	-	0.215
<i>Jambosa formosa</i> (288)	-	-	0.215	-	-	-	-	-	-	0.215
<i>Litsea species</i> (308)	-	0.071	-	-	-	-	-	-	-	0.071
<i>Michelia species</i> (323)	-	-	7.629	2.871	-	-	-	-	-	13.019
<i>Machilus species</i> (325)	-	-	1.564	0.997	0.483	-	-	-	-	3.044
<i>Macaranga indica</i> (341)	-	-	0.071	-	-	-	-	-	-	0.071
<i>Magnolia species</i> (364)	-	-	0.213	-	-	-	-	-	-	0.213
<i>Prunus species</i> (409)	-	-	0.398	0.282	-	-	-	-	-	0.679

2.519

Species name with code	Diameter classes (in cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	
<i>Quercus laingii</i> (441)	-	0.213	0.215	-	0.610	-	-	-	-	-	1.038
<i>Quercus species</i> (446)	-	0.567	0.431	1.095	-	-	-	-	-	-	2.092
<i>Shorea robusta</i> (462)	-	0.109	-	-	-	-	2.044	-	-	-	2.153
<i>Symplocos spicata</i> (468)	-	0.425	-	-	-	-	-	-	-	-	0.425
<i>Schima wallichii</i> (476)	-	0.283	0.431	-	-	-	-	-	-	-	0.714
<i>Tsuga brunoniana</i> (504)	9.354	14.213	4.743	1.221	-	-	-	-	-	-	29.531
<i>Trewia nudiflora</i> (509)	-	0.491	-	-	-	-	-	-	-	-	0.431
<i>Tectona grandis</i> (510)	2.239	5.817	3.004	-	-	-	-	-	-	-	11.060
<i>Toona ciliata</i> (512)	0.213	1.077	1.095	-	-	-	-	-	-	-	2.384
<i>Terminalia tomentosa</i> (516)	-	-	-	0.610	-	-	-	-	-	-	1.810
<i>Terminalia myriocarpa</i> (517)	0.780	3.015	2.189	0.610	-	1.199	-	-	-	-	8.050
<i>Terminalia citrina</i> (518)	-	-	-	0.610	-	-	1.456	-	-	-	0.610
<i>Cephaelostachyum pallicium</i> (569)	-	-	0.365	-	-	-	-	-	-	-	0.365
<i>Cryptomeria japonica</i> (596)	7.959	30.828	56.628	29.918	13.238	1.218	-	-	-	-	139.784
Others(600)	2.480	1.077	0.365	-	-	1.199	-	-	-	-	5.121
Total:	-	41.386	72.422	77.272	36.017	16.072	5.660	1.456	-	2.519	252.805

TABLE NO. 3.1.3.

TOTAL VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

STRATA - 3

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizzia lebbek</i> (005)	-	0.071	-	0.366	-	-	-	-
<i>Anthocophalus cadamba</i> (013)	-	0.071	0.432	-	-	-	-	0.437
<i>Ailanthus altissima</i> (030)	-	0.071	-	-	-	-	-	0.503
<i>Acer species</i> (035)	-	-	0.216	-	-	-	-	0.071
<i>Alnus nepalensis</i> (037)	-	-	4.655	1.475	-	-	-	6.130
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.216	-	-	-	-	0.216
<i>Abies pindrow</i> (047)	-	0.285	0.216	-	-	-	-	0.501
<i>Albizia species</i> (054)	-	-	-	-	-	-	1.204	-
<i>Betula alnoidea</i> (070)	-	-	1.513	1.831	-	-	-	3.344
<i>Bombax ceiba</i> (073)	-	-	-	0.366	-	-	-	0.366
<i>Bogenlia serrata</i> (091)	-	0.071	-	-	-	-	-	0.071
<i>Chukrasia tabularis</i> (098)	0.071	0.432	-	-	-	-	-	0.503
<i>Castanopsis species</i> (100)	0.427	-	-	-	-	-	-	0.427
<i>Cinnamomum species</i> (105)	0.153	0.246	-	-	-	-	-	0.400
<i>Callicarpa arborea</i> (112)	0.071	-	-	-	-	-	-	0.071
<i>Careya arborea</i> (116)	0.071	-	-	-	-	-	-	0.071
<i>Castanopsis indica</i> (123)	0.142	-	-	-	-	-	-	0.142
<i>Cleistanthus collinus</i> (133)	0.071	-	-	-	-	-	-	0.071
<i>Dubanga sonneratiae</i> (170)	0.213	0.216	1.631	1.225	-	-	-	3.486
<i>Eurya Japonica</i> (192)	0.142	-	-	-	-	-	-	0.142
<i>Erodia roxburghiana</i> (211)	0.142	-	-	-	-	-	-	0.142
<i>Ficus species</i> (233)	-	0.216	-	-	-	-	-	0.216
<i>Juglans populnea</i> (238)	0.498	0.216	-	-	-	-	-	1.530
<i>Garuga pinnata</i> (239)	0.071	-	-	-	-	-	0.071	-
<i>Litsea Polyantha</i> (302)	-	0.216	-	-	-	-	-	0.216

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Litsea species (308)	-	0.216	-	-	-	-	-	-	-	0.216
Michelia species (323)	-	2.458	-	-	-	-	-	-	-	2.458
Machilus species (325)	-	1.863	0.500	-	-	-	-	-	-	2.384
Macaranga liosa (341)	-	0.071	0.648	0.366	-	-	-	-	-	1.086
Morus laevigata (349)	-	0.285	-	-	-	-	-	-	-	0.285
Prunus species (409)	-	0.080	-	-	-	-	-	-	-	0.080
Quercus species (446)	-	0.427	0.432	0.366	-	-	-	-	-	1.225
Shorea robusta (462)	-	2.825	1.533	1.15	-	-	-	-	-	5.533
Sterculia alata (464)	-	-	-	0.613	-	-	-	-	-	0.613
Symplocos Spicata (468)	-	0.142	-	-	-	-	-	-	-	0.142
Schima wallichii (476)	-	0.925	0.865	-	-	-	-	-	-	1.769
Syzygium species (492)	-	0.071	-	-	-	-	-	-	-	0.071
Tsuga brunoniensis (504)	-	1.352	1.297	-	-	-	-	-	-	2.649
Terminalia belerica (506)	-	0.071	-	-	-	-	-	-	-	0.071
Tectona grandis (510)	-	0.325	0.306	-	-	-	-	-	-	0.631
Cryptomeria japonica (596)	-	8.627	21.548	12.674	1.332	3.010	1.257	-	-	48.448
Others (600)	-	0.640	0.432	-	-	-	-	-	-	1.973
Terminalia myriocarpa (517)	-	0.356	0.648	0.366	-	-	-	-	-	1.376
Total :	-	25.182	37.217	20.818	3.170	3.826	2.461	-	-	90.674

### Stem timber

TABLE NO. 8, 1, 4.

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TOTAL VOLUME (IN 900 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lucida</i> (026)	-	-	-	-	-	-	-	-	-	0.650
<i>Alnus species</i> (055)	-	-	-	0.428	-	-	-	-	-	0.428
<i>Bauhinia species</i> (069)	-	-	-	-	1.300	-	-	-	-	1.300
<i>Bursera serratum</i> (093)	-	-	-	-	-	-	-	-	-	1.752
<i>Castanopsis species</i> (100)	-	-	-	0.642	-	-	-	-	-	0.642
<i>Cinnamomum species</i> (105)	-	-	-	0.231	-	-	-	-	-	0.231
<i>Castanopsis indica</i> (123)	-	-	-	0.214	-	-	-	-	-	0.214
<i>Dubanga sonneratoides</i> (170)	-	-	-	-	0.650	-	-	-	-	0.650
<i>Eucalyptus hybrid</i> (206)	-	-	-	0.214	-	-	-	-	-	0.214
<i>Juglans regia</i> (290)	-	-	-	0.214	-	-	-	-	-	0.214
<i>Polyalthia cerasoides</i> (396)	-	-	-	-	0.650	-	-	-	-	0.650
<i>Quercus species</i> (446)	-	-	-	0.428	-	-	-	-	-	0.428
<i>Schorea robusta</i> (462)	-	-	-	2.354	0.934	-	-	-	-	3.288
<i>Symplocos spicata</i> (468)	-	-	-	0.214	-	-	-	-	-	0.214
<i>Tsuga brunoniensis</i> (504)	-	-	-	2.996	0.650	-	-	-	-	7.267
<i>Tectona grandis</i> (510)	-	-	-	11.359	-	-	-	-	-	11.359
<i>Cryptomeria japonica</i> (596)	-	-	-	37.331	23.776	2.303	1.843	-	-	65.153

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TABLE NO. 8.1.5.  
TOTAL/VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING  
/STEM TIMBER

<i>Cryptomeria japonica</i> (596)	-	3.020	-	-	-	-	3.020
<i>Tectona grandis</i> (510)	-	1.822	-	-	-	-	1.822
Total :	-	4.841	-	-	-	-	4.841

TOTAL VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - KALIMONG

## STRATA-1.

-192-

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Anthocephala cadamba</i> (013)	-	-	-	0.454	-	-	-
<i>Aphanamixis Polystachya</i> (022)	-	0.132	-	0.227	-	-	-
<i>Amoora Wallichii</i> (023)	-	0.132	0.134	0.227	-	-	0.360
<i>Alnus nepalensis</i> (037)	-	-	1.050	0.315	-	-	0.494
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.134	0.682	-	-	1.965
<i>Amoora species</i> (063)	-	-	0.268	-	-	-	0.816
<i>Betula alnoidea</i> (070)	-	-	-	-	-	-	0.268
<i>Beilschmiedia assamica</i> (085)	-	0.044	-	-	-	-	0.380
<i>Cinnamomum occidodaphne</i> (099)	-	-	-	-	0.330	0.506	0.886
<i>Castanopsis species</i> (100)	-	-	-	-	-	-	0.044
<i>Cinnamomum species</i> (105)	-	-	0.306	1.374	-	-	0.380
<i>Callicarpa arborea</i> (112)	-	-	-	0.382	-	-	1.679
<i>Castanopsis indica</i> (123)	-	-	-	-	-	-	0.662
<i>Dusabanga sonneratoides</i> (170)	0.088	2.146	4.772	3.301	1.515	-	0.907
<i>Engelhardtia spicata</i> (200)	-	0.134	-	-	-	-	12.326
<i>Gmelina arborea</i> (246)	-	0.134	-	-	-	-	0.134
<i>Holarrhena antidysenterica</i> (266)	-	0.044	-	-	-	-	0.044
<i>Jambosa formosa</i> (288)	-	0.044	0.134	-	-	-	0.178
<i>Lagerstroemia parviflora</i> (299)	-	0.044	-	-	-	-	0.044

Species name with code	Diameter class (in cm.)										100-109 Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	
<i>Litsea species</i> (302)	-	0.044	0.134	-	-	-	-	-	-	-	0.178
<i>Nicheia species</i> (323)	-	0.176	0.536	0.312	-	-	-	-	-	-	1.024
<i>Morus nigra</i> (349)	-	0.044	-	-	-	-	-	-	-	-	0.044
<i>Michelia champaca</i> (362)	-	0.044	1.207	0.227	0.760	1.013	-	-	-	-	3.251
<i>Prunus species</i> (409)	-	-	0.175	-	-	-	-	-	-	-	0.175
<i>Phoebe attenuata</i> (423)	-	0.068	1.073	0.227	-	0.506	-	-	-	-	1.595
<i>Schleicheria trijuga</i> (461)	-	0.044	-	-	-	-	-	-	-	-	0.044
<i>Shorea robusta</i> (462)	-	-	0.813	4.042	0.661	2.172	-	-	-	-	7.687
<i>Symplocos epicatea</i> (468)	-	0.044	-	-	-	-	-	-	-	-	0.044
<i>Schima wallitchii</i> (476)	-	0.309	1.073	2.045	2.661	2.025	1.494	-	-	-	9.606
<i>Terminalia bellieriae</i> (506)	-	0.044	0.134	-	-	-	-	-	-	-	0.178
<i>Toona ciliata</i> (512)	-	-	-	0.454	0.380	-	-	-	-	-	0.835
<i>Terminalia benthamii</i> (515)	-	0.088	0.134	0.227	-	-	-	-	-	-	0.450
<i>Terminalia triocarpa</i> (517)	-	0.221	1.743	2.499	0.380	-	-	-	-	-	4.844
<i>Tetrameles nudiflora</i> (525)	-	0.044	-	-	-	0.747	-	-	-	-	0.791
<i>Wrightia tinantensis</i> (535)	-	0.530	0.268	0.454	-	-	-	-	-	-	0.227
Others (600)	-	-	-	-	-	-	-	-	-	-	1.252

Total : - 2.250 11.732 20.049 9.784 7.740 2.241 0.907 - - 54.703

TOTAL VOLUME (IN OOO H3) AT THE 1-3 OF INVENTORY  
DIVISION - KALIMPONG

Species name with code	Diameter class (in cm.)										Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	
<i>Jambosa formosae</i> (288)	-	0.190	0.192	-	-	-	-	-	-	-	0.383
<i>Lagerstroemia periflora</i> (299)	-	0.127	0.385	-	-	-	-	-	-	-	0.512
<i>Lophopetalum wightianum</i> (310)	-	-	-	-	-	-	-	-	-	-	0.546
<i>Lagerstroemia speciosa</i> (313)	-	2.724	6.545	1.957	-	-	-	-	-	-	11.225
<i>Lagerstroemia florregimel</i> (318)	-	0.127	0.192	-	-	-	-	-	-	-	0.319
<i>Michelia species</i> (323)	-	1.431	3.850	1.344	-	-	-	-	-	-	6.625
<i>Magnolia species</i> (325)	-	0.070	-	-	-	-	-	-	-	-	0.070
<i>Jacaranga indica</i> (341)	-	-	0.385	0.326	-	-	-	-	-	-	0.711
<i>Nicchelia champaca</i> (362)	-	0.950	3.657	4.692	2.728	1.453	-	-	-	-	14.982
<i>Magnolia species</i> (364)	-	0.063	-	-	-	-	-	-	-	-	0.063
<i>Ostodes paniculatus</i> (377)	-	0.063	-	-	-	-	-	-	-	-	0.063
<i>Phoebe heinegensis</i> (389)	-	-	0.192	0.326	-	-	-	-	-	-	0.519
<i>Prunus cornuta</i> (407)	-	0.063	-	-	-	-	-	-	-	-	0.063
<i>Prunus species</i> (409)	-	0.142	0.755	-	-	-	-	-	-	-	0.897
<i>Phoabes attenuata</i> (423)	-	0.063	1.925	0.652	-	-	-	-	-	-	2.641
<i>Spondias pinnata</i> (460)	-	0.063	0.192	-	-	-	-	-	-	-	0.256
<i>Shorea robusta</i> (462)	-	1.862	15.357	12.510	3.925	-	-	-	-	-	35.892
<i>Syzygium c. chinii</i> (469)	-	0.253	-	-	-	-	-	-	-	-	0.253
<i>Schima wallichii</i> (476)	-	0.317	1.347	1.305	-	-	-	-	-	-	4.767
<i>Terminalia crassifolia</i> (505)	-	-	0.577	-	-	-	-	-	-	-	0.577
<i>Zerwia nudiflora</i> (509)	-	0.063	-	-	-	-	-	-	-	-	0.063
<i>Tectona grandis</i> (529)	-	0.494	6.830	12.476	3.310	-	-	-	-	-	23.110
<i>Toona sinensis</i> (512)	-	0.127	0.770	-	1.091	-	-	-	-	-	3.060
<i>Terminalia tomentosa</i> (516)	-	0.063	0.962	1.631	0.546	-	-	-	-	-	3.202
<i>Terminalia myriocarpa</i> (517)	-	0.507	5.582	3.587	2.728	1.453	-	-	-	-	13.858
<i>Tetrameles nudiflora</i> (523)	-	0.063	-	0.326	1.091	0.727	-	-	-	-	2.207
<i>Wrightia tomentosa</i> (538)	-	-	0.192	-	-	-	-	-	-	-	0.192
<i>Daemonorops jenkinsiae</i> (593)	-	-	-	-	0.546	-	-	-	-	-	0.546
<i>Cryptomeria japonica</i> (596)	-	0.633	4.620	9.132	7.658	1.453	-	-	-	-	23.476
<i>Others</i> (600)	-	1.361	4.222	3.434	2.354	-	-	-	-	-	11.371
Total :	-	15.432	24.087	85.124	50.548	20.658	6.661	5.207	-	-	4.773

TOTAL(VOLUME (IN CCO & J) BY SPECIES & DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - KALIZONG  
STRATA - 3

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Podocarpus neriifolia</i> (397)	-	0.173	-	-	-	-	-	-	-	0.173
<i>Prunus</i> species (409)	-	0.097	-	-	-	-	-	-	-	0.097
<i>Populus</i> species (410)	-	0.173	-	-	-	-	-	-	-	0.173
<i>Pterospermum acinifolium</i> (419)	-	0.087	-	-	-	-	-	-	-	0.087
<i>Syzygium cumini</i> (469)	-	0.087	-	-	-	-	-	-	-	0.087
<i>Schima wallichii</i> (476)	-	0.347	0.527	1.340	-	-	-	-	-	3.661
<i>Ficus microphylla</i> (509)	-	0.387	-	-	-	-	-	-	-	0.387
<i>Tectona grandis</i> (510)	-	0.310	1.464	0.567	0.914	-	-	-	-	3.255
<i>Toona ciliata</i> (512)	-	0.347	-	-	-	-	-	-	-	0.347
<i>Terminalia myriocarpa</i> (517)	-	4.076	2.635	1.786	0.747	-	-	-	-	9.245
<i>Trema orientalis</i> (519)	-	-	0.264	-	-	-	-	-	-	0.264
<i>Tetrameles nudiflora</i> (523)	-	0.173	-	0.447	1.494	1.990	-	-	-	4.104
<i>Cryptomeria japonica</i> (596)	-	-	-	0.578	-	-	-	-	-	0.678
Others (600)	-	0.694	-	-	0.747	-	-	-	-	1.441

Total : - 15.586 26.244 24.984 8.766 1.990 1.466 - - - 79.037

TABLE NO. 8.2.4.

SCALLOVIA (IN CCC-3) BY SPECIES AND DIAMETER CLASSES (in cm.) AT THE TIB. OF 3 INVENTORY.  
DIVISION - KALIFONG

-192-

STRATA -4

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia lebbek</i> (005)	-	0.142	-	-	1.225	-	-	-
<i>Anthocephalus cadamba</i> (013)	-	0.711	1.296	0.732	1.225	-	-	-
<i>Albizia stipulata</i> (021)	-	-	0.432	-	-	-	-	3.364
<i>Aphanius polystachya</i> (022)	-	1.991	1.296	-	-	-	-	0.432
<i>Amoora wallacii</i> (023)	-	0.142	0.432	-	-	-	-	3.287
<i>Alnus nepalensis</i> (037)	-	-	8.458	2.948	-	-	-	0.574
<i>Betula utilis</i> (071)	-	1.991	2.592	-	-	-	-	11.406
<i>Bombax ceiba</i> (073)	-	0.284	1.296	2.196	1.225	-	-	4.583
<i>Buxus wallaciana</i> (077)	-	0.427	-	-	-	-	-	5.001
<i>Chukrasia tabularis</i> (098)	-	2.559	0.432	-	-	-	-	0.427
<i>Cinnamomum cecidodaphne</i> (099)	-	0.142	-	-	-	-	-	2.591
<i>Castanopsis species</i> (100)	-	0.142	-	-	-	-	-	0.142
<i>Cassia siamea</i> (120)	-	3.555	-	-	-	-	-	3.555
<i>Dubouza sonneratoides</i> (170)	-	1.422	4.321	4.392	4.899	1.631	2.406	12.071
<i>Eucalyptus hybrid</i> (206)	-	0.142	-	-	-	-	-	0.142
<i>Erodia roxburghiana</i> (211)	-	0.142	-	-	-	-	-	0.142
<i>Garuga pinnata</i> (239)	-	0.142	-	-	-	-	-	0.142
<i>Lagerstroemia speciosa</i> (313)	-	0.995	0.432	-	-	-	-	1.427
<i>Lagerstroemia floribundae</i> (318)	-	0.284	0.432	-	-	-	-	0.716
<i>Michelia species</i> (323)	-	0.567	2.304	-	-	-	-	2.781
<i>Michelia doltsopa</i> (345)	-	0.284	0.864	-	-	-	-	1.149

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Mitchelia champaca</i> (362)	-	1.705	3.025	1.464	-	-	-	-	-	6.195
<i>Prunus species</i> (409)	-	C.160	-	-	-	-	-	-	-	0.160
<i>Shorea robusta</i> (462)	-	8.372	4.602	-	-	-	-	-	-	12.975
<i>Sterculia villosa</i> (463)	-	0.142	-	-	-	-	-	-	-	0.142
<i>Sterculia urens</i> (465)	-	0.142	-	-	-	-	-	-	-	0.142
<i>Symplocos apicata</i> (468)	-	0.142	-	-	-	-	-	-	-	0.142
<i>Syzygium cumini</i> (469)	-	0.142	-	0.732	-	-	-	-	-	0.674
<i>Sageretia oppositifolia</i> (474)	-	0.427	-	-	-	-	-	-	-	0.427
<i>Schima wallichii</i> (476)	-	6.114	5.617	0.732	-	-	-	-	-	12.463
<i>Tectona grandis</i> (510)	-	24.285	14.237	3.945	3.267	-	-	-	-	45.734
<i>Toona ciliata</i> (512)	-	0.142	-	-	-	-	-	-	-	0.142
<i>Terminalia tomentosa</i> (516)	-	0.427	1.296	-	-	-	-	-	-	1.723
<i>Terminalia myriocarpa</i> (517)	-	3.555	0.364	0.732	-	-	-	-	-	5.151
<i>Tetrameles nudiflora</i> (523)	-	-	-	0.732	-	-	-	-	-	3.138
<i>Cryptomeria japonica</i> (596)	-	7.854	3.592	-	-	-	-	-	-	11.746
<i>Cupressus kashmiriana</i> (599)	-	0.264	0.432	-	-	-	-	-	-	0.716
Others (600)	-	1.138	-	-	1.225	-	2.406	-	-	4.766

Total : - 71.098 56.554 18.506 13.055 1.631 7.219 - - - - 170.172

## /STEM TIMBER

TABLE NO. 8.2.5.

TOTAL VOLUME (IN CUB M3) BY SPECIES AND DIA-STER CLASSES (IN CUB M3) AT THE TIME OF ENTHROPY  
DIVISION - KAILILONG

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i> (005)	-	0.173	-	-	-	-	0.173
<i>Anthocephalus cadamba</i> (013)	-	3.117	1.053	-	-	-	4.170
<i>Ailanthus altissima</i> (030)	-	1.732	-	-	-	-	1.732
<i>Acrocerpus fraxinifolius</i> (041)	-	0.173	-	-	-	-	0.173
<i>Betula alnoides</i> (070)	-	0.693	-	-	-	-	0.693
<i>Betula utilis</i> (071)	-	0.173	0.526	-	-	-	0.699
<i>Bombar ce-be</i> (073)	-	1.212	0.526	-	-	-	1.739
<i>Chukrasia tabularis</i> (098)	-	0.173	-	-	-	-	0.173
<i>Cinnamomum species</i> (105)	-	0.187	-	-	-	-	0.187
<i>Calliocarpa arborea</i> (112)	-	0.173	0.526	-	-	-	0.699
<i>Cassia siamea</i> (120)	-	0.173	-	-	-	-	0.173
<i>Duabanga sonneratoides</i> (170)	-	1.559	3.158	6.241	-	-	10.957
<i>Falbergia sissoo</i> (181)	-	0.346	-	-	-	-	0.346
<i>Gmelina arborea</i> (246)	-	0.173	-	-	-	-	0.173
<i>Macaranga peltata</i> (352)	-	0.520	-	-	-	-	0.520
<i>Nichelia champaca</i> (362)	-	0.346	-	-	-	-	0.346
<i>Schima wallitchii</i> (476)	-	3.290	0.526	-	-	-	5.305
<i>Tectona grandis</i> (510)	-	14.145	5.356	-	-	-	26.914
<i>Terminalia myriocarpa</i> (517)	-	0.866	-	-	-	-	0.866
<i>Tetrameles nudiflora</i> (523)	-	0.173	-	-	-	-	0.173
<i>Cryptomeria japonica</i> (596)	-	4.165	0.557	-	-	-	4.723
<i>Cupressus cashmiriana</i> (599)	-	0.520	-	-	-	-	0.520
Others (600)	-	0.173	-	-	-	-	0.173
Total :	-	34.256	12.228	6.241	1.492	-	7.414
						-	6.631

TABLE NC, 9,1,1

DIVISION: DARJEELING

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia lebbeck</i> (005)	0.036	-	-	-	-	-	-	0.036
<i>Anthocephalus cadamba</i> (13)	-	-	-	-	-	-	-	0.041
<i>Acer nivale</i> (25)	-	-	0.032	-	-	-	-	0.032
<i>Ailanthus altissima</i> (30)	-	-	0.032	0.041	-	-	-	0.073
<i>Acer species</i> (35)	0.036	-	0.095	-	-	-	-	0.131
<i>Ailanthus nepalensis</i> (37)	-	0.044	0.085	0.224	0.092	0.328	-	0.784
<i>Acrocarpus fraxinifolius</i> (41)	-	-	-	0.075	0.241	-	-	0.315
<i>Abies webbiana</i> (048)	-	-	-	-	-	0.080	-	0.080
<i>Bombax ceiba</i> (073)	0.018	-	-	-	-	-	-	0.174
<i>Buxus wallichiana</i> (077)	0.018	0.082	0.063	-	-	-	-	0.163
<i>Castanopsis species</i> (100)	0.036	-	0.158	0.041	-	-	-	0.235
<i>Cinnamomum spp.</i> (105)	-	0.134	0.128	0.079	-	-	-	0.341
<i>Callicarpa arborea</i> (112)	-	-	0.032	-	-	-	-	0.032
<i>Callicarpa spp.</i> (119)	-	-	0.063	-	-	-	-	0.063
<i>Castanopsis hystrix</i> (122)	-	-	0.075	0.101	-	-	-	0.176
<i>Castanopsis indica</i> (123)	0.018	0.027	0.095	0.341	0.075	-	-	0.256
<i>Dubanga sonneratoides</i> (170)	-	0.082	0.032	0.247	0.523	0.481	0.949	0.626
<i>Dysoxylum binectariflorum</i> (171)	-	-	-	-	0.075	-	-	0.075
<i>Eurya japonica</i> (192)	0.108	0.027	-	-	-	-	-	0.135
<i>Erythrina indica</i> (201)	0.018	-	-	-	0.075	-	-	0.093
<i>Bucida buceras</i> (238)	0.018	0.058	0.032	-	-	-	-	0.104
<i>Gmelina arborea</i> (246)	-	-	0.032	0.082	0.149	0.160	-	0.424
<i>Laportea carenulata</i> (300)	-	-	0.032	-	-	-	-	0.032
<i>Litssea spp.</i> (308)	0.072	0.082	0.126	0.082	-	-	-	0.963
<i>Michelia spp.</i> (323)	0.330	1.059	0.368	-	-	-	-	1.757

## Species name with code

	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Machilus spp. (325)	0.195	0.342	0.719	0.538	0.128	-	-	-	-	1.923
Mallotus philippensis (330)	0.018	-	0.063	-	-	-	-	-	-	0.081
Morus laevigata (349)	-	0.027	0.126	0.041	0.075	-	-	-	-	0.270
Prunus spp. (409)	0.324	0.139	0.089	0.060	-	-	-	-	-	0.612
Quercus spp. (446)	0.054	-	-	0.082	0.149	0.080	-	-	-	0.566
Shorea robusta (462)	-	-	-	0.163	-	-	-	-	-	0.163
Sterculia alata (464)	-	-	-	0.041	0.075	0.080	-	-	-	0.196
Symplocos spicata (468)	0.162	0.137	0.032	-	-	-	-	-	-	0.230
Syzygium cumini (469)	0.018	-	-	-	-	-	-	-	-	0.018
Sapindus mukorossi (471)	-	0.027	-	-	-	-	-	-	-	0.027
Schima wallichii (476)	-	0.109	0.190	0.288	0.374	-	-	-	-	0.41
Tsuga brunoniensis (504)	-	0.055	0.190	0.041	-	-	-	-	-	0.286
Toona ciliata (512)	-	-	0.032	0.041	-	-	-	-	-	0.073
Terminalia myriocarpa (517)	-	0.055	0.221	0.371	-	0.160	-	-	-	0.807
Cryptomeria japonica (596)	0.041	0.542	1.139	4.270	7.249	2.583	-	-	-	16.824
Others (600)	0.180	0.191	0.253	0.165	0.149	0.160	-	-	-	1.099

T O T A L :      1.698      3.216      4.457      7.056      9.364      5.446      0.949      0.782      -      -      32.969

TABLE NO. 2.1.2

TECHNICAL SMALL WOOD VOLUME (IN M<sup>3</sup>) BY SIZES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - DARJEELING.

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Albizia lebbeck</i> (005)	0.034	-	-	-	-	-	-	-
<i>Amaria vaillichii</i> (023)	0.034	-	-	-	-	-	-	0.034
<i>Ailanthus altissima</i> grandis (030)	0.171	0.313	0.060	-	-	-	-	0.545
<i>Acer species</i> (035)	0.069	0.052	-	-	-	-	-	0.121
<i>Alnus nepalensis</i> (037)	-	0.035	0.244	0.214	-	-	-	0.758
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.060	0.079	-	-	-	0.139
<i>Abies pindrow</i> (047)	0.171	0.052	-	-	-	-	-	0.224
<i>Alnus species</i> (055)	-	-	0.060	-	-	-	-	0.060
<i>Areca triandra</i> (065)	-	-	0.060	-	-	-	-	0.060
<i>Bombax ceiba</i> (073)	-	-	0.060	-	-	-	-	0.214
<i>Bauhinia purpurea</i> (082)	0.034	-	0.060	-	-	-	-	0.095
<i>Bursera serratum</i> (093)	-	-	-	0.079	-	-	-	0.079
<i>Chukrasia tabularis</i> (098)	0.069	0.052	0.181	0.079	0.143	-	-	0.523
<i>Castanopsis species</i> (100)	0.137	0.553	0.442	0.079	-	-	-	1.576
<i>Cinnamomum species</i> (105)	0.560	0.128	-	-	-	-	-	0.688
<i>Callicarpa species</i> (119)	0.034	0.052	-	-	-	-	-	0.086
<i>Gentianopsis species</i> (400)	-	-	-	-	-	-	-	-
<i>Castanopsis hystrix</i> (122)	-	0.070	-	-	-	-	-	0.070
<i>Castanopsis indica</i> (123)	0.240	0.313	0.181	0.236	-	-	-	0.970
<i>Dusanga sonneratoides</i> (170)	-	0.104	0.181	0.393	0.285	-	-	0.964
<i>Eurya japonica</i> (192)	1.303	0.156	-	-	-	-	-	1.459
<i>Evodia roxburghiana</i> (211)	0.034	-	-	-	-	-	-	0.034
<i>Eucryphia populnea</i> (238)	0.686	2.815	1.207	0.315	0.143	0.153	-	5.318
<i>Garuga pinnata</i> (239)	0.069	-	0.060	-	-	-	-	0.129
<i>Jambose formosa</i> (288)	0.069	-	0.060	-	-	-	-	0.129
<i>Litsea species</i> (308)	0.103	0.052	-	-	-	-	-	0.155
<i>Michelia species</i> (323)	6.058	6.296	0.585	-	-	-	-	13.318
<i>Nachilus species</i> (325)	1.399	1.338	0.262	0.093	-	-	-	2.842
<i>Mallotus philippinus</i> (330)	0.069	-	-	-	-	-	-	0.069
<i>Nagaranga indica</i> (341)	-	0.052	-	-	-	-	-	0.052
<i>Nachilus macroantha</i> (351)	0.034	-	-	-	-	-	-	0.034

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Magnolia species</i> (364)	0.069	0.156	-	-	-	-	-	-	-	0.225
<i>Prunus species</i> (409)	0.475	0.331	0.085	-	-	-	-	-	-	0.892
<i>Pterospermum acerifolium</i> (419)	0.034	-	-	-	-	-	-	-	-	0.034
<i>Quercus laurinae</i> (441)	0.069	0.156	0.060	-	0.143	-	-	-	-	0.428
<i>Rhododendron</i> (8)	-	-	-	-	-	-	-	-	-	-
<i>Quercus species</i> (446)	0.343	0.417	0.121	0.236	-	-	-	-	-	1.116
<i>Rhododendron species</i> (449)	0.034	-	-	-	-	-	-	-	-	0.034
<i>Schima robusta</i> (462)	-	0.117	-	-	-	-	-	-	-	0.117
<i>Symplocos crataegoides</i> (468)	1.440	0.313	-	-	-	-	-	-	-	1.753
<i>Semecarpus anacardium</i> (472)	0.240	-	-	-	-	-	-	-	-	0.240
<i>Schima wallitchii</i> (476)	0.206	0.208	0.121	-	-	-	-	-	-	0.535
<i>Tsuga brunoniana</i> (504)	1.063	6.880	3.983	1.022	0.285	-	-	-	-	13.234
<i>Tsuga nudiflora</i> (509)	-	-	0.121	-	-	-	-	-	-	0.121
<i>Tectona grandis</i> (510)	-	0.736	1.207	0.411	-	-	-	-	-	2.355
<i>Toona ciliata</i> (512)	-	0.156	0.302	0.236	-	-	-	-	-	0.694
<i>Terminalia tomentosa</i> (516)	-	-	-	-	0.143	-	-	-	-	0.401
<i>Terminalia myriocarpa</i> (517)	-	0.573	0.845	0.472	0.143	-	-	-	-	2.331
<i>Terminalia citrina</i> (518)	-	-	-	-	0.143	-	-	-	-	0.143
<i>Tetrameles nudiflora</i> (523)	0.034	-	-	-	-	-	-	-	-	0.034
<i>Cephaelostachyum pergracile</i> (569)	-	-	-	0.079	-	-	-	-	-	0.079
<i>Cryptomeria japonica</i> (596)	0.481	3.080	8.494	14.344	9.985	4.455	0.259	-	-	41.098
Others (600)	0.583	0.365	0.302	0.079	-	-	-	-	-	1.587
<i>Pinus patula</i> (502)	0.514	1.355	-	-	-	-	-	-	-	1.369
<i>Phoebe attenuata</i> (603)	0.069	0.104	-	-	-	-	-	-	-	0.173
<i>Klaeckarpus sikkimensis</i> (504)	0.034	-	-	-	-	-	-	-	-	0.034
Total :	17.134	27.568	19.385	18.444	11.412	4.977	0.776	0.299	-	0.379

TABLE NO. 9.1.2.

TOTAL SMALL VOLUME (IN 100 M<sup>3</sup>) BY SPECIES & DIAM. CLASSES (IN CM.) AT THE TIME OF INVENTORY

## DIVISION: DARJEELING

## STRATA - 2

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbek</i> (005)	0.138	0.052	-	0.079	-	-	0.269
<i>Anthocephalus cadamba</i> (013)	-	0.052	0.121	-	-	-	0.173
<i>Ailanthus altissima</i> (030)	-	0.052	-	-	-	-	0.052
<i>Aer species</i> (035)	0.241	-	0.061	-	-	-	0.302
<i>Afnus nepalensis</i> (037)	0.438	1.358	0.899	0.215	-	-	2.910
<i>A rocarpus fraxinifolius</i> (041)	-	-	0.061	-	-	-	0.061
<i>Abies pindrow</i> (047)	0.688	0.209	0.061	-	-	-	0.958
<i>Albizia species</i> (054)	-	-	-	-	0.260	-	0.260
<i>Betula alnoides</i> (070)	0.103	-	0.424	0.395	-	-	0.922
<i>Bombar ceiba</i> (07)	-	-	-	0.079	-	-	0.079
<i>Bocenlia seprata</i> (091)	-	0.052	-	-	-	-	0.052
<i>Chukrasia tabularis</i> (098)	0.069	0.052	0.121	-	-	-	0.242
<i>Castanopsis species</i> (100)	0.516	0.314	-	-	-	-	0.830
<i>Cinnamomum species</i> (105)	0.796	0.129	0.082	-	-	-	1.006
<i>Callicarpa arborea</i> (112)	-	0.052	-	-	-	-	0.052
<i>Careya arborea</i> (116)	-	0.052	-	-	-	-	0.052
<i>Castanopsis indica</i> (123)	0.034	0.105	-	-	-	-	0.139
<i>Cleistanthus collinus</i> (133)	-	0.052	-	-	-	-	0.052
<i>Dubanga sonneratoides</i> (170)	-	0.157	0.061	0.395	0.286	-	0.899
<i>Eurya japonica</i> (192)	0.654	0.105	-	-	-	-	0.759
<i>Erodia roxburghiana</i> (211)	0.172	0.105	-	-	-	-	0.277
<i>Ficus spp.</i> (23)	-	-	0.061	-	-	-	0.061
<i>Bucplandia populnea</i> (238)	0.447	0.366	0.061	-	-	-	1.028
<i>Garuga pinnata</i> (239)	0.069	0.052	-	-	-	-	0.121
<i>Jambosa formosa</i> (2-8)	0.207	-	-	-	-	-	0.207

## Species code with name

	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Total
Diameter classes [in cm.]										109

<i>Juglans regia</i> (290)	0.034	-	-	-	-	-	-	-	-	0.034
<i>Litssea polyantha</i> (302)	-	-	0.061	-	-	-	-	-	-	0.061
<i>Litssea species</i> (308)	0.413	-	0.061	-	-	-	-	-	-	0.474
<i>Michelia species</i> (323)	2.773	2.029	-	-	-	-	-	-	-	4.801
<i>Machilus species</i> (325)	2.715	1.211	0.131	-	-	-	-	-	-	4.157
<i>Macaranga Indica</i> (341)	0.034	0.052	0.182	0.079	-	-	-	-	-	0.347
<i>Grewia abutilifolia</i> (349)	0.207	0.209	-	-	-	-	-	-	-	0.416
<i>Magnolia species</i> (364)	0.034	-	-	-	-	-	-	-	-	0.034
<i>Prunus species</i> (409)	0.239	0.057	-	-	-	-	-	-	-	0.305
<i>Quercus species</i> (446)	0.826	0.314	0.121	0.079	-	-	-	-	-	1.340
<i>Shorea robusta</i> (462)	0.977	3.172	0.778	0.312	-	-	-	-	-	5.239
<i>Sterculia alata</i> (454)	-	-	-	-	-	-	-	-	-	0.143
<i>Symplocos spicata</i> (468)	1.023	0.105	-	-	-	-	-	-	-	1.137
<i>Schima wallichii</i> (476)	0.654	0.680	0.242	-	-	-	-	-	-	1.576
<i>Stereosperma chelonoides</i> (478)	0.034	-	-	-	-	-	-	-	-	0.024
<i>Syzygium species</i> (492)	-	0.052	-	-	-	-	-	-	-	0.052
<i>Taxus baccata</i> (503)	0.034	-	-	-	-	-	-	-	-	0.034
<i>Tsuga bruniiana</i> (504)	0.103	0.994	0.363	-	-	-	-	-	-	1.461
<i>Terminalia bellierica</i> (506)	-	0.052	-	-	-	-	-	-	-	0.052
<i>Tectona grandis</i> (510)	0.026	0.158	0.064	-	-	-	-	-	-	0.248
<i>Terminalia elliptocarpa</i> (517)	0.034	0.262	0.182	0.079	-	-	-	-	-	0.557
<i>Cryptomeria Japonica</i> (596)	0.655	4.532	6.138	3.013	0.716	1.274	-	-	-	16.334
Others(600)	1.377	0.171	0.121	-	-	-	-	-	-	1.969

Total:

16.776	17.778	10.455	4.729	1.146	1.427	0.260	-	-	52.570
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TABLE No. 9.1.4.

TOTAL SMALL WOOD VOLUME (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY.  
DIVISION - DARBELLING  
STRATA-4.

Species name with code	Diameter class (in cm.)						100-109	Total
	10-19	20-29	30-39	40-49	50-59	60-69		
<i>Alnus</i> <i>lucida</i> (026)	-	-	-	0.182	-	-	-	0.182
<i>Acer</i> species (035)	0.207	-	-	-	-	-	-	0.207
<i>Alnus</i> <i>epelensis</i> (037)	0.585	0.255	-	-	-	-	-	0.841
<i>Alnus</i> species (055)	0.207	0.315	-	-	-	-	-	0.522
<i>Bauhinia</i> species (069)	0.104	-	0.364	-	-	-	-	0.468
<i>Betula</i> <i>alnoidea</i> (070)	0.104	-	-	-	-	-	-	0.104
<i>Bursera</i> <i>serratum</i> (093)	-	-	0.182	0.237	-	-	-	0.420
<i>Casuaropsis</i> species (100)	1.657	0.472	-	-	-	-	-	2.129
<i>Cinnamomum</i> species (105)	1.830	0.193	-	-	-	-	-	2.024
<i>Careya</i> <i>arborea</i> (116)	0.104	-	-	-	-	-	-	0.104
<i>Castanopsis</i> <i>indice</i> (123)	1.242	0.157	-	-	-	-	-	1.400
<i>Dusanga sonneratoides</i> (170)	-	-	0.182	-	-	-	-	0.182
<i>Eucalyptus</i> <i>hybrid</i> (206)	0.207	0.157	-	-	-	-	-	0.364
<i>Evodia</i> <i>robburghiana</i> (211)	0.104	-	-	-	-	-	-	0.104
<i>Ficus</i> <i>populnea</i> (238)	1.346	-	-	-	-	-	-	1.346
<i>Juglans</i> <i>regia</i> (240)	0.311	0.157	-	-	-	-	-	0.468
<i>Mitchella</i> species (323)	3.219	-	-	-	-	-	-	3.219
<i>Macillus</i> species (325)	1.549	-	-	-	-	-	-	1.549
<i>Polyalthia</i> <i>cerasoidea</i> (396)	-	-	0.182	-	-	-	-	0.182
<i>Prunus</i> species (409)	0.574	-	-	-	-	-	-	0.574
<i>Quercus</i> species (446)	5.487	0.315	-	-	-	-	-	5.802

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Sorbus robusta</i> (462)	2.203	3.034	0.468	-	-	-	-	-
<i>Sorbus aucuparia</i> (468)	1.967	0.157	-	-	-	-	-	-
<i>Sorbus brunnescens</i> (504)	2.485	2.203	0.152	-	-	-	-	-
<i>Sorbus grandis</i> (510)	9.836	5.056	-	-	-	-	-	-
<i>Sorbus torminalis</i> (516)	0.104	-	-	-	-	-	-	-
<i>Sorbus japonica</i> (596)	14.070	21.734	7.055	0.475	0.431	-	-	-
<i>Ostrya carpinifolia</i> (600)	0.621	-	-	-	-	-	-	-
Total :	50.121	35.207	8.778	0.712	0.431	-	0.781	-
						-	-	96.031

TABLE NO. 90-1.

TOTAL SMALL WOOD YOUNGS (IN 000 m<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) AT THE TIME OF INVENTORY  
DIVISION - KAILIMPONG

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Anthocephalus cadamba</i> (013)	-	-	-	-	0.098	-	-	-
<i>Aphanamixis polystachya</i> (022)	0.021	0.097	-	-	0.049	-	-	0.098
<i>Amoora wallichii</i> (023)	0.064	0.097	0.038	0.049	-	-	-	0.168
<i>Alnus nepalensis</i> (037)	0.815	-	0.203	0.133	-	-	-	0.248
<i>Acrocarpus fraxinifolius</i> (041)	-	-	0.038	0.147	-	-	-	0.151
<i>Amoore species</i> (063)	-	-	0.075	-	-	-	-	0.185
<i>Betula alnoidea</i> (070)	-	-	-	-	0.089	-	-	0.075
<i>Betelcheedia assamica</i> (085)	-	0.032	-	-	-	-	-	0.089
<i>Cinnamomum cecigodappane</i> (099)	-	-	-	-	0.089	0.095	-	0.184
<i>Castanopsis species</i> (100)	-	-	-	-	0.089	-	-	0.089
<i>Cinnamomum species</i> (105)	-	-	0.101	0.374	-	-	-	0.475
<i>Callicarpa arborea</i> (112)	-	-	-	0.147	-	-	-	0.147
<i>Callicarpa species</i> (119)	0.021	-	-	-	-	-	-	0.021
<i>Gestanoopsis indica</i> (123)	-	-	-	-	-	-	-	0.186
<i>Dusabanga sonneratoides</i> (170)	-	0.065	0.601	1.028	0.688	0.286	-	2.869
<i>Engelhardtia spicata</i> (200)	-	-	0.038	-	-	-	-	0.038
<i>Gmelina arborea</i> (246)	-	-	0.038	-	-	-	-	0.038
<i>Holarrrhena antidysenterica</i> (266)	0.021	-	0.032	-	-	-	-	0.054
<i>Jambosa formosa</i> (288)	-	0.032	0.038	-	-	-	-	0.070
<i>Lagerstroemia parviflora</i> (299)	-	0.032	-	-	-	-	-	0.032

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Litsea species</i> (308)	0.021	0.032	0.038	-	-	-	-	-	-	0.091
<i>Michelia species</i> (323)	-	0.045	0.109	0.051	-	-	-	-	-	0.306
<i>Morus laevigata</i> (349)	-	0.032	-	-	-	-	-	-	-	0.032
<i>Michelia champaca</i> (362)	-	0.032	0.338	0.049	0.178	0.191	-	-	-	0.768
<i>Prunus species</i> (409)	0.030	-	0.053	-	-	-	-	-	-	0.082
<i>Phoebe attenuata</i> (423)	-	0.065	0.301	0.049	-	0.095	-	-	-	0.510
<i>Schleichera tri-juga</i> (461)	-	0.032	-	-	-	-	-	-	-	0.032
<i>Shorea robusta</i> (462)	0.043	-	0.290	0.871	0.105	-	-	-	-	1.310
<i>Symplocos spicata</i> (463)	-	0.032	-	-	-	-	-	-	-	0.032
<i>Schima wallichii</i> (476)	0.064	0.227	0.301	0.441	0.622	0.322	-	-	-	2.358
<i>Terminalia belerica</i> (506)	0.043	0.032	0.038	-	-	-	-	-	-	0.113
<i>Toona ciliata</i> (512)	-	-	-	0.093	0.089	-	-	-	-	0.157
<i>Terminalia tomentosa</i> (516)	0.021	0.065	0.038	0.049	-	-	-	-	-	0.173
<i>Terminalia myriocarpa</i> (517)	-	0.162	0.489	0.539	0.089	-	-	-	-	1.276
<i>Tetrameles nudiflora</i> (523)	-	0.032	-	-	-	0.161	-	-	-	0.194
<i>Wrightia tomentosa</i> (538)	-	0.390	0.075	0.049	-	-	-	-	-	0.049
Others (600)	-	-	-	0.098	-	-	-	-	-	0.563

Total :                    1.165    1.671    3.236    4.319    2.237    1.049    0.483    0.126    -    -    14.348



Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
Bucania posilne (238)	0.061	0.699	0.466	-	-	-	1.246
Iarus pinnata (239)	-	-	0.054	-	-	-	0.054
Holarrhena antidysenterica (266)	-	0.047	-	-	-	-	0.047
Jambosa formosa (268)	0.153	0.140	0.054	-	-	-	0.347
Lagerstroemia parviflora (299)	-	0.093	0.108	-	-	-	0.201
Lophopetalum Weitzelianum (310)	-	-	-	-	0.128	-	0.128
Lagerstroemia speciosa (313)	0.490	2.003	1.534	0.422	-	-	4.750
Lagerstroemia florregimen (318)	0.031	0.093	0.054	-	-	-	0.178
Lichelia species (323)	0.067	1.181	0.785	0.221	-	-	2.273
Lachilius species (325)	0.042	0.049	-	-	-	-	0.090
Macaranga indica (341)	-	-	0.108	0.070	-	-	0.178
Mitchelia champaca (362)	-	0.699	1.025	1.054	0.638	0.274	3.956
Magnolia species (364)	-	0.047	-	-	-	-	0.047
Ostodes paniculatus (377)	-	0.047	-	-	-	-	0.047
Phoebe hainesiana (389)	-	-	0.054	0.070	-	-	0.124
Prunus communis (407)	-	0.047	-	-	-	-	0.047
Prunus species (409)	0.043	0.119	0.227	-	-	-	0.388
Phoebe attenuata (423)	-	0.047	0.539	0.141	-	-	0.727
Spondias pinrata (460)	-	0.047	0.054	-	-	-	0.101
Shorea robusta (462)	0.031	1.255	6.096	2.779	0.605	-	10.766
Syzygium cumini (469)	-	0.186	-	-	-	-	0.166
Syzygium enacardium (472)	0.051	-	0.378	0.281	-	0.137	0.31
Schima wallichii (476)	0.215	0.233	-	-	-	0.251	1.475
Terminalia granulata (505)	-	-	0.162	-	-	-	0.162
Trewia nudiflora (509)	-	0.047	-	-	-	-	0.047
Tectona grandis (510)	0.163	0.141	1.307	1.655	-	-	3.266
Toona calittara (512)	-	0.093	0.216	-	0.255	-	0.795
Terminalia tomentosa (516)	0.092	0.047	0.270	0.351	0.128	-	0.887
Terminalia myriocarpa (517)	-	0.373	1.564	0.773	0.638	0.274	3.622
Tetrameles nudiflora (523)	-	0.047	-	0.070	0.255	0.137	0.509
Wrightia tomentosa (538)	-	0.054	-	-	-	-	0.054
Daemonorops jenkinsianus (593)	-	0.874	2.825	2.428	3.060	0.274	10.492
Cryptomeria japonica (596)	0.031	0.699	0.593	0.211	-	0.137	2.069
Others (600)	0.429	0.699	0.593	0.211	-	-	-
Total :	2.419	10.863	24.465	17.544	10.649	3.836	0.953
						1.067	-
						-	.71.735

**TOTAL SMALL WOOD VOLVUS (L. CCC. 2) ET SECTES AND DEA STATE CLASSSES (IN C.) AS AT TIME OF INVENTORY  
STRAGA 3  
DIVISION - KALIMONG**

Species name with code	Diameter class (in cm.)									Total
	10-15	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Lagerstroemia speciosa</i> (313)	0.252	0.064	-	-	-	-	-	-	-	0.316
<i>Lagerstroemia florreginei</i> (318)	-	0.064	0.074	-	-	-	-	-	-	0.138
<i>Macharia indica</i> (341)	-	0.363	0.295	0.096	-	-	-	-	-	0.774
<i>Michelia doltsopa</i> (345)	-	0.126	-	-	-	-	-	-	-	0.126
<i>Morus laevigata</i> (349)	0.294	-	-	-	-	-	-	-	-	0.294
<i>Mucaranga peltata</i> (352)	-	0.546	0.191	0.148	0.096	-	-	-	-	0.435
<i>Ostodes paniculatus</i> (37)	* 0.546	0.191	-	-	-	-	-	-	-	0.737
<i>Podocarpus nerifolia</i> (397)	-	0.128	-	-	-	-	-	-	-	0.128
<i>Frunus species</i> (409)	-	0.081	-	-	-	-	-	-	-	0.081
<i>Populus species</i> (410)	0.294	0.128	-	-	-	-	-	-	-	0.421
<i>Pterospermum acerifolium</i> (419)	-	0.064	-	-	-	-	-	-	-	0.064
<i>Syzygium cumini</i> (469)	0.042	0.064	-	-	-	-	-	-	-	0.106
<i>Schima wallacii</i> (476)	0.252	0.255	0.146	0.269	-	-	-	-	-	1.260
<i>Trewia nudiflora</i> (509)	-	0.064	-	-	-	-	-	-	-	0.064
<i>Tectona grandis</i> (510)	0.096	0.129	0.311	0.064	-	-	-	-	-	0.619
<i>Tungs ciliata</i> (512)	0.546	0.255	-	-	-	-	-	-	-	0.801
<i>Terminalia trilocarpa</i> (517)	0.965	2.998	0.739	0.365	0.175	-	-	-	-	5.261
<i>Trema cristallis</i> (519)	-	0.074	-	-	-	-	-	-	-	0.074
<i>Tetrameles nudiflora</i> (523)	-	0.128	-	0.096	0.349	0.375	-	-	-	0.948
<i>Cryptomeria japonica</i> (596)	-	-	-	0.222	-	-	-	-	-	0.222
Others (500)	0.61	0.510	-	-	0.175	-	-	-	-	1.356
Total :	11.915	12.822	6.221	4.668	1.652	0.375	0.317	-	-	37.968

TABLE VC, S, 2, b,

TOTAL SMALL TUSCULUM ( $\text{m}^2$ ) BY SPECIES AND DIAM. CLASSES<sup>a</sup> IN THE AREA OF INVENTORY

## DIVISION: VALENCIA

## STATA - b

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia lebbeck</i> (C05)	-	0.105	-	-	-	0.286	-	-	-	0.391
<i>Anthocephalus cadamba</i> (C12)	0.128	0.523	0.363	0.158	0.286	-	-	-	-	1.468
<i>Albizia stipulata</i> (021)	-	-	0.121	-	-	-	-	-	-	0.121
<i>Aphanius</i> sp. <i>polystachya</i> (C-2)	0.550	1.464	0.363	-	-	-	-	-	-	2.078
<i>Amoora wallichii</i> (023)	0.275	0.105	0.121	-	-	-	-	-	-	0.501
<i>Ailanthus altissima</i> (03C)	0.344	-	-	-	-	-	-	-	-	0.344
<i>Alnus nepalensis</i> (037)	0.397	1.527	1.633	0.429	-	-	-	-	-	3.667
<i>Amoora</i> species(C63)	0.512	-	-	-	-	-	-	-	-	0.413
<i>Betula utilis</i> (071)	0.126	1.464	0.727	-	-	-	-	-	-	2.328
<i>Bombax ceiba</i> (073)	0.236	0.209	0.363	0.473	0.286	-	-	-	-	1.538
<i>Buxus wallichiana</i> (077)	0.275	0.314	-	-	-	-	-	-	-	0.589
<i>Chu'trassia tahularia</i> (002)	1.514	1.882	0.121	-	-	-	-	-	-	3.517
<i>Cinnamomum cecigodarne</i> "C05"	0.344	0.105	-	-	-	-	-	-	-	0.449
<i>Castanopsis</i> species(10G)	0.129	0.105	-	-	-	-	-	-	-	0.242
<i>Callicarpa arborea</i> (112)	0.126	-	-	-	-	-	-	-	-	0.128
<i>Cassia siamea</i> (120)	6.195	2.614	-	-	-	-	-	-	-	8.807
<i>Dillenia pentagyna</i> (164)	0.06c	-	-	-	-	-	-	-	-	0.069
<i>Dubanga sonneratoides</i> "1-0"	0.206	1.046	1.211	0.947	1.145	0.307	0.519	-	-	5.381
<i>Dalbergia sissoo</i> (181)	0.069	-	-	-	-	-	-	-	-	0.069
<i>Eucalyptus hybrid</i> (206)	0.069	0.105	-	-	-	-	-	-	-	0.173
<i>Evodia roxburghiana</i> (211)	0.069	0.105	-	-	-	-	-	-	-	0.173
<i>Garuga pinnata</i> (239)	-	0.105	-	-	-	-	-	-	-	0.105
<i>Lagerstroemia parviflora</i> (205)	0.069	-	-	-	-	-	-	-	-	0.069
<i>Lagerstroemia speciosa</i> (313)	0.206	0.732	0.121	-	-	-	-	-	-	1.060

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Lagerstroemia florregimel</i> (318)	0.413	0.209	0.121	-	-	-	-	-	-	0.743
<i>Michelia species</i> (322)	-	0.468	0.470	-	-	-	-	-	-	0.938
<i>Michelia doltsopa</i> (345)	0.688	0.209	0.242	-	-	-	-	-	-	1.139
<i>Michelia champaca</i> (362)	-	0.619-	1.255-	0.848-	0.316-	-	-	-	-	3.037
<i>Prunus species</i> (409)	0.191	0.133	-	-	-	-	-	-	-	0.324
<i>Shorea robusta</i> (462)	8.018	9.629	1.866	-	-	-	-	-	-	19.512
<i>Sterculia villosa</i> (463)	-	0.105	-	-	-	-	-	-	-	0.105
<i>Sterculia urens</i> (465)	-	0.105	-	-	-	-	-	-	-	0.105
<i>Symplocos spicata</i> (468)	-	0.105	-	-	-	-	-	-	-	0.400
<i>Syzygium cumini</i> (469)	0.128	0.105	-	-	0.158	-	-	-	-	0.469
<i>Sapindus mukorossi</i> (471)	0.069	-	-	-	-	-	-	-	-	0.658
<i>Sageretia oppositifolia</i> (474)	0.244	0.314	-	-	-	-	-	-	-	10.632
<i>Schima wallichii</i> (476)	4.403	4.497	1.574	0.158	-	-	-	-	-	20.559
<i>Tectona grandis</i> (510)	5.699	10.566	3.443	0.550	-	-	-	-	-	0.173
<i>Toona ciliata</i> (512)	0.069	0.105	-	-	-	-	-	-	-	0.746
<i>Terminalia tomentosa</i> (516)	0.069	0.314	0.363	-	-	-	-	-	-	4.322
<i>Terminalia myriocarpa</i> (517)	1.307	2.614	0.242	0.158	-	-	-	-	-	0.746
<i>Tetrameles nudiflora</i> (523)	0.069	-	0.158	-	-	0.519	-	-	-	6.565
<i>Cryptomeria japonica</i> (596)	2.156	2.953	1.457	-	-	-	-	-	-	1.018
<i>Cupressus kashmiriana</i> (599)	0.68-	0.209	0.121	-	-	0.286	-	0.519	-	2.225
Others(601)	0.68-	0.732	-	-	-	-	-	-	-	0.242-
<i>Pinus species</i> (601)	0.138	0.105	-	-	-	-	-	-	-	-
Total:	37.283	47.537	15.891	3.504	2.290	0.307	1.558	-	-	108.370

TABLE NO. 6212.

TOTAL SMALL TREES (IN 000 M<sup>3</sup>) IN SPECIES AND STAY. CLASSES (IN CM.) AT THE END OF JUNE

## DIVISION: KALIFONG

STATE-5

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Albizia lebbeck</i> (005)	-	0.127	-	-	-	-	0.127
<i>Anthocephalus caudatus</i> (011)	1.844	2.293	0.295	-	-	-	4.431
<i>Ailanthus altissima</i> (030)	7.458	1.274	-	-	-	-	9.722
<i>Artocarpus integrifolia</i> (028)	0.084	-	-	-	-	-	0.084
<i>Acrocarpus fraininfolius</i> (C41)	0.168	0.127	-	-	-	-	0.295
<i>Albizia</i> sp. <sup>es</sup> (054)	0.084	-	-	-	-	-	0.084
<i>Betula alnooides</i> (070)	0.084	0.509	-	-	-	-	0.593
<i>Betula utilis</i> (071)	0.168	0.127	0.147	-	-	-	0.442
<i>Bombax ceiba</i> (073)	0.503	0.892	0.147	-	-	-	1.542
<i>Chukrasia tabularis</i> (C98)	1.760	0.127	-	-	-	-	1.887
<i>Cas tanopsis</i> sp. <sup>ecies</sup> (100)	0.168	-	-	-	-	-	0.168
<i>Cinnamomum</i> sp. <sup>ecies</sup> (105)	0.114	0.156	-	-	-	-	0.270
<i>Callicarpa arborea</i> (112)	0.251	0.127	0.147	-	-	-	0.526
<i>Cassia siamea</i> (120)	0.587	0.127	-	-	-	-	0.714
<i>Cupressus torulosa</i> (145)	0.084	-	-	-	-	-	0.084
<i>Cornus macrophylla</i> (151)	0.084	-	-	-	-	-	0.084
<i>Dubanga sonneratoides</i> (170)	0.878	1.146	0.885	1.345	-	-	4.215
<i>Dalbergia sissoo</i> (181)	1.341	0.255	-	-	-	-	1.596
<i>Erodia roxburghiana</i> (211)	0.084	-	-	-	-	-	0.084
<i>Emblema officinalis</i> (222)	0.084	-	-	-	-	-	0.084
<i>Bucplandia populnea</i> (238)	0.168	-	-	-	-	-	0.168
<i>Garuga pinnata</i> (239)	0.335	-	-	-	-	-	0.335
<i>Gmelina arborea</i> (246)	0.084	0.127	-	-	-	-	0.211

Species name with code	Diameter classes(in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Holarrhena antidysenterica</i> (266)	0.084	-	-	-	-	-	-	-	-	0.084
<i>Lagerstroemia parviflora</i> (299)	0.251	-	-	-	-	-	-	-	-	0.251
<i>Litsea species</i> (308)	0.084	-	-	-	-	-	-	-	-	0.084
<i>Lagerstroemia speciosa</i> (312)	0.335	-	-	-	-	-	-	-	-	0.335
<i>Michelia species</i> (323)	1.421	-	-	-	-	-	-	-	-	1.421
<i>Nachilus species</i> (325)	0.114	-	-	-	-	-	-	-	-	0.114
<i>Mitragyna parvifolia</i> (331)	0.084	-	-	-	-	-	-	-	-	0.084
<i>Macaranga peltata</i> (352)	0.168	0.382	-	-	-	-	-	-	-	0.550
<i>Michelia champaca</i> (362)	1.844	0.255	-	-	-	-	-	-	-	2.098
<i>Quercus species</i> (446)	0.335	-	-	-	-	-	-	-	-	0.335
<i>Shorea robusta</i> (462)	6.539	-	-	-	-	-	-	-	-	6.539
<i>Sageretia oppositifolia</i> (474)	0.084	-	-	-	-	-	-	-	-	0.084
<i>Schima wallichii</i> (476)	8.966	2.420	0.147	-	-	-	-	-	-	11.883
<i>Trewia nudiflora</i> (509)	0.168	-	-	-	-	-	-	-	-	0.168
<i>Tectona grandis</i> (510)	11.082	6.682	1.208	-	-	-	-	-	-	19.161
<i>Terminalia tomentosa</i> (516)	0.084	-	-	-	-	-	-	-	-	0.084
<i>Terminalia myriocarpa</i> (517)	4.106	0.637	-	-	-	-	-	-	-	4.742
<i>Tetrameles nudiflora</i> (523)	-	0.127	-	-	-	-	-	-	-	0.127
<i>Cryptomeria japonica</i> (596)	5.146	1.984	0.232	-	-	-	-	-	-	7.363
<i>Cupressus-kashmiriana</i> (599)	0.16	0.382	-	-	-	-	-	-	-	0.550
Others(600)	0.670	0.127	-	-	-	-	-	-	-	0.798
<i>Pinus species</i> (601)	0.084	-	-	-	-	-	-	-	-	0.084
Total:	58.186	20.413	3.400	1.345	0.349	-	-	-	-	83.694

**TABLE NO. 10.1.1.**  
**TOTAL STUMP VOLUME (IN CUM3) BY SPECIES AND DIAMETER CLASSES (IN CM.)**

**DIvision: PARJEELING**      **MARKEd FOR THINNING AFTER INVENTORY**

**STRATA 1.**

Species name with code	Diameter classes (in cm.)						Total			
	10-19	20-29	30-39	40-49	50-59	60-69				
<i>Albizia species(054)</i>	-	0.001	0.001	0.002	0.003	-	0.008			
<i>Bombax ceiba(073)</i>	-	0.001	-	-	-	-	0.001			
<i>Castanopsis hystrix(122)</i>	-	0.001	-	-	-	-	0.001			
<i>Castanopsis indica(123)</i>	-	0.009	0.040	0.035	0.008	0.004	0.097			
<i>Castanopsis aronata(124)</i>	0.002	0.041	0.047	0.017	0.017	-	0.123			
<i>Toona serrata(511)</i>	-	0.001	-	0.002	-	-	0.003			
<i>Toona ciliata(512)</i>	-	-	-	-	0.004	0.005	0.009			
<i>Chukrasia tabularis(098)</i>	-	0.001	0.001	-	0.003	-	0.005			
<i>Dalium trabeatosiculum(158)</i>	-	0.002	0.007	0.011	-	0.005	0.026			
<i>Dubabanga grandiflora(184)</i>	-	0.009	0.036	0.027	0.011	0.012	0.095			
<i>Erythrina species(280)</i>	-	0.011	0.016	0.10	0.003	-	0.041			
<i>Grewina arborea(246)</i>	-	0.001	0.006	0.004	0.003	-	0.015			
<i>Machilus species(325)</i>	-	-	0.002	-	-	-	0.002			
<i>Morus laevigata(349)</i>	-	0.003	0.009	0.002	-	-	0.014			
<i>Saurinaria nepalensis(502)</i>	-	-	0.001	-	-	-	0.001			
<i>Schima wallitchii(476)</i>	-	0.009	0.015	0.004	-	-	0.028			
<i>Shorea robusta(462)</i>	-	0.002	-	-	-	-	C.002			
<i>Terminalia tomentosa(516)</i>	-	0.001	-	-	-	-	0.001			
<i>Terminalia myriocarpa(517)</i>	0.001	0.009	0.010	0.002	-	-	0.022			
<i>Tetrameles nudiflora(523)</i>	-	-	0.001	0.002	-	C.004	0.000			
<i>Theespesia populnea(689)</i>	-	-	0.001	-	-	-	0.001			
<i>Others(600)</i>	0.002	0.018	0.025	0.025	0.003	0.004	0.081			
Total:	-	0.007	0.120	0.216	0.146	0.050	0.033	0.015	-	0.587

TOTAL STEM TIMBER VOLUME (IN M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
DIVISION - DARJEELING STRATA-2

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Adina sessilifolia</i> (020)	-	-	0.001	-	-	-	-
<i>Ailanthus altissima</i> (035)	-	-	-	0.001	-	-	-
<i>Albizia species</i> (054)	-	-	0.002	0.004	0.005	-	0.001
<i>Bassia latifolia</i> (068)	-	-	0.001	-	-	-	0.016
<i>Betispermum miersanthus</i> (072)	-	-	0.001	-	-	-	0.001
<i>Bombax ceiba</i> (073)	-	-	0.002	0.001	0.010	0.006	0.020
<i>Boswellia serrata</i> (074)	-	-	0.001	-	-	-	0.001
<i>Canarium resiniferum</i> (102)	-	-	0.001	-	-	-	0.001
<i>Carallia brachistia</i> (141)	-	-	0.001	-	-	-	0.001
<i>Castanopsis aronata</i> (124)	-	0.001	0.023	0.019	0.005	-	0.048
Toona serrata (511)	-	0.001	0.029	0.043	0.010	0.010	0.093
Toona ciliata (512)	-	0.001	0.020	0.017	0.007	0.003	0.050
<i>Chukrasia tabularis</i> (098)	-	0.005	0.046	0.019	0.002	0.003	0.075
<i>Cinnamomum tamala</i> (150)	-	-	0.002	-	-	-	0.002
<i>Dubanga grandiflora</i> (184)	-	0.001	0.082	0.194	0.116	0.064	0.017
<i>Erythrina species</i> (280)	-	-	0.001	0.006	0.007	-	0.014
<i>Erythroxylon monogynum</i> (203)	-	-	-	0.001	-	-	0.001
<i>Gmelina arborea</i> (246)	-	-	0.005	0.006	0.015	0.013	0.043
<i>Ilex species</i> (281)	-	0.001	-	0.001	-	-	0.002
<i>Juglans regia</i> (290)	-	-	0.002	-	-	-	0.002
<i>Lagerstroemia perviflora</i> (299)	-	0.001	0.001	-	0.002	-	0.004

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Michelia champaca</i> (362)	-	0.001	0.003	-	0.002	-	-	-
<i>Morus laevigata</i> (349)	-	0.027	0.322	0.005	-	-	-	0.054
<i>Saurauia nepalensis</i> (502)	-	0.002	0.001	-	-	-	-	0.003
<i>Schima wallichii</i> (476)	-	0.001	0.015	0.004	-	-	-	0.020
<i>Shorea robusta</i> (462)	-	0.176	0.140	0.051	0.017	0.006	-	0.393
<i>Stereospermum aveolens</i> (471)	-	-	-	-	-	-	-	-
<i>Talauma mollucarpa</i> (522)	-	0.001	-	-	-	-	-	0.001
<i>Tectonia grandis</i> (510)	-	0.124	0.153	0.035	0.009	-	-	0.332
<i>Terminalia bellarica</i> (506)	-	-	-	-	-	0.005	-	0.005
<i>Terminalia tomentosa</i> (516)	-	0.003	0.004	0.002	-	-	-	0.009
<i>Terminalia myriocarpa</i> (517)	-	0.014	0.118	0.069	0.024	0.006	0.005	0.236
<i>Terminalia nudiflora</i> (523)	-	0.008	0.059	0.002	0.010	-	0.006	0.034
Others (600)	0.010	0.080	0.361	0.024	0.016	0.005	-	0.196
Total :	-	0.350	0.770	0.752	0.265	0.138	0.029	2.147

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TABLE NO. 10.1.2.  
TOTAL STEM TIMBER VOLUME (IN 000m<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY

DIVISION: PARJEELING

STRATA - 2

Species name with code	Diameter classes (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Albizia species(054)	-	-	-	0.004	-	-	-	0.004
Amoora species(063)	-	-	-	0.001	0.002	-	-	0.004
Anthocephalus cadamba(065)	-	-	-	0.004	-	-	-	0.004
Betula alnooides(070)	-	-	-	0.001	-	-	-	0.001
Castanopsis aronata(124)	-	-	-	0.004	-	-	-	0.004
Chukrasia tabularis(098)	-	-	-	0.002	-	-	-	0.002
Madhuca latifolia(226)	-	-	-	0.026	0.039	0.010	0.005	0.082
Dubanga grandiflora(184)	-	-	-	0.001	0.002	0.004	-	0.008
Erythrina species(280)	-	-	-	0.004	-	-	-	0.013
Gmelina arborea(246)	-	-	-	0.004	0.002	0.007	-	0.007
Schina wallichii(476)	-	-	-	-	-	-	-	-
Shorea robusta(462)	-	-	-	0.005	0.002	-	-	-
Calamus endamanicus(570)	-	0.003	0.003	0.005	-	-	-	0.017
Terminalia tormentosa(516)	-	-	0.002	-	-	-	-	0.002
Terminalia myriocarpa(517)	-	-	0.009	-	-	-	-	0.009
Tetrameles nudiflora(523)	-	-	0.001	-	-	-	-	0.001
Others(600)	-	-	0.010	0.006	-	-	-	0.016
Total:	-	0.020	0.068	0.066	0.017	0.005	-	0.176

1'000

TABLE NO. 10.1.4.

TOTAL STEM TIMBER VOLUME (M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
DIVISION - DARJIBELING

-224-  
STRATA-4

SPECIES NAME WITH CODE	DIAMETER CLASS (IN CM.)							TOTAL			
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	
Bombax ceiba (073)	-	-	0.003	-	0.003	-	-	-	-	-	0.006
Cinnamomum tamala (150)	-	-	-	0.002	-	-	-	-	-	-	0.002
Cordia species (138)	-	-	0.001	-	-	-	-	-	-	-	0.001
Dusanga grandiflora (184)	-	-	-	0.005	-	-	-	-	-	-	0.005
Shorea robusta (462)	-	0.008	0.003	-	-	-	-	-	-	-	0.011
Fectona grandis (510)	-	0.117	0.010	-	-	-	-	-	-	-	0.127
Terminalia myricarpa (517)	-	-	0.001	0.002	-	-	-	-	-	-	0.003
Others (600)	-	0.001	0.001	-	-	-	-	-	-	-	0.002
Total :	-	0.127	0.019	0.009	0.003	-	-	-	-	-	0.158

TABLE NO. 10,1,5.

TOTAL STEM FIBER VOLUME (cu.m) BY SPECIES AND DIAMETER CLASSES (in cm.) MARKED FOR THINNING AFTER INVENTORY.  
DIVISION - DAJEERLING  
STRATA-5

-225-

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia species</i> (054)	-	-	-	-	-	-	-	-	-	-
<i>Areca triandra</i> (065)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Cerallis integrifrons</i> (107)	-	-	0.002	-	-	-	-	-	-	0.002
<i>Cassia nodosa</i> (152)	-	-	0.003	-	-	0.005	-	-	-	0.008
<i>Castanopsis eronata</i> (124)	0.002	0.030	0.030	0.015	0.005	-	-	-	-	0.082
<i>Cinnamomum tamala</i> (150)	-	-	0.007	-	-	-	-	-	-	0.007
<i>Dubاهنگ Grandiflora</i> (184)	0.001	0.008	0.005	-	-	-	-	-	-	0.014
<i>Erythrina species</i> (280)	-	0.004	0.009	0.006	-	-	-	-	-	0.021
<i>Gmelina elliptica</i> (246)	-	0.004	-	-	0.003	-	-	-	-	0.009
<i>Saurina repens</i> (502)	-	0.001	0.002	-	-	-	-	-	-	0.004
<i>Schima wallacii</i> (476)	0.001	0.015	0.016	-	0.003	-	-	-	-	0.037
<i>Shorea robusta</i> (462)	0.009	0.031	0.026	-	-	0.014	-	-	-	0.081
<i>Tectona grandis</i> (510)	0.007	0.002	-	-	-	-	-	-	-	0.009
<i>Terminalia belerica</i> (506)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Terminalia tonentosae</i> (516)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Terminalia triocarpa</i> (517)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Tetrameles nudiflora</i> (523)	-	0.003	-	0.004	-	-	-	-	-	0.003
Others (60C)	0.001	0.005	0.002	0.004	-	-	-	-	-	0.012
Total :	-	0.023	0.113	0.099	0.027	0.025	0.014	-	-	0.296

TABLE NO. 10.2.1

TOTAL STEM TIMBER VOLUME ( IN 000M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES( IN CM.) DIVISION: KALIMPONG STRATA: 1.

Species name with code	Diameter classes (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Alangium salviifolium</i> (37)	-	0.031	0.030	0.007	0.003	-	-	-	-	0.072
<i>Toona serrata</i> (511)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Duabanga grandiflora</i> (184)	-	0.001	0.027	0.030	0.005	0.005	-	-	-	0.073
<i>Shorea robusta</i> (462)	0.011	0.150	0.141	0.035	0.011	-	-	-	-	0.349
<i>Nichea hanguinosa</i> (464)	-	0.016	0.002	0.002	-	-	-	-	-	0.020
<i>Schinia wallichii</i> (476)	-	0.001	-	-	-	-	-	-	-	0.001
<i>Terminalia myriocarpa</i> (517)	-	-	0.003	0.005	-	-	-	-	-	0.009
<i>Tetrameles nudiflora</i> (523)	-	-	0.002	-	0.002	0.003	-	-	-	0.008
Others(600)	-	-	0.001	-	-	-	-	-	-	0.001
Total:	-	0.012	0.226	0.211	0.054	0.021	0.003	0.004	-	0.532

TABLE NO. 10, 2.2  
TOTAL STEM TIMBER VOLUME (IN 000M<sup>3</sup>) MARKED FOR THINNING BY SPECIES AND DIAMETER CLASSES (IN CM.)  
DIVISION: KALIMPONG.  
STRATA: 2

Species name with code	Diameter classes (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
Toona serrata(511)	-	-	0.009	-	-	-	0.009
Dubabanga grandiflora(184)	-	-	0.009	0.016	0.025	-	0.050
Shorea robusta(462)	-	0.191	0.587	0.092	-	-	0.670
Teotoma grandis(510)	-	0.042	0.014	-	-	-	0.056
Cryptomeria japonica(596)	-	0.070	0.476	0.371	0.559	-	1.478
Schima wallichii(476)	-	-	0.009	-	-	-	0.009
Tetrameles nudiflora(523)	-	-	-	0.016	-	-	0.015
Others(600)	-	-	0.027	0.015	-	-	0.042
<b>Total:</b>	-	0.303	1.133	0.509	0.584	-	2.529

TABLE NO. 10.2.2.  
 TOTAL STEM TIMBER VOLUME (IN 000 M<sup>3</sup>) MARKED FOR THINNING BY SPECIES AND DIAMETER CLASSES (IN CM.)  
 DIVISION - KALIMPONG  
 STRATA-2.

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Albizia odoratissima</i> (044)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Foona serrata</i> (511)	-	-	0.013	-	-	-	-	-	-	0.013
<i>Carica arbores</i> (116)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Dipterocarpus grandiflora</i> (184)	-	0.001	0.036	0.011	0.010	-	-	-	-	0.058
<i>Garuga pinnata</i> (239)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Gmelina arbores</i> (246)	-	-	0.007	0.006	-	-	-	-	-	0.012
<i>Lagerstroemia Speciosa</i> (313)	-	-	0.007	-	-	-	-	-	-	0.007
<i>Sassa robusta</i> (462)	-	0.032	0.013	0.011	-	-	-	-	-	0.056
<i>Schima Wallichii</i> (476)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Serninalia belerica</i> (506)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Serninalia tomentosa</i> (516)	-	-	0.003	-	-	-	-	-	-	0.003
<i>Setariales nudiflora</i> (523)	-	-	0.030	-	0.010	-	-	-	-	0.040
Others (600)	-	-	0.017	-	-	-	-	-	-	0.017
Total :	-	0.053	0.143	0.029	0.019	-	-	-	-	0.224

TABLE NO. 10,24.

DISTRICT: HARRISON

Note 1:

20254

TABLE NO. 10,2,5.  
TOTAL STEM TIMBER VOL. (IN 000's) BY SPECIES AND DIA. CLASSES (IN CM.).

EDITIONS: ENGLISH

*Chukrasiella tabularis*(0.98) - - - - -  
*Tectona grandis*(510) - - - - -  
 Total: - 0.133 0.002 0.002 - - - - -

TABLE NO. 11.1.1.

TOTAL SMALL WOOD VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (2" CM.) MARKED FOR THINNING AFTER INVENTORIES - 1.

Species name with code	Diameter class (in cm.)						Total			
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109
<i>Albizia</i> species (054)	-	-	-	-	-	-	0.001	-	-	-
<i>Cestanopsis indica</i> (123)	-	-	0.002	0.007	0.005	0.001	0.001	-	-	0.001
<i>Cestanopsis aronata</i> (124)	-	0.001	0.010	0.008	0.002	0.003	-	-	-	0.015
<i>Toona ciliata</i> (512)	-	-	-	-	-	0.001	0.001	0.001	-	0.024
<i>Cinnamomum tamala</i> (150)	-	-	0.001	0.001	0.002	-	-	-	-	0.002
<i>Dubanga grandiflora</i> (184)	-	-	0.002	0.006	0.003	0.002	0.002	-	-	0.005
<i>Hydnocarpus wightiana</i> (280)	-	-	0.003	0.003	0.001	-	-	-	-	0.016
<i>Gmelina arborea</i> (246)	-	-	0.001	0.001	-	-	-	-	-	0.007
<i>Kachilus</i> species (325)	-	-	-	-	-	-	-	-	-	0.002
<i>Morus laurigata</i> (349)	-	-	0.001	0.001	-	-	-	-	-	-
<i>Schinia walllichii</i> (476)	-	-	0.002	0.002	0.001	-	-	-	-	0.002
<i>Terminalia myriocarpa</i> (517)	-	-	0.002	0.002	0.000	-	-	-	-	0.005
<i>Tetrameles nudiflora</i> (523)	-	-	-	-	-	-	0.001	0.001	-	0.002
Others (600)	0.001	0.004	0.004	0.003	-	0.001	0.001	0.001	-	0.015
Total :	-	0.003	0.029	0.036	0.019	0.009	0.004	0.003	0.001	0.104

TABLE 11.1.2.

Species name with code	Diameter class (in cm)										Total
	13-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	
<i>Albizia species</i> (054)	-	-	-	-	-	-	-	-	-	-	0.002
<i>Bombax ceiba</i> (073)	-	-	-	-	-	-	-	-	-	-	0.003
<i>Castanopsis erubescens</i> (124)	-	-	0.001	0.006	0.003	0.001	-	-	-	-	0.010
<i>Foena serrata</i> (511)	-	-	0.007	0.007	0.001	0.002	-	-	-	-	0.013
<i>Fourea ciliata</i> (512)	-	-	0.001	0.005	0.005	0.001	0.001	-	-	-	0.010
<i>Gnathoceras tabuliferis</i> (098)	-	-	0.002	0.011	0.003	-	0.001	-	-	-	0.017
<i>Cinnamomum tamala</i> (152)	-	-	-	0.001	-	-	-	-	-	-	0.001
<i>Dubanga grandiflora</i> (134)	-	-	-	0.026	0.032	0.025	0.011	0.003	-	-	0.082
<i>Hydrocarpus wightiana</i> (280)	-	-	-	-	0.001	0.001	0.001	0.001	-	-	0.002
<i>Gamelia arborea</i> (246)	-	-	-	-	-	-	-	-	-	-	0.007
Flex species (281)	-	-	-	-	-	-	-	-	-	-	0.001
<i>Juglans regia</i> (290)	-	-	-	-	-	-	-	-	-	-	0.001
<i>Michelia champaca</i> (362)	-	-	-	-	0.001	-	-	-	-	-	0.001
<i>Norfolkia levigata</i> (349)	-	-	-	-	0.007	0.004	0.001	-	-	-	0.011
<i>Schinia wallichii</i> (476)	-	-	-	-	0.004	0.001	-	-	-	-	0.005
<i>Schoes robusta</i> (462)	0.027	0.059	0.048	0.012	0.001	0.001	-	-	-	-	0.149
<i>Zectone grandis</i> (510)	0.034	0.026	0.030	0.005	0.001	-	-	-	-	-	0.063
<i>Pterinalia belerice</i> (306)	-	-	-	-	-	-	-	-	-	-	0.001
<i>Pterinalia tomentosa</i> (515)	-	-	0.007	0.031	0.034	0.001	-	-	-	-	0.002
<i>Pterinalia myriocarpa</i> (517)	-	-	-	0.029	0.011	0.001	0.001	-	-	-	0.051
<i>Pterinalia nudiflora</i> (523)	-	-	-	0.002	0.001	-	0.002	-	-	-	0.006
<i>Ochroma (600)</i>	-	0.005	0.019	0.010	0.001	0.003	0.005	0.001	-	-	0.041
Total :	0.322	0.104	0.192	0.097	0.057	0.024	0.004	0.004	-	-	0.487

LOG-SUM OF VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) : ADJUSTED FOR THINNING AFTER DIVISION - DIAULUS

Species name with code	Diameter class (in cm.)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
Albizia species (054)	-	-	-	-	0.001	-	-	-	-
Betula sinensis (070)	-	-	0.001	-	-	-	-	-	-
Castanopsis fissa (124)	-	0.001	-	-	-	-	-	-	0.001
Chubaisie tabularis (098)	-	-	0.001	-	-	-	-	-	0.001
Dulichia gracilicarpa (154)	-	0.001	0.006	0.007	0.001	0.001	-	-	0.016
Hymenocarpus littoralis (280)	-	0.001	0.001	0.301	-	-	-	-	0.002
Gmelina arborea (246)	-	-	0.001	-	0.001	-	-	-	0.002
Schorea rodriguezii (462)	0.003	0.003	0.001	-	-	-	-	-	0.007
Pectone grossalis (510)	-	0.002	0.001	0.001	-	-	-	-	0.005
Terminalia torontoba (516)	-	-	0.001	-	-	-	-	-	0.001
Terminalia myriocarpa (517)	-	-	0.002	-	-	-	-	-	0.002
Others (606)	-	-	0.002	0.001	-	-	-	-	0.003
Total :	0.003	0.007	0.016	0.011	0.002	0.001	-	-	0.041

~~9455.20.~~ 11.1.4.

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TOTAL SMALL WOOD VOLUMES ( $\text{m}^3$  000 1:5) BY SPECIES AND 2-4.5 METER CLASSSES (IN CM.) ARRIVED FOR SELLING AFTER INVENTORY  
 DIVISION - DARJEELING

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Bombax ceiba (073)	-	-	0.001	-	-	-	-	0.001
Sapona serreza (511)	-	-	-	-	-	-	-	-
Dubeance grandiflora (154)	-	-	-	0.001	-	-	-	0.001
Shorea robusta (462)	0.006	0.004	0.001	-	-	-	-	0.011
Fectoria grandis (510)	0.015	0.029	0.002	-	-	-	-	0.050
Terminalia myriocarpa (517)	-	0.001	-	0.001	-	-	-	0.001
Others (600)	-	-	-	-	-	-	-	0.001
Total :	0.025	0.034	0.004	0.002	-	-	-	0.065

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 TOTAL SMALL WOOD VOLUME (in. CCO M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (in. Cm.) MARKED FOR THINNING AFTER INVENTORY  
 DIVISION - DAJBELLING  
 TABLE NO. 11.1.5.  
 STRATA - 5.

Species name with code	Diameter class (in cm.)									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
<i>Areca triandra</i> (065)	-	-	-	-	-	-	-	-	-	0.001
<i>Cocculus laurifolius</i> (152)	-	-	-	-	-	-	-	-	-	0.001
<i>Cestrum arona</i> (124)	-	-	0.001	0.007	0.005	0.002	0.001	-	-	0.002
<i>Cinnamomum tamala</i> (150)	-	-	-	-	0.001	-	-	-	-	0.016
<i>Dioscorea grandiflora</i> (164)	-	-	0.001	0.002	0.001	-	-	-	-	0.001
<i>Hydnocarpus wightiana</i> (280)	-	-	-	0.001	0.002	0.001	-	-	-	0.003
<i>Gmelina arborea</i> (246)	-	-	-	-	0.001	-	-	-	-	0.002
<i>Schima wallichii</i> (476)	-	-	0.001	0.004	0.003	-	-	-	-	0.006
<i>Shorea robusta</i> (462)	0.001	0.003	0.010	0.005	-	-	-	-	-	0.018
<i>Tectonia grandis</i> (510)	0.003	0.002	-	-	-	-	-	-	-	0.005
<i>Tetrameles nudiflora</i> (523)	-	-	-	0.001	-	-	-	-	-	0.001
Others (600)	-	-	-	-	-	-	-	-	-	0.003
Total :	0.004	0.008	0.029	0.017	0.003	0.004	-	-	-	0.065

TABLE II. 11.2.1.

TOTAL SMALL WOOD VOLUME (IN 000 m<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MAILED FOR THINNING AFTER INVENTORY  
STRATA - 1

Notes

TABLE NO. 11.2.2.

TOTAL SMALL WOOD VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
DIVISION - KALTEONG

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
<i>Toona serrata</i> (511)	-	-	0.003	-	-	-	-	0.003
<i>Dusanga grandiflora</i> (154)	-	-	0.003	0.005	0.006	-	-	0.012
<i>Shorea robusta</i> (462)	0.028	0.186	0.237	0.019	-	-	-	0.471
<i>Tectonia grandis</i> (510)	0.013	0.015	0.005	-	-	-	-	0.031
<i>Cryptomeria japonica</i> (596)	-	0.025	0.160	0.142	0.278	-	-	0.606
<i>Schima wallichii</i> (476)	-	-	0.003	-	-	-	-	0.003
<i>Tetrameles nudiflora</i> (523)	-	-	-	0.003	-	-	-	0.003
Others (600)	-	-	0.006	0.003	-	-	-	0.011
Total :	0.041	0.227	0.415	0.171	0.284	-	-	1.139

TABLE NO. 11.2.2.  
TOTAL SMALL WOOD VOLUME (IN CCO 1.3) BY SEEDS AND DIAMETER CLASSES (IN CM.) LARIED FOR THINNING AFTER INVENTORY  
STRATA - 2  
DIVISION - KAILIMPONG

Species name with code	Diameter class (in cm.)						Total
	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Antiaris toxicaria</i> (044)	0.001	-	0.001	-	-	-	-
<i>Ceratya arborea</i> (116)	-	-	0.001	-	-	-	-
<i>Cone serrata</i> (511)	-	-	0.004	-	-	-	0.004
<i>Draudtia grandiflora</i> (124)	-	0.001	0.010	0.002	0.002	-	0.016
<i>Garuga pinnata</i> (239)	-	-	0.001	-	-	-	0.001
<i>Smeilina arborea</i> (246)	-	-	0.002	0.001	-	-	0.003
<i>Leptostroemia speciosa</i> (313)	-	-	0.002	-	-	-	0.002
<i>Siores robusta</i> (462)	0.005	0.031	0.005	0.002	-	-	0.042
<i>Schima wallichii</i> (476)	-	-	0.001	-	-	-	0.001
<i>Ferninalia belericia</i> (506)	-	-	0.001	-	-	-	0.001
<i>Terminalia tomentosa</i> (516)	-	-	0.001	-	-	-	0.001
<i>Setariales nudiflora</i> (523)	-	-	0.008	-	0.002	-	0.011
Others (600)	-	-	0.005	-	-	-	0.005
Total :	0.004	0.032	0.042	0.006	0.004	-	0.088

TABLE NO.11.2.4

TOTAL SMALL WOOD VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
STRATA- 04  
DIVISION-KALIPOG

Species name with code	Diameter class (in cm.)								Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Alsegium salvifolium</i> (037)	-	0.013	0.110	0.032	0.009	-	-	-	0.165
<i>Albizia odoratissima</i> (044)	-	-	0.001	-	-	-	-	-	0.001
<i>Archocarpus cadamba</i> (065)	-	-	-	0.001	-	-	-	-	0.001
<i>Tocca serrata</i> (511)	-	-	0.003	-	-	-	-	-	0.004
<i>Dabergeria sissoo</i> (131)	-	0.001	-	0.001	-	-	-	-	0.002
<i>Diabanga grandiflora</i> (184)	-	-	0.014	0.007	0.002	-	-	-	0.023
<i>Garcia pinnata</i> (239)	-	-	0.002	-	-	-	-	-	0.004
<i>Lagerstroemia speciosa</i> (313)	-	-	0.004	-	-	-	-	-	0.004
<i>Mitchelia species</i> (323)	-	0.025	0.013	0.003	-	-	-	-	0.041
<i>Syorea robusta</i> (452)	0.110	0.133	0.018	-	-	-	-	-	0.261
<i>Pectona grandis</i> (510)	0.053	0.191	0.076	0.005	-	-	-	-	0.325
<i>Scirnia wallichii</i> (476)	-	-	0.002	-	-	-	-	-	0.002
<i>Terminalia tonentosa</i> (516)	-	-	0.002	-	-	-	-	-	0.001
<i>Terminalia myrticarpa</i> (517)	-	-	-	0.001	-	-	-	-	0.003
<i>Petrenea nuciflora</i> (523)	-	-	-	0.003	-	-	-	-	0.003
Total:	0.165	0.362	0.246	0.053	0.011	-	-	-	0.338

TABLE NO.11.2.5

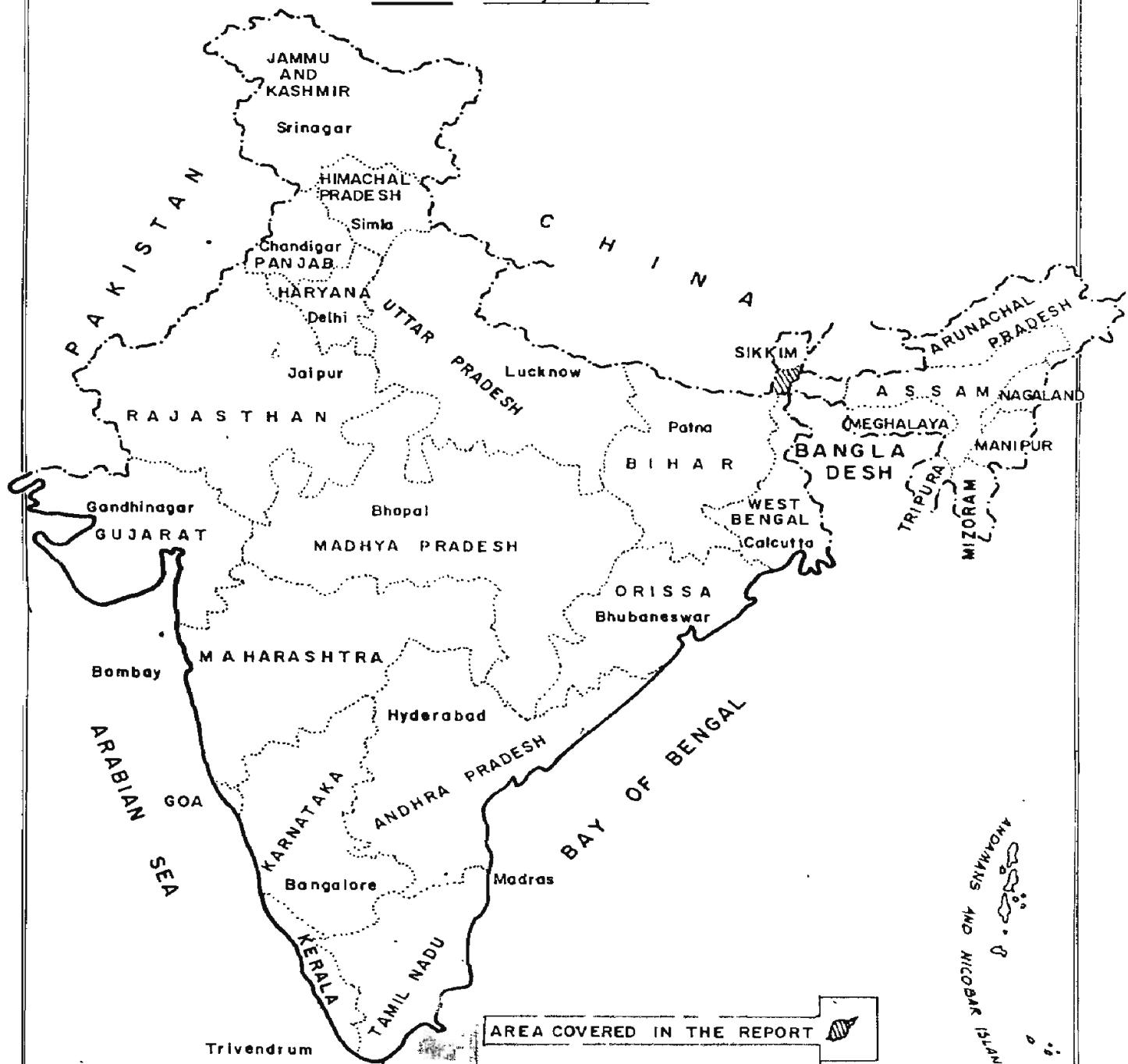
TOTAL SMALL WOOD VOLUME (IN 000 M<sup>3</sup>) BY SPECIES AND DIAMETER CLASSES (IN CM.) MARKED FOR THINNING AFTER INVENTORY  
DIVISION- KALIMPONG

Species name with code	Diameter class (in cm.)							Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Shorea robusta(462)	0.001	-	-	-	-	-	-	-
Tectona grandis(510)	0.073	0.048	-	-	-	-	-	0.121
Total:	0.072	0.048	-	-	-	-	-	0.120

**MAP OF INDIA**  
**SHOWING PROJECT AREA IN DARJEELING & KALIMPONG DIVISION**

**WEST BENGAL**

SCALE :- 1 : 15,000,000

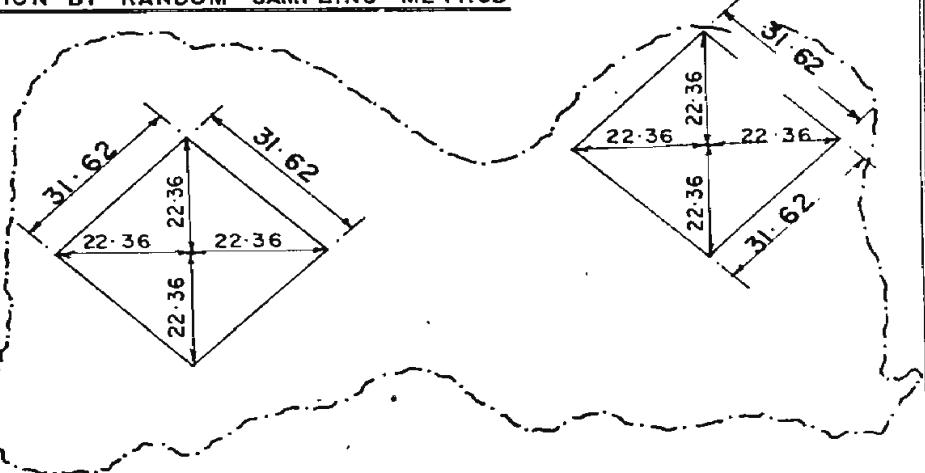


## ORIENTATION OF PLOT IN PLANTATION SURVEY

SELECTION BY RANDOM SAMPLING METHOD

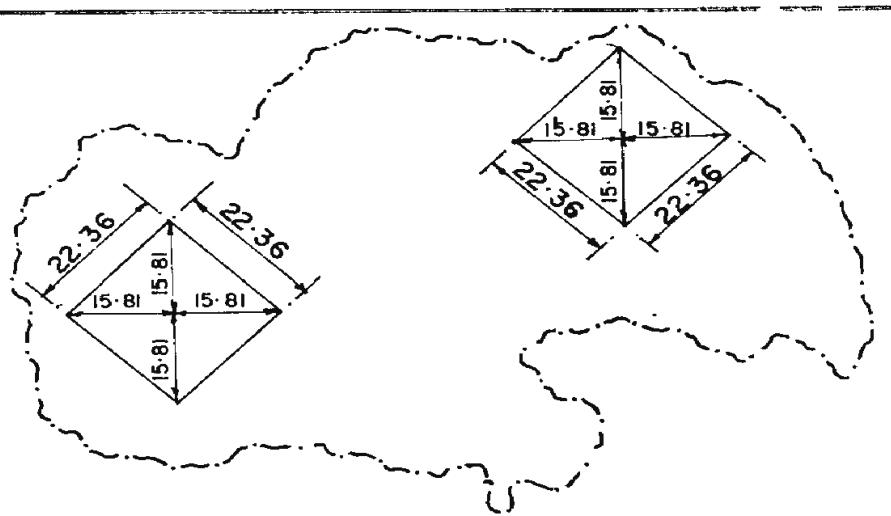
PLOT SIZE

0.1 Hactre



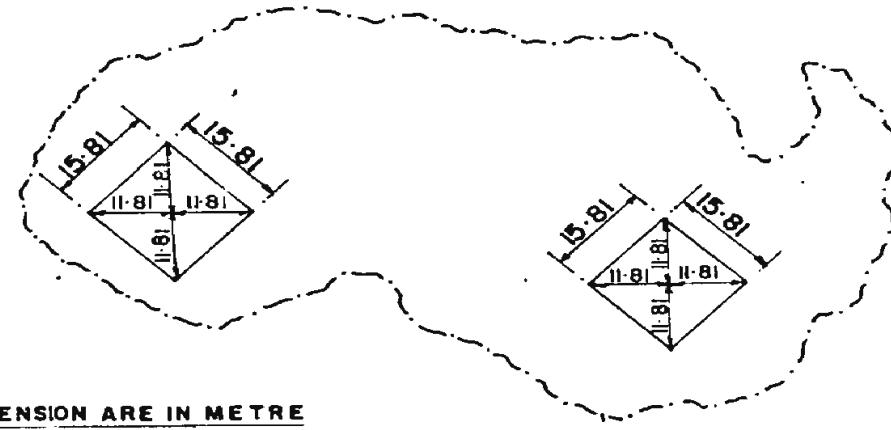
PLOT SIZE

0.05 Hactre



PLOT SIZE

0.025 Hactre



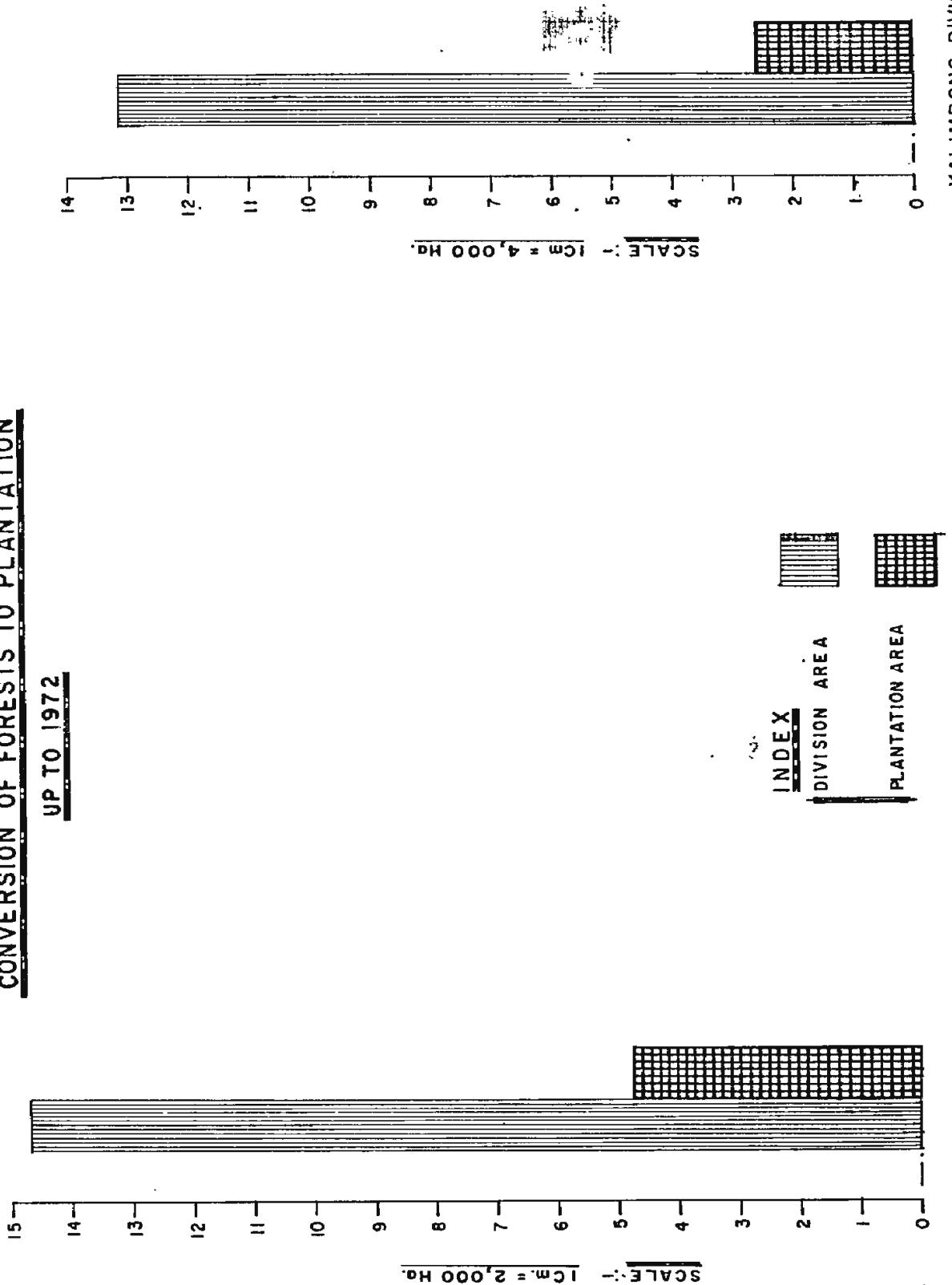
NOTE :- ALL DIAMENSION ARE IN METRE

CROSS SECTION OF PLOT (CENTRE OF THE PLOT)

DRAWN BY - Suman Bhattacharyya, Dt. 12-9-1985

CONVERSION OF FORESTS TO PLANTATION

UP TO 1972



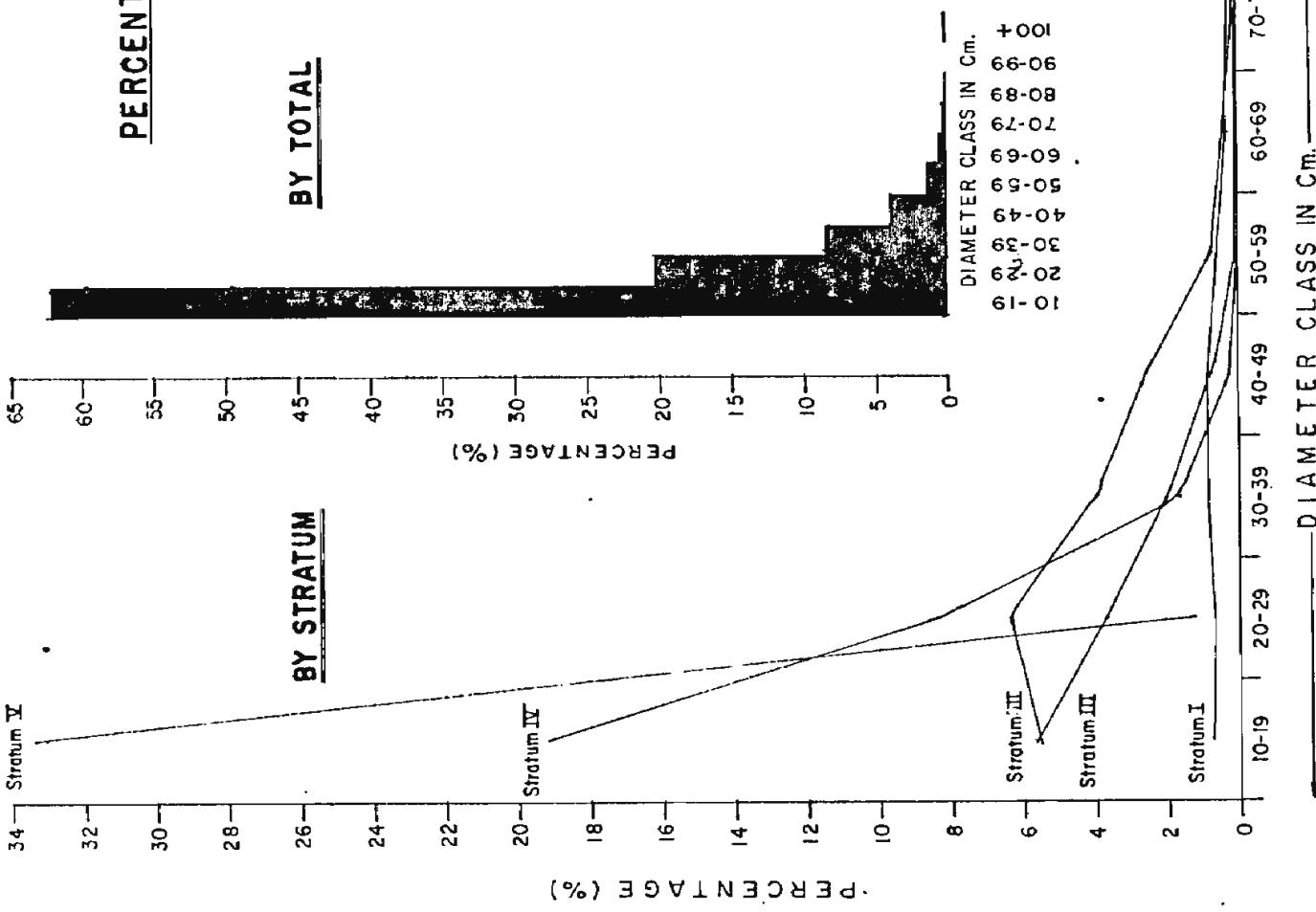
DARJEELING DIVISION

KALIMPONG DIVISION

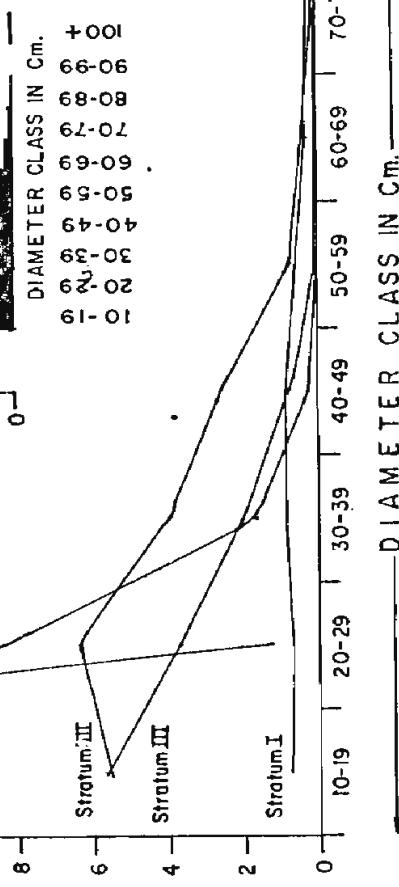
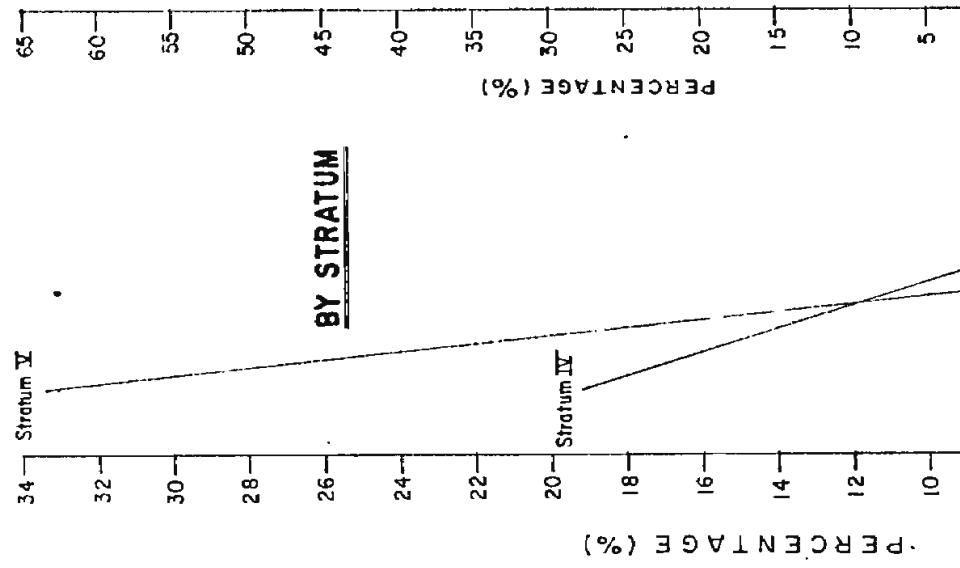
## DARJEELING DIVISION

### PERCENTAGE OF DISTRIBUTION OF STEM IN DIAMETER CLASSES

BY TOTAL



BY STRATUM



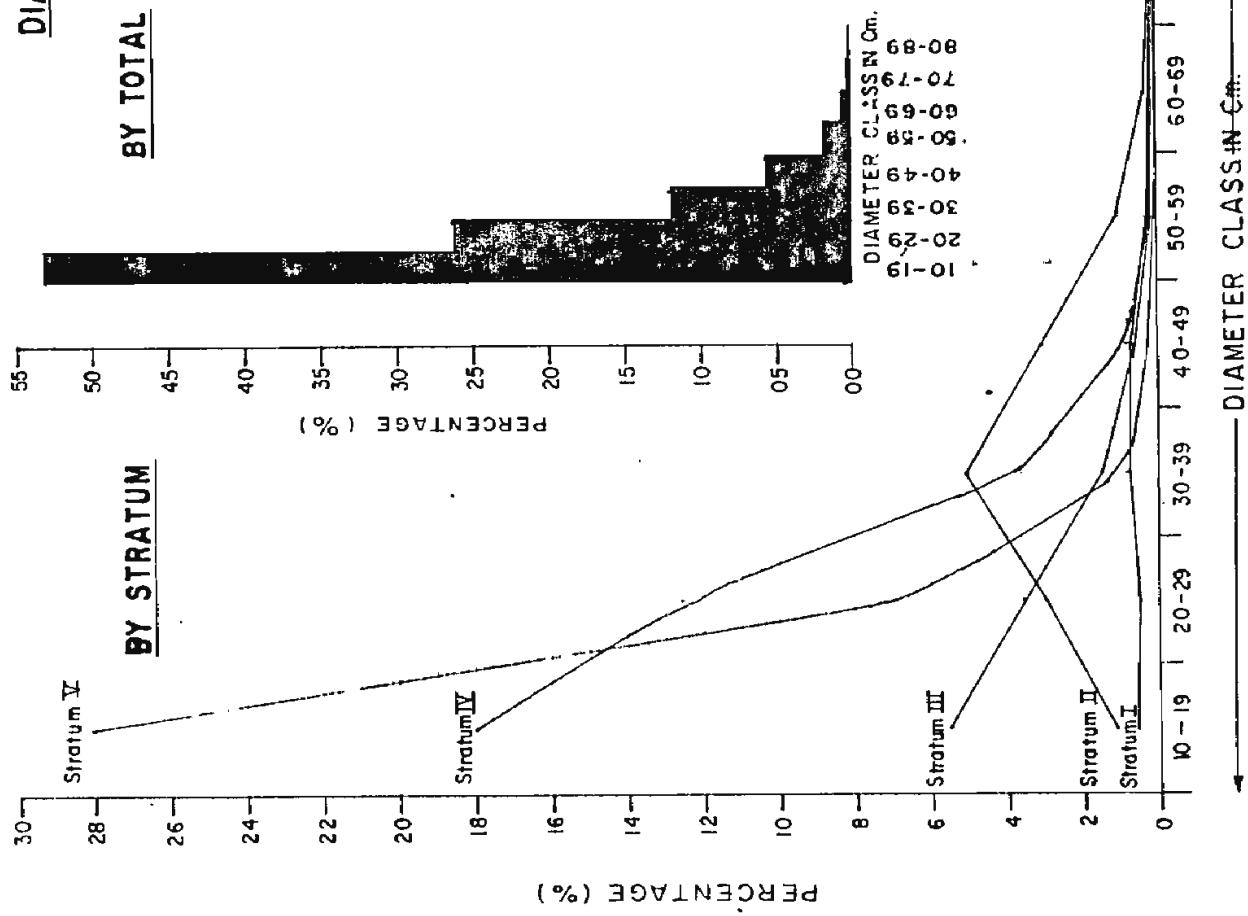
DRAWN BY:- Suman Bhattacharya, Dr... | 6th Sept. 1985

## KALIMPONG DIVISION

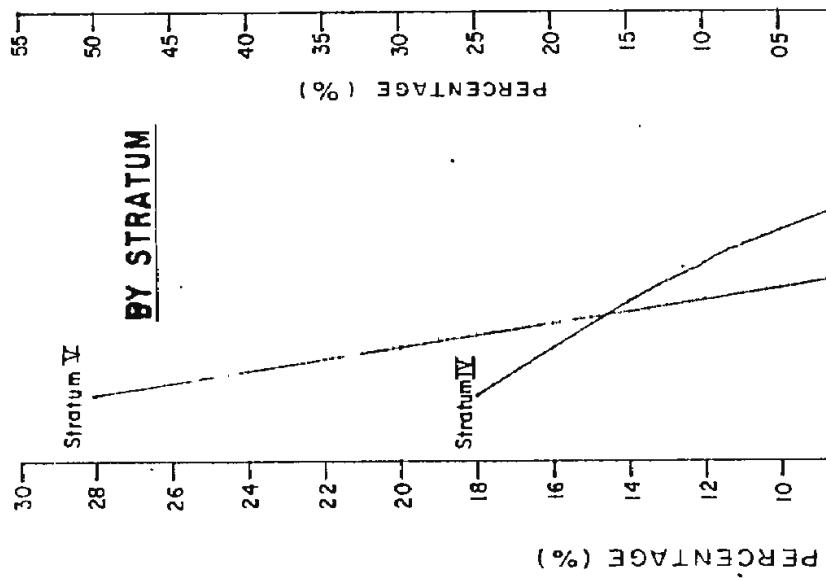
### PERCENTAGE OF DISTRIBUTION OF STEM IN

#### DIAMETER CLASSES

BY TOTAL

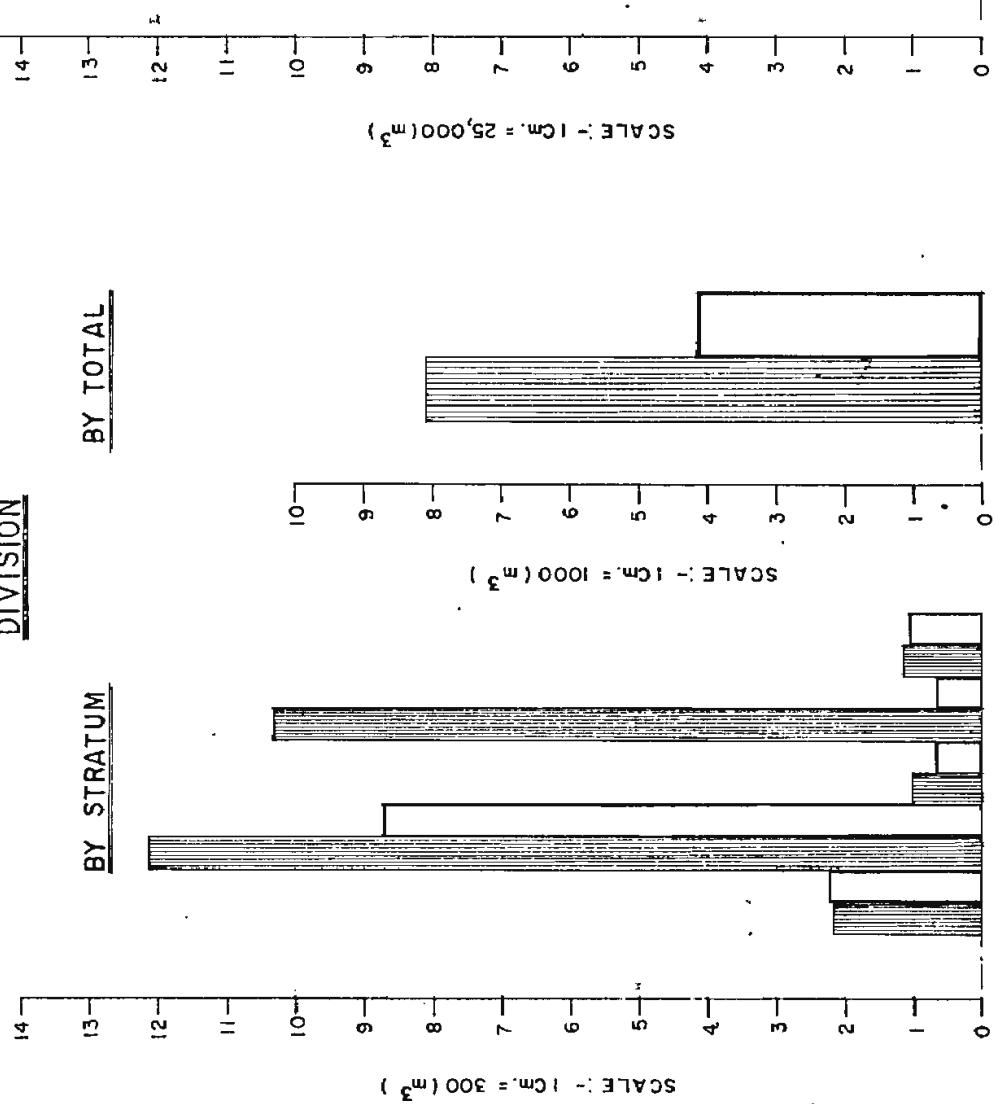


BY STRATUM



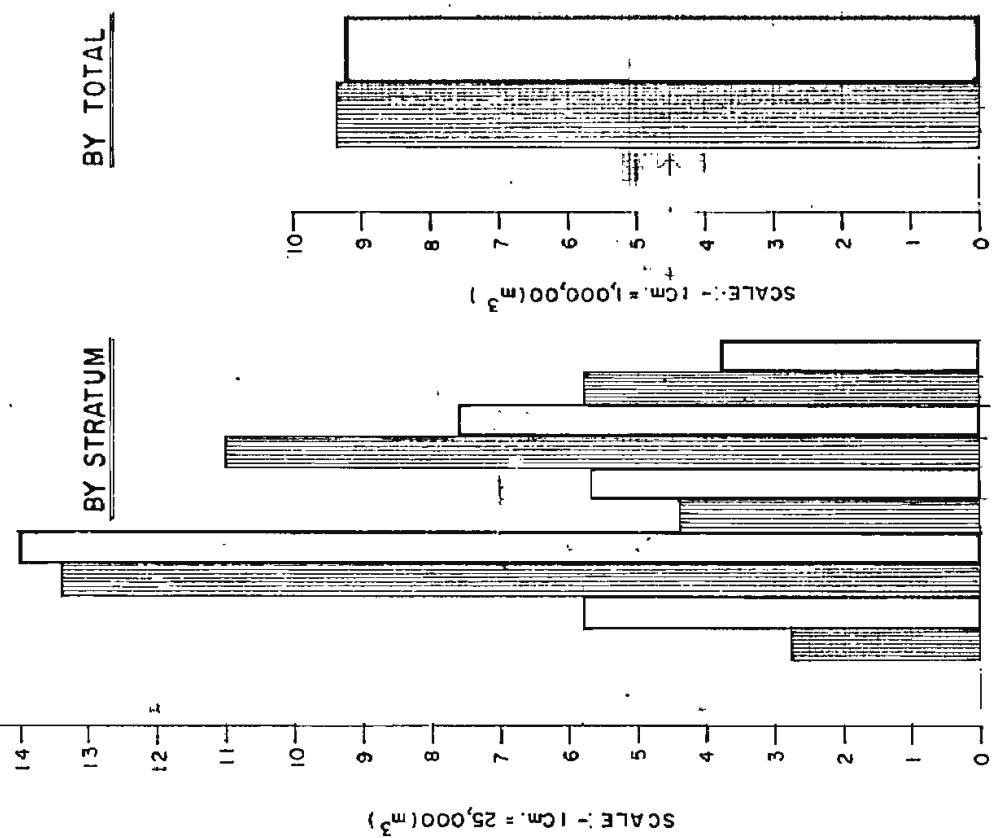
THINING REMOVAL IN DARJEELING & KALIMPONG  
DIVISION

BY STRATUM



VOLUME RETAINED AFTER THINNING IN  
DARJEELING & KALIMPONG DIVISION

BY STRATUM



INDEX  
DARJEELING  
KALIMPONG

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Stratum - III  
Stratum - II  
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DRAWN BY : Suman Bhattacharyya, Dt. 17th Sept. 1995