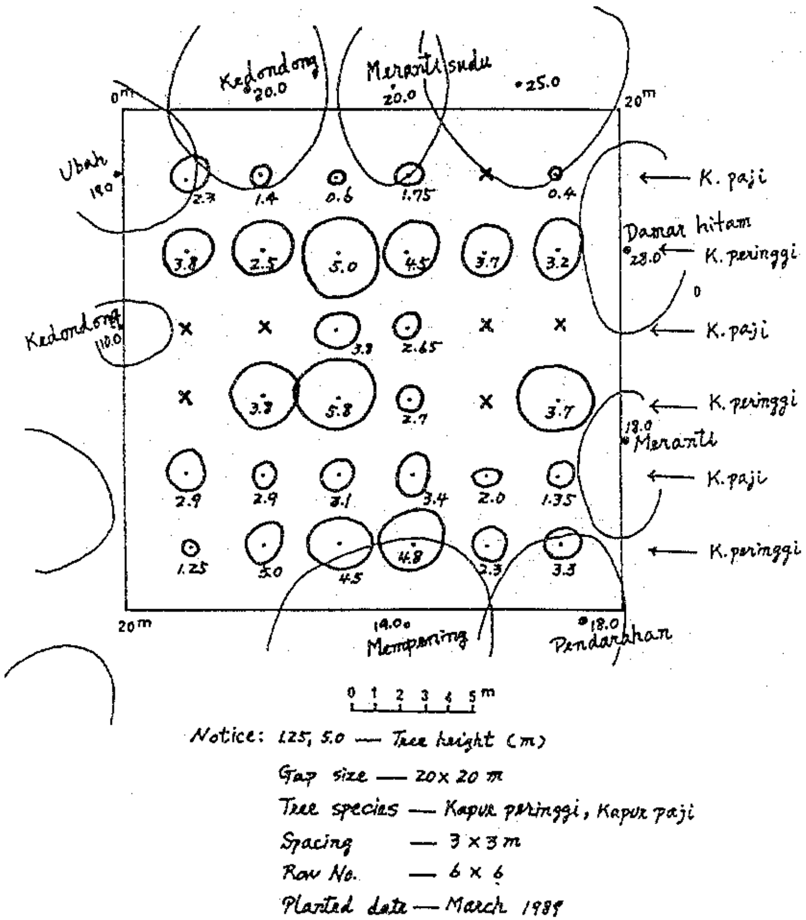


Figure-23 Quadrat of gap planting (Plot No.13)

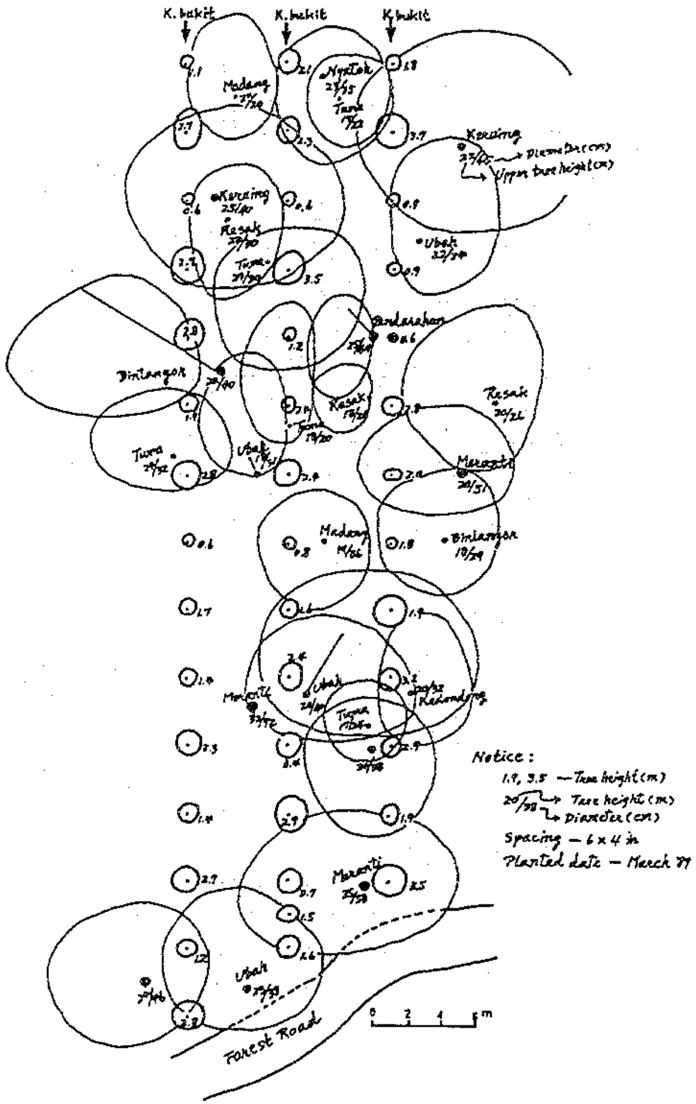


Figure-24 Survival and crown projection diagram of Kapur bukit enrichment (Block A)

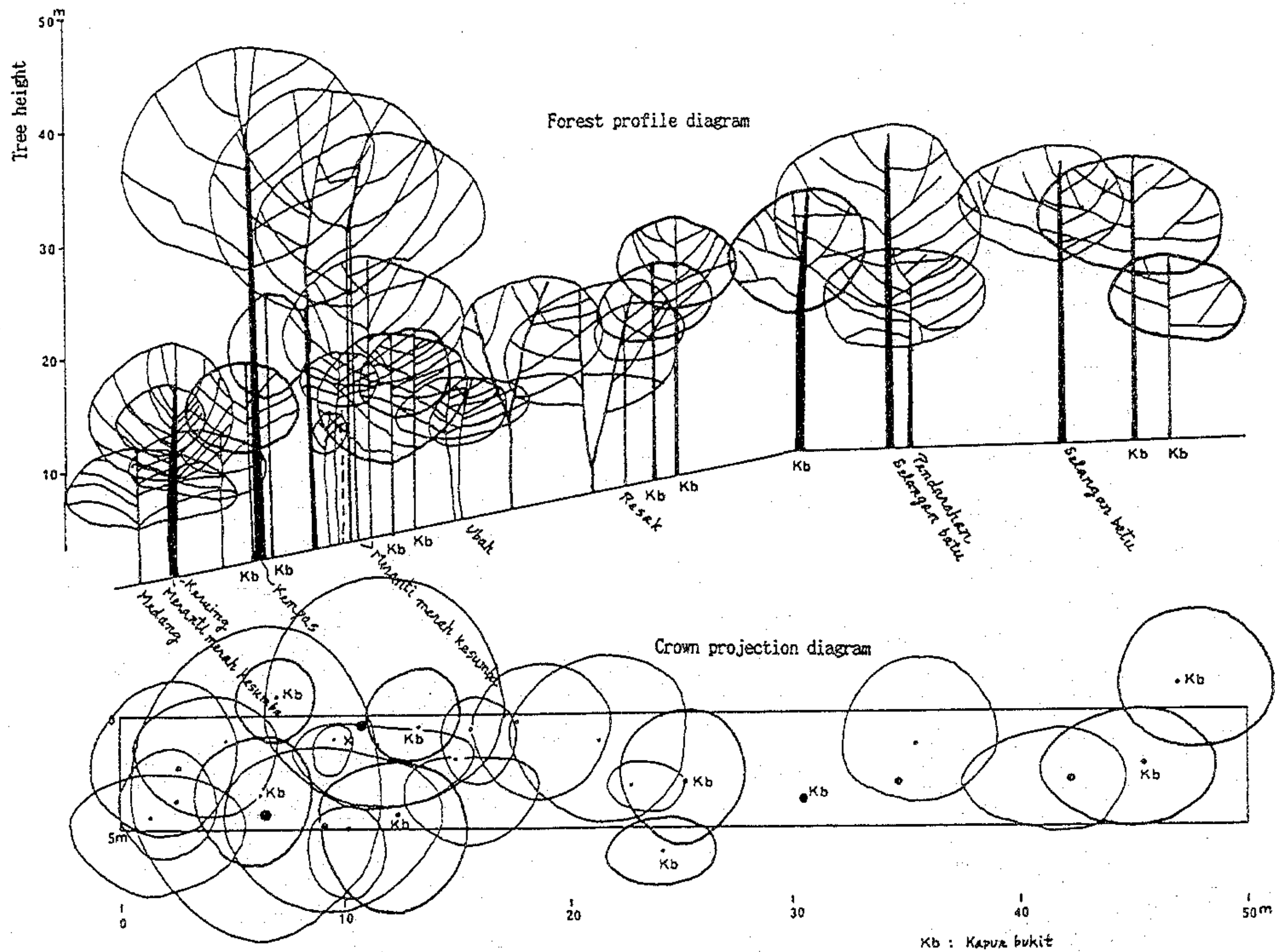


Figure-25 No.2 Belt-transect of Kapur bukit plantation at Lamunin

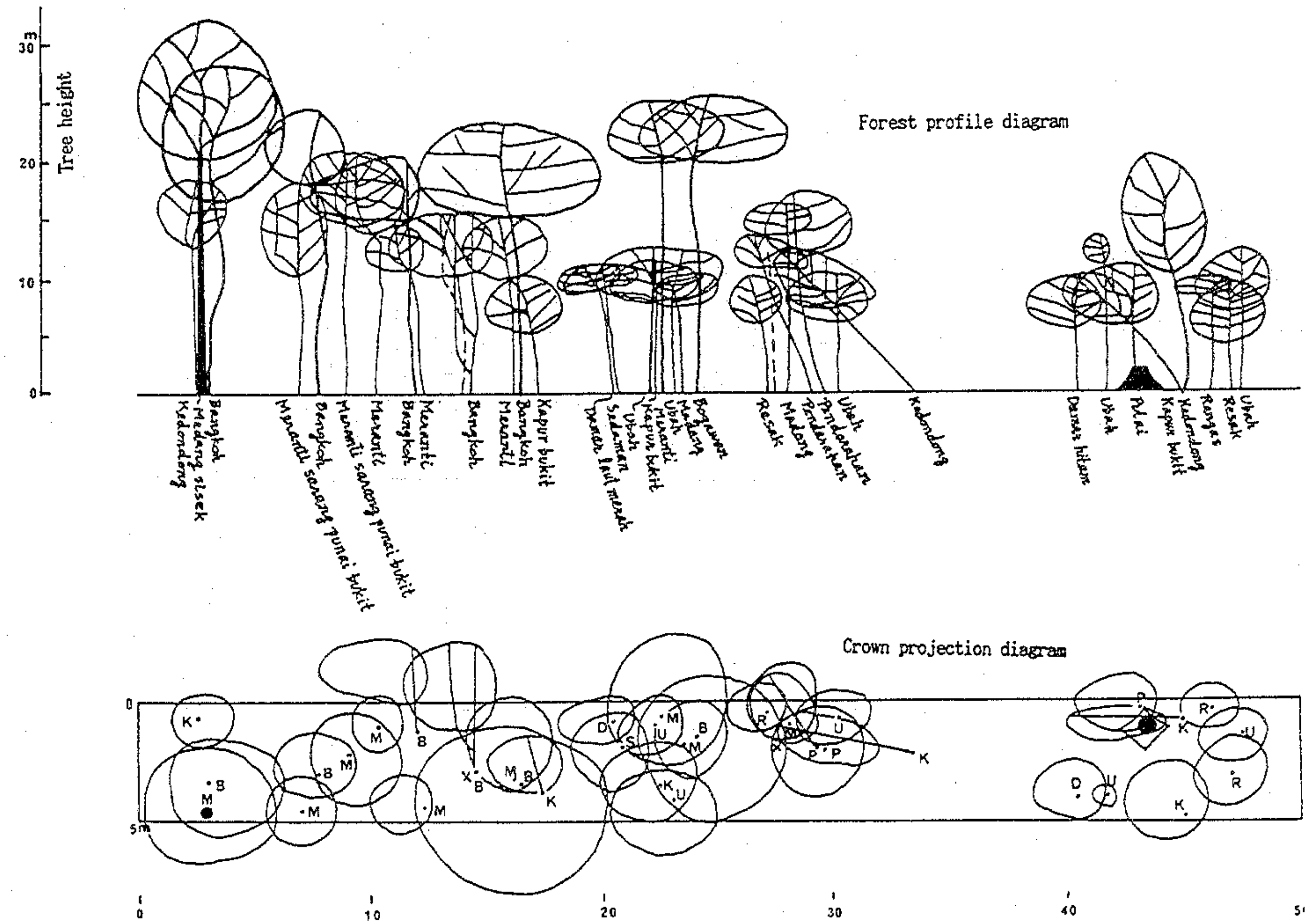
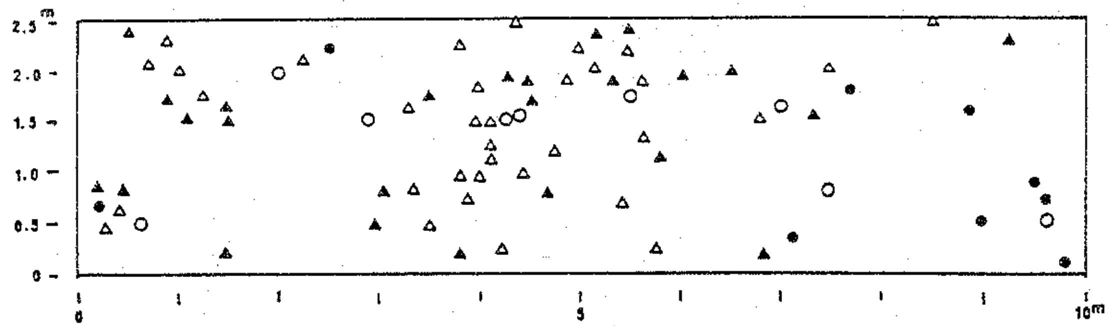


Figure-26 No.1 Belt-transect of natural forest at Bukit Sawat



● - Tree of under 10 meters (Dipterocarp)
○ - As above (Non-Dipterocarp)
▲ - Regenerated seedlings under 1 meter (Dipterocarp)
△ - As above (Non-Dipterocarp)

Figure-27 Lower storey trees and regenerated seedlings in No.1 belt

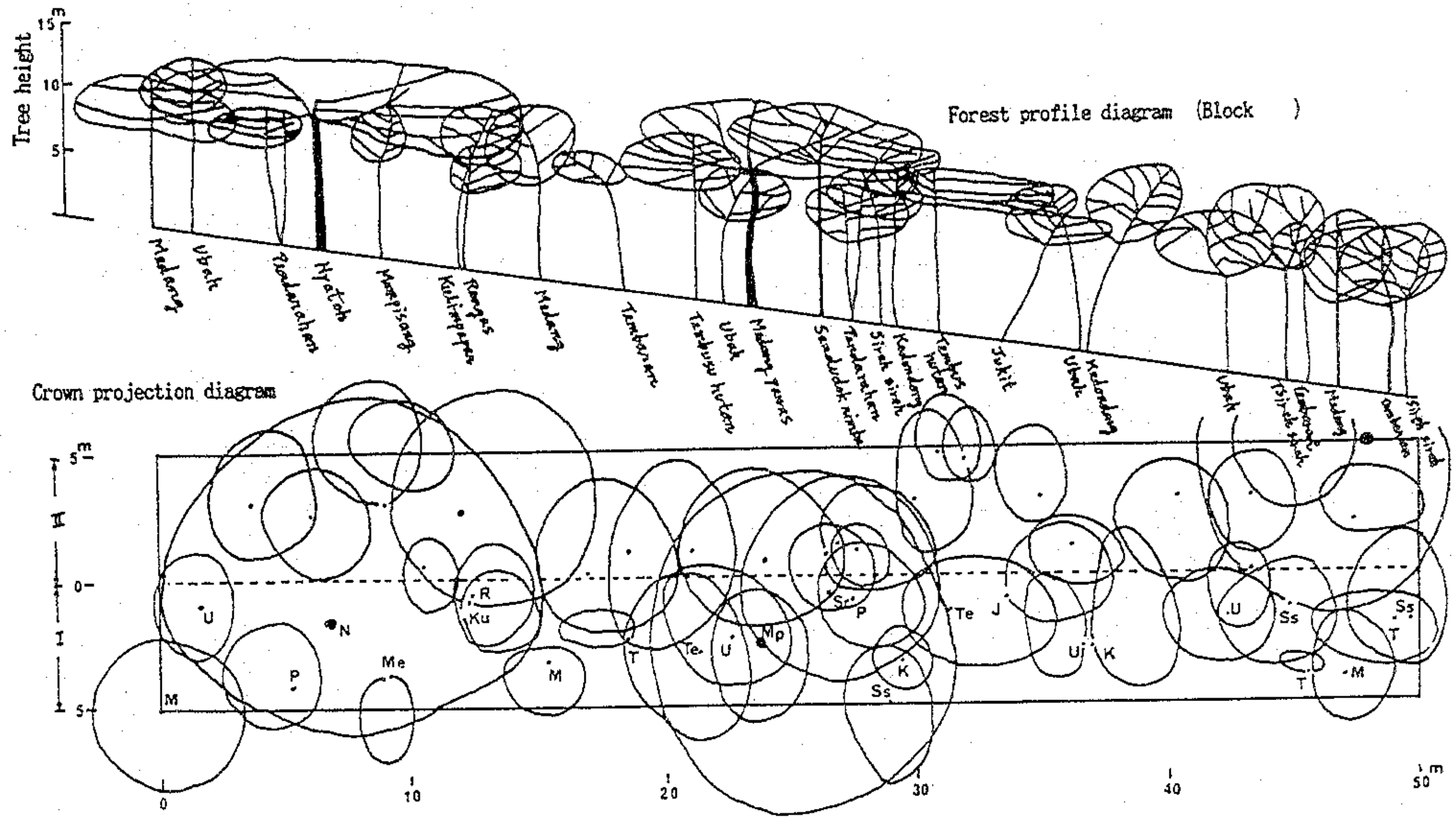


Figure-28 No.5 Belt-transect of secondary forest at Merangking

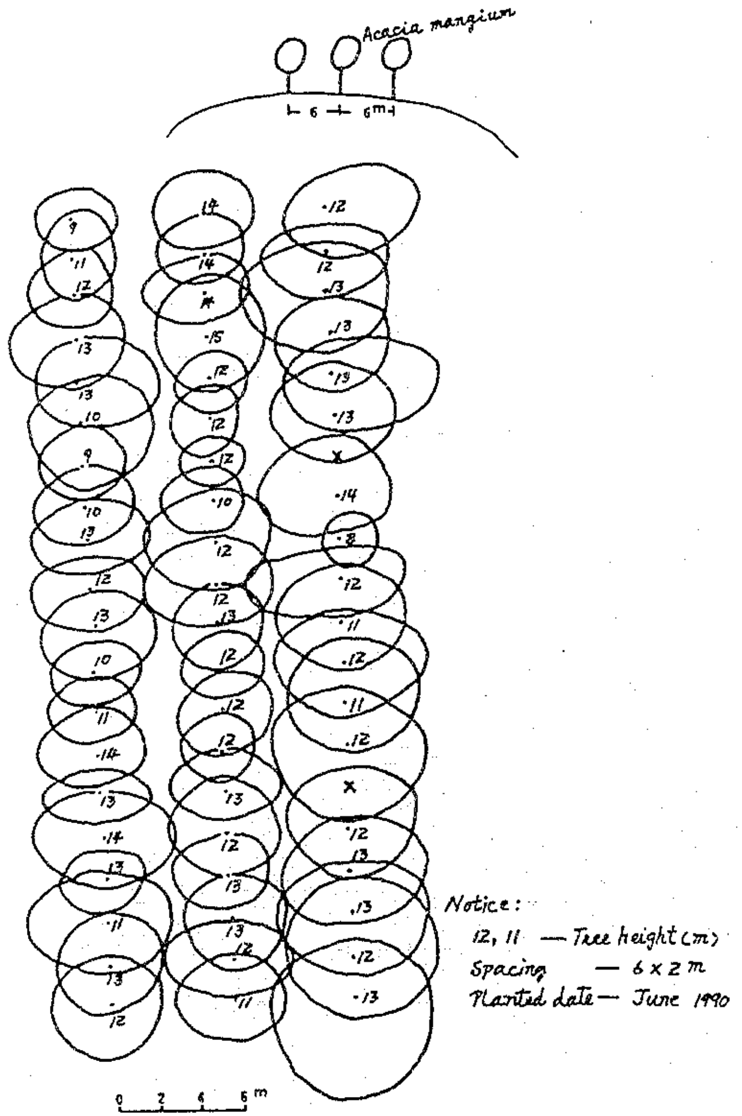


Figure-29 Survival and crown projection diagram of Acacia mangium (Block I)

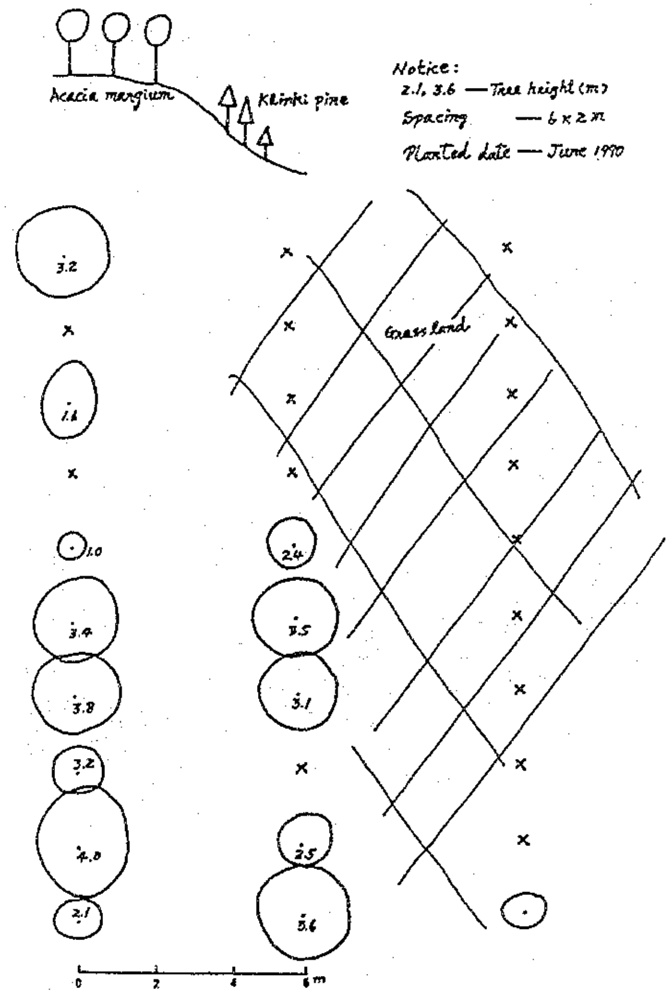


Figure-30 Survival and crown projection diagram of Klinki pine (Block F)

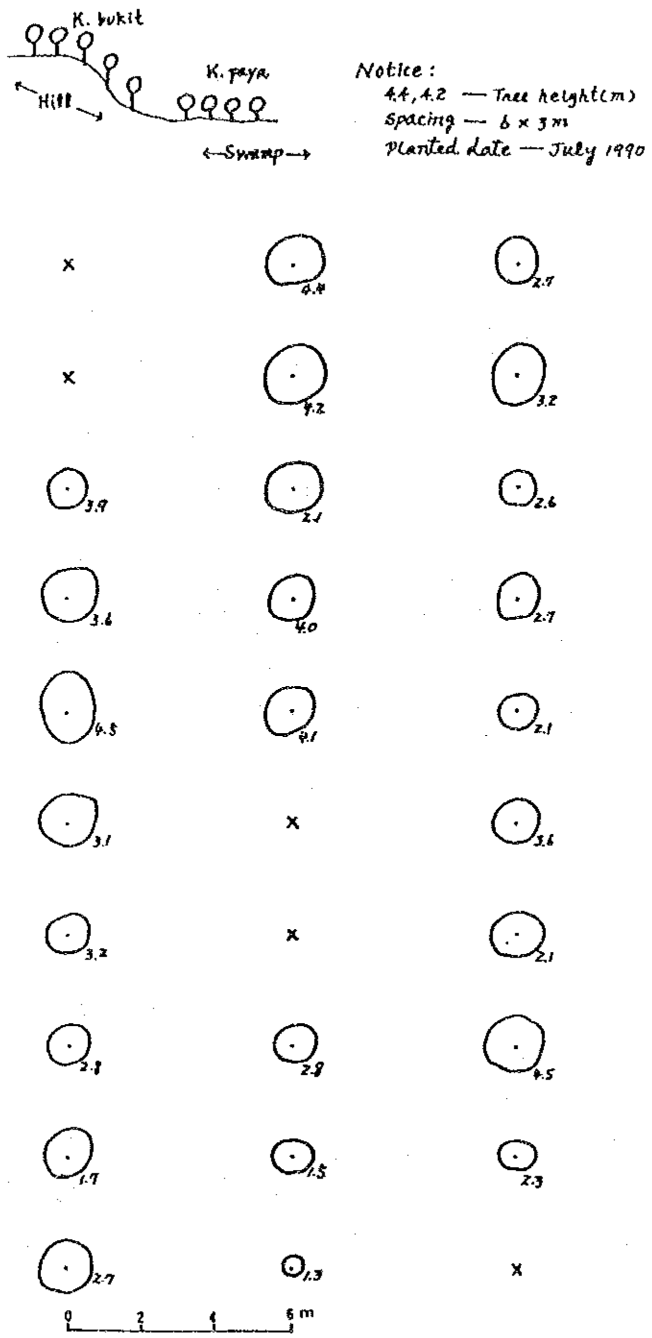
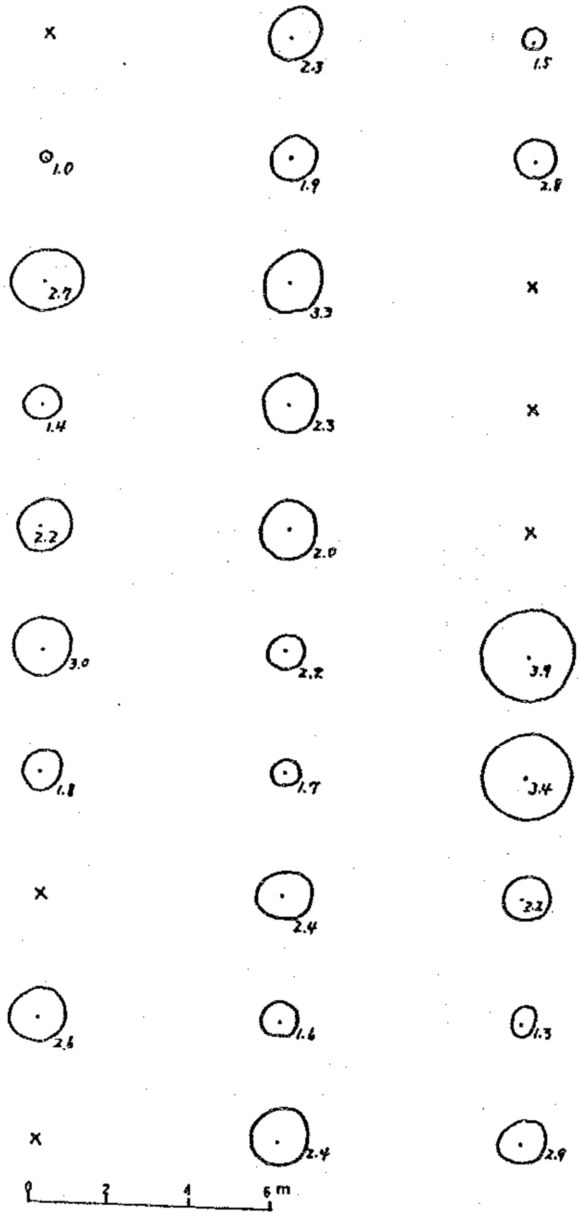


Figure-31 Survival and crown projection diagram of Kapur bukit (Block N)



Notice: 2.4, 2.9 — Tree height (m)
Spacing — 6 x 3 m
Planted date — July 1990

Figure-32 Survival and crown projection diagram of Kapur paya (Block N)

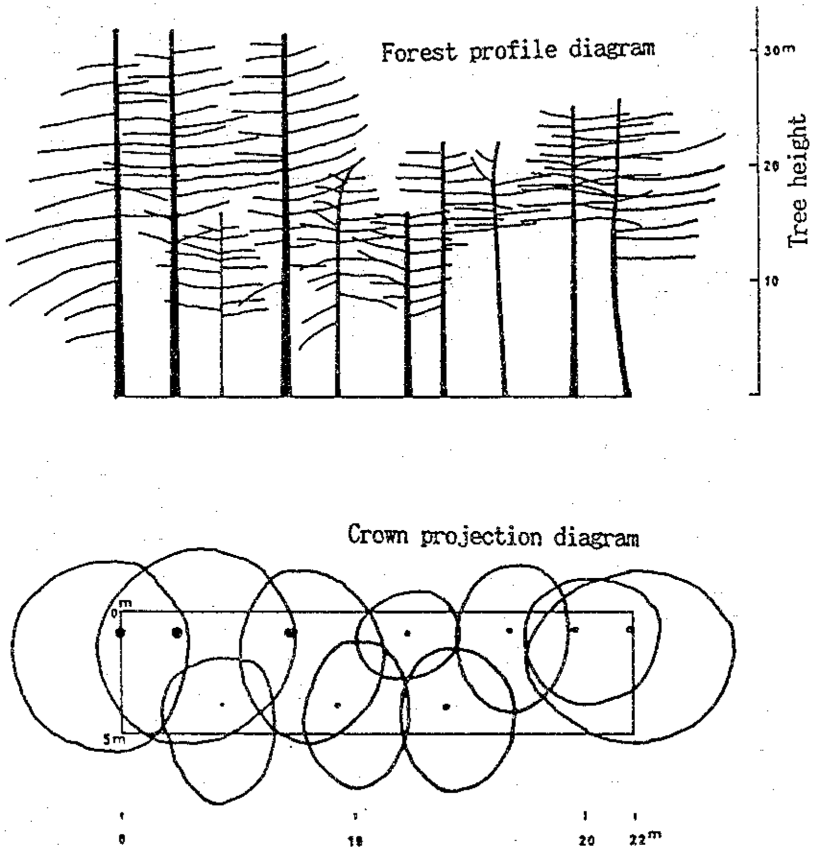


Figure-33 No.3 Belt-transect of Klinki pine at Lamunin

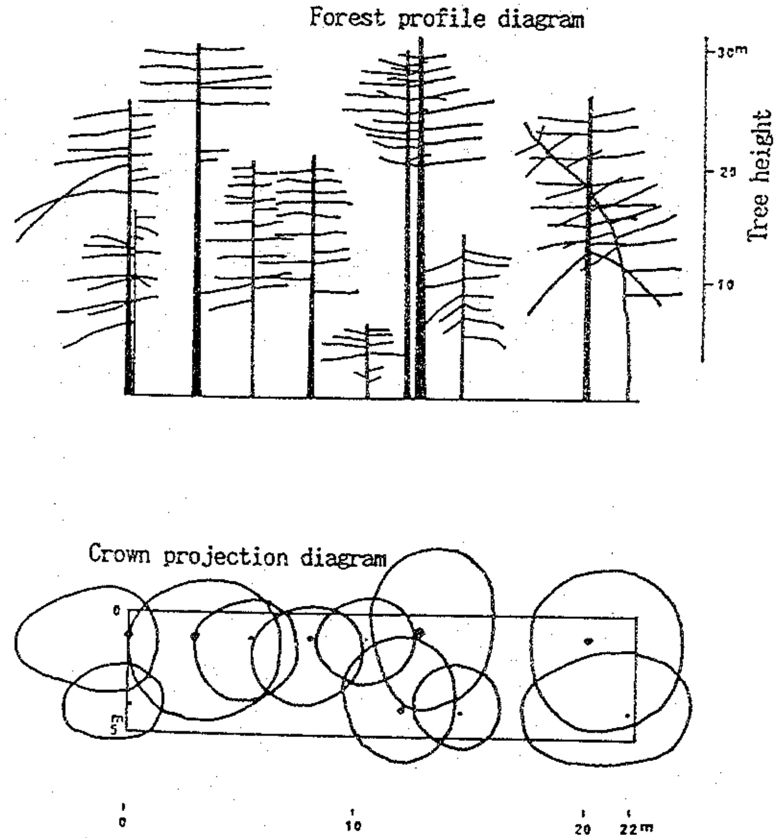


Figure-34 No.4 Belt-transect of Klinki pine at Lamunin

7. Forest Operation Guidelines

It is desirable that forest operations the Model Plantation area are not confined to standardised plantation development, but should be based on the existing conditions of forest status, topography and soil type of each of the operation sites. Therefore, the following detailed guidelines and notes for forest operations are based on the field survey, and give a description of basic approach to forest operations and their requirements.

7.1. Purposes of Forest Operations

Forest operations are required to systematise the handling of forests with respect to time and space considerations, which are appropriate and suitable to the purpose. According to the "Terminology of Forest Science and Technology" compiled by the Society of American Foresters under the supervision of the FAO/IFURO, forest operations are generally defined to be "practical application of scientific and socioeconomic principles to work and management of forest estates for established purposes."

7.1.1. Sustained supply of forest products

Sustained supply of forest products is one of the important purposes of forest operations. An optimal state in forest stock and flow can be obtained by appropriately performing forest operations in terms of regime and technology.

7.1.2. Demonstration of public-interest function to a high level

Consideration must be given to demonstrating the public-interest functions of forests to a high level in performing forest operations, such as securing water resources, environment conservation and disaster prevention, in addition to supplying forest products.

7.1.3. Contribution to regional development

A contribution to regional development by stabilising the living conditions of residents in the area is required by utilising plantations for other purposes, such as by building forest roads and through forestry activities such as the processing of forest products.

7.2. Forest Operations Measures

7.2.1. Maintenance and cultivation of forest resources

The first priority in the basics of forest operations, should be to maintain and enhance the content and quality of forests for the future. The current states of the forests must be understood accordingly, and forest operations should be conducted to suit the stated purposes.

7.2.2. Establishment of forest operations plan

The deterioration of forests and devastation of forest land caused by excessive cutting which exceeds the forest production power, by poor regeneration methods and by other means are focused as global problems of tropical forests. A forest operations plan must be formulated to fully demonstrate the diverse functions which the forests have, such as a sustained yield volume and maintenance of the environment.

(1) Land utilisation division

The areas to be covered must be defined before formulating an operations plan. The entire area must be divided into land that is intended to be preserved as forests in the future, and also into land intended for agriculture, including no-cultivation land, stock farms and for other purposes. An operation plan must be established for land to be preserved as forests.

(2) Standardisation of forest operations methods

Forests to be covered by an operations plan are divided by operation purpose. There are forests to be actively intended for forestry production and forests to be protected for forest land conservation and environment maintenance. Forests actively intended for forestry production must be divided into those for artificial forest operations, those for natural forest operations and others, in accordance with the operation methods employed. The respective forest operation methods must be standardised.

(3) Improvements and expansion of operations infrastructure

A plan must be prepared for improving and expanding the operations infrastructure, such as forest roads and nurseries, in forest operations needed for the transport of forest products, the establishment of artificial forests, and the management of forests.

7.2.3. Considerations concerning environment conservation

(1) Maintenance of soil and water conservation function

Generally, forests are said to have productive and public utility functions. The role of soil and water conservation as a public utility function in land conservation is extremely important. The effects produced by maintaining ground water base run-off (prevention of floods and relaxation of droughts) prevents disasters and helps secure water resources. Forests function to intercept raindrops by crowns and by undergrowth, and to mitigate overland flow by increases in the rainwater infiltration capacity which prevents soil erosion. The overland flow velocity is relaxed by the undergrowth. These and other factors function as positive factors to prevent erosion. Needless to say, economic effects of lumber production are important in executing forest operations. Nevertheless, soil and water conservation functions also must receive similarly careful attention.

(2) Conservation of the forest ecosystem

Sustainable management is considered as an important proposition in developing tropical forests. Recently, in addition to this, conservation of biological diversity in tropical forests has been attracting attention as an important theme. The destruction of the forest ecosystem is to some extent unavoidable if human social and production activities are to be undertaken in forest areas. Clear cutting on a large scale causes changes in the forest ecosystem, and land preparation by controlled burning destroys low plants also, possibly resulting in the destruction of the forest ecosystem.

Plantation activities must give consideration to conserving the forest ecosystem as much as possible.

(3) Living environment of local residents

Residents in forest areas depend for much of their livelihood on forests, such as for food, drinking water and fuels. On the other hand, the residents in the forest areas are indispensable to forestry activities and forest management.

It is extremely important to conserve the living environment of local residents, who maintain such a mutual-dependence relationship with forests, in implementing forest operations.

7.3. Basic Approach to Operation Methods

The plantation in the model plantation area is classified as "industrial plantation" which is required to satisfy the following points:

(1) Plantation has to be undertaken based on an appropriate management plan to enable stable and sustainable utilisation of forest resources.

(2) The area has to be zoned as part of regional development and the plantation harmonised with other industrial enterprises.

(3) A plantation plan which takes into account local residents and the natural environment, including natural forests, must be formulated.

(4) Research and development in the forest products industry to increase its value and to enhance production efficiency, as well as technology development which enables easy maintenance and management, such as tending, should be undertaken.

(5) Improvements and expansions to the infrastructure and test plantation will be necessary to promote an emphasis on the private sector under an appropriate management plan.

The Forestry Department is establishing a large sawtimber plantation at present in the Bukit Sawat area, located northwest of the model plantation area. This project is being implemented generally satisfying the industrial plantation requirements mentioned above. In the light of the forest operations measures described in section 6.2, the following points can be listed for future consideration.

7.3.1. Matters related to forest operations

(1) Cutting sites

A cutting site layout for each year must be decided in accordance with the overall cutting and plantation programme. Aerial photographs, as well as topographical, vegetation and soil maps, must be utilised to plan the division of areas in order to preserve the existing vegetation and the areas to plant trees. Forest roads and feeders will also have to be planned.

Generally, clear cutting and plantation of a large area presents the following problems which affect the stability of forests and environmental changes:

(a) Runoff of humus layers and depletion of litter by clear cutting.

(b) Acceleration of erosion by exposing bare land.

(c) Increases in danger of disease and pest damage caused by general plantation.

(d) Water pollution and depletion of water sources caused by clear cutting.

(e) Changes in the living environment of communities.

Cutting sites must be dispersed as much as possible and areas of cutting sites must be reduced to avoid these problems. Measures such as providing reserved belts in ridges should be taken to prevent a continuation of cutting sites.

Reserved belts should be provided along rivers and roads to protect river banks and road slopes.

(2) Skidding

Generally, skidding is performed using tractors. However, this method extensively damages the forest land surface by vehicle tracks, pulled timber and other materials. Skidding by forwarders damages forest land less compared with skidding by tractors. This method, however, is not commonly in use as yet, and is not suitable for slopes. It cannot therefore be used universally at present.

It is not possible to fundamentally prevent devastation of forest land by skidding and it would be logical to disperse cutting blocks so as to disperse devastated sites. Skidding roads frequently cause erosion. Sheathing by wicker work or other appropriate measures are desirable for steep slopes after skidding is completed.

(3) Site preparation

Sites are prepared by cutting surface vegetation and clearing scattered butts, branches and unused trees to ensure easy and correct plantation.

Sites in clear-cut tropical forest land are prepared mostly by controlled burning. Site preparation by controlled burning is considered effective in preventing damage by termites and other insects. Charcoal is also said to be effective in accelerating growth of planted trees. Site preparation by controlled burning is considered efficient if the sites are large areas, due to fire control considerations. Controlled burning, however, damages the ecosystem by completely burning surface vegetation. It appears that the problems with site preparation by controlled burning can be solved to some extent by making cutting sites small in area, and by dispersing them.

Controlled burning is performed two or three months after cutting trees to allow butts and branches to dry. Needless to say, extreme care must be exercised to prevent damage to adjacent areas by a spreading fire.

Site preparation by tractors also present problems such as disturbing surface soil in forest land. However, tractors are needed in removing trees that are left. A site preparation method of cutting butts and branches into small pieces by a chain saw and collecting and stacking them between lines should also be used.

(4) Regeneration and selection of tree species

The results produced from plantation depend on genetic factors, environmental conditions and the tending technology of nursery stocks, assuming that the right tree species for right sites are selected.

The Forestry Department has selected Kapur, Mangium and Klinki pine as tree species to be planted in the model plantation area.

Of these three tree species, Mangium and Klinki pine are exotic species. After the FAO recommended industrial plantation of fast growing tree species, the countries in the tropical zone have been planting trees appropriate to their situations, including planting of exotic species.

In some countries, the selection of tree species to be planted has taken root or is taking root after a period of experimentation to gain experience. In many other countries, this matter is still at the stage of trial and error.

Exotic species have the following advantages:

a. Planted in various countries of the world, so much experience and research results have been accumulated.

b. Generally grow fast and can adapt widely.

c. Seeds can be obtained and purchased easily.

Conversely, planting of exotic species involves problems such as their adaptability to a new environment, and danger of disease and pest damage, as they will be introduced to a different ecosystem.

Measures have to be prepared to avoid as much as possible, disease and pest damage in the future, before exotic species are planted. One measure that is recommended is to plant species produced in as many countries as possible to secure a wide genetic mix (types).

Mangium originates in the northern part of Queensland, Australia. The requirements of this species on land are low and the species is known to producuce excellent grouth. Its texture is hard and dense, and is suitable for particle boards, pulp and other applications. Mangium is suitable for planting in devastated land and for the plantation of grassland. Some problems however remain with this species for plantation use, following the cutting of good natural forests.

Klinki pine can be found in New Guinea at altitudes of 600 to 1,500m. It grows naturally up to altitudes of about 2,500m in some areas. Klinki pine grows to heights of more than 50m and is a useful species.

Large-diameter trees are used for producing veneer for plywood. Nevertheless, careful observation will be necessary concerning the growth of this species if trees of this species are planted in areas below 100 m in altitude, which are far lower than the altitudes of their natural habitat.

Kapur is a domestic species. A general characteristic of the *Dipterocarpaceae* species is that fruit bearing varies greatly from one year to another, giving a rich or poor harvest. Few research results can be found regarding storage of seeds. Generally, Kapur seeds are considered not durable if stored over long period, and stable production of nursery stocks is difficult.

Kapur is planted at present using nursery stocks produced in nurseries in Sg. Liang, and wildlings. The quality of wildlings, such as the nursery stock T/R ratio is not good, and genetic properties are not constant. For this reason, a system to supply selected nursery stocks grown in nurseries should be established in the future.

The active introduction of techniques relaiting to Kapur are proposed, such as line planting which is already being conducted on an experimental basis, and enrichment planting, to artificially correct natural forests by cutting part of forests and by planting trees there, over and above regular plantation techniques.

Forest stands very similar to pure forests of Agathis can be found near the survey area. Kerangas is also scattered in the southern parts of the survey area, and the planting of Agathis trees in these places should be studied.

Generally, trees are planted immediately before the rainy season to improve the survival rate. In Brunei Darussalam, however, the difference between the rainy and dry seasons is not distinct and trees must be planted empirically. Nearby soil has to be trampled on to bring root systems and soil closer before planting trees.

(5) Supplementary planting and vacancy planting

Generally, the practice of conducting a success survey two or three months after planting and replacing dead trees during the same season is called "supplementary planting." If the survival rate is very low, all trees are replaced during the next season. This is called "replanting." In Brunei Darussalam, both of these practices are called "vacancy planting" requiring trees to be replanted if the survival rate in a success survey is below 90%.

The causes of the tree mortality are studied, and trees are planted after removing these causes.

(6) Tending

Tending work includes weeding, climber cutting, cleaning cutting, pruning, thinning and fertilising.

a. Weeding

Weeding has to be performed before miscellaneous trees, shrubs and undergrowth reach the heights of planted trees. Depending on the growth condition of undergrowth and other vegetation, weeding is performed in the moist tropical region about twice in one growth period, for two or three years after planting. Weeding of plots prepared by controlled burning can be omitted in the planting year, but must be performed at least twice per year after the second year.

Weeding must be continued till the heights of the planted trees surpass the heights of undergrowth and other vegetation.

The complete weeding, strip/line weeding and spot weeding methods are employed in weeding and an optimal method is used in accordance with the characteristics of the planted trees, growth of undergrowth and meteorological conditions.

b. Climber cutting and improvement cutting

Climbers grow rapidly in moist tropical forests. Climbers are cut to protect planted trees from them. In the tropical region, poor results of artificial and natural forests are freguently caused by climber damage.

Climbers should preferably be cut at least once per year after weeding is finished.

Many of the broad-leaved trees have excellent reproductive power from stools. Coppice shoots grown from stumps often obstruct the growth of planted trees when natural forests are cut and converted into artificial forests. Coppice shoots are cut keeping useful trees intact as much as possible. Improvement cutting must be performed at least twice till forest land has a crown closure by branches and leaves of planted trees.

c. Pruning and thinning

Pruning is performed for producing straight knotless lumber and is specially necessary for species with which natural trimming cannot be expected.

Thinning is performed by removing trees that have poor shapes, overspread trees and similar trees before planted trees struggle, and to adjust to the appropriate number of trees suiting the forest stands. Thinning is performed by counting the number of trees for each species if the stand growth history is known, by the basal area method, or, as the most precise method, by the stand density control chart.

If these methods are not used, thinning must be performed empirically using experience with other similar species as a reference.

According to the stand density control chart of Caribbean pine in Fiji (Tropical Plantation Plan Standard, JICA, 1983), depending on differences due to tree forms and growth for each species, about 30% of standing trees are thinned in 10th and 20th years.

d. Fertilising

Fertilising of forest land will be effective with plantation of infertile forest land and with reforestation of pine and other species.

In some industrial plantations, forest land is fertilised to accelerate growth and to increase the yield. However, ideally, a balance between consumption and supply should be achieved by material circulation under natural conditions. For this purpose, mixed planting of species that form root nodules, a method that does not weaken the soil productivity during site preparation and other measures should preferably be taken. (Sumihiko Asakawa, Tropical Plantation Technology, 1992)

Verification of investment effects at the time of harvesting will be a future task when forest land is fertilised.

(7) Protection

Plantations are protected by mainly controlling disease and pest damage and by preventing forest fires.

Appropriate tending work will be most effective for controlling disease and pest damage. However, danger of disease and pest damage will be extremely high with general plantation in a large area, where only one species, particularly an exotic species is planted. Disease and pest damage to trees of exotic species planted in large areas have been reported. For example, heart rot of Mangium on a large scale has occurred recently in Malaysia. This phenomenon is prominent with stands that are ten years and older. Therefore in this project also, reduction in sizes of single plantation areas will be effective.

The awareness of those concerned and of residents living nearby must be enhanced as the most important element to prevent forest fires. A system of fire fighting for forest fires must be improved and expanded. Needless to say, improvements and expansions of forest roads and other facilities are very useful in fire fighting activities.

7.3.2. Infrastructure improvements

(1) Nurseries

Nursery stocks needed by the model plantation area are supplied at present mainly by the nursery of the Forestry Department at Sg. Liang. This nursery is equipped with seed beds, nursery beds, shading facilities, irrigation, other facilities. It is also well equipped in terms of nursery specialists and skilled nursery workers.

The carrying distance for nursery stocks from nurseries to plantations differ according to the planting stock. Stump stocks are considered to endure about two weeks' transportation. If roads are built, this nursery can supply the requirements of ordinary nursery stocks needed by the model plantation area. If plantation moves to deeper areas in the future, the transportation cost of pot nursery stocks will become expensive. It is recommended that one nursery each in the watersheds of Sg. Belait and Sg. Tutong be built for a better link between tree planting and nursery stock supply.

The new nurseries must be located where water can be obtained and drainage presents no problems throughout the year. From this standpoint, the nurseries should preferably be built on bank terraces of rivers in which water flows even during the dry season. Due to the river grades, natural flow by building a dam will be difficult and water will have to be pumped. The new nurseries should be located near communities to secure the labour needed for them.

The areas of nurseries differ in accordance with the nursing period and yield percent of seedling. As a criterion, one ha is needed to produce one million pot nursery stocks.

(2) Forest roads

Forest roads are indispensable in hauling timber, carrying nursery stocks for plantation, moving workers and managing forests.

As mentioned in section 1.2 Survey Area, roads in the northern part of the survey area are relatively dense, but are sparse in the southeastern part. Existing national roads and forest roads total only about 120km, and planned roads total about 30km. The total road distance will be, therefore, only 150km. The road network density will be only 3m/ha.

In formulating an overall plan for forest roads, firstly, a road network density is set, and the total forest road length decided as the final goal. In the case of the survey area, the total road length will be 500km if a road network density of 10m/ha is assumed. The forest roads to be built will total 350km. Under the circumstances, only a necessary minimum total length will be considered. Only main access roads that will connect with public roads, and which are needed for managing and operating wide forests will be studied.

The layout of main access roads consists of circulation roads that pass through the southern and eastern parts of the model plantation area and short-circuit roads that connect the central part to the eastern and western parts.

Maximum grades will be important in planning forest roads. Some parts of the national road being built in the southern part of the survey area are more than 16% in longitudinal slope. Roads at this grade cannot be passed through during the rainy season, as forest roads to be built in the future will not be paved. Maintenance of these roads will also present problems such as gullies on road surfaces. In view of these factors, a maximum longitudinal slope of 7% is considered appropriate.

The area has a wavy topography with low relief. If forest roads were to be built along ridges, this maximum longitudinal slope of 7% cannot be maintained. For this reason, the forest road layout will be selected so that forest roads are built on skirts of mountains avoiding swamps.

Detailed conditions cannot be identified from topographical maps and routes will be decided paying attention to these matters during the survey. The points requiring attention during design and construction of forest roads are as follows:

a. Avoid construction of large sectional profiles such as large scale cutting and filling.

b. Sufficiently roll filled areas.

c. Green slopes as early as possible.

d. Side channels excavated without timbering must have large sectional profiles. Side channel drainage must be provided every 100m or so, if grades in excess of 5% continue.

e. Drainage holes must be provided where water stays.

f. Drainage work and channel end work must be provided at inlets and outlets of cross drain channels.

(3) Erosion control

Consideration should also be given to maintaining the soil and water conservation functions which forests originally have, when executing forest operations in the model plantation area. Erosion and floods are feared specially during the period after forest cutting and before planting trees. Therefore, full precaution must be exercised at this stage in executing forest operations. A study to improve and expand erosion control facilities that supplement the soil and water conservation functions will be needed.

a. Forest cutting and soil and water conservation

1) Erosion

Generally, forest cutting affects soil properties (permeability), ground surface overlay and the intensity of raindrops falling to the ground. Variations in these factors increase the amount of erosion. In the tropical region, organic matter decomposes quickly and these variations progress rapidly within a year after forest cutting and erosion is easily caused. Soil in the model plantation area is sandy soil which is very easily eroded, and the danger of erosion is great.

Erosion decreases if grass and shrubs grow easily and cover the ground surface, even if erosion occurs after cutting. However, if gully erosion occurs before grass and shrubs cover the ground surface, the flow of water becomes further concentrated, and gully erosion continuously expands.

2) Floods

As one of the factors that affects the peak flood discharge, forest cutting varies the runoff coefficient, water running distances concentrating ratio and rainfall intensity and increases the peak flood discharge. As a result, the peak flood discharge after tree cutting sometimes increases by two or three times its value before tree cutting. If sediment flows to rivers by erosion or other reasons, the peak flood discharge will be further increased by the mix of sediment.

At present, fluctuations of the peak flood discharge caused by tree cutting inside the model plantation area are not particularly significant. However, if forest cutting inside the same watershed accelerates in the future, flood problems in the downstream area will become more serious.

b. Forest management taking soil and water conservation into consideration

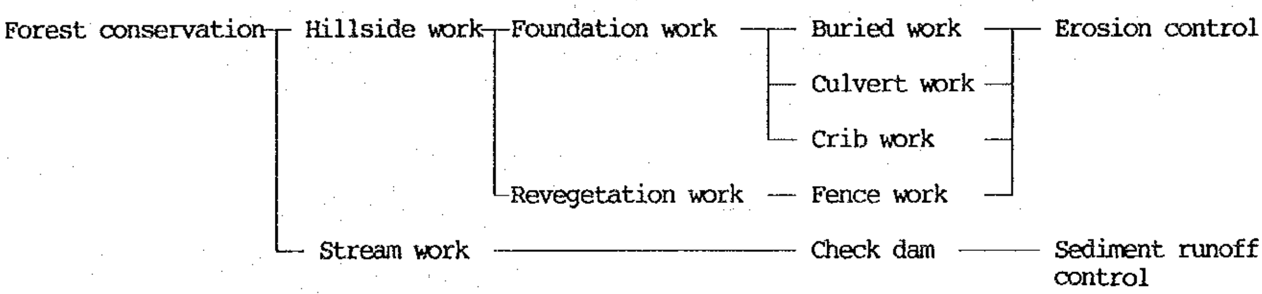
Soil erosion and floods are studied as part of soil and water conservation aspects in the model plantation area. A study will be needed on forest management in exercising care to prevent such erosion. This forest management is divided roughly into soft and hard measures:

Operation aspect:	Preventive measures. Forest operations paying attention to soil and water conservation.
Facility aspect:	Restoration measures. Erosion control facilities that supplement soil and water conservation functions which forests offer.

Forest management of the soft aspect requires preventive measures to prevent soil erosion and floods. The execution of the practical application of scientific, economic and social principles to the administration and working of a forest estate for specified objectives, paying attention to soil and water conservation, will be specific measures. The reader is requested to refer to paragraph 7.4.1. Matters related to forest operations regarding these measures.

This paragraph describes forest management in the hard aspect, i.e., the erosion control facilities that supplement the soil and water conservation functions which forest have. These erosion control facilities are directly intended to restore eroded land, and to prevent sediment runoff. Indirectly, they are effective in preventing floods.

As described in paragraph 6.4.1. Erosion control, the following erosion control facilities are needed to maintain and demonstrate the soil and water conservation functions in the model plantation areas:



1) Buried work (See App. Figures. 6 and 7.)

Purpose: To stabilise instable gully heads and side walls.

Materials: Small logs and tree branches. (The model plantation area has low relief and gentle inclination. It has sandy soil. Small and simple materials that can be obtained locally will be used.)

2) Culvert work (See App. Figure-8.)

Purpose: To reduce the flow velocity of seepage water in the bottom of the gullies to prevent erosion.

Materials: Tree branches. (Tree branches that can be procured locally are put in the bottoms of the gullies and sediment around the gullies is put back into them.

3) Crib work (See App. Figure-9.)

Purpose: To stabilise over a wide area of a plane slopes, specially in steep

locations, to prevent movement of surface soil by slope erosion.
Materials: Logs (Materials that can be procured locally are used as piles and vertical and horizontal frames)

4) Fence work (See App. Figure-10.)

Purpose: To disperse surface flow on surfaces of bare land and, by reducing the flow velocity of surface flow, to prevent runoff of surface soil and growth of gullies.
Materials: Logs and tree branches. (Materials that can be procured locally will be used as fences and piles that support fences.)

5) Check dams (See App. Figure-11.)

Purpose: To control sandy sediment easily moved by the tractive force of flowing water to prevent runoff of sediment to downstream areas.
Materials: Gabions. (Stones and boulders are not expected to flow down in the model plantation area and a simple structure will be sufficient. In most cases, foundation ground is softand a flexible structure will be needed.)

Among the works mentioned above, underground work, culvert work and fence work as hillside work should preferably be undertaken in accordance with the degree of erosion (Ranks A, B, C and D). A typical example of work type selection is shown below.
(See App. Figure-12.)

Degree of erosion		Type of erosion
Gully erosion	Rank A	Gabion buried work, Log buried work, Brush culvert work, Log crib work and Fence work
	Rank B	Log buried work, Brush culvert work, Log crib work and Fence work
	Rank C	Brush culvert work, Log crib work and Fence work
Sheet erosion	Rank D	Log crib work and Fence work

8. Recommendations for Future Forest Operations

8.1. Basic Matters

The major premises for forest operations is to preserve sound forests, to maintain and enhance the contents of the forests for the future, and to protect the forests and their surrounding environment. From this point of view, we would like to make the following proposals for the Model Plantation area.

1. Planting blocks for Model Plantation development should be dispersed so as avoid opening of large clear felled areas at any time, which will encourage soil erosion.

Dispersing planting blocks will provide green buffer zones, therefore, clear cutting should not be carried out on adjacent blocks until earlier planting have developed a ground cover.

2. Thorough investigation and screening of exotic species should be carried out before they are introduced for local plantation development, to ensure productivity with minimal risks of pests and outbreaks of diseases.

3. Mixed Dipterocap Forest covers two thirds of the survey area, and contains more than 70% of its timber volume.

While the major plantation development area is expected to be situated in this area, there are certain portions of land, where local topography and poor soil nutrient require special management consideration.Areas which have poor soil nutrient content, should be planted with species which do not demand a lot of nutrients.

Forest with a high proportion of valuable commercial trees should be maintained in its natural condition, and managed through natural regeneration and timber stand improvement, such as enrichment planting, and should be harvested by selective management techniques.

4. Peat Swamp Forest has strongly acidic soil, Histosols. In many places within this forest type, plantation seems impossible due to the prevailing conditions. Also, as some forest types have difficulty in regenerating naturally in these areas, care should be taken in dealing with Peat Swamp Forest.

Freshwater Swamp Forest is excellent in protecting river banks, and has a function in holding sediment from upper slope. Therefore this forest should be kept undisturbed.

5. Soil from gently sloping land contains medium- and fine-grained Acrisols, and is the best soil for plantation in survey area. But because its soil nutrition is poor, it is necessary to choose the correct site preparation method which will not result in the loss of the surface layer of organic matter.
6. Sandy soil of sloping land has a high tendency to soil erosion. Therefore a lot of care should be taken in plantation establishment and road construction. Sheathing by wicker work and other appropriate measures are recommended to prevent soil erosion.

8.2. Concrete Matters Based on Survey Results

The model plantation area is situated within the Stateland (non-national forest estate). Mixed Dipterocarp forests with a high stand volume are widely distributed from the centre part to the southeast part of the survey area. As mentioned in paragraph 7.2.1., "the first priority in the basics of forest operations should be to maintain and enhance contents and quality of forests for the future". In this context, a sufficiently careful study is needed before using the entire area for plantation

The exploited forests, parts of which were cut before, contain forests which abound with commercial tree species centring on the Dipterocarp fmily. Forest operations to raise these species deserve a sufficient future study.

A large number of young growths of the Dipterocarp species are grown in some of these forests. These young growths must be grown positively in these areas, in addition to using them as wildlings.

The areas along the Belait River and the western parts of the Ukong and Rambai region, abound with swamp areas. Generally, the mix proportions of Alan and Kapur paya are high in the forest stand composition of swamp forests. Risks encountered in regeneration must be fully taken into consideration when developing swamp forests.

Kapur paya was grown as a succeeding species in nearly all of the Alan forest land near Apak-Apak left after selection cutting of trees around 1967. This suggests that regneration of Alan forests is difficult and careful handling of them is desirable.

Table-26 summarises combinations of topography, forest types and soil types, as well as forest handling, based on the results of the field survey. The survey was not conducted to study handling of forests as its main purpose and was not complete in this respect. The surveyed locations were also limited. Therefore, this table must not be used as absolute guideline.

Table-26 Plan of forest operations

Topography	Forest Type / Soil Type	Matters Requiring Attention	Area	Felling Method	Regenerating Method
Along Rivers (1) Riparian low swamp - Lowland	Freshwater swamp forest 2 Gleysols	Riparian forests need protection. Poor workability due to soft ground. Fine-grained soil and drainage rather poor.	All areas	Felling prohibited	-
(2) Low-altitude flat land	Peat swamp forest 3.1 and 3.2 Secondary forest 8 Gleysols Histosols	Workability is poor in low swamps. Fine-grained soil and drainage rather poor. Afforestation needs caution. Riparian forests need proteciton. Poor drainage and strong in acidity. Not suitable for afforestation except special species.	Lowland Low swamps	Clear cutting of small area Felling prohibited	Afforestation -
(3) Same as above.	Alan bunga forest 3.3 Histosols	Regeneration is difficult. Protection as pure forest needed. Poor drainage and strong in acidity. Not suitable for afforestation except special species.	All areas	Felling prohibited	-
(4) Same as above.	Padang Alan forest 3.5 Histosols	Alan can be reserved by natural regeneration. Workability is poor in low swamps. Poor drainage and strong in acidity. Not suitable for afforestation except special species.	Lowland Low swamps	Selection felling Felling prohibited	Natural regeneration -
(5) Hilly land Fine wavy topography	Lowland mixed Dipterocarp forest 5(2),5(2.EX) Acrisols	Natural regeneration is possible. Erosion control and prevention is necessary. Soil conservation is needed for steep slopes and coarse-grained ground.	Centle slop Steep slope	Clear cutting of small area Selection felling	Afforestation Natural regeneration Enrichment
(6) Hill land Inland	Mixed Dipterocarp forest 5(3),5(4),5(4.EX) Acrisols	Distributed in steep slopes around hill tops. Large in volume. Variations are small. Soil conservation is needed for steep slopes and coarse-grained ground.	All areas	Selecton felling	Natural regeneration Enrichment

Remarks

1. Areas by forest type are as follows:
   Sturatum 2 : 5,069.32ha Strata 3.1,3.2 and 8 : 5,623.40ha Sturatum 3.3 : 947.70ha Stratum 3.5 : 391.34ha
   Strata 5(2) and 5(2.EX) : 21,894.33ha Strata 5(3),5(4) and 5(4.EX) : 1,124.80ha
2. Lowland in (2) for clear cutting of small areas is scatttered and group clear cutting is dosirable as the felling method.
3. Gentle slopes are suitable for clear cutting of small areas in (5). Strip clear-cutting is specially desired for Stratum 5(2.EX).
4. Kapur paya, which is a domestic species, is desirable as an afforestation species for (2) when availability of seeds and production of nursery stocks are condiered.
5. A domestic species, such as Kapur, is desirable as an afforestation species for (5) when conservation of natural ecosystem is considered. However, a fast growing species (*Acacia mangium*) should also be considered for areas with deteriorated site environment due to poor forest stand condition such as in Stratum 5(2.EX).

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Appendices

App.Table-1 List of principal instruments employed

(1) Aerial signalisation/monumentation

Handy GPS (Sony Pyxis)

(2) Aerial photography

Aircraft (USA Beechcraft Duke B60)

Camera (Switzerland Wild RC10)

(3) Photo processing

Processor (Morse)

Enlarger (Switzerland Wild E4)

Printer (Denmark Eskofot 842)

Drier (Germany Zeiss TG24)

(4) Control point survey

GPS Receiver (USA Trimble 4000SL)

Computer (Toshiba J3100SGT)

Printer (Canon K10061)

EDM Theodolite (Topcon Guppy GTS-10D)

Generator (Honda EX300)

(5) Levelling

Level (Switzerland Wild NA2000)

Level (Nikon auto level)

Bar-code staff (Lica)

(6) Aerial triangulation

Pricking device (Switzerland Wild PUG4)

Stereocomparator (Germany Zeiss)

Computer (Fujitsu Facom M760-4)

(7) Plotting

Coordinategraph (Muto XT1100)

Plotting machine (Switzerland Wild Stereoplotter A8)

Plotting machine (Germany Zeiss Metrograph)

App.Table-2 List of photographs

Course No.	Counter No.	No. of Photo sheets	Roll No.	Photographed Date
C1	146 - 160	15	JICA 1	Jul/7/92
C2	161 - 179	19	JICA 1	Jul/7/92
C3	180 - 201	22	JICA 1	Jul/7/92
C4	202 - 225	24	JICA 1	Jul/7/92
C5	490 - 519	30	JICA 2	Aug/2/92
C6	520 - 548	29	JICA 2	Aug/2/92
C7	549 - 577	28	JICA 2	Aug/2/92
C8	578 - 605	28	JICA 2	Aug/2/92
C9	659 - 686	28	JICA 3	Aug/3/92
C10	687 - 715	29	JICA 3	Aug/3/92
C11	716 - 743	28	JICA 3	Aug/3/92
C12	744 - 770	27	JICA 3	Aug/3/92
C13	771 - 797	27	JICA 3	Aug/3/92
C14	798 - 818	27	JICA 3	Aug/3/92
C15	907 - 926	20	JICA 2	Aug/10/92
C16	399 - 417	19	JICA 1	Jul/25/92
C17	382 - 398	17	JICA 1	Jul/25/92
C18	367 - 381	15	JICA 1	Jul/25/92
C19	355 - 366	12	JICA 1	Jul/25/92
C20	438 - 445	8	JICA 1	Jul/25/92
C21	963 - 976	14	JICA 2	Aug/10/92
C22	819 - 840	22	JICA 3	Aug/3/92
C22	898 - 906	9	JICA 2	Aug/10/92
C23	877 - 888	12	JICA 2	Aug/10/92
C24	889 - 897	9	JICA 2	Aug/10/92
		Table 512 sheets		

The following photos were replaced by reflights.

Course No.	Counter No.	No. of Photo sheets	Roll No.	Photographed Date
C15	418 - 437	20	JICA 1	Jul/25/92
C21	446 - 459	14	JICA 1	Jul/25/92

App.Table-3 List of photos and films for delivery

1) Diapositive films

Course No.	Counter No.	No. of sheets
C3	186 - 194	9
C4	207 - 219	13
C5	492 - 508	17
C6	530 - 545	16
C7	551 - 567	17
C8	586 - 603	18
C9	662 - 678	17
C10	700 - 710	11
C11	722 - 731	10
	Total	128 sheets

2) Two-times enlarged photos

Course No.	Counter No.	No. of sheets
C3	186 - 194	9
C4	207 - 218	12
C5	493 - 508	16
C6	530 - 545	16
C7	551 - 567	17
C8	586 - 603	18
C9	662 - 678	17
C10	700 - 710	11
C11	722 - 731	10
	Total	126 sheets

App.Table-4

Volume table (All species) No.1

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
10	0.205	0.254	0.307	0.366	0.430	0.499	0.574	0.653	0.738	0.828	0.924	1.024	1.130	1.241	1.357
12	0.233	0.288	0.349	0.416	0.489	0.568	0.652	0.743	0.839	0.942	1.050	1.164	1.284	1.410	1.542
14	0.260	0.321	0.389	0.464	0.545	0.633	0.727	0.828	0.935	1.049	1.170	1.297	1.431	1.572	1.719
16	0.286	0.353	0.428	0.510	0.599	0.695	0.799	0.909	1.027	1.153	1.285	1.425	1.572	1.727	1.888
18	0.310	0.383	0.465	0.554	0.650	0.755	0.868	0.988	1.116	1.252	1.396	1.548	1.708	1.876	2.051
20	0.334	0.413	0.500	0.596	0.700	0.813	0.934	1.064	1.202	1.349	1.504	1.667	1.839	2.020	2.209
22	0.357	0.442	0.535	0.637	0.749	0.869	0.999	1.138	1.285	1.442	1.608	1.783	1.967	2.160	2.362
24	0.380	0.469	0.569	0.678	0.796	0.924	1.062	1.209	1.366	1.533	1.709	1.895	2.091	2.296	2.511
26	0.402	0.497	0.602	0.717	0.842	0.978	1.123	1.279	1.445	1.622	1.808	2.005	2.212	2.429	2.657
28	0.423	0.523	0.634	0.755	0.887	1.030	1.184	1.348	1.523	1.709	1.905	2.112	2.330	2.559	2.799
30	0.444	0.549	0.665	0.793	0.931	1.081	1.242	1.415	1.598	1.793	2.000	2.217	2.446	2.686	2.938
32	0.465	0.575	0.696	0.830	0.975	1.131	1.300	1.481	1.673	1.877	2.093	2.320	2.560	2.811	3.074
34	0.485	0.600	0.727	0.866	1.017	1.181	1.357	1.545	1.746	1.958	2.184	2.421	2.671	2.933	3.208
36	0.505	0.624	0.756	0.901	1.059	1.229	1.412	1.608	1.817	2.039	2.273	2.521	2.781	3.054	3.340
38	0.525	0.649	0.786	0.936	1.100	1.277	1.467	1.671	1.888	2.118	2.361	2.618	2.888	3.172	3.469
40	0.544	0.672	0.815	0.971	1.140	1.324	1.521	1.732	1.957	2.196	2.448	2.714	2.995	3.289	3.596
42	0.563	0.696	0.843	1.004	1.180	1.370	1.574	1.792	2.025	2.272	2.533	2.809	3.099	3.403	3.722
44	0.582	0.719	0.871	1.038	1.219	1.415	1.626	1.852	2.093	2.348	2.618	2.903	3.202	3.517	3.846
46	0.600	0.742	0.899	1.071	1.258	1.460	1.678	1.911	2.159	2.422	2.701	2.995	3.304	3.628	3.968
48	0.618	0.764	0.926	1.103	1.296	1.505	1.729	1.969	2.225	2.496	2.783	3.086	3.404	3.738	4.088
50	0.636	0.787	0.953	1.135	1.334	1.549	1.779	2.026	2.289	2.569	2.864	3.175	3.503	3.847	4.207

Volume table (All species) No.2

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm) 48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
10	1.478	1.605	1.737	1.874	2.016	2.164	2.317	2.475	2.638	2.807	2.981	3.160	3.344	3.534	3.729
12	1.680	1.824	1.974	2.130	2.292	2.460	2.634	2.813	2.999	3.191	3.388	3.592	3.802	4.017	4.239
14	1.873	2.033	2.200	2.374	2.554	2.741	2.935	3.135	3.342	3.556	3.776	4.003	4.237	4.477	4.724
16	2.057	2.233	2.417	2.608	2.806	3.011	3.224	3.444	3.671	3.906	4.148	4.397	4.654	4.918	5.189
18	2.235	2.426	2.626	2.833	3.048	3.271	3.502	3.741	3.988	4.243	4.506	4.777	5.056	5.342	5.637
20	2.407	2.613	2.828	3.051	3.283	3.523	3.772	4.029	4.295	4.570	4.853	5.144	5.444	5.753	6.071
22	2.574	2.794	3.024	3.262	3.510	3.767	4.033	4.308	4.593	4.886	5.189	5.501	5.822	6.152	6.491
24	2.736	2.970	3.214	3.468	3.732	4.005	4.288	4.580	4.883	5.195	5.516	5.848	6.189	6.540	6.901
26	2.894	3.142	3.400	3.669	3.948	4.237	4.536	4.845	5.165	5.495	5.836	6.186	6.548	6.919	7.300
28	3.049	3.310	3.582	3.865	4.159	4.463	4.778	5.105	5.441	5.789	6.148	6.517	6.898	7.289	7.691
30	3.201	3.475	3.760	4.057	4.365	4.685	5.016	5.358	5.712	6.077	6.454	6.841	7.241	7.651	8.073
32	3.349	3.636	3.935	4.246	4.568	4.903	5.249	5.607	5.977	6.359	6.753	7.159	7.577	8.006	8.448
34	3.495	3.795	4.106	4.430	4.767	5.116	5.477	5.851	6.237	6.636	7.047	7.471	7.907	8.355	8.816
36	3.638	3.950	4.275	4.612	4.963	5.326	5.702	6.091	6.493	6.908	7.336	7.777	8.231	8.698	9.178
38	3.779	4.103	4.440	4.791	5.155	5.532	5.923	6.327	6.745	7.176	7.620	8.078	8.550	9.035	9.533
40	3.918	4.254	4.603	4.967	5.344	5.735	6.141	6.560	6.993	7.439	7.900	8.375	8.864	9.367	9.883
42	4.055	4.402	4.764	5.140	5.531	5.936	6.355	6.789	7.237	7.699	8.176	8.667	9.173	9.694	10.228
44	4.190	4.549	4.922	5.311	5.715	6.133	6.566	7.014	7.477	7.955	8.448	8.956	9.478	10.016	10.568
46	4.323	4.693	5.079	5.480	5.896	6.328	6.775	7.237	7.715	8.208	8.716	9.240	9.779	10.334	10.904
48	4.454	4.836	5.233	5.646	6.075	6.520	6.980	7.457	7.949	8.457	8.981	9.521	10.076	10.648	11.235
50	4.584	4.977	5.385	5.811	6.252	6.710	7.184	7.674	8.180	8.703	9.242	9.798	10.370	10.958	11.562

Volume table (All species) No.3

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm) 78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
10	3.929	4.134	4.345	4.561	4.782	5.009	5.241	5.478	5.720	5.968	6.221	6.479	6.743	7.012	7.286
12	4.466	4.700	4.939	5.185	5.437	5.694	5.958	6.227	6.503	6.784	7.072	7.366	7.665	7.971	8.282
14	4.978	5.238	5.505	5.779	6.059	6.346	6.640	6.940	7.247	7.561	7.882	8.209	8.543	8.883	9.231
16	5.468	5.754	6.047	6.348	6.655	6.971	7.293	7.623	7.961	8.305	8.657	9.017	9.384	9.758	10.139
18	5.940	6.250	6.569	6.896	7.230	7.573	7.923	8.282	8.648	9.023	9.405	9.795	10.194	10.600	11.015
20	6.397	6.731	7.074	7.426	7.786	8.155	8.532	8.918	9.313	9.716	10.128	10.549	10.978	11.415	11.862
22	6.840	7.198	7.564	7.941	8.326	8.720	9.124	9.537	9.959	10.390	10.830	11.280	11.739	12.207	12.684
24	7.271	7.652	8.042	8.442	8.851	9.270	9.699	10.138	10.587	11.045	11.514	11.992	12.479	12.977	13.484
26	7.692	8.095	8.507	8.930	9.364	9.807	10.261	10.725	11.200	11.685	12.180	12.686	13.202	13.728	14.265
28	8.104	8.528	8.962	9.408	9.864	10.332	10.810	11.299	11.799	12.310	12.832	13.364	13.908	14.463	15.028
30	8.507	8.952	9.408	9.876	10.355	10.845	11.347	11.861	12.386	12.922	13.470	14.029	14.599	15.181	15.775
32	8.902	9.367	9.845	10.334	10.835	11.349	11.874	12.411	12.961	13.522	14.095	14.680	15.277	15.886	16.507
34	9.289	9.775	10.273	10.784	11.307	11.843	12.391	12.952	13.525	14.111	14.709	15.319	15.942	16.578	17.226
36	9.670	10.176	10.695	11.226	11.771	12.329	12.899	13.483	14.080	14.689	15.312	15.948	16.596	17.258	17.933
38	10.045	10.570	11.109	11.661	12.227	12.806	13.399	14.005	14.625	15.258	15.905	16.566	17.239	17.927	18.628
40	10.414	10.959	11.517	12.090	12.676	13.277	13.891	14.520	15.162	15.819	16.489	17.174	17.872	18.585	19.312
42	10.777	11.341	11.919	12.512	13.119	13.740	14.376	15.027	15.691	16.371	17.065	17.773	18.496	19.234	19.986
44	11.136	11.718	12.315	12.928	13.555	14.197	14.854	15.526	16.213	16.915	17.632	18.364	19.111	19.873	20.650
46	11.489	12.090	12.706	13.338	13.985	14.648	15.326	16.019	16.728	17.452	18.192	18.947	19.718	20.504	21.306
48	11.838	12.457	13.092	13.743	14.410	15.093	15.791	16.506	17.236	17.983	18.745	19.523	20.317	21.127	21.953
50	12.183	12.820	13.474	14.144	14.830	15.532	16.251	16.986	17.738	18.506	19.291	20.091	20.909	21.742	22.592

Volume table (All species) No.4

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
10	7.565	7.850	8.140	8.435	8.736	9.042	9.353	9.670	9.991	10.318	10.651	10.989	11.332	11.680	12.034
12	8.600	8.924	9.253	9.589	9.931	10.279	10.632	10.992	11.358	11.730	12.108	12.492	12.881	13.277	13.679
14	9.585	9.945	10.313	10.687	11.068	11.455	11.850	12.251	12.658	13.073	13.494	13.922	14.356	14.798	15.246
16	10.528	10.924	11.328	11.739	12.157	12.583	13.016	13.456	13.904	14.360	14.822	15.292	15.769	16.254	16.746
18	11.437	11.868	12.306	12.753	13.207	13.669	14.140	14.618	15.105	15.599	16.102	16.612	17.131	17.658	18.192
20	12.317	12.780	13.252	13.733	14.223	14.721	15.227	15.742	16.266	16.799	17.340	17.890	18.448	19.016	19.591
22	13.170	13.666	14.171	14.685	15.208	15.741	16.283	16.834	17.394	17.963	18.542	19.130	19.727	20.334	20.949
24	14.001	14.528	15.065	15.612	16.168	16.734	17.310	17.896	18.491	19.097	19.712	20.337	20.972	21.616	22.271
26	14.812	15.369	15.937	16.515	17.104	17.703	18.312	18.932	19.562	20.202	20.853	21.514	22.186	22.868	23.560
28	15.604	16.192	16.790	17.399	18.019	18.650	19.292	19.945	20.608	21.283	21.969	22.665	23.373	24.091	24.821
30	16.380	16.996	17.624	18.264	18.915	19.577	20.251	20.936	21.633	22.341	23.061	23.792	24.535	25.289	26.054
32	17.140	17.785	18.443	19.112	19.793	20.486	21.191	21.908	22.637	23.378	24.131	24.896	25.674	26.463	27.264
34	17.887	18.560	19.246	19.944	20.655	21.378	22.114	22.862	23.623	24.396	25.182	25.981	26.792	27.615	28.451
36	18.620	19.321	20.035	20.762	21.502	22.255	23.021	23.800	24.592	25.397	26.215	27.046	27.890	28.748	29.618
38	19.342	20.070	20.811	21.566	22.335	23.117	23.913	24.722	25.544	26.381	27.231	28.094	28.971	29.862	30.766
40	20.052	20.807	21.576	22.358	23.155	23.966	24.791	25.630	26.483	27.350	28.231	29.126	30.035	30.958	31.896
42	20.752	21.533	22.329	23.139	23.963	24.802	25.656	26.524	27.407	28.304	29.216	30.142	31.083	32.039	33.009
44	21.442	22.249	23.071	23.908	24.760	25.627	26.509	27.406	28.318	29.245	30.187	31.145	32.117	33.104	34.106
46	22.123	22.956	23.804	24.667	25.546	26.441	27.351	28.276	29.217	30.174	31.146	32.134	33.137	34.155	35.189
48	22.795	23.653	24.527	25.416	26.322	27.244	28.182	29.135	30.105	31.091	32.092	33.110	34.143	35.193	36.258
50	23.459	24.342	25.241	26.157	27.089	28.037	29.002	29.984	30.982	31.996	33.027	34.074	35.137	36.218	37.314

Volume table (All species) No.5

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm) 138	140	142	144	146	148	150
10	12.392	12.757	13.126	13.501	13.881	14.267	14.658
12	14.088	14.502	14.922	15.348	15.780	16.218	16.663
14	15.700	16.162	16.630	17.105	17.587	18.075	18.570
16	17.246	17.753	18.267	18.789	19.318	19.854	20.398
18	18.735	19.286	19.844	20.411	20.986	21.569	22.160
20	20.176	20.769	21.370	21.981	22.600	23.227	23.864
22	21.574	22.208	22.852	23.504	24.166	24.837	25.518
24	22.935	23.609	24.293	24.987	25.691	26.404	27.128
26	24.263	24.976	25.700	26.434	27.178	27.933	28.698
28	25.561	26.312	27.075	27.848	28.632	29.427	30.233
30	26.832	27.620	28.420	29.232	30.055	30.890	31.736
32	28.077	28.903	29.740	30.589	31.451	32.324	33.210
34	29.300	30.161	31.035	31.921	32.820	33.732	34.656
36	30.502	31.398	32.308	33.230	34.166	35.115	36.077
38	31.684	32.615	33.560	34.518	35.490	36.476	37.475
40	32.847	33.813	34.792	35.786	36.794	37.815	38.851
42	33.994	34.993	36.006	37.035	38.078	39.135	40.207
44	35.124	36.156	37.204	38.266	39.344	40.437	41.544
46	36.239	37.304	38.385	39.481	40.593	41.720	42.863
48	37.340	38.437	39.551	40.681	41.826	42.988	44.165
50	38.427	39.557	40.703	41.865	43.044	44.240	45.451

Volume table (Kapur bukit) No.1

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
10	0.298	0.351	0.406	0.463	0.524	0.586	0.652	0.719	0.789	0.861	0.936	1.012	1.090	1.171	1.253
12	0.352	0.414	0.479	0.547	0.618	0.693	0.770	0.850	0.932	1.017	1.105	1.195	1.288	1.383	1.480
14	0.406	0.476	0.551	0.630	0.712	0.797	0.886	0.978	1.073	1.171	1.272	1.376	1.482	1.592	1.704
16	0.458	0.538	0.623	0.711	0.804	0.901	1.001	1.105	1.212	1.323	1.437	1.554	1.674	1.798	1.924
18	0.510	0.599	0.693	0.792	0.895	1.003	1.114	1.230	1.349	1.473	1.600	1.730	1.864	2.002	2.143
20	0.562	0.660	0.763	0.872	0.986	1.104	1.227	1.354	1.486	1.621	1.761	1.905	2.053	2.204	2.359
22	0.613	0.720	0.833	0.951	1.075	1.204	1.338	1.477	1.621	1.769	1.921	2.078	2.239	2.404	2.573
24	0.663	0.779	0.901	1.030	1.164	1.304	1.449	1.599	1.755	1.915	2.080	2.250	2.424	2.603	2.786
26	0.713	0.838	0.970	1.108	1.252	1.402	1.559	1.720	1.887	2.060	2.238	2.420	2.608	2.800	2.997
28	0.763	0.897	1.038	1.185	1.340	1.501	1.668	1.841	2.020	2.204	2.394	2.590	2.790	2.996	3.207
30	0.813	0.955	1.105	1.262	1.427	1.598	1.776	1.960	2.151	2.347	2.550	2.758	2.971	3.191	3.415
32	0.862	1.013	1.172	1.339	1.513	1.695	1.884	2.079	2.281	2.490	2.704	2.925	3.152	3.384	3.622
34	0.911	1.071	1.239	1.415	1.599	1.791	1.991	2.197	2.411	2.631	2.858	3.091	3.331	3.577	3.828
36	0.960	1.128	1.305	1.491	1.685	1.887	2.097	2.315	2.540	2.772	3.011	3.257	3.509	3.768	4.033
38	1.009	1.185	1.371	1.566	1.770	1.983	2.203	2.432	2.668	2.912	3.163	3.422	3.687	3.959	4.237
40	1.057	1.242	1.437	1.641	1.855	2.078	2.309	2.549	2.796	3.052	3.315	3.586	3.863	4.148	4.440
42	1.105	1.298	1.502	1.716	1.940	2.172	2.414	2.665	2.924	3.191	3.466	3.749	4.039	4.337	4.642
44	1.153	1.355	1.567	1.790	2.024	2.267	2.519	2.780	3.050	3.329	3.616	3.911	4.214	4.525	4.844
46	1.201	1.411	1.632	1.865	2.107	2.360	2.623	2.895	3.177	3.467	3.766	4.073	4.389	4.713	5.044
48	1.248	1.467	1.697	1.938	2.191	2.454	2.727	3.010	3.302	3.604	3.915	4.235	4.563	4.899	5.244
50	1.296	1.522	1.761	2.012	2.274	2.547	2.830	3.124	3.428	3.741	4.064	4.395	4.736	5.085	5.443

Volume table (Kapur bukit) No.2

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm)														
	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
10	1.338	1.424	1.512	1.602	1.693	1.787	1.882	1.979	2.077	2.177	2.279	2.382	2.487	2.594	2.702
12	1.580	1.682	1.786	1.892	2.000	2.110	2.222	2.337	2.453	2.571	2.691	2.814	2.937	3.063	3.191
14	1.818	1.936	2.055	2.177	2.302	2.429	2.558	2.690	2.824	2.960	3.098	3.238	3.381	3.526	3.673
16	2.054	2.186	2.321	2.459	2.600	2.744	2.890	3.038	3.189	3.343	3.499	3.658	3.819	3.983	4.149
18	2.287	2.434	2.585	2.739	2.895	3.055	3.217	3.383	3.551	3.723	3.896	4.073	4.253	4.435	4.619
20	2.518	2.680	2.846	3.015	3.187	3.363	3.542	3.724	3.910	4.098	4.290	4.484	4.682	4.882	5.085
22	2.747	2.924	3.104	3.289	3.477	3.669	3.864	4.063	4.265	4.471	4.679	4.892	5.107	5.326	5.547
24	2.973	3.165	3.361	3.561	3.764	3.972	4.183	4.398	4.617	4.840	5.065	5.296	5.529	5.766	6.006
26	3.199	3.405	3.615	3.830	4.049	4.273	4.500	4.732	4.967	5.207	5.450	5.697	5.948	6.203	6.461
28	3.423	3.643	3.868	4.098	4.333	4.572	4.815	5.063	5.315	5.571	5.831	6.096	6.364	6.636	6.913
30	3.645	3.880	4.120	4.365	4.614	4.869	5.128	5.392	5.660	5.933	6.210	6.492	6.778	7.068	7.362
32	3.866	4.115	4.370	4.629	4.894	5.164	5.439	5.719	6.003	6.293	6.587	6.885	7.189	7.496	7.809
34	4.086	4.349	4.618	4.893	5.173	5.458	5.748	6.044	6.345	6.651	6.961	7.277	7.598	7.923	8.253
36	4.305	4.582	4.865	5.155	5.449	5.750	6.056	6.368	6.685	7.007	7.334	7.667	8.004	8.347	8.694
38	4.522	4.814	5.111	5.415	5.725	6.041	6.362	6.690	7.023	7.361	7.705	8.054	8.409	8.769	9.134
40	4.739	5.044	5.356	5.675	5.999	6.330	6.667	7.010	7.359	7.714	8.074	8.440	8.812	9.189	9.572
42	4.955	5.274	5.600	5.933	6.272	6.618	6.971	7.329	7.694	8.065	8.442	8.825	9.213	9.608	10.008
44	5.170	5.503	5.843	6.190	6.544	6.905	7.273	7.647	8.028	8.415	8.808	9.207	9.613	10.024	10.442
46	5.384	5.731	6.085	6.447	6.815	7.191	7.574	7.964	8.360	8.763	9.172	9.588	10.011	10.439	10.874
48	5.597	5.957	6.326	6.702	7.085	7.476	7.874	8.279	8.691	9.110	9.536	9.968	10.407	10.852	11.304
50	5.809	6.184	6.566	6.956	7.354	7.760	8.173	8.593	9.021	9.456	9.898	10.346	10.802	11.264	11.733

Volume table (Kapur bukit) No.3

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm)														
	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
10	2.811	2.922	3.035	3.149	3.264	3.381	3.499	3.619	3.740	3.862	3.986	4.111	4.238	4.365	4.495
12	3.320	3.451	3.584	3.719	3.855	3.993	4.133	4.274	4.417	4.561	4.708	4.855	5.005	5.156	5.308
14	3.821	3.972	4.125	4.280	4.437	4.596	4.757	4.919	5.084	5.250	5.419	5.589	5.761	5.934	6.110
16	4.317	4.487	4.660	4.835	5.012	5.191	5.373	5.557	5.743	5.931	6.121	6.313	6.507	6.703	6.901
18	4.806	4.996	5.189	5.383	5.581	5.781	5.983	6.187	6.394	6.604	6.815	7.029	7.245	7.464	7.684
20	5.291	5.500	5.712	5.927	6.144	6.364	6.586	6.812	7.039	7.270	7.503	7.738	7.976	8.217	8.460
22	5.772	6.000	6.231	6.465	6.702	6.942	7.185	7.431	7.679	7.930	8.185	8.441	8.701	8.963	9.228
24	6.249	6.496	6.746	6.999	7.256	7.516	7.779	8.045	8.314	8.586	8.861	9.139	9.420	9.704	9.991
26	6.723	6.988	7.257	7.530	7.806	8.085	8.368	8.654	8.944	9.236	9.532	9.831	10.134	10.439	10.748
28	7.193	7.477	7.765	8.057	8.352	8.651	8.953	9.259	9.569	9.882	10.199	10.519	10.843	11.170	11.500
30	7.660	7.963	8.269	8.580	8.894	9.213	9.535	9.861	10.191	10.525	10.862	11.203	11.547	11.895	12.247
32	8.125	8.446	8.771	9.100	9.434	9.772	10.113	10.459	10.809	11.163	11.521	11.882	12.248	12.617	12.990
34	8.587	8.926	9.270	9.618	9.971	10.327	10.689	11.054	11.424	11.798	12.176	12.558	12.944	13.335	13.729
36	9.047	9.404	9.766	10.133	10.504	10.880	11.261	11.646	12.036	12.429	12.828	13.230	13.637	14.049	14.464
38	9.504	9.880	10.260	10.645	11.036	11.431	11.830	12.235	12.644	13.058	13.476	13.900	14.327	14.759	15.195
40	9.960	10.353	10.752	11.155	11.564	11.978	12.397	12.821	13.250	13.684	14.122	14.566	15.014	15.466	15.923
42	10.413	10.825	11.241	11.663	12.091	12.524	12.962	13.405	13.853	14.307	14.765	15.229	15.697	16.170	16.648
44	10.865	11.294	11.729	12.169	12.615	13.067	13.524	13.986	14.454	14.927	15.405	15.889	16.378	16.871	17.370
46	11.315	11.761	12.214	12.673	13.137	13.608	14.084	14.565	15.052	15.545	16.043	16.547	17.056	17.570	18.089
48	11.763	12.227	12.698	13.175	13.658	14.146	14.641	15.142	15.648	16.160	16.678	17.202	17.731	18.266	18.806
50	12.209	12.691	13.180	13.675	14.176	14.683	15.197	15.716	16.242	16.774	17.311	17.855	18.404	18.959	19.519

Volume table (Kapur bukit) No.4

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm)														
	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
10	4.625	4.757	4.889	5.024	5.159	5.296	5.434	5.573	5.713	5.855	5.998	6.142	6.287	6.433	6.580
12	5.462	5.617	5.774	5.933	6.093	6.254	6.417	6.582	6.747	6.915	7.083	7.253	7.425	7.597	7.772
14	6.287	6.466	6.647	6.829	7.013	7.199	7.386	7.576	7.766	7.959	8.153	8.349	8.546	8.745	8.945
16	7.102	7.304	7.508	7.714	7.922	8.132	8.344	8.557	8.773	8.990	9.209	9.430	9.653	9.878	10.104
18	7.907	8.132	8.360	8.589	8.821	9.054	9.290	9.528	9.768	10.010	10.254	10.500	10.749	10.999	11.251
20	8.705	8.953	9.203	9.456	9.711	9.968	10.228	10.490	10.754	11.020	11.289	11.560	11.833	12.109	12.386
22	9.496	9.767	10.039	10.315	10.593	10.874	11.157	11.443	11.731	12.022	12.315	12.610	12.908	13.209	13.511
24	10.281	10.574	10.869	11.167	11.468	11.772	12.079	12.388	12.700	13.015	13.332	13.652	13.975	14.300	14.628
26	11.060	11.375	11.693	12.013	12.337	12.664	12.994	13.327	13.663	14.001	14.343	14.687	15.034	15.384	15.736
28	11.834	12.170	12.511	12.854	13.201	13.550	13.903	14.259	14.618	14.981	15.346	15.714	16.086	16.460	16.837
30	12.602	12.961	13.323	13.689	14.058	14.431	14.807	15.186	15.568	15.954	16.343	16.735	17.131	17.529	17.931
32	13.367	13.747	14.132	14.519	14.911	15.306	15.705	16.107	16.513	16.922	17.334	17.750	18.170	18.593	19.019
34	14.127	14.529	14.935	15.345	15.759	16.177	16.598	17.023	17.452	17.884	18.320	18.760	19.203	19.650	20.101
36	14.884	15.307	15.735	16.167	16.603	17.043	17.487	17.934	18.386	18.842	19.301	19.764	20.231	20.702	21.177
38	15.636	16.081	16.531	16.984	17.442	17.905	18.371	18.841	19.316	19.795	20.277	20.764	21.255	21.749	22.248
40	16.385	16.852	17.323	17.798	18.278	18.762	19.251	19.744	20.241	20.743	21.249	21.759	22.273	22.791	23.314
42	17.131	17.619	18.111	18.609	19.110	19.617	20.128	20.643	21.163	21.687	22.216	22.749	23.287	23.829	24.375
44	17.874	18.383	18.897	19.415	19.939	20.467	21.000	21.538	22.081	22.628	23.179	23.736	24.297	24.862	25.432
46	18.614	19.144	19.679	20.219	20.764	21.314	21.870	22.430	22.995	23.564	24.139	24.718	25.302	25.891	26.485
48	19.351	19.902	20.458	21.020	21.587	22.158	22.736	23.318	23.905	24.497	25.095	25.697	26.304	26.917	27.534
50	20.086	20.657	21.235	21.817	22.406	22.999	23.598	24.203	24.812	25.427	26.047	26.672	27.303	27.938	28.578

Volume table (Kapur bukit) No.5

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm)														
	138	140	142	144	146	148	150								
10	6.729	6.879	7.030	7.182	7.335	7.489	7.645								
12	7.947	8.124	8.302	8.482	8.663	8.845	9.028								
14	9.147	9.351	9.556	9.763	9.971	10.181	10.392								
16	10.333	10.562	10.794	11.028	11.263	11.500	11.738								
18	11.505	11.761	12.019	12.279	12.541	12.804	13.070								
20	12.666	12.948	13.232	13.518	13.806	14.097	14.389								
22	13.817	14.124	14.434	14.746	15.061	15.377	15.696								
24	14.958	15.291	15.627	15.965	16.305	16.648	16.993								
26	16.092	16.450	16.811	17.174	17.540	17.909	18.281								
28	17.217	17.601	17.987	18.376	18.768	19.162	19.560								
30	18.336	18.744	19.155	19.570	19.987	20.407	20.831								
32	19.448	19.881	20.317	20.757	21.199	21.645	22.094								
34	20.555	21.012	21.473	21.937	22.405	22.876	23.351								
36	21.655	22.137	22.623	23.112	23.605	24.101	24.601								
38	22.750	23.257	23.767	24.281	24.798	25.320	25.845								
40	23.840	24.371	24.905	25.444	25.987	26.533	27.084								
42	24.926	25.480	26.039	26.602	27.170	27.741	28.317								
44	26.006	26.585	27.168	27.756	28.348	28.944	29.545								
46	27.083	27.686	28.293	28.905	29.521	30.142	30.768								
48	28.155	28.782	29.413	30.049	30.690	31.336	31.986								
50	29.224	29.874	30.530	31.190	31.855	32.525	33.200								

Volume table (Keruing) No.1

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
10	0.227	0.289	0.361	0.442	0.532	0.632	0.742	0.862	0.992	1.133	1.285	1.447	1.621	1.806	2.002
12	0.234	0.298	0.372	0.456	0.549	0.652	0.765	0.888	1.023	1.168	1.324	1.492	1.671	1.861	2.063
14	0.240	0.306	0.382	0.467	0.563	0.668	0.784	0.911	1.049	1.198	1.358	1.530	1.714	1.909	2.117
16	0.245	0.313	0.390	0.478	0.575	0.683	0.802	0.932	1.072	1.225	1.388	1.564	1.752	1.952	2.164
18	0.250	0.319	0.398	0.487	0.586	0.697	0.818	0.950	1.093	1.249	1.416	1.595	1.786	1.990	2.206
20	0.254	0.325	0.405	0.496	0.597	0.709	0.832	0.966	1.113	1.271	1.440	1.623	1.817	2.025	2.245
22	0.258	0.330	0.411	0.503	0.606	0.720	0.845	0.982	1.130	1.291	1.463	1.648	1.846	2.057	2.280
24	0.262	0.334	0.417	0.511	0.615	0.730	0.857	0.996	1.147	1.309	1.484	1.672	1.873	2.086	2.313
26	0.265	0.339	0.423	0.517	0.623	0.740	0.869	1.009	1.162	1.327	1.504	1.694	1.898	2.114	2.344
28	0.269	0.343	0.428	0.524	0.631	0.749	0.879	1.022	1.176	1.343	1.523	1.715	1.921	2.140	2.373
30	0.272	0.347	0.433	0.530	0.638	0.758	0.890	1.033	1.190	1.358	1.540	1.735	1.943	2.165	2.400
32	0.275	0.351	0.438	0.535	0.645	0.766	0.899	1.044	1.202	1.373	1.557	1.753	1.964	2.188	2.426
34	0.277	0.354	0.442	0.541	0.651	0.774	0.908	1.055	1.214	1.387	1.572	1.771	1.983	2.210	2.450
36	0.280	0.358	0.446	0.546	0.657	0.781	0.917	1.065	1.226	1.400	1.587	1.788	2.002	2.231	2.473
38	0.282	0.361	0.450	0.551	0.663	0.788	0.925	1.074	1.237	1.412	1.601	1.804	2.020	2.251	2.495
40	0.285	0.364	0.454	0.556	0.669	0.795	0.933	1.084	1.247	1.424	1.615	1.819	2.037	2.270	2.517
42	0.287	0.367	0.458	0.560	0.674	0.801	0.940	1.092	1.257	1.436	1.628	1.834	2.054	2.288	2.537
44	0.289	0.370	0.461	0.564	0.680	0.807	0.947	1.101	1.267	1.447	1.640	1.848	2.070	2.306	2.556
46	0.291	0.372	0.464	0.568	0.685	0.813	0.954	1.109	1.276	1.458	1.653	1.862	2.085	2.323	2.575
48	0.294	0.375	0.468	0.572	0.689	0.819	0.961	1.117	1.285	1.468	1.664	1.875	2.100	2.339	2.593
50	0.296	0.377	0.471	0.576	0.694	0.824	0.968	1.124	1.294	1.478	1.675	1.887	2.114	2.355	2.611

Volume table (Keruing) No.2

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm) 48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
10	2.210	2.430	2.662	2.906	3.162	3.430	3.711	4.005	4.311	4.630	4.963	5.308	5.667	6.039	6.425
12	2.278	2.504	2.743	2.994	3.258	3.535	3.824	4.127	4.443	4.772	5.114	5.470	5.840	6.224	6.621
14	2.336	2.569	2.814	3.071	3.342	3.626	3.923	4.233	4.557	4.895	5.246	5.611	5.990	6.384	6.792
16	2.388	2.626	2.876	3.140	3.416	3.707	4.010	4.327	4.658	5.003	5.363	5.736	6.124	6.526	6.943
18	2.435	2.677	2.933	3.201	3.483	3.779	4.089	4.412	4.750	5.102	5.468	5.848	6.244	6.654	7.079
20	2.478	2.724	2.984	3.257	3.544	3.845	4.160	4.489	4.833	5.191	5.564	5.951	6.353	6.771	7.203
22	2.517	2.768	3.031	3.309	3.601	3.906	4.226	4.561	4.910	5.273	5.652	6.045	6.454	6.878	7.317
24	2.554	2.807	3.075	3.357	3.653	3.963	4.287	4.626	4.980	5.349	5.733	6.133	6.547	6.977	7.423
26	2.588	2.845	3.116	3.401	3.701	4.015	4.344	4.688	5.047	5.420	5.810	6.214	6.634	7.070	7.522
28	2.619	2.880	3.154	3.443	3.747	4.065	4.398	4.746	5.109	5.487	5.881	6.290	6.716	7.157	7.614
30	2.649	2.913	3.190	3.483	3.790	4.111	4.448	4.800	5.167	5.550	5.948	6.362	6.792	7.239	7.701
32	2.678	2.944	3.225	3.520	3.830	4.155	4.496	4.851	5.222	5.609	6.012	6.430	6.865	7.316	7.783
34	2.705	2.973	3.257	3.555	3.869	4.197	4.541	4.900	5.275	5.666	6.072	6.495	6.934	7.390	7.862
36	2.730	3.002	3.288	3.589	3.905	4.237	4.584	4.946	5.325	5.719	6.130	6.557	7.000	7.460	7.936
38	2.755	3.028	3.317	3.621	3.940	4.275	4.625	4.991	5.372	5.770	6.185	6.615	7.062	7.526	8.007
40	2.778	3.054	3.345	3.652	3.974	4.311	4.664	5.033	5.418	5.819	6.237	6.671	7.122	7.590	8.075
42	2.800	3.079	3.372	3.681	4.006	4.346	4.702	5.074	5.462	5.866	6.287	6.725	7.180	7.652	8.140
44	2.822	3.103	3.398	3.710	4.037	4.379	4.738	5.113	5.504	5.912	6.336	6.777	7.235	7.710	8.203
46	2.843	3.125	3.423	3.737	4.066	4.411	4.773	5.150	5.544	5.955	6.383	6.827	7.288	7.767	8.263
48	2.863	3.147	3.447	3.763	4.095	4.442	4.806	5.187	5.583	5.997	6.427	6.875	7.340	7.822	8.322
50	2.882	3.169	3.471	3.789	4.123	4.472	4.839	5.222	5.621	6.037	6.471	6.921	7.389	7.875	8.378

Volume table (Keruing) No.3

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm) 78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
10	6.825	7.238	7.665	8.106	8.562	9.031	9.515	10.013	10.526	11.053	11.595	12.152	12.724	13.311	13.913
12	7.033	7.459	7.899	8.354	8.823	9.307	9.805	10.319	10.847	11.390	11.949	12.523	13.112	13.717	14.337
14	7.214	7.651	8.102	8.569	9.050	9.546	10.057	10.584	11.126	11.684	12.257	12.845	13.450	14.070	14.706
16	7.375	7.821	8.283	8.759	9.251	9.759	10.281	10.820	11.374	11.944	12.529	13.131	13.749	14.383	15.034
18	7.519	7.975	8.445	8.931	9.433	9.950	10.483	11.032	11.597	12.178	12.775	13.389	14.019	14.665	15.328
20	7.651	8.114	8.593	9.088	9.598	10.124	10.667	11.225	11.800	12.391	12.999	13.623	14.264	14.922	15.597
22	7.772	8.243	8.729	9.232	9.750	10.285	10.836	11.403	11.987	12.587	13.205	13.839	14.490	15.159	15.844
24	7.884	8.362	8.855	9.365	9.891	10.433	10.992	11.568	12.160	12.769	13.396	14.039	14.700	15.378	16.073
26	7.989	8.473	8.973	9.489	10.022	10.572	11.138	11.721	12.322	12.939	13.574	14.225	14.895	15.582	16.287
28	8.087	8.577	9.083	9.606	10.145	10.702	11.275	11.865	12.473	13.098	13.740	14.400	15.078	15.773	16.487
30	8.180	8.675	9.187	9.716	10.262	10.824	11.404	12.001	12.616	13.248	13.898	14.565	15.250	15.954	16.675
32	8.267	8.768	9.285	9.820	10.371	10.940	11.526	12.130	12.751	13.390	14.046	14.721	15.414	16.125	16.854
34	8.350	8.856	9.379	9.918	10.476	11.050	11.642	12.251	12.879	13.524	14.187	14.869	15.568	16.286	17.023
36	8.430	8.940	9.468	10.012	10.575	11.155	11.752	12.367	13.001	13.652	14.322	15.010	15.716	16.441	17.184
38	8.505	9.020	9.552	10.102	10.669	11.254	11.857	12.478	13.117	13.774	14.450	15.144	15.857	16.588	17.338
40	8.577	9.097	9.633	10.188	10.760	11.350	11.958	12.584	13.229	13.891	14.573	15.273	15.991	16.729	17.485
42	8.646	9.170	9.711	10.270	10.847	11.442	12.055	12.686	13.335	14.004	14.690	15.396	16.120	16.864	17.627
44	8.713	9.241	9.786	10.349	10.930	11.530	12.147	12.783	13.438	14.111	14.803	15.514	16.244	16.994	17.762
46	8.777	9.309	9.858	10.425	11.011	11.615	12.237	12.877	13.537	14.215	14.912	15.629	16.364	17.119	17.893
48	8.839	9.374	9.927	10.499	11.088	11.696	12.323	12.968	13.632	14.315	15.017	15.739	16.479	17.239	18.019
50	8.899	9.437	9.994	10.570	11.163	11.775	12.406	13.056	13.724	14.412	15.119	15.845	16.590	17.356	18.141

Volume table (Keruing) No.4

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
10	14.530	15.162	15.810	16.474	17.152	17.847	18.557	19.283	20.025	20.783	21.558	22.348	23.154	23.977	24.816
12	14.973	15.625	16.293	16.976	17.676	18.392	19.124	19.872	20.637	21.418	22.215	23.030	23.861	24.709	25.574
14	15.359	16.027	16.712	17.413	18.131	18.865	19.616	20.383	21.168	21.969	22.787	23.623	24.475	25.345	26.232
16	15.701	16.384	17.084	17.801	18.534	19.285	20.052	20.837	21.639	22.458	23.294	24.148	25.020	25.909	26.816
18	16.008	16.705	17.419	18.150	18.898	19.663	20.446	21.246	22.063	22.898	23.751	24.622	25.511	26.417	27.342
20	16.289	16.998	17.724	18.468	19.229	20.008	20.804	21.618	22.450	23.300	24.167	25.053	25.958	26.880	27.821
22	16.547	17.267	18.005	18.760	19.534	20.325	21.133	21.960	22.805	23.669	24.550	25.450	26.369	27.306	28.261
24	16.786	17.517	18.265	19.032	19.816	20.618	21.439	22.278	23.135	24.011	24.905	25.818	26.750	27.700	28.670
26	17.009	17.749	18.508	19.284	20.079	20.892	21.724	22.574	23.442	24.330	25.236	26.161	27.105	28.068	29.051
28	17.218	17.968	18.735	19.521	20.326	21.149	21.991	22.851	23.730	24.629	25.546	26.482	27.438	28.413	29.408
30	17.415	18.173	18.950	19.745	20.558	21.391	22.242	23.113	24.002	24.910	25.838	26.785	27.752	28.738	29.744
32	17.601	18.368	19.152	19.956	20.778	21.620	22.480	23.360	24.259	25.177	26.115	27.072	28.049	29.046	30.062
34	17.778	18.552	19.345	20.156	20.987	21.837	22.706	23.594	24.502	25.430	26.377	27.344	28.331	29.337	30.364
36	17.947	18.728	19.528	20.347	21.186	22.044	22.921	23.818	24.734	25.671	26.627	27.603	28.599	29.615	30.652
38	18.107	18.895	19.703	20.529	21.375	22.241	23.126	24.031	24.956	25.900	26.865	27.850	28.855	29.880	30.926
40	18.261	19.056	19.870	20.704	21.557	22.430	23.323	24.235	25.168	26.120	27.093	28.086	29.100	30.134	31.189
42	18.408	19.210	20.031	20.871	21.731	22.611	23.511	24.431	25.371	26.331	27.312	28.313	29.335	30.378	31.441
44	18.550	19.358	20.185	21.032	21.898	22.785	23.692	24.619	25.566	26.534	27.522	28.531	29.561	30.611	31.683
46	18.687	19.500	20.333	21.186	22.059	22.953	23.866	24.800	25.754	26.729	27.725	28.741	29.778	30.837	31.916
48	18.818	19.637	20.476	21.336	22.215	23.114	24.034	24.975	25.936	26.917	27.920	28.944	29.988	31.054	32.141
50	18.945	19.770	20.615	21.480	22.365	23.270	24.197	25.143	26.111	27.099	28.109	29.139	30.191	31.263	32.358

Volume table (Keruing) No.5

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)						
	138	140	142	144	146	148	150
10	25.672	26.544	27.433	28.339	29.261	30.200	31.156
12	26.455	27.354	28.270	29.204	30.154	31.122	32.107
14	27.136	28.058	28.998	29.955	30.930	31.923	32.934
16	27.740	28.683	29.643	30.622	31.619	32.634	33.667
18	28.284	29.245	30.225	31.222	32.239	33.273	34.327
20	28.780	29.758	30.754	31.770	32.804	33.857	34.928
22	29.236	30.229	31.241	32.273	33.323	34.393	35.482
24	29.658	30.666	31.693	32.739	33.805	34.890	35.994
26	30.052	31.073	32.114	33.174	34.254	35.353	36.472
28	30.422	31.455	32.509	33.582	34.675	35.788	36.921
30	30.770	31.815	32.881	33.966	35.071	36.197	37.343
32	31.099	32.155	33.232	34.329	35.447	36.584	37.743
34	31.411	32.478	33.566	34.674	35.803	36.952	38.122
36	31.709	32.786	33.884	35.002	36.142	37.302	38.483
38	31.993	33.080	34.187	35.316	36.465	37.636	38.827
40	32.264	33.361	34.478	35.616	36.775	37.955	39.157
42	32.525	33.630	34.756	35.903	37.072	38.262	39.473
44	32.775	33.889	35.024	36.180	37.357	38.556	39.777
46	33.016	34.138	35.281	36.446	37.632	38.840	40.070
48	33.249	34.379	35.530	36.703	37.897	39.114	40.352
50	33.473	34.611	35.770	36.950	38.153	39.378	40.624

Volume table (Seraya) No.1

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm) 18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
10	0.126	0.157	0.190	0.228	0.268	0.312	0.360	0.411	0.465	0.523	0.584	0.649	0.717	0.789	0.864
12	0.160	0.199	0.242	0.289	0.341	0.397	0.457	0.522	0.591	0.664	0.742	0.824	0.911	1.002	1.098
14	0.196	0.244	0.296	0.354	0.417	0.486	0.560	0.639	0.723	0.813	0.909	1.009	1.116	1.227	1.344
16	0.234	0.290	0.353	0.422	0.497	0.579	0.667	0.761	0.862	0.969	1.083	1.203	1.329	1.462	1.602
18	0.273	0.339	0.412	0.493	0.580	0.676	0.778	0.888	1.006	1.131	1.264	1.404	1.552	1.707	1.870
20	0.314	0.389	0.473	0.566	0.666	0.776	0.894	1.020	1.155	1.299	1.451	1.612	1.782	1.960	2.147
22	0.355	0.441	0.536	0.641	0.755	0.879	1.013	1.156	1.309	1.472	1.645	1.827	2.019	2.222	2.434
24	0.398	0.494	0.601	0.719	0.847	0.986	1.136	1.296	1.468	1.650	1.844	2.048	2.264	2.490	2.728
26	0.442	0.549	0.668	0.798	0.941	1.095	1.261	1.440	1.630	1.833	2.048	2.275	2.515	2.766	3.031
28	0.488	0.605	0.736	0.880	1.037	1.207	1.390	1.587	1.797	2.021	2.257	2.508	2.772	3.049	3.340
30	0.534	0.663	0.806	0.963	1.135	1.321	1.522	1.737	1.968	2.212	2.472	2.746	3.035	3.338	3.657
32	0.581	0.721	0.877	1.048	1.235	1.438	1.657	1.891	2.142	2.408	2.690	2.989	3.303	3.634	3.980
34	0.629	0.781	0.950	1.135	1.338	1.557	1.794	2.048	2.319	2.607	2.913	3.236	3.577	3.935	4.310
36	0.678	0.842	1.024	1.224	1.442	1.679	1.934	2.207	2.500	2.811	3.140	3.488	3.855	4.241	4.646
38	0.728	0.904	1.099	1.314	1.548	1.802	2.076	2.370	2.684	3.017	3.371	3.745	4.139	4.553	4.988
40	0.779	0.967	1.176	1.405	1.656	1.928	2.221	2.535	2.871	3.228	3.606	4.006	4.428	4.871	5.336
42	0.831	1.031	1.253	1.498	1.766	2.055	2.368	2.703	3.061	3.441	3.845	4.271	4.720	5.193	5.689
44	0.883	1.096	1.332	1.593	1.877	2.185	2.517	2.873	3.253	3.658	4.087	4.540	5.018	5.520	6.047
46	0.936	1.162	1.412	1.688	1.990	2.316	2.668	3.046	3.449	3.878	4.332	4.813	5.319	5.852	6.410
48	0.990	1.229	1.494	1.785	2.104	2.449	2.821	3.221	3.647	4.101	4.581	5.090	5.625	6.188	6.779
50	1.044	1.296	1.576	1.884	2.220	2.584	2.977	3.398	3.848	4.326	4.834	5.370	5.935	6.529	7.152

Volume table (Seraya) No.2

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm) 48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
10	0.943	1.025	1.111	1.201	1.294	1.390	1.490	1.594	1.701	1.812	1.926	2.044	2.166	2.291	2.420
12	1.198	1.303	1.412	1.525	1.644	1.766	1.893	2.025	2.161	2.302	2.447	2.597	2.752	2.911	3.074
14	1.467	1.595	1.729	1.868	2.012	2.162	2.318	2.479	2.646	2.818	2.996	3.180	3.369	3.564	3.764
16	1.748	1.901	2.060	2.226	2.398	2.577	2.762	2.954	3.153	3.359	3.571	3.789	4.015	4.247	4.485
18	2.040	2.219	2.404	2.598	2.799	3.008	3.224	3.449	3.681	3.920	4.168	4.423	4.686	4.957	5.236
20	2.343	2.548	2.761	2.983	3.214	3.454	3.703	3.960	4.227	4.502	4.786	5.079	5.381	5.692	6.012
22	2.656	2.887	3.129	3.381	3.643	3.915	4.196	4.488	4.790	5.102	5.424	5.757	6.099	6.451	6.814
24	2.977	3.237	3.508	3.790	4.084	4.388	4.704	5.032	5.370	5.720	6.081	6.453	6.837	7.232	7.639
26	3.307	3.596	3.897	4.210	4.536	4.875	5.226	5.589	5.965	6.354	6.755	7.169	7.595	8.034	8.485
28	3.645	3.963	4.295	4.641	5.000	5.373	5.760	6.160	6.575	7.003	7.445	7.901	8.371	8.855	9.353
30	3.990	4.339	4.702	5.081	5.474	5.882	6.306	6.745	7.198	7.667	8.151	8.650	9.165	9.694	10.239
32	4.343	4.723	5.118	5.530	5.958	6.403	6.864	7.341	7.835	8.345	8.872	9.415	9.975	10.552	11.145
34	4.703	5.114	5.542	5.988	6.452	6.933	7.432	7.949	8.484	9.037	9.607	10.196	10.802	11.426	12.068
36	5.070	5.513	5.974	6.455	6.955	7.474	8.012	8.569	9.145	9.741	10.356	10.990	11.644	12.317	13.009
38	5.443	5.918	6.414	6.930	7.466	8.024	8.601	9.199	9.818	10.458	11.118	11.799	12.501	13.223	13.966
40	5.822	6.330	6.861	7.413	7.987	8.583	9.200	9.840	10.502	11.186	11.893	12.621	13.371	14.144	14.939
42	6.207	6.749	7.315	7.903	8.515	9.150	9.809	10.491	11.197	11.926	12.679	13.456	14.256	15.080	15.928
44	6.598	7.174	7.775	8.401	9.051	9.727	10.427	11.152	11.902	12.678	13.478	14.304	15.154	16.030	16.931
46	6.995	7.606	8.243	8.906	9.595	10.311	11.054	11.823	12.618	13.440	14.288	15.163	16.065	16.993	17.949
48	7.397	8.043	8.716	9.418	10.147	10.904	11.689	12.502	13.343	14.212	15.109	16.035	16.988	17.970	18.980
50	7.804	8.486	9.196	9.936	10.706	11.504	12.333	13.190	14.078	14.995	15.941	16.918	17.924	18.960	20.025

Volume table (Seraya) No.3

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
10	2.552	2.688	2.828	2.971	3.118	3.268	3.423	3.580	3.742	3.907	4.076	4.248	4.424	4.604	4.787
12	3.242	3.415	3.593	3.775	3.961	4.152	4.348	4.549	4.754	4.964	5.178	5.397	5.621	5.849	6.082
14	3.970	4.181	4.399	4.622	4.850	5.084	5.324	5.569	5.820	6.077	6.340	6.608	6.882	7.161	7.447
16	4.731	4.983	5.242	5.507	5.779	6.058	6.344	6.637	6.936	7.242	7.555	7.874	8.201	8.534	8.874
18	5.522	5.816	6.118	6.428	6.746	7.072	7.405	7.747	8.096	8.453	8.818	9.191	9.572	9.961	10.358
20	6.341	6.679	7.026	7.382	7.747	8.121	8.504	8.896	9.297	9.707	10.127	10.555	10.992	11.439	11.895
22	7.187	7.570	7.963	8.366	8.780	9.204	9.638	10.082	10.537	11.002	11.477	11.962	12.458	12.964	13.480
24	8.057	8.486	8.927	9.379	9.843	10.318	10.804	11.302	11.812	12.333	12.866	13.410	13.966	14.533	15.112
26	8.950	9.426	9.916	10.418	10.933	11.461	12.002	12.555	13.121	13.700	14.292	14.896	15.514	16.144	16.787
28	9.864	10.390	10.930	11.483	12.051	12.633	13.228	13.838	14.462	15.100	15.752	16.419	17.099	17.794	18.503
30	10.800	11.375	11.966	12.572	13.194	13.830	14.483	15.150	15.834	16.532	17.246	17.976	18.721	19.481	20.257
32	11.755	12.381	13.024	13.684	14.360	15.054	15.764	16.490	17.234	17.994	18.771	19.565	20.376	21.204	22.049
34	12.729	13.407	14.103	14.818	15.550	16.301	17.070	17.857	18.662	19.485	20.327	21.187	22.065	22.961	23.876
36	13.721	14.452	15.203	15.973	16.762	17.572	18.400	19.249	20.116	21.004	21.911	22.838	23.784	24.751	25.736
38	14.730	15.515	16.321	17.148	17.996	18.864	19.754	20.665	21.596	22.549	23.523	24.518	25.534	26.572	27.630
40	15.757	16.596	17.458	18.343	19.249	20.179	21.130	22.105	23.101	24.120	25.162	26.226	27.313	28.423	29.555
42	16.799	17.694	18.613	19.556	20.523	21.514	22.528	23.567	24.630	25.716	26.827	27.962	29.120	30.303	31.511
44	17.857	18.809	19.786	20.788	21.816	22.869	23.947	25.051	26.181	27.336	28.517	29.723	30.955	32.212	33.495
46	18.931	19.939	20.975	22.038	23.127	24.243	25.387	26.557	27.755	28.979	30.231	31.509	32.815	34.148	35.509
48	20.019	21.085	22.181	23.304	24.456	25.637	26.846	28.084	29.350	30.645	31.968	33.320	34.701	36.111	37.550
50	21.121	22.247	23.402	24.588	25.803	27.049	28.324	29.630	30.966	32.332	33.729	35.155	36.612	38.100	39.617

Volume table (Seraya) No.4

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
10	4.974	5.165	5.359	5.557	5.759	5.965	6.174	6.387	6.603	6.823	7.047	7.275	7.506	7.742	7.980
12	6.320	6.562	6.809	7.061	7.317	7.578	7.844	8.114	8.389	8.669	8.954	9.243	9.537	9.836	10.139
14	7.737	8.034	8.337	8.645	8.959	9.278	9.604	9.935	10.271	10.614	10.962	11.317	11.677	12.042	12.414
16	9.220	9.574	9.934	10.301	10.675	11.055	11.444	11.839	12.240	12.648	13.063	13.485	13.914	14.350	14.793
18	10.763	11.175	11.596	12.025	12.461	12.906	13.358	13.819	14.287	14.764	15.248	15.741	16.242	16.750	17.267
20	12.359	12.833	13.316	13.809	14.310	14.821	15.340	15.869	16.407	16.954	17.511	18.077	18.651	19.236	19.829
22	14.007	14.544	15.092	15.650	16.218	16.796	17.385	17.985	18.595	19.215	19.845	20.487	21.138	21.800	22.473
24	15.703	16.305	16.918	17.544	18.181	18.829	19.490	20.162	20.845	21.540	22.247	22.966	23.697	24.439	25.193
26	17.443	18.112	18.793	19.488	20.196	20.916	21.650	22.396	23.155	23.928	24.713	25.511	26.323	27.147	27.985
28	19.226	19.963	20.714	21.480	22.260	23.054	23.862	24.685	25.522	26.373	27.239	28.119	29.013	29.922	30.845
30	21.049	21.856	22.678	23.517	24.370	25.240	26.125	27.026	27.942	28.874	29.822	30.785	31.764	32.759	33.769
32	22.910	23.789	24.684	25.596	26.526	27.472	28.435	29.416	30.413	31.428	32.459	33.508	34.573	35.656	36.756
34	24.808	25.760	26.729	27.717	28.724	29.748	30.792	31.853	32.933	34.032	35.149	36.284	37.438	38.611	39.802
36	26.742	27.767	28.813	29.878	30.962	32.067	33.192	34.336	35.500	36.684	37.888	39.112	40.356	41.620	42.904
38	28.710	29.811	30.933	32.076	33.241	34.426	35.634	36.862	38.112	39.383	40.676	41.990	43.325	44.682	46.060
40	30.710	31.887	33.088	34.311	35.557	36.825	38.116	39.430	40.767	42.127	43.510	44.915	46.344	47.795	49.270
42	32.742	33.997	35.277	36.581	37.909	39.261	40.638	42.039	43.465	44.914	46.389	47.887	49.410	50.958	52.529
44	34.804	36.139	37.499	38.885	40.297	41.735	43.198	44.687	46.203	47.744	49.311	50.904	52.522	54.167	55.838
46	36.896	38.311	39.753	41.222	42.719	44.243	45.794	47.373	48.980	50.613	52.274	53.963	55.679	57.423	59.194
48	39.017	40.513	42.038	43.592	45.174	46.786	48.427	50.096	51.795	53.522	55.279	57.065	58.880	60.724	62.597
50	41.165	42.744	44.353	45.992	47.662	49.362	51.093	52.855	54.647	56.470	58.323	60.207	62.122	64.067	66.044

Volume table (Seraya) No.5

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm) 138	140	142	144	146	148	150
10	8.223	8.469	8.719	8.973	9.230	9.491	9.756
12	10.447	10.760	11.077	11.400	11.727	12.059	12.395
14	12.791	13.174	13.563	13.957	14.358	14.764	15.176
16	15.242	15.699	16.162	16.632	17.109	17.594	18.085
18	17.792	18.324	18.865	19.414	19.971	20.536	21.109
20	20.432	21.043	21.664	22.295	22.934	23.583	24.241
22	23.155	23.849	24.553	25.267	25.992	26.727	27.473
24	25.958	26.735	27.525	28.325	29.138	29.962	30.799
26	28.835	29.698	30.575	31.465	32.367	33.283	34.212
28	31.782	32.734	33.700	34.680	35.675	36.685	37.708
30	34.796	35.838	36.895	37.969	39.058	40.163	41.284
32	37.873	39.007	40.158	41.327	42.512	43.715	44.935
34	41.011	42.239	43.486	44.751	46.035	47.337	48.659
36	44.208	45.531	46.875	48.239	49.623	51.027	52.451
38	47.460	48.881	50.324	51.788	53.274	54.781	56.310
40	50.767	52.287	53.830	55.397	56.986	58.598	60.234
42	54.126	55.747	57.392	59.062	60.756	62.475	64.219
44	57.535	59.258	61.007	62.782	64.583	66.411	68.264
46	60.993	62.820	64.674	66.556	68.465	70.402	72.367
48	64.499	66.430	68.391	70.381	72.400	74.449	76.526
50	68.051	70.088	72.157	74.257	76.387	78.548	80.740

Volume table (Others) No.1

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm) 18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
10	0.191	0.236	0.285	0.338	0.396	0.459	0.526	0.597	0.674	0.754	0.839	0.929	1.023	1.122	1.225
12	0.225	0.277	0.334	0.397	0.465	0.539	0.617	0.702	0.791	0.886	0.986	1.091	1.202	1.318	1.439
14	0.257	0.317	0.383	0.455	0.533	0.617	0.707	0.804	0.906	1.015	1.129	1.250	1.377	1.509	1.648
16	0.289	0.357	0.431	0.512	0.599	0.694	0.796	0.904	1.019	1.141	1.270	1.406	1.548	1.698	1.854
18	0.321	0.396	0.478	0.567	0.665	0.770	0.883	1.003	1.131	1.266	1.409	1.560	1.718	1.883	2.057
20	0.352	0.434	0.524	0.623	0.730	0.845	0.968	1.100	1.241	1.389	1.546	1.711	1.885	2.067	2.257
22	0.383	0.472	0.570	0.677	0.793	0.919	1.053	1.197	1.349	1.511	1.682	1.861	2.050	2.248	2.454
24	0.414	0.510	0.615	0.731	0.857	0.992	1.137	1.292	1.457	1.631	1.816	2.010	2.213	2.427	2.650
26	0.444	0.547	0.660	0.785	0.919	1.065	1.220	1.387	1.563	1.751	1.948	2.156	2.375	2.604	2.844
28	0.474	0.584	0.705	0.838	0.981	1.136	1.303	1.480	1.669	1.869	2.080	2.302	2.535	2.780	3.036
30	0.504	0.620	0.749	0.890	1.043	1.208	1.384	1.573	1.773	1.986	2.210	2.446	2.694	2.954	3.226
32	0.533	0.657	0.793	0.942	1.104	1.278	1.465	1.665	1.877	2.102	2.339	2.589	2.852	3.127	3.415
34	0.562	0.693	0.837	0.994	1.164	1.348	1.546	1.756	1.980	2.217	2.468	2.732	3.008	3.299	3.602
36	0.591	0.729	0.880	1.045	1.225	1.418	1.625	1.847	2.082	2.332	2.595	2.873	3.164	3.469	3.788
38	0.620	0.764	0.923	1.096	1.284	1.487	1.705	1.937	2.184	2.446	2.722	3.013	3.318	3.638	3.973
40	0.649	0.799	0.965	1.147	1.344	1.556	1.784	2.027	2.285	2.559	2.848	3.152	3.472	3.806	4.157
42	0.677	0.835	1.008	1.197	1.403	1.624	1.862	2.116	2.385	2.671	2.973	3.291	3.624	3.974	4.339
44	0.706	0.869	1.050	1.247	1.461	1.692	1.940	2.204	2.485	2.783	3.097	3.428	3.776	4.140	4.521
46	0.734	0.904	1.092	1.297	1.520	1.760	2.017	2.292	2.584	2.894	3.221	3.565	3.927	4.305	4.701
48	0.762	0.939	1.134	1.347	1.578	1.827	2.094	2.380	2.683	3.005	3.344	3.701	4.077	4.470	4.881
50	0.790	0.973	1.175	1.396	1.636	1.894	2.171	2.467	2.782	3.115	3.467	3.837	4.226	4.634	5.060

Volume table (Others) No.2

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm) 48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
10	1.333	1.445	1.562	1.683	1.809	1.939	2.073	2.212	2.356	2.504	2.656	2.813	2.974	3.140	3.310
12	1.565	1.697	1.834	1.976	2.124	2.277	2.435	2.598	2.766	2.940	3.119	3.303	3.492	3.687	3.887
14	1.793	1.944	2.101	2.264	2.433	2.608	2.789	2.976	3.169	3.368	3.573	3.784	4.001	4.224	4.452
16	2.017	2.187	2.363	2.546	2.736	2.933	3.137	3.347	3.564	3.788	4.019	4.256	4.500	4.751	5.008
18	2.237	2.426	2.622	2.825	3.036	3.254	3.480	3.713	3.954	4.202	4.458	4.721	4.992	5.270	5.556
20	2.455	2.662	2.877	3.100	3.331	3.571	3.818	4.075	4.339	4.611	4.892	5.181	5.478	5.783	6.097
22	2.670	2.895	3.129	3.371	3.623	3.883	4.153	4.431	4.719	5.015	5.320	5.635	5.958	6.290	6.631
24	2.883	3.126	3.378	3.640	3.912	4.193	4.484	4.785	5.095	5.415	5.744	6.084	6.433	6.791	7.159
26	3.094	3.354	3.625	3.906	4.197	4.499	4.812	5.134	5.467	5.811	6.164	6.528	6.903	7.287	7.682
28	3.302	3.580	3.869	4.169	4.481	4.803	5.136	5.481	5.836	6.203	6.580	6.969	7.368	7.779	8.201
30	3.509	3.805	4.112	4.431	4.761	5.104	5.458	5.824	6.202	6.591	6.993	7.405	7.830	8.266	8.715
32	3.715	4.027	4.352	4.690	5.040	5.403	5.778	6.165	6.565	6.977	7.402	7.839	8.288	8.750	9.224
34	3.919	4.248	4.591	4.947	5.317	5.699	6.095	6.503	6.925	7.360	7.808	8.269	8.743	9.230	9.731
36	4.121	4.468	4.828	5.203	5.591	5.993	6.409	6.839	7.283	7.740	8.211	8.696	9.195	9.707	10.233
38	4.322	4.686	5.064	5.457	5.864	6.286	6.722	7.173	7.638	8.118	8.612	9.120	9.643	10.181	10.733
40	4.522	4.902	5.298	5.709	6.135	6.576	7.033	7.504	7.991	8.493	9.010	9.542	10.089	10.651	11.229
42	4.721	5.118	5.531	5.960	6.405	6.865	7.342	7.834	8.342	8.866	9.406	9.961	10.532	11.119	11.722
44	4.918	5.332	5.762	6.209	6.673	7.153	7.649	8.162	8.691	9.237	9.799	10.378	10.973	11.585	12.212
46	5.114	5.545	5.992	6.457	6.939	7.438	7.955	8.488	9.038	9.606	10.191	10.792	11.411	12.047	12.700
48	5.310	5.757	6.221	6.704	7.204	7.723	8.258	8.812	9.384	9.973	10.580	11.205	11.847	12.508	13.186
50	5.504	5.968	6.449	6.949	7.468	8.005	8.561	9.135	9.727	10.338	10.968	11.615	12.281	12.966	13.668

Volume table (Others) No.3

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm) 78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
10	3.485	3.664	3.847	4.035	4.228	4.425	4.626	4.831	5.042	5.256	5.475	5.698	5.926	6.158	6.395
12	4.092	4.302	4.518	4.739	4.964	5.196	5.432	5.673	5.920	6.172	6.429	6.691	6.959	7.232	7.509
14	4.687	4.928	5.175	5.428	5.687	5.951	6.222	6.499	6.781	7.070	7.364	7.665	7.971	8.284	8.602
16	5.273	5.544	5.821	6.106	6.397	6.695	6.999	7.310	7.628	7.953	8.284	8.622	8.967	9.318	9.676
18	5.849	6.150	6.458	6.773	7.096	7.427	7.764	8.110	8.462	8.822	9.190	9.565	9.947	10.337	10.734
20	6.418	6.748	7.086	7.432	7.787	8.149	8.520	8.899	9.286	9.681	10.084	10.495	10.915	11.342	11.778
22	6.981	7.339	7.707	8.083	8.469	8.863	9.266	9.678	10.099	10.529	10.967	11.415	11.871	12.336	12.810
24	7.537	7.924	8.321	8.727	9.144	9.569	10.004	10.449	10.904	11.368	11.841	12.324	12.817	13.319	13.831
26	8.087	8.503	8.929	9.365	9.812	10.268	10.736	11.213	11.700	12.198	12.706	13.225	13.754	14.292	14.842
28	8.633	9.077	9.532	9.997	10.474	10.961	11.460	11.969	12.490	13.021	13.564	14.117	14.682	15.257	15.843
30	9.174	9.646	10.129	10.624	11.130	11.648	12.178	12.720	13.273	13.838	14.414	15.002	15.602	16.213	16.836
32	9.711	10.210	10.722	11.245	11.781	12.330	12.891	13.464	14.049	14.647	15.257	15.880	16.515	17.162	17.821
34	10.244	10.770	11.310	11.862	12.428	13.007	13.598	14.203	14.820	15.451	16.095	16.751	17.421	18.103	18.799
36	10.773	11.327	11.894	12.475	13.070	13.678	14.301	14.936	15.586	16.249	16.926	17.616	18.321	19.039	19.770
38	11.299	11.879	12.474	13.084	13.708	14.346	14.998	15.665	16.346	17.042	17.752	18.476	19.215	19.967	20.735
40	11.821	12.429	13.051	13.689	14.341	15.009	15.692	16.389	17.102	17.830	18.573	19.330	20.103	20.891	21.693
42	12.340	12.975	13.624	14.290	14.971	15.668	16.381	17.109	17.853	18.613	19.388	20.179	20.986	21.808	22.646
44	12.857	13.517	14.195	14.888	15.598	16.324	17.066	17.825	18.600	19.392	20.200	21.024	21.864	22.721	23.594
46	13.370	14.057	14.762	15.483	16.221	16.976	17.748	18.537	19.343	20.166	21.006	21.863	22.737	23.628	24.536
48	13.881	14.595	15.326	16.074	16.841	17.625	18.426	19.246	20.082	20.937	21.809	22.699	23.606	24.531	25.474
50	14.390	15.129	15.887	16.663	17.457	18.270	19.101	19.950	20.818	21.704	22.608	23.530	24.471	25.430	26.407

Volume table (Others) No.4

(Unit : m^3)

Clear Length (m)	Diameter Breast Height (cm)														
	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
10	6.636	6.881	7.131	7.386	7.644	7.907	8.175	8.447	8.723	9.004	9.289	9.578	9.872	10.170	10.473
12	7.792	8.081	8.374	8.673	8.976	9.285	9.599	9.919	10.243	10.573	10.907	11.247	11.592	11.943	12.298
14	8.926	9.256	9.592	9.934	10.282	10.636	10.996	11.362	11.733	12.111	12.494	12.884	13.279	13.680	14.087
16	10.041	10.412	10.790	11.175	11.566	11.964	12.369	12.780	13.198	13.623	14.054	14.492	14.937	15.388	15.846
18	11.139	11.551	11.970	12.397	12.831	13.272	13.721	14.178	14.641	15.113	15.591	16.077	16.570	17.071	17.579
20	12.222	12.674	13.134	13.603	14.079	14.564	15.056	15.557	16.066	16.583	17.108	17.641	18.182	18.731	19.289
22	13.293	13.785	14.285	14.794	15.313	15.840	16.375	16.920	17.473	18.036	18.607	19.186	19.775	20.372	20.979
24	14.352	14.883	15.423	15.973	16.533	17.102	17.680	18.268	18.866	19.473	20.089	20.715	21.351	21.996	22.650
26	15.401	15.971	16.550	17.140	17.741	18.351	18.972	19.603	20.244	20.896	21.557	22.229	22.911	23.603	24.306
28	16.440	17.048	17.667	18.297	18.938	19.590	20.252	20.926	21.610	22.306	23.012	23.729	24.457	25.196	25.946
30	17.471	18.117	18.774	19.444	20.125	20.817	21.522	22.237	22.965	23.704	24.454	25.216	25.990	26.775	27.572
32	18.493	19.177	19.873	20.582	21.302	22.036	22.781	23.539	24.308	25.091	25.885	26.692	27.511	28.342	29.185
34	19.508	20.229	20.964	21.711	22.471	23.245	24.031	24.830	25.642	26.467	27.305	28.156	29.020	29.897	30.786
36	20.515	21.274	22.046	22.832	23.632	24.445	25.272	26.113	26.967	27.834	28.716	29.611	30.519	31.441	32.377
38	21.516	22.312	23.122	23.946	24.785	25.638	26.505	27.387	28.283	29.193	30.117	31.055	32.008	32.975	33.956
40	22.511	23.343	24.191	25.054	25.931	26.823	27.731	28.653	29.590	30.542	31.509	32.491	33.488	34.500	35.526
42	23.500	24.369	25.254	26.154	27.070	28.002	28.949	29.912	30.890	31.884	32.893	33.918	34.959	36.015	37.087
44	24.483	25.389	26.310	27.248	28.203	29.173	30.160	31.163	32.182	33.218	34.270	35.338	36.422	37.522	38.639
46	25.461	26.403	27.361	28.337	29.329	30.339	31.365	32.408	33.468	34.545	35.639	36.749	37.877	39.021	40.182
48	26.434	27.412	28.407	29.420	30.450	31.498	32.563	33.646	34.747	35.865	37.000	38.153	39.324	40.512	41.718
50	27.402	28.415	29.447	30.497	31.565	32.651	33.756	34.879	36.019	37.178	38.355	39.551	40.764	41.996	43.245

Volume table (Others) No.5

(Unit : m³)

Clear Length (m)	Diameter Breast Height (cm) 138	140	142	144	146	148	150
10	10.780	11.091	11.407	11.727	12.052	12.381	12.714
12	12.658	13.024	13.395	13.771	14.152	14.538	14.930
14	14.500	14.919	15.344	15.774	16.211	16.653	17.102
16	16.310	16.782	17.260	17.744	18.235	18.733	19.237
18	18.094	18.617	19.147	19.684	20.229	20.781	21.341
20	19.854	20.428	21.010	21.599	22.197	22.803	23.417
22	21.594	22.218	22.850	23.492	24.142	24.801	25.468
24	23.314	23.988	24.671	25.363	26.065	26.777	27.498
26	25.018	25.741	26.474	27.217	27.970	28.734	29.507
28	26.706	27.478	28.260	29.053	29.858	30.672	31.498
30	28.380	29.200	30.031	30.874	31.729	32.595	33.473
32	30.041	30.909	31.789	32.681	33.585	34.502	35.431
34	31.689	32.605	33.533	34.474	35.428	36.395	37.375
36	33.326	34.289	35.265	36.255	37.258	38.275	39.306
38	34.952	35.962	36.986	38.024	39.076	40.143	41.224
40	36.568	37.624	38.696	39.782	40.883	41.999	43.130
42	38.174	39.277	40.395	41.529	42.679	43.844	45.024
44	39.771	40.920	42.086	43.267	44.464	45.678	46.908
46	41.360	42.555	43.767	44.995	46.241	47.503	48.782
48	42.941	44.181	45.439	46.715	48.007	49.318	50.646
50	44.513	45.799	47.103	48.425	49.766	51.124	52.501

App.Table-5　　Species list (Group A)

Vernacular Name	Family Name		Genus Name
	Latin Name	Japanese Name	
Alan	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Amat	Theaceae	ﾂﾊﾞｷ	Tetramerista
Belian	Lauraceae	ｸｽﾉｷ	Eusideroxylon
Belian landak	Olacaceae	ﾎﾞﾛﾎﾞﾛﾉｷ	Anacolosa
Benchaloi	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Anisoptera
Damar hitam	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Kapur	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Dryobalanops
Kapur bukit	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Dryobalanops
Kapur paji	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Dryobalanops
Kapur paya	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Dryobalanops
Kayu karas	Thymelaeaceae	ｼﾞﾝﾁｮｳｹﾞ	Aquilaria
Keruing	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Dipterocarpus
Mang	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Hopea
Meranti	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti bukit	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti kerukup	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti langgai	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti laut puteh	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti lop	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti melantai	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti merah	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti paya	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti puteh timbul	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti sarang punai	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Meranti sudu	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Merawan	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Hopea
Merawan daun tebal	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Hopea
Merbau	Leguminosae	ﾏﾒ	Intsia
Nyatoh	Sapotaceae	ｱｶﾃﾂ	Palaquium
Nyatoh temiang	Sapotaceae	ｱｶﾃﾂ	Palaquium
Ramin	Thymelaeaceae	ｼﾞﾝﾁｮｳｹﾞ	Gonystylus
Raru	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Resak	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Vatica
Resak ayer	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Vatica
Resak hitam	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Cotylelobium
Selangan	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Tembusu	Loganiaceae	ﾌｼﾞｳﾂｷﾞ	Fagraea
Tismantok	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Shorea
Upun batu	Dipterocarpaceae	ﾌﾀﾊﾞｶﾞｷ	Upuna

App.Table-6　　Species list (Group B)

Vernacular Name	Family Name		Genus Name
	Latin Name	Japanese Name	
Bayor	Sterculiaceae	ｱｵｷﾞﾘ	Pterospermum
Berangan	Fagaceae	ﾌﾞﾅ	Castanopsis
Bintangor	Guttiferae	ｵﾄｷﾞﾘｿｳ	Calophyllum
Bintawak	Moraceae	ｸﾜ	Artocarpus
Jelutong	Apocynaceae	ｷｮｳﾁｸﾄｳ	Dyera
Kayu malam	Ebenaceae	ｶｷﾉｷ	Diospyros
Kedondong	Burseraceae	ｶﾝﾗﾝ	Canarium
Kelidang	Moraceae	ｸﾜ	Parartocarpus
Kelidang babi	Moraceae	ｸﾜ	Artocarpus

(Continued on the next page)

(Continued from the previous page)

Kempas	Leguminosae	ﾏﾒ	Koompassia
Keranji	Leguminosae	ﾏﾒ	Dialium
Manggis	Guttiferae	ｵﾄｷﾞﾘｿｳ	Garcinia
Mata ulat	Celastraceae	ﾆｼｷｷﾞ	Kokoona
Medang	Lauraceae	ｸｽﾉｷ	Nothaphoebe
Medang tabak	Melastomataceae	ﾉﾎﾞﾀﾝ	Dactylocladus
Mengilas	Rosaceae	ﾊﾞﾗ	Parastemon
Merpauh	Anacardiaceae	ｳﾙｼ	Swintonia
Petaling	Olacaceae	ﾎﾞﾛﾎﾞﾛﾉｷ	Ochanostachys
Rengas	Anacardiaceae	ｳﾙｼ	Melanorrhoea
Sabal	Burseraceae	ｶﾝﾗﾝ	Dacryodes
Senumpul	Flacourtiaceae	ｲｲｷﾞﾘ	Homalium
Sepetir	Leguminosae	ﾏﾒ	Sindora
Simpor	Dilleniaceae	ﾋﾞﾜﾓﾄﾞｷ	Dillenia
Somah	Theaceae	ﾂﾊﾞｷ	Ploiarium
Teruntum	Rhizophoraceae	ﾋﾙｷﾞ	Combretocarpus
Tualang	Leguminosae	ﾏﾒ	Koompassia
Ubah	Myrtaceae	ﾌﾄﾓﾓ	Eugenia
Ubah ribu	Myrtaceae	ﾌﾄﾓﾓ	Eugenia

App.Table-7 Species list (Group C)

Vernacular Name	Family Name		Genus Name
	Latin Name	Japanese Name	
Adau	Linaceae	ｱﾏ	Ctenolophon
Ara	Moraceae	ｸﾜ	Ficus
Bangkoh	Annonaceae	ﾊﾞﾝﾚｲｼ	Xylopia
Benggang	Bombacaceae	ﾊﾟﾝﾔ	Neesia
Chempadak	Moraceae	ｸﾜ	Artocarpus
Durian	Bombacaceae	ﾊﾟﾝﾔ	Durio
Geronggang	Guttiferae	ｵﾄｷﾞﾘｿｳ	Cratoxylon
Jukit	Meliaceae	ｾﾝﾀﾞﾝ	Heynia
Kandis	Guttiferae	ｵﾄｷﾞﾘｿｳ	Garcinia
Kedang	Tiliaceae	ｼﾅﾉｷ	Pentace
Kembang semangkok	Sterculiaceae	ｱｵｷﾞﾘ	Scaphium
Keruntum	Rhizophoraceae	ﾋﾙｷﾞ	Combretocarpus
Limau sebayan	Olacaceae	ﾎﾞﾛﾎﾞﾛﾉｷ	Gonocaryum
Melunak	Tiliaceae	ｼﾅﾉｷ	Pentace
Mempening	Fagaceae	ﾌﾞﾅ	Lithocarpus
Menengang	Rhizophoraceae	ﾋﾙｷﾞ	Anisophyllea
Merakit	Euphorbiaceae	ﾄｳﾀﾞｲｸﾞｻ	Macaranga
Merpisang	Annonaceae	ﾊﾞﾝﾚｲｼ	Mezettia
Nipis kulit	Melastomataceae	ﾉﾎﾞﾀﾝ	Memecylon
Pendarahan	Myristicaceae	ﾆｸｽﾞｸ	Gymnacranthera
Perah	Euphorbiaceae	ﾄｳﾀﾞｲｸﾞｻ	Elateriospermu
Pudu	Moraceae	ｸﾜ	Artocarpus
Pulai	Apocynaceae	ｷｮｳﾁｸﾄｳ	Alstonia
Putat	Lecythidaceae	ｻｶﾞﾘﾊﾞﾅ	Barringtonia
Sedaman	Euphorbiaceae	ﾄｳﾀﾞｲｸﾞｻ	Macaranga
Sentul	Meliaceae	ｾﾝﾀﾞﾝ	Sandoricum
Sial menaun	Melastomataceae	ﾉﾎﾞﾀﾝ	Kibessia
Sindok sindok	Euphorbiaceae	ﾄｳﾀﾞｲｸﾞｻ	Endospermum
Tampoi	Euphorbiaceae	ﾄｳﾀﾞｲｸﾞｻ	Baccaurea
Tempagas	Melastomataceae	ﾉﾎﾞﾀﾝ	Memecylon
Terantang	Anacardiaceae	ｳﾙｼ	Campnosperma
Terap	Moraceae	ｸﾜ	Artocarpus
Terap hutan	Moraceae	ｸﾜ	Artocarpus
Tulang	Simaroubaceae	ﾆｶﾞｷ	Irvingia

App.Table-8 List of complete enumeration results by plot

Plot	Stratum	Number/ha			D.B.H (cm)			Clear Length (m)			Crown Diameter (m)			Volume (m^3/ha)		
No.		N1	N2	Total	D1	D2	Total	L1	L2	Total	CD1	CD2	Total	V1	V2	Total
1	3.1(1)	408	65	473	26.4	48.0	30.3	17.0	21.3	17.6	7.6	10.0	8.1	279.84	168.54	448.38
2	3.1(2)	160	80	240	27.0	49.8	36.2	15.7	22.1	17.9	8.3	11.0	9.7	105.06	228.15	333.21
3	3.1(2)	163	53	216	26.1	57.3	36.3	13.6	19.3	15.0	8.6	14.9	11.6	90.95	192.11	283.06
4	2.1(1)	243	68	311	26.0	50.9	33.0	12.8	16.0	13.5	7.5	9.6	8.3	121.97	151.77	273.74
5	2.1(1)	270	40	310	26.3	52.4	30.9	9.3	12.9	9.8	6.0	8.3	6.6	106.42	79.79	186.21
6	3.3(3)	158	58	216	25.5	74.6	44.4	12.3	25.3	15.8	7.3	12.2	11.6	75.13	430.17	505.30
7	3.1(2)	175	105	280	29.1	55.3	41.0	17.0	23.2	19.3	7.7	9.5	8.8	146.71	408.64	555.35
8	5 (2)	153	58	211	26.1	52.6	35.4	15.1	22.7	17.2	7.6	9.2	8.5	88.93	186.25	275.18
9	5 (2)	143	55	198	28.3	64.9	41.8	14.9	23.3	17.3	7.3	10.1	8.9	100.23	292.08	392.31
10	5 (2)	203	45	248	27.7	61.5	36.3	21.8	26.6	22.6	8.0	11.7	9.1	187.00	254.44	441.44
11	5 (4)	138	58	196	28.1	61.7	41.0	18.7	27.3	21.2	9.9	13.2	11.9	114.24	339.63	453.87
12	5 (2)	195	68	263	26.0	60.6	38.0	17.9	24.8	19.7	7.9	9.7	8.8	133.38	320.72	454.10
13	5(2,EX)	143	15	158	25.8	44.5	28.1	17.5	22.2	18.0	9.0	11.5	9.3	94.34	34.77	129.11
14	5(2,EX)	215	28	243	27.4	52.7	31.3	18.5	23.4	19.1	9.6	12.1	10.0	168.13	95.91	264.04
15	3.2(2)	160	38	198	26.5	49.3	32.1	14.2	17.0	14.7	8.1	11.1	9.0	95.49	85.47	180.96
16	3.5(1)	240	120	360	27.7	51.2	37.2	13.9	19.3	15.7	6.0	7.7	7.0	155.45	333.59	489.04
17	3.2(2)	238	123	361	25.8	58.4	40.0	13.5	19.5	15.5	7.0	8.6	8.0	129.25	441.32	570.57
18	3.1(1,EX)	308	48	356	25.0	52.4	30.1	10.9	18.5	11.9	7.9	9.6	8.4	131.17	129.29	260.46
19	5(2,EX)	100	63	163	26.2	56.8	40.8	10.1	16.5	12.6	7.6	9.5	8.9	42.39	184.64	227.03
20	5 (2)	133	70	203	27.6	57.6	40.6	12.8	19.4	15.0	7.6	10.2	9.5	77.45	248.53	325.98
21	2.2(1)	380	55	435	25.7	43.5	28.5	15.0	18.1	15.4	7.0	7.8	7.2	217.59	101.44	319.03
22	3.3(3)	105	115	220	26.1	62.1	48.4	13.3	21.8	17.7	7.0	9.1	9.0	56.38	521.21	577.59
23	3.3(3)	123	113	236	26.7	70.8	52.7	11.2	19.4	15.2		10.5	10.5	58.11	633.15	691.26
24	3.2(2)	193	73	266	25.2	55.3	36.0	13.2	21.6	15.5	7.2	9.7	8.8	96.09	254.77	350.86
25	3.2(2)	283	48	331	25.8	54.1	31.5	12.4	15.9	12.9	7.6	9.0	8.0	134.55	123.12	257.67
26	3.3(3)	165	83	248	25.1	69.4	45.0	13.9	22.3	16.7	7.5	9.8	9.6	83.42	481.11	564.53
27	5 (2)	90	88	178	27.1	67.3	51.0	12.6	19.4	16.0	7.3	10.0	9.7	48.36	440.02	488.38
28	5 (2)	185	53	238	26.3	49.4	32.9	14.9	19.0	15.8	7.8	8.7	8.2	112.98	131.46	244.44
29	5 (4)	195	68	263	25.3	55.0	35.4	14.1	22.1	16.2	7.7	9.6	9.0	103.64	247.50	351.14
30	5 (4)	198	78	276	26.3	73.0	44.7	15.3	22.8	17.4	8.8	11.8	10.8	121.74	444.18	565.92
31	5 (4)	155	85	240	25.7	63.8	43.2	13.4	17.0	14.7	8.0	11.2	10.8	79.91	307.76	387.67
32	3.1(2)	219	88	307	27.2	50.7	35.5	14.1	22.9	16.6	6.1	7.9	7.0	141.46	270.71	412.17
33	8	488	13	501	19.5	49.3	20.8	10.0	15.0	10.1	6.1	8.3	6.2	125.93	25.16	151.09
34	5(2,EX)	125	75	200	26.9	54.8	39.7	13.0	21.2	16.1	7.4	9.9	9.2	70.83	256.40	327.23
35	2.2(1)	356	28	384	23.5	47.4	26.0	14.4	17.7	14.6	5.1	8.9	5.5	164.04	62.47	226.51
36	3.2(2)	140	48	188	25.6	61.6	38.1	12.4	24.2	15.4	8.1	9.9	9.2	68.51	226.47	294.98
37	8	804	21	825	18.8	49.8	20.2	10.7	19.4	10.9	5.3	7.8	5.6	205.09	53.84	258.93
38	3.5(1)	263	143	406	25.4	52.1	37.1	13.2	20.8	15.9	4.9	6.3	6.0	136.81	430.71	567.52
Total		221	67	288	25.6	58.2	36.3	15.4	22.2	15.6	7.6	10.6	8.4	117.60	253.09	370.69

(Note) 1: D.B.H < 40 cm 2: 40 cm ≦ D.B.H

App.Table-9 List of complete enumeration results by stratum

Stratum	Number/ha			D.B.H (cm)			Clear Length (m)			Crown Diameter(m)			Volume (m^3/ha)		
	N1	N2	Total	D1	D2	Total	L1	L2	Total	CD1	CD2	Total	V1	V2	Total
2.1(1)	256	54	310	26.1	51.5	32.0	11.0	14.8	11.7	6.8	9.2	7.5	114.19	115.78	229.97
2.2(1)	369	43	412	24.8	44.7	27.5	14.7	18.0	15.1	6.1	8.1	6.4	193.79	84.12	277.91
3.1(1)	408	65	473	26.4	48.0	30.3	17.0	21.3	17.6	7.6	10.0	8.1	279.84	168.54	448.38
3.1(1.EX)	308	47	355	25.0	52.4	30.1	10.9	18.5	11.9	7.9	9.6	8.4	131.17	129.29	260.46
3.1(2)	172	80	252	27.4	53.6	37.8	15.3	22.1	17.4	7.8	10.7	9.3	117.44	275.64	393.08
3.2(2)	203	65	268	25.8	56.6	35.8	13.1	19.9	14.7	7.6	9.4	8.5	104.78	226.22	331.00
3.3(3)	137	92	229	25.8	68.5	47.7	12.7	21.7	16.3	7.3	10.1	9.9	68.26	516.41	584.67
3.5(1)	251	131	382	26.5	51.7	37.1	13.5	20.1	15.8	5.7	7.0	6.6	146.13	382.15	528.28
5 (2)	157	62	219	27.0	60.0	39.3	16.3	21.9	17.9	7.7	9.9	8.9	106.90	267.64	374.54
5(2.EX)	146	45	191	26.7	54.4	35.3	15.7	20.0	16.7	9.0	10.2	9.4	93.92	142.93	236.85
5 (4)	171	72	243	26.3	64.1	41.2	15.2	21.8	17.2	8.7	11.3	10.6	104.88	334.77	439.65
8	646	17	663	19.1	49.6	20.4	10.4	17.8	10.6	5.7	8.0	5.9	165.51	39.50	205.01
Total	211	67	278	25.6	58.2	36.3	14.0	20.7	15.6	7.3	9.7	8.4	115.90	258.54	374.44

(Note) 1: D.B.H < 40 cm 2: 40 cm ≦ D.B.H

App.Table-10 Number of species by stratum

Strata	Number of Plots	Total	Dipterocarp		Group			D.B.H	
			D	N	A	B	C	D<40	40≦D
2	4	31	6	25	10	12	9	27	19
3	17	60	12	48	19	20	21	56	39
5	15	82	29	53	32	24	26	74	61
8	2	21	3	18	5	7	9	21	5
Total	38	103	32	71	41	28	34	94	74

(Note) Dipterocarp : D / Dipterocarp, N / Non-dipterocarp
Group : A / Commercial Tree
B / Available Tree C / Others

App.Table-11 Number of dominant species by stratum

Unit : Number/ha

NO	Vernacular Name	Total	2.1(1)	2.2(1)	3.1(1)	3.1 (1, EX)	3.1(2)	3.2(2)	3.3(3)	3.5(1)	5(2)	5 (2, EX)	5(4)	8
1	Ubah Group	52	158	57	80	158	29	57	25	19	44	21	26	200
2	Kedondong	24		7		5	29	29	1	1	35	27	48	65
3	Kapur Group	21		79	110	63	21	16	3		3	1	22	150
4	Nyatoh Group	16		106	28	15	26	19	11	33	6		6	4
5	Alan	15							62	153				
6	Resak Group	12	58	6		43	1	10	3		4	8	17	75
7	Medang	12	18	17	25	5	8	17	7		15	8	11	25
8	Ramin	11		1	63	25	19	12	33	24				8
9	Meranti Group	9		8			6	7			17	5	29	
10	Bintangor	9	13		3	3	4	5	6	29	11	6	14	8
11	Keruntum	8		54	8		1	9	13	48				
12	Tampoi	8	11		5	3	21	14	7		8	6	2	2
13	Sepetir	7		1	20		23	9	18		1	3		
14	Kayu malam	6		29	45	10	4	2	3	4	5	1	3	27
15	Medang tabak	6		25	43		5	6	13	18	1			
16	Keruing Group	5		1							9	8	18	
17	Jelutong	4		6	5		5	10	14	4			3	
18	Bangkoh	4	3		33			1	1		5	9		25
19	Pendarahan	4		1			12	5			5	4	6	4
20	Perah	4									8	17	2	
21	Rengas	4	1			8	1	10		16	2	3	1	2
22	Keranji	3				15		2	1		5	1	10	
23	Mengilas	2						3		35				4
24	Merpisang	2					13	1			2	3	2	
25	Sial menaun	2					3				5	2		19
	Others	27	50	14	8	5	21	29	10	1	28	58	24	44
Total		278	310	413	473	355	252	268	229	383	219	191	243	663

App.Table-12 Number by group and D.B.H class

Unit:Number/ha

Stratum	Group	D<40	40≦D	Total	Stratum	Group	D<40	40≦D	Total
2.1(1)	A	60	5	65	3.3(3)	A	37	74	111
	B	173	45	218		B	81	9	90
	C	24	4	28		C	20	8	28
	Total	256	54	310		Total	138	92	229
2.2(1)	A	190	21	211	3.5(1)	A	99	110	209
	B	139	4	143		B	118	8	125
	C	40	18	58		C	35	14	49
	Total	369	43	413		Total	251	131	383
3.1(1)	A	178	28	205	5(2)	A	32	17	49
	B	198	23	220		B	91	37	128
	C	33	15	48		C	34	8	42
	Total	408	65	473		Total	157	62	219
3.1 (1.EX)	A	113	33	145	5(2.EX)	A	24	13	38
	B	193	15	208		B	69	21	91
	C	3	0	3		C	52	11	63
	Total	308	48	355		Total	146	45	191
3.1(2)	A	41	39	80	5(4)	A	51	51	103
	B	81	32	113		B	108	14	121
	C	50	9	59		C	13	7	19
	Total	172	80	252		Total	171	72	243
3.2(2)	A	49	25	74	8	A	229	8	238
	B	122	32	154		B	327	4	331
	C	32	9	40		C	90	4	94
	Total	203	66	268		Total	646	17	663
					Total	A	63	35	98
						B	114	24	138
						C	34	9	43
						Total	211	67	278

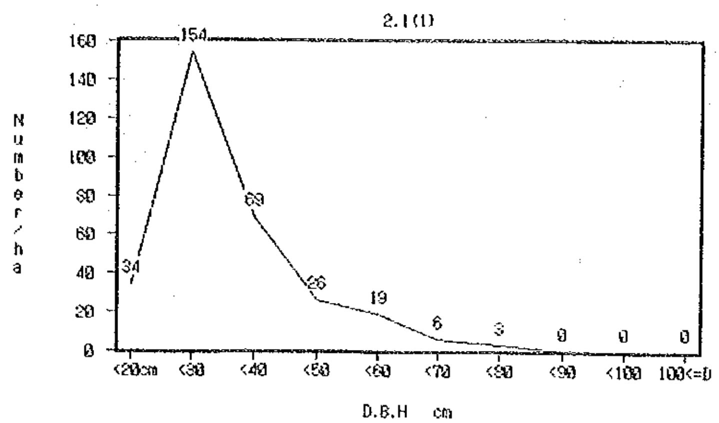
App.Table-13 Number by D.B.H class and stratum

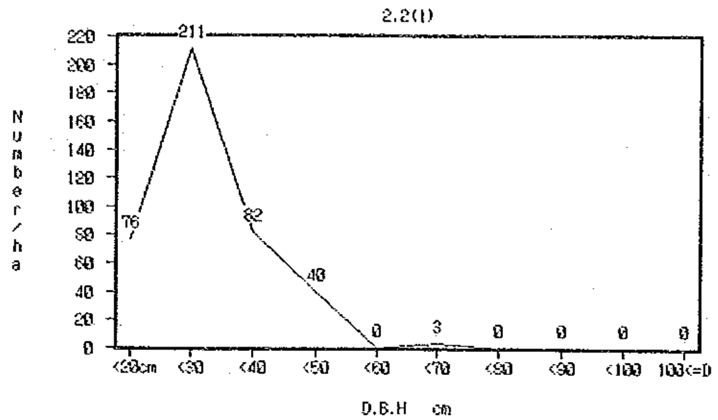
Unit:Number/ha

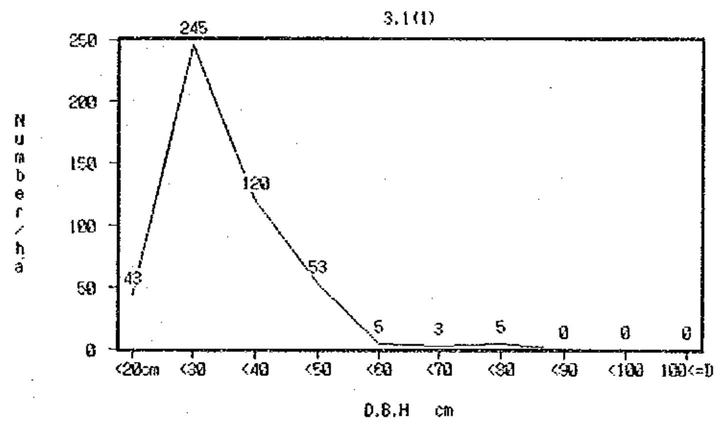
D.B.H / Stratum	18≦ D <20cm	20≦ D <30	30≦ D <40	40≦ D <50	50≦ D <60	60≦ D <70	70≦ D <80	80≦ D <90	90≦ D <100	100≦D	Total
2.1(1)	34	154	69	26	19	6	3				310
2.2(1)	76	211	82	40		3					413
3.1(1)	43	245	120	53	5	3	5				473
3.1(1.EX)	68	168	73	15	25	5	3				355
3.1(2)	21	93	57	44	20	5	5	4	1		252
3.2(2)	24	125	54	23	19	13	9	3			268
3.3(3)	12	92	34	27	16	11	11	11	11	6	229
3.5(1)	24	159	69	71	30	28	3				383
5 (2)	20	86	51	27	16	4	6	3	3	2	219
5(2.EX)	17	83	46	20	14	6	4	1	1		191
5 (4)	24	98	49	21	19	13	8	4	3	4	243
8	413	171	63	8	6	2					663
Total	38	117	56	29	17	9	6	3	2	1	278

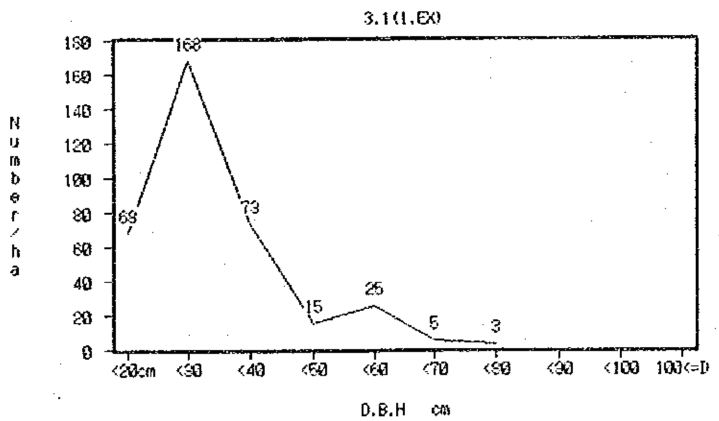
Note : 8stratum / 10≦D.B.H

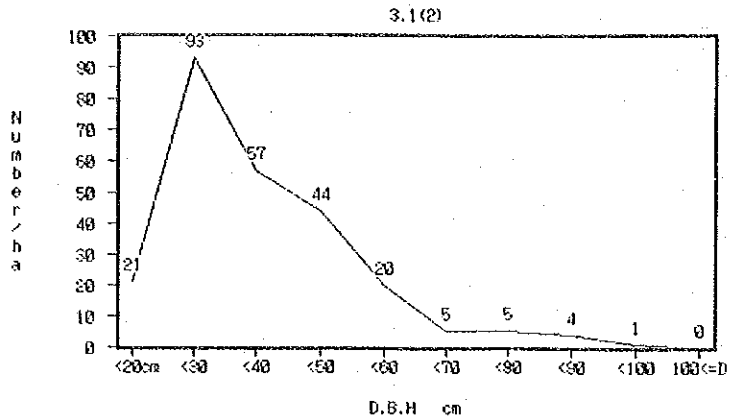
App.Figure-1 Number by D.B.H.class and stratum

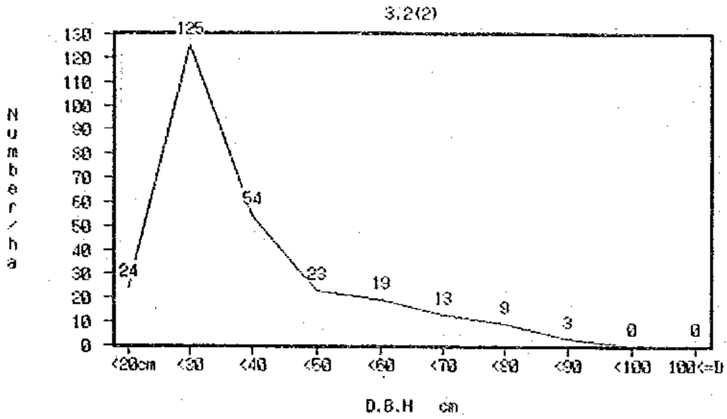


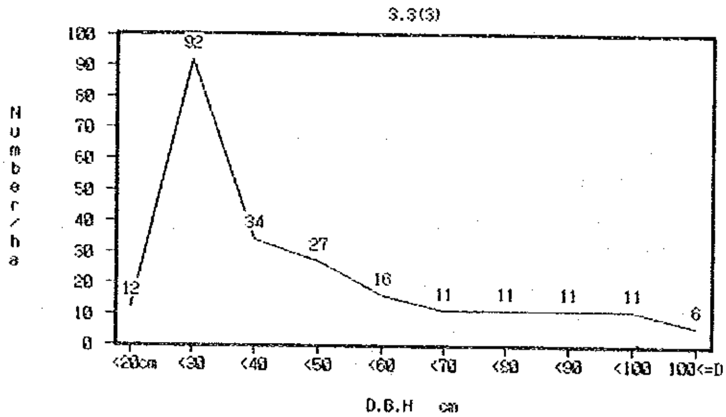


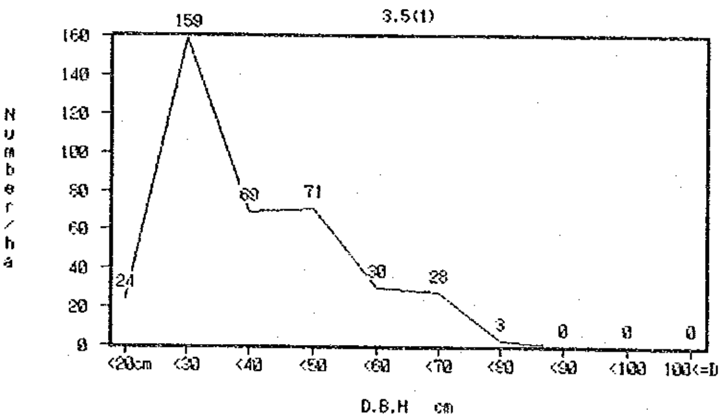


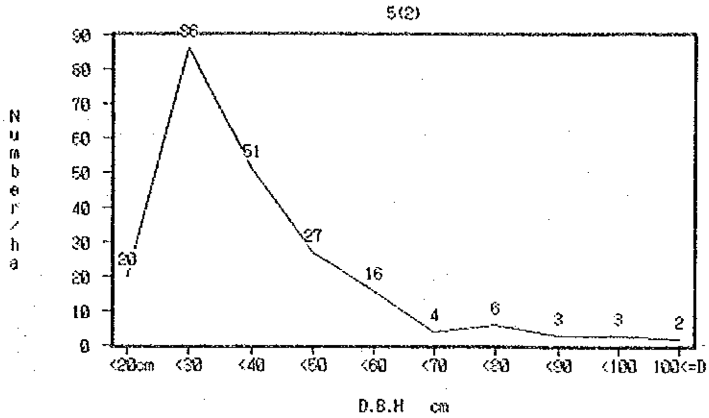


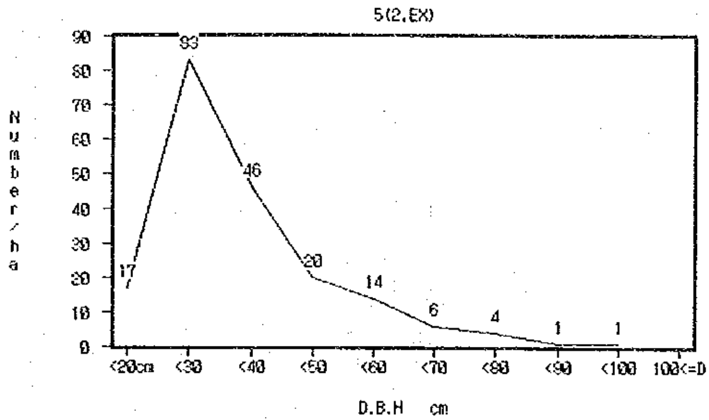

3.1(2)
Number/ha
100 90 80 70 60 50 40 30 20 10 0
21 93 57 44 20 5 5 4 1 0
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
D.B.H cm

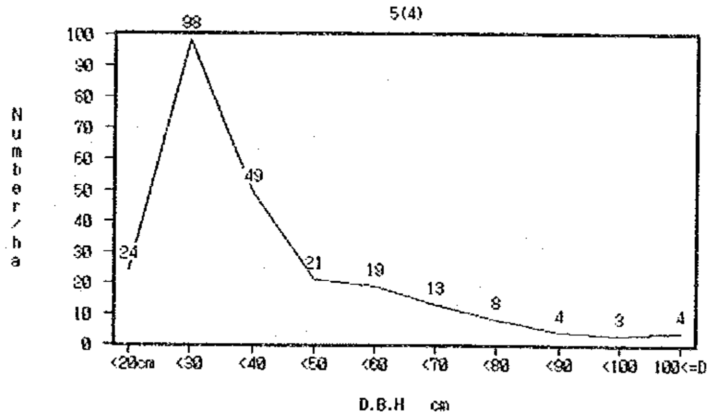

3.2(2)
Number/ha
130 120 110 100 90 80 70 60 50 40 30 20 10 0
24 125 54 23 19 13 9 3 0 0
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
D.B.H cm

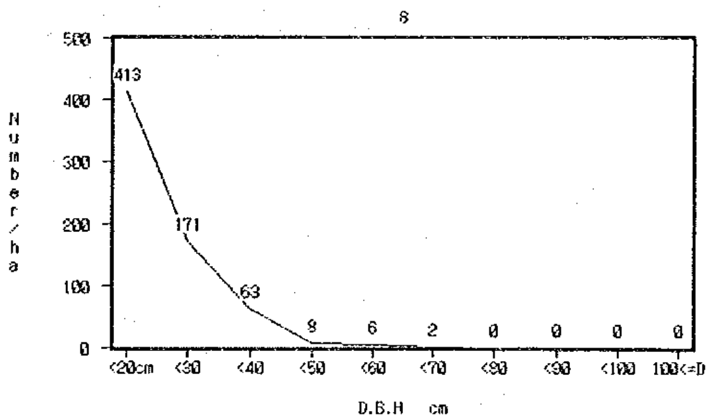

3.3(3)
Number/ha
100 90 80 70 60 50 40 30 20 10 0
12 92 34 27 16 11 11 11 11 6
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
D.B.H cm


3.5(1)
Number/ha
160 140 120 100 80 60 40 20 0
24 159 69 71 30 28 3 0 0 0
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
D.B.H cm


5(2)
Number/ha
D.B.H cm
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
20 86 51 27 16 4 6 3 3 2


5(2,EX)
Number/ha
D.B.H cm
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
17 83 46 20 14 6 4 1 1


5(4)
Number/ha
D.B.H cm
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
24 98 49 21 19 13 8 4 3 4


6
Number/ha
D.B.H cm
<20cm <30 <40 <50 <60 <70 <80 <90 <100 100<=D
413 171 63 8 6 2 0 0 0 0

App.Table-14　Number by stratum and storey

Unit : Number／ha

Stratum	Storey	D	N	Total	Stratum	Storey	D	N	Total
2.1(1)	Up	36	134	170	3.3(3)	Up	62	16	78
	Low	25	115	140		Low	6	146	152
	Total	61	249	310		Total	68	161	229
2.2(1)	Up	76	188	264	3.5(1)	Up	134	44	178
	Low	21	128	149		Low	19	186	205
	Total	97	315	413		Total	153	230	383
3.1(1)	Up	80	203	283	5 (2)	Up	25	79	103
	Low	35	155	190		Low	15	101	116
	Total	115	358	473		Total	40	179	219
3.1 (1.EX)	Up	55	95	150	5(2,EX)	Up	22	97	119
	Low	50	155	205		Low	10	62	72
	Total	105	250	355		Total	32	159	191
3.1(2)	Up	26	111	137	5 (4)	Up	56	38	94
	Low	8	107	115		Low	41	108	149
	Total	34	218	252		Total	97	146	243
3.2(2)	Up	24	92	116	8	Up	83	142	225
	Low	15	138	153		Low	142	296	438
	Total	39	229	268		Total	225	438	663
					Total	Up	45	86	132
						Low	22	124	147
						Total	68	211	278

Note) D:Dipterocarp Tree　N:Non-dipterocarp Tree

App.Table-15 Species by stratum -2.1(1)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Ubah	115.006	52.330	62.676	54.14	158	126	31	57.41
2	Bintangor	16.070	3.964	12.106	10.46	13	8	5	9.26
3	Medang	14.349	5.325	9.024	7.79	18	14	4	7.41
4	Resak	32.560	25.729	6.831	5.90	58	55	3	5.56
5	Rengas	6.369		6.369	5.50	1		1	1.85
6	Pudu	5.843		5.843	5.05	3		3	5.56
7	Mata ulat	16.068	10.890	5.178	4.47	20	18	3	5.56
8	Merbau	5.476	0.715	4.761	4.11	4	1	3	5.56
9	Adau	5.799	3.660	2.139	1.85	10	9	1	1.85
10	Berangan	4.485	3.636	0.849	0.73	9	8	1	1.85
	Others	7.946	7.946			19	19		
	Total	229.969	114.194	115.775	100.00	310	256	54	100.00

App.Table-16 Species by stratum -2.2(1)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Keruntum	59.799	26.861	32.938	39.16	54	36	18	41.86
2	Kapur paya	69.644	51.264	18.381	21.85	79	69	10	23.26
3	Nyatoh	53.581	40.871	12.710	15.11	106	100	6	13.95
4	Meranti paya	10.954	4.721	6.233	7.41	8	7	1	2.33
5	Medang tabak	13.699	8.875	4.824	5.73	25	22	3	6.98
6	Ramin	2.871		2.871	3.41	1		1	2.33
7	Keruing	2.481		2.481	2.95	1		1	2.33
8	Kayu malam	18.086	15.919	2.167	2.58	29	28	1	2.33
9	Amat	5.208	3.693	1.515	1.80	7	6	1	2.33
10	Ubah	22.719	22.719			57	57		
	Others	18.865	18.865			44	44		
	Total	277.907	193.789	84.118	100.00	413	369	43	100.00

App.Table-17 Species by stratum -3.1(1)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Keruntum	43.928		43.928	26.06	8		8	12.31
2	Ramin	66.933	36.648	30.285	17.97	63	50	13	20.00
3	Kapur paya	107.175	82.815	24.360	14.45	110	100	10	15.38
4	Bangkoh	40.633	19.768	20.865	12.38	33	25	8	12.31
5	Medang	24.845	13.388	11.458	6.80	25	20	5	7.69
6	Medang tabak	33.710	23.478	10.233	6.07	43	38	5	7.69
7	Nyatoh	23.218	14.840	8.378	4.97	28	23	5	7.69
8	Sepetir	18.140	10.188	7.953	4.72	20	15	5	7.69
9	Kayu malam	39.000	32.165	6.835	4.06	45	40	5	7.69
10	Bintangor	4.245		4.245	2.52	3		3	4.62
	Others	46.556	46.556			98	98		
	Total	448.380	279.843	168.538	100.00	473	408	65	100.00

App.Table-18 Species by stratum -3.1(1.EX)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Ramin	72.055	2.630	69.425	53.70	25	3	23	47.92
2	Kapur paya	53.975	33.768	20.208	15.63	63	53	10	20.83
3	Ubah	68.633	50.715	17.918	13.86	158	150	8	16.67
4	Medang	14.415	2.548	11.868	9.18	5	3	3	6.25
5	Kayu malam	7.943	1.583	6.360	4.92	10	8	3	6.25
6	Rengas	7.748	4.233	3.515	2.72	8	5	3	6.25
7	Resak	15.798	15.798			43	43		
8	Keranji	8.020	8.020			15	15		
9	Nyatoh	5.945	5.945			15	15		
10	Kedondong	2.050	2.050			5	5		
	Others	3.886	3.886			11	11		
	Total	260.465	131.173	129.293	100.00	355	308	48	100.00

App.Table-19 Species by stratum -3.1(2)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Kapur paya	88.360	5.751	82.609	29.97	21	6	15	18.75
2	Ramin	47.088	9.493	37.594	13.64	19	8	11	13.75
3	Sepetir	40.483	14.029	26.454	9.60	23	13	10	12.50
4	Ubah	36.579	12.296	24.284	8.81	29	22	7	8.75
5	Nyatoh	36.253	16.721	19.532	7.09	26	19	7	8.75
6	Kedondong	35.209	15.982	19.227	6.98	29	23	6	7.50
7	Medang	12.388	2.976	9.411	3.41	8	6	2	2.50
8	Meranti Group	10.434	3.15	7.283	2.64	6	4	3	3.75
9	Kembang semangkok	5.804	0.000	5.804	2.11	1	0	1	1.25
10	Pendarahan	10.703	5.499	5.204	1.89	12	9	3	3.75
	Others	69.781	31.543	38.236	13.86	77	66	15	18.75
	Total	393.082	117.443	275.640	100.00	252	172	80	100.00

App.Table-20 Species by stratum -3.2(2)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Kapur paya	62.711	3.003	59.708	26.39	16	3	13	19.70
2	Kedondong	43.352	8.317	35.035	15.49	29	18	12	18.18
3	Rengas	34.158	1.214	32.944	14.56	10	2	8	12.12
4	Keruntum	24.928	2.051	22.877	10.11	9	3	7	10.61
5	Ubah	37.457	23.184	14.274	6.31	57	52	5	7.58
6	Nyatoh Group	19.799	7.860	11.940	5.28	19	15	4	6.06
7	Ramin	15.716	5.873	9.844	4.35	12	8	4	6.06
8	Meranti Group	11.087	2.466	8.621	3.81	8	5	4	6.07
9	Semayor	6.161	0.000	6.161	2.72	1	0	1	1.52
10	Medang	12.760	6.953	5.808	2.57	17	14	3	4.55
	Others	62.887	43.866	19.023	8.4	101	95	12	18.22
	Total	331.004	104.775	226.229	100.00	268	203	66	100.00

App.Table-21 Species by stratum -3.3(3)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Alan	444.558	1.186	443.373	85.86	62	1	61	66.30
2	Keruntum	25.930	3.955	21.975	4.26	13	6	7	7.61
3	Ramin	35.894	15.046	20.848	4.04	33	21	11	11.96
4	Ubah	15.700	9.249	6.451	1.25	25	21	4	4.35
5	Jelutong	11.071	4.891	6.180	1.20	14	11	3	3.26
6	Sepetir	13.922	8.384	5.538	1.07	18	16	3	3.26
7	Nyatoh	7.879	4.423	3.456	0.67	11	9	1	1.09
8	Kapur paya	3.448	0.645	2.803	0.54	3	2	1	1.09
9	Geronggang	1.838		1.838	0.36	1		1	1.09
10	Resak	2.483	0.748	1.736	0.34	3	2	1	1.09
	Others	21.950	19.738	2.214	0.43	49	48	2	2.18
	Total	584.673	68.264	516.409	100.00	229	138	92	100.00

App.Table-22 Species by stratum -3.5(1)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Alan	379.451	45.535	333.916	87.38	153	45	108	82.44
2	Keruntum	52.208	21.364	30.844	8.07	48	34	14	10.69
3	Rengas	15.328	7.794	7.534	1.97	16	13	4	3.05
4	Bintangor	26.270	21.393	4.878	1.28	29	26	3	2.29
5	Nyatoh	18.023	15.398	2.625	0.69	33	30	3	2.29
6	Mengilas	16.991	14.638	2.354	0.62	35	34	1	0.76
7	Ramin	8.170	8.170			24	24		
8	Ubah	5.105	5.105			19	19		
9	Medang tabak	3.623	3.623			18	18		
10	Kayu malam	1.324	1.324			4	4		
	Others	1.786	1.786			6	6		
	Total	528.278	146.128	382.150	100.00	383	251	131	100.00

App.Table-23 Species by stratum -5(2)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Meranti Group	53.895	8.271	45.625	17.05	15	9	8	12.9
2	Kedondong	50.613	15.800	34.813	13.01	35	25	10	16.13
3	Ubah	52.429	21.325	31.104	11.62	44	33	11	17.74
4	Medang	26.824	6.593	20.231	7.56	15	9	6	9.68
5	Keranji	18.240	1.579	16.660	6.22	5	1	4	6.45
6	Keruing	18.341	4.313	14.028	5.24	9	6	3	4.84
7	Kempas	10.976		10.976	4.10	1		1	1.61
8	Kapur Group	11.277	0.834	10.443	3.9	2	1	1	1.61
9	Nyatoh	11.947	3.434	8.513	3.18	6	5	2	3.23
10	Raru	7.669		7.669	2.87	0		0	0.00
	Others	112.339	44.756	67.581	25.27	77	63	13	20.94
	Total	374.546	106.904	267.643	100.00	219	157	62	100.00

App.Table-24 Species by stratum -5(2.EX)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Kedondong	41.906	14.921	26.985	18.88	27	19	8	17.78
2	Keruing	24.479	1.481	22.999	16.09	8	2	6	13.33
3	Belian Group	13.336	0.739	12.596	8.81	5	1	4	8.89
4	Ubah	18.041	8.851	9.190	6.43	21	17	4	8.89
5	Perah	15.368	6.363	9.005	6.30	17	12	5	11.11
6	Resak	10.964	3.801	7.163	5.01	8	7	1	2.22
7	Kempas	8.230	1.146	7.084	4.96	3	2	1	2.22
8	Tualang	7.680	1.484	6.196	4.33	3	1	2	4.44
9	Meranti Group	7.234	1.363	5.871	4.11	6	5	1	2.22
10	Sepetir	6.332	0.509	5.823	4.07	3	1	2	4.44
	Others	83.289	53.268	30.020	21.00	96	83	15	33.30
	Total	236.853	93.923	142.930	100.00	191	146	45	100.00

App.Table-25 Species by stratum -5(4)-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Kapur bukit	97.422	3.713	93.709	27.99	22	5	17	23.61
2	Meranti Group	102.255	8.583	93.674	27.98	31	13	18	25.02
3	Keruing Group	57.472	5.654	51.818	15.48	18	9	9	12.5
4	Resak Group	18.178	7.207	10.971	3.28	17	14	3	4.17
5	Ubah Group	23.453	13.97	9.483	2.83	27	25	2	2.78
6	Merawan Group	8.089	0.432	7.658	2.29	4	2	4	5.56
7	Kempas	7.489		7.489	2.24	1		1	1.39
8	Kembang semangkok	7.299	0.434	6.865	2.05	3	1	3	4.17
9	Kedondong	30.484	24.799	5.684	1.70	48	45	3	4.17
10	Merpauh	5.581		5.581	1.67	1		1	1.39
	Others	81.930	40.092	41.839	12.50	76	63	15	20.85
	Total	439.650	104.883	334.768	100.00	243	171	72	100.00

App.Table-26 Species by stratum -8-

	Vernacular Name	Volume (m^3/ha)				Number/ha			
		Total	D<40	40≦D	%	Total	D<40	40≦D	%
1	Ramin	18.760	5.975	12.785	32.37	8	4	4	23.53
2	Kapur paya	65.788	55.446	10.342	26.18	150	146	4	23.53
3	Ubah	41.892	35.229	6.663	16.87	200	196	4	23.53
4	Pulai	6.252	0.079	6.173	15.63	4	2	2	11.76
5	Sindok sindok	7.467	3.929	3.538	8.96	15	13	2	11.76
6	Resak Group	12.179	12.179			75	75		
7	Nyatoh	0.229	0.229			4	4		
8	Kayu malam	8.125	8.125			27	27		
9	Rengas	0.079	0.079			2	2		
10	Melunak	2.015	2.015			4	4		
	Others	42.226	42.226			173	173		
	Total	205.010	165.510	39.500	100.00	663	646	17	100.00

App.Table-27 Volume by group and D.B.H class

Unit : m^3

Stratum	Group	D<40	40≦D	Total	Stratum	Group	D<40	40≦D	Total
2.1(1)	A	27.849	11.592	39.441	3.3(3)	A	22.571	472.215	494.786
	B	76.145	96.201	172.346		B	35.648	19.359	55.007
	C	10.200	7.981	18.181		C	10.044	24.835	34.879
	Total	114.194	115.775	229.969		Total	68.264	516.409	584.673
2.2(1)	A	103.135	44.190	147.325	3.5(1)	A	69.102	336.541	405.644
	B	60.774	6.990	67.764		B	55.338	14.765	70.103
	C	29.881	32.938	62.818		C	21.688	30.844	52.531
	Total	193.789	84.118	277.907		Total	146.128	382.150	528.278
3.1(1)	A	136.073	63.022	199.095	5(2)	A	24.118	99.056	123.174
	B	120.868	40.723	161.590		B	60.128	128.950	189.077
	C	22.902	64.793	87.695		C	22.659	39.637	62.295
	Total	279.843	168.538	448.380		Total	106.904	267.643	374.546
3.1 (1.EX)	A	58.140	89.633	147.773	5(2.EX)	A	17.439	52.966	70.405
	B	72.290	39.660	111.950		B	47.392	64.094	111.486
	C	0.742	0.000	0.742		C	29.092	25.871	54.962
	Total	131.173	129.293	260.465		Total	93.923	142.930	236.853
3.1(2)	A	38.761	151.463	190.224	5(4)	A	32.396	261.594	293.991
	B	54.574	103.632	158.206		B	63.476	48.931	112.407
	C	24.107	20.545	44.652		C	9.011	24.242	33.253
	Total	117.443	275.640	393.082		Total	104.883	334.768	439.650
3.2(2)	A	30.965	98.181	129.146	8	A	73.829	23.127	96.956
	B	59.528	102.142	161.670		B	66.671	6.663	73.333
	C	14.282	25.906	40.188		C	25.010	9.710	34.721
	Total	104.775	226.229	331.004		Total	165.510	39.500	205.010
					Total	A	38.665	159.412	198.077
						B	58.672	71.927	130.599
						C	18.566	27.198	45.764
						Total	115.903	258.537	374.440

App.Table-28 Volume by stratum and storey

Unit : m^3

Stratum	Storey	D	N	Total	Stratum	Storey	D	N	Total
2.1(1)	Up	27.309	159.876	187.185	3.3(3)	Up	447.911	37.418	485.329
	Low	6.656	36.128	42.784		Low	3.102	96.242	99.344
	Total	33.965	196.004	229.969		Total	451.013	133.660	584.673
2.2(1)	Up	78.394	148.981	227.375	3.5(1)	Up	366.168	60.362	426.530
	Low	7.271	43.261	50.532		Low	13.284	88.464	101.747
	Total	85.665	192.242	277.907		Total	379.451	148.826	528.278
3.1(1)	Up	95.753	276.797	372.550	5 (2)	Up	100.000	206.934	306.934
	Low	13.193	62.637	75.830		Low	7.823	59.789	67.612
	Total	108.945	339.435	448.380		Total	107.823	266.723	374.546
3.1 (1.EX)	Up	54.817	146.802	201.620	5(2.EX)	Up	50.566	153.207	203.773
	Low	14.955	43.890	58.845		Low	3.701	29.379	33.080
	Total	69.773	190.693	260.465		Total	54.267	182.586	236.853
3.1(2)	Up	99.079	229.384	328.463	5 (4)	Up	263.283	92.330	355.613
	Low	7.294	57.325	64.619		Low	24.574	59.463	84.037
	Total	106.374	286.709	393.082		Total	287.857	151.793	439.650
3.2(2)	Up	81.294	183.910	265.204	8	Up	53.525	91.573	145.098
	Low	6.401	59.400	65.800		Low	24.442	35.471	59.913
	Total	87.694	243.309	331.004		Total	77.967	127.044	205.010
					Total	Up	147.697	130.833	278.529
						Low	8.730	53.997	62.727
						Total	156.426	184.830	341.256

Note) D:Dipterocarp Tree N:Non-dipterocarp Tree

App.Table-29 D.B.H by stratum

Unit:cm

Stratum	D.B.H								
	D<40			40≦D			Total		
	AVG.	MAX.	MIN.	AVG.	MAX.	MIN.	AVG.	MAX.	MIN.
2.1(1)	26.1	38	18	51.5	74	40	32.0	74	18
2.2(1)	24.8	38	18	44.7	62	40	27.5	62	18
3.1(1)	26.4	38	18	48.0	78	40	30.3	78	18
3.1(1.EX)	25.0	38	18	52.4	72	40	30.1	72	18
3.1(2)	27.4	38	18	53.6	94	40	37.8	94	18
3.2(2)	25.8	38	18	56.6	88	40	35.8	88	18
3.3(3)	25.8	38	18	68.5	130	40	47.7	130	18
3.5(1)	26.5	38	18	51.7	72	40	37.1	72	18
5 (2)	27.0	38	18	60.0	130	40	39.3	130	18
5(2.EX)	26.7	38	18	54.4	90	40	35.3	90	18
5 (4)	26.3	38	18	64.1	130	40	41.2	130	18
8	19.1	38	10	49.6	60	42	20.4	60	10
Total	25.6	38	10	58.2	130	40	36.3	130	10

App.Table-30 Clear length by stratum

Unit:m

Stratum	D.B.H								
	D<40			40≦D			Total		
	AVG.	MAX.	MIN.	AVG.	MAX.	MIN.	AVG.	MAX.	MIN.
2.1(1)	11.0	24	2	14.8	24	7	11.7	24	2
2.2(1)	14.7	20	8	18.0	22	12	15.1	22	8
3.1(1)	17.0	28	10	21.3	28	15	17.6	28	10
3.1(1.EX)	10.9	19	5	18.5	22	8	11.9	22	5
3.1(2)	15.3	28	6	22.1	32	9	17.4	32	6
3.2(2)	13.1	24	6	19.9	28	10	14.7	28	6
3.3(3)	12.7	24	5	21.7	35	12	16.3	35	5
3.5(1)	13.5	24	6	20.1	25	10	15.8	25	6
5 (2)	16.3	32	3	21.9	33	10	17.9	33	3
5(2.EX)	15.7	26	6	20.0	28	7	16.7	28	6
5 (4)	15.2	30	7	21.8	35	14	17.2	35	7
8	10.4	22	5	17.8	24	13	10.6	24	5
Total	14.0	32	2	20.7	35	7	15.6	35	2

App.Table-31 Crown diameter by stratum

Unit:m

Stratum	D.B.H								
	D<40			40≦D			Total		
	AVG.	MAX.	MIN.	AVG.	MAX.	MIN.	AVG.	MAX.	MIN.
2.1(1)	6.8	12	4	9.2	12	6	7.5	12	4
2.2(1)	6.1	9	2	8.1	10	6	6.4	10	2
3.1(1)	7.6	14	5	10.0	14	6	8.1	14	5
3.1(1.EX)	7.9	12	6	9.6	14	7	8.4	14	6
3.1(2)	7.8	16	4	10.7	22	6	9.3	22	4
3.2(2)	7.6	16	5	9.4	15	6	8.5	16	5
3.3(3)	7.3	9	6	10.1	16	6	9.9	16	6
3.5(1)	5.7	8	4	7.0	10	4	6.6	10	4
5 (2)	7.7	14	4	9.9	16	6	8.9	16	4
5(2.EX)	9.0	18	6	10.2	16	6	9.4	18	6
5 (4)	8.7	17	6	11.3	20	6	10.6	20	6
8	5.7	9	4	8.0	9	6	5.9	9	4
Total	7.3	18	2	9.7	22	4	8.4	22	2