

# Quantitative Inventory of Non-Wood Forest Products in Northern Kerala



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**QUANTITATIVE INVENTORY OF NON-WOOD FOREST PRODUCTS  
IN NORTHERN KERALA**

**(KFRI/361/00)**

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## ABSTRACT OF THE PROJECT PROPOSAL

1. Project No : KFRI/361/2000
2. Title : Quantitative Inventory of Non-Wood Forest Products in Northern Kerala
3. Objectives : • To quantify the growing stock of commercially exploited NWFPs of Kerala.
- To analyse the density, distribution, regeneration status and yield of NWFPs in the eleven Forest Divisions of Northern Kerala (Thrissur to Kasaragod).
  - To evaluate the present collection methods and suggest sustainable harvesting schedules for NWFPs.
  - To identify NWFP species which are rare and threatened.
  - To study the socio-economic aspects of marketing NWFPs, such as market structure, marketing channels and margins, price spread and marketing efficiency.
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10. Study area : Northern Kerala



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## ABSTRACT

A list of 137 NWFPs collected for commercial purpose from the forest was prepared. The quantitative inventory study of the NWFPs was carried out in the 15 Forest Divisions (11 Territorial and four Wildlife Divisions) of the seven northern districts of Kerala covering an area of 4,220 km<sup>2</sup>. The NWFPs consist of different forms like herbs, shrubs, climbers and tree yielding useful products such as bark, flowers, fruits, seeds, leaves and roots. Most of the NWFPs have clumped distribution, seasonal availability, rarity and occur in a varied terrain conditions. Therefore, there has been any methodology available for the quantitative inventories of NWFPs. A pilot study was constructed to determine the sample size and the number of plots to be established for the estimation of NWFPs in different forest types by species area curve method.

For the quantification of useful products of NWFPs a software called *Invent NTFP* has been developed. The software has two major parts. The first part deals with input data. Using the data, the software quickly analyse density, abundance, relative density, relative frequency, important value index, Shannon's index and evenness index. The second part deals with yield studies such as available quantity of useful products like root, flower, bark and leaves from different species.

For quantification of NWFPs, a total of 11,548 sample plots were laid out in the natural forests and plantations of 15 forest divisions. Among the 137 NWFPs listed for quantification, 123 were enumerated from the sample plots. Others did not appear mostly because of their habitat specificity and restricted distribution. Among the 123 NWFPs recorded, the species with enough sampling intensity alone were quantified. However, structural data such as density, frequency and abundance of the species were worked out. The highest and lowest density and availability of useful part (kg/ha) were worked out for each forest division, range and vegetation types.

Though, it was envisaged to standardize the collection of important NWFPs, the study was restricted to 30 herbaceous and shrubby species. The sustainable harvest per cent was studied through regeneration index method and the appropriate collection season is also worked out. For want of permission, the sustainable extraction of bark and root of tree species could not been undertaken.

Among the 123 NWFPs studied 25 species belong to the Red Listed Categories such as Vulnerable (12 spp.); Low risk near threatened (4 spp.); Endangered (6 spp.) and one species (*Coscinium fenestratum*) as critically endangered. Among these *Kingiodendrum pinnatum*, *Strobilanthes ciliates* and *Hydnocarpus pentandra* are Peninsular Indian endemics.

There are two stages in the marketing of NWFPs in Kerala, sale of collected products by the tribes to Federation through society and marketing of the collected products by the Federation. There exists different market situation in both the stages. In the first stage, the market structure is more or less similar to that of monopoly. In the second stage, the market structure of NWFPs in the product market is oligopolistic in Kerala with few firms or sellers in the market.

With no increase in the real income and standard of living, the gatherers are compelled to collect more and more of highly demanded items which will affect their availability in coming years. For conservation and better management of NWFPs, economic upliftment of the collectors, value addition of NWFPs through post harvested, processing are suggested.



# 1. INTRODUCTION

The forests of Kerala are endowed with a luxuriant vegetation, rich in species. They provide a variety of Non-wood Forest Products (NWFPs) or Non-Timber Forest Products (NTFPs), besides the major products like timber, firewood and small wood. The NWFPs include all goods of biological origin as well as services derived from forests or any land under similar use and exclude wood in all its form (Chandrashekar, 1995). They can be broadly grouped as edible products, medicinal plants, toiletries, tans and dyes, gums and resins, rattans, bamboo, fodder and animal products. It has been estimated that there are over 500 species of NWFP yielding plants in the forests (Nambiar et al, 1985). Among them, 150 are exploited on a commercial scale because of their requirement in the manufacture of medicine, toiletries, cosmetics, varnish, etc. The rest of the NWFPs are collected on limited extent as food, Folk-lore medicine, fodder, etc. by the tribes and others living in and around the forest areas. An analysis of the various NWFPs collected for commercial purposes highlights that roots and tubers of 50 species are used including tree species. The other major parts are fruits and seeds (35 species), bark (20 species), wood (5 species), leaves (15 species), exudations (5 species). About 28 species are collected as such. The Ayurvedic medicine industry, the largest consumer of NWFPs, is still meeting majority of their raw drugs requirements from the forests. Only a very few items are obtained from cultivation, mostly spices and aromatic species. Thus, forest will continue to be the main source for the raw drugs. Among the forest types of Kerala, it is from the moist deciduous forests 40 per cent of the NWFPs are extracted (Basha, 1990). These forests are under severe threat due to a variety of reasons (Swarupananadan & Sasidharan, 1992). Tropical rain forest ecosystem is very fragile and less able to recover from severe disturbances. NWFP yielding species are important components of the forest diversity. So, it is very important to conserve them and extract them on a sustainable basis.

Traditionally, the tribal communities in Kerala are the gatherers of NWFPs and it is their main source of subsistence and income needs. In 1970, the Government granted the right of NWFP collection to the tribes in the State. In 1978, a number of Tribal Co-operative Societies were formed with membership reserved only to the tribal people in order to ensure them a fair price for their products. In 1981, the Kerala State Scheduled Caste and Scheduled Tribe

Development Co-operative Federation Limited (Federation) was formed and the Federation was entrusted with the right to monopoly of procurement and marketing of all NWFPs collected by the tribal societies. However, due to the increase in the demand for NWFPs and due to the preference of Federation to marketing only premier items, the non-tribes are also collecting and selling of NWFPs.

A large number of agents and operations are involved in the marketing of NWFPs, that makes the same a complex process. In Kerala, these products are marketed through the authorised and unauthorised channels. While, the former consists of Tribal Service Co-operative Societies (at present 33 numbers) and their apex body, the Federation; the unauthorised channel is completely owned and operated by the private traders. Of the 140 commercially important NWFPs, only 50 to 60 items are collected by the Federation on a regular basis. The Federation restricts collection and marketing of only limited items mainly due to the fact that others do not fetch a profit. Thus, other items are collected in an unauthorised manner by either the tribes or non-tribes and sell the same to private traders, who on the other hand market the same. The total quantity of NWFPs marketed by the Federation may be high, but the number of items marketed by the private traders are more. Further, one of the objectives of the establishment of these institutions (Societies and Federation) is to eliminate middlemen from the collection and marketing channels. But, studies show that they are still prevalent in the collection and marketing chain and take huge marketing margins (Muraleedharan et al, 1997; Anjana, 1999). There are only very few studies on the marketing of NWFPs in Kerala focusing mainly on marketing in the authorised channel.

The NWFPs are important renewable resources. They are the main source of subsistence and income needs of the tribes, raw materials for Ayurvedic medicine, cosmetics, varnish, etc. In the past, NWFPs in Kerala were exploited to meet the requirements of the forest dwelling communities. Last few decades have witnessed a renewed interests and activities concerning NWFPs. The current interest in NWFPs among Conservationists, Foresters, Development workers and Indigenous communities has prompted numerous initiatives aimed at value addition as a means of improving the wellbeing of the indigenous communities. Over the years, their demand has increased tremendously due to their requirement for manufacturing a variety of products

on a commercial basis. This has lead to increased exploitation often on an unsustainable basis. This project envisaged to undertake quantitative resource inventory study to estimate the growing stock, sustainable exploitation and marketing of NWFPs.

The study was proposed to be conducted in the 11 Territorial Divisions of the Kerala Forest Department from Thrissur to Kasaragod comprising an area of about 4,000 km<sup>2</sup>. The study on remaining Forest Divisions (Southern Kerala) will be undertaken by TBGRI, Palode, Thiruvananthapuram). The objectives of the study are: i) to quantify the growing stock of commercially exploited NWFPs of Kerala (Appendix 6); ii) to analyse the density, distribution, regeneration status and yield of NWFPs in the eleven Forest Divisions of Northern Kerala (Thrissur to Kasaragod); iii) to evaluate the present collection methods and suggest sustainable harvesting schedules for NWFPs; iv) to identify NWFP species which are rare and threatened; v) to study the socio-economic aspects of marketing NWFPs, such as market structure, marketing channels and margins, price spread and marketing efficiency.



## 2. METHODOLOGY

NWFP inventory in forests is a sample-based survey of the NWFP resources with an intention to quantify their abundance and the identification of rare, endangered and vulnerable species at various spatial scales. The NWFP plant species consist of different life forms like herbs, shrubs, climbers and trees. There are number of useful products exploited from these species such as bark, flowers, fruits, seeds, leaves and roots. Some of the problems associated with the inventory of NWFP resources are rarity, clumped distribution and seasonality of the species, high cost, large forest areas and difficult terrain condition. Due to such complexities, there has not been any formalized methodology available for the inventory of NWFPs.

The choice of survey design depends on the factors to be considered at different levels such as forest administrative unit, habitat type, habit of the species and the spatial and temporal scale at which the survey is intended. In the survey design of NWFP resources there are four elements, which are spatially nested (Table 1) (Wong, 2000). Generally, decision at each level can be considered to some extent as being independent of other levels. For example, decision to use simple random sampling does not have bearing on whether the plot should be square or rectangular.

**Table 1. Framework for the survey of NWFP resources**

<b>Elements of survey design</b>	<b>Protocol requirement</b>	<b>Relevant target characteristic</b>
Sampling design	Spatial distribution of sample plots	Spatial distribution of population
Plot layout	Size and shape of the plot	Life form eg. trees, shrubs, herbs
Population enumeration	Means of quantifying abundance, distribution and diversity	Growth form
Product quantification	Measurement of product yield	Part of plants exploited. eg. bark, fruits, leaves, roots etc.

## 2.1 Standardization of sample plot size and number of sample plots

### 2.1.1 Sample plot size

A pilot study was conducted to determine the size and number of plots to be established for the quantitative estimation of NWFPs in different vegetation types. Sample plots of size 20 × 20 m, 20 × 40 m, 20 × 60 m, 20 × 80 m and 20 × 100 m were laid out in one km<sup>2</sup> grid and NWFP trees and saplings were enumerated. This exercise was repeated 10 times randomly in the same grid. For enumerating shrubs, four consecutive 5 × 5 m subplots were taken in each 20 × 20 m subplots (which also led to 4 plots of different sizes *viz.* 5 × 5 m, 5 × 10 m, 5 × 15 m and 5 × 20 m). Thus, in each main plot (20 × 100 m), 20 subplots of size 5 × 5 m were taken for the enumeration of shrubs. In each subplot of 5 × 5 m, plots of 1 × 1 m were taken consecutively for studying the herbs and seedlings (which also led to plots of size 1 × 1m, 1 × 2 m and 1 × 3 m). Thus, in each main plot, 60 subplots were taken for herbs and seedlings. The optimum size of the plot for each plant category was found out from the species area curve.

The above procedure was carried out in moist deciduous forests (Chanoth mala, Pattikkad Range), semi-evergreen forests (Kolathilampara, Peechi Range) and for evergreen forests (Pothumala, Nelliampathy).

The optimum size of the plot as found from the analysis are:

#### Trees and saplings

Moist deciduous forests	-	20 × 80 m
Semi-evergreen forests	-	20 × 80 m
Evergreen forests	-	20 × 60 m

#### Shrubs

For all forest types	-	5 × 5 m
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#### Herbs and seedlings

For all forest types	-	2 × 2 m
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### 2.1.2 Number of sample plots

Four areas of moist deciduous forests in Thrissur Forest Division were selected to determine the number of plots required for the study. The areas selected were Perumthumba, Channakkad, Chakolatharissu and Kanjippara. In each

area, 20 × 100 m plots were established in three consecutive grids of one km<sup>2</sup> size along the same direction and number of trees and saplings were enumerated. The analysis highlighted that a minimum of 4 sample plots were required to be laid out in one km<sup>2</sup> grid for the enumeration of NWFP tree species.

## **2.2 Inventory of NWFPs**

### **2.2.1 Sampling strategy for the enumeration of species**

In the forest cover map of the study area, grids of size 1 km<sup>2</sup> were marked and identified in the field by reconnaissance survey. Four plots were laid out in each 1 km<sup>2</sup> grid for the enumeration of tree and saplings. The subplots for shrubs, herbs, climbers and seedlings were selected within the plots laid down for trees and saplings. The presence or absence of listed NWFP species was recorded in each plot. If the species of interest was present in a plot, its availability in terms of number of individuals was assessed. As regards trees, number of individuals, girth at breast height (gbh) and height were measured.

### **2.2.2 Sampling strategy for quantification of useful products**

Sampling was also involved at the individual plant level for the non-destructive estimation of quantity of useful products such as bark, leaves, fruits and flowers. The double sampling approach was preferred. In this, detailed measurements of product quantity (eg. bark) were undertaken for a small sample of individuals and quantity related to some easily measurable features like height and girth and regression equations developed. The species for which the product quantity was not related with size measurements conversion factor (mean weight) was obtained. Such equation/conversion factor was applied for the individuals enumerated in the general inventory for predicting their product quantity. Additional details on this aspect are dealt within under the section 'Quantification of useful products'.

## 2.3 Estimation of abundance, distribution and diversity of NWFP resources

The NWFP resources in forests should be understood in terms of abundance, distribution and diversity. The formulae used to measure the abundance and diversity are described below (Luduid and Reyndds, 1988; Megurren, 1988).

$$1. \text{ Density (No. of individuals/ha)} = \frac{\text{Number of individuals encountered}}{\text{Total area sampled in m}^2} \times 10,000$$

where total area sampled = No. of plots  $\times$  area of the plot

### 2. Abundance

Abundance is described as the number of individuals per quadrat of occurrence.

$$\text{Abundance} = \frac{\text{Total number of individuals}}{\text{Number of quadrats of occurrence}}$$

$$3. \text{ Relative Density (RD)}_i = \frac{\text{Number of individuals belonging to species } i}{\text{Total number of individuals}}$$

$$4. \text{ Frequency (F)}_i = \frac{\text{Number of quadrats in which species } i \text{ was present}}{\text{Total number of quadrats sampled}}$$

$$5. \text{ Relative Frequency (RF)}_i = \frac{F_i}{\sum F_i}$$

$$6. \text{ Relative Basal Area (RBA)}_i = \frac{BA_i}{BP}$$

where  $BA_i$  = Sum of basal area of the trees belonging to species  $i$

$BP$  = Sum of basal areas of all the trees in a plot

Basal area of a tree =  $\pi r^2$ ;  $r = gbh/2\pi$

### 7. Importance Value Index (IVI)

It is used to express dominance and ecological success of any species.

$IVI = \text{Relative Density (RD)}_i + \text{Relative Frequency (RF)}_i + \text{Relative Basal Area (RBA)}_i$

## 8. Richness indices

### i) Margalef's index

$$R1 = \frac{S - 1}{\ln(n)}$$

where  $S$  = No. of species recorded

$n$  = Total number of individuals observed

### ii) Menhinick's index

$$R2 = \frac{S}{\sqrt{n}}$$

where  $S$  = Number of species recorded

$n$  = Total number of individuals summed over all the species

## 9. Diversity indices

Diversity indices incorporate both species richness and evenness in to a single value.

### i) Simpson's index

Simpson's index was the first diversity index used in ecology as  $\lambda = \sum_{i=1}^s p_i^2$

where,  $p_i = \frac{n_i}{N}$

$n_i$  = number of individuals of the  $i^{th}$  species.

$N$  = total number of individuals for all  $S$  species in the population

This index varies from 0 to 1 and gives the probability that two individuals drawn at random from a population belong to the same species. If the probability is high then the diversity of the community sampled is low.

The above equation applies only to finite communities where all of the members have been counted i.e.,  $n = N$ , where  $n$  is the total number of individuals in the sample and  $N$  is the total number of individuals in the population. In the case of infinite populations where it is impossible to count all the members, the unbiased estimator  $\lambda$  is given by  $\lambda =$

$$\sum_{i=1}^s \frac{n_i(n_i - 1)}{n(n - 1)}$$

## ii) Shannon's index [ $H'$ ]

$H'$  has probably been the most widely used index in community ecology. It is a measure of the average degree of 'uncertainty' in predicting to which species an individual selects at random from a collection of  $S$  species and  $N$  individuals belong. The average uncertainty increases as the number of species increases and as the distribution of individuals among the species becomes even.

$$H' = - \sum_{i=1}^r (p_i \log p_i)$$

where,  $p_i = \frac{n_i}{n}$

$n_i$  = number of individuals belonging to  $i^{\text{th}}$  of  $S$  species in the sample  
and  $n$  is the total number of individuals in the sample.

## iii) Hill's diversity indices

The following Hill's diversity numbers  $N_0$  to  $N_2$  measure the effective number of species present in a sample.

$N_0$  is the number of all species present in the sample regardless of their abundance.

$N_0$  is expressed as

$$N_0 = S; \text{ where } S = \text{Number of species recorded}$$

$N_1$  is number of abundant species. The value of  $N_1$  always intermediate between  $N_0$  and  $N_2$ .

$$N_1 = e^{H'} \text{ where } H' = \text{Shannon's index}$$

$N_2$  is the number of very abundant species calculated using Simpson's index.

$$N_2 = \frac{1}{\lambda}; \text{ where } \lambda = \text{Simpson's index}$$

## 10. Evenness indices

Evenness index indicates whether all the species in a sample are equally abundant or not. If all the species are equally abundant evenness index

value should be minimum and decreases towards zero as the relative abundance of the species diverge away from evenness.

i) Evenness index 1 ( $E1$ )

This is the most common evenness index used by ecologists.

$$E1 = \frac{H'}{\ln(S)} = \frac{\ln(N1)}{\ln(N0)}$$

where  $H'$  = Shannon's index

$S$  = Total number of species recorded

$N0, N1$  are Hill's diversity numbers

ii) Evenness index 2 ( $E2$ )

$E2$  is an exponential form of  $E1$ .

$$E2 = \frac{e^{H'}}{S} = \frac{N1}{N0}$$

iii) Evenness index 3 ( $E3$ )

$$E3 = \frac{e^{H'} - 1}{S - 1} = \frac{N1 - 1}{N0 - 1}$$

iv) Evenness index 4 ( $E4$ )

$E4$  is known as Hill's ratio. It provides the ratio of the number of very abundant species to abundant species.

$$E4 = \frac{1/\lambda}{e^{H'}} = \frac{N2}{N1}$$

When diversity of the community decreases, that is, as one species tends to dominate both  $N1$  and  $N2$  will tend to be one and then  $E4$  converges towards one.

v) Evenness index 5 ( $E5$ )

$E5$  is known as modified Hill's ratio given by

$$E5 = \frac{1/\lambda - 1}{e^{H'} - 1} = \frac{N2 - 1}{N1 - 1}$$

*E5* approaches zero as single species become more and more dominant in a community. This is clearly a desirable property for an evenness index and that is why *E5* is preferred over *E4*.

## **2.4 Quantification and extrapolation of availability of useful products**

Quantification and extrapolation methodology vary depending on the habit of the species and also the useful part(s) of the plants to be quantified such as bark, leaves, flowers, fruits, seeds and roots.

### **2.4.1 Quantification of useful products from herbaceous species**

Single conversion factor was used to quantify the useful products from herbaceous species. The number of sufficient samples of herbs, each weighing a particular weight, 100gm, were collected from different localities of the survey area and the number of individuals in each sample counted. The weight of the useful part on a per plant basis was worked out from each of these samples and the over all mean weight (*MW*) worked out.

The total available quantity of useful product (kg/ha)

$$= \frac{MW \times \text{Number of individuals encountered}}{a \times n} \times 10$$

where 'a' is the sample plot area (m<sup>2</sup>) and 'n' is the number of plots enumerated in the general survey.

### **2.4.2 Quantification of leaves, flowers and fruits, etc.**

A sub-sample of trees was selected from different forest areas for quantification. The girth and height were measured for those trees. The available quantity of useful parts viz., leaves, flowers, fruits etc. from these individual trees were estimated by using multistage stratified random sampling approach. In the case of sympodial species, the branches in a tree was stratified into primary, secondary and terminal branches. In the case of monopodial species, branches was stratified considering various portions of the tree like bottom, middle and top. The number of branches to be considered for the quantification in each stratum at each stage ranged from 10 per cent to 20 per cent of the total available branches or it was proportional allocation to



cross-sectional areas of the branches or number of branches. This sampling approach can be extended till the terminal branches are chosen. The number of fruits/leaves/flowers was directly counted from the distal end of the terminal branches when these are conspicuous. If the fruits were not conspicuous, a person was asked to climb the tree and count. The total number of fruits/leaves/flowers of the tree was worked out by doing back calculation. Such an exercise was replicated to sufficient number of trees belonging to different girth and crown classes.

The regression equations like equations presented in Table 2 relating the total availability of leaves/fruits/seeds with the size measurements of the tree can be developed for the prediction of product availability from individual trees (PAT).

$$\text{Product availability (kg/ha)} = \frac{\sum PAT}{a \times n} \times 10$$

where 'a' is the sample plot area (m<sup>2</sup>) and 'n' is the number of plots enumerated in the inventory survey.

**Table 2. Examples of prediction equation**

$Y = a + bd + cd^2$
$\ln(Y) = a + b d$
$\ln(Y) = a + b \ln(d)$
$\ln(Y) = a + b \ln(d) + c(\ln(d))^2$
$Y^{0.5} = a + bd$
$Y = a + bd^2h$
$\ln(Y) = a + bd^2h$
$Y^{0.5} = a + bd^2h$
$\ln Y = a + b \ln(d) + c \ln(h)$
$Y^{0.5} = a + bd + ch$
$Y^{0.5} = a + bd^2 + ch + d^2h$

where a, b and c are regression co-efficient; d is dbh (cm); h is height (m)

### 2.4.3 Quantification of bark

#### 2.4.3.1. Prediction of bark thickness

During the survey, a sub-sample of trees belonging to different girth classes from different forest areas was selected. The gbh and height are recorded for

those trees. Samples of bark of size 10 x 5 cm at breast height were collected from those trees. The bark thickness before drying, green weight and dry weight were worked out. A regression equation was developed to predict the thickness of the bark using dbh and height of the trees. In this, all possible functional forms or candidate regression equations were considered and the final model identified based on the values of adjusted  $R^2$  and the Furnival index and the number of parameters involved in the equation. Some possible functional forms are indicated in Table 2.

#### 2.4.3.2. Extrapolation of available bark

Let 'A' be the area of the forest to be surveyed. 'n' denotes the number of sample plots of area 'a' to be laid down. 'p' is the number of trees encountered with varying diameter at breast height (dbh) and height (h). It is necessary to make an assumption on the geometrical form of the tree to work out its surface area so that bark weight can be worked out.

Assuming that the tree takes conical form, the surface area of the tree (SA) is worked out as

$$SA = \pi r \sqrt{(r^2 + l^2)}$$

where  $r = gbh/2\pi$ ;  $l = \sqrt{(r^2 + h^2)}$

$$\text{Bark Volume (BV)} = SA \times BT$$

where BT is the bark thickness (cm) estimated from the thickness prediction equation for the given gbh and height (h).

$$\text{Bark weight of a tree (gm) (BW)} = BV \times \text{Conversion Factor}$$

where the Conversion Factor is obtained based on sub-sample measurements using the formula  $\text{Conversion Factor (gm/cm}^3\text{)} = \frac{\text{dryweight}}{\text{greenvolume}}$

$$\text{Bark availability - BA (kg/ha)} = \frac{\sum BW}{a \times n} \times 10$$

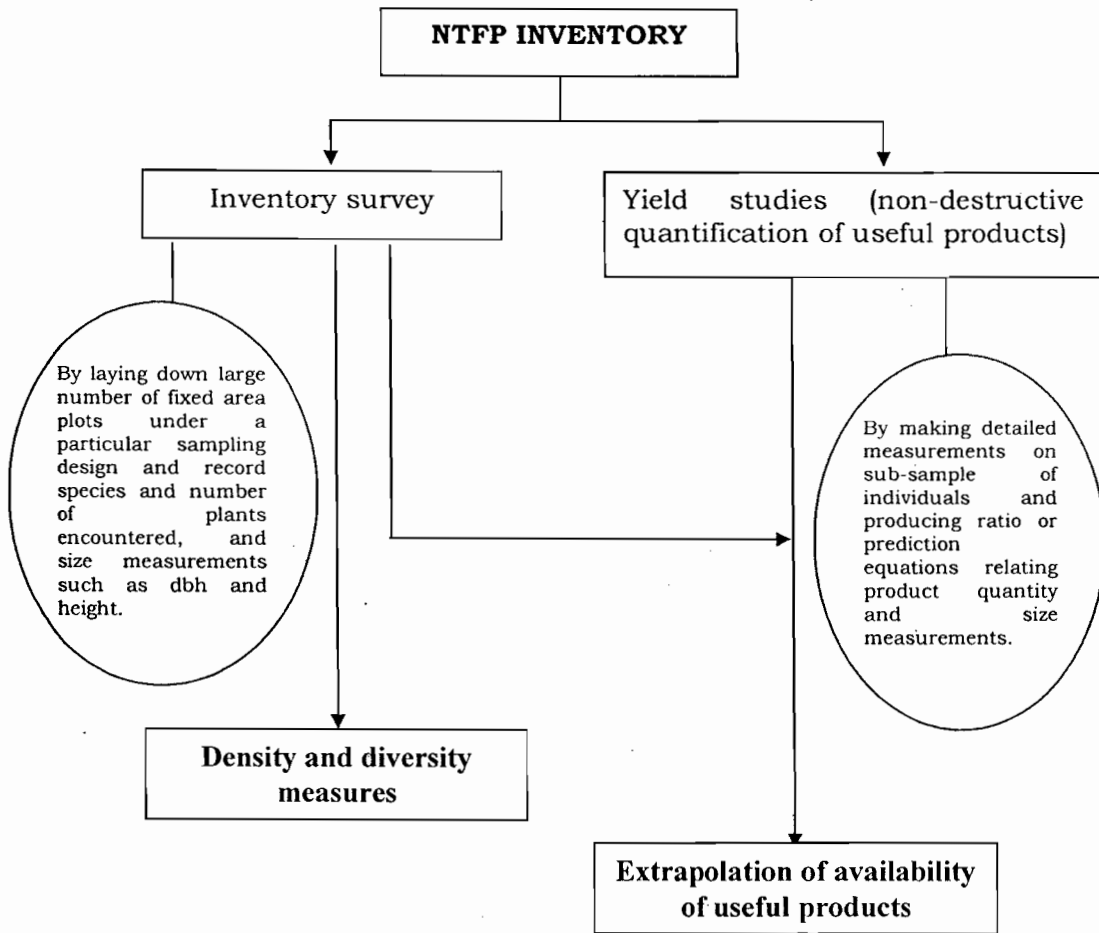
$$\text{Total bark availability (kg/ha)} = BA \times A$$

## 2.5 InventNTP Software

The quantification of useful products involves complex computations and therefore, software was necessitated. In this regard, the software called 'InventNTP' has been developed with the objective to carry out quantitative analysis of data obtained in an inventory of NWFPs in forests conducted by laying fixed area plots like rectangular, square and circular plots. Although the software was originally conceived for the analysis of NWFP inventory, it may be found useful in other areas involving fixed area plot based surveys for working out various density and diversity measures. Such application domain include inventory of selected floral and faunal groups. The details of the software are presented below.

The software functionally has two major parts. First part is related to the input data obtained by laying down number of fixed area plots in an inventory survey (Figure 1). Using these data, the software quickly produces density and diversity measures viz., density, abundance, relative density, frequency, relative frequency, *IVI*, Marglef's index, Menhinick's index, Simpson's index Shannon's index, Hill's diversity measures and evenness indices. Second part requires input data from yield studies (or quantification of useful products) such as average weight of the useful part, prediction equation relating the weight of the useful part of the plant with its size measurements (dbh and height) obtained through detailed measurements made on sub-sample of individuals (Figure 2). With this input data, available quantity of range of useful products such as roots, flowers, bark and leaves from different species are extrapolated. It may be noted that estimates from yield studies (input for second part) have to be worked out outside this software, that is, using other statistical software.

InventNTP is easy to install. The system required are Microsoft Windows 98 or above and 3MB disk space. The software is best viewed under the screen area 800 by 600 pixels. The software has a help file in Acrobat describing inventory methodology, guidance and to use the software utility of the software.



### 2.5.1 Input data

The input details required in the first section are given below (Figure 1).

#### *Plot-wise details:*

Plot number, name of the species encountered, number of individuals enumerated and size measurements viz., gbh and height are to be fed. In case, the size measurements are to be entered for an individual, then the number of individuals should be 1. If no species was encountered in the survey, other columns should be left blank except the first column where the plot number is must.

Second section requires the following input data from yield studies (quantification of useful parts) for the extrapolation of availability of useful products (Figure 2).

1. Name of the species
2. Life form (habit) of the species
3. Number of useful products
4. Names of the useful products
5. Yield estimates (ratio/regression estimates) of the useful products viz., average weight of the useful product in gm, prediction equation relating weight (gm) of the useful product with dbh(cm)/ height(m).

If the useful product is bark, then the prediction equation relating the bark thickness (cm) with dbh(cm)/ height(m) is to be entered. In this case, conversion factor that is dry weight to green volume ( $\text{gm}/\text{cm}^3$ ) and form factor (conical/cylindrical) should also be entered.

Some forms of the regression equations are given earlier under the section 'Extrapolation of useful products'. The notation used for denoting dbh is 'd' and for denoting height is 'h'. The operators/functions to be used for presenting the regression equations to the software are same that of operators used in Excel. However, symbols representing commonly used operators/functions are listed below.

Plot No.	Species	No. of individuals	GBH (cm)	Height (m)
	Wrightia tinctoria	1	45	6
	Schleicheria oleosa	1	16	2
1	Schleicheria oleosa	1	42	11
	Hydnocarpus pentandra	1	62	10
	Dillenia pentagyna	1	118	13
	Wrightia tinctoria	1	28	4
	Wrightia tinctoria	1	57	7
	Wrightia tinctoria	1	47	5
	Wrightia tinctoria	1	62	8
	Wrightia tinctoria	1	30	5
	Wrightia tinctoria	1	55	7
2	Wrightia tinctoria	1	35	4
	Wrightia tinctoria	1	24	3
	Wrightia tinctoria	1	34	6
	Dillenia pentagyna	1	133	14
	Spondias pinnata	1	94	10
	Ficus racemosa	1	88	13

Figure 1. Data entry window indicating plot-wise data of tree species obtained from inventory survey conducted in Palakkad Forest division.

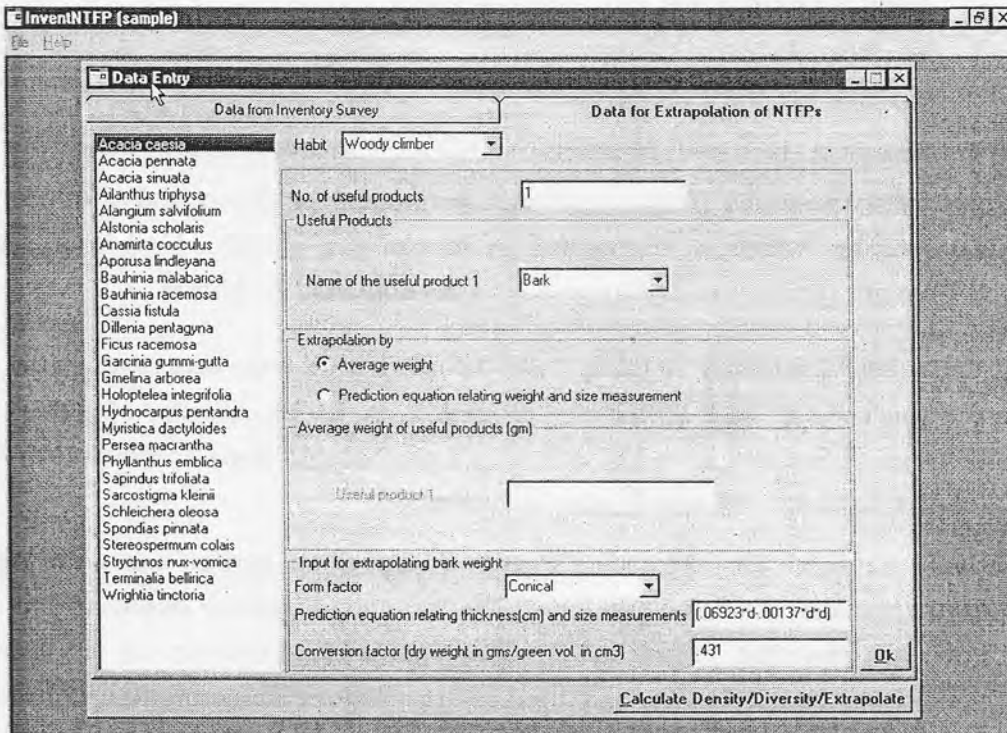


Figure 2. Data entry window indicating data from quantification studies of inventory survey conducted in Palakkad Forest Division (example shown above is for species *Acacia caesia*; useful part- bark)

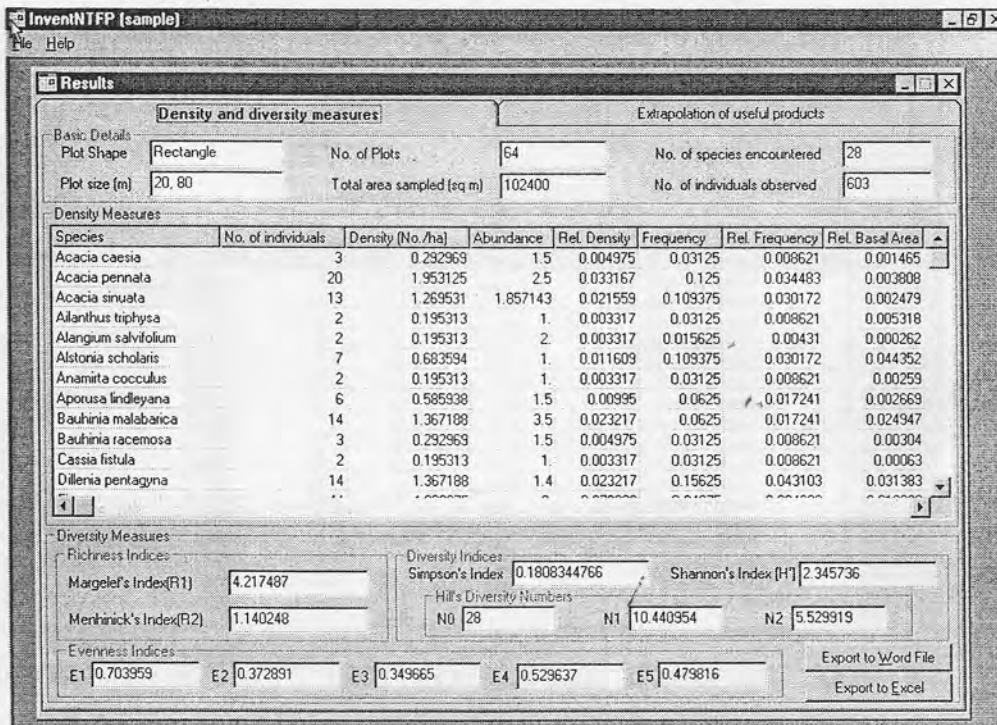


Figure 3. Results window indicating results of abundance and diversity indices

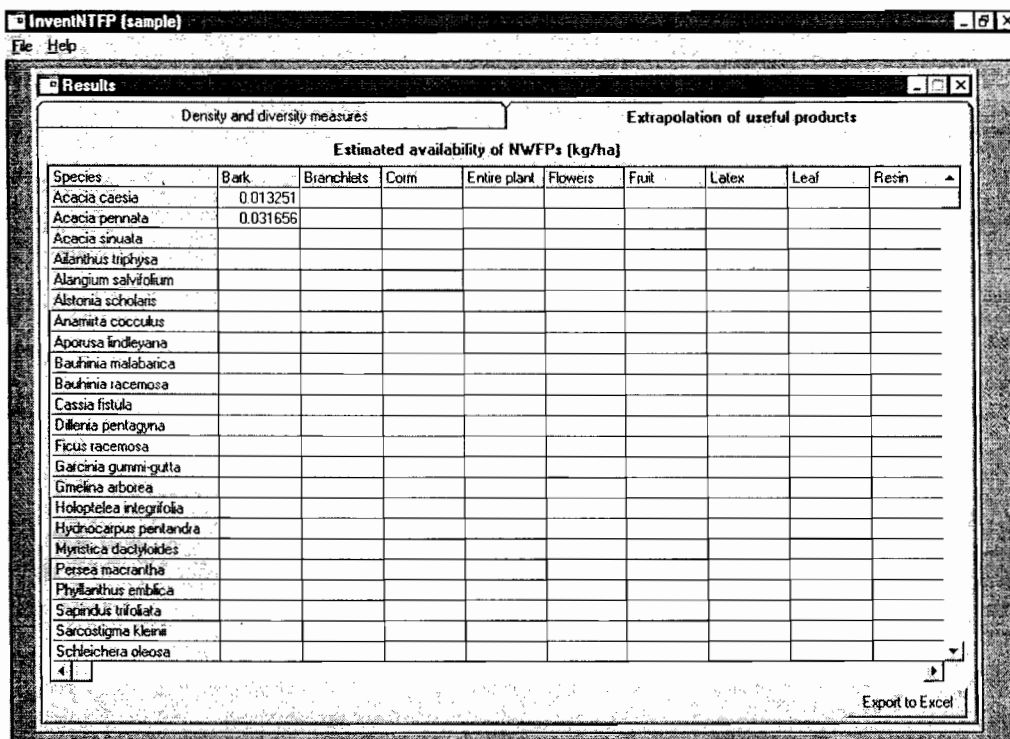


Figure 4. Results window indicating results of estimated availability of useful products of various species (example shown above is for species *Acacia caesia* and *Acacia pennata*; useful part- bark)

Addition	+
Subtraction	-
Multiplication	*
Division	/
Power	^
Natural logarithm	$\ln(\text{argument})$
Square root	$\text{sqrt}(\text{argument})$
Exponentiation	$\text{exp}(\text{argument})$

While feeding the prediction equation, it is enough to input the right hand side of the equation. If functions like log or square root exist on the left hand side of the equation then the right hand side of the equation should be entered in

such a manner that the equation produces the values in original scale. Some specific examples are as follows.

Prediction equation	Format to be followed to enter the equation in the software
$Y = 7 + 0.5d + 0.3d^2$	$7 + 0.5*d + 0.3*d^2$
$\ln(Y) = 3 + 0.8 d$	$\exp(3 + 0.8*d)$
$\ln(Y) = 3 + 0.9 \ln(d)$	$\exp(3 + 0.9*\ln(d))$
$Y^{0.5} = 0.7 + 3d$	$(0.7 + 3*d)^2$
$Y^{0.5} = 0.7 + 0.9d^2 + 0.12h + 0.32d^2h$	$(0.7 + 0.9*d^2 + 0.12*h + 0.32*d^2*h)^2$

Note that the extrapolation is optional.

### 2.5.2 Calculation

Once the required input data are fed, the results are displayed by clicking on.

Calculate density/diversity/extrapolate. With respect to second part of the input window, click Ok for accepting input data from yield studies before clicking on Calculate density/diversity/extrapolate. The output window has two sections. The first section displays density and diversity measures based on the data entered in the first section of the data entry window (Figure 3). The formulae used in this section are presented under Appendix.

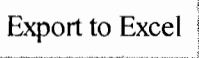

The second part of the output window displays estimated availability of useful products on per hectare basis (Figure 4). These results are displayed in matrix form with species in rows and different useful products in columns. The estimation procedure related to this section is described earlier under the section 'Extrapolation of useful products'.



### 2.5.3 Copying input data from Excel file

Instead of using data entry facility available in the software, user may copy the data from Excel file provided if they are in required format of InventNTFP. Right clicking of the mouse can do copying/pasting.

### 2.5.4 Exporting input data and output data to Excel

The input data and results obtained can be saved in Excel for further use by clicking on . The results can also be saved in Word by clicking on .

## 2.6. Sustainable extraction

The sustainable harvesting per cent of herbaceous NWFPs was determined based on their capacity to regenerate after harvest in the next season through regeneration index method. In the permanent sample plots, different levels of harvests such as 25, 50, 75, 85 and 95 per cent of the population of a given species was carried out in the conventional manner in the appropriate season. For each harvest level three replicate sample plots were used. The number of new individuals regenerated in the sample plots were enumerated during next harvesting season. Regeneration index was calculated from the mean of plants harvested in the previous season and the number of plants regenerated subsequently.

$$\text{Regeneration index} = \frac{\text{No. of plants regenerated} \times 100}{\text{No. of plants harvested}}$$

Maximum per cent of harvesting at which maximum value for regeneration index recorded is considered as the sustainable harvest rate of the species.

## 2.7. Marketing of NWFPs

This study is mainly based on data collected from the Federation, the societies, Ayurvedic medicine manufacturing units in the state, Private medicinal plant traders during 2001-2004. As part of the analysis, an attempt is made to identify marketing channels and estimate marketing cost and margin, economic efficiency of marketing and share factors, by focusing on nine highly demanded NWFPs. They are *Coscinium fenestratum* (Maramanj),

*Curcuma aromatica* (Kasthurimanjal), *Myristica beddomei* (Kattupathiri), *Desmodium gangeticum* (Orila), *Sida rhombifolia* (Kurumthotti), *Terminalia chebula* (Kadukka), *Hydnocarpus pentandra* (Marotti) and *Phyllanthus emblica* (Nellikka). Following are the methods used to assess the above aspects.

### **2.7.1. Economic efficiency**

The economic efficiency of marketing of selected products has been examined with the following formula developed by Shepherd (1965).

$$ME = \frac{V}{I} \times 100$$

Where ME = Index of marketing efficiency

V = Value of goods sold

I = Total marketing cost including margin

### **2.7.2. Share factor**

In order to assess the share factor, the ratio of average collection charge per kg to average sale value per kg (expressed in percentage) is worked out.

### 3. STUDY AREA

The study area comprising seven northern districts of Kerala lies between 10° 20' and 12° 48' N latitude and 74° 52' and 77° 22'E longitude. The forests areas of Kasaragod, Kannur, Kozhikode, Wayanad, Malappuram, Thrissur and Palakkad were surveyed for the programme. Altogether 51 Forest Ranges under 15 Forest and Wildlife Divisions in northern Kerala were studied (Fig. 5). Among these Wayanad, Peechi-Vazhani, Chimmini and Parambikulam are Wildlife sanctuaries. As the Silent Valley is a National Park, it was excluded from the study area. Most of the areas of Chimmini Wildlife Sanctuary were part of the Peechi Wildlife Sanctuary earlier. Also the forests of Peechi and Chimmini are more or less contiguous and following a similar floristic pattern, hence in the analysis these two divisions were treated as a single unit and presented the data. The Forest Divisions and Ranges of northern Kerala, their extent and the total area covered during the survey are given in the Table 3.

Table3. Forest Division and Range wise areas surveyed

No	Divisions	Ranges	Area (Sq. km)
1	Kannur	Kasaragod	60.46
		Kanjangad	50.48
		Taliparamba	24.85
		Kottiyur	60.68
		Kannavam	93.85
		<b>Total</b>	<b>290.32</b>
2	Wayanad north	Begur	104.78
		Periya	85.06
		Mananthavady	26.05
		<b>Total</b>	<b>215.89</b>
3	Wayanad south	Kalpetta	123.29
		Meppady	116.86
		Chedleth	86.00
		<b>Total</b>	<b>326.15</b>
4	Wayanad WLS	Aralam	55.00
		Tholpetty	77.67
		Kurichiath	106.56
		Muthariga	74.29
		Sultan Bathery	86.03
		<b>Total</b>	<b>399.55</b>
5	Kozhikode	Peruvannamuzhi	127.71
		Kuttiyadi	63.37
		Thamarasseri	99.72
		<b>Total</b>	<b>290.80</b>

6	Nilambur south	Kalikavu	99.83
		Karulai	265.61
		<b>Total</b>	<b>365.44</b>
7	Nilambur north	Nilambur	140.87
		Edavanna	97.90
		Vazhikkadavu	155.19
		<b>Total</b>	<b>393.96</b>
8	Mannarkkad	Attappady	249.43
		Agali	129.10
		Mannarkkad	151.58
		<b>Total</b>	<b>530.11</b>
9	Palakkad	Olavakkode	81.27
		Walayar	122.35
		Ottappalam	34.78
		<b>Total</b>	<b>238.40</b>
10	Nenmara	Nelliampathy	205.94
		Kollengode	51.79
		Alathur	81.68
		<b>Total</b>	<b>339.41</b>
11	Peechi WLS	Peechi	<b>126.73</b>
		Chimmini	<b>75.00</b>
12	Thrissur	Wadakkancherry	58.86
		Pattikkad	59.44
		Machad	92.34
		<b>Total</b>	<b>210.64</b>
13	Parambikulam WLS	Sungam	81.75
		Parambikulam	52.18
		Orukomban	71.84
		Karimala	68.37
		<b>Total</b>	<b>274.14</b>
14	Chalakkudy	Pariyaram	115.31
		Palappilly	56.00
		Vellikkulangara	108.40
		<b>Total</b>	<b>279.71</b>
15	Vazhachal	Charpa	59.98
		Vazhachal	90.64
		Sholayar	138.88
		Kollathirumed	29.35
		Athirappally	95.10
		<b>Total</b>	<b>413.95</b>
<b>Total</b>			<b>4770.20</b>

### 3.1. Vegetation

By following Chandrasekharan (1962) and Champion & Seth (1968) the natural vegetation of northern Kerala can be broadly classified into west coast



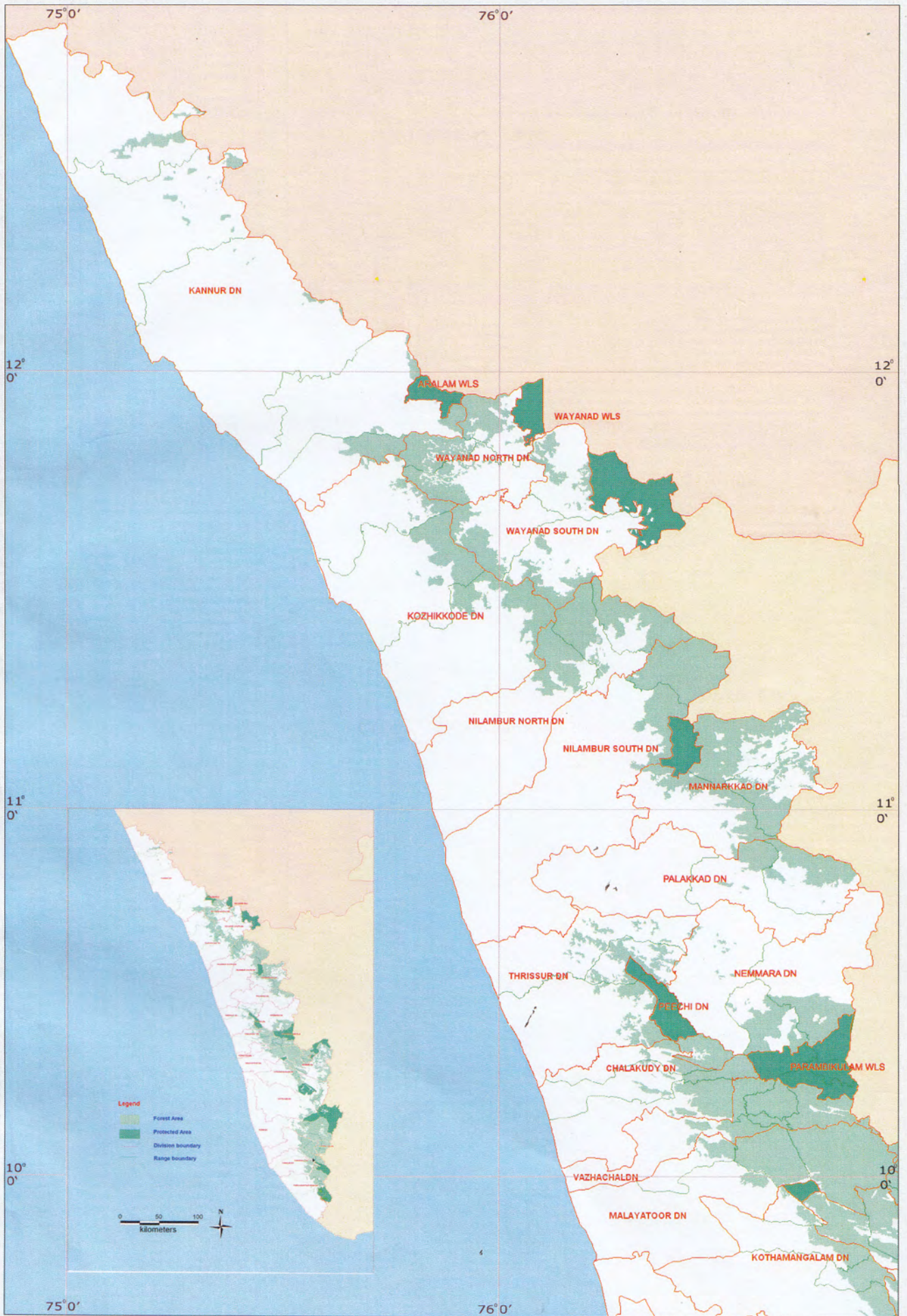


Figure 5. Map of the Study area - Vegetation and Forest Divisions

tropical evergreen, west coast semi-evergreen, southern moist mixed deciduous, southern dry mixed deciduous, southern montane wet temperate forests, southern subtropical hill forests, southern montane wet temperate grasslands. West coast tropical evergreen, west coast semi-evergreen and southern moist mixed deciduous are the major forest types in the area. Southern dry mixed deciduous, southern montane wet temperate forests, southern subtropical hill forests, southern montane wet temperate grasslands occur as small patches in certain areas of northern Kerala. While sampling enumeration, these forest types did not come in any of the grids due to their fragmented occurrence and smaller extent. Observation showed that these forest patches are with a low diversity and frequency of the selected NWFPs.

### **West-coast tropical evergreen forests**

Evergreen forests are characterised by the profusion of species, particularly trees and woody climbers. This forest type is observed in most of the forest divisions. Herbaceous flora is very low. The lower shrubby layer is composed mostly of seedlings and saplings of tree species. The evergreen forests are found between 200 - 1,300 m altitude. It has been observed that there is difference in the physiognomy and composition of species with respect to altitude. Trees are arranged in three strata. The important medicinal trees in the upper stratum are *Vateria*, *Mesua*, *Palaquium* and *Canarium*. Other medicinal trees are *Kingiodendron pinnatum*, *Mastixia arborea* ssp. *meziana*, *Persea macrantha*, *Dysoxylum malabaricum* etc. Medicinal trees found in middle stratum are *Aphanamixis polystachya*, *Cinnamomum malabratum*, *Garcinia gummi-gutta*, *Hydnocarpus alpina*, *Knema attenuata*, *Myristica beddomei*, *M. malabarica*, etc. In lower stratum medicinal trees are comparatively low. The woody climbers are *Acacia concinna*, *Entada rheedei*, *Sarcostigma kleinii*, etc. Species of *Strobilanthes* are the main undergrowth at higher altitudes of evergreen forest. The parasitic medicinal herb, *Balanophora fungosa* is fairly common in the forest floor.

### **West-coast semi-evergreen forests**

This forest type is mostly found below 700 m asl. It is intermediate between evergreen and moist deciduous types where several species which are common in evergreen forests and some of the trees in the moist deciduous forests are also seen. Due to the presence of both evergreen and moist deciduous elements, the diversity of medicinal trees is high. The upper stratum is



composed mainly of *Antiaris toxicaria*, *Dysoxylum beddomei*, *Mimusops elengi*, *Persea macrantha*, *Cinnamomu* spp., *Canarium strictum*, *Vateria indica*, etc. At the middle stratum, *Aporusa lindleyana*, *Hydnocarpus alpina*, *H. pentandra*, *Oroxylum indicum*, *Schleichera oleosa*, *Dillenia pentagyna*, etc. The lower stratum trees are *Sapindus trifoliata*, *Aphanamixis polystachya*, etc. The woody climbers include *Acacia concinna*, *A. pennata*, *Sarcostigma kleinii*, etc. The lower shrubby layer mainly composed of *Strobilanthes* spp. Medicinal herbs such as *Balanophora fungosa*, *Nervilia* spp., etc. are common in certain areas.

### **Southern moist mixed deciduous forests**

This forest type is most common in all Forest Division and seen below 700 m. Density and diversity of medicinal trees, shrubs and herbs are common in this forest type. In Moist deciduous forests also three tier stratification for trees can be met with. Most common medicinal trees in the upper stratum are *Alstonia scholaris*, *Dillenia pentagyna*, *Gmelina arborea*, *Pterocarpus marsupium*, *Stereo-spermum colais*, etc. The middle stratum is composed mainly of, *Bauhinia malabarica*, *B. racemosa*, *Cassia fistula*, *Ficus racemosa*, *Phyllanthus emblica*, *Sapindus trifoliata*, *Schleichera oleosa*, *Spondias pinnata*, *Strychnos nux-vomica*, etc. At the lower stratum *Helicteres isora*, *Holarrhena pubescens*, *Tabernaemontana heyneana*, *Wrightia tinctoria*, etc. are common. The climbers include *Acacia pennata*, *A. torta*, *Bauhinia scandens* var. *anguina*, etc. The undergrowth is composed of *Baliospermum montanum*, *Barleria prattensis*, *Clerodendrum serratum*, *Desmodium pulchellum*, *D. triangulare* var. *congestum*, *D. velutinum*, etc.

### **Southern hill-top tropical evergreen forests**

This forest type is confined to places above 1,500 m elevation. There is no stratification of tree canopy into different tiers. The trees are not very large and often highly branched. The frequently seen medicinal trees are *Mastixia arborea*, *Meliosma pinnata* ssp. *barbulata*, *Cinnamomum* sp., *Persea macrantha*, etc. The lower shrubby layer is composed of *Strobilanthes* spp., *Symplocos cochinchinensis*, etc.

### **Southern montane wet temperate forests (Shola Forests)**

This type is characterised by the short-boled and highly branched trees. The branches are densely clothed with moss and other epiphytes. There is no stratification of trees. Leaves of trees in general are small. Climbers are few.

This forest type is mostly distributed in high ranges of southern Kerala and Nilgiri region of Tamil Nadu. In northern Kerala this forest type exists in higher altitudes of Silentvalley, New Amarambalam Reserve Forests of Nilambur and Vellarimala region of Kozhikode as small patches. Hence the species from this forest type is not frequent in the sample plots. The characteristic medicinal trees are *Cinnamomum sulphuratum*, *Mahonia leschenaultii*, *Pittosporum neelgherrense*, *Rhododendron arboreum* ssp. *nilagiricum*, *Symplocos cochinchinensis* ssp. *laurina*, etc.

#### **Southern montane wet grasslands**

This type is confined to the hill-tops, and the vegetation is dominated by grasses and herbs. Grasslands are associated with Shola forests. The extent of this habitat is extremely low hence the diversity and density of the species, which are restricted to this particular type, is low. The common medicinal herbs are *Arisaema tortuosum*, *Drosera* Spp., etc.

#### **Southern tropical thorn forests (scrub jungle)**

In northern Kerala this forest type is restricted to the rain shadow regions of Palakkad District. The species are mostly xerophytic with short bole and low branching. The canopy is wide open and the canopy level differentiation is not distinct. The hardwood trees, thorny shrubs and climbers are characteristic features of the forest type. The undergrowth is furnished with some herbaceous forms during monsoons and remains exposed for the rest of the time. The major species representing the forest type are *Acacia* spp., *Albizia amara*, *Actinopteris radiata*, *Strychnos potatorum*, *Sarcostemma* spp., *Tribulus terrestris*, etc.

#### **Southern dry mixed deciduous forests (dry deciduous forests)**

In northern Kerala this forest type is restricted to the rain shadow regions of Palakkad district. The forest type is characterised predominantly by hardwood deciduous tree species. The canopy is open with poor undergrowth. Bamboos are barely represented. The canopy level is vague in this type also. The lower storey consists of mostly shrubs and small trees. The most characteristic species present invariably in the forest type are *Acacia catechu*, *Albizia amara*, *Boswellia serrata*, *Cassia fistula*, *Commiphora pubescens*, *Premna tomentosa*, *Santalum album*, *Sapindus emarginatus*, etc. *Actinopteris radiata*, *Cissus quadrangularis*, *Sarcostemma brunonianum*, *Tribulus terrestris*, etc.



## 4. RESULTS

### 4.1. Quantification of NWFPs

#### 4.1.1. Distribution

For analyzing the species composition (structure) and quantification, a total of 11548 sample plots were laid out in the forest areas of 15 Forest Divisions in northern Kerala (Table 4), covering an area of 4,220 km<sup>2</sup>. Moist deciduous forest is the major forest type in the area and a total of 4,458 sample plots were laid out in this forest type. Semi-evergreen and Evergreen forests are other major forest types. Two thousand three hundred and ninety seven sample plots were laid out in the former and 1256 plots in the latter. Besides the sample plots in natural vegetation, a total of 2970 plots were laid out in the forest plantations. Among the plantations, Teak has the largest area and as many as 2181 sample plots were laid out in this habitat. Shola forests and grasslands have very limited occurrence. Therefore, the NWFP species typical of these habitats poorly represented in the sample plots. Only 36 sample plots were laid out in the shola forests.

Among the 137 NWFP species selected for the study 123 species were recorded from these sample plots (Table 5). Other species were not recorded in any of the sample plots due to their restricted distribution or rarity. The distribution of *Trichopus zeylanicus* in Kerala is restricted to Agasthyamalai region of Western Ghats. The other 11 species which did not appear in any of the sample plots are *Heracleum ringens*, *Gaultheria fragrantissima*, *Drypetes roxburghii*, *Decalepis hamiltonii*, *Ricinus communis*, *Datura metel*, *Neolamarckia cadamba*, *Centratherrum anthelminticum*, *Argyreia speciosa* and *Coffea travancorensis*. Among these, *Gaultheria fragrantissima* and *Heracleum ringens* are confined to the shola-grass land region of Idukki district. *Decalepis hamiltonii*, *Centratherrum anthelminticum* and *Argyreia nervosa* occur in the dry deciduous forest of Idukki district. *Datura metel* and *Ricinus communis* are exotics established in the study area and are more frequent in non-forest areas, particularly in open areas around human settlement.

Majority of the NWFP species are occurring in the moist deciduous forest. About 83 species were recorded from the moist deciduous forest. However,

among these 83 species some are seen in other habits such as semi-evergreen and evergreen forests. Species such as *Rotula aquatica* are highly habitat specific and seen only in riparian area. *Terminalia arjuna* is a riparian tree in the rain shadow region of the Western Ghats in Kerala, Occasionally this species is planted along with *Pongamia pinnata*, *Phyllanthus emblica*, *Holarhena antidysentrica*, etc. in forest areas. During the survey, such plants in the natural forest areas were also enumerated if they occurred in the sample plots.

Table 4. Number of sample plots surveyed in different habitats of 15 Forest Divisions in Northern Kerala

No.	Forest Divisions	MD	SE	EG	DD	GL	SV	SH	Teak	Acacia	CS	EP	Other PLN	Total
1	Thrissur	716	39						254	12	106	138	1	1266
2	Mannarkkad	90	69	27	69									255
3	Palakkad	333	60	21										414
4	Vazhachal	63	360	78					40					541
5	Nenmara	51	42	234					96					423
6	Chalakkudy	177	108	21					94					400
7	Nilambur north	216	63	132					417				21	849
8	Nilambur south	258	144	33					258	39			27	759
9	Wayanad south	183	158	94		123	93	36	75			75		837
10	Wayanad north	57	174	96		15			186	27		48	33	636
11	Kozhikode	203	596	218		8			40	15				1080
12	Kannur	425	152	191		17			141	18	90		79	1113
13	Peechi WL	930	300	48					240					1518
14	Parambikulam WL	243	54	24	4				16					341
15	Wayanad WL	513	78	39	102				324			60		1116
<b>Total</b>		<b>4458</b>	<b>2397</b>	<b>1256</b>	<b>175</b>	<b>163</b>	<b>93</b>	<b>36</b>	<b>2181</b>	<b>111</b>	<b>196</b>	<b>321</b>	<b>161</b>	<b>11548</b>

MD: Moist Deciduous Forests; SE: Semi-evergreen forests; EG: Evergreen forests; DD: Dry Deciduous Forests; GL: Grasslands; SV: Savannah; SH: Shola; CS: Cashew; EP: Eucalyptus; PLN: Plantation

Table 5. NWFP species enumerated during the study

1.	<i>Acacia caesia</i>	34.	<i>Cissus quadrangularis</i>
2.	<i>Acacia catechu</i>	35.	<i>Clerodendrum serratum</i>
3.	<i>Acacia pennata</i>	36.	<i>Coscinium fenestratum</i>
4.	<i>Acacia sinuata</i>	37.	<i>Costus speciosus</i>
5.	<i>Acacia torta</i>	38.	<i>Crataeva magna</i>
6.	<i>Adenia hondala</i>	39.	<i>Cucumis prophetarum</i>
7.	<i>Aerva lanata</i>	40.	<i>Curcuma aromatica</i>
8.	<i>Ailanthus triphysa</i>	41.	<i>Curcuma zedoaria</i>
9.	<i>Alangium salvifolium</i>	42.	<i>Cyathula prostrata</i>
10.	<i>Albizia amara</i>	43.	<i>Cyclea peltata</i>
11.	<i>Alstonia scholaris</i>	44.	<i>Desmodium gangeticum</i>
12.	<i>Amorphophallus paeoniifolius</i>	45.	<i>Desmodium gyrans</i>
13.	<i>Anamirta cocculus</i>	46.	<i>Desmodium velutinum</i>
14.	<i>Aphanamixis polystachya</i>	47.	<i>Dillenia pentagyna</i>
15.	<i>Aporosa lindleyana</i>	48.	<i>Drosera peltata</i>
16.	<i>Ardisia solanacea</i>	49.	<i>Dysoxylum malabaricum</i>
17.	<i>Aristolochia indica</i>	50.	<i>Elephantopus scaber</i>
18.	<i>Asparagus racemosus</i>	51.	<i>Elettaria cardamomum</i>
19.	<i>Balanophora indica</i>	52.	<i>Embelia ribes</i>
20.	<i>Baliospermum montanum</i>	53.	<i>Entada rheedei</i>
21.	<i>Barleria prattensis</i>	54.	<i>Evolvulus alsinoides</i>
22.	<i>Bauhinia malabarica</i>	55.	<i>Ficus gibbosa</i>
23.	<i>Bauhinia racemosa</i>	56.	<i>Ficus racemosa</i>
24.	<i>Biophytum sp.</i>	57.	<i>Garcinia gummi-gutta</i>
25.	<i>Boerhavia diffusa</i>	58.	<i>Garcinia morella</i>
26.	<i>Butea monosperma</i>	59.	<i>Gloriosa superba</i>
27.	<i>Caesalpinia bonduc</i>	60.	<i>Gmelina arborea</i>
28.	<i>Canarium strictum</i>	61.	<i>Helicteres isora</i>
29.	<i>Cassia fistula</i>	62.	<i>Hemidesmus indicus</i>
30.	<i>Celastrus paniculatus</i>	63.	<i>Holarrhena antidysenterica</i>
31.	<i>Centrosema pubescens</i>	64.	<i>Holoptelea integrifolia</i>
32.	<i>Chonemorpha fragrans</i>	65.	<i>Holostemma ada-kodien</i>
33.	<i>Cinnamomum spp.</i>	66.	<i>Hydnocarpus pentandra</i>
		67.	<i>Ichnocarpus frutescence</i>

68.	<i>Indigofera tinctoria</i>	96.	<i>Sapindus trifoliata</i>
69.	<i>Kingiodendron pinnatum</i>	97.	<i>Sarcostemma acidum</i>
70.	<i>Lagerstroemia reginae</i>	98.	<i>Sarcostigma kleinii</i>
71.	<i>Malaxis rheedei</i>	99.	<i>Schleichera oleosa</i>
72.	<i>Merremia tridentata</i>	100.	<i>Semecarpus anacardium</i>
73.	<i>Mesua ferrea</i>	101.	<i>Sida rhombifolia</i>
74.	<i>Mimusops elengi</i>	102.	<i>Solanum sp.</i>
75.	<i>Mucuna pruriens</i>	103.	<i>Solanum torvum</i>
76.	<i>Myristica dactyloides</i>	104.	<i>Solanum trilobatum</i>
77.	<i>Naravelia zeylanica</i>	105.	<i>Solanum viarum</i>
78.	<i>Naregamia alata</i>	106.	<i>Spondias pinnata</i>
79.	<i>Nervilia aragoana</i>	107.	<i>Stereospermum colais</i>
80.	<i>Ocimum gratissimum</i>	108.	<i>Strobilanthes ciliatus</i>
81.	<i>Oroxylum indicum</i>	109.	<i>Strychnos nux-vomica</i>
82.	<i>Palaquium ellipticum</i>	110.	<i>Strychnos potatorum</i>
83.	<i>Parmelia dilatata</i>	111.	<i>Symplocos cochinchinensis</i>
84.	<i>Persea macrantha</i>	112.	<i>Terminalia arjuna</i>
85.	<i>Phoenix loureirii</i>	113.	<i>Terminalia bellirica</i>
86.	<i>Phyllanthus amarus</i>	114.	<i>Terminalia chebula</i>
87.	<i>Phyllanthus emblica</i>	115.	<i>Tiliacora acuminata</i>
88.	<i>Piper longum</i>	116.	<i>Tinospora cordifolia</i>
89.	<i>Piper spp.</i>	117.	<i>Tragia involucrata</i>
90.	<i>Pongamia pinnata</i>	118.	<i>Trichosanthes cucumerina</i>
91.	<i>Pseudarthria viscida</i>	119.	<i>Tylophora indica</i>
92.	<i>Rauwolfia serpentina</i>	120.	<i>Uraria hamosa</i>
93.	<i>Rotula aquatica</i>	121.	<i>Vateria indica</i>
94.	<i>Rubia cordifolia</i>	122.	<i>Wrightia tinctoria</i>
95.	<i>Salacia oblonga</i>	123.	<i>Zingiber zerumbet</i>

#### 4.1.2. Inventory analysis of NWFPs in northern Kerala

Among the 123 NWFPs recorded from the northern Kerala, the common and available species with enough sampling intensity alone were quantified. However, structural data such as density, frequency and abundances of all the species were worked out and provided in the appendix. Altogether 50 NWFPs species were quantified from northern Kerala, which includes 20 woody

species (shrubs and trees) and 30 herbs. Quantification of root biomass of some trees and woody species, require destructive sampling. The quantification of these species could not be carried out for want of permission for destructive sampling. Due to the heterogeneity of the products, habitats, rarity etc. quantification of some herbs and shrubs are pending. Quantified data are provided with important details like density of the species and availability of useful products. Others NWFPs are provided in detail as appendix. Mainly quantity comparison of NWFPs was made between natural forests. However due to the higher intensity of certain herbaceous species in plantations, comparison were made also with plantations. The habitat provided in species details is the most frequently occurring one. Rarely, higher frequency and density are seen outside the preferred habitat due to the mosaic nature of habitat.

#### 4.1.2.1. Herbs and shrubs

Botanical Name : *Aerva lanata*  
Local name : Cherula  
Habitats : Moist deciduous forests and plantations  
Habit : Herb  
Useful part : Root

*Aerva lanata* is an annual herb mostly distributed in open areas. During the survey in different habitats of the 15 Forest Divisions in northern Kerala, it was recorded from nine Forest Divisions. Among the nine Divisions, deciduous forests interspersed with semi-evergreen forests of Mannarkkad Forest Division have the highest density (227.27/ha) and availability (8.38 kg/ha) of useful part. Semi-evergreen forests of Kannur Forest Division have the lowest density (12.14/ha) and availability (0.44 kg/ha).

Botanical Name : *Amorphophallus paeoniifolius*  
Local name : Kattuchena  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Herb  
Useful part : Corm (Tuber)

*Amorphophallus paeoniifolius* is a seasonal plant. During the seasonal surveys in the different habitats of the 15 Forest Divisions in northern Kerala, it was recorded only in six Forest Divisions. This indicates the low density and frequency of the species. Among the six Divisions with highest percentage of availability, moist deciduous forests interspersed with Acacia plantations in the Kannur Forest Division have the highest density (833.33/ha) and availability of Corm (245.98 kg/ha.). Acacia plantations in the same division have also the lowest density (11.66/ha) and availability (3.44 kg/ha).

Botanical Name : *Aristolochia indica*  
Local name : Garudakkodi, Eeswaramooli, Karalakam  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Climbing herb  
Useful part : Root

This species is reported from all the Forest Divisions in northern Kerala. However, it was enumerated only from the sample plots of six Forest Divisions. This denotes the very low density and frequency in other Forest Divisions. The species is sparsely distributed in all its habitats. Among the six Forest Divisions, moist deciduous forests interspersed with Cashew plantations in the Mannarkkad Forest Division have the highest density (1052.63/ha) with an average availability of 4.53 kg/ha of root per hectare. This herbaceous climber prefers openings in forest areas. Therefore, highest density was recorded from such habitats. Lowest density (22.7/ha) was observed in Teak plantations of Nilambur North Division, where the availability of useful part is 0.10kg/ha.

Botanical Name : *Asparagus racemosus*  
Local name : Sathavari  
Habitats : Moist deciduous, semi-evergreen and evergreen forests  
Habit : Climbing herb  
Useful part : Root tuber

*Asparagus racemosus* is distributed in almost all the forest types and it was enumerated from all the Forest Divisions. This species has a moderate density and frequency among the other herbaceous medicinal plants. Among the 15

Forest and Wildlife Divisions in northern Kerala, moist deciduous forests of Wayanad South Division has the highest density of 3750/ha and an average availability of tuberous root (94.33 kg/ha). It was observed that semi-evergreen forests in the Kannur Forest Division have the lowest density (12.14/ha) and tuberous root availability (0.34 kg/ha).

Botanical Name : *Baliospermum montanum*  
Local name : Nagadhanthi  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Subshrub  
Useful part : Root

*Baliospermum montanum* is reported in the deciduous forests of all the Forest Divisions in northern Kerala, however it was enumerated from the sample plots only in six Forest Divisions. In these areas the population is comparatively high and good patches were observed in many areas of Mannarkkad, Wayanad, Peechi and Thrissur Forest Divisions. Moist deciduous forests interspersed with Cashew plantations in Thrissur Forest Division have the highest density of 2269.23/ha and an availability of 19.33 kg root per hectare. Moist deciduous forests of Wayanad Wildlife Division have the lowest density of 30.30/ha and an average availability of 0.26 kg root per hectare.

Botanical Name : *Barleria prattensis*  
Local name : Madhurakkurinji  
Habitat : Moist deciduous forests  
Habit : Subshrub  
Useful part : Root

*Barleria prattensis* is an endemic species of the Western Ghats. So far this species is reported from Thrissur, Palakkad, Malappuram and Kozhikode districts. During the surveys it was enumerated from the moist deciduous forests of Thrissur, Chalakkudy, Palakkad, Mannarkkad and Kozhikode Forest Divisions. In all the divisions density, frequency and availability of this species are very low. Highest density (2083/ha) was recorded from the moist deciduous forests interspersed with semi-evergreen forests in the Chalakkudy

Forest Division with an availability of 2.52 kg of root per hectare. Lowest density (44.25/ha) was recorded from the moist deciduous forests of Palakkad Forest Division. The availability of useful part here is 0.05 kg/ha.

Botanical Name : *Biophytum* spp.  
Local name : Mukkutti  
Habitats : Moist deciduous, semi-evergreen forests and plantations  
Habit : Small herb  
Useful part : Whole plant

*Biophytum* is widely distributed to most of the forest areas, plantations and other open areas in the northern Kerala and in most of the Forest Divisions it has a high density and frequency. The plant is a seasonal herb and it is available in the rainy season. Among the 15 Forest and Wildlife Divisions in northern Kerala, highest density (14375/ha) was recorded in the moist deciduous forests-teak plantation areas in the Nenmara Forest Division with an average availability of 4.10 kg/ha. The lowest density (43.86/ha) was observed in the *Eucalyptus* plantations of Thrissur Forest Division with an average availability of 0.10 kg/ha.

Botanical Name : *Boerhavia diffusa*  
Local name : Thazuthama  
Habitat : Deciduous forests, open areas in the plains  
Habit : Prostrate herb  
Useful part : Root

It was observed that the distribution of this species is more frequent in open areas in the plains and sparsely distributed in the undisturbed or other dense forests areas. During the sample plot enumeration, its occurrence was recorded only from four divisions though they are widely distributed in northern Kerala. Among the 15 Forest Divisions, it was enumerated from Mannarkkad, Kozhikode, Parambikulam and Nilambur North. Deciduous forests of Mannarkkad division have the highest density of 652.17/ha with an average availability of 11.16 kg of root per hectare. The lowest density of 60.98/ha was observed in deciduous forests of Parambikulam Division with an availability of 1.04 kg/ha.



Botanical Name : *Costus speciosus*  
Local name : Channakoova  
Habitats : Moist deciduous, semi-evergreen and evergreen forests  
Habit : Annual erect rhizomatous herb  
Useful part : Rhizome

*Costus speciosus* is widely distributed in the forests of northern Kerala. It is observed that the density, abundance and frequency in all the Forest Divisions are high. Semi-evergreen with moist deciduous forest patches in the Chalakkudy Forest Division has the highest density of 3409.09/ha with an average availability of 76.70 kg of rhizome per hectare. The lowest density (42.02/ha) was observed in the semi-evergreen forests of Vazhachal Division with an average availability of 0.95 kg/ha.

Botanical Name : *Curcuma zedoaria*  
Local name : Manjakkoova  
Habitat : Moist deciduous forests  
Habit : Annual erect rhizomatous herb  
Useful part : Rhizome

*Curcuma zedoaria* is an annual herb. The leafy part appears only during the rainy season. Seasonal sample plot surveys in the Forest Divisions of northern Kerala revealed that, it occurs in nine divisions. The highest density (3690.48/ha) was recorded from the moist deciduous forest-semi-evergreen tracts of Parambikulam Wildlife division with the availability of 37.34 kg of rhizome per hectare. The lowest density (7.89/ha) was recorded in the teak plantations of Peechi Wildlife division with an availability of 0.13kg/ha.

Botanical Name : *Cyathula prostrata*  
Local name : Cherukadaladi  
Habitat : Deciduous and semi-evergreen forests  
Habit : Herb  
Useful part : Stem and Root

Except Wayanad South Division, all other Forest Divisions in northern Kerala have comparatively a higher frequency of *Cyathula prostrata*. The absence of this species in the sample plots of Wayanad South Forest Division shows the

very low frequency and density. Cashew plantations interspersed with deciduous forests in the Mannarkkad Forest Division has the highest density of 8552.63/ha with an average availability of 13.86 kg of stem and root per hectare. The lowest density (24.51/ha) was recorded from the Teak plantations of Peechi Wildlife Division with an average availability of 0.4 kg/ha.

Botanical Name : *Cyclea peltata*  
Local name : Padakizhangu  
Habitat : Deciduous and semi-evergreen forests  
Habit : Herb  
Useful part : Tuberous root

*Cyclea peltata* is distributed throughout the northern Kerala and represented in most of the sample plots in all the Forest Divisions. Except evergreen and shola forests, the species registered better density, frequency and availability in all other habitats. Among the 15 Forest Divisions in northern Kerala, deciduous forests with bamboo patches in the Nilambur (North) Forest Division showed the highest density of 2142.86/ha with an average availability of 32.68 kg root per hectare. The lowest density (22.12/ha) was recorded in moist deciduous forests of Palakkad Forest Division with an availability of 0.34 kg of rhizome per hectare.

Botanical Name : *Desmodium gangeticum*  
Local name : Orila  
Habitats : Moist deciduous forests and plantations  
Habit : Subshrubs  
Useful part : Root

*Desmodium gangeticum* is a perennial subshrub widely distributed in the deciduous forests of northern Kerala. Analysis shows that, in the natural forests, the density and frequency are low when compared to the plantations or plantations interspersed with deciduous forests. This may be due to the over-exploitation the species from its natural habitats. The highest density (10000/ha) was recorded from the moist deciduous-teak plantation forest tracts in the Parambikulam Wildlife division with an availability of 91.70 kg of root per hectare. The lowest density (15.15/ha) was recorded in the moist

deciduous forests of Wayanad Wildlife Forest Division. The availability of root in this area is 0.14 kg/ha

**Botanical Name** : *Desmodium motorium*  
**Local name** : Thozukanni  
**Habitats** : Moist deciduous forests and semi-evergreen forests  
**Habit** : Subshrubs  
**Useful part** : Root

This species is a perennial subshrub distributed throughout the northern Kerala. Among the 15 Forest Divisions in northern Kerala, only six divisions have its occurrence in the sample plots. This indicates the very low density and frequency of the species in other Forest Divisions. In the divisions, from where it was recorded, also has low density and availability. The highest density of 1171.88/ha was observed in the deciduous forests of Wayanad Wildlife Division with an availability of 0.8 kg root per hectare. The lowest density (20.33/ha) and availability was observed in the mixed plantations of Kannur Forest Division. The availability of root is very low (.01 kg/ha).

**Botanical Name** : *Desmodium velutinum*  
**Local name** : Orila  
**Habitats** : Moist deciduous forest and plantations  
**Habit** : Subshrubs  
**Useful part** : Root

*Desmodium velutinum* is distributed mostly in the southern districts of northern Kerala. It is one of the most widely collected species as Orila. It was enumerated in the sample plots of eight Forest Divisions in northern Kerala. Among the eight divisions, moist deciduous forests-teak plantation areas of Parambikulam Wildlife division have the highest density of 7500/ha with an average availability of 87.15 kg of root per hectare. The lowest density of 30.49/ha was recorded from the mixed plantation-moist deciduous forest areas of Thrissur Forest Division with an availability of 0.35 kg/ha.

**Botanical name** : *Elephantopus scaber*  
**Local name** : Anachuvadi

Habitats : Moist deciduous forest, plantations and open areas in the plains  
Habit : Herb  
Useful part : Entire plant

*Elephantopus scaber* is widely distributed to northern Kerala. Its availability, density and frequency are high, when compared to other species. It is a seasonal herb and availability is mostly during the rainy season. The species prefer open areas. Therefore, in the dense forests the frequency is very low. Among the 15 divisions, deciduous forest-teak plantation forest tracts in the Wayanad Wildlife Division have the highest density (20000/ha) and availability (51.40 kg/ha). The lowest density (24.51/ha) was observed in the semi-evergreen-moist deciduous forest tract of Nilambur South Division with an availability of 0.06 kg of plant per hectare.

Botanical name : *Helicteres isora*  
Local name : Edampiri-valampiri  
Habitats : Moist deciduous forests and plantations  
Habit : Shrub  
Useful part : Fruit

*Helictres isora* is a very common medicinal plant in northern Kerala. However in most of the areas, the number of mature individuals was extremely low. Among the 15 Forest Divisions, moist deciduous-semi-evergreen forest tracts of Thrissur Forest Division have the highest density (10000/ha). However, the availability of fruit is extremely low. The lowest density (12.50/ha) was recorded from the Savanah of Wayanad south division. The highest availability of useful part (204.03 kg/ha) was recorded from the moist deciduous-teak plantation areas of Vazhachal Forest Division and the lowest (2.91 kg/ha) was recorded from the teak plantations of Peechi Wildlife Division.

Botanical name : *Hemidesmus indicus*  
Local name : Nannari, Naruneendi  
Habitats : Moist deciduous forests and plantations  
Habit : Climbing herb  
Useful part : Tuberous root

This perennial climber is distributed in most of the forest areas in northern Kerala. It was enumerated from all the Forest Divisions with a moderate density and frequency. In many areas, though the number of individuals is high, the availability of tuberous root is very low. Among the 15 Forest Divisions, deciduous forests-teak plantation areas of Peechi Wildlife Division have the highest density of 11519.61/ha with an average availability of 10.87 kg of tuberous root per hectare. The lowest density (24.15/ha) was observed in the semi-evergreen forests of Kannur Forest Division with an availability of 0.02 kg of tuberous root per hectare.

Botanical name : *Holarrhena antidysenterica*  
Local name : Kudakappala  
Habitat : Moist deciduous forests and plantations  
Habit : Shrub to small tree  
Useful part : Bark, seeds

*Holarrhena antidysenterica* is a common species distributed throughout the deciduous forests of northern Kerala. However, the density and frequency of mature plants are low. Useful parts are bark and seeds hence the availability depend on the density and frequency of mature plants. The density of this species was highest in the moist deciduous-teak plantation forest tracts of Peechi Wildlife division. Here the density is 1827.45/ha, but mature plants are low and therefore the availability of useful parts are also very low. The lowest density of 18.18/ha was recorded from the semi-evergreen forests of Mannarkkad division. The highest availability of bark (14.18 kg/ha) was recorded from the moist deciduous forests of Nenmara Forest Division. The lowest availability (0.21 kg/ha) was recorded from the teak plantations of Nilambur south division.

Botanical name : *Ichnocarpus frutescence*  
Local name : Palvalli  
Habitats : Moist deciduous, semi-evergreen forests and plantations  
Habit : Climbing herb  
Useful part : Tuberous root

*Ichnocarpus frutescence* is a perennial climber widely distributed in the forests of northern Kerala. Among 15 Forest Division, teak plantations of Nilambur North division have the highest density of 13068.18/ha. In many of the plantation areas, especially in teak plantations the number of individual are high but availability of useful part is very low due to the low occurrence of mature individuals. The highest availability of tuberous root (14.06 kg/ha) was recorded from the moist deciduous-teak plantation areas of Nilambur North division. The lowest density (30.30/ha) was recorded from the moist deciduous forests of Wayanad Wildlife Division with an average availability 0.01 kg/ha.

Botanical name : *Naregamia alata*  
Local name : Nilanarakam  
Habitats : Semi-evergreen and deciduous forests  
Habit : Herb  
Useful part : Root

*Naregamia alata* is a seasonal medicinal herb distributed in all the Forest Divisions of northern Kerala. It was enumerated from the sample plots of eleven Forest Divisions. This indicates the low frequency and density of the species in the other four divisions. Its availability is restricted to rainy season. Among these eleven Forest Divisions, moist deciduous forest-Acacia plantation tracts of Palakkad Forest Division have the highest density (35500/ha) and the average availability (24.96 kg/ha) of useful part. The lowest density (48.54/ha) and availability (0.03 kg/ha) was recorded from the semi-evergreen forests of Kannur Forest Division.

Botanical name : *Nervilia aragoana*  
Local name : Orilathamara  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Herb  
Useful part : Root tuber

*Nervilia aragoana* is an annual, seasonal plant. Its leaves arise above the ground only during the onset of monsoon. Based on the published report, this plant is so far known from the Thrissur, Malappuram and Palakkad districts of northern Kerala. During the survey, it was enumerated from the sample

plots of Wayanad districts also. Plot enumeration on the Forest Divisions of these districts shows a low frequency, density and availability. Among the six Forest Divisions, evergreen forests of the Parambikulam Wildlife division have the highest density (1136.364/ha) and moist deciduous forest of the Peechi Wildlife has the lowest density (23.66/ha). The availability of root tuber is highest in the evergreen forests of Parambikulam Wildlife Division and Mannarkkad Forest Division (3.58kg/ha). The lowest average availability (0.07 kg/ha) was recorded from the moist deciduous forests of Peechi Wildlife Division.

Botanical Name : *Phyllanthus amarus*  
Local name : Keezharnelli  
Habitats : Moist deciduous forests and plantations  
Habit : Small herb  
Useful part : Whole plant

This annual herb prefers open areas and seen abundant in the openings of forests and other wastelands than in the dense forests. The availability is restricted to raining season. This species is distributed throughout the northern Kerala. It was enumerated from the sample plots of eight Forest Divisions with a low density and frequency. Among these, deciduous forests of Mannarkkad Forest Division have the highest density of 9130.43/ha with an availability of 2.91 kg of plant per hectare. Moist deciduous forests of Thrissur Forest Division have the lowest density (93.46/ha) and availability (0.03 kg/ha).

Botanical name : *Piper longum*  
Local name : Thippali  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Herbaceous climber  
Useful part : Fruit, stem & root

*Piper longum* is a perennial root climber distributed throughout the northern Kerala. In most of sample plots its density and frequency are comparatively high. However, the availability of fruits is extremely low. It is also cultivated in Kerala. Among the 15 Forest Divisions, moist deciduous-semi-evergreen forest

areas of Peechi Wildlife division have highest density of 23635.65/ha with an average availability of 17.39 kg of root per hectare and 26.58 kg of stem per hectare. The lowest density (116.28/ha) of root was recorded from the moist deciduous forests of Nilambur south division with an average availability of 0.09 kg of root per hectare and 0.13 kg of stem per hectare.

Botanical name : *Piper* spp.  
Local name : Katukurumulaku  
Habitats : Moist deciduous, semi-evergreen and evergreen forests  
Habit : Climbing shrub  
Useful part : Stem

*Piper* is distributed throughout the northern Kerala. It was enumerated from all the Forest Divisions. Among the 15 Forest Divisions, the highest density (7421.88/ha) was recorded from the evergreen forests of Wayanad north division with an average availability of 780.41 kg/ha. The lowest density (30.49/ha) was recorded from the moist deciduous forests of Parambikulam Wildlife division with an average availability of 3.20 kg stem per hectare.

Botanical name : *Pseudarthria viscida*  
Local name : Moovila  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Herb  
Useful part : Root

*Pseudarthria viscida* is an annual decumbent herb growing in the rainy season. It is one of the most demanding species in the Ayurvedic industry in Kerala. It is widely distributed in all the Forest Divisions of northern Kerala. Among the 15 Forest Divisions, teak plantation-moist deciduous forest tracts of Mannarkkad Forest Division have the highest density (6666.67/ha) and an average availability (5.40 kg/ha). The lowest density of 22.73/ha was observed in the Teak plantations of Nilambur north division with an average availability of 0.03 kg of root per hectare.

Botanical name : *Rauvolfia serpentina*  
Local name : Sarpagandhi



Habitats : Moist deciduous and semi-evergreen forests  
Habit : Subshrub  
Useful part : Root

*Rauvolfia serpentina* is a perennial subshrub distributed throughout the deciduous forests of northern Kerala. However, during the sample plot enumeration, it was recorded only from eight divisions, indicating the low frequency and density in other Forest Divisions. In all the sample plots, its density and frequency were low. Among the eight divisions, deciduous forest-teak plantation areas in the Palakkad Forest Division have the highest density of 476.19/ha with an average availability 1.42 kg of root per hectare. The lowest density of 5.83/ha was observed in the moist deciduous forests of Kannur Forest Division with an availability of 0.01 kg of root per hectare.

Botanical name : *Rubia cordifolia*  
Local name : Manjatti  
Habitats : Moist deciduous and semi-evergreen forests.  
Habit : Climbing herb  
Useful part : Root

It is observed that the density, frequency and availability of this perennial climbing herb are very low in our forests. Among the 15 Forest Divisions of northern Kerala, It was enumerated in the sample plots of seven Forest Divisions with low density and frequency. The highest density of 2031.25/ha was recorded from the moist deciduous forests of Wayanad North division with an average availability of 5.15 kg of root per hectare. The lowest density of 30.49/ha was observed in the moist deciduous forest of Parambikulam Wildlife division with an average availability of 0.09 kg of root per hectare.

Botanical name : *Sida alnifolia*  
Local name : Kurunthotti  
Habitats : Deciduous forest and plantations  
Habit : Subshrub  
Useful part : Root

This subshrub prefers open areas rather than the dense forests. This is one of the most demanding species for Ayurvedic drug manufacturing industry in

Kerala. Large quantity of *Sida alnifolia* is collected from the forests every year. A few other species of *Sida* are also collected and sold along with *Sida alnifolia*. The species is widely distributed throughout the northern Kerala. However, in many areas the frequency, density and availability are very low. The highest density of 11346.15/ha was recorded from the deciduous –semi-evergreen forest tracts of Wayanad Wildlife division with an average availability of 16.11 kg of root per hectare. The lowest density of 42.02/ha was recorded from the semi-evergreen forests of Vazhachal Forest Division with an average availability of 0.06 kg of root per hectare.

Botanical name : *Solanum viarum*  
Local name : Puthirichunda  
Habitats : Moist deciduous forest and plantations  
Habit : Subshrubs  
Useful part : Root

*Solanum viarum* is perennial subshrub so far reported from the Thrissur, Kannur and Kasaragod districts of Kerala. During the survey it was enumerated from the sample plots of Parambikulam, Nenmara and Wayanad Wildlife divisions. However, it was not enumerated from the sample plots of Kannur Forest Division. Among the four divisions, teak plantations of the Vazhachal Forest Division has the highest density (250/ha) and availability (2.57 kg/ha) of useful part. The lowest density of 30.49/ha was recorded from the moist deciduous forests of Parambikulam Forest Division with an average availability of 0.31 kg of root per hectare.

Botanical Name : *Strobilanthes ciliatus*  
Local name : Karimkurinji  
Habitats : Evergreen and semi-evergreen forests  
Habit : Shrubs  
Useful part : Root and stem

*Strobilanthes ciliatus* is a commercially exploited species from the forests of Kerala. It is one of the most demanding species in the Ayurvedic drug industry. It is distributed throughout the northern Kerala and occurred in most of the sample plots in the evergreen forests of all the 15 Forest Divisions.

Evergreen forests of Nenmara Forest Division have the highest density of 5500/ha with an average availability of 25.80 kg of root/stem per hectare. The lowest density of 43.75/ha was recorded from the semi-evergreen and adjacent moist deciduous forests of Parambikulam Wildlife division with an average availability of 0.21 kg/ha. Though *Strobilanthes ciliatus* is the preferred source of Karimkunj, other species of *Strobilanthes* are also collected and sold along with *S. ciliatus*.

Botanical name : *Tragia involucrata*  
Local name : Kodithoova  
Habitats : Deciduous forests and Plantations  
Habit : Herbaceous climber  
Useful part : Root

*Tragia involucrata* is an annual herb during the rainy season. It was enumerated from the sample plots of ten Forest Divisions of northern Kerala. The density, frequency and availability are very low. The deciduous forest - plantation areas of Palakkad Forest Division have the highest density (1250/ha) and availability of root (3.56 kg/ha). The lowest density of 15.77/ha was recorded from the moist deciduous forests of Peechi Wildlife Division with an average availability of 0.04 kg root per hectare.

#### **4.1.2.2. Trees and woody climbers**

Botanical Name : *Acacia caesia*  
Local name : Palinja  
Habitats : Moist deciduous and semi-evergreen forests.  
Habit : Woody climber  
Useful part : Bark

This woody climber is reported from the moist deciduous forests of all the Forest Divisions of northern Kerala. Compared to other woody climbing NWFPs, this species shows much higher density and availability. Among the 15 Forest Divisions in northern Kerala, highest density (7.29) of mature plants was recorded from the moist deciduous - semi-evergreen forest tracts Nilambur North Division and the highest average availability (1.53 kg/ha.) of

bark was also recorded from the area. Moist deciduous forests in the Parambikulam Forest Division have the lowest density (0.08/ha) and availability (0.02 kg/ha) of bark. The highest density (1250/ha) of seedlings was recorded from the moist deciduous-teak plantation area of Nenmara Forest Division and the lowest density (53.19) was recorded from the moist deciduous forests of Mannarkkad Forest Division.

Botanical Name : *Acacia pennata*  
Local name : Kakkincha, Karincha  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Woody climber  
Useful part : Bark

It was observed that the distribution of this species is more frequent in lowland moist deciduous forests. During the sample plot enumeration, its occurrence was recorded from twelve Divisions. Moist deciduous forests of Thrissur division have the highest density (152.09/ha) for mature plants with an average availability of 6.06 kg of bark per hectare. The lowest density of 0.25/ha was observed in the moist deciduous forests of Parambikulam Division with an availability of 0.54 kg/ha. Highest density (1781.71/ha) of seedlings was observed from the moist deciduous-evergreen forest tracts of Chalakkudy Forest Division and lowest density (0.69/ha) from the moist deciduous forests of Thrissur Forest Division.

Botanical Name : *Acacia sinuata*  
Local name : Cheevakkai, Cheenikkai  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Woody climber  
Useful part : Fruit

Compared to other climbing species of *Acacia*, *A. sinuata* more common in moisture rich localities. It was enumerated from the 13 Forest Divisions of northern Kerala. It is observed that the density, abundance and frequency in most of the 13 Forest Divisions are low. Moist deciduous - semi-evergreen forests of Wayanad South Division has the highest density for mature plants (7.22/ha) with an average availability of 26.01 kg of fruit per hectare. The

lowest density (0.09) was observed from the semi-evergreen forests of Nenmara Division with an average availability of 0.25 kg of fruit per hectare. The lowest (23.36/ha) and highest density (2291.67/ha) of saplings was observed from the semi-evergreen forests of Peechi Division and Nilambur South Division respectively.

Botanical Name : *Acacia torta*  
Local name : Kallincha  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Woody climber  
Useful part : Bark

*Acacia torta* was enumerated from the 12 Forest Divisions of northern Kerala. Compared to other climbing *Acacia*, this species shows lower density and availability, though its bark is of low quality. Among the 12 Forest Divisions of northern Kerala, highest density (5.45/ha) of mature individual was recorded from the moist deciduous forests of Mannarkkad Forest Division with an average availability of 1.51 kg of bark per hectare. Teak plantations – moist deciduous area of Peechi Forest Division have the lowest density (0.18/ha) and availability (0.02 kg/ha) of bark. The highest density (1808/ha) of seedlings was recorded from the moist deciduous forests of Mannarkkad Forest Division. The lowest density (28.52) was recorded from the moist deciduous forests of Thrissur Forest Division.

Botanical Name : *Alstonia scholaris*  
Local name : Ezhilampala  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Tree  
Useful part : Bark

It is one of the commonest species of medicinal tree in northern Kerala. This species was enumerated from most of the sample plots in all the Forest Divisions. Deciduous forests are the main habitats with high density and frequency, however it is seen in other forest types also. Semi-evergreen forests of Thrissur division have the highest density (3.13/ha) for mature plants. The highest average availability of 12.4 kg of bark per hectare is recorded from

evergreen - moist deciduous forest areas of Parambikulam Division. The lowest density of 0.04 was observed in moist deciduous forests of Wayanad Wildlife Division with an average availability of 0.01 kg/ha. Highest density (43.86/ha) of seedlings was observed from the moist deciduous forests of Thrissur Forest Division and lowest density (21.01/ha) from the semi-evergreen forests of Vazhachal Forest Division.

Botanical Name : *Bauhinia malabarica*  
Local name : Arampuli  
Habitat : Moist deciduous forests  
Habit : Tree  
Useful part : Bark

This species was enumerated from most of the Forest Divisions in northern Kerala. However the density, abundance and frequency are low in all the Forest Divisions. Moist deciduous forests of Mannarkkad Forest Division have the highest density for mature plants (4.79/ha). The highest average availability of 3.79 kg of bark per hectare was reported from the moist deciduous-semi-evergreen forest tract of Chalakkudy Forest Division. The lowest density (0.05/ha) was recorded from the semi-evergreen forests of Vazhachal Division with an average availability of 0.02 kg of bark per hectare.

Botanical Name : *Bauhinia recemosa*  
Local name : Malamandharam  
Habitat : Moist deciduous forests  
Habit : Small tree  
Useful part : Bark

It was reported from ten Forest Divisions of northern Kerala. Moist deciduous forest is the main habitat of this species, however it was enumerated from other forest types also. Moist deciduous - semi-evergreen forest tract of Mannarkkad Forest Division have the highest recorded density (4.26/ha) for mature plants. The highest average availability of 2.44 kg of bark per hectare is recorded from moist deciduous forests of Nilambur north Division. The lowest density of 0.04 was observed in moist deciduous forests of Wayanad Wildlife Sanctuary with an average availability of 0.03 kg/ha. Highest density

(416.67/ha) of seedlings was observed from the moist deciduous forests of Nilambur north division and lowest density (7.89/ha) from the semi-evergreen forests of Peechi Forest Division.

Botanical Name : *Butea monosperma*  
Local name : Plasu  
Habitat : Deciduous forests  
Habit : Small tree  
Useful part : Bark/Fruits

It is mostly inhabited to the moist deciduous forests towards dry habitats in the eastern sides of Kerala. Among the 15 Forest Divisions, it was recorded from seven Forest Division which have an adjacent dry deciduous forests or similar habitats. Moist deciduous forests of Wayanad north Division have the highest density for mature plants (5.47/ha). The highest average availability of 2.75 kg of bark per hectare was reported from moist deciduous forest of Nilambur south division. The lowest density (0.04/ha) was recorded from the semi-evergreen forests of Vazhachal Division with an average availability of 0.02 kg of bark per hectare.

Botanical Name : *Cassia fistula*  
Local name : Kanikkonna  
Habitat : Moist deciduous forests  
Habit : Small tree  
Useful part : Bark

This species is reported from all the Forest Divisions of North Kerala and one of the commonest medicinal trees. It is also widely planted as avenue tree. Deciduous forests are the main habitats of this species with high density and frequency. Moist deciduous forests of Parambikulam division have the highest density (12.35/ha) for mature plants and availability (0.93 kg/ha) of bark. The lowest density of 0.01 was observed in moist deciduous forests of Kannur Forest Division with an average availability of 0.01 kg/ha. Highest density (1000.00/ha) of seedlings was observed from the moist deciduous forests of Palakkad Forest Division and lowest density (38.46/ha) from the plantations of Thrissur Forest Division.

Botanical name : *Cinnamomum spp.*  
Local name : Kattuvayana  
Habitat : Moist deciduous, semi-evergreen and evergreen forests  
Habit : Tree  
Useful part : Bark

Most of the species of *Cinnamomum* are distributed to evergreen forests. It was enumerated from all the Forest Divisions of northern Kerala. Among the 15 Forest Divisions of northern Kerala, highest density (199.28/ha) of mature individuals was recorded from the semi-evergreen forests of Wayanad Wildlife Division. The highest average availability (14.27 kg/ha) of useful part (bark), was recorded from evergreen forests of Nilambur north Division. Semi-evergreen forests of Nilambur south division have the lowest density (0.13/ha) and availability (0.01 kg/ha) of bark. The highest density (4642/ha) of seedlings was recorded from the evergreen forests of Palakkad Forest Division. The lowest density (38.02/ha) was recorded from the moist deciduous forests of Thrissur Forest Division.

Botanical name : *Ficus racemosa*  
Local name : Athi  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Small tree  
Useful part : Bark

This species is commonly seen in moisture rich localities in the moist deciduous forests or semi-evergreen forest. It was enumerated from twelve Forest Divisions of northern Kerala. Moist deciduous forests of Palakkad Forest Division have the highest density of 5.08/ha for mature plants and average availability (2.92 kg/ha). The lowest density of 0.019/ha was observed from the moist deciduous forests of Peechi Forest Division with an average availability of 0.01 kg/ha. Highest density (21.008/ha) of seedlings was observed from the semi-evergreen forests of Vazhachal Forest Division and lowest density (3.89/ha) was recorded from the semi-evergreen forests of Parambikulam Forest Division.



Botanical name : *Holoptelea integrifolia*  
Local name : Aaval  
Habitats : Moist deciduous and dry deciduous forests  
Habit : Medium tree  
Useful part : Bark

This species has a dense distribution in dry habitats of Kerala. It was enumerated from eight Forest Divisions of northern Kerala. Moist deciduous forests of Thrissur Forest Division have the highest recorded density of 3.13/ha. The highest average availability of 0.79 kg of bark per hectare is recorded from moist deciduous forests of Mannarkkad Forest Division. The lowest density of 0.02/ha was observed from the moist deciduous forests of Peechi Forest Division with an average availability of 0.04 kg of bark per hectare.

Botanical name : *Lagerstroemia reginae*  
Local name : Manimaruthu  
Habitat : Moist deciduous and semi-evergreen forests (Riparian)  
Habit : Small tree  
Useful part : Bark

*Lagerstroemia reginae* was enumerated from ten Forest Divisions of northern Kerala, mostly distributed along the sides of streams and marshy areas. Except in one or two divisions, all other divisions have very low density and frequency for mature plants. The availability and density of mature individuals were highest (76.19/ha) in the evergreen-moist deciduous forest tracts of Chalakkudy Forest Division with the highest average availability of useful part (32.39 kg/ha). The lowest density of 0.09/ha was recorded from the semi-evergreen forests of Nenmara division with an average availability 0.03 kg of bark per hectare. The highest density of seedlings (84.75/ha) was recorded from the moist deciduous forests of Chalakkudy Forest Division and the lowest (7.89/ha) from the moist deciduous forests of Peechi division.

Botanical name : *Persea macrantha*  
Local name : Kulamavu  
Habitats : Moist deciduous, semi-evergreen and evergreen forests

Habit : Tall tree  
Useful part : Bark

This species is common in most of the Forest Divisions in northern Kerala. Semi-evergreen forests are the main habitat with high density and frequency. It is also seen in other forest types upto an altitude of 1800 msl. Semi-evergreen forests of Wayanad Wildlife Division have the highest density (393.75/ha) of mature individuals. The highest availability of its useful part bark (10.31 kg/ha) was recorded from the semi-evergreen forests of Nilambur north Division. The Lowest density of 0.04/ha was recorded in moist deciduous forests of Peechi wildlife Division with an average availability of 0.01 kg/ha. Highest density (2142.86/ha) of seedlings was observed from the evergreen forests of Chalakkudy Forest Division and lowest density (21.01/ha) from the semi-evergreen forests of Vazhachal Forest Division.

Botanical name : *Pongamia pinnata*  
Local name : Ungu  
Habitats : Semi-evergreen and moist deciduous forests  
Habit : Small tree  
Useful part : Bark & seeds

*Pongamia pinnata* is widely planted in non-forest areas as an avenue tree. Generally this species is seen along the sides of streams and wet localities. As bark and seeds are useful parts, in this programme the quantified data of bark alone is provided. Survey of this species in forest areas showed that, it was frequent in ten Forest Divisions of northern Kerala. Among the ten divisions, Wayanad north division has the highest density (6.25/ha) of mature plants and availability of 2.39 kg/ha bark. The lowest density of 0.10/ha was recorded from moist deciduous forests of Kannur Forest Division. The lowest availability (0.01 kg/ha) was recorded from the moist deciduous forests of Thrissur Division. The highest density of seedlings (260.42/ha) was recorded from the semi-evergreen forests of Nilambur south division and lowest density (30.49/ha) in the moist deciduous forests of Parambikulam Forest Division.

Botanical Name : *Sarcostigma kleinii*  
Local name : Vellodal

Habitats : Semi-evergreen and evergreen forests  
Habit : Woody climber  
Useful part : Fruit

This woody climber is common in lowland evergreen forests and enumerated from ten Forest Divisions of northern Kerala. It is observed that the density, abundance and frequency in most of the Forest Divisions are low. Evergreen forests of Palakkad division has the highest density (2.38/ha) of mature individuals and availability (15.29 kg/ha) of useful part, fruit. The lowest density (0.04/ha) was recorded from the moist deciduous forests of Kannur Division with an average availability of 0.31 kg of fruit per hectare. The lowest (9.51/ha) density of saplings was recorded from moist deciduous forests of Thrissur division and highest (294.12/ha) from the semi-evergreen-moist deciduous forest tract of Nenmara Division.

Botanical Name : *Spondias pinnata*  
Local name : Kattambazham  
Habitats : Moist deciduous and semi-evergreen forests  
Habit : Large tree  
Useful part : Bark/fruits

Bark and fruit of this tree are used for various purposes. In this analysis, quantified data of bark alone is provided. Though this species was enumerated from 13 Forest Divisions, density and frequency are very low. Analysis showed that semi-evergreen forests of Thrissur division have the highest density (6.25/ha) of mature individuals. The availability of useful part is higher (2.58 kg/ha) in semi-evergreen forests of Nilambur, north division. The lowest density (0.03/ha) was recorded from the moist deciduous forests of Kannur Division and the lowest availability (0.01 kg/ha) from the moist deciduous forests of Peechi Forest Division.

Botanical Name : *Wrightia tinctoria*  
Local name : Dhanthapala, Vettupala  
Habitats : Moist deciduous and dry deciduous forests  
Habit : Small tree  
Useful part : Leaves

It is a widely distributed medicinal tree in the deciduous forests of Kerala. This species was enumerated from most of the sample plots in all the Forest Divisions of northern Kerala with higher density and frequency. Moist deciduous forests of Peechi division have the highest density (43.83/ha) for mature plants and availability (432.53 kg/ha) of useful part. The lowest density of 0.32/ha was recorded from the semi-evergreen forests of Vazhachal Forest Division. The lowest availability of 0.54 kg/ha of leaves was recorded from semi-evergreen forests of Kannur Forest Division. Highest density (3063.73/ha) of seedlings was observed in the moist deciduous forests of Peechi Forest Division and lowest density (58.14/ha) from the semi-evergreen forests of Nilambur south Forest Division.

#### **4.2. Sustainable harvesting of NWFPs**

NWFPs are harvested, quite often in an unsustainable manner. A resource is sustainable only if the harvesting is proportionate to the regeneration/recouping ability of the harvested plant or plant parts before the next harvesting season. However, collectors give little or no consideration to the perpetuation of the resource. Their motive is to collect the maximum within the shortest time possible. This aggressive collection is influenced by the market forces as well as social issues. The collectors prefer to collect premier items which fetch a higher price. Though, the right for collection of NWFPs are given to the Tribes, they never had any sense of ownership of the NWFPs. Unauthorised collection is another factor forcing the tribes to collect NWFPs before the right harvesting period. Some of the most heavily harvested NWFPs, particularly herbaceous as well as shrubby species, still survive because of their reproductive efficiency and regeneration capacity. *Coscinium fenestratum* a woody climber seen in the evergreen/semi-evergreen is now almost depleted from our forest due to over-exploitation. Collection of bark, stem and roots of tree are destructive. Collection of bark by girdling the tree often result in the death of the tree, particularly those with fibrous bark which gets easily detachable from the stem. On the other hand, trees with brittle bark, especially Lauraceae family can withstand removal of fair amount bark if not girdled (Plate 1). Collection of resin is by making cuts on the bark and

collects the hardened resin after a few days (Plate 2). *Vateria indica* and *Canarium strictum* are the sources of white dammar and black dammar. The quality and price of dammer is determined by the size of the hardened resin. The bigger size get maximum price. Therefore, to get bigger size resin block, fire is often lit at the base of the tree for the speedy flow of resin. Collection of fruits is often before they ripen. The process adversely affects the regeneration of the species as well as the quality [Plates 3 and 4].

Though in the project it was envisaged to standardize the collection of important NWFPs, the present study was restricted to herbaceous and shrubby annuals and biennials with adequate sampling intensity. Permission was not granted for collection of bark and root of tree species. The regeneration index at different percentage of extraction of the 30 species studied are provided in Fig. 6. The sustainable harvesting per cent of 30 species studied through the regeneration index method are provided along with the preferred collection period (Table 6).

Table 6. Proposed and actual harvesting percentage of 30 herbaceous NWFPs

No.	Botanical name	Part/s used	Proposed* (%)	Actual (%)	Season
1.	<i>Amorphophallus paeoniifolius</i>	Tuber	50-60	70-90	Dec - May
2.	<i>Aristolochia indica</i>	Root	45-55	70-85	May - Dec
3.	<i>Asparagus racemosus</i>	Tuberous root	70-75	85-95	Nov - May
4.	<i>Baliospermum montanum</i>	Root	50-60	70-80	Aug - Jun
5.	<i>Barleria prattensis</i>	Root	40-50	70-85	Nov - Jun#
6.	<i>Biophytum sp.</i>	Whole plant	70-80	85-90	Aug - Mar
7.	<i>Boerhavia diffusa</i>	Root	50-60	60-70	Aug - Apr
8.	<i>Costus speciosus</i>	Rhizome	50-60	65-75	Dec - May
9.	<i>Centrosema pubescens</i>	Seeds	70-80	50-60	Jan - Mar
10.	<i>Curcuma zedoaria</i>	Rhizome	60-70	70-80	Feb - Jun
11.	<i>Cyathula prostrata</i>	Whole plant	65-75	80-90	Aug - Mar
12.	<i>Cyclea peltata</i>	Tuberous root	45-55	70-80	Aug - Mar

13.	<i>Desmodium gangeticum</i>	Root	60-70	85-95	Feb- May #
14.	<i>Desmodium gyrans</i>	Root	60-70	70-80	Feb- May #
15.	<i>Desmodium velutnium</i>	Root	65-75	80-90	Feb- May #
16.	<i>Elephantopus scaber</i>	Whole plant	70-80	80-90	Aug - Jun
17.	<i>Hemidesmus indicus</i>	Tuberous root	60-70	80-90	Whole year
18.	<i>Ichnocarpus frutescens</i>	Root	50-60	70-80	Whole year
19.	<i>Naregamia alata</i>	Root	60-70	80-90	Aug - Feb
20.	<i>Nervilia aragoana</i>	Tuber	40-50	75-85	Aug - Dec
21.	<i>Phyllanthus amarus</i>	Whole plant	60-70	80-90	Aug - Jan
22.	<i>Piper longum</i>	Stem& Root	65-75	80-95	Whole year
23.	<i>Piper spp.</i>	Stem& Root	55-65	65-75	Whole year
24.	<i>Pseudarthria viscida</i>	Root	70-80	80-90	Feb- May #
25.	<i>Rauwolfia serpentina</i>	Root	20-30	50-75	Whole year
26.	<i>Rubia cordifolia</i>	Whole plant	40-50	70-85	Aug - Jun
27.	<i>Sida alnifolia</i>	Root	60-70	70-90	Feb- May #
28.	<i>Solanum viarum</i>	Root	50-60	75-90	Whole year
29.	<i>Strobilanthes ciliatus</i>	Root	50-60	85-95	Whole year
30.	<i>Tragia involucrata</i>	Root	50-60	60-70	Aug- Jun

\* Upper limit is admissible – Range for sustainable extraction, depending on the habitat and capacity of regeneration.

# Plant is available for harvesting from August to May however, suitable season for collection is after the seed maturation





**Lagerstroemia reginae**



**Persea macrantha**



**Kingiodendron pinnatum**





**Canarium strictum**



**Kingiodendron pinnatum**



**Symplocos racemosa**



**Acacia pennata**





**Solanum torvum**



**Coscinium fenestratum**



**Acacia caesia**



**Clerodendrum serratum**



**Sida spp.**





**Sida spp.**



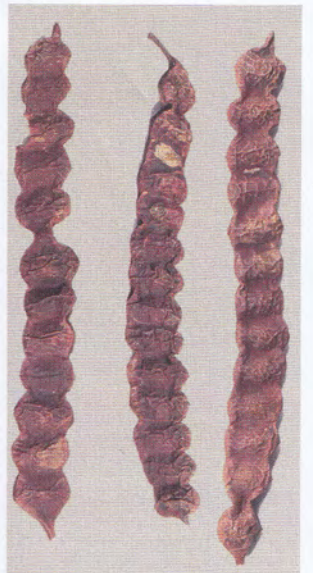
**Strobilanthes ciliatus**



**Pseudarthria viscida**

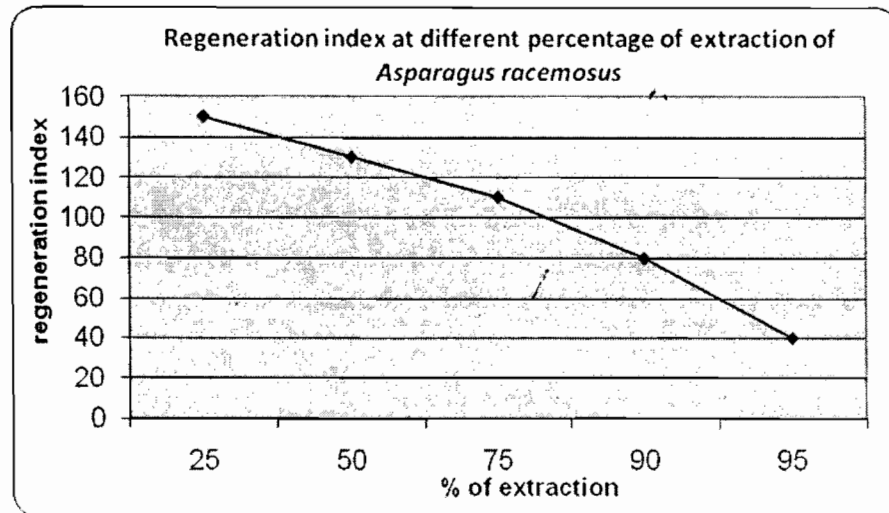
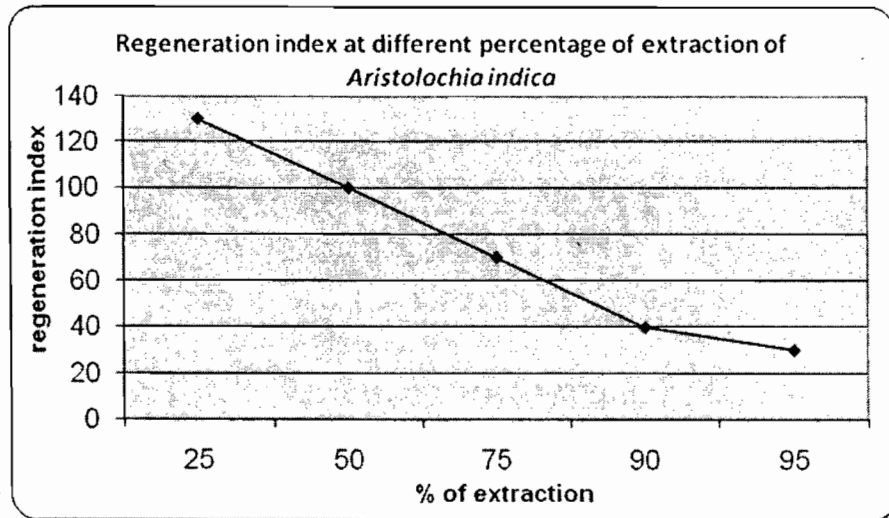
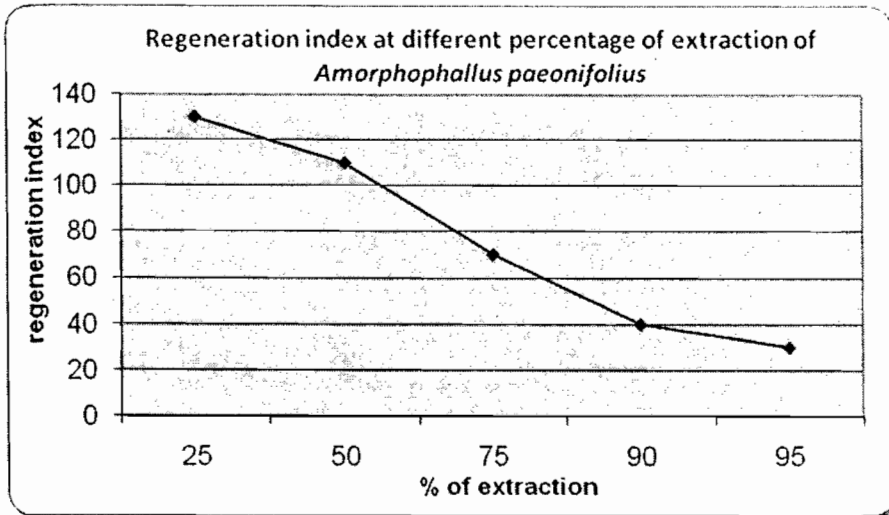


**Asparagus racemosus**



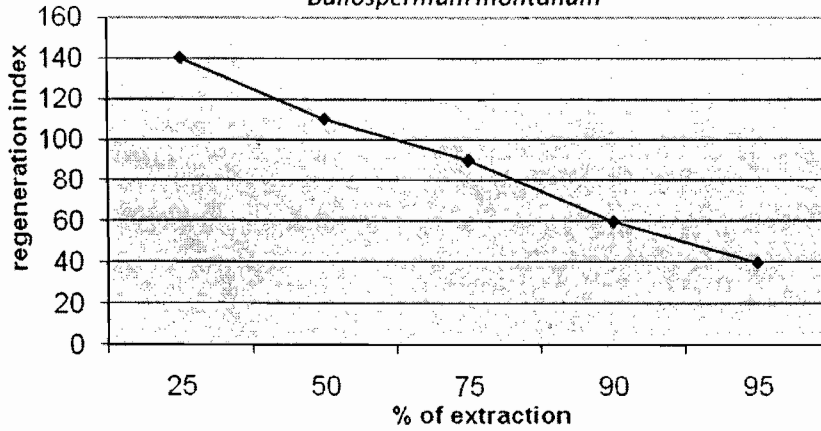
**Acacia sinuata**

**Fig. 6. Regeneration index at different percentage of extraction of herbaceous and shrubby medicinal plants**

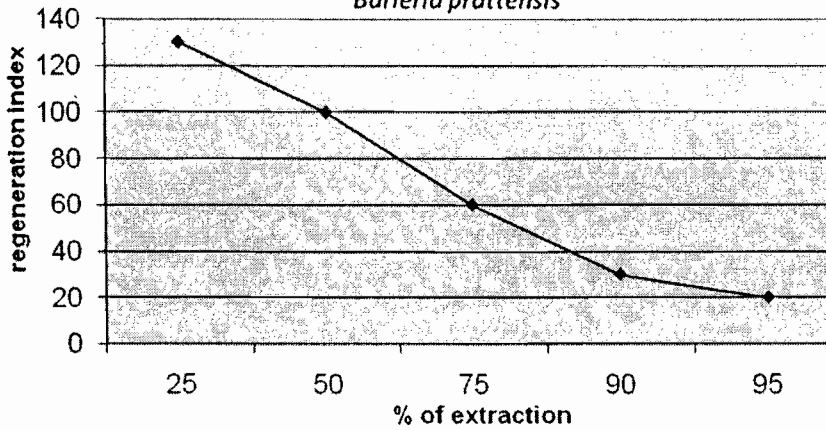




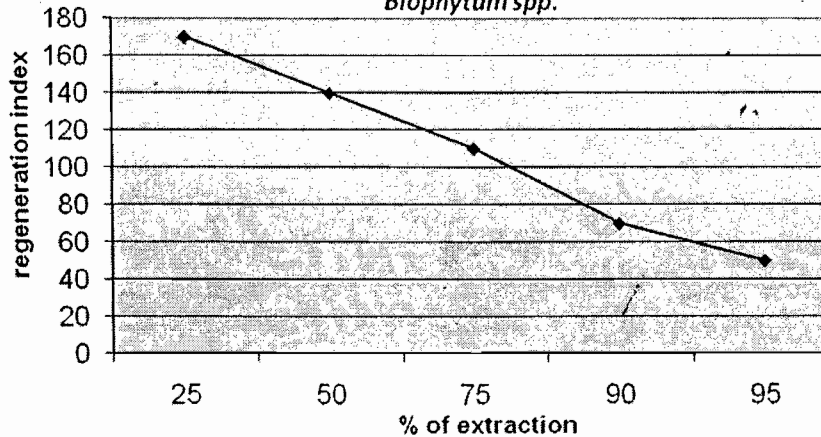
Regeneration index at different percentage of extraction of *Baliospermum montanum*

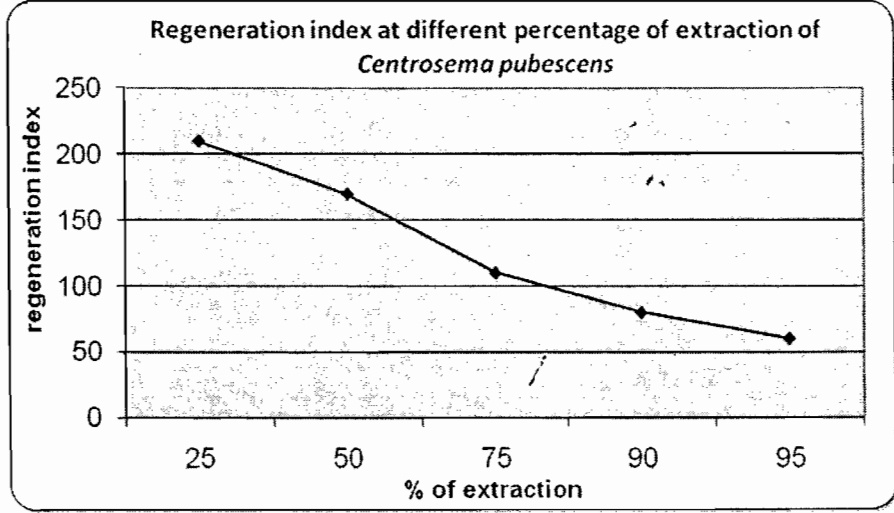
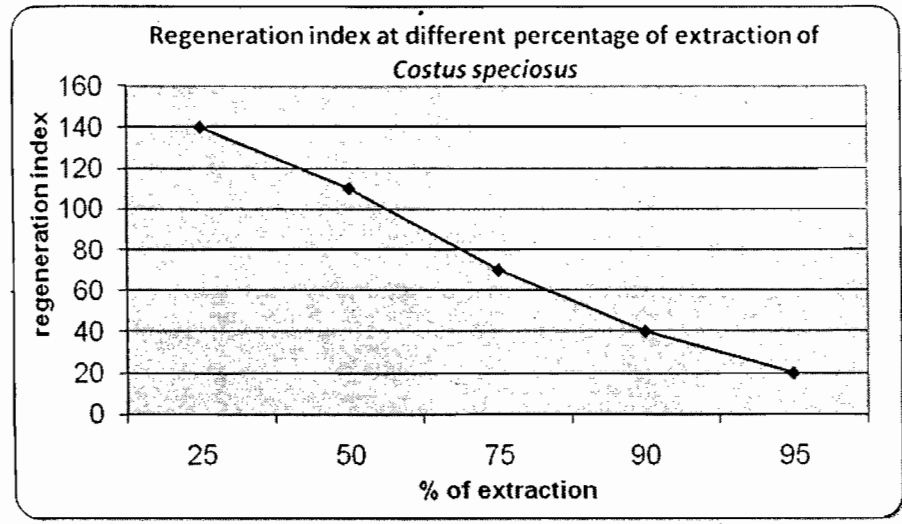
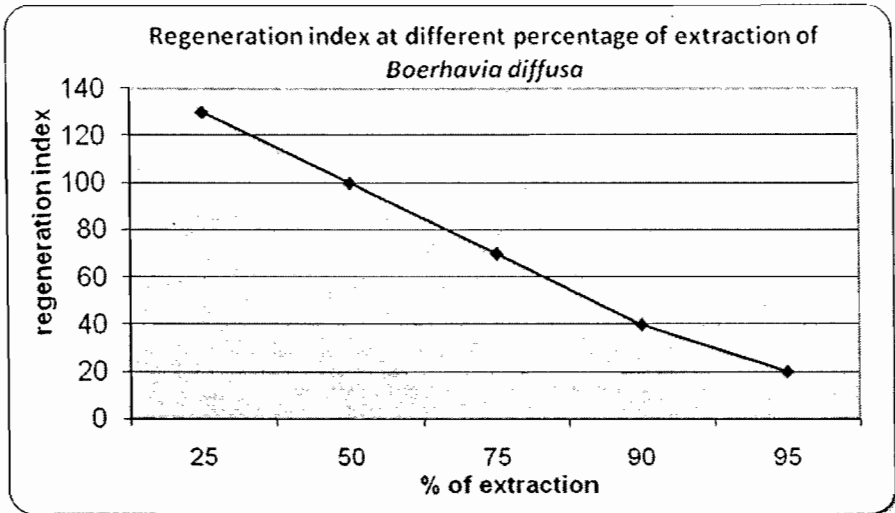


Regeneration index at different percentage of extraction of *Barleria prattensis*

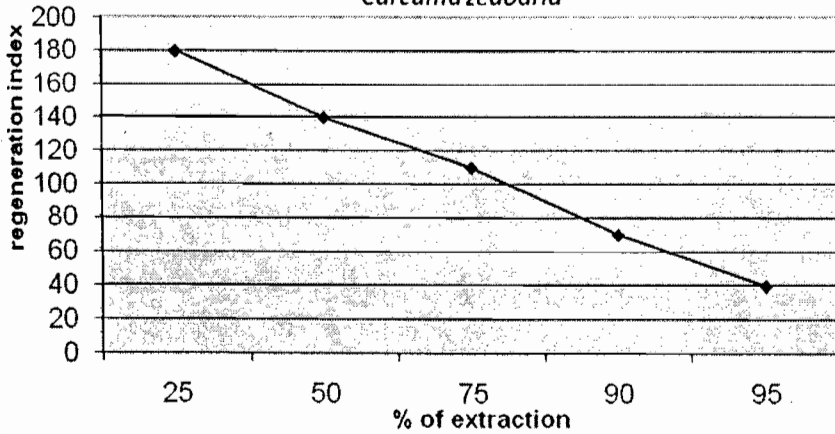


Regeneration index at different percentage of extraction of *Biophytum spp.*

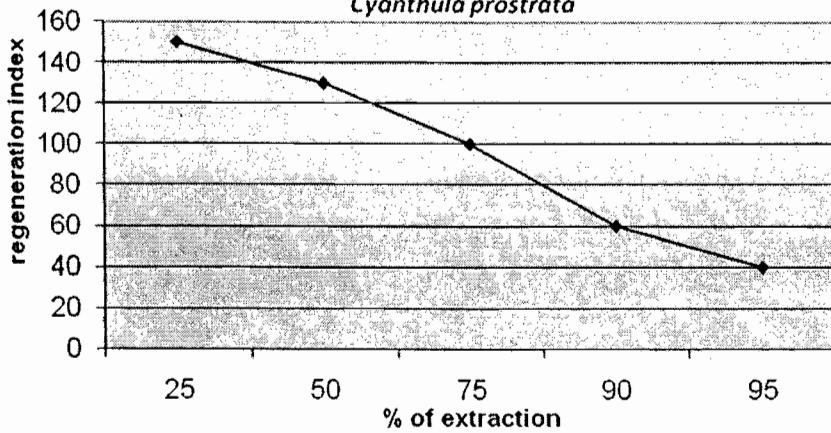




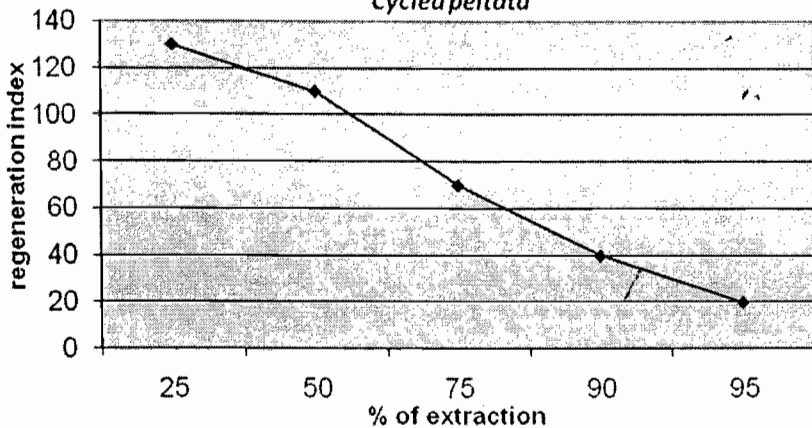
Regeneration index at different percentage of extraction of *Curcuma zedoaria*

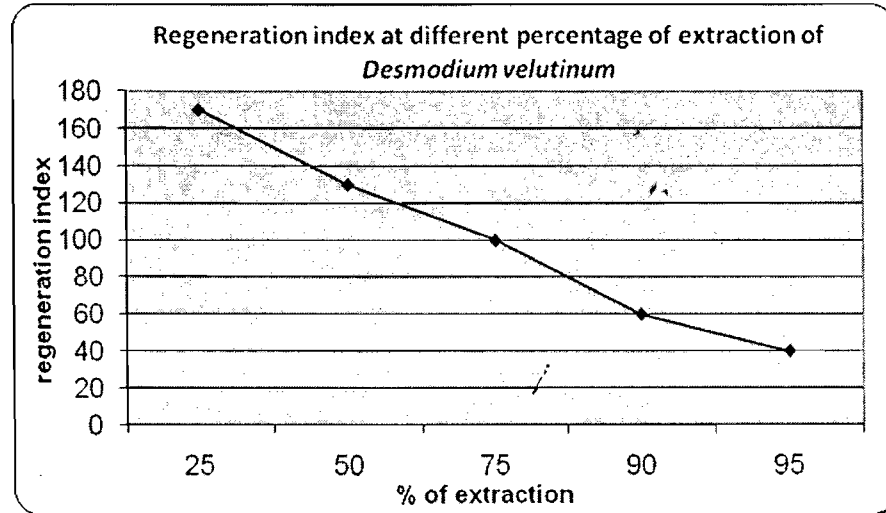
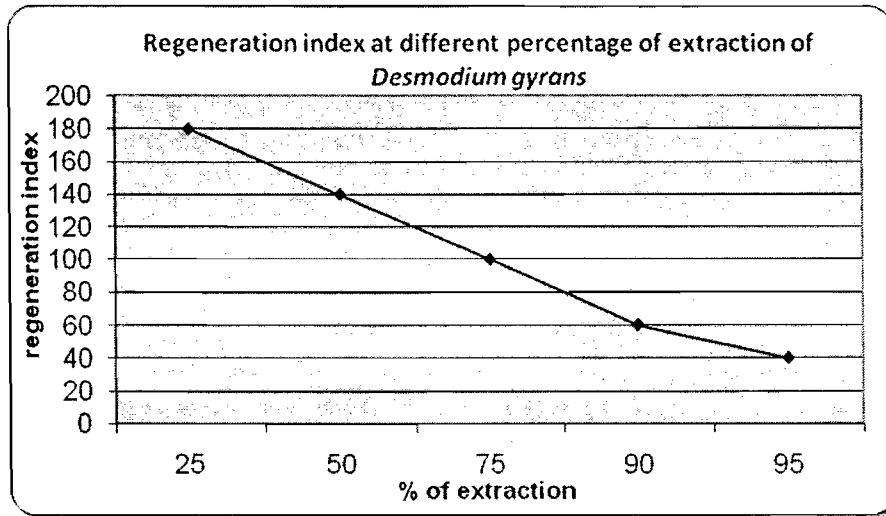
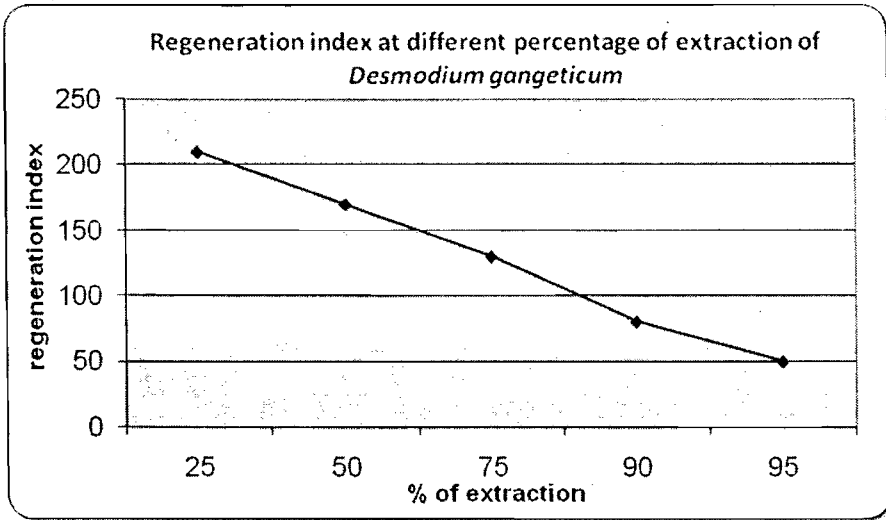


Regeneration index at different percentage of extraction of *Cyanthula prostrata*

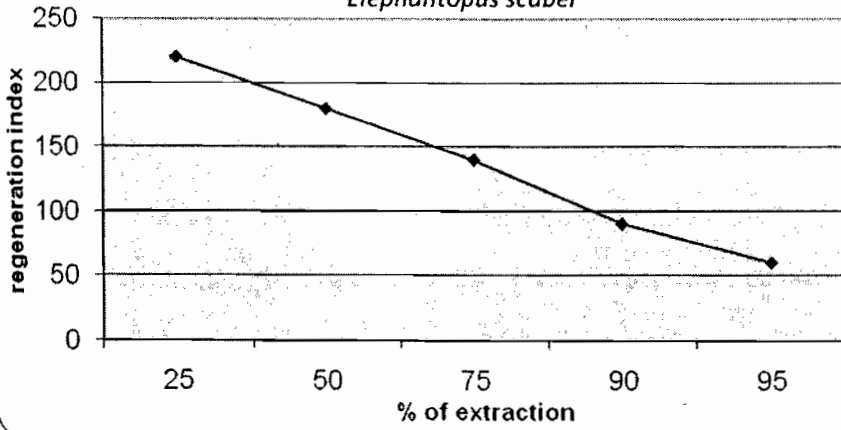


Regeneration index at different percentage of extraction of *Cyclea peltata*

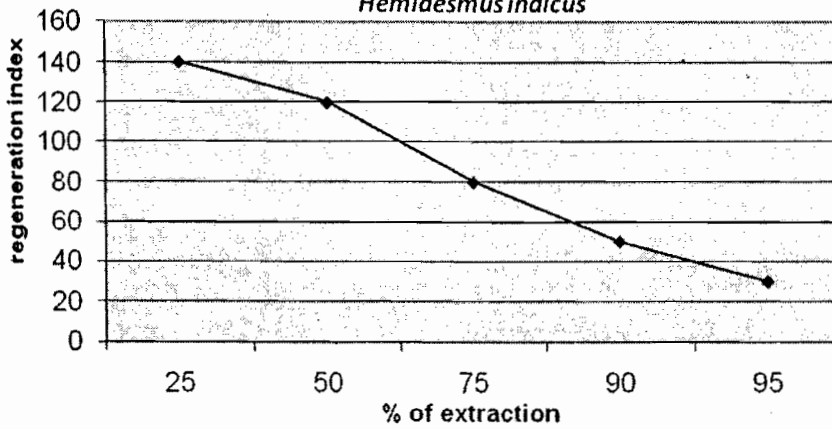




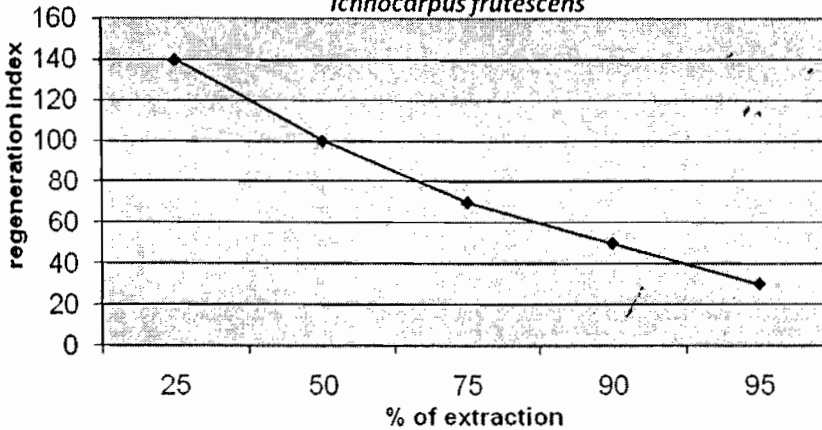
Regeneration index at different percentage of extraction of *Elephantopus scaber*



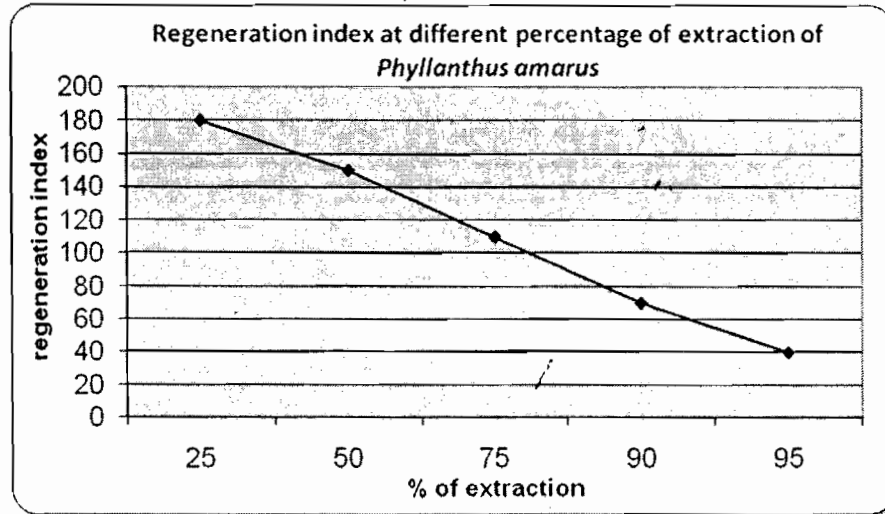
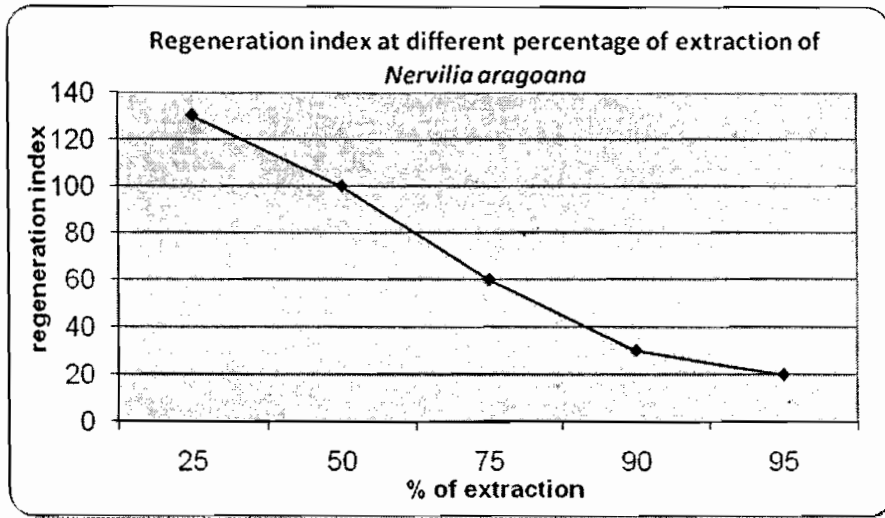
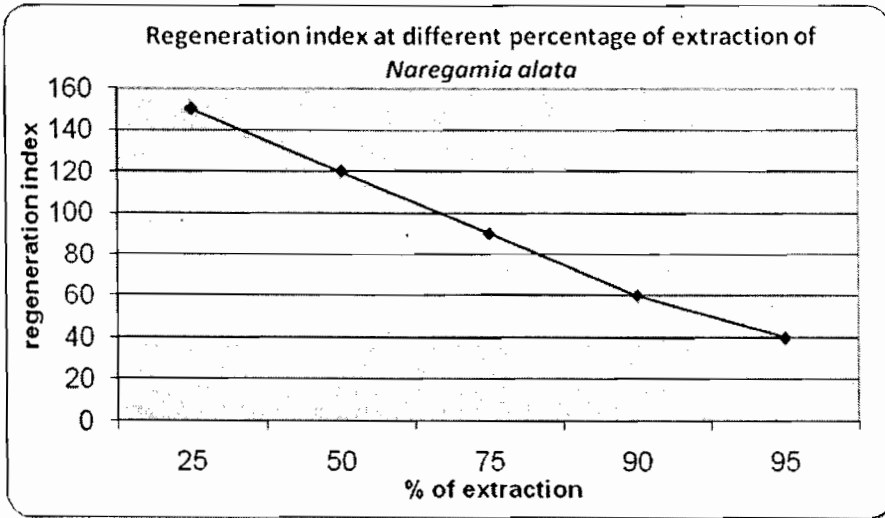
Regeneration index at different percentage of extraction of *Hemidesmus indicus*



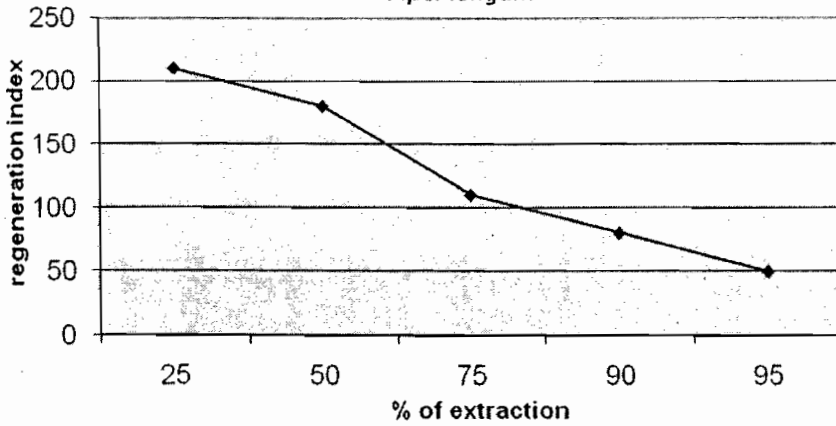
Regeneration index at different percentage of extraction of *Ichnocarpus frutescens*



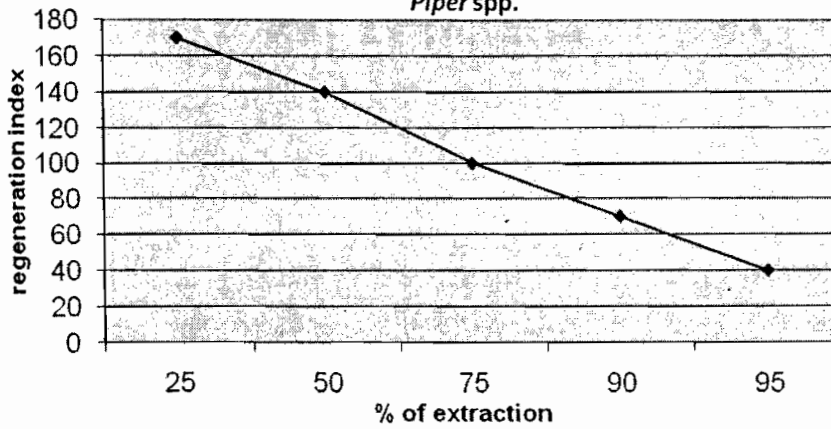




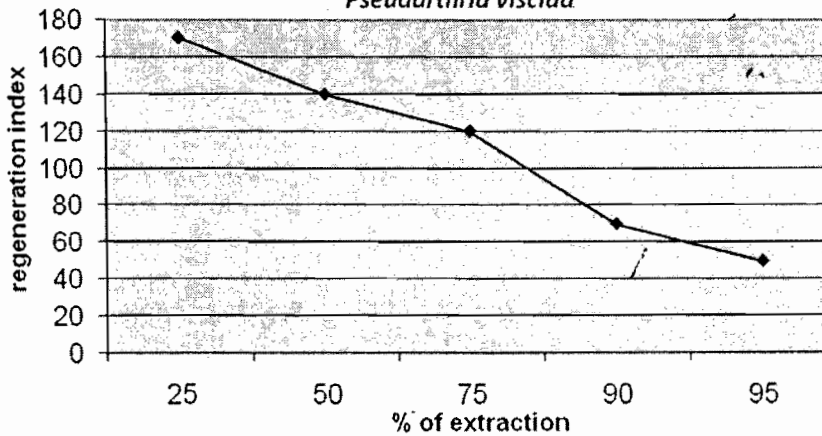
Regeneration index at different percentage of extraction of *Piper longum*

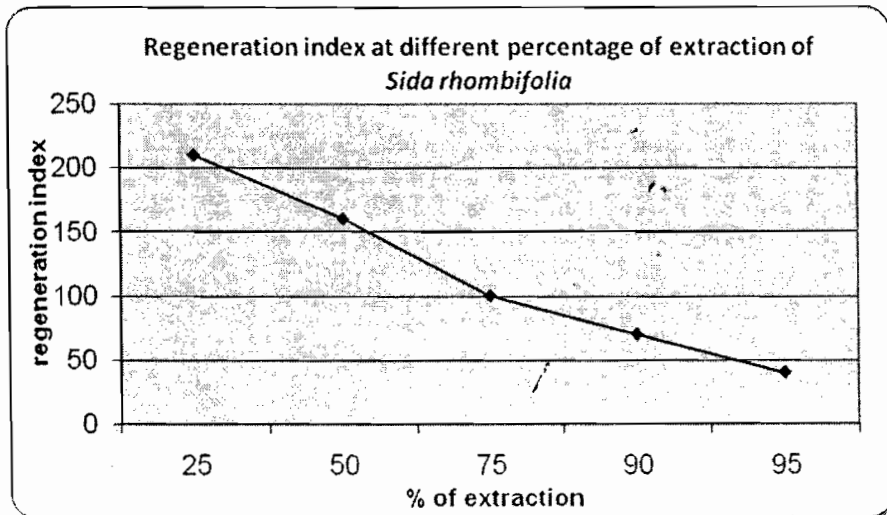
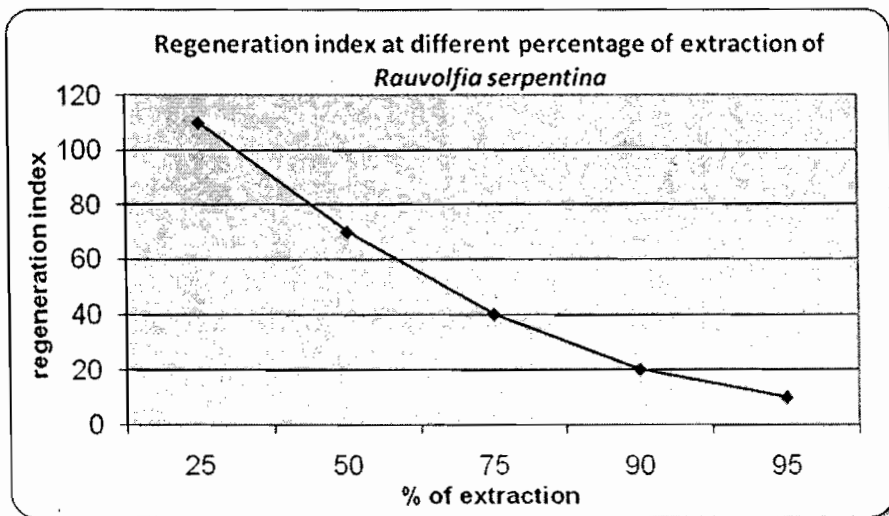
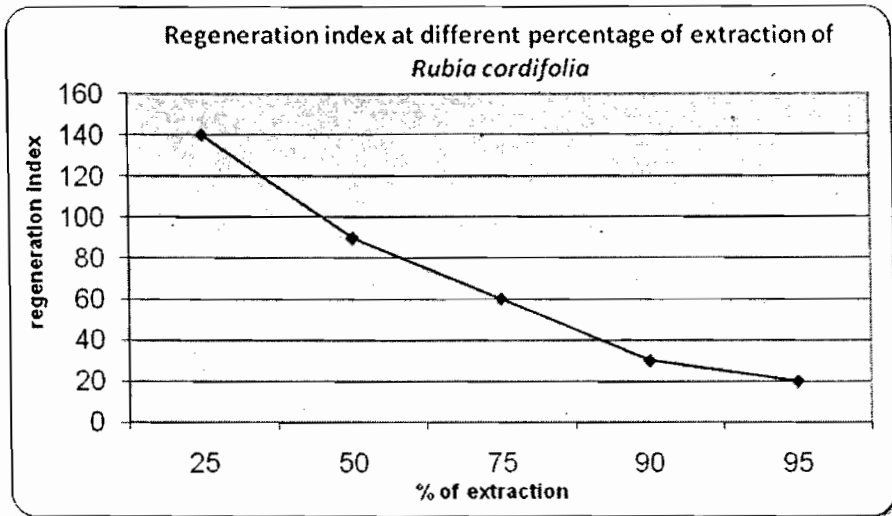


Regeneration index at different percentage of extraction of *Piper spp.*

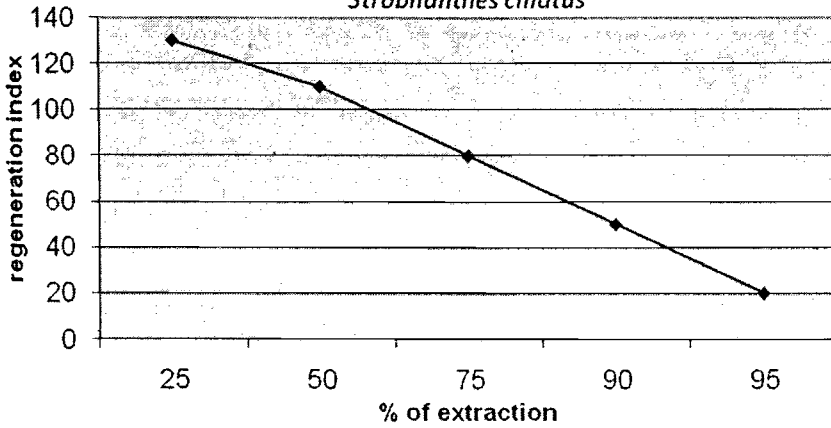


Regeneration index at different percentage of extraction of *Pseudarthria viscida*

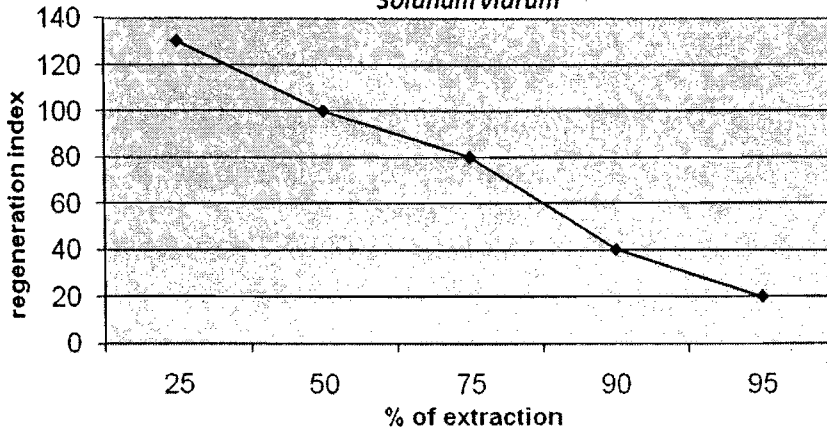




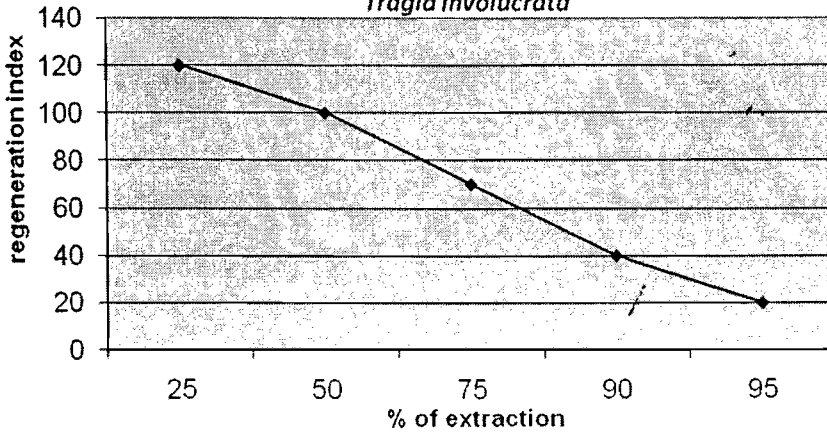
Regeneration index at different percentage of extraction of *Strobilanthes ciliatus*



Regeneration index at different percentage of extraction of *Solanum viarum*



Regeneration index at different percentage of extraction of *Tragia involucrata*



### 4.3. Rare and Threatened NWFPs

It has been estimated that about 10 per cent of the world flora is facing various kinds of threats and some are presumed to be extinct in the wild. The situation is severe in the tropics due to a variety of reasons.

The rare and threatened plants of South India has been assessed by various authors like Henry et al. 1979; Nayar and Sastry, 1987, 1988, 1990; Nayar 1995. The list of threatened plants includes medicinal plants. In Kerala, out of the 4801 flowering plants recorded so far, 483 are placed under various threatened categories (Sasidharan, 2005). The major reasons for the rarity of medicinal plants are over exploitation and habitat loss. Though most of the medicinal plants have a wider range of distribution from south to south-east Asia, they are getting depleted from their habitats in South India, mainly due to the exploitation.

Ravikumar and Ved (2000) brought out a list of one hundred threatened medicinal plants of Karnataka, Kerala and Tamil Nadu. The threatened medicinal plants were assigned for various threat categories such as Critically endangered, Endangered, Vulnerable, Low risk, Near threatened etc. as per the IUCN (1994) criteria for assessing threat categories. During the quantification inventory studies of the NWFPs in the northern districts of Kerala, 25 threatened medicinal plants were enumerated. They are *Adenia hondala* (vulnerable); *Aphanamixis polystachya* (vulnerable); *Baliospermum montanum* (vulnerable); *Canarium strictum* (vulnerable); *Celastrus paniculatus* (Low risk near threatened); *Chonemorpha fragrans* (Endangered); *Coscinium fenestratum* (Critically endangered); *Drosera peltata* (Endangered); *Dysoxylum malabaricum* (Endangered); *Embelia ribes* (Vulnerable); *Garcinia gummi-gutta* (Low risk near threatened); *Gloriosa superba* (Vulnerable); *Holostemma adakodian* (Endangered); *Hydnocarpus pentandra* (Vulnerable); *Kingiodendron pinnatum* (Vulnerable); *Myristica dactyloides* (Vulnerable); *Nervilia aragoana* (Vulnerable); *Oroxylum indicum* (Vulnerable); *Persea macrantha* (Vulnerable); *Pseudarthria viscida* (Vulnerable); *Rauvolfia serpentina* (Endangered); *Salacia oblonga* (Vulnerable); *Strobilanthes ciliatus* (Endangered); *Symplocos cochinchinensis* ssp. *Laurina* (Low risk) and *Terminalia arjuna* (Low risk near threatened) [Plates 5 and 6]. Of these 25 species *Kingiodendron pinnatum*, *Strobilanthes ciliatus*, *Dysoxylum malabaricum* and *Hydnocarpus pentandra* are endemic species. Though these species were enumerated from the sample plots, their density and frequency are very low. *Holostemma adakodian* was enumerated from a few sample plots, but mature individuals were totally absent.

## General status of NWFPs in Northern Kerala

Based on different density-diversity measures and indices, 123 NWFPs enumerated from northern Kerala are broadly categorised into common, moderate and rare, in relation to their presence or absence in the sample plots. Field observation, regeneration status, seedlings percentage, occurrence outside the sample plots, habitat, etc are also considered for categorisation. Density, Abundance, Frequency, IVI and different indices of each NWFP species in Forest Division wise and species wise are provided in details as appendix (Tables 5.1.1-5.1.15 and Tables 5.2.1-5.2.15). Among the 123 species, 42 species are with rare occurrence and availability. Only 20 species are with high density and abundance in their respective forest types. Species such as *Alstonia scholaris*, *Dillenia pentagyna*, *Wrightia tinctoria*, etc are the most abundant NWFPs in the deciduous forests of northern Kerala. In evergreen forests *Cinnamomum spp.*, *Palaquium ellipticum*, *Vateria indica*, etc are abundant. Certain habitat specific species such as *Acacia catechu*, *Alangium salvifolium*, *Sarcostemma brunonianum*, etc are common in the dry deciduous forests of Deccan region, however in Kerala they are rare species due to the smaller extends of this habitat. Species recorded from more Forest Divisions with very low density and frequency are also included under the category rare. Species such as *Cyclea peltata*, *Hemidesmus indicus*, etc. are very common but the availability of useful part (tuberous root) is low. NWFP species from north Kerala, under different categories are listed below.

### Common

- |                               |                                      |
|-------------------------------|--------------------------------------|
| 1 <i>Acacia pennata</i>       | 11 <i>Helicteres isora</i>           |
| 2 <i>Alstonia scholaris</i>   | 12 <i>Hemidesmus indicus</i>         |
| 3 <i>Aporosa lindleyana</i>   | 13 <i>Holarrhena antidysenterica</i> |
| 4 <i>Cassia fistula</i>       | 14 <i>Ichnocarpus frutescence</i>    |
| 5 <i>Centrosema pubescens</i> | 15 <i>Palaquium ellipticum</i>       |
| 6 <i>Cyathula prostrata</i>   | 16 <i>Phyllanthus emblica</i>        |
| 7 <i>Cyclea peltata</i>       | 17 <i>Schleichera oleosa</i>         |
| 8 <i>Desmodium velutinum</i>  | 18 <i>Terminalia bellirica</i>       |
| 9 <i>Dillenia pentagyna</i>   | 19 <i>Vateria indica</i>             |
| 10 <i>Elephantopus scaber</i> | 20 <i>Wrightia tinctoria</i>         |





**Adenia hondala**



**Aphanamixis polystachya**



**Baliospermum montanum**



**Canarium strictum**



**Celastrus paniculatus**



**Chonemorpha grandiflora**



**Coccinium fenestratum**



**Drosera peltata**



**Dysoxylum malabaricum**



**Embelia ribes**



**Garcinia gummi-gutta**



**Gloriosa superba**

**Plate 5. NWFP species belonging to the RET listed categories**

## Moderate

- 1 *Acacia caesia*
- 2 *Acacia sinuata*
- 3 *Acacia torta*
- 4 *Adenia hondala*
- 5 *Aerva lanata*
- 6 *Ailanthus triphysa*
- 7 *Amorphophallus paeoniifolius*
- 8 *Anamirta cocculus*
- 9 *Asparagus racemosus*
- 10 *Baliospermum montanum*
- 11 *Barleria prattensis*
- 12 *Bauhinia malabarica*
- 13 *Bauhinia racemosa*
- 14 *Biophytum sp.*
- 15 *Boerhavia diffusa*
- 16 *Butea monosperma*
- 17 *Canarium strictum*
- 18 *Chonemorpha fragrans*
- 19 *Cinnamomum spp.*
- 20 *Costus speciosus*
- 21 *Crataeva magna*
- 22 *Curcuma zedoaria*
- 23 *Desmodium gangeticum*
- 24 *Desmodium gyrans*
- 25 *Elettaria cardamomum*
- 26 *Ficus racemosa*
- 27 *Garcinia gummi-gutta*
- 28 *Gloriosa superba*
- 29 *Gmelina arborea*
- 30 *Holoptelea integrifolia*
- 31 *Hydnocarpus pentandra*
- 32 *Lagerstroemia reginae*
- 33 *Mesua ferrea*
- 34 *Mucuna pruriens*
- 35 *Myristica dactyloides*
- 36 *Naravelia zeylanica*
- 37 *Naregamia alata*
- 38 *Ocimum gratissimum*
- 39 *Oroxylum indicum*
- 40 *Persea macrantha*
- 41 *Phyllanthus amarus*
- 42 *Piper longum*
- 43 *Piper spp.*
- 44 *Pongamia pinnata*
- 45 *Pseudarthria viscida*
- 46 *Sapindus trifoliata*
- 47 *Sarcostigma kleinii*
- 48 *Sida rhombifolia*
- 49 *Solanum sp.*
- 50 *Solanum torvum*
- 51 *Spondias pinnata*
- 52 *Stereospermum colais*
- 53 *Strobilanthes ciliatus*
- 54 *Strychnos nux-vomica*
- 55 *Symplocos cochinchinensis*
- 56 *Tiliacora acuminata*
- 57 *Tinospora cordifolia*
- 58 *Tragia involucrata*
- 59 *Uraria hamosa*
- 60 *Zingiber zerumbet*

## Rare

- 1 *Acacia catechu*
- 2 *Alangium salvifolium*
- 3 *Albizia amara*
- 4 *Aphanamixis polystachya*
- 5 *Ardisia solanacea*
- 6 *Aristolochia indica*



- |                                  |                                    |
|----------------------------------|------------------------------------|
| 7 <i>Balanophora indica</i>      | 25 <i>Merremia tridentata</i>      |
| 8 <i>Caesalpinia bonduc</i>      | 26 <i>Mimusops elengi</i>          |
| 9 <i>Celastrus paniculatus</i>   | 27 <i>Nervilia aragoana</i>        |
| 10 <i>Cissus quadrangularis</i>  | 28 <i>Parmelia dilatata</i>        |
| 11 <i>Clerodendrum serratum</i>  | 29 <i>Phoenix loureirii</i>        |
| 12 <i>Cosciniium fenestratum</i> | 30 <i>Rauvolfia serpentina</i>     |
| 13 <i>Cucumis prophetarum</i>    | 31 <i>Rotula aquatica</i>          |
| 61 <i>Curcuma aromatica</i>      | 32 <i>Rubia cordifolia</i>         |
| 14 <i>Drosera peltata</i>        | 33 <i>Salacia oblonga</i>          |
| 15 <i>Dysoxylum malabaricum</i>  | 34 <i>Sarcostemma acidum</i>       |
| 16 <i>Embelia ribes</i>          | 35 <i>Semecarpus anacardium</i>    |
| 17 <i>Entada rheedei</i>         | 36 <i>Solanum trilobatum</i>       |
| 18 <i>Evolvulus alsinoides</i>   | 37 <i>Solanum viarum</i>           |
| 19 <i>Ficus gibbosa</i>          | 38 <i>Strychnos potatorum</i>      |
| 20 <i>Garcinia morella</i>       | 39 <i>Terminalia arjuna</i>        |
| 21 <i>Holostemma ada-kodien</i>  | 40 <i>Terminalia chebula</i>       |
| 22 <i>Indigofera tinctoria</i>   | 41 <i>Trichosanthes cucumerina</i> |
| 23 <i>Kingiodendron pinnatum</i> | 42 <i>Tylophora indica</i>         |
| 24 <i>Malaxis rheedei</i>        |                                    |

#### 4.4. Marketing of Non-Wood Forests Products

Marketing is one of the most vital issues to promote production and distribution of goods and services. Basically it identifies market opportunities and needs and analyses competition, develop appropriate approaches to reach customers and to earn profit (Lintu, 1995) Marketing is much more than a simple sale, involving both structural and institutional factors through which it can create better economic value for the products. The aim of marketing of any product is its maximum distribution to the society at a minimum time and at a reasonable cost (Ahmad and Islam, 1995).

The major sources of medicinal plants are forests and non-forest areas, that is wild as well as cultivated. In addition a few items are imported from other states in the country. they are consumed by individuals and industrial units both in the organized and unorganized sectors. Further, the marketing of medicinal plants is highly complex, involving a number of agencies including middlemen. Thus understanding of existing institutional arrangements is essential to know the intricacies of the marketing of the medicinal plants.

#### **4.4.1. Institutional arrangement**

During 1978, the Tribal Service Co-operative Societies (TSCS) were established to organize collection and marketing of NWFPs in the state. In 1981 an apex body of the TSCS called the Kerala State Scheduled Caste and Scheduled Tribe Development Co-operative Federation Ltd. (Federation) was formed. The Federation was entrusted with the right of monopoly procurement and marketing of all NWFPs from the forests. The right to NWFP collection is given to the Tribal communities by the Government. There are 35 co-operative societies in the state and they employ tribes for collection of about 50 NWFP species which are in high demand in the market and rest of the items are collected in an unauthorized manner locally by tribes/ other collectors and sell to the private traders (Muraleedharan, *et al.*1997). The marketing practices generally include auction, quotation and negotiation of which the auction is the most common marketing practice of the Federation. If the auction rate is very low due to such reasons as ring formation by the traders, low demand, etc. other practices are followed.

In addition to co-operative sector, NWFPs are also marketed by the private traders. The private traders sell their products to consumers directly. However, maximum quantities of NWFPs are sold by the co-operative sector. Here, more attention is paid on marketing of NWFPs by the co-operative sector.

#### **4.4.2. Economic aspects of marketing**

Although marketing of NWFPs is an important activity in the state, not much attention has been paid to study its economic aspects. Thus, Economic aspects such as marketing channels, price spread, economic efficiency and share of collection charges in the sale value are analysed here. As mentioned earlier, this is carried out for the selected NWFPs (*Coscinium fenestratum*, *Curcuma aromatica*, *Myristica dactyloides*, *Desmodium gangeticum*, *Sida rhombifolia*, Honey, *Terminalia chebula*, *Hydnocarpus pentandra*, *Phyllanthus emblica*) among 123 species enumerated from the northern Kerala as models. Selection is based on each habit type and useful part and market demand.

The marketing channels are the routes through which the products move from gatherers to consumers. Two major marketing channels are in operation.

Channel 1: Collectors -Society- Federation- first wholesaler- second wholesaler-retailers-consumers.

Channel 2: Collectors- agents-wholesalers-retailers- consumers

In each stage of marketing, the marketing agents have incurred costs to sell a product which are its marketing cost. Apart from collection charge, marketing cost consists of godown rent, establishment charge, loading and unloading charges, provision for shrinkage, wastage, cost of gunnies, tins and cans, miscellaneous expenses (transportation pass, bribe at check post, etc.), interest of money invested, etc. The marketing cost of middlemen, their net margins and statutory taxes constitute the gross marketing margin (Shankar,1999). The net margin consists of returns for the services including the risk.

The difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of products is known as price spread (Acharya and Agarwal, 1987). This is in fact, another way of looking into the margin taken by various parties involved in the marketing of a product.

The study on price spread, marketing cost and margin of above 8 NWFPs from the northern Kerala in both the channels highlights the following results.

The collectors share and the price spread account for 50 per cent each in channel I. The marketing cost and the marketing margin, two components of the price spread, constitute about 14 and 36 percentages respectively (Table 7).

Second, It further highlights that price spread is slightly more in the former mainly because of more number of intermediaries in the channel 1. The collector's share in the final price is more in channel 2 (53%) than in channel 1 (50%). The collectors who market through private traders get a higher share of final price compared to when they sell to tribal societies.

Among the marketing agents, the Federation receives more marketing margin (12.70%), followed by the first (11.42%) and second wholesalers (7.58%) in channel 1. This may be mainly due to the monopoly control over collection and marketing of NWFPs by the Federation. However, between the Federation the private traders (first and second wholesalers and retailers) the latter gets more net margin (22.70%) than the former (Table 8).

Table 7: Price spread, marketing cost and margins of selected medicinal plants (in %)

Items	Channel 1				Channel 2			
	Share of collectors	Price spread	Marketing cost	Marketing margin	Share of collectors	Price spread	Marketing cost	Marketing margin
<i>Coscinium fenestratum</i>	42.00	48.00	10.32	37.68	44.28	55.72	18.45	37.27
<i>Curcuma aromatica</i>	55.41	44.59	12.62	31.97	56.01	43.99	13.05	30.94
<i>Myristica dactyloides</i>	52.94	47.06	14.15	32.91	56.05	43.95	16.88	27.12
<i>Desmodium gangeticum</i>	48.52	51.48	16.05	35.43	50.90	49.10	17.45	31.65
<i>Sida rhombifolia</i> ssp. <i>retusa</i>	55.00	45.00	10.25	34.75	58.70	41.30	12.30	29.00
<i>Terminalia chebula</i>	46.19	53.81	17.09	36.72	49.28	50.72	17.90	32.82
<i>Hydnocarpus pentandra</i>	43.00	57.00	15.88	41.12	52.91	47.09	16.40	30.69
<i>Phyllanthus emblica</i>	48.46	51.54	14.25	37.29	50.25	49.75	16.55	33.20
	49.50	50.50	13.95	36.55	52.77	47.23	16.38	30.85

Table 8: Distribution of marketing margin among the sellers in Channel 1 (in %)

Items	Federation	First wholesaler	Second wholesaler	Retailer	Total
<i>Coscinium fenestratum</i>	12.75	13.05	7.99	3.89	37.68
<i>Curcuma aromatica</i>	14.35	10.62	4.88	2.12	31.97
<i>Myristica dactyloides</i>	10.10	12.14	6.35	4.32	32.91
<i>Desmodium gangeticum</i>	11.15	10.25	8.12	5.91	35.43
<i>Sida rhombifolia</i> ssp. <i>retusa</i>	12.18	10.25	8.40	3.92	34.75
<i>Terminalia chebula</i>	12.15	13.17	8.15	3.25	36.72
<i>Hydnocarpus pentandra</i>	14.65	14.05	10.12	2.30	41.12
<i>Phyllanthus emblica</i>	10.90	12.15	8.14	6.10	37.29
Mean	12.70	11.42	7.58	3.70	

Assessing the marketing margin is one of the traditional ways of market efficiency analysis. An attempt is also made to work out economic efficiency attained or enhanced by the price mechanism of selected products by the

Federation. The result highlights that the indices are low, varying between 100.11 and 124.24, indicating low economic efficiency.

#### 4.4.3. Implications

NWFPs trade in Kerala is a very prospective one and the prices of most of the items are on the increase (Table 9). The price increase may be partly due to imbalance between supply and demand. In the context of increasing prices of NWFPs, the question is whether present marketing arrangement by the co-operative sector is beneficial to the collectors and consumers?.

Table 9. prices of selected species of NWFPs (Rs./kg)

Species	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
<i>Coscinium Fenestratum</i>	16.65	18.72	19.75	21.00	16.00
<i>Myristica dactyloides</i>	230.00	250.00	257.49	275.00	278.00
<i>Desmodium gangeticum</i>	12.50	13.58	12.88	12.30	14.00
<i>Sida rhombifolia</i>	10.00	10.50	10.30	9.20	18.72
<i>Terminalia chebula</i>	15.10	15.74	11.25	10.50	9.00
<i>Phyllanthus emblica</i> (dry)	24.50	25.75	39.00	59.75	40.00

Source: The Pharmaceutical Corporation (I.M.), Kerala Ltd.

Since the tribal people mostly depend on collection of NWFPs for their livelihood, the collection charge received constitutes their principal source of income. As against the Ministry of Social Justice and Empowerment, Government of India, stipulation that tribal people should receive at least 75 per cent of the final sale value, the Federation proposed to provide 80 per cent. Generally collection charges paid by the societies vary according to the market price; it increases when market price rises and vice versa. However, the increase of collection charges does not commensurate with general price rise, resulting in no increase of real income for the tribes (Muraleedharan, *et. al.*, 1997).

With an aim to see whether the collectors get the proposed share as collection charge, share factor is worked out and presented in Table 10. The share of collection charge in sale value realized is indicative of the extent of differences in both. Over the years only 60 per cent of the sale value is realized as against

the stipulated 80 per cent. In other words, except honey, the proposed share of 80 per cent of the sale value could not be achieved in any of the selected products in any of the years under study.

Table 10. Share factor of the tribes in cooperative sector (in %)

SI No	Item	1999-2000	2000-2001	2001-2002	2002-2003	Mean
1	<i>Coscinium Fenestratum</i>	53	61	59	77	62.50
2	<i>Curcuma aromatica</i>	66	59	46	72	60.75
3	<i>Myristica dactyloides</i>	43	59	48	40	47.50
4	<i>Desmodium ganganticum</i>	52	54	67	71	61.00
5	<i>Sida rhombifolia</i>	36	25	26	23	27.50
7	<i>Terminalia chebula</i>	46	62	56	74	59.50
8	<i>Hydnocarpus petandra</i>	41	65	66	70	60.50
9	<i>Phyllanthus emblica</i>	69	79	52	71	67.75
	Mean	54.88	61.11	56.66	65.66	59.57

There are many constraints for not giving the proposed share of collection charge to the collectors. From the marketing point of view, the most important detrimental factor is the market structure faced by the Federation and consequent market imperfections.

There are two stages of marketing of NWFPs in Kerala, sale of collected products by tribal people to the Federation through society and marketing of collected products by the Federation. There exist different market situations in both the stages. In the first stage, the market structure is more or less similar to that of monopsony. In the second stage, the market structure of NWFPs in the product market is oligopoly in Kerala, with few firms or sellers in the market (the NWFPs are also available outside the forest; e.g., private garden, common properties, wastelands, and homesteads). The monopolist always buys lesser quantity from the sellers that too, at lesser prices (Muraleedharan, *et al.*2003).

As there is no increase of real income and standard of living, the gatherers are compelled to undertake intensive harvesting, especially highly demanded items which led to changes in species composition and availability. The repeated collection of these species annually further aggravates the problem. The Forest Department and the Federation/societies seldom give attention to the conservation and sustainable management of NWFPs. Resolution of ecological and economic problems in the sector, however, may be possible by

adopting a variety of measures including encouragement to the gatherers. For conservation and better management of NWFPs, economic upliftment of the collectors, value addition of NWFPs through improved and simple post-harvesting processing, etc. are suggested.

The increase in the prices of NWFPs has its own impact on price structure of ayurvedic medicines which showed an upward trend during the last one decade, resulting in decline of its use by the poor people (Sasidharan and Muraleedharan,2000). Thus, an effective marketing strategy, considering the interest of the collectors and consumers should be evolved for better prospects of NWFP marketing in the state.

#### **4.5 Discussions and conclusions**

Non-wood Forest Products (NWFPs) are renewable resources. These are the main sources of subsistence and income needs of the Tribes living in the forest areas, raw materials for Ayurvedic medicines, cosmetics etc. Though NWFPs are important forest resources, there have been no past attempts to estimate the growing stock, which is essential for the better management of these resources. There are 145 NWFP items in the list of the Kerala Forest Department which is classified as Minor Forest Produce (MFP). From the MFP list and based on the collection and trade by Tribal Service co-operative Societies, 137 items were selected for the quantitative inventory study in Kerala. Due to the quantum of the work, the NWFPs of the seven northern Districts of Kerala were studied by KFRI and the seven southern districts by TBGRI. The study in the northern Kerala resulted in the enumeration of 123 NWFPs that are exploited by the collectors. The other 14 species could not be enumerated from the study area because of their habitat preference and restricted distribution. Species such as *Gaultheria fragrantissima*, *Heracleum ringens* are restricted to the Shola-Grasslands region in Idukki dist. A few other species are restricted to the dry deciduous forests in the rain shadow regions. Such a habitat is of limited occurrence in northern Kerala.

For the quantification of useful products of NWFPs a software called *Invent NTFP* has been developed. The software has two major parts. The first part deals with input data. Using the data, the software quickly analysis density, abundance, relative density, relative frequency, important value index, shannum index and evenness index. The second part deals with yield studies



such as available quantity of useful products like root, flower, bark and leaves from different species were extrapolated.

Among the 123 NWFPs enumerated from the sample plots, the species with enough sampling intensity alone were quantified. The estimation of the available quantity of root of tree species was not worked out as it needs destructive sampling. However, structural data such as density, frequency and abundance of all the enumerated species were worked out. The highest density and availability of useful part (kg/ha) has been estimated at Forest Division and Forest Ranges levels. Further, extrapolation could not be attempted for reasons such as habitat preference, restricted as well as clumped distribution and rarity of the NWFP species.

Sustainable harvesting per cent of 30 herbaceous and shrubby species were worked out through Regeneration Index method and the appropriate collection period also worked out. The sustainable extraction of bark of trees could not be studied for want of permission from the Department.

Based on the frequency of occurrence in the sample plots, regeneration status and habitat preferences, only 20 species are recorded with high density and abundance; 60 species moderate and 42 species are noted with rare occurrence and availability. Among the 123 NWFPs enumerated, 25 species are belonging to the RED listed categories, of which *Coscinium fenestratum* is critically endangered.

For the past few decades, the demand for NWFPs has been increased due to the requirements for the manufacturing of a variety of herbal products. This has led to the increased extraction, often in an unsustainable way. A resource is sustainable only if the extraction is proportionate to the regeneration capacity of the resource. For sustainable management of the NWFPs, data on the growing stock is a prerequisite. The collection methods should also be standardized. Above all, active cooperation on the part of the gatherers is very important. An analysis of the marketing and price factor of the NWFPs for the past few years reveals that there is no substantial increase in the real income and standard of living of the gatherers and they are compelled to collect more and more of items high in demand. This trend will affect their availability in future years. At present there is no post harvest processing for value addition by the tribes. For conservation and sustainable extraction of NWFPs, the standard of living of the gatherers is to be improved through alternate income generation activities.

## 5. APPENDICES

### 1. Details of sample plots laid out in Northern Kerala

#### 1.1. Sample plots in different Forest types in each Forest Ranges of the 15 Divisions

Table 1.1.1	Thrissur (Wadakkancherry, Pattikkad and Machad)
Table 1.1.2	Chalakkudy (Pariyaram, Palappilly and Vellikkulangara)
Table 1.1.3	Vazhachal (Charpa, Vazhachal, Sholayar, Kollathirumed and Athirappally)
Table 1.1.4	Peechi (Peechi and Chimmini)
Table 1.1.5	Nenmara (Nelliampathy, Kollengode and Alathur)
Table 1.1.6	Palakkad (Olavakkode, Walayar and Ottappalam)
Table 1.1.7	Mannarkkad (Attappady, Agali and Mannarkkad)
Table 1.1.8	Parambikulam (Sungam, Parambikulam, Orukomban and Karimala)
Table 1.1.9	Nilambur North (Nilambur, Edavanna and Vazhikkadavu)
Table 1.1.10	Nilambur South (Kalikavu and Karulai)
Table 1.1.11	Kozhikode (Peruvannamuzhi, Kuttiyadi and Thamarasseri)
Table 1.1.12	Wayanad South (Kalpetta, Meppady and Chedleth)
Table 1.1.13	Wayanad North (Begur, Periya and Mananthavady)
Table 1.1.14	Wayanad WLS (Aralam, Tholpetty, Kurichiath, Muthanga and Sultan Bathery)
Table 1.1.15	Kannur (Kasaragod, Kanjangad, Taliparamba, Kottiyur and Kannavam)

#### 1.2. Sample plots in different Forest types in the 15 Divisions

Table 1.2.1	Thrissur
Table 1.2.2	Chalakkudy
Table 1.2.3	Vazhachal
Table 1.2.4	Peechi
Table 1.2.5	Nenmara
Table 1.2.6	Palakkad
Table 1.2.7	Mannarkkad

Table 1.2.8	Parambikulam
Table 1.2.9	Nilambur North
Table 1.2.10	Nilambur South
Table 1.2.11	Kozhikode
Table 1.2.12	Wayanad South
Table 1.2.13	Wayanad North
Table 1.2.14	Wayanad WLS
Table 1.2.15	Kannur

## 2. Prediction equation for estimating useful products

Table 2.1	Bark
Table 2.2	Leaves
Table 2.3	Fruits

## 3. Distribution, density, abundance, frequency and availability of useful parts of the NWFP species in different Forest Divisions

### 3.1. Herbs

Table 3.1.1	<i>Amorphophallus paeoniifolius</i>
Table 3.1.2	<i>Aristolochia indica</i>
Table 3.1.3	<i>Asparagus racemosus</i>
Table 3.1.4	<i>Baliospermum montanum</i>
Table 3.1.5	<i>Barleria prattensis</i>
Table 3.1.6	<i>Biophytum sp.</i>
Table 3.1.7	<i>Boerhavia diffusa</i>
Table 3.1.8	<i>Costus speciosus</i>
Table 3.1.9	<i>Curcuma zedoaria</i>
Table 3.1.10	<i>Cyathula prostrata</i>
Table 3.1.11	<i>Cyclea peltata</i>
Table 3.1.12	<i>Desmodium gangeticum</i> /
Table 3.1.13	<i>Desmodium gyrans</i>
Table 3.1.14	<i>Desmodium velutinum</i>
Table 3.1.15	<i>Elephantopus scaber</i>
Table 3.1.16	<i>Hemidesmus indicus</i>
Table 3.1.17	<i>Ichnocarpus frutescens</i>

Table 3.1.18	<i>Naregamia alata</i>
Table 3.1.19	<i>Nervilia aragoana</i>
Table 3.1.20	<i>Phyllanthus amarus</i>
Table 3.1.21	<i>Piper longum</i>
Table 3.1.22	<i>Piper sp.</i>
Table 3.1.23	<i>Pseudarthria viscida</i>
Table 3.1.24	<i>Rauwolfia serpentina</i>
Table 3.1.25	<i>Rubia cordifolia</i>
Table 3.1.26	<i>Sida rhombifolia</i>
Table 3.1.27	<i>Solanum viarum</i>
Table 3.1.28	<i>Tragia involucrata</i>

### 3.2. Shrubs

#### 3.2.1 Distribution across different diameter classes

Table 3.2.1.1	<i>Holarrhena antidysenterica</i>
Table 3.2.1.2	<i>Helicteres isora</i>

#### 3.2.2 Density, abundance, frequency and availability of useful parts

Table 3.2.2.1	<i>Strobilanthes ciliatus</i>
Table 3.2.2.2	<i>Holarrhena antidysenterica</i>
Table 3.2.2.3	<i>Helicteres isora</i>

### 3.3. Trees and Lianas

#### 3.3.1 Distribution across different diameter classes

Table 3.3.1.1	<i>Acacia caesia</i>
Table 3.3.1.2	<i>Acacia pennata</i>
Table 3.3.1.3	<i>Acacia sinuata</i>
Table 3.3.1.4	<i>Acacia torta</i>
Table 3.3.1.5	<i>Alstonia scholaris</i>
Table 3.3.1.6	<i>Bauhinia malabarica</i>
Table 3.3.1.7	<i>Bauhinia racemosa</i>
Table 3.3.1.8	<i>Butea monosperma</i>
Table 3.3.1.9	<i>Cassia fistula</i>

Table 3.3.1.10	<i>Cinnamomum</i> spp.
Table 3.3.1.11	<i>Ficus racemosa</i>
Table 3.3.1.12	<i>Holoptelea integrifolia</i>
Table 3.3.1.13	<i>Lagerstroemia reginae</i>
Table 3.3.1.14	<i>Persea macrantha</i>
Table 3.3.1.15	<i>Pongamia pinnata</i>
Table 3.3.1.16	<i>Sarcostigma kleinii</i>
Table 3.3.1.17	<i>Spondias pinnata</i>
Table 3.3.1.18	<i>Wrightia tinctoria</i>

### 3.3.2 Density, abundance frequency and availability of useful parts of NWFPs in different Forest Divisions

Table 3.3.2.1	<i>Acacia caesia</i>
Table 3.3.2.2	<i>Acacia pennata</i>
Table 3.3.2.3	<i>Acacia sinuata</i>
Table 3.3.2.4	<i>Acacia torta</i>
Table 3.3.2.5	<i>Alstonia scholaris</i>
Table 3.3.2.6	<i>Bauhinia malabarica</i>
Table 3.3.2.7	<i>Bauhinia racemosa</i>
Table 3.3.2.8	<i>Butea monosperma</i>
Table 3.3.2.9	<i>Cassia fistula</i>
Table 3.3.2.10	<i>Cinnamomum</i> spp.
Table 3.3.2.11	<i>Ficus racemosa</i>
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Table 3.3.2.16	<i>Sarcostigma kleinii</i>
Table 3.3.2.17	<i>Spondias pinnata</i>
Table 3.3.2.18	<i>Wrightia tinctoria</i>

#### 4. Diversity measures in different Forest types of Forest Ranges and Divisions

##### 4.1. Forest Ranges

Table 4.1.1	Thrissur (Wadakkancherry, Pattikkad and Machad)
Table 4.1.2	Chalakkudy (Pariyaram, Palappilly and Vellikkulangara)
Table 4.1.3	Vazhachal (Charpa, Vazhachal, Sholayar, Kollathirumed and Athirappally)
Table 4.1.4	Peechi (Peechi and Chimmini)
Table 4.1.5	Nenmara (Nelliampathy, Kollengode and Alathur)
Table 4.1.6	Palakkad (Olavakkode, Walayar and Ottappalam)
Table 4.1.7	Mannarkkad (Attappady, Agali and Mannarkkad)
Table 4.1.8	Parambikulam (Sungam, Parambikulam, Orukomban and Karimala)
Table 4.1.9	Nilambur North (Nilambur, Edavanna and Vazhikkadavu)
Table 4.1.10	Nilambur South (Kalikavu and Karulai)
Table 4.1.11	Kozhikode (Peruvannamuzhi, Kuttiyadi and Thamarasseri)
Table 4.1.12	Wayanad South (Kalpetta, Meppady and Chedleth)
Table 4.1.13	Wayanad North (Begur, Periya and Mananthavady)
Table 4.1.14	Wayanad WLS (Aralam, Tholpetty, Kurichiath, Muthanga and Sultan Bathery)
Table 4.1.15	Kannur (Kasaragod, Kanjangad, Taliparamba, Kottiyur and Kannavam)

##### 4.2. Forest Divisions

Table 4.2.1	Thrissur
Table 4.2.2	Chalakkudy
Table 4.2.3	Vazhachal
Table 4.2.4	Peechi
Table 4.2.5	Nenmara
Table 4.2.6	Palakkad
Table 4.2.7	Mannarkkad

Table 4.2.8	Parambikulam
Table 4.2.9	Nilambur North
Table 4.2.10	Nilambur South
Table 4.2.11	Kozhikode
Table 4.2.12	Wayanad South
Table 4.2.13	Wayanad North
Table 4.2.14	Wayanad (WL)
Table 4.2.15	Kannur

## 5 Density, Abundance, Frequency and availability of useful parts of NWFP species in different Forest Ranges and Divisions

### 5.1. Forest Ranges

Table 5.1.1	Thrissur (Wadakkancherry, Pattikkad and Machad)
Table 5.1.2	Chalakkudy (Pariyaram, Palappilly and Vellikkulangara)
Table 5.1.3	Vazhachal (Charpa, Vazhachal, Sholayar, Kollathirumed and Athirappally)
Table 5.1.4	Peechi (Peechi and Chimmini)
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Table 5.1.15	Kannur (Kasaragod, Kanjangad, Taliparamba, Kottiyur and Kannavam)



## 5.2. Forest Divisions

Table 5.2.1	Thrissur
Table 5.2.2	Chalakkudy
Table 5.2.3	Vazhachal
Table 5.2.4	Peechi
Table 5.2.5	Nenmara
Table 5.2.6	Palakkad
Table 5.2.7	Mannarkkad
Table 5.2.8	Parambikulam
Table 5.2.9	Nilambur North
Table 5.2.10	Nilambur South
Table 5.2.11	Kozhikode
Table 5.2.12	Wayanad South
Table 5.2.13	Wayanad North
Table 5.2.14	Wayanad (WL)
Table 5.2.15	Kannur

## 6. List of NWFPs Proposed for Quantitative Inventory

### Abbreviations used in the Tables

Acacia	:	Acacia Plantations
Bamboo	:	Bamboo Plantations
Cashew	:	Cashew Plantations
Cinnamomum	:	Cinnamon Plantations
Eucalyptus	:	Eucalyptus Plantations
Mahagony	:	Mahagony Plantations
Teak	:	Teak Plantations
EG	:	Evergreen Forests
SE	:	Semi-evergreen Forests
MDF	:	Moist Deciduous Forests
DDF	:	Dry Deciduous Forests
Shola	:	Shola Forests

**Table 1.1.1 Sample plots laid out in different Forest types and Forest Ranges in Thrissur Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Machad	MDF	Herb	166	664	46	1911
Machad	MDF	Shrub	166	4150	3	1504
Machad	MDF	Tree	166	265600	38	2149
Machad	Mixed	Herb	21	84	15	298
Machad	Mixed	Shrub	21	525	2	132
Machad	SE	Herb	2	8	2	12
Machad	SE	Shrub	2	8	1	8
Machad	SE	Tree	2	3200	12	28
Machad	Teak	Herb	35	140	18	410
Machad	Teak	Shrub	35	875	2	157
Pattikkad	MDF	Herb	91	364	26	1272
Pattikkad	MDF	Shrub	91	2275	2	637
Pattikkad	MDF	Tree	91	145600	37	1885
Wadakkancherry	Acacia	Herb	7	28	5	41
Wadakkancherry	Acacia	Shrub	65	1625	2	34
Wadakkancherry	Cashew	Herb	65	260	25	833
Wadakkancherry	Cashew	Shrub	57	1425	2	130
Wadakkancherry	Eucalyptus	Herb	57	228	22	989
Wadakkancherry	Eucalyptus	Shrub	57	1425	2	130
Wadakkancherry	MDF	Herb	6	24	9	56
Wadakkancherry	MDF	Shrub	6	150	2	27
Wadakkancherry	MDF	Tree	6	9600	11	48
Wadakkancherry	Teak	Herb	7	28	9	88
Wadakkancherry	Teak	Shrub	7	175	1	17

**Table 1.1.2 Sample plots laid out in different Forest types and Forest Ranges in Chalakkudy Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Palappilly	Teak	Herb	43	172	24	321
Palappilly	Teak	Shrub	43	1075	2	143
Pariyaram	Cashew	Herb	3	12	6	21
Pariyaram	Cashew	Shrub	3	75	2	24
Pariyaram	MDF	Herb	32	128	25	280
Pariyaram	MDF	Shrub	32	800	3	184
Pariyaram	MDF	Tree	32	51200	22	235
Pariyaram	SE	Herb	9	36	11	64
Pariyaram	SE	Shrub	9	225	1	30
Pariyaram	SE	Tree	9	14400	18	83
Pariyaram	Teak	Herb	12	48	19	123
Pariyaram	Teak	Shrub	12	300	1	96
Vellikkulangara	EG	Herb	7	28	12	63
Vellikkulangara	EG	Shrub	7	175	2	26
Vellikkulangara	EG	Tree	7	8400	12	176
Vellikkulangara	MDF	Herb	27	108	20	453
Vellikkulangara	MDF	Shrub	27	675	3	140
Vellikkulangara	MDF	Tree	27	43200	18	195
Vellikkulangara	SE	Herb	27	108	22	386
Vellikkulangara	SE	Shrub	27	675	3	135
Vellikkulangara	SE	Tree	27	43200	21	215
Vellikkulangara	Teak	Herb	32	128	24	501
Vellikkulangara	Teak	Shrub	32	800	0	0

**Table 1.1.3 Sample plots laid out in different Forest types and Forest Ranges in Vazhachal Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Charpa	EG	Herb	4	16	5	29
Charpa	EG	Shrub	4	100	0	0
Charpa	EG	Tree	4	4800	13	26
Charpa	MDF	Herb	9	36	7	86
Charpa	MDF	Shrub	9	225	1	61
Charpa	MDF	Tree	9	14400	11	56
Charpa	SE	Herb	16	64	9	50
Charpa	SE	Shrub	16	400	3	92
Charpa	SE	Tree	16	25600	23	115
Charpa	Teak	Herb	12	48	10	33
Charpa	Teak	Shrub	12	300	1	41
Kollathirumedu	MDF	Herb	5	20	7	25
Kollathirumedu	MDF	Shrub	5	125	1	22
Kollathirumedu	MDF	Tree	5	8000	4	14
Kollathirumedu	SE	Herb	33	132	24	138
Kollathirumedu	SE	Shrub	33	825	3	71
Kollathirumedu	SE	Tree	33	52800	26	194
Kollathirumedu	Teak	Herb	8	32	7	56
Kollathirumedu	Teak	Shrub	8	200	1	21
Sholayar	EG	Herb	12	48	6	37
Sholayar	EG	Shrub	12	300	2	157
Sholayar	EG	Tree	12	14400	14	73
Sholayar	SE	Herb	42	168	18	190
Sholayar	SE	Shrub	42	1050	2	189
Sholayar	SE	Tree	42	67200	26	210
Vazhachal	EG	Herb	6	24	1	3

Vazhachal	EG	Shrub	6	150	0	0
Vazhachal	EG	Tree	6	7200	8	54
Vazhachal	MDF	Herb	11	44	16	111
Vazhachal	MDF	Shrub	11	275	3	52
Vazhachal	MDF	Tree	11	17600	13	79
Vazhachal	SE	Herb	28	112	17	134
Vazhachal	SE	Shrub	28	700	3	9
Vazhachal	SE	Tree	28	44800	27	133

**Table 1.1.4 Sample plots laid out in different Forest types and Forest Ranges in Peechi Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled(sq m)	Number of species encountered	Number of individuals enumerated
Chimmini	MDF	Herb	44	176	28	362
Chimmini	MDF	Shrub	44	1100	4	346
Chimmini	MDF	Tree	44	70400	30	388
Chimmini	SE	Herb	82	328	27	396
Chimmini	SE	Shrub	82	2050	4	253
Chimmini	SE	Tree	82	131200	35	790
Peechi	EG	Herb	6	24	9	48
Peechi	EG	Shrub	6	150	2	14
Peechi	EG	Tree	6	7200	10	24
Peechi	MDF	Herb	273	1092	41	6711
Peechi	MDF	Shrub	273	6825	3	2339
Peechi	MDF	Tree	273	436800	34	4144
Peechi	SE	Herb	25	100	17	397
Peechi	SE	Shrub	25	625	2	110
Peechi	SE	Tree	25	40000	24	322
Peechi	Teak	Herb	102	408	32	2096
Peechi	Teak	Shrub	102	2550	3	1339

**Table 1.1.5 Sample plots laid out in different Forest types and Forest Ranges in Nenmara Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Alathur	MDF	Herb	2	8	2	36
Alathur	MDF	Shrub	2	50	2	28
Alathur	MDF	Tree	2	3200	5	18
Alathur	SE	Herb	2	8	1	4
Alathur	SE	Shrub	2	50	1	16
Alathur	SE	Tree	2	3200	10	25
Alathur	Teak	Herb	39	156	20	503
Alathur	Teak	Shrub	39	975	2	407
Kollengode	MDF	Herb	15	60	15	89
Kollengode	MDF	Shrub	15	375	3	77
Kollengode	MDF	Tree	15	24000	14	181
Kollengode	Teak	Herb	9	36	7	199
Kollengode	Teak	Shrub	9	225	0	0
Nelliyampathy	EG	Herb	20	80	10	44
Nelliyampathy	EG	Shrub	20	500	1	275
Nelliyampathy	EG	Tree	20	24000	8	84
Nelliyampathy	SE	Herb	70	280	16	167
Nelliyampathy	SE	Shrub	70	1750	2	585
Nelliyampathy	SE	Tree	70	112000	16	325

**Table 1.1.6 Sample plots laid out in different Forest types and Forest Ranges in Palakkad Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Olavakkode	MDF	Herb	64	256	25	783
Olavakkode	MDF	Shrub	64	1600	2	149
Olavakkode	MDF	Tree	64	102400	28	603
Olavakkode	Teak	Herb	6	24	9	51
Olavakkode	Teak	Shrub	6	150	2	20
Ottappalam	Acacia	Herb	5	20	6	94
Ottappalam	Acacia	Shrub	5	125	0	0
Ottappalam	Mixed	Herb	16	64	11	214
Ottappalam	Mixed	Shrub	16	400	1	18
Ottappalam	Teak	Herb	15	60	13	232
Ottappalam	Teak	Shrub	15	60	1	17
Walayar	EG	Herb	7	28	4	24
Walayar	EG	Shrub	7	175	1	65
Walayar	EG	Tree	7	8400	10	32
Walayar	MDF	Herb	49	196	20	250
Walayar	MDF	Shrub	49	1225	2	325
Walayar	MDF	Tree	49	78400	20	665
Walayar	SE	Herb	19	76	11	64
Walayar	SE	Shrub	19	475	2	147
Walayar	SE	Tree	19	30400	15	161



**Table 1.1.7 Sample plots laid out in different Forest types and Forest Ranges in Mannarkkad Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Agali	DDF	Herb	23	92	19	202
Agali	DDF	Shrub	23	575	1	3
Agali	DDF	Tree	23	36800	10	332
Agali	MDF	Herb	6	24	11	31
Agali	MDF	Shrub	6	150	1	32
Agali	MDF	Tree	6	9600	12	48
Agali	SE	Herb	13	52	21	88
Agali	SE	Shrub	13	325	1	36
Agali	SE	Tree	13	20800	24	163
Attappady	EG	Herb	6	24	1	3
Attappady	EG	Shrub	6	150	0	0
Attappady	EG	Tree	6	7200	7	34
Attappady	MDF	Herb	21	84	19	151
Attappady	MDF	Shrub	21	525	3	98
Attappady	MDF	Tree	21	33600	16	321
Attappady	SE	Herb	3	12	5	15
Attappady	SE	Shrub	3	75	1	29
Attappady	SE	Tree	3	4800	10	37
Mannarkkad	Acacia	Herb	27	108	14	316
Mannarkkad	Acacia	Shrub	27	675	3	62
Mannarkkad	Cashew	Herb	19	76	13	171
Mannarkkad	Cashew	Shrub	19	475	2	56

Mannarkkad	EG	Herb	4	16	6	19
Mannarkkad	EG	Shrub	4	100	0	0
Mannarkkad	EG	Tree	4	4800	6	15
Mannarkkad	MDF	Herb	20	80	21	146
Mannarkkad	MDF	Shrub	20	500	2	62
Mannarkkad	MDF	Tree	20	32000	22	170
Mannarkkad	SE	Herb	6	24	5	25
Mannarkkad	SE	Shrub	6	150	2	13
Mannarkkad	SE	Tree	6	9600	19	54
Mannarkkad	Teak	Herb	6	24	7	61
Mannarkkad	Teak	Shrub	6	150	2	4

**Table 1.1.8 Sample plots laid out in different Forest types and Forest Ranges in Parambikulam Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Karimala	MDF	Herb	18	72	20	144
Karimala	MDF	Shrub	18	450	2	26
Karimala	MDF	Tree	18	28800	10	41
Karimala	SE	Herb	6	24	10	53
Karimala	SE	Shrub	6	150	1	11
Karimala	SE	Tree	6	9600	12	99
Orukomban	MDF	Herb	18	72	12	130
Orukomban	MDF	Shrub				
Orukomban	MDF	Tree	18	28800	18	196

Parambikulam	MDF	Herb	5	20	11	45
Parambikulam	MDF	Shrub	5	75	0	0
Parambikulam	MDF	Tree	5	8000	8	30
Parambikulam	SE	Shrub	15	375	1	17
Parambikulam	SE	Tree	15	24000	17	141
Parambikulam	SE	Herb	15	60	14	118
Sungam	EG	Herb	11	44	12	70
Sungam	EG	Shrub	11	275	0	0
Sungam	EG	Tree	11	13200	14	56
Sungam	MDF	Herb	41	164	24	290
Sungam	MDF	Shrub	41	1025	2	30
Sungam	MDF	Tree	41	65600	21	297
Sungam	Teak	Herb	2	8	4	21
Sungam	Teak	Shrub	2	50	0	0

**Table 1.1.9 Sample plots laid out in different Forest types and Forest Ranges in Nilambur North Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Edavanna	Bamboo	Herb	7	28	6	40
Edavanna	Bamboo	Shrub	7	175	2	10
Edavanna	EG	Herb	3	12	4	6
Edavanna	EG	Shrub	3	75	1	57
Edavanna	EG	Tree	3	3600	8	32

Edavanna	MDF	Herb	31	124	15	147
Edavanna	MDF	Shrub	31	775	4	105
Edavanna	MDF	Tree	31	49600	18	211
Nilambur	MDF	Herb	7	28	10	87
Nilambur	MDF	Shrub	7	175	1	73
Nilambur	MDF	Tree	7	11200	15	83
Nilambur	Mixed	Herb	30	120	17	141
Nilambur	Mixed	Shrub	30	750	2	96
Nilambur	SE	Herb	9	36	8	97
Nilambur	SE	Shrub	9	225	2	57
Nilambur	SE	Tree	9	14400	16	87
Nilambur	Teak	Herb	72	288	20	815
Nilambur	Teak	Shrub	72	1800	2	182
Vazhikkadavu	EG	Herb	45	180	10	141
Vazhikkadavu	EG	Shrub	45	1125	0	0
Vazhikkadavu	EG	Tree	45	54000	14	284
Vazhikkadavu	MDF	Herb	38	152	22	351
Vazhikkadavu	MDF	Shrub	38	950	3	120
Vazhikkadavu	MDF	Tree	38	60800	17	350
Vazhikkadavu	SE	Herb	3	12	4	11
Vazhikkadavu	SE	Shrub	3	75	0	0
Vazhikkadavu	SE	Tree	3	4800	8	25
Vazhikkadavu	Teak	Herb	38	152	21	620
Vazhikkadavu	Teak	Shrub	38	960	3	417

**Table 1.1.10 Sample plots laid out in different Forest types and Forest Ranges in Nilambur South Division**

Forest Range	Habitat	Habit	No. of plots	Tot area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Kaljkavu	Acacia	Herb	13	52	9	95
Kalikavu	Acacia	Shrub	13	325	1	33
Kalikavu	EG	Herb	3	12	0	0
Kalikavu	EG	Shrub	13	325	0	0
Kalikavu	EG	Tree	3	3600	3	7
Kalikavu	MDF	Herb	7	28	7	41
Kalikavu	MDF	Shrub	7	175	1	29
Kalikavu	MDF	Tree	7	11200	9	45
Karulai	Bamboo	Herb	2	8	0	0
Karulai	Bamboo	Shrub	2	50	0	0
Karulai	EG	Herb	8	32	7	42
Karulai	EG	Shrub	8	200	2	18
Karulai	EG	Tree	8	9600	5	123
Karulai	MDF	Herb	79	316	22	324
Karulai	MDF	Shrub	79	1975	3	120
Karulai	MDF	Tree	79	126400	23	474
Karulai	SE	Herb	48	192	23	312
Karulai	SE	Shrub	48	1200	3	38
Karulai	SE	Tree	48	76800	26	593
Karulai	Teak	Herb	86	344	27	1167
Karulai	Teak	Shrub	86	2150	3	482

**Table 1.1.11 Sample plots laid out in different Forest types and Forest Ranges in Kozhikode Division**

Range	Habitat	Habit	No. of plots	Tot area sampled (sq m)	No. of species encountered	No. of individuals enumerated
Thamarassery	EG	Herb	182	728	13	324
Thamarassery	SE	Herb	103	412	6	184
Thamarassery	MDF	Herb	84	336	9	183
Thamarassery	EG	Shrub	182	4550	4	369
Thamarassery	SE	Shrub	93	2325	3	235
Thamarassery	MDF	Shrub	103	2575	3	235
Thamarassery	EG	Tree	182	218400	21	775
Thamarassery	SE	Tree	103	164800	21	312
Thamarassery	MDF	Tree	84	134400	16	183
Kuttiyadi	MDF	Herb	45	180	11	132
Kuttiyadi	SE	Herb	144	576	8	283
Kuttiyadi	EG	Herb	14	56	1	20
Kuttiyadi	Mixed	Herb	15	60	2	19
Kuttiyadi	MDF	Shrub	45	1125	3	147
Kuttiyadi	SE	Shrub	144	3600	2	357
Kuttiyadi	EG	Shrub	14	350	2	16
Kuttiyadi	Mixed	Shrub	15	375	2	6
Kuttiyadi	MDF	Tree	15	375	2	6
Kuttiyadi	MDF	Tree	45	72000	11	197
Kuttiyadi	SE	Tree	144	230400	15	378
Kuttiyadi	EG	Tree	14	16800	4	29
Peruvannamuzhi	MDF	Herb	66	264	13	104

Peruvannamuzhi	SE	Herb	353	1412	10	651
Peruvannamuzhi	EG	Herb	30	120	2	58
Peruvannamuzhi	Teak	Herb	41	164	10	129
Peruvannamuzhi	MDF	Shrub	66	1650	3	82
Peruvannamuzhi	SE	Shrub	353	8825	4	788
Peruvannamuzhi	EG	Shrub	30	750	2	192
Peruvannamuzhi	Teak	Shrub	41	1025	1	37
Peruvannamuzhi	MDF	Tree	66	105600	15	213
Peruvannamuzhi	SE	Tree	353	564800	24	1214
Peruvannamuzhi	EG	Tree	30	36000	11	70

**Table 1.1.12 Sample plots laid out in different types and Forest Ranges in Wayanad South Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Chedleth	MDF	Herb	61	244	7	162
Chedleth	MDF	Shrub	61	1525	4	150
Chedleth	MDF	Tree	61	97600	18	326
Chedleth	Teak	Herb	25	100	4	57
Chedleth	Teak	Shrub	25	625	2	34
Kalpetta	Eucalyptus	Herb	25	100	6	40
Kalpetta	Eucalyptus	Shrub	25	625	2	27
Kalpetta	Grassland	Herb	27	108	4	18
Kalpetta	Grassland	Shrub	27	675	2	10
Kalpetta	SE	Herb	27	108	7	80
Kalpetta	SE	Shrub	27	675	1	201



Kaipetta	SE	Tree	27	43200	12	125
Kaipetta	Shola	Herb	11	44	2	23
Kaipetta	Shola	Shrub	11	275	2	30
Kaipetta	Shola	Tree	11	17600	5	53
Meppady	EG	Herb	30	120	1	48
Meppady	EG	Shrub	30	750	1	68
Meppady	EG	Tree	30	36000	8	145
Meppady	Grassland	Herb	16	64	2	10
Meppady	Grassland	Shrub	16	400	2	7
Meppady	Savannah	Herb	32	128	8	33
Meppady	Savannah	Shrub	32	800	2	5
Meppady	Savannah	Tree	32	51200	4	22
Meppady	SE	Herb	25	100	5	54
Meppady	SE	Shrub	25	625	1	70
Meppady	SE	Tree	25	40000	8	128

Table 1.1.13 Sample plots laid out in different Forest types and Forest Ranges in Wayanad North Division

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Begur	MDF	Herb	7	28	4	89
Begur	MDF	Shrub	7	175	2	31
Begur	MDF	Tree	7	11200	7	42
Begur	SE	Herb	33	132	8	202
Begur	SE	Shrub	33	825	3	229
Begur	SE	Tree	33	52800	16	144
Begur	Teak	Herb	62	248	8	328

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Aralam	EG	Herb	13	52	2	34
Aralam	EG	Tree	13	15600	5	123

Table 1.1.14 Sample plots laid out in different Forest types and Forest Ranges in Wayanad (WL) Division

Begur	Teak	Shrub	62	1550	2	129
Mananthavady	Grassland	Herb	5	20	3	11
Mananthavady	MDF	Herb	9	36	4	63
Mananthavady	MDF	Tree	9	14400	4	41
Mananthavady	SE	Herb	11	44	5	36
Mananthavady	SE	Shrub	11	275	3	23
Mananthavady	SE	Tree	11	17600	10	28
Periya	Acacia	Herb	9	36	2	6
Periya	Acacia	Shrub	9	225	1	18
Periya	Cashew	Herb	3	12	1	7
Periya	EG	Herb	32	128	4	100
Periya	EG	Shrub	32	800	1	130
Periya	EG	Tree	32	38400	14	210
Periya	Eucalyptus	Herb	17	68	7	45
Periya	Pine	Herb	8	32	1	4
Periya	Pine	Shrub	8	200	1	23
Periya	Pine	Shrub	8	64	5	24
Periya	SE	Herb	16	64	5	24
Periya	SE	Shrub	16	400	1	24
Periya	SE	Tree	16	25600	8	128

208	Aaram	MDF	Herb	42	168	5
85	Aaram	MDF	Shrub	42	1050	2
327	Aaram	MDF	Tree	42	67200	18
226	Kurchiyath	DDF	Herb	19	76	10
70	Kurchiyath	DDF	Shrub	19	475	2
125	Kurchiyath	DDF	Tree	19	30400	10
43	Kurchiyath	MDF	Herb	4	16	2
15	Kurchiyath	MDF	Shrub	4	100	1
416	Kurchiyath	SE	Herb	26	104	14
274	Kurchiyath	SE	Shrub	26	650	2
163	Kurchiyath	SE	Tree	26	41600	16
666	Kurchiyath	Teak	Herb	35	140	14
115	Kurchiyath	Teak	Shrub	35	875	3
101	Muthanga	Eucalyptus	Herb	20	80	9
16	Muthanga	Eucalyptus	Shrub	20	500	2
444	Muthanga	MDF	Herb	50	200	9
67	Muthanga	MDF	Shrub	50	1250	2
269	Muthanga	MDF	Tree	50	80000	14
268	Muthanga	Teak	Herb	17	68	12
20	Muthanga	Teak	Shrub	17	425	3
102	S. Bathery	DDF	Herb	13	52	6
33	S. Bathery	DDF	Shrub	13	325	2
66	S. Bathery	DDF	Tree	13	20800	8
382	S. Bathery	MDF	Herb	29	116	11
200	S. Bathery	MDF	Shrub	29	725	3
130	S. Bathery	MDF	Tree	29	46400	13

S. Bathery	Teak	Herb	26	104	6	347
S. Bathery	Teak	Shrub	26	650	3	121
Tholpetty	Eucalyptus	Herb	5	20	2	51
Tholpetty	Eucalyptus	Shrub	5	125	2	5
Tholpetty	MDF	Herb	40	160	13	370
Tholpetty	MDF	Shrub	40	1000	2	145
Tholpetty	MDF	Tree	40	64000	13	249
Tholpetty	Teak	Herb	33	132	12	308
Tholpetty	Teak	Shrub	33	825	2	76

**Table 1.1.15 Sample plots laid out in different Forest types and Forest Ranges in Kannur Division**

Forest Range	Habitat	Habit	No. of plots	Total area sampled (sq m)	Number of species encountered	Number of individuals enumerated
Kanjangad	Cashew	Herb	34	136	4	41
Kanjangad	Cashew	Shrub	34	850	1	21
Kanjangad	EG	Herb	18	72	1	39
Kanjangad	EG	Shrub	18	450	1	66
Kanjangad	EG	Tree	18	21600	6	37
Kanjangad	Grassland	Herb	10	40	3	33
Kanjangad	MDF	Herb	111	444	7	249
Kanjangad	MDF	Shrub	111	2775	1	177
Kanjangad	MDF	Tree	111	177600	19	350
Kanjangad	SE	Herb	35	140	6	95
Kanjangad	SE	Shrub	35	875	2	195
Kanjangad	SE	Tree	35	56000	17	155

Kannavam	EG	Herb	69	276	3	155
Kannavam	EG	Shrub	69	1725	1	448
Kannavam	EG	Tree	69	82800	13	361
Kannavam	Mahagony	Herb	20	80	4	48
Kannavam	Mahagony	Shrub	20	500	2	12
Kannavam	MDF	Herb	175	700	21	660
Kannavam	MDF	Shrub	175	4375	4	770
Kannavam	MDF	Tree	175	280000	24	635
Kannavam	Mixed	Herb	44	176	12	187
Kannavam	Mixed	Shrub	44	1100	3	115
Kannavam	SE	Herb	30	120	3	81
Kannavam	SE	Shrub	30	750	3	211
Kannavam	SE	Tree	30	48000	12	133
Kannavam	Teak	Herb	13	52	4	36
Kannavam	Teak	Shrub	13	325	1	36
Kasaragod	Acacia	Herb	10	40	5	18
Kasaragod	Acacia	Shrub	10	250	1	9
Kasaragod	Cashew	Herb	41	164	3	139
Kasaragod	Cashew	Shrub	41	1025	2	29
Kasaragod	Cinnamomom	Herb	10	40	2	9
Kasaragod	Cinnamomom	Shrub	10	250	1	9
Kasaragod	Mahagony	Herb	6	24	2	4
Kasaragod	Mahagony	Shrub	6	150	1	5
Kasaragod	MDF	Herb	88	352	10	216
Kasaragod	MDF	Shrub	88	2200	3	101
Kasaragod	MDF	Tree	88	140800	20	319

Kasaragod	Mixed	Herb	35	140	4	84
Kasaragod	Mixed	Shrub	35	875	2	30
Kasaragod	SE	Herb	17	68	4	41
Kasaragod	SE	Shrub	17	425	2	28
Kasaragod	SE	Tree	17	27200	12	93
Kasaragod	Teak	Herb	41	164	6	61
Kasaragod	Teak	Shrub	41	1025	2	23
Kottiyur	MDF	Herb	35	140	12	93
Kottiyur	MDF	Shrub	35	875	3	13
Kottiyur	MDF	Tree	35	56000	8	46
Kottiyur	Mixed	Herb	44	176	7	196
Kottiyur	Mixed	Shrub	44	1100	1	165
Kottiyur	SE	Herb	124	496	13	500
Kottiyur	SE	Shrub	124	3100	3	796
Kottiyur	SE	Tree	124	198400	19	674
Kottiyur	Teak	Herb	7	28	3	15
Taliparamba	Acacia	Herb	8	32	1	12
Taliparamba	Acacia	Shrub	8	200	2	3
Taliparamba	Cashew	Herb	15	60	1	27
Taliparamba	Cashew	Shrub	15	375	1	10
Taliparamba	EG	Herb	50	200	5	88
Taliparamba	EG	Shrub	50	1250	2	66
Taliparamba	EG	Tree	50	60000	13	238
Taliparamba	Grassland	Herb	7	28	2	8
Taliparamba	MDF	Herb	20	80	2	24
Taliparamba	MDF	Shrub	20	500	2	18
Taliparamba	MDF	Tree	20	32000	6	35

Table 1.2.1 Distribution of sample plots in different Forest types in Thrissur Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Number of species encountered	Total Number of individuals enumerated
Acacia	Herb	7	28	5	41
Acacia	Shrub	7	1625	2	34
Cashew	Herb	65	260	25	833
Cashew	Shrub	65	1425	2	130
Eucalyptus	Herb	57	228	22	989
Eucalyptus	Shrub	57	1425	2	130
MDF	Herb	263	1052	53	3237
MDF	Shrub	263	6575	3	2168
MDF	Tree	263	419200	48	4082
Mixed	Herb	21	84	15	298
Mixed	Shrub	21	525	2	132
SE	Herb	2	8	2	12
SE	Shrub	2	8	1	8
SE	Tree	2	3200	12	28
Teak	Herb	42	168	19	498
Teak	Shrub	42	1050	2	174

Table 1.2.2 Distribution of sample plots in different Forest types in Chalakkudy Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Number of species encountered	Total number of individuals enumerated
Cashew	Herb	3	12	6	21
Cashew	Shrub	3	75	2	24
EG	Herb	7	28	12	63
EG	Shrub	7	175	2	26
EG	Tree	7	8400	12	176
MDF	Herb	59	236	32	733
MDF	Shrub	59	1475	3	324
MDF	Tree	59	94400	26	430
SE	Herb	36	144	25	450
SE	Shrub	36	900	3	165
SE	Tree	36	57600	26	298
Teak	Herb	87	348	33	945
Teak	Shrub	87	2175	2	239

Table 1.2.3 Distribution of sample plots in different Forest types in Vazhachal Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
EG	Herb	22	88	11	69
EG	Shrub	22	550	2	157
EG	Tree	22	26400	20	153
MDF	Herb	25	100	19	222
MDF	Shrub	25	625	3	135
MDF	Tree	25	40000	18	149
SE	Herb	119	476	36	512
SE	Shrub	119	2975	5	361
SE	Tree	119	190400	38	652
Teak	Herb	20	80	15	89
Teak	Shrub	20	500	1	62

Table 1.2.4 Distribution of sample plots in Forest different types in Peechi Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
EG	Herb	6	24	9	48
EG	Shrub	6	150	2	14
EG	Tree	6	7200	10	24
MDF	Herb	317	1268	49	7073
MDF	Shrub	317	7925	5	2676
MDF	Tree	317	507200	41	4532
SE	Herb	107	428	33	793
SE	Shrub	107	2675	4	363
SE	Tree	107	171200	36	1112
Teak	Herb	102	408	32	2096
Teak	Shrub	102	2550	3	1339

Table 1.2.5 Distribution of sample plots in different Forest types in Nenmara Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
EG	Herb	20	80	10	44
EG	Shrub	20	500	1	275
EG	Tree	20	24000	8	84
MDF	Herb	17	68	17	127
MDF	Shrub	17	425	3	105



MDF	Tree	17	27200	15	199
SE	Herb	72	288	17	171
SE	Shrub	72	1800	3	601
SE	Tree	72	115200	24	350
Teak	Herb	48	192	21	702
Teak	Shrub	48	1200	2	407

Table 1.2.6 Distribution of sample plots in different Forest types in Palakkad Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
Acacia	Herb	5	20	6	94
Acacia	Shrub	5	125	0	0
EG	Herb	7	28	4	24
EG	Shrub	7	175	1	65
EG	Tree	7	8400	10	32
MDF	Herb	113	452	36	1033
MDF	Shrub	113	2825	2	474
MDF	Tree	113	180800	29	1268
Mixed	Herb	16	64	11	214
Mixed	Shrub	16	400	1	18
SE	Herb	19	76	11	64
SE	Shrub	19	475	2	147
SE	Tree	19	30400	15	161
Teak	Herb	21	84	20	283
Teak	Shrub	21	525	2	37

Table 1.2.7 Distribution of sample plots in different Forest types in Mannarkkad Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
Acacia	Herb	27	108	14	316
Acacia	Shrub	27	675	3	62
Cashew	Herb	19	76	14	171
Cashew	Shrub	19	475	2	56
DDF	Herb	23	92	19	202
DDF	Shrub	23	575	1	3
DDF	Tree	23	36800	10	332
EG	Herb	10	40	6	22
EG	Shrub	10	250	0	0
EG	Tree	10	12000	7	49
MDF	Herb	47	188	32	328
MDF	Shrub	47	1175	3	192

MDF	Tree	47	75200	28	539
SE	Herb	22	88	24	128
SE	Shrub	22	550	2	78
SE	Tree	22	35200	29	254
Teak	Herb	6	24	7	61
Teak	Shrub	6	150	2	4

Table 1.2.8 Distribution of sample plots in different Forest types in Parambikulam Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
EG	Herb	11	44	12	70
EG	Shrub	11	275	0	0
EG	Tree	11	13200	14	56
MDF	Herb	82	328	33	609
MDF	Shrub	64	1600	3	56
MDF	Tree	82	131200	28	564
SE	Herb	21	84	16	171
SE	Shrub	21	525	1	28
SE	Tree	21	33600	20	240
Teak	Herb	2	8	4	21
Teak	Shrub	2	50	0	0

Table 1.2.9 Distribution of sample plots in different Forest types in Nilambur North Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
Bamboo	Herb	7	28	6	40
Bamboo	Shrub	7	175	2	10
EG	Herb	48	192	11	147
EG	Shrub	48	1200	1	57
EG	Tree	48	57600	17	316
MDF	Herb	76	304	29	585
MDF	Shrub	76	1900	4	298
MDF	Tree	76	121600	27	644
Mixed	Herb	30	120	17	141
Mixed	Shrub	30	750	2	96
SE	Herb	12	48	10	108
SE	Shrub	12	300	2	57
SE	Tree	12	19200	19	112
Teak	Herb	110	440	31	1435
Teak	Shrub	110	2750	3	599

Table 1.2.10 Distribution of sample plots in different Forest types in Nilambur South Division

Habitat	Habit	Number of sampled plots	Total area sampled (sq m)	Total number of species encountered	Total number of individuals enumerated
Acacia	Herb	13	52	9	95
Acacia	Shrub	13	325	1	33
Bamboo	Herb	2	8	0	0
Bamboo	Shrub	2	50	0	0
EG	Herb	11	44	7	42
EG	Shrub	11	275	2	18
EG	Tree	11	13200	8	130
MDF	Herb	86	344	22	365
MDF	Shrub	86	2150	3	149
MDF	Tree	86	137600	24	519
SE	Herb	48	192	23	312
SE	Shrub	48	1200	3	38
SE	Tree	48	76800	26	593
Teak	Herb	86	344	27	1167
Teak	Shrub	86	2150	3	482

Table 1.2.11 Distribution of sample plots in different Forest types in Kozhikode Division

Habitat	Habit	Number of sampled plots	Total area sampled (sq m)	Total number of species encountered	Total number of individuals enumerated
MDF	Herb	195	780	21	419
SE	Herb	600	2400	15	1112
EG	Herb	226	904	13	402
Mixed	Herb	15	60	2	19
Teak	Herb	41	164	10	129
MDF	Shrub	195	4875	4	469
SE	Shrub	600	15000	5	1380
EG	Shrub	226	5650	5	577
Teak	Shrub	41	1025	1	37
Mixed	Shrub	15	375	2	6
MDF	Tree	195	312000	22	593
SE	Tree	600	960000	31	1914
EG	Tree	226	271200	23	874

Table 1.2.12 Distribution of sample plots in different Forest types in Wayanad South Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
EG	Herb	30	120	1	48
EG	Shrub	30	750	1	68
EG	Tree	30	36000	8	145
Eucalyptus	Herb	25	100	6	40
Eucalyptus	Shrub	25	625	2	27
Grassland	Herb	43	172	4	28
Grassland	shrub	43	1075	2	17
MDF	Herb	61	244	7	162
MDF	Shrub	61	1525	4	150
MDF	Tree	61	97600	18	326
Savanah	Herb	32	128	8	33
Savanah	Shrub	32	800	2	5
Savanah	Tree	32	51200	4	22
SE	Herb	52	208	9	134
SE	shrub	52	1300	1	271
SE	Tree	52	83200	13	253
Shola	Herb	11	44	2	23
Shola	Shrub	11	275	2	30
Shola	Tree	11	17600	5	53
Teak	Herb	25	100	4	57
Teak	Shrub	25	625	2	34

Table 1.2.13 Distribution of sample plots in different Forest types in Wayanad North Division

Habitat	Habit	Number of sampled plots	Total area sampled (sq m)	Total number of species encountered	Total number of individuals enumerated
Acacia	Herb	9	36	2	6
Acacia	Shrub	9	225	1	18
Cashew	Herb	3	12	1	7
Cashew	Shrub	3			
EG	Herb	32	128	4	100
EG	Shrub	32	800	1	130
EG	Tree	32	38400	14	210
Eucalyptus	Herb	17	68	7	45
Eucalyptus	Shrub				
Grassland	Herb	5	20	3	11

Grassland	Shrub	5			
MDF	Herb	16	64	8	152
MDF	Shrub	16	400	2	31
MDF	Tree	16	25600	11	83
Pine	Herb	8	32	1	4
Pine	Shrub	8	200	1	23
SE	Herb	60	240	12	262
SE	Shrub	60	1500	4	276
SE	Tree	60	96000	20	300
Teak	Herb	62	248	8	328
Teak	Shrub	62	1550	2	129

Table 1.2.14 Distribution of sample plots in different Forest types in Wayanad WLS Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
DDF	Herb	32	128	10	328
DDF	Shrub	32	800	2	103
DDF	Tree	32	51200	12	191
EG	Herb	13	52	2	34
EG	Tree	13	15600	5	123
Eucalyptus	Herb	25	100	9	152
Eucalyptus	Shrub	25	625	2	21
MDF	Herb	165	660	23	1447
MDF	Shrub	165	4125	4	512
MDF	Tree	165	264000	28	975
SE	Herb	26	104	14	416
SE	Shrub	26	650	2	274
SE	Tree	26	41600	16	163
Teak	Herb	111	444	20	1589
Teak	Shrub	111	2775	5	332

Table 1.2.15 Distribution of sample plots in different Forest types in Kannur Division

Habitat	Habit	Number of sampled plots	Total area sampled(sq m)	Total number of species encountered	Total number of individuals enumerated
Acacia	Herb	18	72	5	282
Acacia	Shrub	18	450	2	717
Cashew	Herb	90	360	4	1242

Cashew	Shrub	90	2250	2	41
Cinnamomum	Herb	10	40	2	9
Cinnamomum	Shrub	10	250	1	9
EG	Herb	137	548	6	112
EG	Shrub	137	3425	2	467
EG	Tree	137	164400	18	636
Grassland	Herb	17	68	3	30
Mahagony	Herb	26	104	5	52
Mahagony	Shrub	26	650	3	580
MDF	Herb	429	1716	25	1230
MDF	Shrub	429	10725	6	1079
MDF	Tree	429	686400	32	1385
Mixed	Herb	123	492	14	310
Mixed	Shrub	123	3075	4	60
SE	Herb	206	824	16	717
SE	Shrub	206	5150	4	17
SE	Tree	206	329600	25	1055
Teak	Herb	61	244	8	1055
Teak	Shrub	61	1525	2	1384

**Table 2.1 Thickness prediction equation for the quantification of bark**

No	Species	n	Range		CF*	Prediction equation ** [Log(thickness +2) =]	MSE***	Adj.R <sup>2</sup>	Furnival index
			Diameter (cm)	Thickness (cm)					
1	Acacia caesia	115	2.55 - 23.23	0.2 - 0.9	0.4455	0.793 LogD - 0.165(LogD) <sup>2</sup>	0.0042	0.995	0.1609
2	Acacia pennata	40	4.45 - 16.86	0.3 - 0.8	0.3778	0.76 LogD - 0.147 (LogD) <sup>2</sup>	0.0016	0.998	0.0220
3	Lagerstroemia reginae	102	6.68 - 51.86	0.1 - 0.9	0.3234	0.564 LogD - 0.0844(LogD) <sup>2</sup>	0.0032	0.996	0.1401
4	Holarrhena antidysenterica	70	1.91 - 22.91	0.1 - 1.1	0.3385	0.648Ln(D+2)-0.103cLn(D+2) <sup>2</sup>	0.0028	0.997	0.1341
5	Pongamia pinnata	41	7.64 - 27.36	0.2 - 0.6	0.4172	0.558LogD - 0.0871(LogD) <sup>2</sup>	0.0075	0.999	0.0649
6	Acacia torta	48	4.14 - 17.18	0.2 - 0.8	0.4273	0.772LogD - 0.157(LogD) <sup>2</sup>	0.0028	0.997	0.0530
7	Alstonia scholaris	58	4.77 - 134.27	0.2 - 1.2	0.2625	0.474 LogD - 0.0526(LogD) <sup>2</sup>	0.0060	0.994	0.0242
8	Bauhinia malabarica	46	6.05 - 48.68	0.3 - 1.7	0.5668	0.55 LogD - 0.0604(LogD) <sup>2</sup>	0.0050	0.996	0.1324
9	Butea monosperma	57	4.77 -100.23	0.3-1.3	0.3585	0.613LogD - 0.0844(LogD) <sup>2</sup>	0.0053	0.995	0.2113
10	Cassia fistula	45	5.41 - 39.45	0.2-1.2	0.3407	0.544LogD - 0.0694(LogD) <sup>2</sup>	0.0070	0.993	0.0809
11	Cinnamomum sp.	46	5.09 - 133.64	0.3 - 2.8	0.1744	0.435LogD - 0.0282(LogD) <sup>2</sup>	0.0008	0.995	0.1069
12	Holoptelea integrifolia	52	9.55 - 99.59	0.6 - 1.4	0.4044	0.533LogD - 0.0629(LogD) <sup>2</sup>	0.0030	0.997	0.0588
13	Persea macrantha	47	7.00 - 116.45	0.3 - 2.1	0.3265	0.406LogD - 0.0251(LogD) <sup>2</sup>	0.0047	0.997	0.0825
14	Spondias pinnata	48	13.36 - 22.50	0.4 - 1.6	0.3184	0.371LogD - 0.0241(LogD) <sup>2</sup>	0.0021	0.998	0.0496
15	Bauhinia racemosa	40	8.27 - 59.82	0.3 - 1.4	0.6052	0.463LogD - 0.0435(LogD) <sup>2</sup>	0.0035	0.997	0.0606
16	Ficus racemosa	52	14.32 -135.23	0.2 - 0.9	0.5502	0.376LogD - 0.0365(LogD) <sup>2</sup>	0.0039	0.995	0.0570

\* CF- Conversion Factor (dry weight/green volume)

\*\* Predicts thickness in cm using diameter measurement

\*\*\* MSE- Mean Square Error

A correction factor of MSE/2 has to be added to the predicted value before transforming to the original units in the case of equation involving dependent variable in logarithmic scale

**Table 2.2 Prediction equation for quantification of leaves**

Species	n	Diameter Range(cm)	Prediction equation	MSE*	Adj.R2	Furnival index
Wrightia tinctoria	29	2.55 - 28	$\text{Log}(\text{Weight (gm)}) = 6.321 \text{ LogD} - 1.057 \text{ LogD}^2$	0.702	0.99	0.846317578
* MSE- Mean Sqaure Error						
A correction factor of MSE/2 has to be added to the predicted value before transforming to the original units in the case of equation involving dependent variable in logarithmic scale						

**Table 2.3 Prediction equation for quantification of fruits**

SI No	Species	n	Diameter Range(cm)	Prediction equation	MSE*	Adj.R2	Furnival index
1	Acacia sinuata	32	4.77-21	$\text{Weight}(\text{in gms}) = 530.729*d - 18.076*d*d$	879354.50	0.93	937.74
2	Helicteres isora	24	1.27-10.82	$\text{Ln}(\text{Weight}(\text{in gms})) = 2.682*\text{Ln}(D+2)$	0.38	0.99	88.69
3	Sarcostigma kleinii	24	8.5909-21.3182	$\text{Weight}(\text{in gms}) = 611.093*d$	1616266.49	0.98	1271.32
* MSE- Mean Sqaure Error							
A correction factor of MSE/2 has to be added to the predicted value before transforming to the original units in the case of equation involving dependent variable in logarithmic scale							



**Table 3.1.1 Density, abundance and frequency of *Amorphophallus paeoniifolius*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful products (corm) (kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Chalakkudy	Palappilly	Teak	174.42	3.00	0.0233	127.0762	65.8413	188.3110	51.4831	27.4203	75.5459
	Vellikkulangara	Teak	234.38	1.50	0.0625	170.7586	88.4742	253.0430	69.1805	36.8461	101.5148
	Overall	Teak	172.41	2.00	0.0345	125.6155	65.0845	186.1466	50.8914	27.1052	74.6776
Vazhachal	Kollathirumedu	SE	75.76	1.00	0.0303	55.1947	28.5977	81.7917	22.3614	11.9098	32.8129
	Sholayar	SE	476.19	2.67	0.0714	346.9381	179.7571	514.1190	140.5571	74.8619	206.2524
	Vazhachal	MDF	454.55	2.00	0.0909	331.1682	171.5864	490.7500	134.1682	71.4591	196.8773
	Overall	SE	189.08	2.25	0.0336	137.7548	71.3742	204.1355	137.7548	71.3742	204.1355
		MDF	200.00	2.00	0.0400	145.7140	75.4980	215.9300	59.0340	31.4420	86.6260
Peechi	Chimmini	SE	60.98	2.00	0.0122	44.4250	23.0177	65.8323	17.9982	9.5860	26.4104
	Peechi	MDF	64.10	1.75	0.0147	46.7032	24.1981	69.2083	18.9212	10.0776	27.7647
	Overall	MDF	55.21	1.75	0.0126	40.2207	20.8394	59.6021	16.2949	8.6788	23.9110
		SE	46.73	2.00	0.0093	34.0453	17.6397	50.4509	13.7930	7.3463	20.2397
Mannarkkad	Agali	SE	192.31	1.00	0.0769	140.1096	72.5942	207.6250	56.7635	30.2327	83.2942
	Overall	SE	113.64	1.00	0.0455	82.7920	42.8966	122.6875	33.5420	17.8648	49.2193
Parambikulam	Sungam	MDF	182.93	1.50	0.0488	133.2750	69.0530	197.4970	53.9945	28.7579	79.2311
		EG	227.27	1.00	0.0909	165.5841	85.7932	245.3750	67.0841	35.7295	98.4386
	Overall	MDF	91.46	1.50	0.0244	66.6375	34.5265	98.7485	26.9973	14.3790	39.6155
		EG	227.27	1.00	0.0909	165.5841	85.7932	245.3750	67.0841	35.7295	98.4386
Kannur	Kasaragod	MDF	56.82	1.00	0.0227	41.3960	21.4483	61.3438	16.7710	8.9324	24.6097
		Acacia	1500.00	1.50	0.4000	1092.8550	566.2350	1619.4750	442.7550	235.8150	649.6950
	Overall	MDF	11.66	1.00	0.0047	8.4915	4.3997	12.5833	3.4402	1.8323	5.0481
		Acacia	833.33	1.50	0.2222	607.1417	314.5750	899.7083	245.9750	131.0083	360.9417

LCL- Lower Confidence Limit, UCL- Upper Confidence Limit

**Table 3.1.2 Density, abundance and frequency of *Aristolochia indica*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products (Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	45.18	1.00	0.0181	0.5431	0.3587	0.7274	0.1943	0.1370	0.2516
		Teak	71.43	1.00	0.0286	0.8586	0.5671	1.1500	0.3071	0.2166	0.3977
	Wadakkancherry	MDF	416.67	1.00	0.1667	5.0083	3.3083	6.7083	1.7917	1.2634	2.3199
		Cashew	500.00	1.44	0.1385	6.0100	3.9700	8.0500	2.1500	1.5161	2.7839
		Eucalyptus	526.32	2.40	0.0877	6.3263	4.1789	8.4737	2.2632	1.5959	2.9304
	Overall	MDF	38.02	1.00	0.0152	0.4570	0.3019	0.6122	0.1635	0.1153	0.2117
		Teak	59.52	1.00	0.0238	0.7155	0.4726	0.9583	0.2560	0.1805	0.3314
		Cashew	500.00	1.44	0.1385	6.0100	3.9700	8.0500	2.1500	1.5161	2.7839
Eucalyptus		526.32	2.40	0.0877	6.3263	4.1789	8.4737	2.2632	1.5959	2.9304	
Chalakkudy	Palappilly	Teak	58.14	1.00	0.0233	0.6988	0.4616	0.9360	0.2500	0.1763	0.3237
	Vellikulangara	Teak	78.13	1.00	0.0313	0.9391	0.6203	1.2578	0.3359	0.2369	0.4350
	Overall	Teak	57.47	1.00	0.0230	0.6908	0.4563	0.9253	0.2471	0.1743	0.3200
Palakkad	Ottappalam	Teak	166.67	1.00	0.0667	2.0033	1.3233	2.6833	0.7167	0.5054	0.9280
	Overall	Teak	119.05	1.00	0.0476	1.4310	0.9452	1.9167	0.5119	0.3610	0.6628
Mannarkkad	Agali	DDF	326.09	3.00	0.0435	3.9196	2.5891	5.2500	1.4022	0.9888	1.8156
	Mannarkkad	MDF	500.00	2.00	0.1000	6.0100	3.9700	8.0500	2.1500	1.5161	2.7839
		Cashew	1052.63	2.67	0.1579	12.6526	12.6526	16.9474	4.5263	4.5263	5.8608
		Acacia	740.74	2.00	0.1481	8.9037	5.8815	11.9259	3.1852	2.2461	4.1243
	Overall	MDF	212.77	2.00	0.0426	2.5574	1.6894	3.4255	0.9149	0.6451	1.1846
		DDF	326.09	3.00	0.0435	3.9196	2.5891	5.2500	1.4022	0.9888	1.8156
		Cashew	1052.63	2.67	0.1579	12.6526	12.6526	16.9474	4.5263	4.5263	5.8608
Acacia		740.74	2.00	0.1481	8.9037	5.8815	11.9259	3.1852	2.2461	4.1243	
Nilambur(n)	Vazhikkadavu	Teak	65.79	1.00	0.0263	0.7908	0.5224	1.0592	0.2829	0.1995	0.3663
	Overall	Teak	22.73	1.00	0.0091	0.2732	0.1805	0.3659	0.0977	0.0689	0.1265

**Table 3.1.3 Density, abundance and frequency of *Asparagus racemosus*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	60.24	2.00	0.0120	2.2235	1.7307	2.7163	1.7048	1.2904	2.1193
	Overall	MDF	38.02	2.00	0.0076	1.4034	1.0924	1.7144	1.0760	0.8144	1.3376
Chalakkudy	Vellikkulangara	MDF	92.59	1.00	0.0370	3.4176	2.6602	4.1750	2.6204	1.9833	3.2574
	Overall	MDF	42.37	1.00	0.0169	1.5640	1.2174	1.9106	1.1992	0.9076	1.4907
Peechi	Chimmini	MDF	56.82	1.00	0.0227	2.0972	1.6324	2.5619	1.6080	1.2170	1.9989
		SE	60.98	2.00	0.0122	2.2506	1.8128	2.7494	1.7256	1.3061	2.1451
	Peechi	Teak	49.02	1.00	0.0196	1.8093	1.4083	2.2103	1.3873	1.7245	1.0500
		MDF	100.73	1.57	0.0256	3.7180	2.8940	4.5420	2.8507	2.1577	3.5438
		SE	100.00	1.00	0.0400	3.6910	2.8730	4.5090	2.8300	2.1420	3.5180
	Overall	MDF	94.64	1.50	0.0252	3.2020	2.4924	3.9116	2.4550	1.8582	3.0519
		SE	70.09	1.50	0.0187	1.7248	1.3425	2.1070	1.3224	1.0009	1.6439
		Teak	49.02	1.00	0.0196	1.8093	1.4083	2.2103	1.3873	1.7245	1.0500
Palakkad	Walayar	MDF	51.02	1.00	0.0204	1.8832	1.4658	2.3005	1.4439	1.0929	1.7949
	Overall	MDF	22.12	1.00	0.0089	0.8166	0.6356	0.9976	0.6261	0.4739	0.7783
Mannarkkad	Agali	DDF	217.39	2.00	0.0435	8.0239	6.2457	9.8022	6.1522	4.6565	7.6478
		MDF	416.67	1.00	0.1667	15.3792	11.9708	18.7875	11.7917	8.9250	14.6583
		SE	384.62	1.00	0.1538	14.1962	11.0500	17.3423	10.8846	8.2385	13.5308
	Mannarkkad	MDF	125.00	1.00	0.0500	4.6138	3.5913	5.6363	3.5375	2.6775	4.3975
	Overall	MDF	106.38	1.00	0.0426	1.9633	1.5282	2.3984	1.5053	1.1394	1.8713
		DDF	217.39	2.00	0.0435	8.0239	6.2457	9.8022	6.1522	4.6565	7.6478
SE		227.27	1.00	0.0909	8.3886	6.5295	10.2477	6.4318	4.8682	7.9955	
Parambikulam	Sungam	MDF	365.85	2.00	0.0732	13.5037	10.5110	16.4963	10.3537	7.8366	12.8707
	Overall	MDF	182.93	2.00	0.0366	6.7518	5.2555	8.2482	5.1768	3.9183	6.4354
Nilambur(N)	Edavanna	MDF	161.29	2.00	0.0323	5.9532	4.6339	7.2726	4.5645	3.4548	5.6742
	Vazhikkadavu	MDF	65.79	1.00	0.0263	2.4283	1.8901	2.9664	1.8618	1.4092	2.3145

	Overall	Teak	394.74	2.00	0.0789	14.5697	11.3408	17.7987	11.1711	8.4553	13.8868
		MDF	98.68	1.50	0.0263	3.6424	2.8352	4.4497	2.7928	2.1138	3.4717
		Teak	136.36	2.00	0.0273	5.0332	3.9177	6.1486	3.8591	2.9209	4.7973
Nilambur(S)	Kalikavu	MDF	1428.57	1.33	0.4286	52.7286	41.0429	64.4143	40.4286	30.6000	50.2571
		Acacia	576.92	1.00	0.2308	21.2942	16.5750	26.0135	16.3269	12.3577	20.2962
	Overall	MDF	189.87	3.00	0.0253	7.0082	5.4551	8.5614	5.3734	4.0671	6.6797
		Acacia	576.92	1.00	0.2308	21.2942	16.5750	26.0135	16.3269	12.3577	20.2962
		MDF	290.70	2.00	0.0581	10.7297	8.3517	13.1076	8.2267	6.2267	10.2267
Wayanad (N)	Begur	SE	454.55	2.00	0.0909	16.7773	13.0591	20.4955	12.8636	9.7364	15.9909
		Teak	80.65	1.00	0.0323	2.9766	2.3169	3.6363	2.2823	1.7274	2.8371
	Mananthavady	MDF	6666.67	3.43	0.7778	246.0667	191.5333	300.6000	188.6667	142.8000	234.5333
		Grassland	2000.00	1.33	0.6000	73.8200	57.4600	90.1800	56.6000	42.8400	70.3600
	Periya	SE	156.25	1.00	0.0625	5.7672	4.4891	7.0453	4.4219	3.3469	5.4969
		Eucalyptus	147.06	1.00	0.0588	5.4279	4.2250	6.6309	4.1618	3.1500	5.1735
	Overall	MDF	3750.00	3.43	0.4375	123.0333	95.7667	150.3000	94.3333	71.4000	117.2667
		SE	291.67	1.75	0.0667	10.7654	8.3796	13.1513	8.2542	6.2475	10.2608
		Eucalyptus	147.06	1.00	0.0588	5.4279	4.2250	6.6309	4.1618	3.1500	5.1735
		Grassland	2000.00	1.33	0.6000	73.8200	57.4600	90.1800	56.6000	42.8400	70.3600
		Teak	80.65	1.00	0.0323	2.9766	2.3169	3.6363	2.2823	1.7274	2.8371
	Wayanad (S)	Chedleth	MDF	245.90	2.00	0.0492	9.0762	7.0648	11.0877	6.9590	5.2672
SE			555.56	1.50	0.1481	20.5056	15.9611	25.0500	15.7222	11.9000	19.5444
Kalpetta		Grassland	92.59	1.00	0.0370	3.4176	2.6602	4.1750	2.6204	1.9833	3.2574
		Eucalyptus	400.00	2.00	0.0800	14.7640	11.4920	18.0360	11.3200	8.5680	14.0720
Meppady		SE	900.00	1.50	0.2400	33.2190	25.8570	40.5810	25.4700	19.2780	31.6620
		Grassland	312.50	1.00	0.1250	11.5344	8.9781	14.0906	8.8438	6.6938	10.9938
		Savanah	234.38	1.00	0.0938	8.6508	6.7336	10.5680	6.6328	5.0203	8.2453
Overall		Eucalyptus	400.00	2.00	0.0800	14.7640	11.4920	18.0360	11.3200	8.5680	14.0720
		MDF	245.90	2.00	0.0492	9.0762	7.0648	11.0877	6.9590	5.2672	8.6508
	SE	721.15	1.50	0.1923	26.6178	20.7188	32.5168	20.4087	15.4471	25.3702	

		Grassland	174.42	1.00	0.0698	6.4378	5.0110	7.8645	4.9360	3.7360	6.1360
		Savanah	234.38	1.00	0.0938	8.6508	6.7336	10.5680	6.6328	5.0203	8.2453
Wayanad WLS	Muthanga	Teak	441.18	1.00	0.1765	16.2838	12.6750	19.8926	12.4853	9.4500	15.5206
		Eucalyptus	1500.00	3.00	0.2000	55.3650	43.0950	67.6350	42.4500	36.6300	52.7700
	S. Bathery	MDF	1637.93	2.38	0.2759	60.4560	47.0578	73.8543	46.3534	35.0845	57.6224
	Tholpetty	MDF	375.00	1.50	0.1000	13.8413	10.7738	16.9088	10.6125	8.0325	13.1925
		Teak	227.27	1.00	0.0909	8.3886	6.5295	10.2477	6.4318	4.8682	7.9955
	Kurichiyath	SE	192.31	2.00	0.0385	7.0981	5.5250	8.6712	5.4423	4.1192	6.7654
		DDF	131.58	1.00	0.0526	4.8566	3.7803	5.9329	3.7237	2.8184	4.6289
		Teak	2285.71	2.29	0.4000	84.3657	65.6686	103.0629	64.6857	48.9600	80.4114
	Overall	MDF	378.79	2.08	0.0727	13.9811	10.8826	17.0795	10.7197	8.1136	13.3258
		DDF	78.13	1.00	0.0313	2.8836	2.2445	3.5227	2.2109	1.6734	2.7484
		Teak	855.86	1.90	0.1802	31.5896	24.5887	38.5905	24.2207	18.3324	30.0902
		Eucalyptus	1200.00	3.00	0.1600	44.2920	34.4760	54.1080	33.9600	25.7040	42.2160
SE		192.31	2.00	0.0385	7.0981	5.5250	8.6712	5.4423	4.1192	6.7654	
Kannur	Kannavam	MDF	185.71	1.30	0.0571	6.8547	5.3356	8.3739	0.7986	0.5631	1.0340
		Mixed	56.82	1.00	0.0227	2.0972	1.6324	2.5619	1.6080	1.2170	1.9989
	Kottiyur	Mixed	113.64	1.00	0.0455	4.1943	3.2648	5.1239	3.2159	2.4341	3.9977
	Kanjangad	SE	71.43	1.00	0.0286	2.6364	2.0521	3.2207	2.0214	1.5300	2.5129
		MDF	157.66	1.17	0.0541	5.8191	4.5295	7.1088	4.4617	3.3770	5.5464
	Taliparamba	EG	150.00	1.50	0.0400	5.5365	4.3095	6.7635	4.2450	3.2130	5.2770
		MDF	750.00	1.50	0.2000	27.6825	21.5475	33.8175	21.2250	16.0650	26.3850
	Overall	EG	54.74	1.50	0.0146	2.0206	1.5728	2.4684	1.5493	1.1726	1.9259
		SE	12.14	1.00	0.0049	0.4479	0.3487	0.5472	0.3434	0.2600	0.4269
		MDF	151.52	1.30	0.0466	5.5924	4.3530	6.8318	4.2879	3.2455	5.3303
Mixed		60.98	1.00	0.0244	2.2506	1.7518	2.7494	1.7256	1.3061	2.1451	
Kozhikode	Thamarassery	EG	13.7363	1	0.005495	0.507005	0.394643	0.619368	0.388736	0.294231	0.483242
		MDF	89.2857	1	0.035714	3.295536	2.565179	4.025893	2.526786	1.9125	3.141071

**Table 3.1.4 Density, abundance and frequency of *Baliospermum montanum*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products (Root) (kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	557.23	4.63	0.0482	16.5330	10.2474	22.8185	4.7476	3.6778	5.8174
		Teak	71.43	1.00	0.0286	2.1193	1.3136	2.9250	0.6086	0.4714	0.7457
	Pattikkad	MDF	137.36	2.50	0.0220	4.0755	2.5261	5.6250	1.1703	0.9066	1.4340
	Wadakkancherry	Cashew	2269.23	8.43	0.1077	67.3281	41.7312	92.9250	19.3338	14.9774	23.6903
	Overall	MDF	399.24	4.20	0.0380	11.8454	7.3420	16.3489	3.4015	2.6351	4.1680
		Teak	59.52	1.00	0.0238	1.7661	1.0946	2.4375	0.5071	0.3929	0.6214
Cashew		2269.23	8.43	0.1077	67.3281	41.7312	92.9250	19.3338	14.9774	23.6903	
Chalakkudy	Vellikkulangara	MDF	370.37	4.00	0.0370	10.9889	6.8111	15.1667	3.1556	2.4445	3.8666
	Overall	MDF	169.49	4.00	0.0169	5.0288	3.1169	6.9407	1.4441	1.1187	1.7695
Peechi	Peechi	Teak	318.63	1.30	0.0980	9.4537	5.8596	13.0478	2.7147	2.1030	3.3264
		MDF	283.88	1.72	0.0659	8.4228	5.2206	11.6250	2.4187	1.8737	2.9637
		SE	200.00	2.00	0.0400	5.9340	3.6780	8.1900	1.7040	1.3200	2.0880
	Overall	MDF	244.48	1.72	0.0568	7.2537	4.4960	10.0114	2.0830	1.6136	10.0114
		SE	46.73	2.00	0.0093	1.3864	0.8593	1.9136	0.3981	0.3084	0.4878
		Teak	318.63	1.30	0.0980	9.4537	5.8596	13.0478	2.7147	2.1030	3.3264
Mannarkkad	Attappady	MDF	1547.62	4.33	0.1429	45.9179	28.4607	63.3750	13.1857	10.2146	16.1568
	Overall	MDF	691.49	4.33	0.0638	20.5165	12.7165	28.3165	5.8915	4.5640	7.2190
Wayanad WLS	Tholpetty	MDF	125.00	2.00	0.0250	3.7088	2.2988	5.1188	1.0650	0.8250	1.3050
		Teak	984.85	2.17	0.1818	29.2205	18.1114	40.3295	8.3909	6.5002	10.2814
	Kurichiyath	Teak	1285.71	3.60	0.1429	38.1471	23.6443	52.6500	10.9543	8.4860	13.4226
	Overall	MDF	30.30	2.00	0.0061	0.8991	0.5573	1.2409	0.2582	0.2000	0.3164
		Teak	698.20	2.82	0.0991	20.7155	12.8399	28.5912	5.9486	4.6082	7.2891

**Table 3.1.5 Density, abundance and frequency of *Barleria prattensis*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	557.23	3.08	0.0723	1.4767	1.1694	1.7839	0.6742	0.4968	0.8517
	Overall	MDF	351.71	3.08	0.0456	0.9320	0.7381	1.1260	0.4256	0.3136	0.5376
Chalakkudy	Vellikkulangara	SE	2777.78	5.00	0.2222	7.3611	5.8294	8.8928	3.3611	2.4767	4.2456
		MDF	3703.70	3.33	0.4444	9.8148	7.7726	11.8570	4.4815	3.3022	5.6607
	Overall	MDF	1694.92	3.33	0.2034	4.4915	3.5569	5.4261	2.0508	1.5112	2.5905
		SE	2083.33	5.00	0.1667	5.5208	4.3721	6.6696	2.5208	1.8575	3.1842
Palakkad	Olavakkode	MDF	78.13	2.00	0.0156	0.2070	0.1640	0.2501	0.0945	0.0697	0.1194
	Overall	MDF	44.25	2.00	0.0089	0.1173	0.0929	0.1417	0.0535	0.0395	0.0676
Mannarkkad	Mannarkkad	Acacia	185.19	2.00	0.0370	0.4907	0.3886	0.5929	0.2241	0.1651	0.2830
	Overall	Acacia	185.19	2.00	0.0370	0.4907	0.3886	0.5929	0.2241	0.1651	0.2830

**Table 3.1.6 Density, abundance and frequency of *Biophytum spp*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability of useful Products(Entire plant) (kg/ha)		
						Estimate	LCL	UCL
Thrissur	Machad	MDF	1400.60	3.88	0.1446	0.3992	0.3642	0.4342
		Teak	1214.29	3.40	0.1429	0.3461	0.3157	0.3764
		Mixed	2619.05	22.00	0.0476	0.7464	0.6810	0.8119
	Pattikkad	MDF	9120.88	7.72	0.4725	2.5838	2.3571	2.8104
	Wadakkancherry	Eucalyptus	43.86	1.00	0.0175	0.0125	0.0114	0.0136
	Overall	MDF	4039.92	6.34	0.2548	1.1460	1.0454	1.2465
		Teak	1011.90	3.40	0.1190	0.2884	0.2631	0.3137
		Mixed	2619.05	22.00	0.0476	0.7464	0.6810	0.8119
		Eucalyptus	43.86	1.00	0.0175	0.0125	0.0114	0.0136

Chalakkudy	Palappilly	Teak	6511.63	6.22	0.4186	1.4581	1.3302	1.5860
	Pariyaram	MDF	10078.13	9.21	0.4375	2.8723	2.6203	3.1242
		Cashew	4166.67	5.00	0.3333	1.1875	1.0833	1.2917
		SE	1666.67	2.00	0.3333	0.4750	0.5167	0.5167
		Teak	8750.00	8.40	0.4167	2.0869	2.2750	2.2750
	Vellikulangara	SE	1666.67	4.50	0.1481	0.4750	0.4333	0.5167
		MDF	11388.89	11.18	0.4074	3.2458	2.9611	3.5306
		Teak	10000.00	8.53	0.4688	2.8500	2.6000	3.1000
	Overall	MDF	10677.97	10.08	0.4237	1.5578	1.4212	1.6945
		SE	1666.67	3.43	0.1944	0.1188	0.3250	0.3875
		Teak	8103.45	7.42	0.4368	0.5405	1.6138	1.9241
Vazhachal	Charpa	Teak	208.33	1.00	0.0833	0.0594	0.0542	0.0646
	Kollathirumedu	SE	454.55	6.00	0.0303	0.1295	0.1182	0.1409
	Overall	SE	126.05	6.00	0.0084	0.0359	0.0328	0.0391
		Teak	125.00	1.00	0.0500	0.0356	0.0325	0.0388
Peechi	Chimmiqi	MDF	2840.91	16.67	0.0682	0.8097	0.7386	0.8807
		SE	274.39	4.50	0.0244	0.0782	0.0713	0.0851
	Peechi	EG	11666.67	28.00	0.1667	3.3250	3.0333	3.6167
		Teak	3333.33	7.16	0.1863	0.9500	0.8667	1.0333
		MDF	11556.78	13.01	0.3553	3.2937	3.0048	3.5826
		SE	12300.00	12.30	0.4000	3.5055	3.1980	3.8130
	Overall	MDF	10347.00	13.12	0.3155	2.9489	2.6902	3.2076
		SE	3084.11	11.00	0.1122	0.8790	0.8019	0.9561
		EG	11666.67	28.00	0.1667	3.3250	3.0333	3.6167
		Teak	3333.33	7.16	0.1863	0.9500	0.8667	1.0333



Nenmara	Alathur	SE	5000.00	4.00	0.5000	1.4250	1.3000	1.5500
		MDF	40000.00	16.00	1.0000	11.4000	10.4000	12.4000
		Teak	13205.13	17.17	0.3077	3.7635	3.4333	4.0936
	Kollengode	MDF	1166.67	3.50	0.1333	0.3325	0.3033	0.3617
		Teak	19444.44	23.33	0.3333	5.5417	5.0556	6.0278
	Overall	SE	138.89	4.00	0.0139	0.0396	0.0361	0.0431
		MDF	5735.29	9.75	0.2353	1.6346	1.4912	1.7779
Teak		14375.00	18.40	0.3125	4.0969	3.7375	4.4563	
Palakkad	Olavakkode	MDF	1679.69	5.38	0.1250	0.4787	0.4367	0.5207
	Overall	MDF	951.33	5.38	0.0708	0.2711	0.2473	0.2949
Mannarkkad	Attappady	MDF	3214.29	13.50	0.0952	0.9161	0.8357	0.9964
	Overall	MDF	1436.17	13.50	0.0426	0.4093	0.3734	0.4452
Parambikulam	Karimala	MDF	3750.00	6.75	0.2222	1.0688	0.9750	1.1625
		SE	1666.67	4.00	0.1667	0.4750	0.4333	0.5167
	Parambikulam	MDF	9000.00	18.00	0.2000	2.5650	2.3400	2.7900
		SE	2500.00	3.75	0.2667	0.7125	0.6500	0.7750
	Orukomban	MDF	5694.44	5.86	0.3889	1.6229	1.4806	1.7653
	Sungam	EG	2045.45	9.00	0.0909	0.5830	0.5318	0.6341
		MDF	2621.95	7.17	0.1463	0.7473	0.6817	0.8128
	Overall	MDF	3932.93	7.17	0.2195	1.1209	1.0226	1.2192
		EG	2045.45	9.00	0.0909	0.5830	0.5318	0.6341
		SE	2261.90	3.80	0.2381	0.6446	0.5881	0.7012
Wayanad N	Begur	Teak	645.16	2.67	0.0968	0.1839	0.1677	0.2000
	Mananthavady	MDF	1666.67	6.00	0.1111	0.4750	0.4333	0.5167
		SE	4545.45	6.67	0.2727	1.2955	1.1818	1.4091
	Overall	MDF	937.50	6.00	0.0625	0.2672	0.2438	0.2906

		SE	833.33	6.67	0.0500	0.2375	0.2167	0.2583
		Teak	645.16	2.67	0.0968	0.1839	0.1677	0.2000
Wayanad S	Kalpetta	Grassland	462.96	1.67	0.1111	0.1319	0.1204	0.1435
	Meppady	Savanah	156.25	1.00	0.0625	0.0445	0.0406	0.0484
	Overall	Grassland	290.70	1.67	0.0698	0.0828	0.0756	0.0901
		Savanah	156.25	1.00	0.0625	0.0445	0.0406	0.0484
Wayanad WLS	Muthanga	MDF	500.00	1.67	0.1200	0.1425	0.1300	0.1550
		Teak	4705.88	5.33	0.3529	1.3412	1.2235	1.4588
	S. Bathery	MDF	517.24	6.00	0.0345	0.1474	0.1345	0.1603
		DDF	2500.00	6.50	0.1538	0.7125	0.6500	0.7750
		Teak	2692.31	7.00	0.1538	0.7673	0.7000	0.8346
	Tholpetty	MDF	625.00	5.00	0.0500	0.1781	0.1625	0.1938
	Kurichiyath	SE	5000.00	4.73	0.4231	1.4250	1.3000	1.5500
		DDF	6315.79	8.00	0.3158	1.8000	1.6421	1.9579
		Teak	20714.29	11.15	0.7429	5.9036	5.3857	6.4214
	Overall	MDF	393.94	2.89	0.0545	0.1123	0.1024	0.1221
		DDF	4765.63	7.63	0.2500	1.3582	1.2391	1.4773
		SE	5000.00	4.73	0.4231	1.4250	1.3000	1.5500
		Teak	7882.88	9.72	0.3243	2.2466	2.0496	2.4437

**Table 3.1.7 Density, abundance and frequency of *Boerhavia diffusa*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Mannarkkad	Agali	DDF	652.17	3.00	0.0870	33.6978	16.7152	50.6804	11.1587	8.5891	13.7283
	Mannarkkad	Acacia	185.19	2.00	0.0370	9.5685	4.7463	0.5929	3.1685	2.4389	3.8981
	Overall	DDF	652.17	3.00	0.0870	33.6978	16.7152	50.6804	11.1587	8.5891	13.7283

		Acacia	185.19	2.00	0.0370	9.5685	4.7463	0.5929	3.1685	2.4389	3.8981
Parambikulam	Sungam	MDF	121.95	1.00	0.0488	6.3012	3.1256	9.4768	2.0866	1.6061	2.5671
	Overall	MDF	60.98	1.00	0.0244	3.1506	1.5628	4.7384	1.0433	0.8030	1.2835
Nilambur(N)	Nilambur	Teak	243.06	2.33	0.0417	12.5587	6.2295	18.8878	4.1587	3.2010	5.1163
	Overall	Teak	243.06	2.33	0.0417	12.5587	6.2295	18.8878	4.1587	3.2010	5.1163

**Table 3.1.8 Density, abundance and frequency of *Costus speciosus*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products (Rhizome)( kg/ha)			
						Estimate	LCL	UCL	Estimate	LCL	UCL	
Thrissur	Machad	MDF	165.66	2.20	0.0301	7.1053	5.8661	8.3444	3.7274	2.7699	4.6849	
	Pattikkad	MDF	412.09	3.00	0.0549	17.6745	14.5920	20.7569	9.2720	6.8901	11.6538	
	Overall	MDF	247.15	2.60	0.0380	10.6002	8.7515	12.4489	5.5608	4.1323	6.9894	
Chalakkudy	Palappilly	Teak	1046.51	4.50	0.0930	44.8849	37.0570	52.7128	23.5465	17.4977	29.5953	
		MDF	937.50	3.00	0.1250	40.2094	33.1969	47.2219	21.0938	15.6750	26.5125	
		Cashew	6666.67	8.00	0.3333	285.9333	150.0000	335.8000	150.0000	111.4667	188.5333	
		SE	2500.00	3.00	0.3333	107.2250	88.5250	125.9250	56.2500	41.8000	70.7000	
	Pariyaram	Teak	833.33	2.00	0.1667	35.7417	29.5083	41.9750	18.7500	13.9333	23.5667	
		Vellikkulangara	EG	2500.00	3.50	0.2857	107.2250	88.5250	125.9250	56.2500	41.8000	70.7000
			SE	3425.93	6.17	0.2222	146.9380	121.3120	172.5639	77.0833	57.2815	96.8852
			MDF	648.15	1.75	0.1481	27.7991	22.9509	32.6472	14.5833	10.8370	18.3296
	Teak		625.00	2.67	0.0938	26.8063	22.1313	31.4813	14.0625	10.4500	17.6750	
	Overall	EG	2500.00	3.50	0.2857	107.2250	88.5250	125.9250	56.2500	41.8000	70.7000	
		MDF	805.08	2.38	0.1356	34.5301	28.5081	40.5521	18.1144	13.4610	22.7678	
		SE	3194.44	5.11	0.2500	137.0097	113.1153	160.9042	71.8750	53.4111	90.3389	
		Teak	862.07	3.33	0.1034	36.9741	30.5259	30.5259	19.3966	14.4138	24.3793	
Vazhachal	Kollathirumedu	SE	151.52	2.00	0.0303	6.4985	5.3652	7.6318	3.4091	2.5333	4.2848	

	Vazhachal	MDF	2500.00	5.50	0.1818	107.2250	88.5250	125.9250	56.2500	41.8000	70.7000
	Overall	SE	42.02	2.00	0.0084	1.8021	1.4878	2.1164	0.9454	0.7025	1.1882
		MDF	1100.00	5.50	0.0800	47.1790	38.9510	55.4070	24.7500	18.3920	31.1080
Peechi	Chimmini	MDF	56.82	1.00	0.0227	9.7477	8.0477	11.4477	5.1136	3.8000	6.4273
	Peechi	Teak	392.16	3.20	0.0490	16.8196	13.8863	19.7529	8.8235	6.5569	11.0902
		MDF	1062.27	4.14	0.1026	45.5608	37.6150	53.5066	23.9011	17.7612	30.0410
	Overall	MDF	922.71	4.03	0.0915	39.2369	32.3940	46.0798	20.5836	15.2959	25.8713
		Teak	392.16	3.20	0.0490	16.8196	13.8863	19.7529	8.8235	6.5569	11.0902
Nenmara	Alathur	Teak	3589.74	8.00	0.1795	153.9641	127.1128	180.8154	80.7692	60.0205	101.5179
	Overall	Teak	2916.67	8.00	0.1458	125.0958	103.2792	146.9125	65.6250	48.7667	82.4833
Palakkad	Olavakkode	MDF	390.63	5.00	0.0313	16.7539	13.8320	19.6758	8.7891	6.5313	11.0469
	Walayar	MDF	102.04	2.00	0.0204	4.3765	3.6133	5.1398	2.2959	1.7061	2.8857
		SE	131.58	1.00	0.0526	5.6434	4.6592	6.6276	2.9605	2.2000	3.7211
	Overall	MDF	265.49	4.00	0.0265	11.3867	9.4009	13.3726	5.9735	4.4389	7.5080
		SE	131.58	1.00	0.0526	5.6434	4.6592	6.6276	2.9605	2.2000	3.7211
Mannarkkad	Agali	SE	4615.38	4.80	0.3846	197.9538	163.4308	232.4769	103.8462	77.1692	130.5231
	Attappady	MDF	2976.19	4.17	0.2857	91.9071	29.5083	41.9750	48.2143	13.9333	23.5667
		SE	3333.33	4.00	0.3333	142.9667	118.0333	167.9000	75.0000	55.7333	94.2667
	Mannarkkad	EG	1875.00	3.00	0.2500	80.4188	66.3938	94.4438	42.1875	31.3500	53.0250
		MDF	875.00	3.50	0.1000	37.5288	30.9838	44.0738	19.6875	14.6300	24.7450
		SE	833.33	2.00	0.1667	35.7417	29.5083	41.9750	18.7500	13.9333	23.5667
	Overall	EG	750.00	3.00	0.1000	32.1675	26.5575	37.7775	16.8750	12.5400	21.2100
		MDF	1702.13	4.00	0.1702	31.9394	26.3691	37.5096	16.7553	12.4511	21.0596
		SE	3409.09	4.29	0.3182	146.2159	120.7159	171.7159	76.7045	57.0000	96.4091
Parambikulam	Karimala	MDF	5416.67	13.00	0.1667	232.3208	191.8042	272.8375	121.8750	90.5667	153.1833
		SE	833.33	2.00	0.1667	35.7417	29.5083	41.9750	18.7500	13.9333	23.5667
	Parambikulam	MDF	6500.00	6.50	0.4000	278.7850	230.1650	327.4050	146.2500	108.6800	183.8200
		SE	3833.33	5.75	0.2667	164.4117	135.7383	193.0850	86.2500	64.0933	108.4067

	Orukomban	MDF	1388.89	5.00	0.1111	59.5694	49.1806	69.9583	31.2500	23.2222	39.2778
	Sungam	MDF	365.85	1.50	0.0976	15.6915	12.9549	18.4280	8.2317	6.1171	10.3463
		EG	454.55	2.00	0.0909	19.4955	16.0955	22.8955	10.2273	7.6000	12.8545
	Overall	MDF	2073.17	6.18	0.1341	71.9192	59.3765	84.4619	37.7287	28.0366	47.4207
		EG	454.55	2.00	0.0909	19.4955	16.0955	22.8955	10.2273	7.6000	12.8545
		SE	2976.19	5.00	0.2381	10.2119	8.4310	11.9929	5.3571	3.9810	6.7333
Nilambur(N)	Vazhikkadavu	MDF	1513.16	7.67	0.0789	64.8993	53.5809	76.2178	34.0461	25.3000	42.7921
		Teak	657.89	10.00	0.0263	28.2171	23.2961	33.1382	14.8026	11.0000	18.6053
	Overall	MDF	756.58	7.67	0.0395	32.4497	26.7905	38.1089	17.0230	12.6500	21.3961
		Teak	227.27	10.00	0.0091	9.7477	8.0477	11.4477	5.1136	3.8000	6.4273
Nilambur(S)	Karulai	Teak	58.14	2.00	0.0116	2.4936	2.0587	2.9285	1.3081	0.9721	1.6442
	Overall	Teak	58.14	2.00	0.0116	2.4936	2.0587	2.9285	1.3081	0.9721	1.6442
Wayanad (N)	Begur	SE	303.03	1.33	0.0909	12.9970	10.7303	15.2636	6.8182	5.0667	8.5697
		Teak	725.81	2.57	0.1129	31.1298	25.7008	36.5589	16.3306	12.1355	20.5258
	Mananthavady	SE	909.09	1.00	0.3636	38.9909	32.1909	45.7909	20.4545	15.2000	25.7091
		EG	234.38	1.50	0.0625	10.0523	8.2992	11.8055	5.2734	3.9188	6.6281
	Periya	SE	468.75	1.50	0.1250	20.1047	16.5984	23.6109	10.5469	7.8375	13.2563
		Eucalyptus	294.12	1.00	0.1176	12.6147	10.4147	14.8147	6.6176	4.9176	8.3176
	Overall	SE	458.33	1.22	0.1500	19.6579	16.2296	23.0863	10.3125	7.6633	12.9617
		Eucalyptus	294.12	1.00	0.1176	12.6147	10.4147	14.8147	6.6176	4.9176	8.3176
		EG	234.38	1.50	0.0625	10.0523	8.2992	11.8055	5.2734	3.9188	6.6281
		Teak	725.81	2.57	0.1129	31.1298	25.7008	36.5589	16.3306	12.1355	20.5258
Wayanad S	Kalpetta	SE	92.59	1.00	0.0370	3.9713	3.2787	4.6639	2.0833	1.5481	2.6185
	Overall	SE	48.08	1.00	0.0192	2.0620	1.7024	2.4216	1.0817	0.8038	1.3596
Wayanad WLS	Tholpetty	MDF	6312.50	5.05	0.5000	270.7431	223.5256	317.9606	142.0313	105.5450	178.5175
		Teak	303.03	4.00	0.0303	12.9970	10.7303	15.2636	6.8182	5.0667	8.5697
	Kurichiyath	SE	576.92	1.50	0.1538	24.7442	20.4288	29.0596	12.9808	9.6462	16.3154
		DDF	789.47	6.00	0.0526	33.8605	27.9553	39.7658	17.7632	22.3263	13.2000

	Overall	Teak	642.86	3.00	0.0857	27.5721	22.7636	32.3807	14.4643	10.7486	18.1800
		MDF	1530.30	5.05	0.1212	65.6347	54.1880	77.0814	34.4318	25.5867	43.2770
		DDF	468.75	6.00	0.0313	20.1047	16.5984	23.6109	10.5469	7.8375	13.2563
		Teak	292.79	3.25	0.0360	12.5579	10.3678	14.7480	6.5878	4.8955	8.2802
Kannur	Kannavam	MDF	228.57	1.23	0.0743	9.8034	8.0937	11.5131	5.1429	3.8217	6.4640
		EG	289.86	1.33	0.0870	12.4319	10.2638	14.6000	6.5217	4.8464	8.1971
		Mixed	227.27	1.00	0.0909	9.7477	8.0477	11.4477	5.1136	3.8000	6.4273
		Teak	769.23	2.00	0.1538	32.9923	27.2385	38.7462	17.3077	12.8615	21.7538
	Kottiyur	MDF	857.14	1.71	0.2000	36.7629	30.3514	43.1743	19.2857	14.3314	24.2400
		SE	544.35	2.25	0.0968	23.3474	19.2756	27.4192	12.2480	9.1016	15.3944
		Mixed	852.27	1.25	0.2727	36.5540	30.1790	42.9290	19.1761	14.2500	24.1023
	Overall	EG	145.99	1.33	0.0438	6.2613	5.1693	7.3533	3.2847	2.4409	4.1285
		SE	327.67	2.25	0.0583	14.0538	11.6028	16.5047	7.3726	5.4786	9.2665
		MDF	163.17	1.40	0.0466	6.9984	5.7779	8.2189	3.6713	2.7282	4.6145
		Teak	163.93	2.00	0.0328	7.0311	5.8049	8.2574	3.6885	2.7410	4.6361
		Mixed	386.18	1.19	0.1301	16.5632	13.6746	19.4518	8.6890	6.4569	10.9211
Kozhikode	Thamarassery	EG	796.7033	3.866667	0.082418	34.170604	28.211264	40.129945	17.925824	13.320879	22.530769
		SE	53.76344	2	0.010753	2.305914	1.903763	2.708065	1.209677	0.898925	1.52043

**Table 3.1.9 Density, abundance and frequency of *Curcuma zedoria*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products (Rhizome)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Chalakkudy	Pariyaram	MDF	1562.50	4.00	0.1563	41.5781	31.0781	52.0781	25.7969	17.1094	34.4844
		Teak	1041.67	2.50	0.1667	27.7188	20.7188	34.7188	17.1979	11.4063	22.9896
	Vellikkulangara	SE	740.74	4.00	0.0741	19.7111	14.7333	24.6889	12.2296	8.1111	16.3481
		MDF	370.37	4.00	0.0370	9.8556	7.3667	12.3444	6.1148	4.0556	8.1741

	Overall	MDF	1016.95	4.00	0.1017	27.0610	20.2271	33.8949	16.7898	11.1356	22.4441
		SE	555.56	4.00	0.0556	14.7833	11.0500	18.5167	9.1722	6.0833	12.2611
		Teak	143.68	2.50	0.0230	3.8233	2.8578	4.7888	2.3721	1.5733	3.1710
Vazhachal	Kollathirumedu	SE	1742.42	4.60	0.1515	46.3659	34.6568	58.0750	28.7674	19.0795	38.4553
		EG	416.67	2.00	0.0833	11.0875	8.2875	13.8875	11.0875	8.2875	13.8875
	Sholayar	SE	1190.48	4.00	0.1190	31.6786	23.6786	39.6786	19.6548	13.0357	26.2738
		SE	5357.14	8.57	0.2500	142.5536	106.5536	178.5536	88.4464	58.6607	118.2321
	Overall	EG	227.27	2.00	0.0455	6.0477	7.5750	4.5205	3.7523	2.4886	5.0159
SE		2163.87	6.06	0.1429	57.5805	43.0393	72.1216	35.7254	23.6943	47.7565	
Peechi	Peechi	Teak	24.51	1.00	0.0098	0.6522	0.4875	0.8169	0.4047	0.2684	0.5409
		MDF	9.16	1.00	0.0037	0.2437	0.1821	0.3052	0.1512	0.1003	0.2021
	Overall	MDF	7.89	1.00	0.0032	0.2099	0.1569	0.2629	0.1302	0.0864	0.1741
		Teak	24.51	1.00	0.0098	0.6522	0.4875	0.8169	0.4047	0.2684	0.5409
Mannarkkad	Agali	SE	1923.08	3.33	0.2308	51.1731	38.2500	64.0962	31.7500	21.0577	42.4423
		MDF	1071.43	4.50	0.0952	28.5107	21.3107	35.7107	17.6893	11.7321	23.6464
	Attappady	SE	1666.67	2.00	0.3333	44.3500	33.1500	55.5500	27.5167	18.2500	36.7833
		MDF	478.72	4.50	0.0426	12.7388	9.5218	15.9559	7.9037	5.1941	10.5654
	Overall	SE	1363.64	3.00	0.1818	36.2864	27.1227	45.4500	22.5136	14.9318	30.0955
Palakkad	Olavakkode	MDF	625.00	2.67	0.0938	16.6313	12.4313	20.8313	10.3188	6.8438	13.7938
	Overall	MDF	353.98	2.67	0.0531	9.4195	7.0407	11.7982	5.8442	3.8761	7.8124
Parambikulam	Karimala	MDF	1388.89	3.33	0.1667	36.9583	27.6250	46.2917	22.9306	15.2083	30.6528
		SE	5000.00	4.00	0.5000	133.0500	99.4500	166.6500	82.5500	54.7500	110.3500
	Parambikulam	SE	3166.67	3.80	0.3333	84.2650	62.9850	105.5450	52.2817	34.6750	69.8883
	Orukomban	MDF	1666.67	3.00	0.2222	44.3500	33.1500	55.5500	27.5167	18.2500	36.7833
	Sungam	MDF	1524.39	5.00	0.1220	40.5640	30.3201	50.8079	25.1677	16.6921	33.6433
	Overall	MDF	1432.93	3.92	0.1463	28.3948	21.2241	35.5655	17.6174	11.6845	23.5503

		SE	3690.48	3.88	0.3810	60.1893	44.9893	75.3893	37.3440	24.7679	49.9202
Nilambur(n)	Vazhikkadavu	MDF	197.37	3.00	0.0263	5.2520	3.9257	6.5783	3.2586	2.1612	4.3559
	Overall	MDF	98.68	3.00	0.0132	2.6260	1.9618	3.2891	1.6293	1.0806	2.1780
Nilambur(S)	Karulai	SE	520.83	2.50	0.0833	13.8594	10.3594	17.3594	8.5990	5.7031	11.4948
		Teak	116.28	2.00	0.0233	3.0942	2.3128	3.8756	1.9198	1.2733	2.5663
	Overall	SE	520.83	2.50	0.0833	13.8594	10.3594	17.3594	8.5990	5.7031	11.4948
		Teak	116.28	2.00	0.0233	3.0942	2.3128	3.8756	1.9198	1.2733	2.5663
Wayanad WLS	Tholpetty	MDF	937.50	15.00	0.0250	24.9469	18.6469	31.2469	15.4781	10.2656	20.6906
	Overall	MDF	227.27	15.00	0.0061	6.0477	4.5205	7.5750	3.7523	2.4886	5.0159

**Table 3.1.10 Density, abundance and frequency of *Cyathula prostrata*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)(kg/ha)			Availability of useful Products(stem) (kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	1400.60	3.88	0.1446	4.0057	3.0194	4.9920	0.4301	0.3455	0.5147	2.2690	1.7440	2.7939
	Pattikkad	MDF	27.47	1.00	0.0110	0.0786	0.0592	0.0979	0.0084	0.0068	0.0101	0.0445	0.0342	0.0548
	Wadakkancherry	MDF	1666.67	4.00	0.1667	4.7667	3.5930	5.9403	0.5118	0.4112	0.6125	2.7000	2.0753	3.3247
		Cashew	1269.23	3.30	0.1538	3.6300	2.7362	4.5238	0.3898	0.3131	0.4664	2.0562	1.5804	2.5319
		Eucalyptus	87.72	2.00	0.0175	0.2509	0.1891	0.3126	0.0269	0.0216	0.0322	0.1421	0.1092	0.1750
	Overall	MDF	931.56	3.77	0.0989	2.6643	2.0083	3.3203	0.2861	0.2298	0.3423	1.5091	1.1600	1.8583
		Cashew	1269.23	3.30	0.1538	3.6300	2.7362	4.5238	0.3898	0.3131	0.4664	2.0562	1.5804	2.5319
Eucalyptus	87.72	2.00	0.0175	0.2509	0.1891	0.3126	0.0269	0.0216	0.0322	0.1421	0.1092	0.1750		
Chalakkudy	Palappilly	Teak	523.26	3.00	0.0698	1.4965	1.1280	1.8650	0.1607	0.1291	0.1923	0.8477	0.6516	1.0438
		MDF	312.50	4.00	0.0313	0.8938	0.6737	1.1138	0.0960	0.0771	0.1148	0.5063	0.3891	0.6234
	Pariyaram	SE	555.56	2.00	0.1111	1.5889	1.1977	1.9801	0.1706	0.1371	0.2042	0.9000	0.6918	1.1082
		Teak	625.00	3.00	0.0833	1.7875	1.3474	2.2276	0.1919	0.1542	0.2297	1.0125	0.7783	1.2468



	Vellikkulangara	EG	2857.14	8.00	0.1429	8.1714	6.1594	10.1834	0.8774	0.7049	1.0500	4.6286	3.5577	5.6994
		SE	7592.59	6.83	0.4444	21.7148	16.3681	27.0615	2.3317	1.8731	2.7903	12.3000	9.4543	15.1457
		MDF	7129.63	9.63	0.2963	20.3907	15.3701	25.4114	2.1895	1.7589	2.6201	11.5500	8.8778	14.2222
		Teak	2031.25	3.71	0.2188	5.8094	4.3790	7.2398	0.6238	0.5011	0.7465	3.2906	2.5293	4.0519
	Overall	EG	2857.14	8.00	0.1429	8.1714	6.1594	10.1834	0.8774	0.7049	1.0500	4.6286	3.5577	5.6994
		MDF	3432.20	9.00	0.1525	9.8161	7.3991	12.2331	1.0540	0.8467	1.2613	5.5602	4.2738	6.8466
		SE	5833.33	6.46	0.3611	16.6833	12.5755	20.7912	1.7914	1.4391	2.1438	9.4500	7.2520	11.6363
		Teak	1091.95	3.45	0.1264	3.1230	2.3540	3.8919	0.3353	0.2694	0.4013	1.7690	1.3597	2.1782
Vazhachal	Charpa	SE	1093.75	2.33	0.1875	3.1281	2.3579	3.8983	0.3359	0.2698	0.4020	1.7719	1.3619	2.1818
		Teak	1041.67	2.50	0.1667	2.9792	2.2456	3.7127	0.3195	0.2570	0.3828	1.6875	1.2971	2.0779
	Kollathirumedu	SE	984.85	6.50	0.0606	2.8167	2.1231	3.5102	0.3024	0.2430	0.3619	1.5955	1.2263	1.9646
	Sholayar	SE	952.38	3.20	0.1190	2.7238	2.0531	3.3945	0.2925	0.2350	0.3500	1.5429	1.1859	1.8998
	Vazhachal	SE	982.14	5.50	0.0714	2.8089	2.1173	3.5006	0.3016	0.2423	0.3609	1.5911	1.2230	1.9592
		MDF	1818.18	4.00	0.1818	5.2000	3.9196	6.4804	0.5584	0.4485	0.6682	2.9455	2.2640	3.6269
	Overall	SE	987.39	3.92	0.1008	1.8626	1.4040	2.3212	0.2000	0.1607	0.2393	1.0550	0.8110	1.2991
		MDF	800.00	4.00	0.0800	2.2880	1.7246	2.8514	0.2457	0.1974	0.2940	1.2960	0.9962	1.5958
		Teak	625.00	2.50	0.1000	1.7875	1.3474	2.2280	0.1919	0.1542	0.2297	1.0125	0.7783	1.2468
	Peechi	Chimmini	MDF	568.18	5.00	0.0455	1.6250	1.2249	2.0251	0.1745	0.1402	0.2088	0.9205	0.7075
SE			1189.02	6.50	0.0732	3.4006	2.5633	4.2379	0.3651	0.2933	0.4370	1.9262	1.4806	2.3719
Peechi		Teak	24.51	1.00	0.0098	0.0701	0.0528	0.0874	0.0075	0.0060	0.0090	0.0397	0.0305	0.0489
		MDF	91.58	5.00	0.0073	0.2619	0.1974	0.3264	0.0281	0.0226	0.0337	0.1484	0.1827	0.1140
Overall		MDF	157.73	5.00	0.0126	0.2256	0.1700	0.2811	0.0242	0.0195	0.0290	0.1278	0.0982	0.1573
		SE	911.21	6.50	0.0561	2.6061	1.9644	3.2478	0.2798	0.2248	0.3349	1.4762	1.1346	1.8177
		Teak	24.51	1.00	0.0098	0.0701	0.0528	0.0874	0.0075	0.0060	0.0090	0.0397	0.0305	0.0489
Nenmara		Alathur	Teak	320.51	2.50	0.0513	0.9167	0.6910	1.1424	0.0984	0.0791	0.1178	0.5192	0.3991
	Nelliyampathy	EG	375.00	1.00	0.1500	1.0725	0.8084	1.3366	0.1152	0.0925	0.1378	0.6075	0.4670	0.7481
		EG	375.00	1.00	0.1500	1.0725	0.8084	1.3366	0.1152	0.0925	0.1378	0.6075	0.4670	0.7481
	Overall	Teak	260.42	2.50	0.0417	0.7448	0.5614	0.9282	0.0800	0.0642	0.0957	0.4219	0.3243	0.5195

Palakkad	Olavakkode	MDF	507.81	3.25	0.0625	1.4523	1.0947	1.8099	0.1559	0.1253	0.1866	0.8227	0.6323	1.0130
		Teak	6250.00	7.50	0.3333	17.8750	13.4738	22.2763	1.9194	1.5419	2.2969	10.1250	7.7825	12.4675
	Overall	MDF	287.61	3.25	0.0354	0.8226	0.6200	1.0251	0.0883	0.0710	0.1057	0.4659	0.5737	0.3581
		Teak	1785.71	7.50	0.0952	5.1071	3.8496	6.3646	0.5484	0.4405	0.6563	2.8929	2.2236	3.5621
Mannarkkad	Agali	DDF	1413.04	2.17	0.2609	4.0413	3.0462	5.0364	0.4263	0.3486	0.5193	2.2891	1.7595	2.8193
	Attappady	MDF	833.33	2.33	0.1429	2.3833	1.7965	2.9702	0.2559	0.2056	0.3063	1.3500	1.0377	1.6623
		SE	3333.33	4.00	0.3333	9.5333	7.1860	11.8807	1.0237	0.8223	1.2250	5.4000	4.1507	6.6493
	Mannarkkad	MDF	3250.00	8.67	0.1500	9.2950	7.0064	11.5837	0.9981	0.8018	1.1944	5.2650	4.0469	6.4831
		Cashew	8552.63	9.29	0.3684	24.4605	18.4378	30.4833	2.6265	2.1099	3.1431	13.8553	10.6497	17.0608
		Acacia	92.59	1.00	0.0370	0.2648	0.1996	0.3300	0.0284	0.0228	0.0340	0.1500	0.1153	0.1847
	Overall	MDF	1755.32	5.50	0.1277	5.0202	3.7841	6.2563	0.5391	0.4330	0.6451	2.8436	2.1857	3.5015
		DDF	1413.04	2.17	0.2609	4.0413	3.0462	5.0364	0.4263	0.3486	0.5193	2.2891	1.7595	2.8193
		SE	454.55	4.00	0.0455	1.3000	0.9799	1.6201	0.1396	0.1121	0.1670	0.7364	0.5660	0.9067
		Cashew	8552.63	9.29	0.3684	24.4605	18.4378	30.4833	2.6265	2.1099	3.1431	13.8553	10.6497	17.0608
		Acacia	92.59	1.00	0.0370	0.2648	0.1996	0.3300	0.0284	0.0228	0.0340	0.1500	0.1153	0.1847
	Parambikulam	Karimala	MDF	694.44	2.50	0.1111	1.9861	1.4971	2.4751	0.2133	0.1713	0.2552	1.1250	0.8647
SE			10416.67	8.33	0.5000	29.7917	22.4563	37.1271	3.1990	2.5698	3.8281	16.8750	12.9708	20.7792
Parambikulam		MDF	500.00	1.00	0.2000	1.4300	1.0779	1.7821	0.1536	0.1234	0.1838	0.8100	0.6226	0.9974
		SE	2500.00	5.00	0.2000	7.1500	5.3895	8.9105	0.7678	0.6168	0.9188	4.0500	3.1130	4.9870
Orukomban		MDF	1527.78	2.75	0.2222	4.3694	3.2936	5.4453	0.4692	0.3769	0.5615	2.4750	1.9024	3.0476
Sungam		MDF	1524.39	3.57	0.1707	4.3598	3.2863	5.4332	0.4681	0.3761	0.5602	2.4695	1.8982	3.0409
		EG	2954.55	3.25	0.3636	8.4500	6.3694	10.5306	0.9073	0.7289	1.0858	4.7864	5.8937	3.6790
Overall		MDF	1280.49	3.00	0.1707	3.5750	2.6948	4.4553	0.3839	0.3084	0.4594	2.0250	1.5565	2.4935
		EG	2954.55	3.25	0.3636	8.4500	6.3694	10.5306	0.9073	0.7289	1.0858	4.7864	5.8937	3.6790
		SE	4761.90	6.67	0.2857	8.5119	6.4161	10.6077	0.9140	0.7342	1.0938	4.8214	3.7060	5.9369
Nilambur(N)		Nilambur	SE	9166.67	11.00	0.3333	26.2167	19.7615	32.6718	2.8151	2.2614	3.3688	14.8500	11.4143
	Teak		69.44	2.00	0.0139	0.1986	0.1497	0.2475	0.0213	0.0171	0.0255	0.1125	0.1385	0.0865
	Mixed		500.00	3.00	0.0667	1.4300	1.0779	1.7821	0.1536	0.1234	0.1838	0.8100	0.6226	0.9974

	Vazhikkadavu	EG	222.22	2.00	0.0444	0.6356	0.4791	0.7920	0.0682	0.0548	0.0817	0.3600	0.2767	0.4433
	Overall	EG	208.33	2.00	0.0417	0.5958	0.4491	0.7425	0.0640	0.0514	0.0766	0.3375	0.2594	0.4156
		Mixed	500.00	3.00	0.0667	1.4300	1.0779	1.7821	0.1536	0.1234	0.1838	0.8100	0.6226	0.9974
		SE	6875.00	11.00	0.2500	19.6625	14.8211	24.5039	2.1113	1.6961	2.5266	11.1375	8.5608	13.7143
		Teak	45.45	2.00	0.0091	0.1300	0.0980	0.1620	0.0140	0.0112	0.0167	0.0736	0.0566	0.0907
Wyanad N	Begur	Teak	161.29	4.00	0.0161	0.4613	0.3477	0.5749	0.0495	0.0398	0.0593	0.2613	0.2008	0.3217
	Overall	Teak	161.29	4.00	0.0161	0.4613	0.3477	0.5749	0.0495	0.0398	0.0593	0.2613	0.2008	0.3217
Kannur	Kannavam	MDF	57.14	4.00	0.0057	0.1634	0.1232	0.2037	0.0175	0.0141	0.0210	0.0926	0.0712	0.1140
	Kottiyur	MDF	714.29	2.00	0.1429	2.0429	1.5399	2.5459	0.2194	0.1755	0.2625	1.1571	0.8894	1.4249
		SE	181.45	4.50	0.0161	0.5190	0.3912	0.6467	0.0557	0.0448	0.0667	0.2940	0.2259	0.3620
	Kasaragod	Teak	60.98	1.00	0.0244	0.1744	0.1315	0.2173	0.0187	0.0150	0.0224	0.0988	0.0759	0.1216
	Overall	SE	109.22	4.50	0.0097	0.3124	0.2355	0.3893	0.0335	0.0269	0.0401	0.1769	0.1360	0.2179
		MDF	81.59	2.33	0.0140	0.2333	0.1759	0.2908	0.0251	0.0201	0.0300	0.1322	0.1016	0.1627
Teak		40.98	1.00	0.0164	0.1172	0.0884	0.1051	0.0126	0.0101	0.0151	0.0664	0.0510	0.0818	

**Table 3.1.11 Density, abundance and frequency of *Cyclea peltata*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)(kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	481.93	2.46	0.0783	9.6386	8.0289	11.2482	7.3494	5.3735	9.3253
		Teak	285.71	1.00	0.1143	5.7143	4.7600	6.6686	4.3571	3.1857	5.5286
		Mixed	1547.62	2.17	0.2857	30.9524	25.7833	36.1214	23.6012	17.2560	29.9464
	Pattikkad	MDF	576.92	1.31	0.1758	11.5385	9.6115	13.4654	8.7981	6.4327	11.1635
	Wadakkancherry	Cashew	1038.46	2.25	0.1846	17.6923	14.7377	20.6469	13.4904	9.8635	17.1173
		Eucalyptus	526.32	1.33	0.1579	4.3860	3.6535	5.1184	3.3443	2.4452	4.2434
	Overall	MDF	503.80	1.83	0.1103	10.0760	8.3933	11.7587	7.6830	5.6174	9.7486

		Teak	238.10	1.00	0.0952	4.7619	3.9667	5.5571	3.6310	2.6548	4.6071
		Mixed	1547.62	2.17	0.2857	30.9524	25.7833	36.1214	23.6012	17.2560	29.9464
		Cashew	1038.46	2.25	0.1846	17.6923	14.7377	20.6469	13.4904	9.8635	17.1173
		Eucalyptus	526.32	1.33	0.1579	4.3860	3.6535	5.1184	3.3443	2.4452	4.2434
Chalakkudy	Palappilly	Teak	116.28	1.00	0.0465	2.3256	1.9372	2.7140	1.7733	1.2965	2.2500
		SE	277.78	3.00	0.0370	5.5556	4.6278	6.4833	4.2361	3.0972	5.3750
	Vellikkulangara	MDF	277.78	1.50	0.0741	5.5556	4.6278	6.4833	4.2361	3.0972	5.3750
		Teak	78.13	1.00	0.0313	1.5625	1.3016	1.8234	1.1914	0.8711	1.5117
	Overall	MDF	127.12	1.50	0.0339	2.5424	2.1178	2.9669	1.9386	1.4174	2.4597
		SE	208.33	3.00	0.0278	4.1667	3.4708	4.8625	3.1771	2.3229	4.0313
		Teak	86.21	1.00	0.0345	1.7241	1.4362	2.0121	1.3147	0.9612	1.6681
Vazhachal	Charpa	MDF	555.56	1.00	0.2222	11.1111	9.2556	12.9667	8.4722	6.1944	10.7500
		Teak	1041.67	2.50	0.1667	20.8333	17.3542	24.3125	15.8854	11.6146	20.1563
	Kollathirumedu	SE	151.52	2.00	0.0303	3.0303	2.5242	3.5364	2.3106	1.6894	2.9318
		MDF	1000.00	2.00	0.2000	20.0000	16.6600	23.3400	15.2500	11.1500	19.3500
		Teak	2812.50	2.25	0.5000	56.2500	46.8563	65.6438	42.8906	31.3594	54.4219
	Sholayar	EG	208.33	1.00	0.0833	4.1667	3.4708	4.8625	3.1771	2.3229	4.0313
	Vazhachal	MDF	227.27	1.00	0.0909	4.5455	3.7864	5.3045	3.4659	2.5341	4.3977
	Overall	EG	113.64	1.00	0.0455	2.2727	1.8932	2.6523	1.7330	1.2670	2.1989
		SE	42.02	2.00	0.0084	0.8403	0.7000	0.9807	0.6408	0.4685	0.8130
		MDF	500.00	1.25	0.1600	6.0000	4.9980	7.0020	4.5750	3.3450	5.8050
		Teak	1750.00	2.33	0.3000	22.5000	18.7425	26.2575	17.1563	12.5438	21.7688
Peechi	Chimmini	MDF	454.55	1.60	0.1136	9.0909	7.5727	10.6091	6.9318	5.0682	8.7955
		SE	91.46	1.50	0.0244	1.8293	1.5238	2.1348	1.3948	1.0198	1.7698
	Peechi	Teak	1053.92	2.69	0.1569	21.0784	17.5583	24.5985	16.0723	11.7512	20.3934

		MDF	540.29	1.90	0.1136	10.8059	9.0013	12.6104	8.2395	6.0243	10.4547
		SE	900.00	2.25	0.1600	18.0000	14.9940	21.0060	13.7250	10.0350	17.4150
	Overall	MDF	528.39	1.86	0.1136	9.3060	7.7519	10.8601	7.0958	5.1881	9.0035
		SE	280.37	2.00	0.0561	4.2056	3.5033	4.9079	3.2068	2.3446	4.0689
Nenmara	Alathur	Teak	64.10	1.00	0.0256	1.2821	1.0679	1.4962	0.9776	0.7147	1.2404
	Overall	Teak	52.08	1.00	0.0208	1.0417	0.8677	1.2156	0.7943	0.5807	1.0078
Palakkad	Walayar	MDF	51.02	1.00	0.0204	1.0204	0.8500	1.1908	0.7781	0.5689	0.9872
		SE	263.16	2.00	0.0526	5.2632	4.3842	6.1421	4.0132	2.9342	5.0921
	Ottappalam	Mixed	312.50	2.00	0.0625	6.2500	5.2063	7.2938	4.7656	3.4844	6.0469
	Overall	MDF	22.12	1.00	0.0089	0.4425	0.3686	0.5164	0.3374	0.2467	0.4281
		Mixed	312.50	2.00	0.0625	6.2500	5.2063	7.2938	4.7656	3.4844	6.0469
		SE	263.16	2.00	0.0526	5.2632	4.3842	6.1421	4.0132	2.9342	5.0921
Mannarkkad	Agali	DDF	108.70	1.00	0.0435	2.1739	1.8109	2.5370	1.6576	1.2120	2.1033
		MDF	416.67	1.00	0.1667	8.3333	6.9417	9.7250	6.3542	4.6458	8.0625
	Attappady	MDF	119.05	1.00	0.0476	2.3810	1.9833	2.7786	1.8155	1.3274	2.3036
	Mannarkkad	MDF	125.00	1.00	0.0500	2.5000	2.0825	2.9175	1.9063	1.3688	2.4188
		Cashew	526.32	1.33	0.1579	10.5263	8.7684	12.2842	8.0263	5.8684	10.1842
		Acacia	277.78	1.50	0.0741	5.5556	4.6278	6.4833	4.2361	3.0972	5.3750
	Overall	MDF	159.57	1.00	0.0638	1.0638	0.8862	1.2415	0.8112	0.5931	1.0293
		DDF	108.70	1.00	0.0435	2.1739	1.8109	2.5370	1.6576	1.2120	2.1033
		Cashew	526.32	1.33	0.1579	10.5263	8.7684	12.2842	8.0263	5.8684	10.1842
		Acacia	277.78	1.50	0.0741	5.5556	4.6278	6.4833	4.2361	3.0972	5.3750
Parambikulam	Karimala	MDF	1527.78	2.20	0.2778	30.5556	25.4528	35.6583	23.2986	17.0347	29.5625
	Parambikulam	SE	166.67	1.00	0.0667	3.3333	2.7767	3.8900	2.5417	1.8583	3.2250

	Sungam	MDF	121.95	1.00	0.0488	2.4390	2.0317	2.8463	1.8598	1.3598	2.3598	
		EG	454.55	2.00	0.0909	9.0909	7.5727	10.6091	6.9318	5.0682	8.7955	
	Overall	MDF	396.34	1.86	0.0854	7.9268	6.6030	9.2506	6.0442	4.4192	7.6692	
		EG	454.55	2.00	0.0909	9.0909	7.5727	10.6091	6.9318	5.0682	8.7955	
		SE	119.05	1.00	0.0476	2.3810	1.9833	2.7786	1.8155	1.3274	2.3036	
Nilambur(N)	Edavanna	MDF	80.65	1.00	0.0323	1.6129	1.3435	1.8823	1.2298	0.8992	1.5605	
		Bamboo	2142.86	2.00	0.4286	42.8571	35.7000	50.0143	32.6786	23.8929	41.4643	
	Nilambur	MDF	1785.71	1.67	0.4286	35.7143	29.7500	41.6786	27.2321	19.9107	34.5536	
		Teak	520.83	1.67	0.1250	10.4167	8.6771	12.1563	7.9427	5.8073	10.0781	
		Mixed	1166.67	2.00	0.2333	23.3333	19.4367	27.2300	17.7917	13.0083	22.5750	
	Vazhikkadavu	MDF	263.16	2.00	0.0526	5.2632	4.3842	6.1421	4.0132	2.9342	5.0921	
		SE	1666.67	2.00	0.3333	33.3333	27.7667	38.9000	25.4167	18.5833	32.2500	
		Teak	263.16	1.33	0.0789	5.2632	4.3842	6.1421	4.0132	2.9342	5.0921	
	Overall	SE	416.67	2.00	0.0833	8.3333	6.9417	9.7250	6.3542	4.6458	8.0625	
		MDF	328.95	1.67	0.0789	6.5789	5.4803	7.6776	5.0164	3.6678	6.3651	
		Mixed	1166.67	2.00	0.2333	23.3333	19.4367	27.2300	17.7917	13.0083	22.5750	
		Bamboo	2142.86	2.00	0.4286	42.8571	35.7000	50.0143	32.6786	23.8929	41.4643	
		Teak	431.82	1.58	0.1091	8.6364	7.1941	10.0786	6.5852	4.8148	8.3557	
	Nilambur(S)	Kalikavu	MDF	714.29	1.00	0.2857	14.2857	11.9000	16.6714	10.8929	7.9643	13.8214
			Acacia	384.62	1.00	0.1538	7.6923	6.4077	8.9769	5.8654	4.2885	7.4423
Karulai		MDF	284.81	1.50	0.0759	5.6962	4.7449	6.6475	4.3434	3.1756	5.5111	
		SE	625.00	3.00	0.0833	12.5000	10.4125	14.5875	9.5313	6.9688	12.0938	
		Teak	930.23	2.29	0.1628	18.6047	15.4977	21.7116	14.1860	10.3721	18.0000	
Overall		Acacia	384.62	1.00	0.1538	7.6923	6.4077	8.9769	5.8654	4.2885	7.4423	
		MDF	319.77	1.38	0.0930	6.3953	5.3273	7.4634	4.8765	3.5654	6.1875	

		SE	625.00	3.00	0.0833	12.5000	10.4125	14.5875	9.5313	6.9688	12.0938
		Teak	930.23	2.29	0.1628	18.6047	15.4977	21.7116	14.1860	10.3721	18.0000
Wayanad (N)	Begur	SE	378.79	2.50	0.0606	7.5758	6.3106	8.8409	5.7765	4.2235	7.3295
		Teak	645.16	1.78	0.1452	12.9032	10.7484	15.0581	9.8387	7.1935	12.4839
	Periya	Acacia	1388.89	1.25	0.4444	27.7778	23.1389	32.4167	21.1806	15.4861	26.8750
		Eucalyptus	735.29	1.00	0.2941	14.7059	12.2500	17.1618	11.2132	8.1985	14.2279
	Overall	SE	208.33	2.50	0.0333	4.1667	3.4708	4.8625	3.1771	2.3229	4.0313
		Teak	645.16	1.78	0.1452	12.9032	10.7484	15.0581	9.8387	7.1935	12.4839
		Acacia	1388.89	1.25	0.4444	27.7778	23.1389	32.4167	21.1806	15.4861	26.8750
		Eucalyptus	735.29	1.00	0.2941	14.7059	12.2500	17.1618	11.2132	8.1985	14.2279
Wayanad (S)	Chedleth	MDF	1762.30	1.48	0.4754	35.2459	29.3598	41.1320	26.8750	19.6496	34.1004
		Teak	900.00	1.29	0.2800	18.0000	14.9940	21.0060	13.7250	10.0350	17.4150
	Kalpetta	SE	462.96	2.50	0.0741	9.2593	7.7130	10.8056	7.0602	5.1620	8.9583
		Grassland	185.19	2.00	0.0370	3.7037	3.0852	4.3222	2.8241	2.0648	3.5833
		Eucalyptus	1400.00	1.27	0.4400	28.0000	23.3240	32.6760	21.3500	15.6100	27.0900
	Meppady	SE	600.00	1.50	0.1600	12.0000	9.9960	14.0040	9.1500	6.6900	11.6100
		Savanah	625.00	1.14	0.2188	12.5000	10.4125	14.5875	9.5313	6.9688	12.0938
	Overall	MDF	1762.30	1.48	0.4754	35.2459	29.3598	41.1320	26.8750	19.6496	34.1004
		Eucalyptus	1400.00	1.27	0.4400	28.0000	23.3240	32.6760	21.3500	15.6100	27.0900
		SE	528.85	1.83	0.1154	10.5769	8.8106	12.3433	8.0649	5.8966	10.2332
		Grassland	116.28	2.00	0.0233	2.3256	1.9372	2.7140	1.7733	1.2965	2.2500
		Teak	900.00	1.29	0.2800	18.0000	14.9940	21.0060	13.7250	10.0350	17.4150
		Savanah	625.00	1.14	0.2188	12.5000	10.4125	14.5875	9.5313	6.9688	12.0938
	Wayanad WLS	Aralam	MDF	535.71	1.80	0.1190	10.7143	8.9250	12.5036	8.1696	5.9732
Muthanga		MDF	200.00	2.00	0.0400	4.0000	3.3320	4.6680	3.0500	2.2300	3.8700

		Eucalyptus	2250.00	1.80	0.5000	45.0000	37.4850	52.5150	34.3125	25.0875	43.5375	
	S. Bathery	MDF	1637.93	2.71	0.2414	32.7586	27.2879	38.2293	24.9784	18.2629	31.6940	
		DDF	192.31	1.00	0.0769	3.8462	3.2038	4.4885	2.9327	2.1442	3.7212	
		Teak	192.31	2.00	0.0385	3.8462	3.2038	4.4885	2.9327	2.1442	3.7212	
	Tholpetty	Teak	303.03	1.33	0.0909	6.0606	5.0485	7.0727	4.6212	3.3788	5.8636	
	Kurichiyath	SE	192.31	2.00	0.0385	3.8462	3.2038	4.4885	2.9327	2.1442	3.7212	
		DDF	394.74	1.00	0.1579	7.8947	6.5763	9.2132	6.0197	4.4013	7.6382	
		Teak	357.14	1.25	0.1143	7.1429	5.9500	8.3357	5.4464	3.9821	6.9107	
	Overall	MDF	484.85	2.29	0.0848	9.6970	8.0776	11.3164	7.3939	5.4061	9.3818	
		DDF	312.50	1.00	0.1250	6.2500	5.2063	7.2938	4.7656	3.4844	6.0469	
		Teak	247.75	1.38	0.0721	4.9550	4.1275	5.7824	3.7782	2.7624	4.7939	
		Eucalyptus	1800.00	1.80	0.4000	36.0000	29.9880	42.0120	27.4500	20.0700	34.8300	
		SE	192.31	2.00	0.0385	3.8462	3.2038	4.4885	2.9327	2.1442	3.7212	
	Kannur	Kannavam	MDF	428.57	1.30	0.1314	8.5714	7.1400	10.0029	6.5357	4.7786	8.2929
			EG	72.46	1.00	0.0290	1.4493	1.2072	1.6913	1.1051	0.8080	1.4022
Mahagony			125.00	1.00	0.0500	2.5000	2.0825	2.9175	1.9063	1.3938	2.4188	
Mixed			568.18	1.43	0.1591	11.3636	9.4659	13.2614	8.6648	6.3352	10.9943	
Teak			192.31	1.00	0.0769	3.8462	3.2038	4.4885	2.9327	2.1442	3.7212	
Kottiyur		MDF	1785.71	1.56	0.4571	35.7143	29.7500	41.6786	27.2321	19.9107	34.5536	
		SE	80.65	1.33	0.0242	1.6129	1.3435	1.8823	1.2298	0.8992	1.5605	
		Mixed	454.55	1.33	0.1364	9.0909	7.5727	10.6091	6.9318	5.0682	8.7955	
		Teak	357.14	1.00	0.1429	7.1429	5.9500	8.3357	5.4464	3.9821	6.9107	
Kasaragod		SE	147.06	1.00	0.0588	2.9412	2.4500	3.4324	2.2426	1.6397	2.8456	
		MDF	198.86	1.17	0.0682	3.9773	3.3131	4.6415	3.0327	2.2173	3.8480	
		Teak	365.85	1.00	0.1463	7.3171	6.0951	8.5390	5.5793	4.0793	7.0793	



		Mixed	142.86	1.00	0.0571	2.8571	2.3800	3.3343	2.1786	1.5929	2.7643
		Cashew	365.85	1.50	0.0976	7.3171	6.0951	8.5390	5.5793	4.0793	7.0793
		Acacia	250.00	1.00	0.1000	5.0000	4.1650	5.8350	3.8125	2.7875	4.8375
		Mahagony	1250.00	1.50	0.3333	15.0000	12.4950	17.5050	11.4375	8.3625	14.5125
	Kanjangad	SE	71.43	1.00	0.0286	1.4286	1.1900	1.6671	1.0893	0.7964	1.3821
		MDF	3040.54	1.96	0.6216	60.8108	50.6554	70.9662	46.3682	33.9020	58.8345
		Grassland	1000.00	1.33	0.3000	20.0000	16.6600	23.3400	15.2500	11.1500	19.3500
		Cashew	1691.18	1.21	0.5588	33.8235	28.1750	39.4721	25.7904	18.8566	32.7243
	Taliparamba	EG	500.00	1.25	0.1600	10.0000	8.3300	11.6700	7.6250	5.5750	9.6750
		MDF	2250.00	1.64	0.5500	45.0000	37.4850	52.5150	34.3125	25.0875	43.5375
		Grassland	1785.71	2.50	0.2857	35.7143	29.7500	41.6786	27.2321	19.9107	34.5536
		Cashew	4500.00	1.93	0.9333	90.0000	74.9700	105.0300	68.6250	50.1750	87.0750
		Acacia	3750.00	1.71	0.8750	75.0000	62.4750	87.5250	57.1875	41.8125	72.5625
	Overall	EG	218.98	1.20	0.0730	4.3796	3.6482	5.1109	3.3394	2.4416	4.2372
		SE	72.82	1.20	0.0243	1.4563	1.2131	1.6995	1.1104	0.8119	1.4090
		MDF	1252.91	1.72	0.2914	25.0583	20.8735	29.2430	19.1069	13.9700	24.2439
		Grassland	1323.53	1.80	0.2941	26.4706	22.0500	30.8912	20.1838	14.7574	25.6103
		Teak	327.87	1.00	0.1311	6.5574	5.4623	7.6525	5.0000	3.6557	6.3443
		Mixed	406.50	1.33	0.1220	8.1301	6.7724	9.4878	6.1992	4.5325	7.8659
		Cashew	1555.56	1.51	0.4111	31.1111	25.9156	36.3067	23.7222	17.3444	30.1000
Acacia		1805.56	1.63	0.4444	36.1111	30.0806	42.1417	27.5347	20.1319	34.9375	
Mahagony		384.62	1.33	0.1154	7.6923	6.4077	8.9769	5.8654	4.2885	7.4423	
Kozhikode	Thamarassery	EG	357.1429	1.529412	0.093407	7.142857	5.95	8.335714	5.446429	3.982143	6.910714
		SE	456.9892	1.7	0.107527	9.139785	7.613441	10.666129	6.969086	5.09543	8.842742
		MDF	2738.095	1.803922	0.607143	54.761905	45.616667	63.907143	41.755952	30.529762	52.982143
		W forest	3000	2.4	0.5	60	49.98	70.02	45.75	33.45	58.05

**Table 3.1.12 Density, abundance and frequency of *Desmodium gangeticum*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	180.72	2.00	0.0361	6.9271	5.1199	8.7343	1.6572	1.3246	1.9899
		Teak	642.86	2.25	0.1143	24.6407	18.2121	31.0693	5.8950	4.7118	7.0782
	Wadakkancherry	Cashew	38.46	1.00	0.0154	1.4742	1.0896	1.8588	0.3527	0.2819	0.4235
		Teak	357.14	1.00	0.1429	13.6893	10.1179	17.2607	3.2750	2.6176	3.9324
		Eucalyptus	307.02	1.75	0.0702	8.4057	6.2127	10.5987	2.0110	1.6073	2.4146
	Overall	MDF	114.07	2.00	0.0228	4.3722	3.2316	5.5129	1.0460	0.8361	1.2560
		Teak	595.24	2.00	0.1190	22.8155	16.8631	28.7679	5.4583	4.3627	6.5539
		Cashew	38.46	1.00	0.0154	1.4742	1.0896	1.8588	0.3527	0.2819	0.4235
Eucalyptus		307.02	1.75	0.0702	8.4057	6.2127	10.5987	2.0110	1.6073	2.4146	
Chalakkudy	Palappilly	Teak	58.14	1.00	0.0233	2.2285	1.6471	2.8099	0.5331	0.4261	0.6402
	Pariyaram	MDF	390.63	1.67	0.0938	14.9727	11.0664	18.8789	3.5820	2.8630	4.3010
		SE	555.56	2.00	0.1111	21.2944	15.7389	26.8500	5.0944	4.0719	6.1170
		Teak	416.67	1.00	0.1667	15.9708	11.8042	20.1375	3.8208	3.0539	4.5878
	Vellikkulangara	EG	1071.43	3.00	0.1429	41.0679	30.3536	51.7821	9.8250	7.8529	11.7971
		SE	185.19	1.00	0.0741	7.0981	5.2463	8.9500	1.6981	1.3573	2.0390
		MDF	277.78	3.00	0.0370	10.6472	7.8694	13.4250	2.5472	2.0359	3.0585
	Overall	EG	1071.43	3.00	0.1429	41.0679	30.3536	51.7821	9.8250	7.8529	11.7971
		MDF	338.98	2.00	0.0678	12.9932	9.6034	16.3831	3.1085	2.4845	3.7324
		SE	277.78	1.33	0.0833	10.6472	7.8694	13.4250	2.5472	2.0359	3.0585
Teak		86.21	1.00	0.0345	3.3043	2.4422	4.1638	0.7905	0.6318	0.9492	
Vazhachal	Charpa	Teak	416.67	2.00	0.0833	15.9708	11.8042	20.1375	3.8208	3.0539	4.5878
	Kollathirumedu	SE	454.55	6.00	0.0303	17.4227	12.8773	21.9682	4.1682	3.3315	5.0048

	Vazhachal	SE	357.14	4.00	0.0357	13.6893	10.1179	17.2607	3.2750	2.6176	3.9324
	Overall	SE	210.08	5.00	0.0168	8.0525	5.9517	10.1534	1.9265	1.5398	2.3132
		Teak	250.00	2.00	0.0500	9.5825	7.0825	12.0825	2.2925	1.8324	2.7527
Peechi	Chimmini	MDF	340.91	1.50	0.0909	8.7114	6.4386	10.9841	2.0841	1.6658	2.5024
		SE	243.90	8.00	0.0122	9.3488	6.9098	11.7878	2.2366	1.7877	2.6855
	Overall	MDF	47.32	1.50	0.0126	0.6046	0.4468	0.7623	0.1446	0.1156	0.1737
		SE	186.92	8.00	0.0093	7.1645	5.2953	9.0336	1.7140	1.3700	2.0581
Nenmara	Alathur	Teak	897.44	2.33	0.1538	34.3987	25.4244	43.3731	8.2295	6.5777	9.8813
	Kollengode	MDF	1000.00	6.00	0.0667	38.3300	28.3300	48.3300	9.1700	7.3294	11.0106
	Nelliyampathy	SE				4.1068	3.0354	5.1782	0.9825	0.7853	1.1797
	Overall	SE	104.17	3.00	0.0139	3.9927	2.9510	5.0344	0.9552	0.7635	1.1469
		MDF	882.35	6.00	0.0588	33.8206	24.9971	42.6441	8.0912	6.4671	9.7152
		Teak	729.17	2.33	0.1250	27.9490	20.6573	35.2406	6.6865	5.3444	8.0286
Palakkad	Olavakkode	MDF	468.75	4.00	0.0469	17.9672	13.2797	22.6547	4.2984	3.4357	5.1612
		Teak	1250.00	3.00	0.1667	47.9125	35.4125	60.4125	11.4625	9.1618	13.7633
	Walayar	MDF	153.06	1.50	0.0408	5.8668	4.3362	7.3974	1.4036	1.1218	1.6853
	Overall	MDF	331.86	3.00	0.0442	12.7201	9.4015	16.0387	3.0431	2.4323	3.6540
Teak		357.14	3.00	0.0476	13.6893	10.1179	17.2607	3.2750	2.6176	3.9324	
Mannarkkad	Agali	MDF	416.67	1.00	0.1667	15.9708	11.8042	20.1375	3.8208	3.0539	4.5878
	Attappady	MDF	119.05	1.00	0.0476	4.5631	3.3726	5.7536	1.0917	0.8725	1.3108
	Mannarkkad	Cashew	131.58	1.00	0.0526	5.0434	3.7276	6.3592	1.2066	0.9644	1.4488
	Overall	MDF	106.38	1.00	0.0426	2.0388	1.5069	2.5707	0.4878	0.3899	0.5857
		Cashew	131.58	1.00	0.0526	5.0434	3.7276	6.3592	1.2066	0.9644	1.4488
Parambikulam	Karimala	MDF	138.89	1.00	0.0556	5.3236	3.9347	6.7125	1.2736	1.0180	1.5293
	Sungam	MDF	914.63	3.00	0.1220	35.0579	25.9116	44.2043	8.3872	6.7037	10.0707
		EG	227.27	1.00	0.0909	8.7114	6.4386	10.9841	2.0841	1.6658	2.5024

	Overall	Teak	10000.00	8.00	0.5000	383.3000	283.3000	483.3000	91.7000	73.2940	110.1060
		MDF	487.80	2.67	0.0732	18.6976	13.8195	23.5756	4.4732	3.5753	5.3710
		EG	227.27	1.00	0.0909	8.7114	6.4386	10.9841	2.0841	1.6658	2.5024
		Teak	10000.00	8.00	0.5000	383.3000	283.3000	483.3000	91.7000	73.2940	110.1060
Nilambur(N)	Edavanna	MDF	161.29	2.00	0.0323	6.1823	4.5694	7.7952	1.4790	1.1822	1.7759
	Nilambur	Teak				70.5378	52.1351	88.9406	16.8753	13.4881	20.2626
	Vazhikkadavu	MDF	197.37	1.50	0.0526	7.5651	5.5914	9.5388	1.8099	1.4466	2.1731
		Teak	526.32	1.60	0.1316	20.1737	14.9105	25.4368	4.8263	3.8576	5.7951
	Overall	MDF	164.47	1.67	0.0395	6.3043	4.6595	7.9490	1.5082	1.2055	1.8110
		Teak	1386.36	3.81	0.1455	53.1393	39.2757	67.0030	12.7130	10.1612	15.2647
Nilambur(S)	Kalikavu	MDF	357.14	1.00	0.1429	13.6893	10.1179	17.2607	3.2750	2.6176	3.9324
		Acacia	1538.46	2.67	0.2308	58.9692	43.5846	74.3538	14.1077	11.2760	16.9394
	Karulai	EG	312.50	1.00	0.1250	11.9781	8.8531	15.1031	2.8656	2.2904	3.4408
		MDF	221.52	3.50	0.0253	8.4908	6.2756	10.7060	2.0313	1.6236	2.4391
		Teak	1802.33	4.77	0.1512	69.0831	51.0599	87.1064	16.5273	13.2100	19.8447
	Overall	Acacia	1538.46	2.67	0.2308	58.9692	43.5846	74.3538	14.1077	11.2760	16.9394
		EG	227.27	1.00	0.0909	8.7114	6.4386	10.9841	2.0841	1.6658	2.5024
		MDF	232.56	2.67	0.0349	8.9140	6.5884	11.2395	2.1326	1.7045	2.5606
		Teak	1802.33	4.77	0.1512	69.0831	51.0599	87.1064	16.5273	13.2100	19.8447
	Wayanad (N)	Begur	SE	454.55	3.00	0.0606	17.4227	12.8773	21.9682	4.1682	3.3315
Overall		SE	250.00	3.00	0.0333	9.5825	7.0825	12.0825	2.2925	1.8324	2.7527
Wayanad WLS	Muthanga	Teak	441.18	1.50	0.1176	16.9103	12.4985	21.3221	4.0456	3.2336	4.8576
	Tholpetty	MDF	62.50	1.00	0.0250	2.3956	1.7706	3.0206	0.5731	0.4581	0.6882
	Overall	MDF	15.15	1.00	0.0061	0.5808	0.4292	0.7323	0.1389	0.1111	0.1668
		Teak	67.57	1.50	0.0180	2.5899	1.9142	3.2655	0.6196	0.4952	0.7440
Kannur	Kannavam	MDF	57.14	4.00	0.0057	2.1903	1.6189	2.7617	0.5240	0.4188	0.6292

		Mixed	170.45	1.50	0.0455	6.5335	4.8290	8.2381	1.5631	1.2493	1.8768
	Overall	MDF	23.31	4.00	0.0023	0.8935	0.6604	1.1266	0.2138	0.1708	0.2567
		Mixed	60.98	1.50	0.0163	2.3372	1.7274	2.9470	0.5591	0.4469	0.6714

**Table 3.1.13 Density, abundance and frequency of *Desmodium gyrans*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	105.42	1.75	0.0241	0.6926	0.5655	0.8197	0.0719	5.3357	0.0792
	Wadakkancherry	Cashew	38.46	1.00	0.0154	0.2527	0.2063	0.2991	0.0262	0.0236	0.0289
	Overall	MDF	66.54	1.75	0.0152	0.4372	0.3570	0.5174	0.0454	0.0408	0.0500
		Cashew	38.46	1.00	0.0154	0.2527	0.2063	0.2991	0.0262	0.0236	0.0289
Peechi	Chimmini	MDF	56.82	1.00	0.0227	0.3733	0.3048	0.4418	0.0388	0.0348	0.0427
		SE	121.95	4.00	0.0122	0.8012	0.6542	0.9482	0.0832	0.0748	0.0916
	Peechi	Teak	24.51	1.00	0.0098	0.1610	0.1315	0.1906	0.0167	0.0150	0.0184
	Overall	MDF	7.89	1.00	0.0032	0.0518	0.0423	0.0613	0.0054	0.0048	0.0059
		SE	93.46	4.00	0.0093	0.6140	0.5014	0.7267	0.0637	0.0573	0.0702
		Teak	24.51	1.00	0.0098	0.1610	0.1315	0.1906	0.0167	0.0150	0.0184
Nilambur(S)	Karulai	Teak	843.02	4.14	0.0814	4.9657	4.0546	5.8768	0.5155	0.4635	0.5675
	Overall	Teak	843.02	4.14	0.0814	4.9657	4.0546	5.8768	0.5155	0.4635	0.5675
Wayanad WLS	S. Batherly	DDF	192.31	1.00	0.0769	1.2635	1.0317	1.4953	0.1312	0.1179	0.1444
	Kurichiyath	SE	192.31	1.00	0.0769	1.2635	1.0317	1.4953	0.1312	0.1179	0.1444
		DDF	1842.11	2.80	0.2632	12.1026	9.8822	14.3231	1.2563	1.1296	1.3831
		Teak	1714.29	3.43	0.2000	11.2629	9.1965	13.3293	1.1691	1.0512	1.2871
	Overall	DDF	1171.88	2.50	0.1875	7.8164	6.2866	9.1118	0.7992	0.7186	0.8798
		Teak	540.54	3.43	0.0631	3.5514	2.8998	4.2029	0.3686	0.3315	0.4058

		SE	192.31	1.00	0.0769	1.2635	1.0317	1.4953	0.1312	0.1179	0.1444
Kannur	Kottiyur	Mixed	56.82	1.00	0.0227	0.3733	0.3048	0.4418	0.0388	0.0348	0.0427
	Overall	Mixed	20.33	1.00	0.0081	0.1335	0.1090	0.1580	0.0139	0.0125	0.0153

**Table 3.1.14 Density, abundance and frequency of *Desmodium velutnium*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	120.48	4.00	0.0120	4.3964	3.1337	5.6590	1.4000	0.9325	1.8675
		Mixed	238.10	2.00	0.0476	8.6881	6.1929	11.1833	2.7667	1.8429	3.6905
	Overall	MDF	76.05	4.00	0.0076	2.7749	1.9779	3.5719	0.8837	0.5886	1.1787
		Mixed	238.10	2.00	0.0476	8.6881	6.1929	11.1833	2.7667	1.8429	3.6905
Chalakkudy	Palappilly	Teak	290.70	1.67	0.0698	10.6076	7.5610	13.6541	3.3779	2.2500	4.5058
	Vellikkulangara	Teak	390.63	1.67	0.0938	14.2539	10.1602	18.3477	4.5391	3.0234	6.0547
	Overall	Teak	287.36	1.67	0.0690	5.2428	3.7371	6.7486	1.6695	1.1121	2.2270
Vazhachal	Charpa	MDF	555.56	2.00	0.1111	21.2944	15.7389	26.8500	6.4556	4.3000	8.6111
		SE	75.76	1.00	0.0303	2.7644	1.9705	3.5583	0.8803	0.5864	1.1742
	Kollathirumedu	MDF	500.00	1.00	0.2000	19.1650	14.1650	24.1650	5.8100	3.8700	7.7500
		Teak	1562.50	2.50	0.2500	57.0156	40.6406	73.3906	18.1563	12.0938	24.2188
		SE	535.71	3.00	0.0714	19.5482	13.9339	25.1625	6.2250	4.1464	8.3036
	Vazhachal	SE	178.57	2.00	0.0357	6.5161	4.6446	8.3875	2.0750	1.3821	2.7679
		MDF	227.27	1.00	0.0909	8.2932	5.9114	10.6750	2.6409	1.7591	3.5227
	Overall	SE	252.10	2.40	0.0420	9.1992	6.5571	11.8412	2.9294	1.9513	3.9076
		MDF	400.00	1.33	0.1200	14.5960	10.4040	18.7880	4.6480	3.0960	6.2000
Teak		625.00	2.50	0.1000	22.8063	16.2563	29.3563	7.2625	4.8375	9.6875	
Peechi	Peechi	Teak	98.04	1.33	0.0294	3.5775	2.5500	4.6049	1.1392	0.7588	1.5196
		MDF	155.68	1.55	0.0403	5.6807	4.0492	7.3122	1.8090	1.2049	2.4130

	Overall	MDF	134.07	1.55	0.0347	4.8922	3.4871	6.2972	1.5579	1.0377	2.0781
		Teak	98.04	1.33	0.0294	3.5775	2.5500	4.6049	1.1392	0.7588	1.5196
Palakkad	Olavakkode	MDF	78.13	2.00	0.0156	2.8508	2.0320	3.6695	0.9078	0.6047	1.2109
		SE	263.16	2.00	0.0526	9.6026	6.8447	12.3605	3.0579	2.0368	4.0789
	Walayar	MDF	816.33	3.20	0.1020	29.7878	21.2327	40.7918	9.4857	6.3184	12.6531
		SE	263.16	2.00	0.0526	9.6026	6.8447	12.3605	3.0579	2.0368	4.0789
	Ottappalam	Teak	166.67	1.00	0.0667	6.0817	4.3350	7.8283	1.9367	1.2900	2.5833
		MDF	398.23	3.00	0.0531	12.9168	9.2071	16.6265	4.1133	2.7398	5.4867
	Overall	Teak	119.05	1.00	0.0476	4.3440	3.0964	5.5917	1.3833	0.9214	1.8452
SE		263.16	2.00	0.0526	9.6026	6.8447	12.3605	3.0579	2.0368	4.0789	
Parambikulam	Parambikulam	MDF	500.00	1.00	0.2000	18.2450	13.0050	23.4850	5.8100	3.8700	7.7500
		Teak	7500.00	6.00	0.5000	273.6750	195.0750	352.2750	87.1500	58.0500	116.2500
	Overall	MDF	30.49	1.00	0.0122	1.1125	0.7930	1.4320	0.3543	0.2360	0.4726
		Teak	7500.00	6.00	0.5000	273.6750	195.0750	352.2750	87.1500	58.0500	116.2500
Nilambur(N)	Vazhikkadavu	MDF	1315.79	3.33	0.1579	48.0132	34.2237	61.8026	15.2895	10.1842	20.3947
		Teak	592.11	1.80	0.1316	21.6059	15.4007	27.8112	6.8803	4.5829	9.1776
	Overall	MDF	657.89	3.33	0.0789	24.0066	17.1118	30.9013	7.6447	5.0921	10.1974
		Teak	204.55	1.80	0.0455	7.4639	5.3202	9.6075	2.3768	1.5832	3.1705
Nilambur(S)	Karulai	MDF	253.16	2.67	0.0380	9.2380	6.5848	11.8911	2.9418	1.9595	1.0896
		Teak	232.56	2.00	0.0465	8.4860	6.0488	10.9233	2.7023	1.8000	3.6047
	Overall	MDF	232.56	2.67	0.0349	8.4860	6.0488	10.9233	2.7023	1.8000	3.6047
		Teak	232.56	2.00	0.0465	8.4860	6.0488	10.9233	2.7023	1.8000	3.6047

**Table 3.1.15 Density, abundance and frequency of *Elephantopus scaber*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability of useful Products(Entire plant) (kg/ha)		
						Estimate	LCL	UCL
Thrissur	Machad	MDF	3012.05	8.00	0.1506	7.7410	6.9717	8.5102
		Teak	5285.71	4.93	0.4286	13.5843	12.2343	14.9343
		Mixed	1785.71	3.75	0.1905	4.5893	4.1332	5.0454
	Pattikkad	MDF	2994.51	12.11	0.0989	7.6959	6.9311	8.4607
	Wadakkancherry	MDF	1666.67	4.00	0.1667	4.2833	3.8577	4.7090
		Cashew	1038.46	3.38	0.1231	2.6688	2.4036	2.9341
		Teak	2142.86	6.00	0.1429	5.5071	4.9599	6.0544
		Eucalyptus	482.46	3.67	0.0526	1.2399	1.1167	1.3631
		Acacia	1428.57	2.00	0.2857	3.6714	3.3066	4.0363
	Overall	MDF	2975.29	8.94	0.1331	7.6465	6.8866	8.4064
		Teak	4761.90	5.00	0.3810	12.2381	11.0219	13.4543
		Mixed	1785.71	3.75	0.1905	4.5893	4.1332	5.0454
		Cashew	1038.46	3.38	0.1231	2.6688	2.4036	2.9341
		Eucalyptus	482.46	3.67	0.0526	1.2399	1.1167	1.3631
		Acacia	1428.57	2.00	0.2857	3.6714	3.3066	4.0363
Chalakkudy	Palappilly	Teak	232.56	2.00	0.0465	0.5977	0.5383	0.6571
	Vellikkulangara	SE	555.56	6.00	0.0370	1.4278	1.2859	1.5697
		Teak	11562.50	14.80	0.3125	29.7156	26.7626	32.6687
	Overall	SE	416.67	6.00	0.0278	1.0708	0.9644	1.1773
		Teak	4367.82	12.67	0.1379	11.2253	10.1097	12.3408
Peechi	Peechi	Teak	24.51	1.00	0.0098	0.0630	0.0567	0.0693
		MDF	155.68	3.40	0.0183	0.4001	0.3603	0.4399
	Overall	MDF	134.07	3.40	0.0158	0.3446	0.3103	0.3788
		Teak	24.51	1.00	0.0098	0.0630	0.0567	0.0693



Nenmara	Alathur	Teak	64.10	1.00	0.0256	0.1647	0.1484	0.1811
	Kollengode	MDF	833.33	5.00	0.0667	2.1417	1.9288	2.3545
		Teak	5833.33	7.00	0.3333	14.9917	13.5018	16.4815
	Overall	MDF	735.29	5.00	0.0588	1.8897	1.7019	2.0775
		Teak	1145.83	5.50	0.0833	2.9448	2.6521	3.2374
Palakkad	Olavakkode	MDF	117.19	3.00	0.0156	0.3012	0.2712	0.3311
		Teak	2916.67	7.00	0.1667	7.4958	6.7509	8.2408
	Ottappalam	Mixed	312.50	2.00	0.0625	0.8031	0.7233	0.8829
	Overall	MDF	66.37	3.00	0.0089	0.1706	0.1536	0.1875
		Teak	833.33	7.00	0.0476	2.1417	1.9288	2.3545
		Mixed	312.50	2.00	0.0625	0.8031	0.7233	0.8829
Mannarkkad	Agali	SE	1730.77	9.00	0.0769	4.4481	4.0060	4.8901
	Mannarkkad	EG	5000.00	8.00	0.2500	12.8500	11.5730	14.1270
		MDF	250.00	2.00	0.0500	0.6425	0.5787	0.7064
		Teak	1250.00	3.00	0.1667	3.2125	2.8933	3.5318
		Acacia	1203.70	6.50	0.0741	3.0935	2.7861	3.4009
	Overall	EG	2000.00	8.00	0.1000	5.1400	4.6292	5.6508
		MDF	106.38	2.00	0.0213	0.2734	0.2462	0.3006
		Teak	1250.00	3.00	0.1667	3.2125	2.8933	3.5318
		SE	1022.73	9.00	0.0455	2.6284	2.3672	2.8896
		Acacia	1203.70	6.50	0.0741	3.0935	2.7861	3.4009
Parambikulam	Karimala	MDF	1527.78	5.50	0.1111	3.9264	3.5362	4.3166
	Parambikulam	SE	1333.33	8.00	0.0667	3.4267	3.0861	3.7672
	Sungam	MDF	1402.44	3.29	0.1707	3.6043	3.2461	3.9625
		EG	4090.91	3.60	0.4545	10.5136	9.4688	11.5585
	Overall	MDF	1036.59	3.78	0.1098	2.6640	2.3993	2.9288
		SE	952.38	8.00	0.0476	2.4476	2.2044	2.6909
		EG	4090.91	3.60	0.4545	10.5136	9.4688	11.5585

Nilambur(N)	Edavanna	Bamboo	4642.86	4.33	0.4286	11.9321	10.7464	13.1179
	Nilambur	MDF	1428.57	4.00	0.1429	3.6714	3.3066	4.0363
		Teak	4340.28	11.36	0.1528	11.1545	10.0460	12.2630
		Mixed	500.00	6.00	0.0333	1.2850	1.1573	1.4127
		Vazhikkadavu	Teak	197.37	1.50	0.0526	0.5072	0.4568
	Overall	Bamboo	4642.86	4.33	0.4286	11.9321	10.7464	13.1179
		MDF	131.58	4.00	0.0132	0.3382	0.3046	0.3718
		Mixed	500.00	6.00	0.0333	1.2850	1.1573	1.4127
		Teak	2909.09	9.85	0.1182	7.4764	6.7334	8.2193
	Nilambur(S)	Karulai	MDF	63.29	2.00	0.0127	0.1627	0.1465
SE			156.25	3.00	0.0208	0.4016	0.3617	0.4415
Teak			5843.02	11.17	0.2093	15.0166	13.5243	16.5089
Overall		MDF	58.14	2.00	0.0116	0.1494	0.1346	0.1643
		SE	156.25	3.00	0.0208	0.4016	0.3617	0.4415
		Teak	5843.02	11.17	0.2093	15.0166	13.5243	16.5089
Wayanad (N)	Begur	MDF	21071.43	8.43	1.0000	54.1536	48.7719	59.5352
		SE	1969.70	5.20	0.1515	5.0621	4.5591	5.5652
		Teak	5040.32	3.79	0.5323	12.9536	11.6663	14.2409
	Periya	SE	312.50	1.00	0.1250	0.8031	0.7233	0.8829
		Cashew	5833.33	2.33	1.0000	14.9917	13.5018	16.4815
		Eucalyptus	4852.94	2.36	0.8235	12.4721	11.2326	13.7115
		Pine	1250.00	2.00	0.2500	3.2125	2.8933	3.5318
	Overall	MDF	9218.75	8.43	0.4375	21.0597	18.9669	23.1526
		SE	1166.67	4.00	0.1167	2.9983	2.7004	3.2963
		Cashew	5833.33	2.33	1.0000	14.9917	13.5018	16.4815
		Eucalyptus	4852.94	2.36	0.8235	12.4721	11.2326	13.7115
		Pine	1250.00	2.00	0.2500	3.2125	2.8933	3.5318
Teak		5040.32	3.79	0.5323	12.9536	11.6663	14.2409	

Wayanad (S)	Chedleth	MDF	655.74	1.78	0.1475	1.6852	1.5178	1.8527
		Teak	400.00	1.33	0.1200	1.0280	0.9258	1.1302
	Overall	Eucalyptus	900.00	2.25	0.1600	2.3130	2.0831	2.5429
		MDF	655.74	1.78	0.1475	1.6852	1.5178	1.8527
		Teak	400.00	1.33	0.1200	1.0280	0.9258	1.1302
		Eucalyptus	900.00	2.25	0.1600	2.3130	2.0831	2.5429
Wayanad WLS	Aralam	MDF	2559.52	4.30	0.2381	6.5780	5.9243	7.2317
	Muthanga	MDF	12200.00	8.13	0.6000	31.3540	28.2381	34.4699
		Teak	21470.59	9.13	0.9412	55.1794	49.6958	60.6630
		Eucalyptus	1375.00	3.67	0.1500	3.5338	3.1826	3.8849
	S. Bathery	MDF	20086.21	8.63	0.9310	51.6216	46.4915	56.7516
		DDF	11538.46	5.45	0.8462	29.6538	26.7069	32.6008
		Teak	19807.69	7.92	1.0000	50.9058	45.8469	55.9647
	Tholpetty	MDF	5687.50	7.00	0.3250	14.6169	13.1643	16.0695
		Teak	12196.97	8.47	0.5758	31.3462	28.2311	34.4613
		Eucalyptus	16000.00	8.00	0.8000	41.1200	37.0336	45.2064
	Kurichiyath	MDF	13125.00	5.25	1.0000	33.7313	30.3791	37.0834
		SE	20000.00	8.00	1.0000	51.4000	46.2920	56.5080
		DDF	5526.32	7.00	0.3158	14.2026	12.7912	15.6141
		Teak	6357.14	5.93	0.4286	16.3379	14.7142	17.9615
	Overall	MDF	9575.76	7.52	0.5091	24.6097	22.1640	27.0553
		DDF	7968.75	6.00	0.5313	20.4797	18.4445	22.5149
		SE	20000.00	8.00	1.0000	51.4000	46.2920	56.5080
		Teak	13558.56	7.92	0.6847	34.8455	31.3826	38.3084
		Eucalyptus	4300.00	6.14	0.2800	11.0510	9.9528	12.1492

Kannur	Kannavam	MDF	3428.57	3.38	0.4057	8.8114	7.9358	9.6871
		Mahagony	500.00	2.00	0.1000	1.2850	1.1573	1.4127
		Mixed	5340.91	3.76	0.5682	13.7261	12.3621	15.0902
		Teak	5576.92	2.42	0.9231	14.3327	12.9083	15.7570
	Kottiyur	MDF	642.86	2.25	0.1143	1.6521	1.4880	1.8163
		SE	1028.23	8.50	0.0484	2.6425	2.3799	2.9051
		Mixed	9034.09	5.30	0.6818	23.2176	20.9103	25.5249
		Teak	3214.29	1.80	0.7143	8.2607	7.4398	9.0816
	Kasaragod	SE	882.35	3.00	0.1176	2.2676	2.0423	2.4930
		MDF	3267.05	3.03	0.4318	8.3963	7.5619	9.2307
		Teak	1280.49	3.00	0.1707	3.2909	2.9638	3.6179
		Mixed	2928.57	2.73	0.4286	7.5264	6.7785	8.2744
		Cashew	6036.59	3.00	0.8049	15.5140	13.9723	17.0558
		Acacia	1250.00	2.50	0.2000	3.2125	2.8933	3.5318
	Kanjangad	SE	1857.14	4.33	0.1714	4.7729	4.2985	5.2472
		MDF	518.02	4.60	0.0450	1.3313	1.1990	1.4636
		Cashew	220.59	3.00	0.0294	0.5669	0.5106	0.6233
	Overall	SE	1007.28	5.93	0.0680	2.5887	2.5819	4.9526
		MDF	2255.24	3.28	0.2751	5.7960	5.2200	6.3720
		Teak	2418.03	2.46	0.3934	6.2143	6.1979	11.8890
		Mixed	5975.61	4.20	0.5691	15.3573	15.3167	29.3809
		Cashew	2833.33	3.00	0.3778	7.2817	7.2624	13.9309
		Acacia	694.44	2.50	0.1111	1.7847	1.7800	3.4144
		Mahagony	384.62	2.00	0.0769	0.9885	0.9858	1.8911
Kozhikode	Thamarassery	EG	41.21	1.5	0.0109	0.1059	0.0954	0.1164

**Table 3.1.16 Density, abundance and frequency of *Hemidesmus indicus*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	2515.06	2.61	0.3855	4.0995	3.5638	4.6353	2.3727	1.7565	2.9889
		Teak	7142.86	4.17	0.6857	11.6429	10.1214	13.1643	6.7386	4.9886	8.4886
		Mixed	6785.71	4.38	0.6190	11.0607	9.6154	12.5061	6.4016	4.7391	8.0641
	Pattikkad	MDF	2197.80	1.90	0.4615	3.5824	3.1143	4.0505	2.0734	1.5349	2.6119
	Wadakkancherry	MDF	4166.67	3.33	0.5000	6.7917	5.9042	7.6792	3.9308	2.9100	4.9517
		Cashew	2461.54	3.37	0.2923	4.0123	3.4880	4.5366	2.3222	1.7191	2.9253
		Teak	6428.57	4.50	0.5714	10.4786	9.1093	11.8479	6.0647	4.4897	7.6397
		Eucalyptus	4078.95	3.72	0.4386	6.6487	5.7799	7.5175	3.8481	2.8487	4.8474
		Acacia	1071.43	1.50	0.2857	1.7464	1.5182	1.9746	1.0108	0.7483	1.2733
	Overall	MDF	2442.97	2.36	0.4144	3.9820	3.4617	4.5024	2.3047	1.7062	2.9032
		Teak	7023.81	4.21	0.6667	11.4488	9.9527	12.9449	6.6263	4.9054	8.3471
		Eucalyptus	4078.95	3.72	0.4386	6.6487	5.7799	7.5175	3.8481	2.8487	4.8474
		Acacia	1071.43	1.50	0.2857	1.7464	1.5182	1.9746	1.0108	0.7483	1.2733
		Cashew	2461.54	3.37	0.2923	4.0123	3.4880	4.5366	2.3222	1.7191	2.9253
Mixed		6785.71	4.38	0.6190	11.0607	9.6154	12.5061	6.4016	4.7391	8.0641	
Chalakkudy	Palappilly	Teak	406.98	2.33	0.0698	0.5686	0.4943	0.6429	0.3291	0.2436	0.4146
	Pariyaram	MDF	78.13	1.00	0.0313	0.1273	0.1107	0.1440	0.0737	0.0546	0.0928
	Vellikkulangara	MDF	185.19	2.00	0.0370	0.3019	0.2624	0.3413	0.1747	0.1293	0.2201
	Overall	MDF	127.12	1.50	0.0339	0.0691	0.0600	0.0781	0.0400	0.0296	0.0504
		Teak	201.15	2.33	0.0345	0.0468	0.0407	0.0530	0.0271	0.0201	0.0341
Vazhachal	Charpa	SE	468.75	3.00	0.0625	0.7641	0.6642	0.8639	0.4422	0.3274	0.5571
		MDF	3333.33	3.00	0.4444	5.4333	4.7233	6.1433	3.1457	2.3280	3.9613

	Kollathirumedu	SE	454.55	3.00	0.0606	0.7409	0.6441	0.8377	0.4288	0.3175	0.5402
		MDF	2000.00	4.00	0.2000	3.2600	2.8340	3.6860	1.8868	1.3968	2.3768
		Teak	4375.00	4.67	0.3750	7.1313	6.1994	8.0631	4.1274	3.0555	5.1993
	Vazhachal	SE	892.86	5.00	0.0714	1.4554	1.2652	1.6455	0.8423	0.6236	1.0611
		MDF	2045.45	3.00	0.2727	3.3341	2.8984	3.7698	1.9297	1.4285	2.4308
	Overall	SE	399.16	3.80	0.0420	0.6506	0.5656	0.7357	0.3766	0.2788	0.4744
		MDF	2500.00	3.13	0.3200	4.0750	3.5425	4.6075	2.3585	1.7460	2.9710
		Teak	1750.00	4.67	0.1500	2.8525	2.4798	3.2253	1.6510	1.2222	2.0797
	Peechi	Chimmini	MDF	1761.36	3.44	0.2045	2.5006	2.1738	2.8273	1.4473	1.0714
Peechi		EG	416.67	1.00	0.1667	0.6792	0.5904	0.7679	0.3931	0.2910	0.4952
		Teak	11519.61	6.53	0.7059	18.7770	16.3233	21.2306	10.8676	8.0453	13.6899
		MDF	3974.36	3.47	0.4579	6.4782	5.6317	7.3247	3.7494	2.7757	4.7231
Overall		SE	900.00	1.29	0.2800	1.4670	1.2753	1.6587	0.8491	0.6286	1.0696
		MDF	3667.19	3.47	0.4227	5.9261	5.1517	6.7005	3.4299	2.5391	4.3206
		SE	210.28	1.29	0.0654	0.3428	0.2980	0.3875	0.1984	0.1469	0.2499
		EG	416.67	1.00	0.1667	0.6792	0.5904	0.7679	0.3931	0.2910	0.4952
Nenmara		Alathur	Teak	2179.49	2.62	0.3333	3.5526	3.0883	4.0168	2.0561	1.5222
	MDF		1166.67	7.00	0.0667	1.9017	1.6532	2.1502	1.1006	0.8148	1.3865
	Kollengode	Teak	555.56	2.00	0.1111	0.9056	0.7872	1.0239	0.5241	0.3880	0.6602
		MDF	1029.41	7.00	0.0588	1.6779	1.4587	1.8972	0.9711	0.7189	1.2234
	Overall	Teak	1875.00	2.57	0.2917	3.0563	2.6569	3.4556	1.7689	1.3095	2.2283
Palakkad	Olavakkode	MDF	1406.25	4.00	0.1406	2.2922	1.9927	2.5917	1.3267	0.9821	1.6712
	Walayar	MDF	2091.84	3.15	0.2653	3.4097	2.9641	3.8553	1.9734	1.4609	2.4859
	Ottappalam	Mixed	156.25	1.00	0.0625	0.2547	0.2214	0.2880	0.1474	0.1091	0.1857
		Teak	333.33	2.00	0.0667	0.5433	0.4723	0.6143	0.3145	0.2328	0.3961

	Overall	MDF	1703.54	3.50	0.1947	2.7768	2.4139	3.1396	1.6071	1.1898	2.0245	
		Teak	238.10	2.00	0.0476	0.3881	0.3374	0.4388	0.2246	0.1663	0.2830	
		Mixed	156.25	1.00	0.0625	0.2547	0.2214	0.2880	0.1474	0.1091	0.1857	
Mannakkad	Agali	DDF	543.48	1.67	0.1304	0.8859	0.7701	1.0016	0.5127	0.3796	0.6459	
		MDF	416.67	1.00	0.1667	0.6792	0.5904	0.7679	0.3931	0.2910	0.4952	
		SE	1538.46	4.00	0.1538	2.5077	2.1800	2.8354	1.4514	1.0745	1.8283	
	Mannakkad	MDF	1625.00	6.50	0.1000	2.6488	2.3026	2.9949	1.5330	1.1349	1.9312	
		Teak	1666.67	2.00	0.3333	2.7167	2.3617	3.0717	1.5723	1.1640	1.9807	
		Cashew	2105.26	2.29	0.3684	3.4316	2.9832	3.8800	1.9861	1.4703	2.5019	
		Acacia	9814.81	5.05	0.7778	15.9981	11.2056	18.0887	9.2593	6.8547	11.6639	
	Overall	MDF	744.68	4.67	0.0638	1.1271	0.9798	1.2744	0.6524	0.4829	0.8218	
		DDF	543.48	1.67	0.1304	0.8859	0.7701	1.0016	0.5127	0.3796	0.6459	
		SE	909.09	4.00	0.0909	1.4818	1.2882	1.6755	0.8576	0.6349	1.0804	
		Cashew	2105.26	2.29	0.3684	3.4316	2.9832	3.8800	1.9861	1.4703	2.5019	
		Acacia	9814.81	5.05	0.7778	15.9981	11.2056	18.0887	9.2593	6.8547	11.6639	
	Parambikulam	Karimala	MDF	694.44	5.00	0.0556	1.1319	0.9840	1.2799	0.6551	0.4850	0.8253
		Orukomban	MDF	277.78	2.00	0.0556	0.4528	0.3936	0.5119	0.2621	0.1940	0.3301
		Sungam	MDF	1219.51	2.86	0.1707	1.9878	1.7280	2.2476	1.1505	0.8517	1.4493
Teak			6250.00	2.50	1.0000	10.1875	8.8563	11.5188	5.8963	4.3650	7.4275	
Overall		MDF	823.17	3.00	0.1098	1.3418	1.1664	1.5171	0.7766	0.5749	0.9783	
		Teak	6250.00	2.50	1.0000	10.1875	8.8563	11.5188	5.8963	4.3650	7.4275	
Nilambur(N)		Edavanna	MDF	2258.06	3.50	0.2581	3.6806	3.1997	4.1616	2.1303	1.5770	2.6835
	Bamboo		6071.43	2.83	0.8571	9.8964	8.6032	11.1896	5.7278	4.2403	7.2153	
	Nilambur	MDF	3571.43	3.33	0.4286	5.8214	5.0607	6.5821	3.3693	2.4943	4.2443	
		Teak	4722.22	4.00	0.4722	7.6972	6.6914	8.7031	4.4549	3.2980	5.6119	
		Mixed	1416.67	2.83	0.2000	2.3092	2.0074	2.6109	1.3365	0.9894	1.6836	

	Vazhikkadavu	MDF	2763.16	8.40	0.1316	4.5039	3.9154	5.0925	2.6068	1.9298	3.2837
		Teak	7500.00	6.71	0.4474	12.2250	10.6275	13.8225	7.0755	5.2380	14.1300
	Overall	MDF	2631.58	5.00	0.2105	4.2895	3.7289	4.8500	2.4826	1.8379	3.1274
		Bamboo	6071.43	2.83	0.8571	9.8964	8.6032	11.1896	5.7278	4.2403	7.2153
		Mixed	1416.67	2.83	0.2000	2.3092	2.0074	2.6109	1.3365	0.9894	1.6836
Teak	5681.82	4.90	0.4636	9.2614	8.0511	10.4716	5.3602	3.9682	6.7523		
Nilambur(S)	Kalikavu	MDF	1428.57	1.33	0.4286	2.3286	2.0243	2.6329	1.3477	0.9977	1.6977
		Acacia	576.92	1.50	0.1538	0.9404	0.8175	1.0633	0.5443	0.4029	0.6856
	Karulai	EG	1250.00	2.00	0.2500	2.0375	1.7713	2.3038	1.1793	0.8730	1.4855
		MDF	1044.30	2.75	0.1519	1.3927	1.2107	1.5747	0.8061	0.5967	1.0154
		SE	416.67	2.00	0.0833	0.6792	0.5904	0.7679	0.3931	0.2910	0.4952
	Teak	6715.12	5.37	0.5000	10.4244	9.0622	11.7866	6.0334	4.4345	7.6002	
	Overall	EG	909.09	2.00	0.1818	1.4818	1.2882	1.6755	0.8576	0.6349	1.0804
		MDF	1075.58	2.47	0.1744	1.2794	1.1122	1.4465	0.7405	0.5482	0.9328
		SE	416.67	2.00	0.0833	0.6792	0.5904	0.7679	0.3931	0.2910	0.4952
		Teak	6715.12	5.37	0.5000	10.4244	9.0622	11.7866	6.0334	4.4345	7.6002
Wayanad N	Begur	MDF	1071.43	3.00	0.1429	1.7464	1.5182	1.9746	1.0108	0.7483	1.2733
		SE	227.27	3.00	0.0303	0.3705	0.3220	0.4189	0.2144	0.1587	0.2701
		Teak	322.58	2.00	0.0645	0.5258	0.4571	0.5945	0.3043	0.2253	0.3834
	Periya	Eucalyptus	294.12	2.00	0.0588	0.4794	0.4168	0.5421	0.2775	0.2054	0.3495
	Overall	MDF	468.75	3.00	0.0625	0.6792	0.5904	0.7679	0.3931	0.2910	0.4952
		SE	125.00	3.00	0.0167	0.2038	0.1771	0.2304	0.1179	0.0873	0.1486
		Eucalyptus	294.12	2.00	0.0588	0.4794	0.4168	0.5421	0.2775	0.2054	0.3495
Teak		322.58	2.00	0.0645	0.5258	0.4571	0.5945	0.3043	0.2253	0.3834	
Wayanad S	Chedleth	MDF	2827.87	2.65	0.4262	4.6094	4.0071	5.2118	2.6678	1.9750	3.3606
		Teak	3900.00	2.44	0.6400	6.3570	5.5263	7.1877	3.6793	2.7238	1.9340



	Meppady	Savanah	703.13	2.25	0.1250	1.1461	0.9963	1.2959	0.6633	0.4911	0.8356
	Overall	MDF	2827.87	2.65	0.4262	4.6094	4.0071	5.2118	2.6678	1.9750	3.3606
		Teak	3900.00	2.44	0.6400	6.3570	5.5263	7.1877	3.6793	2.7238	1.9340
		Savanah	703.13	2.25	0.1250	1.1461	0.9963	1.2959	0.6633	0.4911	0.8356
Wayanad WLS	Muthanga	MDF	1050.00	3.00	0.1400	1.7115	1.4879	1.9352	0.9906	0.7333	1.2478
		Teak	882.35	3.00	0.1176	1.4382	1.2503	1.6262	0.8324	0.6162	1.0486
		Eucalyptus	500.00	4.00	0.0500	0.8150	0.7085	0.9215	0.4717	0.3492	0.5942
	S. Bathery	MDF	2413.79	4.67	0.2069	3.9345	3.4203	4.4486	2.2772	1.6858	2.8686
		DDF	384.62	2.00	0.0769	0.6269	0.5450	0.7088	0.3628	0.2686	0.4571
		Teak	769.23	1.60	0.1923	1.2538	1.0900	1.4177	0.7257	0.5372	0.9142
	Tholpetty	Teak	151.52	2.00	0.0303	0.2470	0.2147	0.2792	0.1429	0.1058	0.1801
	Kurichiyath	DDF	394.74	3.00	0.0526	0.6434	0.5593	0.7275	0.3724	0.2757	0.4691
		Teak	71.43	1.00	0.0286	0.1164	0.1012	0.1316	0.0674	0.0499	0.0849
	Overall	MDF	742.42	3.77	0.0788	1.2102	1.0520	1.3683	0.7004	0.5185	0.8823
		DDF	390.63	2.50	0.0625	0.6367	0.5535	0.7199	0.3685	0.2728	0.4642
		Teak	382.88	1.89	0.0811	0.6241	0.5425	0.7057	0.3612	0.2674	0.4550
		Eucalyptus	400.00	4.00	0.0400	0.6520	0.5668	0.7372	0.3774	0.2794	0.4754
Kannur	Kannavam	MDF	271.43	2.11	0.0514	0.4424	0.3846	0.5002	0.2561	0.1896	0.3226
		Mixed	56.82	1.00	0.0227	0.0926	0.0805	0.1047	0.0536	0.0397	0.0675
	Kottiyur	MDF	71.43	1.00	0.0286	0.1164	0.1012	0.1316	0.0674	0.0499	0.0849
		SE	40.32	2.00	0.0081	0.0657	0.0571	0.0743	0.0380	0.0282	0.0479
	Kasaragod	MDF	1477.27	1.63	0.3636	2.4080	2.0933	2.7226	1.3937	1.0317	1.7556
		Teak	1158.54	1.36	0.3415	1.8884	1.6416	2.1352	1.0930	0.8091	1.3768
		Cinnamomum	500.00	1.00	0.2000	0.8150	0.7085	0.9215	0.4717	0.3492	0.5942
		Mixed	2571.43	1.57	0.6571	4.1914	3.6437	4.7391	2.4259	1.7959	3.0559
		Cashew	2073.17	1.70	0.4878	1.9558	1.4479	2.4638	3.3793	2.9377	3.8209

		Acacia	1000.00	1.33	0.3000	1.6300	1.4170	1.8430	0.9434	0.6984	1.1884
		Mahagony	416.67	1.00	0.1667	0.4075	0.3543	0.4608	0.2359	0.1746	0.2971
		MDF	1103.60	1.81	0.2432	1.7989	1.5638	2.0339	1.0411	0.7708	1.3115
	Kanjangad	Grassland	6750.00	2.70	1.0000	11.0025	9.5648	12.4403	6.3680	4.7142	8.0217
		Cashew	808.82	1.22	0.2647	1.3184	1.1461	1.4907	0.7630	0.5649	0.9612
		Taliparamba	Grassland	1071.43	1.50	0.2857	1.7464	1.5182	1.9746	1.0108	0.7483
	Overall	SE	24.27	2.00	0.0049	0.0396	0.0344	0.0447	0.0229	0.0170	0.0288
		MDF	705.13	1.75	0.1608	1.1494	0.9992	1.2996	0.6652	0.4925	0.8380
		Grassland	4411.76	2.50	0.7059	7.1912	6.2515	8.1309	4.1621	3.0812	5.2429
		Teak	778.69	1.36	0.2295	1.2693	1.1034	1.4351	0.7346	0.5438	0.9254
		Mixed	752.03	1.54	0.1951	1.2258	1.0656	1.3860	0.7095	0.5252	0.8937
		Cashew	1250.00	1.55	0.3222	2.0375	1.7713	2.3038	1.1793	0.8730	1.4855
		Acacia	555.56	1.33	0.1667	0.9056	0.6333	1.0239	0.5241	0.3880	0.6602
		Cinnamomum	500.00	1.00	0.2000	0.8150	0.7085	0.9215	0.4717	0.3492	0.5942
Mahagony		96.15	1.00	0.0385	0.1567	0.1096	0.1772	0.0907	0.0672	0.1143	
Kozhikode	Thamarassery	MDF	892.86	2	0.1786	1.4554	1.2652	1.6455	0.8423	0.6236	1.0611
		W Forest	500	2	0.1	0.815	0.7085	0.9215	0.4717	0.3492	0.5942

**Table 3.1.17 Density, abundance and frequency of *Ichnocarpus frutescens*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( (kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	1596.39	5.30	0.1205	3.5280	2.9747	4.0813	0.7201	0.6486	0.7916
		Teak	5428.57	4.47	0.4857	11.9971	10.1156	13.8787	2.4488	2.2056	2.6920
		Mixed	12380.95	8.00	0.6190	27.3619	23.0707	31.6531	5.5850	5.0304	6.1521
	Pattikkad	MDF	2142.86	3.55	0.2418	4.7357	3.9930	5.4784	0.9666	0.8706	1.0626

	Wadakkancherry	MDF	1250.00	1.50	0.3333	2.7625	2.3293	3.1958	0.5639	0.5079	0.6199
		Cashew	8230.77	5.49	0.6000	18.1900	15.3372	21.0428	3.7129	3.3442	4.0816
		Teak	6785.71	3.80	0.7143	14.9964	12.6445	17.3484	3.0610	2.7570	3.3650
		Eucalipyus	6008.77	4.72	0.5088	13.2794	11.1967	15.3620	2.7106	2.4414	2.9798
		Acacia	2142.86	3.00	0.2857	4.7357	3.9930	5.4784	0.9666	0.8706	1.0626
	Overall	MDF	1777.57	4.25	0.1673	3.9284	3.3123	4.5445	0.8019	0.7222	0.8815
		Teak	5654.76	4.32	0.5238	12.4970	10.5371	14.4570	2.5509	2.2975	2.8042
		Eucalipyus	6008.77	4.72	0.5088	13.2794	11.1967	15.3620	2.7106	2.4414	2.9798
		Acacia	2142.86	3.00	0.2857	4.7357	3.9930	5.4784	0.9666	0.8706	1.0626
		Cashew	8230.77	5.49	0.6000	18.1900	15.3372	21.0428	3.7129	3.3442	4.0816
		Mixed	12380.95	8.00	0.6190	27.3619	23.0707	31.6531	5.5850	5.0304	6.1521
Chalakkudy	Palappilly	Teak	1220.93	3.00	0.1628	2.3128	1.9501	2.6755	0.4721	0.4252	0.5190
	Pariyaram	MDF	1015.63	4.33	0.0938	2.2445	1.8925	2.5965	0.4581	0.4126	0.5036
		Teak	833.33	2.00	0.1667	1.8417	1.5528	2.1305	0.3759	0.3386	0.4133
	Vellikkulangara	MDF	92.59	1.00	0.0370	0.2046	0.1725	0.2367	0.0418	0.0376	0.0459
		Teak	1250.00	3.20	0.1563	2.7625	2.3293	3.1958	0.5639	0.5079	0.6199
	Overall	MDF	593.22	3.50	0.0678	1.2174	1.0264	1.4083	0.2485	0.2238	0.2732
		Teak	1178.16	2.93	0.1609	2.4132	2.0347	2.7917	0.4926	0.4437	0.5415
Vazhachal	Charpa	MDF	10833.33	9.75	0.4444	23.9417	20.1868	27.6965	4.8869	4.4016	5.3723
	Kollathirumedu	SE	75.76	1.00	0.0303	0.1674	0.1412	0.1937	0.0342	0.0308	0.0376
		Teak	625.00	2.00	0.1250	1.3813	1.1646	1.5979	0.2819	0.2539	0.3099
	Vazhachal	SE	267.86	1.50	0.0714	0.5920	0.4991	0.6848	0.1208	0.1088	0.1328
		MDF	4545.45	10.00	0.1818	10.0455	8.4700	11.6209	2.0505	1.8468	2.2541
	Overall	SE	84.03	1.33	0.0252	0.1857	0.1566	0.2148	0.0379	0.0341	0.0417
		MDF	5900.00	9.83	0.2400	13.0390	10.9941	15.0839	2.6615	2.3972	2.9258
		Teak	250.00	2.00	0.0500	0.5525	0.4659	0.6392	0.1128	0.1016	0.1240

Peechi	Chimmini	MDF	965.91	4.25	0.0909	1.3813	1.1646	1.5979	0.2819	0.2539	0.3099
		SE	152.44	2.50	0.0244	0.3369	0.2841	0.3897	0.0688	0.0619	0.0756
	Peechi	Teak	6666.67	6.63	0.4020	14.7333	12.4227	17.0440	3.0073	2.7087	3.3060
		MDF	2271.06	3.59	0.2527	5.0190	4.2319	5.8062	1.0245	0.9227	1.1262
		SE	900.00	1.80	0.2000	1.9890	1.6771	2.3009	0.4060	0.3657	0.4463
	Overall	MDF	2089.91	3.63	0.2303	4.5141	3.8062	5.2221	0.9214	0.8299	1.0129
		SE	327.10	2.00	0.0654	0.7229	0.6095	0.8363	0.1476	0.1329	0.1622
		Teak	6666.67	6.63	0.4020	14.7333	12.4227	17.0440	3.0073	2.7087	3.3060
	Nenmara	Alathur	MDF	5000.00	4.00	0.5000	11.0500	9.3170	12.7830	2.2555	2.0315
Teak			2051.28	5.33	0.1538	4.5333	3.8224	5.2443	0.9253	0.8334	1.0172
Kollengode		Teak	16944.44	7.63	0.8889	37.4472	31.5743	43.3202	7.6436	6.8845	8.4028
Overall		MDF	588.24	4.00	0.0588	1.3000	1.0961	1.5039	0.2654	0.2390	0.2917
		Teak	4843.75	6.64	0.2917	10.7047	9.0258	12.3835	2.1850	1.9680	2.4020
Palakkad	Olavakkode	MDF	3750.00	5.05	0.2969	8.2875	6.9878	9.5873	1.6916	0.0840	1.8596
		Teak	5416.67	6.50	0.3333	11.9708	10.0934	13.8483	2.4435	2.2008	2.6861
	Walayar	MDF	4234.69	5.93	0.2857	9.3587	7.8909	10.8264	1.9103	1.7206	2.1000
		SE	263.16	2.00	0.0526	0.5816	0.4904	0.6728	0.1187	0.1069	0.1305
	Ottappalam	Mixed	4062.50	3.71	0.4375	8.9781	7.5701	10.3862	1.8326	1.6506	2.0146
		Acacia	3000.00	2.00	0.6000	6.6300	5.5902	7.6698	1.3533	1.2189	1.4877
		Teak	10000.00	6.67	0.6000	22.1000	18.6340	25.5660	4.5110	4.0630	4.9590
	Overall	MDF	3960.18	5.42	0.2920	8.7520	7.3794	10.1246	1.7864	1.6090	1.9639
		SE	263.16	2.00	0.0526	0.5816	0.4904	0.6728	0.1187	0.1069	0.1305
		Teak	8690.48	6.64	0.5238	19.2060	16.1938	22.2181	3.9203	3.5309	4.3096
		Mixed	4062.50	3.71	0.4375	8.9781	7.5701	10.3862	1.8326	1.6506	2.0146
		Acacia	3000.00	2.00	0.6000	6.6300	5.5902	7.6698	1.3533	1.2189	1.4877

Mannarkkad	Agali	DDF	543.48	2.50	0.0870	1.2011	1.0127	1.3895	0.2452	0.2208	0.2695
		SE	384.62	1.00	0.1538	0.8500	0.7167	0.9833	0.1735	0.1563	0.1907
	Mannarkkad	SE	2916.67	7.00	0.1667	6.4458	5.4349	7.4568	1.3157	1.1850	2.0872
		Teak	416.67	1.00	0.1667	0.9208	0.7764	1.0653	0.1880	0.1693	0.2066
		Acacia	5277.78	3.56	0.5926	11.6639	9.8346	13.4932	2.3808	3.6860	2.6173
	Overall	SE	1022.73	3.00	0.1364	0.5023	0.4235	0.5810	0.1025	0.0923	0.1127
		DDF	543.48	2.50	0.0870	1.2011	1.0127	1.3895	0.2452	0.2208	0.2695
		Teak	416.67	1.00	0.1667	0.9208	0.7764	1.0653	0.1880	0.1693	0.2066
		Acacia	5277.78	3.56	0.5926	11.6639	9.8346	13.4932	2.3808	3.6860	2.6173
	Parambikulam	Karimala	MDF	277.78	2.00	0.0556	0.6139	0.5176	0.7102	0.1253	0.1129
Orukomban		MDF	1250.00	4.50	0.1111	2.7625	2.3293	3.1958	0.5639	0.5079	0.6199
Sungam		MDF	1829.27	3.75	0.1951	4.0427	3.4087	4.6767	0.8252	0.7432	0.9071
Overall		MDF	1250.00	3.73	0.1341	2.0213	1.7043	2.3384	0.4126	0.3716	0.4261
Nilambur(N)	Edavanna	MDF	483.87	6.00	0.0323	1.0694	0.9016	1.2371	0.2183	0.1966	0.2400
		Bamboo	357.14	1.00	0.1429	0.7893	0.6655	0.9131	0.1611	0.1451	0.1771
	Nilambur	Teak	9618.06	7.91	0.4861	21.2559	17.9223	24.5895	4.3387	3.9078	4.7696
		Mixed	333.33	2.00	0.0667	0.7367	0.6211	0.8522	0.1504	0.1354	0.1653
	Vazhikkadavu	MDF	11118.42	9.39	0.4737	24.5717	20.7181	28.4254	5.0155	4.5174	5.5136
		Teak	19605.26	9.61	0.8158	43.3276	36.5324	50.1228	8.8439	7.9656	9.7223
	Overall	MDF	5756.58	9.21	0.2500	12.7220	10.7268	14.7173	2.5968	2.8547	2.3389
		Bamboo	357.14	1.00	0.1429	0.7893	0.6655	0.9131	0.1611	0.1451	0.1771
		Mixed	333.33	2.00	0.0667	0.7367	0.6211	0.8522	0.1504	0.1354	0.1653
		Teak	13068.18	8.71	0.6000	28.8807	24.3513	33.4101	5.8951	5.3096	6.4805
Nilambur(S)	Kalikavu	MDF	9285.71	4.33	0.8571	20.5214	17.3030	23.7399	4.1888	3.7728	4.6048
		Acacia	12115.38	5.25	0.9231	26.7750	22.5758	30.9742	5.4653	4.9225	6.0080
	Karulai	EG	8750.00	7.00	0.5000	19.3375	16.3048	22.3703	3.9471	3.5551	4.3391

		MDF	4936.71	8.67	0.2278	8.6722	7.3121	10.0322	1.7701	1.5943	1.9459
		SE	4583.33	7.33	0.2500	10.1292	8.5406	11.7178	2.0675	1.8622	2.2729
		Teak	4738.37	4.79	0.3953	7.8378	6.6086	9.0670	1.5998	1.4409	1.7587
	Overall	Acacia	12115.38	5.25	0.9231	26.7750	22.5758	30.9742	5.4653	4.9225	6.0080
		EG	6363.64	7.00	0.3636	14.0636	11.8580	16.2693	14.0636	2.5855	3.1557
		MDF	5290.70	7.58	0.2791	9.6366	8.1253	11.1480	1.9670	1.7717	2.1624
		SE	4583.33	7.33	0.2500	10.1292	8.5406	11.7178	2.0675	1.8622	2.2729
		Teak	4738.37	4.79	0.3953	7.8378	6.6086	9.0670	1.5998	1.4409	1.7587
Wayanad (S)	Chedleth	MDF	614.75	1.50	0.1639	1.3586	1.1455	1.5717	0.2773	0.2498	0.3049
		Teak	500.00	1.25	0.1600	1.1050	0.9317	1.2783	0.2256	0.2032	0.2480
	Overall	MDF	614.75	1.50	0.1639	1.3586	1.1455	1.5717	0.2773	0.2498	0.3049
		Teak	500.00	1.25	0.1600	1.1050	0.9317	1.2783	0.2256	0.2032	0.2480
Wayanad WLS	Muthanga	Teak	735.29	5.00	0.0588	1.6250	1.3701	1.8799	0.3317	0.2988	0.3646
		Eucaliptus	500.00	2.00	0.1000	1.1050	0.9317	1.2772	0.2256	0.2032	0.2480
	S. Bathery	MDF	172.41	2.00	0.0345	0.3810	0.3213	0.4408	0.0778	0.0701	0.0855
		Teak	192.31	2.00	0.0385	0.4250	0.3583	0.4917	0.0868	0.0781	0.0954
	Tholpetty	Teak	151.52	2.00	0.0303	0.3348	0.2823	0.3874	0.0683	0.0616	0.0751
	Kurichiyath	Teak	357.14	2.50	0.0571	0.7893	0.6655	0.9131	0.1611	0.1451	0.1771
	Overall	MDF	30.30	2.00	0.0061	0.0670	0.0565	0.0775	0.0137	0.0123	0.0150
		Teak	315.32	2.80	0.0450	0.6968	0.5876	0.8061	0.1422	0.1281	0.1564
Eucaliptus		400.00	2.00	0.0800	0.8840	0.7454	1.0226	0.1804	0.1625	0.1984	
Kannur	Kannavam	MDF	357.14	1.67	0.0857	0.7893	0.6655	0.9131	0.8737	0.7858	0.9615
		Mixed	284.09	1.67	0.0682	0.6278	0.5294	0.7263	0.1282	0.1154	0.1409
	Kottiyur	MDF	71.43	1.00	0.0286	0.1579	0.1331	0.1826	0.0322	0.0290	0.0354
		Teak	1785.71	2.50	0.2857	3.9464	3.3275	4.5654	0.8055	0.7255	0.8855
	Kasaragod	Teak	60.98	1.00	0.0244	0.1348	0.1136	0.1559	0.0275	0.0248	0.0302

	Kanjangad	MDF	360.36	2.00	0.0721	0.7964	0.6715	0.9213	0.1626	0.1464	0.1787	
		Grassland	500.00	1.00	0.2000	1.1050	0.9317	1.2783	0.2256	0.2032	0.2480	
		Cashew	294.12	2.00	0.0588	0.6500	0.5481	0.7519	0.1327	0.1195	0.1459	
	Overall	MDF	244.76	1.75	0.0559	0.0129	0.0109	0.0149	0.0026	0.0024	0.0029	
		Grassland	294.12	1.00	0.1176	0.6500	0.5481	0.7519	0.1327	0.1195	0.1459	
		Teak	245.90	2.00	0.0492	0.0906	0.0764	0.1048	0.0185	0.0167	0.0203	
		Mixed	101.63	1.67	0.0244	0.2246	0.1894	0.2598	0.0458	0.0413	0.0504	
		Cashew	111.11	2.00	0.0222	0.2456	0.2070	0.2841	0.0501	0.0451	0.0551	
	Kozhikode	Thamarassery	MDF	952.38	2	0.1905	2.1048	1.7747	2.4349	0.4297	0.387	0.472

**Table 3.1.18 Density, abundance and frequency of *Naregamia alata*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	4457.83	5.92	0.3012	13.2843	12.6522	13.9165	3.1339	3.0777	3.1900
		Teak	3214.29	4.09	0.3143	9.5786	9.1228	10.0344	2.2596	2.2191	2.3001
		Mixed	3928.57	8.25	0.1905	11.7071	11.1112	12.2642	2.7618	2.7123	2.8113
	Pattikkad	MDF	4148.35	5.81	0.2857	12.3621	11.7739	12.9503	2.9163	2.8640	2.9686
	Wadakkancherry	MDF	6666.67	5.33	0.5000	19.8667	18.9213	20.8120	4.6867	4.6027	4.7707
		Cashew	3961.54	5.72	0.2769	11.8054	11.2436	12.3671	2.7850	2.7350	2.8349
		Eucalyptus	19736.84	10.98	0.7193	58.8158	56.0171	61.6145	13.8750	13.6263	14.1237
		Acacia	3928.57	3.67	0.4286	11.7071	11.1501	12.2642	2.7618	2.7123	2.8109
	Overall	MDF	4401.14	5.86	0.3004	13.1154	12.4913	13.7395	3.0940	3.0385	3.1495
		Teak	2678.57	4.09	0.2619	7.9821	7.6023	8.3620	1.8830	1.8493	1.9168
		Cashew	3961.54	5.72	0.2769	11.8054	11.2436	12.3671	2.7850	2.7350	2.8349
		Eucalyptus	19736.84	10.98	0.7193	58.8158	56.0171	61.6145	13.8750	13.6263	14.1237
		Mixed	3928.57	8.25	0.1905	11.7071	11.1112	12.2642	2.7618	2.7123	2.8113

Chalakkudy	Palappilly	Teak	1395.35	3.00	0.1860	2.4256	1.6501	1.8150	0.5722	0.4014	0.4160	
	Pariyaram	MDF	703.13	1.80	0.1563	2.0953	1.9956	2.1950	0.4943	0.4854	0.5032	
		Cashew	833.33	1.00	0.3333	2.4833	2.3652	2.6015	0.5858	0.5753	0.5963	
		SE	1666.67	3.00	0.2222	4.9667	4.7303	5.2030	1.1717	1.1507	1.1927	
		Teak	1250.00	2.00	0.2500	3.7250	3.5478	3.9023	0.8788	0.8630	0.8945	
	Vellikulangara	SE	4629.63	16.67	0.1111	13.7963	13.1398	14.4528	3.2546	3.1963	3.3130	
		MDF	9814.81	13.25	0.2963	29.2481	27.8564	30.6399	6.8998	6.7761	7.0235	
		Teak	937.50	3.00	0.1250	2.7938	2.6609	2.9267	0.6591	0.6473	0.6709	
	Overall	MDF	4872.88	8.85	0.2203	14.5212	13.8302	15.2122	3.4256	3.3642	3.4870	
		SE	3888.89	11.20	0.1389	11.5889	11.0374	12.1403	2.7339	2.6849	2.7829	
		Teak	1206.90	2.80	0.1724	2.2264	2.1205	2.3324	0.5252	0.5158	0.5346	
	Vazhachal	Charpa	SE	156.25	1.00	0.0625	0.4656	0.4435	0.4878	0.1098	0.1079	0.1118
MDF			5833.33	7.00	0.3333	17.3833	16.5562	18.2105	4.1008	4.0273	4.1743	
Kollathirumedu		SE	681.82	3.00	0.0909	2.0318	1.9351	2.1285	0.4793	0.4707	0.4879	
		MDF	4500.00	4.50	0.4000	13.4100	12.7719	14.0481	3.1635	3.1068	3.2202	
		Teak	1562.50	5.00	0.1250	4.6563	4.4347	4.8778	1.0984	1.0788	1.1181	
Vazhachal		SE	535.71	3.00	0.0714	1.5964	1.5205	1.6724	0.3766	0.3699	0.3834	
		MDF	5454.55	6.00	0.3636	16.2545	15.4811	17.0280	3.8345	3.7658	3.9033	
Overall		SE	336.13	2.67	0.0504	0.9391	0.8944	0.9838	0.2215	0.2176	0.2255	
		MDF	5400.00	6.00	0.3600	6.2580	5.9602	6.5558	1.4763	1.4498	1.5028	
		Teak	625.00	5.00	0.0500	1.8625	1.7739	1.9511	0.4394	0.4315	0.4473	
Peechi		Chimmini	MDF	4715.91	7.55	0.2500	14.0534	13.3847	14.7221	3.3153	3.2559	3.3747
			SE	791.46	3.00	0.0122	0.2726	0.2596	0.2855	0.0643	0.0631	0.0655
	Peechi	Teak	7500.00	6.00	0.5000	22.3500	21.2865	23.4135	5.2725	5.1780	5.3670	
		MDF	7820.51	10.05	0.3114	23.3051	22.1962	24.4141	5.4978	5.3993	5.5964	
		SE	1000.00	5.00	0.0800	2.9800	2.8382	3.1218	0.7030	0.6904	0.7156	
	Overall	MDF	7389.59	9.76	0.3028	20.0703	19.1153	21.0254	4.7347	4.6499	4.8196	
		SE	303.74	4.33	0.0280	0.6963	0.6631	0.7294	0.1643	0.1613	0.1672	
		Teak	7500.00	6.00	0.5000	22.3500	21.2865	23.4135	5.2725	5.1780	5.3670	



Nenmara	Alathur	Teak	512.82	4.00	0.0513	1.5282	1.4555	1.6009	0.3605	0.3541	0.3670
	Kollengode	Teak	8333.33	6.00	0.5556	24.8333	23.6517	26.0150	5.8583	5.7525	5.9633
	Overall	Teak	1979.17	5.43	0.1458	5.8979	5.6173	6.1786	1.3914	1.3664	1.4163
Palakkad	Olavakkode	MDF	1562.50	2.86	0.2188	4.6563	4.4347	4.8778	1.0984	1.0788	1.1181
		Teak	3333.33	2.00	0.6667	9.9333	9.4607	10.4060	2.3433	2.3013	2.3853
	Ottappalam	Mixed	21250.00	17.00	0.5000	63.3250	60.3118	66.3383	14.9388	14.6710	15.2065
		Acacia	35500.00	17.75	0.8000	105.7900	100.7561	110.8239	24.9565	24.5092	25.4038
		Teak	20666.67	17.71	0.4667	61.5867	58.6561	64.5172	14.5287	14.2683	14.7891
	Overall	MDF	884.96	2.86	0.1239	2.6372	2.5117	2.7627	0.6221	0.6333	0.6110
		Teak	15714.29	12.00	0.5238	43.9905	41.8972	46.0837	10.3776	10.1916	10.5636
		Mixed	21250.00	17.00	0.5000	63.3250	60.3118	66.3383	14.9388	14.6710	15.2065
		Acacia	35500.00	17.75	0.8000	105.7900	100.7561	110.8239	24.9565	24.5092	25.4038
	Mannarkkad	Agali	DDF	760.87	7.00	0.0435	2.2674	2.1595	2.3753	0.5349	0.5253
Attappady		MDF	476.19	4.00	0.0476	1.4190	1.3515	1.4866	0.3348	0.3288	0.3408
Mannarkkad		MDF	1250.00	5.00	0.1000	3.7250	3.5478	3.9023	0.8788	0.8630	0.8945
		Teak	11250.00	6.75	0.6667	33.5250	31.9298	35.1203	7.9088	7.7670	8.0505
		Cashew	2763.16	4.20	0.2632	8.2342	7.8424	8.6260	1.9425	1.9077	1.9773
		Acacia	5833.33	6.30	0.3704	17.3833	16.5562	18.2105	4.1008	4.0273	4.1743
Overall		MDF	744.68	4.67	0.0638	2.2191	2.1136	2.3247	0.5235	0.5141	0.5329
		DDF	760.87	7.00	0.0435	2.2674	2.1595	2.3753	0.5349	0.5253	0.5445
		Teak	11250.00	6.75	0.6667	33.5250	31.9298	35.1203	7.9088	7.7670	8.0505
		Cashew	2763.16	4.20	0.2632	8.2342	7.8424	8.6260	1.9425	1.9077	1.9773
	Acacia	5833.33	6.30	0.3704	17.3833	16.5562	18.2105	4.1008	4.0273	4.1743	
Nilambur(N)	Edavanna	MDF	2258.06	4.67	0.1935	6.7290	6.4088	7.0492	1.5874	1.5590	1.6159
	Nilambur	MDF	714.29	2.00	0.1429	2.1286	2.0273	2.2299	0.5021	0.4931	0.5111
		SE	1500.00	4.50	0.1333	9.9333	9.4607	10.4060	2.3433	2.3013	2.3853
		Teak	625.00	4.50	0.0556	1.8625	1.7739	1.9511	0.4394	0.4315	0.4473
		Mixed	1500.00	4.50	0.1333	4.4700	4.2573	4.6827	1.0545	1.0356	1.0734

	Vazhikkadavu	MDF	657.89	3.33	0.0789	1.9605	1.8672	2.0538	0.4625	0.4542	0.4708
		SE	1666.67	2.00	0.3333	4.9667	4.7303	5.2030	1.1717	1.1507	1.1927
		Teak	8355.26	6.35	0.5263	24.8987	23.7139	26.0835	5.8738	5.7685	5.9790
	Overall	SE	2916.67	4.67	0.2500	8.6917	8.2781	9.1053	2.0504	2.0137	2.0872
		MDF	1315.79	4.00	0.1316	3.9211	3.7345	4.1076	0.9250	0.9084	0.9416
		Mixed	1500.00	4.50	0.1333	4.4700	4.2573	4.6827	1.0545	1.0356	1.0734
		Teak	3295.45	6.04	0.2182	9.8205	9.3532	10.2878	2.3167	2.2752	2.3582
Nilambur(S)	Kalikavu	Acacia	2307.69	2.40	0.3846	6.8769	6.5497	7.2042	1.6223	1.5932	1.6514
	Karulai	MDF	474.68	2.50	0.0759	1.4146	1.3472	1.4819	0.3337	0.3277	0.3397
		SE	208.33	1.33	0.0625	0.6208	0.5913	0.6504	0.1465	0.1438	0.1491
		Teak	3401.16	7.80	0.1744	10.1355	9.6532	10.6178	2.3910	2.3482	2.4339
	Overall	Acacia	2307.69	2.40	0.3846	6.8769	6.5497	7.2042	1.6223	1.5932	1.6514
		MDF	436.05	2.50	0.0698	1.2994	1.2376	1.3613	0.3065	0.3010	0.3120
		SE	208.33	1.33	0.0625	0.6208	0.5913	0.6504	0.1465	0.1438	0.1491
Teak		3401.16	7.80	0.1744	10.1355	9.6532	10.6178	2.3910	2.3482	2.4339	
Kannur	Kasaragod	SE	441.18	1.50	0.1176	1.3147	1.2521	1.3773	0.3101	0.3046	0.3157
		MDF	568.18	1.67	0.1364	1.6932	1.6126	1.7738	0.3994	0.3923	0.4066
		Teak	792.68	2.17	0.1463	2.3622	2.2498	2.4746	0.5573	0.5473	0.5672
	Kanjangad	SE	71.43	1.00	0.0286	0.2129	0.2027	0.2230	0.0502	0.0493	0.0511
	Overall	SE	48.54	1.33	0.0146	0.1447	0.1378	0.1515	0.0341	0.0335	0.0347
		MDF	116.55	1.67	0.0280	0.3473	0.3308	0.3638	0.0819	0.0805	0.0834
		Teak	532.79	2.17	0.0984	1.5877	1.5122	1.6633	0.3745	0.3678	0.3813
Kozhikode	Thamarassery	MDF	267.86	2.25	0.0476	0.7982	0.7602	0.8362	0.1883	0.1849	0.1917

**Table 3.1.19 Density, abundance and frequency of *Nerevilia aragona*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Tuber)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Chalakkudy	Vellikkulangara	MDF	370.37	4.0000	0.0370	2.2741	2.0718	2.4764	1.1667	1.0453	1.2881
	Overall	MDF	169.49	4.00	0.0169	1.0407	0.9481	1.1333	0.5339	0.4783	0.5895
Peechi	Peechi	MDF	27.47	1.50	0.0073	0.1687	0.1537	0.1837	0.0865	0.0775	0.0955
	Overall	MDF	23.66	1.50	0.0063	0.1453	0.1323	0.1582	0.0745	0.0668	0.0823
Mannarkkad	Agali	SE	1923.08	5.00	0.1538	11.8077	10.7573	12.8581	6.0577	5.4273	6.6881
	Overall	SE	1136.36	5.00	0.0909	6.9773	6.3566	7.5980	3.5795	3.2070	3.9520
Parambikulam	Sungam	MDF	426.83	7.00	0.0244	2.6207	2.3876	2.8539	1.3445	1.2046	1.4844
		EG	1136.364	2.5	0.1818	6.9773	6.3566	7.5980	3.5795	3.2070	3.9520
	Overall	MDF	213.41	7.00	0.0122	1.3104	1.1938	1.4269	0.6723	0.6023	0.7422
		EG	1136.364	2.5	0.1818	6.9773	6.3566	7.5980	3.5795	3.2070	3.9520
Wayanad (N)	Mananthavady	MDF	555.56	2.00	0.1111	3.4111	3.1077	3.7146	1.7500	1.5679	1.9321
		SE	454.55	2.00	0.0909	2.7909	2.5426	3.0392	1.4318	1.2828	1.5808
	Overall	MDF	312.50	2.00	0.0625	1.7056	1.5538	1.8573	0.8750	0.7839	0.9661
		SE	83.33	2.00	0.0167	0.5117	0.4662	0.5572	0.2625	0.2352	0.2898
Wayanad WLS	Muthanga	Teak	2794.12	6.33	0.1765	37.8603	18.6926	57.0279	8.8015	7.8856	9.7174
	S. Bathery	MDF	603.45	3.50	0.0690	3.7052	3.3756	4.0348	1.9009	1.7031	2.0987
	Tholpetty	Teak	75.76	1.00	0.0303	0.4652	0.4238	0.5065	0.2386	0.2138	0.2635
	Overall	MDF	106.06	3.50	0.0121	0.6512	0.5933	0.7091	0.3341	0.2993	0.3689
		Teak	450.45	5.00	0.0360	2.7658	2.5197	3.0118	1.4189	1.2713	1.5666

**Table 3.1.20 Density, abundance and frequency of *Phyllanthus amarus*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability of useful Products (Entire plant) (kg/ha)		
						Estimate	LCL	UCL
Thrissur	Pattikkad	MDF	549.45	2.22	0.0989	0.0700	0.0552	0.0849
	Overall	MDF	190.11	2.22	0.0342	0.0363	0.0286	0.0441
Chalakkudy	Palappilly	Teak	348.84	3.00	0.0465	0.1111	0.0876	0.1347
		SE	1944.44	7.00	0.1111	0.6195	0.4881	0.7509
	Pariyaram	Teak	416.67	2.00	0.0833	0.1328	0.1046	0.1609
		SE	1640.63	4.20	0.1563	0.5227	0.4118	0.6336
	Vellikulangara	Teak	1640.63	4.20	0.1563	0.5227	0.4118	0.6336
		SE	486.11	7.00	0.0278	0.1549	0.1220	0.1877
Overall	Teak	833.33	3.63	0.0920	0.2655	0.2092	0.3218	
	SE	833.33	3.63	0.0920	0.2655	0.2092	0.3218	
Vazhachal	Vazhachal	MDF	1818.18	8.00	0.0909	0.5793	0.4564	0.7022
	Overall	MDF	800.00	8.00	0.0400	0.2549	0.2008	0.3090
Peechi	Peechi	Teak	245.10	2.50	0.0392	0.0781	0.0615	0.0947
		MDF	320.51	2.92	0.0440	0.1021	0.0804	0.1238
		SE	400.00	2.00	0.0800	0.1274	0.1004	0.1545
	Overall	MDF	276.03	2.92	0.0379	0.0879	0.0693	0.1066
		SE	93.46	2.00	0.0187	0.0298	0.0235	0.0361
		Teak	245.10	2.50	0.0392	0.0781	0.0615	0.0947
Nenmara	Alathur	Teak	320.51	5.00	0.0256	0.1021	0.0804	0.1238
	Overall	Teak	260.42	5.00	0.0208	0.0830	0.0654	0.1006
Mannarkkad	Agali	DDF	9130.43	21.00	0.1739	2.9090	2.2917	3.5262
	Overall	DDF	9130.43	21.00	0.1739	2.9090	2.2917	3.5262
Parambikulam	Parambikulam	SE	666.67	4.00	0.0667	0.2124	0.1673	0.2575
		MDF	138.89	1.00	0.0556	0.0443	0.0349	0.0536
	Sungam	MDF	1097.56	3.00	0.1463	0.3497	0.2755	0.4239
	Overall	MDF	579.27	2.71	0.0854	0.1846	0.1454	0.2237
		SE	476.19	4.00	0.0476	0.1517	0.1195	0.1839

**Table 3.1.21 Density, abundance and frequency of Piper longum, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)			Availability of useful Products(stem) (kg/ha)			
						Estimate	LCL	UCL	Estimate	LCL	UCL	Estimate	LCL	UCL	
Thrissur	Machad	MDF	7409.64	12.00	0.2470	23.8590	22.1148	25.6033	5.5261	4.9704	6.0818	8.4470	7.6823	9.2117	
		SE	12500.00	10.00	0.5000	40.2500	37.3075	43.1925	9.3225	8.3850	10.2600	14.2500	12.9600	15.5400	
		Teak	1357.14	4.75	0.1143	4.3700	4.0505	4.6895	1.0122	0.9104	1.1139	1.5471	1.4071	1.6872	
	Pattikkad	MDF	7912.09	8.00	0.3956	25.4769	23.6144	27.3394	5.9008	5.3074	6.4942	9.0198	8.2033	9.8363	
	Wadakkancherry	MDF	6250.00	15.00	0.1667	20.1250	18.6538	21.5963	4.6613	4.1925	5.1300	7.1250	6.4800	7.7700	
		Cashew	5038.46	8.19	0.2462	16.2238	15.0378	17.4099	3.7577	3.3798	4.1356	5.7438	5.2239	6.2638	
		Eucalyptus	789.47	18.00	0.0175	2.5421	2.3563	2.7279	0.5888	0.5296	0.6480	0.9000	0.8185	0.9815	
	Overall	MDF	7557.03	10.19	0.2966	24.3337	22.5547	26.1126	5.6360	5.0693	6.2028	8.6150	7.8351	9.3949	
		Teak	1130.95	4.75	0.0952	3.6417	3.3754	3.9079	0.8435	0.7586	0.9283	1.2893	1.1726	1.4060	
		Cashew	5038.46	8.19	0.2462	16.2238	15.0378	17.4099	3.7577	3.3798	4.1356	5.7438	5.2239	6.2638	
		Eucalyptus	789.47	18.00	0.0175	2.5421	2.3563	2.7279	0.5888	0.5296	0.6480	0.9000	0.8185	0.9815	
		SE	12500.00	10.00	0.5000	40.2500	37.3075	43.1925	9.3225	8.3850	10.2600	14.2500	12.9600	15.5400	
	Chalakkudy	Palappilly	Teak	1511.63	5.20	0.1163	4.8674	4.5116	5.2233	1.1274	1.0140	1.2407	1.7233	1.5673	1.8793
		Pariyaram	MDF	1328.13	5.67	0.0938	4.2766	3.9639	4.5892	0.9905	0.8909	1.0901	1.5141	1.3770	1.6511
SE			1666.67	3.00	0.2222	5.3667	4.9743	5.7590	1.2430	1.1180	1.3680	1.9000	1.7280	2.0720	
Teak			3541.67	8.50	0.1667	11.4042	10.5705	12.2379	2.6414	2.3758	2.9070	4.0375	3.6720	4.4030	
Vellikkulangara		EG	3571.43	5.00	0.2857	11.5000	10.6593	12.3407	2.6636	2.3957	2.9314	4.0714	3.7029	4.4400	
		SE	10833.33	14.63	0.2963	34.8833	32.3332	37.4335	8.0795	7.2670	8.8920	12.3500	11.2320	13.4680	
		MDF	5740.74	7.75	0.2963	18.4852	17.1338	19.8366	4.2814	3.8509	4.7120	6.5444	5.9520	7.1369	
		Teak	468.75	6.00	0.0313	1.5094	1.3990	1.6197	0.3496	0.3144	0.3848	0.5344	0.4860	0.5828	
Overall		EG	3571.43	5.00	0.2857	11.5000	10.6593	12.3407	2.6636	2.3957	2.9314	4.0714	3.7029	4.4400	
		MDF	3347.46	7.18	0.1864	10.7788	9.9908	11.5668	2.4965	2.2455	2.7476	3.8161	3.4706	4.1616	

		SE	8541.67	12.30	0.2778	27.5042	25.4935	29.5149	6.3704	5.7298	7.0110	9.7375	8.8560	10.6190
		Teak	1408.05	6.13	0.0920	4.5339	4.2025	4.8654	1.0501	0.9445	1.1557	1.6052	1.4599	1.7505
Vazhachal	Charpa	EG	5625.00	4.50	0.5000	18.1125	16.7884	19.4366	4.1951	3.7733	4.6170	6.4125	5.8320	6.9930
		SE	2656.25	3.40	0.3125	8.5531	7.9278	9.1784	1.9810	1.7818	2.1803	3.0281	2.7540	3.3023
	Kollathirumedu	SE	227.27	3.00	0.0303	0.7318	0.6783	0.7853	0.1695	0.1525	0.1865	0.2591	0.2356	0.2825
	Sholayar	SE	1428.57	4.80	0.1190	4.6000	4.2637	4.9363	1.0654	0.9583	1.1726	1.6286	1.4811	1.7760
	Vazhachal	SE	892.86	1.67	0.2143	2.8750	2.6648	3.0852	0.6659	0.5989	0.7329	1.0179	0.9257	1.1100
		MDF	2727.27	6.00	0.1818	8.7818	8.1398	9.4238	2.0340	1.8295	2.2385	3.1091	2.8276	3.3905
	Overall	EG	1022.73	4.50	0.0909	3.2932	3.0524	3.5339	0.7628	0.6860	0.8395	1.1659	1.0604	1.2715
		SE	1134.45	3.18	0.1429	3.6529	3.3859	3.9200	0.8461	0.7610	0.9312	1.2933	1.1762	1.4104
		MDF	1200.00	6.00	0.0800	3.8640	3.5815	4.1465	0.8950	0.8050	0.9850	1.3680	1.2442	1.4918
	Peechi	Chimmini	SE	1615.85	5.30	0.1220	5.2030	4.8227	5.5834	1.2051	1.0839	1.3263	1.8421	1.6753
MDF			2329.55	4.56	0.2045	7.5011	6.9528	8.0495	1.7374	1.5627	1.9121	2.6557	2.4153	2.8961
Peechi		EG	5000.00	12.00	0.1667	16.1000	14.9230	17.2770	3.7290	3.3540	4.1040	5.7000	5.1840	6.2160
		Teak	12377.45	24.05	0.2059	39.8554	36.9417	42.7690	9.2311	8.3028	10.1594	14.1103	12.8329	15.3876
		MDF	27069.60	21.27	0.5092	87.1641	80.7919	93.5363	20.1885	18.1583	22.2187	30.8593	28.0658	33.6529
Overall		SE	19000.00	13.57	0.5600	61.1800	56.7074	65.6526	14.1702	12.7452	15.5952	21.6600	19.6992	23.6208
		MDF	23635.65	20.25	0.4669	75.0656	69.5779	80.5533	17.3863	15.6379	19.1347	26.5760	24.1702	28.9819
		SE	5677.57	10.13	0.2243	3.9873	3.6958	4.2788	0.9236	0.8307	1.0164	1.4117	1.2839	1.5395
		EG	5000.00	12.00	0.1667	16.1000	14.9230	17.2770	3.7290	3.3540	4.1040	5.7000	5.1840	6.2160
			Teak	12377.45	24.05	0.2059	39.8554	36.9417	42.7690	9.2311	8.3028	10.1594	14.1103	12.8329
Nenmara	Alathur	Teak	4487.18	10.00	0.1795	14.4487	13.3924	15.5050	3.3465	3.0100	3.6831	5.1154	4.6523	5.5785
	Kollengode	MDF	3833.33	5.75	0.2667	12.3433	11.4410	13.2457	2.8589	2.5714	3.1464	4.3700	3.9744	4.7656
		Teak	1111.11	4.00	0.1111	3.5778	3.3162	3.8393	0.8287	0.7453	0.9120	1.2667	1.1520	1.3813
	Nelliyampathy	EG	250.00	2.00	0.0500	0.8050	0.7462	0.8639	0.1865	0.1677	0.2052	0.2850	0.2592	0.3108
		SE	571.43	3.20	0.0714	1.8400	1.7055	1.9745	0.4262	0.3833	0.4690	0.6514	0.5925	0.7104

	Overall	EG	250.00	2.00	0.0500	0.8050	0.7462	0.8639	0.1865	0.1677	0.2052	0.2850	0.2592	0.3108
		SE	555.56	3.20	0.0694	1.7889	1.6581	1.9197	0.4127	0.3727	0.4560	0.6333	0.5760	0.6907
		MDF	3382.35	5.75	0.2353	10.8912	10.0950	11.6874	2.5226	2.2689	2.7762	3.8559	3.5068	4.2049
		Teak	3854.17	9.25	0.1667	11.7396	10.8814	12.5978	2.7191	2.4456	2.9925	4.1563	3.7800	4.5325
Palakkad	Olavakkode	MDF	15664.06	14.32	0.4375	50.4383	46.7510	54.1256	11.6823	10.5075	12.8571	17.8570	16.2405	19.4736
	Overall	MDF	8871.68	14.32	0.2478	28.5668	26.4784	30.6552	6.6165	5.9511	7.2819	10.11372	9.198159	11.029274
Mannarkkad	Attappady	MDF	476.19	2.00	0.0952	1.5333	1.4212	1.6454	0.3551	0.3194	0.3909	0.5429	0.4937	0.5920
	Mannarkkad	EG	1875.00	3.00	0.2500	6.0375	5.5961	6.4789	1.3984	1.2578	1.5390	2.1375	1.9440	2.3310
		MDF	500.00	2.00	0.1000	1.6100	1.4923	1.7277	0.3729	0.3354	0.4104	0.5700	0.5184	0.6216
		Cashew	2500.00	6.33	0.1579	8.0500	7.4615	8.6385	1.8645	1.6770	2.0520	2.8500	2.5920	3.1080
	Overall	EG	750.00	3.00	0.1000	2.4150	2.2385	2.5916	0.5594	0.5031	0.6156	0.8550	0.7776	0.9324
		MDF	425.53	2.00	0.0851	1.3702	1.2700	1.4704	0.3174	0.2854	0.3493	0.4851	0.4412	0.5290
Cashew		2500.00	6.33	0.1579	8.0500	7.4615	8.6385	1.8645	1.6770	2.0520	2.8500	2.5920	3.1080	
Parambikulam	Karimala	MDF	972.22	7.00	0.0556	3.1306	2.9017	3.3594	0.7251	0.6522	0.7980	1.1083	1.0080	1.2087
		SE	416.67	1.00	0.1667	1.3417	1.2436	1.4398	0.3108	0.2795	0.3420	0.4750	0.4320	0.5180
	Parambikulam	MDF	1500.00	3.00	0.2000	4.8300	4.4769	5.1831	1.1187	1.0062	1.2312	1.7100	1.5552	1.8648
		SE	166.67	1.00	0.0667	0.5367	0.4974	0.5759	0.1243	0.1118	0.1368	0.1900	0.1728	0.2072
	Sungam	MDF	121.95	2.00	0.0244	0.3927	0.3640	0.4214	0.0910	0.0818	0.1001	0.1390	0.1264	0.1516
	Overall	MDF	365.85	4.00	0.0366	1.1780	1.0919	1.2642	0.2729	0.2454	0.3003	0.4171	0.3793	0.4548
SE		238.10	1.00	0.0952	0.7667	0.7106	0.8227	0.1776	0.1597	0.1954	0.2714	0.2469	0.2960	
Nilambur(N)	Edavanna	EG	1666.67	2.00	0.3333	5.3667	4.9743	5.7590	1.2430	1.1180	1.3680	1.9000	1.3680	2.0720
		MDF	2338.71	4.83	0.1935	7.5306	6.9801	8.0812	1.7442	1.5688	1.9196	2.6661	2.4248	2.9075
	Nilambur	MDF	8928.57	6.25	0.5714	28.7500	26.6482	30.8518	6.6589	5.9893	7.3286	10.1786	9.2571	11.1000
		SE	10833.33	9.75	0.4444	34.8833	32.3332	37.4335	8.0795	7.2670	8.8920	12.3500	11.2320	13.4680
		Teak	486.11	7.00	0.0278	1.5653	1.4508	1.6797	0.3625	0.3261	0.3990	0.5542	0.5040	0.6043
		Mixed	833.33	3.33	0.1000	2.6833	2.4872	2.8795	0.6215	0.5590	0.6840	0.9500	0.8640	1.0360

	Vazhikkadavu	EG	3444.44	3.10	0.4444	11.0911	10.2803	11.9019	2.5689	2.3105	2.8272	3.9267	3.5753	4.2821
		MDF	1578.95	4.80	0.1316	5.0842	4.7125	5.4559	1.1776	1.0592	1.2960	1.8000	1.6371	1.9629
		SE	2500.00	3.00	0.3333	8.0500	7.4615	8.6385	1.8645	1.6770	2.0520	2.8500	2.5920	3.1080
	Overall	EG	3333.33	3.05	0.4375	10.3979	9.6378	11.1581	2.4083	2.1661	2.6505	3.6813	3.3480	4.0145
		SE	8750.00	8.40	0.4167	28.1750	26.1153	30.2348	6.5258	5.8695	7.1820	9.9750	9.0720	10.8780
		Mixed	833.33	3.33	0.1000	2.6833	2.4872	2.8795	0.6215	0.5590	0.6840	0.9500	0.8640	1.0360
		MDF	2565.79	5.20	0.1974	3.0717	2.8472	3.2963	0.7115	0.6399	0.7830	1.0875	0.9891	1.1859
Teak	318.18	7.00	0.0182	1.0245	0.9496	1.0994	0.2373	0.2134	0.2612	0.3627	0.3299	0.3956		
Nilambur(S)	Karulai	MDF	126.58	2.00	0.0253	0.4076	0.3778	0.4374	0.0944	0.0849	0.1039	0.1443	0.1312	0.1574
		SE	2812.50	6.75	0.1667	9.0563	8.3942	9.7183	2.0976	1.8866	2.3085	3.2063	2.9160	3.4965
		Teak	813.95	2.80	0.1163	2.6209	2.4293	2.8125	0.6070	0.5460	0.6681	0.9279	0.8439	1.0119
	Overall	MDF	116.28	2.00	0.0233	0.3744	0.3470	0.4018	0.0867	0.0780	0.0954	0.1326	0.1206	0.1446
		SE	2812.50	6.75	0.1667	9.0563	8.3942	9.7183	2.0976	1.8866	2.3085	3.2063	2.9160	3.4965
		Teak	813.95	2.80	0.1163	2.6209	2.4293	2.8125	0.6070	0.5460	0.6681	0.9279	0.8439	1.0119
Wayanad WLS	Aralam	MDF	4702.38	3.29	0.5714	15.1417	14.0347	16.2486	3.5070	3.1544	3.8597	5.3607	4.8754	5.8460
	Overall	MDF	1196.97	3.29	0.1455	3.8542	3.5725	4.1360	0.8927	0.8029	0.9825	1.3645	1.2410	1.4881
Kannur	Kannavam	MDF	1171.43	2.65	0.1771	3.7720	3.4962	4.0478	0.8737	0.7858	0.9615	1.3354	1.4563	1.2145
		SE	166.67	2.00	0.0333	0.5367	0.4974	0.5759	0.1243	0.1118	0.1368	0.1900	0.1728	0.2072
		Mixed	397.73	1.75	0.0909	1.2807	1.1871	1.3743	0.2966	0.2668	0.3265	0.4534	0.4124	0.4945
	Kottiyur	SE	40.32	2.00	0.0081	0.1298	0.1203	0.1393	0.0301	0.0270	0.0331	0.0460	0.0418	0.0501
	Kanjangad	SE	428.57	3.00	0.0571	1.3800	1.2791	1.4809	0.3196	0.2875	0.3518	0.4886	0.4443	0.5328
		MDF	67.57	3.00	0.0090	0.2176	0.2017	0.2335	0.0504	0.0453	0.0555	0.0770	0.0701	0.0840
	Overall	SE	121.36	2.50	0.0194	0.3908	0.3622	0.4193	0.0905	0.0819	0.0996	0.1384	0.1258	0.1509
		MDF	495.34	2.66	0.0746	1.5950	1.4784	1.7116	0.3694	0.3323	0.4066	0.5647	0.6158	0.5136
Mixed		142.28	1.75	0.0325	0.4581	0.4246	0.4916	0.1061	0.0954	0.1168	0.1622	0.1477	0.2838	
Kozhikode	Thamarassery	EG	109.89	2	0.0219	0.3538	0.3279	0.3797	0.0819	0.0737	0.0901	0.12528	0.11393	0.136615
		SE	510.75	2.11	0.0968	1.6446	1.5244	1.7649	0.3809	0.3426	0.4192	0.5822	0.6349	0.5295



**Table 3.1.22 Density, abundance and frequency of Piper spp, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(stem) (kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	120.48	8.00	0.0060	18.5024	11.8301	25.1747	12.6687	7.1651	18.1723
	Wadakkancherry	Cashew	76.92	2.00	0.0154	11.8131	7.5531	16.0731	8.0885	4.5746	11.6023
		Eucalyptus	175.44	4.00	0.0175	26.9421	17.2263	36.6579	18.4474	10.4333	26.4614
	Overall	MDF	76.05	8.00	0.0038	11.6783	7.4669	15.8897	7.9962	4.5224	11.4700
		Cashew	76.92	2.00	0.0154	11.8131	7.5531	16.0731	8.0885	4.5746	11.6023
		Eucalyptus	175.44	4.00	0.0175	26.9421	17.2263	36.6579	18.4474	10.4333	26.4614
Chalakkudy	Pariyaram	Teak	1250.00	6.00	0.0833	191.9625	122.7375	261.1875	131.4375	74.3375	188.5375
	Vellikkulangara	SE	555.56	6.00	0.0370	85.3167	54.5500	116.0833	58.4167	33.0389	83.7944
		Overall	SE	416.67	6.00	0.0278	63.9875	40.9125	87.0625	43.8125	24.7792
		Teak	172.41	6.00	0.0115	26.4776	16.9293	36.0259	18.1293	10.2534	26.0052
Vazhachal	Charpa	EG	7500.00	12.00	0.2500	1151.7750	736.4250	1567.1250	788.6250	446.0250	1131.2250
		SE	2812.50	3.60	0.3125	431.9156	276.1594	587.6719	296.9156	167.2594	424.2094
		Teak	208.33	1.00	0.0833	31.9938	20.4563	43.5313	21.9063	12.3896	31.4229
	Kollathirumedu	SE	1060.61	3.50	0.1212	162.8773	104.1409	221.6136	111.5227	63.0742	159.9712
	Sholayar	EG	6250.00	3.33	0.7500	543.8938	347.7563	740.0313	372.4063	210.6229	534.1896
		SE	4642.86	3.71	0.5000	639.8750	409.1250	870.6250	438.1250	247.7917	628.4583
	Vazhachal	SE	357.14	1.33	0.1071	54.8464	35.0679	74.6250	37.5536	21.2393	53.8679
	Overall	EG	4772.73	4.20	0.4545	226.8648	145.0534	308.6761	155.3352	87.8534	222.8170
		SE	2394.96	3.45	0.2773	341.9836	218.6584	465.3088	234.1576	132.4332	335.8819
		Teak	125.00	1.00	0.0500	19.1963	12.2738	26.1188	13.1438	7.4338	18.8538
Peechi	Chimmini	MDF	397.73	3.50	0.0455	34.9023	22.3159	47.4886	23.8977	13.5159	34.2795
		SE	3018.29	4.13	0.2927	463.5192	296.3662	630.6723	317.3735	179.4979	455.2491

	Overall	MDF	55.21	3.50	0.0063	4.8445	3.0975	6.5915	3.3170	1.8760	4.7580
		SE	2313.08	4.13	0.2243	355.2203	227.1217	483.3189	243.2208	137.5591	348.8825
Nenmara	Kollengode	MDF	333.33	1.00	0.1333	51.1900	32.7300	69.6500	35.0500	19.8233	50.2767
		EG	2625.00	2.10	0.5000	249.5513	159.5588	339.5438	170.8688	96.6388	245.0988
	Nelliyampathy	SE	1928.57	2.25	0.3429	164.5393	105.2036	223.8750	112.6607	63.7179	161.6036
		EG	2625.00	2.10	0.5000	249.5513	159.5588	339.5438	170.8688	96.6388	245.0988
	Overall	SE	1875.00	2.25	0.3333	127.9750	81.8250	174.1250	87.6250	49.5583	125.6917
		MDF	294.12	1.00	0.1176	45.1676	28.8794	61.4559	30.9265	17.4912	44.3588
Palakkad	Olavakkode	MDF	1484.38	2.71	0.2188	227.9555	145.7508	310.1602	156.0820	88.2758	223.8883
		EG	3214.29	3.00	0.4286	493.6179	315.6107	671.6250	337.9821	191.1536	484.8107
	Walayar	SE	5789.47	4.40	0.5263	889.0895	568.4684	1209.7105	608.7632	344.3000	873.2263
		MDF	840.71	2.71	0.1239	129.1075	82.5491	175.6659	88.4004	126.8040	49.9969
	Overall	SE	5789.47	4.40	0.5263	889.0895	568.4684	1209.7105	608.7632	344.3000	873.2263
		EG	3214.29	3.00	0.4286	493.6179	315.6107	671.6250	337.9821	191.1536	484.8107
		SE	5789.47	4.40	0.5263	889.0895	568.4684	1209.7105	608.7632	344.3000	873.2263
		EG	3214.29	3.00	0.4286	493.6179	315.6107	671.6250	337.9821	191.1536	484.8107
Mannarkkad	Mannarkkad	EG	1250.00	2.00	0.2500	191.9625	122.7375	261.1875	131.4375	74.3375	188.5375
		MDF	500.00	2.00	0.1000	76.7850	49.0950	104.4750	52.5750	29.7350	75.4150
		Cashew	263.16	2.00	0.0526	40.4132	25.8395	54.9868	27.6711	15.6500	39.6921
	Overall	EG	500.00	2.00	0.1000	76.7850	49.0950	104.4750	52.5750	29.7350	75.4150
		MDF	212.77	2.00	0.0426	32.6745	20.8915	44.4574	22.3723	12.6532	32.0915
		Cashew	263.16	2.00	0.0526	40.4132	25.8395	54.9868	27.6711	15.6500	39.6921
Parambikulam	Karimala	MDF	138.89	1.00	0.0556	21.3292	13.6375	29.0208	14.6042	8.2597	20.9486
		SE	416.67	1.00	0.1667	63.9875	40.9125	87.0625	43.8125	24.7792	62.8458
	Overall	MDF	30.49	1.00	0.0122	4.6820	2.9936	6.3704	3.2058	1.8131	4.5985
		SE	119.05	1.00	0.0476	18.2821	11.6893	24.8750	12.5179	7.0798	17.9560
Nilambur(N)	Edavanna	MDF	1209.68	2.50	0.1935	185.7702	118.7782	252.7621	127.1976	71.9395	182.4556
	Nilambur	MDF	1785.71	2.50	0.2857	274.2321	175.3393	373.1250	187.7679	106.1964	269.3393
	Overall	MDF	657.89	2.50	0.1053	101.0329	64.5987	137.4671	69.1776	39.1250	99.2303

Nilambur(S)	Karulai	MDF	126.58	2.00	0.0253	19.4392	12.4291	26.4494	13.3101	7.5278	19.0924
		SE	833.33	2.67	0.1250	127.9750	81.8250	174.1250	87.6250	49.5583	125.6917
	Overall	MDF	116.28	2.00	0.0233	17.8721	11.4174	24.2965	12.2267	6.9151	17.5384
		SE	833.33	2.67	0.1250	127.9750	81.8250	174.1250	87.6250	49.5583	125.6917
Wayanad (N)	Begur	SE	9772.73	4.16	0.9394	1500.7977	959.5841	2042.0114	1027.6023	581.1841	1474.0205
	Mananthavady	MDF	8611.11	3.88	0.8889	1322.4083	845.5250	1799.2917	905.4583	512.1028	1298.8139
		SE	1363.64	1.50	0.3636	209.4136	133.8955	284.9318	143.3864	81.0955	205.6773
	Periya	EG	7421.88	3.06	0.9688	1139.7773	728.7539	1550.8008	780.4102	441.3789	1119.4414
		SE	1406.25	1.00	0.5625	215.9578	138.0797	293.8359	147.8672	83.6297	212.1047
		Acacia	277.78	1.00	0.1111	42.6583	27.2750	58.0417	29.2083	16.5194	41.8972
		Eucalyptus	147.06	1.00	0.0588	22.5838	14.4397	30.7279	15.4632	8.7456	22.1809
	Overall	MDF	4843.75	3.88	0.5000	661.2042	422.7625	899.6458	452.7292	256.0514	649.4069
		SE	6000.00	3.27	0.7333	921.4200	589.1400	1253.7000	630.9000	356.8200	904.9800
		EG	7421.88	3.06	0.9688	1139.7773	728.7539	1550.8008	780.4102	441.3789	1119.4414
		Acacia	277.78	1.00	0.1111	42.6583	27.2750	58.0417	29.2083	16.5194	41.8972
		Eucalyptus	147.06	1.00	0.0588	22.5838	14.4397	30.7279	15.4632	8.7456	22.1809
Wayanad (S)	Kalpetta	SE	5462.96	2.57	0.8519	838.9472	536.4083	1141.4861	574.4306	324.8824	823.9787
		Shola	4545.45	2.00	0.9091	698.0455	446.3182	949.7727	477.9545	270.3182	685.5909
		Eucalyptus	500.00	1.25	0.1600	76.7850	49.0950	104.4750	52.5750	29.7350	75.4150
	Meppady	EG	4000.00	1.85	0.8667	319.9375	204.5625	435.3125	219.0625	123.8958	314.2292
		SE	3100.00	1.94	0.6400	476.0670	304.3890	647.7450	325.9650	184.3570	467.5730
	Overall	SE	4326.92	2.31	0.7500	664.4856	424.8606	904.1106	454.9760	257.3221	652.6298
		EG	4000.00	1.85	0.8667	319.9375	204.5625	435.3125	219.0625	123.8958	314.2292
		Eucalyptus	500.00	1.25	0.1600	76.7850	49.0950	104.4750	52.5750	29.7350	75.4150
		Shola	4545.45	2.00	0.9091	698.0455	446.3182	949.7727	477.9545	270.3182	685.5909
	Wayanad WLS	Aralam	EG	6153.85	2.67	0.9231	945.0462	604.2462	1285.8462	647.0769	365.9692
MDF			4285.71	3.13	0.5476	658.1571	420.8143	895.5000	450.6429	254.8714	646.4143
S. Bathery		MDF	86.21	1.00	0.0345	13.2388	8.4647	18.0129	9.0647	5.1267	13.0026

	Kurichiyath	SE	865.38	2.25	0.1538	132.8971	84.9721	180.8221	90.9952	51.4644	130.5260
	Overall	MDF	1106.06	3.04	0.1455	169.8577	108.6041	231.1114	116.3023	65.7774	166.8271
		SE	865.38	2.25	0.1538	132.8971	84.9721	180.8221	90.9952	51.4644	130.5260
Kannur	Kannavam	MDF	2228.57	2.29	0.3886	342.2417	218.8234	465.6600	234.3343	132.5331	336.1354
		SE	6250.00	2.59	0.9667	959.8125	613.6875	1305.9375	657.1875	371.6875	942.6875
		EG	5253.62	2.46	0.8551	806.7989	515.8533	1097.7446	552.4185	312.4330	792.4040
		Mahagony	5250.00	2.33	0.9000	806.2425	515.4975	1096.9875	552.0375	312.2175	791.8575
		Mixed	1590.91	1.65	0.3864	244.3159	156.2114	332.4205	167.2841	94.6114	239.9568
	Kottiyur	MDF	428.57	1.20	0.1429	65.8157	42.0814	89.5500	45.0643	25.4871	64.6414
		SE	7459.68	3.36	0.8871	1145.5827	732.4657	1558.6996	784.3851	443.6270	1125.1431
		Mixed	568.18	1.43	0.1591	87.2557	55.7898	118.7216	59.7443	33.7898	85.6989
	Kasaragod	SE	4558.82	2.21	0.8235	700.0985	447.6309	952.5662	479.3603	271.1132	687.6074
		MDF	312.50	2.20	0.0568	47.9906	30.6844	65.2969	32.8594	18.5844	47.1344
		Cinnamomum	1750.00	1.17	0.6000	268.7475	171.8325	365.6625	184.0125	104.0725	263.9525
	Kanjangad	EG	5416.67	2.17	1.0000	831.8375	531.8625	1131.8125	569.5625	322.1292	816.9958
		SE	4285.71	2.40	0.7143	658.1571	420.8143	895.5000	450.6429	254.8714	646.4143
		MDF	360.36	1.78	0.0811	55.3405	35.3838	75.2973	37.8919	21.4306	54.3532
	Taliparamba	EG	3600.00	1.95	0.7400	552.8520	353.4840	752.2200	378.5400	214.0920	542.9880
	Overall	EG	4671.53	2.25	0.8321	717.4073	458.6978	976.1168	491.2117	277.8161	704.6073
		SE	6504.85	3.01	0.8641	998.9505	638.7117	1359.1893	683.9854	386.8437	981.1272
		Cinnamomum	1750.00	1.17	0.6000	268.7475	171.8325	365.6625	184.0125	104.0725	263.9525
		MDF	1101.40	2.17	0.2028	169.1418	108.1463	230.1372	115.8121	65.5002	166.1240
Mixed		772.36	1.58	0.1951	118.6110	75.8378	161.3841	81.2134	45.9321	116.4947	
Mahagony		4038.46	2.33	0.6923	620.1865	396.5365	843.8365	424.6442	240.1673	609.1212	
Kozhikode	Thamarassery	EG	2678.57	1.76	0.6099	411.3482	263.0089	559.6875	281.6518	159.2944	404.0089
		SE	3709.68	1.97	0.7527	569.6952	364.2532	775.1371	390.0726	220.6145	559.5307
		MDF	148.81	1.25	0.0476	22.8527	14.6117	31.0937	15.6473	8.8497	22.4449

**Table 3.1.23 Density, abundance and frequency of *Pseudarthria viscida*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	1174.70	5.57	0.0843	5.7560	2.4904	9.0217	0.9509	0.8971	1.0047
		Teak	71.43	1.00	0.0286	0.3500	0.1514	0.5486	0.0578	0.0546	0.0611
		Mixed	238.10	2.00	0.0476	1.1667	0.5048	1.8286	0.1927	0.1818	0.2036
	Pattikkad	MDF	412.09	3.00	0.0549	2.0192	0.8736	3.1648	0.3336	0.3147	0.3525
	Wadakkancherry	Cashew	923.08	2.40	0.1538	4.5231	1.9569	7.0892	0.7472	0.7050	0.7895
		Teak	7142.86	5.00	0.5714	35.0000	15.1429	54.8571	5.7821	5.4550	6.1093
		Eucalyptus	175.44	2.00	0.0351	0.8596	0.3719	1.3474	0.1420	0.1340	0.1501
	Overall	MDF	884.03	4.89	0.0722	4.3317	1.8741	6.7894	0.7156	0.6751	0.7561
		Teak	1250.00	4.20	0.1190	5.8333	2.5238	9.1429	0.9637	0.9092	1.0182
		Mixed	238.10	2.00	0.0476	1.1667	0.5048	1.8286	0.1927	0.1818	0.2036
		Cashew	923.08	2.40	0.1538	4.5231	1.9569	7.0892	0.7472	0.7050	0.7895
Eucalyptus		175.44	2.00	0.0351	0.8596	0.3719	1.3474	0.1420	0.1340	0.1501	
Chalakkudy	Palappilly	Teak	348.84	1.50	0.0930	1.7093	0.7395	2.6791	0.2824	0.2664	0.2984
	Pariyaram	MDF	937.50	1.71	0.2188	4.5938	1.9875	7.2000	0.7589	0.7160	0.8018
		Cashew	1666.67	2.00	0.3333	8.1667	3.5333	12.8000	1.3492	1.2728	1.4255
		SE	555.56	2.00	0.1111	2.7222	1.1778	4.2667	0.4497	0.4243	0.4752
		Teak	833.33	2.00	0.1667	4.0833	1.7667	6.4000	0.6746	0.6364	0.7128
	Vellikkulangara	EG	1785.71	5.00	0.1429	8.7500	3.7857	13.7143	1.4455	1.3638	1.5273
		SE	555.56	6.00	0.0370	2.7222	1.1778	4.2667	0.4497	0.4243	0.4752
		MDF	555.56	3.00	0.0741	2.7222	1.1778	4.2667	0.4497	0.4243	0.4752
		Teak	78.13	1.00	0.0313	0.3828	0.1656	0.6000	0.0632	0.0597	0.0668
	Overall	EG	1785.71	5.00	0.1429	8.7500	3.7857	13.7143	1.4455	1.3638	1.5273
		MDF	762.71	2.00	0.1525	3.7373	1.6169	5.8576	0.6174	0.5825	0.6523

Nenmara	Nelliampathy	SE	35.71	1.00	0.0143	1.0375	0.9039	1.1711	0.3671	0.3391	0.3952
	Overall	SE	34.72	1.00	0.0139	1.0087	0.8788	1.1385	0.3569	0.3297	0.3842
Parambikulam	Parambikulam	MDF	500.00	1.00	0.2000	14.5250	12.6550	16.3950	5.1400	4.7475	5.5325
	Overall	MDF	30.49	1.00	0.0122	0.4088	0.3505	0.4672	0.3134	0.2895	0.3373
Wayanad WLS	Kurichiyath	SE	96.15	1.00	0.0385	2.7933	2.4337	3.1529	0.9885	0.9130	1.0639
	Overall	SE	96.15	1.00	0.0385	2.7933	2.4337	3.1529	0.9885	0.9130	1.0639

**Table 3.1.28 Density, abundance and frequency of *Tragia involucrata*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	PE	LL	UL
Thrissur	Machad	MDF	15.06	1.00	0.0060	0.2995	0.1679	0.4312	0.0429	0.0311	0.0547
		Teak	142.86	2.00	0.0286	2.7700	1.5929	4.0900	0.4071	0.2952	0.5191
		Mixed	476.19	2.00	0.0952	9.4714	5.3095	13.6333	1.3571	0.9841	1.7302
	Pattikkad	MDF	54.95	2.00	0.0110	1.0929	0.6126	1.5731	0.1566	0.1135	0.1996
	Wadakkancherry	Cashew	76.92	1.00	0.0308	1.5300	0.8577	2.2023	0.2192	0.1590	0.2795
		Teak	1071.43	1.50	0.2857	21.3107	11.9464	30.6750	3.0536	2.2142	3.8929
		Eucalyptus	394.74	1.50	0.1053	7.8513	4.4013	11.3013	1.1250	0.8158	1.4342
	Overall	MDF	28.52	1.50	0.0076	0.5672	0.3180	0.8164	0.0813	0.0589	0.1036
		Teak	297.62	1.67	0.0714	5.9196	3.3185	8.5208	0.8482	0.6151	1.0814
		Mixed	476.19	2.00	0.0952	9.4714	5.3095	13.6333	1.3571	0.9841	1.7302
		Cashew	76.92	1.00	0.0308	1.5300	0.8577	2.2023	0.2192	0.1590	0.2795
		Eucalyptus	394.74	1.50	0.1053	7.8513	4.4013	11.3013	1.1250	0.8158	1.4342
Chalakkudy	Palappilly	Teak	174.42	1.50	0.0465	3.4692	1.9448	4.9936	0.4971	0.3605	0.6337
	Pariyaram	Teak	1041.67	5.00	0.0833	20.7188	11.6146	20.7188	2.9688	2.1527	3.7848

		SE	555.56	4.00	0.0556	2.7222	1.1778	4.2667	0.4497	0.4243	0.4752
		Teak	316.09	1.57	0.0805	1.5489	0.6701	2.4276	0.2559	0.2414	0.2704
Vazhachal	Charpa	EG	2500.00	4.00	0.2500	12.2500	5.3000	19.2000	2.0238	1.9093	2.1383
		Teak	1458.33	2.33	0.2500	7.1458	3.0917	11.2000	1.1805	1.1137	1.2473
	Vazhachal	MDF	681.82	3.00	0.0909	3.3409	1.4455	5.2364	3.3409	1.4455	5.2364
	Overall	EG	454.55	4.00	0.0455	2.2273	0.9636	3.4909	0.3680	0.3471	0.3888
		MDF	300.00	3.00	0.0400	1.4700	0.6360	2.3040	0.2429	0.2291	0.2566
		Teak	875.00	2.33	0.1500	4.2875	1.8550	6.7200	0.7083	0.6682	0.7484
Peechi	Chimmini	MDF	284.09	2.50	0.0455	1.3920	0.6023	2.1818	0.2300	0.2170	0.2430
	Peechi	Teak	122.55	1.67	0.0294	0.6005	0.2598	0.9412	0.0992	0.0936	0.1048
		MDF	100.73	3.67	0.0110	0.4936	0.2136	0.7736	0.0815	0.0769	0.0862
	Overall	MDF	126.18	3.20	0.0158	0.1932	0.3028	0.0548	0.0319	0.0301	0.0337
		Teak	122.55	1.67	0.0294	0.6005	0.2598	0.9412	0.0992	0.0936	0.1048
Nenmara	Alathur	Teak	256.41	2.00	0.0513	1.2564	0.5436	1.9692	0.2076	0.1958	0.2193
	Overall	Teak	208.33	2.00	0.0417	1.0208	0.4417	1.6000	0.1686	0.1591	0.1782
Palakkad	Walayar	SE	131.58	1.00	0.0526	0.6447	0.2789	1.0105	0.1065	0.1005	0.1125
	Ottappalam	Mixed	937.50	6.00	0.0625	4.5938	1.9875	7.2000	0.7589	0.7160	0.8018
		Acacia	3500.00	2.33	0.6000	17.1500	7.4200	26.8800	2.8333	2.6730	2.9936
		Teak	500.00	3.00	0.0667	2.4500	1.0600	3.8400	0.4043	0.3819	0.4277
	Overall	SE	131.58	1.00	0.0526	0.6447	0.2789	1.0105	0.1065	0.1005	0.1125
		Teak	357.14	3.00	0.0476	1.7500	0.7571	2.7429	0.2891	0.2728	0.3055
		Mixed	937.50	6.00	0.0625	4.5938	1.9875	7.2000	0.7589	0.7160	0.8018
		Acacia	3500.00	2.33	0.6000	17.1500	7.4200	26.8800	2.8333	2.6730	2.9936
Mannarkkad	Agali	DDF	1086.96	2.00	0.2174	5.3261	2.3043	8.3478	0.8799	0.8301	0.9297
		MDF	1250.00	3.00	0.1667	6.1250	2.6500	9.6000	1.0119	0.9546	1.0691
		SE	576.92	1.00	0.2308	2.8269	1.2231	4.4308	0.4670	0.4406	0.4934
	Attappady	MDF	238.10	2.00	0.0476	1.1667	0.5048	1.8286	0.1927	0.1818	0.2010
		SE	833.33	1.00	0.3333	4.0833	1.7667	6.4000	0.6746	0.6364	0.7128

	Mannarkkad	MDF	1000.00	8.00	0.0500	4.9000	2.1200	7.6800	0.8095	0.7637	0.8553	
		Teak	6666.67	8.00	0.3333	32.6667	14.1333	51.2000	5.3967	5.0913	5.7020	
		Cashew	1973.68	7.50	0.1053	9.6711	4.1842	15.1579	1.5977	1.5073	1.6881	
		Acacia	2500.00	9.00	0.1111	12.2500	5.3000	19.2000	2.0238	1.9093	2.1383	
	Overall	MDF	691.49	4.33	0.0638	3.3883	1.4660	5.3106	0.5598	0.5281	0.5914	
		SE	454.55	1.00	0.1818	2.2273	0.9636	3.4909	0.3680	0.3471	0.3888	
		DDF	1086.96	2.00	0.2174	5.3261	2.3043	8.3478	0.8799	0.8301	0.9297	
		Teak	6666.67	8.00	0.3333	32.6667	14.1333	51.2000	5.3967	5.0913	5.7020	
		Cashew	1973.68	7.50	0.1053	9.6711	4.1842	15.1579	1.5977	1.5073	1.6881	
		Acacia	2500.00	9.00	0.1111	12.2500	5.3000	19.2000	2.0238	1.9093	2.1383	
	Parambikulam	Karimala	MDF	277.78	2.00	0.0556	1.3611	0.5889	2.1333	0.2249	0.2121	0.2376
		Parambikulam	MDF	1500.00	3.00	0.2000	7.3500	3.1800	11.5200	1.2143	1.1456	1.2830
			SE	1000.00	3.00	0.1333	4.9000	2.1200	7.6800	0.8095	0.7637	0.8553
		Sungam	MDF	121.95	1.00	0.0488	0.5976	0.2585	0.9366	0.0987	0.0931	0.1043
EG			454.55	2.00	0.0909	2.2273	0.9636	3.4909	0.3680	0.3471	0.3888	
Overall		MDF	213.41	1.75	0.0488	1.0457	0.4524	1.6390	0.1728	0.1630	0.1825	
		EG	454.55	2.00	0.0909	2.2273	0.9636	3.4909	0.3680	0.3471	0.3888	
		SE	714.29	3.00	0.0952	3.5000	1.5143	5.4857	0.5782	0.5455	0.6109	
Nilambur(N)	Edavanna	MDF	161.29	2.00	0.0323	0.7903	0.3419	1.2387	0.1306	0.1232	0.1380	
	Nilambur	Teak	34.72	1.00	0.0139	0.1701	0.0736	0.2667	0.0281	0.0265	0.0297	
		Mixed	500.00	3.00	0.0667	2.4500	1.0600	3.8400	0.4048	0.3819	0.4277	
	Overall	Mixed	500.00	3.00	0.0667	2.4500	1.0600	3.8400	0.4048	0.3819	0.4277	
		MDF	65.79	2.00	0.0132	0.3224	0.1395	0.5053	0.0533	0.0502	0.0563	
		Teak	22.73	1.00	0.0091	0.1114	0.0482	0.1745	0.3627	0.0174	0.0194	
Nilambur(S)	Karulai	SE	364.58	2.33	0.0625	1.7865	0.7729	2.8000	0.2951	0.2784	0.3118	
		Teak	319.77	2.75	0.0465	1.5669	0.6779	2.4558	0.2589	0.2442	0.2735	
	Overall	SE	364.58	2.33	0.0625	1.7865	0.7729	2.8000	0.2951	0.2784	0.3118	
		Teak	319.77	2.75	0.0465	1.5669	0.6779	2.4558	0.2589	0.2442	0.2735	



Wayanad WLS	Tholpetty	Teak	151.52	2.00	0.0303	0.7424	0.3212	1.1636	0.1227	0.1157	0.1296
	Kurichiyath	Teak	71.43	1.00	0.0286	0.3500	0.1514	0.5486	0.0578	0.0546	0.0611
	Overall	Teak	67.57	1.50	0.0180	0.3311	0.1432	0.5189	0.0547	0.0516	0.0578
Kannur	Kannavam	MDF	542.86	2.38	0.0914	2.6600	1.1509	4.1691	0.4394	0.4146	0.4643
		Mixed	1193.18	3.00	0.1591	5.8466	2.5295	9.1636	0.9659	0.9112	1.0205
	Kasaragod	MDF	56.82	2.00	0.0114	0.2784	0.1205	0.4364	0.0460	0.0434	0.0486
		Mixed	357.14	2.50	0.0571	1.7500	0.7571	2.7429	0.2891	0.2728	0.3055
	Overall	MDF	233.10	2.35	0.0396	1.1422	0.4942	1.7902	0.1887	0.1780	0.1994
		Mixed	528.46	2.89	0.0732	2.5894	1.1203	4.0585	0.4278	0.4036	0.4520
Kozhikode	Thamarassery	MDF	267.86	3	0.0357	1.3125	0.5678	2.0571	0.2168	0.2046	0.2291
		W Forest	750	3	0.1	3.675	1.59	5.76	0.6071	0.5728	0.641

**Table 3.1.24 Density, abundance and frequency of *Rauvolfia serpentina*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	30.12	1.00	0.0120	0.2223	0.1518	0.2928	0.2223	0.1518	0.2928
	Wadakkancherry	Cashew	38.46	1.00	0.0154	0.2838	0.1938	0.3738	0.0819	0.0578	0.1060
	Overall	MDF	19.01	1.00	0.0076	0.1403	0.0958	0.1848	0.0405	0.0286	0.0524
		Cashew	38.46	1.00	0.0154	0.2838	0.1938	0.3738	0.0819	0.0578	0.1060
Chalakkudy	Vellikkulangara	SE	277.78	1.50	0.0741	2.0500	1.4000	2.7000	0.5917	0.4174	0.7659
	Overall	SE	208.33	1.50	0.0556	1.5375	1.0500	2.0250	0.4438	0.3131	0.5744
Peechi	Peechi	MDF	100.73	5.50	0.0073	0.7434	0.5077	0.9791	0.2146	0.1514	0.2777
	Overall	MDF	86.75	5.50	0.0063	0.6402	0.4372	0.8432	0.1848	0.1304	0.2392
Palakkad	Ottappalam	Teak	666.67	1.33	0.2000	4.9200	3.3600	6.4800	1.4200	1.0019	1.8381
	Overall	Teak	476.19	1.33	0.1429	3.5143	2.4000	4.6286	1.0143	0.7156	1.3130

Mannarkkad	Agali	DDF	326.09	3.00	0.0435	2.4065	1.6435	3.1696	0.6946	0.4900	0.8991
		SE	384.62	2.00	0.0769	2.8385	1.9385	3.7385	0.8192	0.5780	1.0605
	Overall	SE	227.27	2.00	0.0455	1.6773	1.1455	2.2091	0.4841	0.3415	0.6266
		DDF	326.09	3.00	0.0435	2.4065	1.6435	3.1696	0.6946	0.4900	0.8991
Nilambur(N)	Vazhikkadavu	Teak	65.79	1.00	0.0263	0.4855	0.3316	0.6395	0.1401	0.0989	0.1814
	Overall	Teak	22.73	1.00	0.0091	0.1677	0.1145	0.2209	0.0484	0.0342	0.0627
Wayanad WLS	Muthanga	Teak	441.18	3.00	0.0588	3.2559	2.2235	4.2882	0.9397	0.6630	1.2164
		Eucalyptus	375.00	3.00	0.0500	2.7675	1.8900	3.6450	0.7988	0.5636	1.0340
	Kurichiyath	SE	96.15	1.00	0.0385	0.7096	0.4846	0.9346	0.2048	0.1445	0.2651
		Teak	71.43	1.00	0.0286	0.5271	0.3600	0.6943	0.1521	0.1073	0.1969
	Overall	Teak	90.09	2.00	0.0180	0.6649	0.4541	0.8757	0.1919	0.1354	0.2484
		Eucalyptus	300.00	3.00	0.0400	2.2140	1.5120	2.9160	0.6390	0.4508	0.8272
SE		96.15	1.00	0.0385	0.7096	0.4846	0.9346	0.2048	0.1445	0.2651	
Kannur	Kannavam	MDF	14.29	1.00	0.0057	0.1054	0.0720	0.1389	0.0304	0.0215	0.0394
	Overall	MDF	5.83	1.00	0.0023	0.0430	0.0294	0.0566	0.0124	0.0088	0.0161
Kozhikode	Thamarassery	MDF	29.762	1	0.0119	0.2196	0.15	0.2893	0.0634	0.0447	0.0821

**Table 3.1.25 Density, abundance and frequency of *Rubia cordifolia*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Wadakkancherry	Cashew	76.92	1.00	0.0308	1.5300	0.8577	2.2023	0.2192	0.1590	0.2795
	Overall	Cashew	76.92	1.00	0.0308	1.5300	0.8577	2.2023	0.2192	0.1590	0.2795
Mannarkkad	Attappady	MDF	119.05	1.00	0.0476	2.3679	1.3274	3.4083	0.3393	0.2460	0.4325
	Mannarkkad	MDF	250.00	2.00	0.0500	4.9725	2.7875	7.1575	0.7125	0.5167	0.9083
	Overall	MDF	159.57	1.50	0.0426	3.1739	1.7793	4.5686	0.4548	0.3298	0.5798

Parambikulam	Orukomban	MDF	138.89	1.00	0.0556	2.7625	1.5486	3.9764	0.3958	0.2871	0.5046
	Overall	MDF	30.49	1.00	0.0122	0.6064	0.3399	0.8729	0.0869	0.0630	0.1108
Wayanad N	Begur	MDF	4642.86	6.50	0.2857	92.3464	51.7679	132.9250	13.2321	9.5959	16.8684
		SE	1742.42	5.75	0.1212	34.6568	19.4280	49.8856	4.9659	3.6012	6.3306
	Periya	Eucalyptus	147.06	1.00	0.0588	2.9250	1.6397	4.2103	0.4191	0.3039	0.5343
	Overall	MDF	2031.25	6.50	0.1250	35.9125	20.1319	51.6931	5.1458	3.7317	6.5599
		SE	958.33	5.75	0.0667	19.0613	10.6854	27.4371	2.7313	1.9807	3.4818
		Eucalyptus	147.06	1.00	0.0588	2.9250	1.6397	4.2103	0.4191	0.3039	0.5343
Wayanad S	Chedleth	MDF	409.84	2.00	0.0820	8.1516	4.5697	11.7336	1.1680	0.8470	1.4890
	Kalpetta	SE	277.78	3.00	0.0370	5.5250	3.0972	7.9528	0.7917	0.5741	1.0092
		Eucalyptus	600.00	1.50	0.1600	11.9340	6.6900	17.1780	1.7100	1.2401	2.1799
	Meppady	Savanah	156.25	1.00	0.0625	3.1078	1.7422	4.4734	0.4453	0.3229	0.5677
	Overall	SE	144.23	3.00	0.0192	2.8688	1.6082	4.1293	0.4111	0.2981	0.5240
		Eucalyptus	600.00	1.50	0.1600	11.9340	6.6900	17.1780	1.7100	1.2401	2.1799
		MDF	409.84	2.00	0.0820	8.1516	4.5697	11.7336	1.1680	0.8470	1.4890
		Savanah	156.25	1.00	0.0625	3.1078	1.7422	4.4734	0.4453	0.3229	0.5677
Wayanad WLS	S. Bathery	MDF	1206.90	4.67	0.1034	24.0052	13.4569	34.5534	3.4397	2.4944	4.3849
	Tholpetty	MDF	312.50	2.50	0.0500	6.2156	3.4844	8.9469	0.5731	0.4581	0.6882
	Kurichiyath	SE	96.15	1.00	0.0385	1.9125	1.0721	2.7529	0.2740	0.1987	0.3493
		DDF	263.16	2.00	0.0526	5.2342	2.9342	7.5342	0.7500	0.5439	0.9561
	Overall	MDF	287.88	3.80	0.0303	5.7259	3.2098	8.2420	0.8205	0.5950	1.0459
		DDF	156.25	2.00	0.0313	3.1078	1.7422	4.4734	0.4453	0.3229	0.5677
		SE	96.15	1.00	0.0385	1.9125	1.0721	2.7529	0.2740	0.1987	0.3493

**Table 3.1.26 Density, abundance and frequency of *Sida rhombifolia*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Thrissur	Machad	MDF	1159.64	3.35	0.1386	6.6563	4.8169	8.4957	1.6467	1.3285	1.9649
		Teak	1857.14	3.25	0.2286	10.6600	7.7142	13.6058	2.6371	2.1275	3.1467
		Mixed	3452.38	4.14	0.3333	19.8167	14.3405	25.2928	4.9024	3.9550	5.8497
	Pattikkad	MDF	1456.04	2.79	0.2088	8.3577	6.0481	10.6673	2.0676	1.6680	2.4671
	Wadakkancherry	MDF	833.33	2.00	0.1667	4.7833	3.4615	6.1052	1.1833	0.9547	1.4120
		Cashew	3923.08	3.92	0.4000	22.5185	16.2957	28.7412	5.5708	4.4943	6.6473
		Teak	1785.71	2.50	0.2857	10.2500	7.4175	13.0825	2.5357	2.0457	3.0257
		Eucalyptus	7149.12	4.94	0.5789	41.0360	29.6960	52.3759	10.1518	8.1900	12.1135
	Overall	Acacia	6071.43	3.40	0.7143	34.8500	25.2195	44.4805	8.6214	6.9554	10.2874
		MDF	1254.75	3.07	0.1635	7.2023	5.2120	9.1926	1.7817	1.4374	2.1261
		Teak	1845.24	3.10	0.2381	10.5917	7.6648	13.5186	2.6202	2.1139	3.1266
		Mixed	3452.38	4.14	0.3333	19.8167	14.3405	25.2928	4.9024	3.9550	5.8497
		Cashew	3923.08	3.92	0.4000	22.5185	16.2957	28.7412	5.5708	4.4943	6.6473
		Eucalyptus	7149.12	4.94	0.5789	41.0360	29.6960	52.3759	10.1518	8.1900	12.1135
	Chalakkudy	Palappilly	Teak	988.37	2.83	0.1395	5.6733	4.1055	7.2410	1.4035	1.1323
Pariyaram		MDF	937.50	2.00	0.1875	5.3813	3.8942	6.8683	1.3313	1.0740	1.5885
		SE	3888.89	4.67	0.3333	22.3222	16.1537	28.4908	5.5222	4.4551	6.5893
		Teak	208.33	1.00	0.0833	1.1958	0.8654	1.5263	0.2958	0.2387	0.3530
Vellikkulangara		SE	370.37	4.00	0.0370	2.1259	1.5384	2.7134	0.5259	0.4243	0.6276
		MDF	277.78	3.00	0.0370	1.5944	1.1538	2.0351	0.3944	0.3182	0.4707
		Teak	3281.25	4.67	0.2813	18.8344	13.6297	24.0391	4.6594	3.7590	5.5598

	Overall	MDF	635.59	2.14	0.1186	3.6483	2.6401	4.6565	0.9025	0.7281	1.0769
		SE	1250.00	4.50	0.1111	7.1750	5.1923	9.1578	1.7750	1.4320	2.1180
		Teak	1724.14	3.75	0.1839	9.8966	7.1617	12.6314	2.4483	1.9752	2.9214
Vazhachal	Charpa	Teak	208.33	1.00	0.0833	1.1958	0.8654	1.5263	0.2958	0.2387	0.3530
		Kollathirumedu	SE	151.52	2.00	0.0303	0.8697	0.6294	1.1100	0.2152	0.1736
	Overall	SE	42.02	2.00	0.0084	0.2412	0.1745	0.3078	0.0597	0.0481	0.0712
		Teak	125.00	1.00	0.0500	0.7175	0.5192	0.9158	0.1775	0.1432	0.2118
Peechi	Peechi	EG	416.67	1.00	0.1667	2.3917	1.7308	3.0526	0.5917	0.4773	0.7060
		Teak	147.06	2.00	0.0294	0.8441	0.6109	1.0774	0.2088	0.1685	0.2492
		MDF	100.73	1.83	0.0220	0.5782	0.4184	0.7380	0.1430	0.1154	0.1707
	Overall	MDF	86.75	1.83	0.0189	0.4980	0.3603	0.6356	0.1232	0.0994	0.1470
		EG	416.67	1.00	0.1667	2.3917	1.7308	3.0526	0.5917	0.4773	0.7060
		Teak	147.06	2.00	0.0294	0.8441	0.6109	1.0774	0.2088	0.1685	0.2492
Nenmara	Kollengode	MDF	333.33	2.00	0.0667	1.9133	1.3846	2.4421	0.4733	0.3819	0.5648
		Teak	3055.56	5.50	0.2222	17.5389	12.6922	12.6922	4.3389	3.5004	3.5004
	Overall	MDF	294.12	2.00	0.0588	1.6882	1.2217	2.1548	0.4176	0.3369	0.4984
		Teak	572.92	5.50	0.0417	3.2885	2.3798	4.1973	0.8135	0.6563	0.9708
Palakkad	Olavakkode	MDF	273.44	2.33	0.0469	1.5695	1.1358	2.0033	0.3883	0.3133	0.4633
	Ottappalam	Mixed	3125.00	2.86	0.4375	17.9375	12.9806	22.8944	4.4375	3.5800	5.2950
		Acacia	3000.00	6.00	0.2000	17.2200	12.4614	21.9786	4.2600	3.4368	5.0832
		Teak	2666.67	5.33	0.2000	15.3067	11.0768	19.5365	3.7867	3.0549	4.5184
	Overall	MDF	154.87	2.33	0.0265	0.8889	0.6433	1.1346	0.2199	0.1774	0.2624
		Teak	1904.76	5.33	0.1429	10.9333	7.9120	13.9547	2.7048	2.1821	3.2274
		Mixed	3125.00	2.86	0.4375	17.9375	12.9806	22.8944	4.4375	3.5800	5.2950
		Acacia	3000.00	6.00	0.2000	17.2200	12.4614	21.9786	4.2600	3.4368	5.0832
Mannarkkad	Agali	DDF	3152.17	4.83	0.2609	18.0935	13.0935	23.0935	4.4761	3.6111	5.3410

		MDF	5833.33	14.00	0.1667	33.4833	24.2305	42.7362	8.2833	6.6827	9.8840
		SE	192.31	1.00	0.0769	1.1038	0.7988	1.4089	0.2731	0.2203	0.3258
	Attappady	MDF	595.24	2.50	0.0952	3.4167	2.4725	4.3608	0.8452	0.6819	1.0086
	Mannarkkad	MDF	1000.00	2.00	0.2000	5.7400	4.1538	7.3262	1.4200	1.1456	1.6944
		Teak	3333.33	2.67	0.5000	19.1333	13.8460	24.4207	4.7333	3.8187	5.6480
		Cashew	1052.63	4.00	0.1053	6.0421	4.3724	7.7118	1.4947	1.2059	1.7836
		Acacia	648.15	2.33	0.1111	3.7204	2.6923	4.7485	0.9204	0.7425	1.0982
	Overall	MDF	1436.17	3.86	0.1489	8.2436	5.9656	10.5217	2.0394	1.6453	2.4334
		SE	113.64	1.00	0.0455	0.6523	0.4720	0.8325	0.1614	0.1302	0.1925
		DDF	3152.17	4.83	0.2609	18.0935	13.0935	23.0935	4.4761	3.6111	5.3410
		Teak	3333.33	2.67	0.5000	19.1333	13.8460	24.4207	4.7333	3.8187	5.6480
		Cashew	1052.63	4.00	0.1053	6.0421	4.3724	7.7118	1.4947	1.2059	1.7836
		Acacia	648.15	2.33	0.1111	3.7204	2.6923	4.7485	0.9204	0.7425	1.0982
Parambikulam	Karimala	MDF	833.33	1.20	0.2778	4.7833	3.4615	6.1052	1.1833	0.9547	1.4120
		SE	416.67	1.00	0.1667	2.3917	1.7308	3.0526	0.5917	0.4773	0.7060
	Parambikulam	MDF	1000.00	2.00	0.2000	5.7400	4.1538	7.3262	1.4200	1.1456	1.6944
		SE	500.00	1.50	0.1333	2.8700	2.0769	3.6631	0.7100	0.5728	0.8472
	Orukomban	MDF	5000.00	3.00	0.6667	28.7000	20.7690	36.6310	7.1000	5.7280	8.4720
	Sungam	MDF	2560.98	2.80	0.3659	14.7000	10.6378	18.7622	3.6366	2.9339	4.3393
		Teak	2500.00	2.00	0.5000	3.5500	2.8640	4.2360	14.3500	10.3845	18.3155
	Overall	MDF	2621.95	2.61	0.4024	7.3500	5.3189	9.3811	1.8183	1.4669	2.1697
		SE	476.19	1.33	0.1429	2.7333	1.9780	3.4887	0.6762	0.5455	0.8069
		Teak	2500.00	2.00	0.5000	3.5500	2.8640	4.2360	14.3500	10.3845	18.3155
Nilambur(N)	Edavanna	Bamboo	714.29	2.00	0.1429	4.1000	2.9670	5.2330	1.0143	0.8183	1.2103
	Nilambur	Teak	1006.94	3.22	0.1250	5.7799	4.1826	7.3771	1.4299	1.1536	1.7062
		Mixed	1000.00	2.40	0.1667	5.7400	4.1538	7.3262	1.4200	1.1456	1.6944

	Vazhikkadavu	MDF	1118.42	5.67	0.0789	6.4197	4.6457	8.1938	1.5882	1.2813	1.8951
	Overall	MDF	559.21	5.67	0.0395	3.2099	2.3228	4.0969	0.7941	0.6406	0.9475
		Bamboo	714.29	2.00	0.1429	4.1000	2.9670	5.2330	1.0143	0.8183	1.2103
		Mixed	1000.00	2.40	0.1667	5.7400	4.1538	7.3262	1.4200	1.1456	1.6944
		Teak	659.09	3.22	0.0818	3.7832	2.7377	4.8286	0.9359	0.7551	1.1168
Nilambur(S)	Karulai	Teak	930.23	3.56	0.1047	5.3395	3.8640	6.8151	1.3209	1.0657	1.5762
	Overall	Teak	930.23	3.56	0.1047	5.3395	3.8640	6.8151	1.3209	1.0657	1.5762
Wayanad (N)	Begur	MDF	5000.00	4.67	0.4286	28.7000	20.7690	36.6310	7.1000	5.7280	8.4720
		Teak	5604.84	3.86	0.5806	32.1718	23.2814	41.0622	7.9589	6.4209	9.4968
	Mananthavady	SE	909.09	2.00	0.1818	5.2182	3.7762	6.6602	1.2909	1.0415	1.5404
	Overall	MDF	2187.50	4.67	0.1875	11.1611	8.0768	14.2454	2.7611	2.2276	3.2947
		SE	166.67	2.00	0.0333	0.9567	0.6923	1.2210	0.2367	0.1909	0.2824
		Teak	5604.84	3.86	0.5806	32.1718	23.2814	41.0622	7.9589	6.4209	9.4968
Wayanad (S)	Kalpetta	SE	462.96	2.50	0.0741	2.6574	1.9231	3.3918	0.6574	0.5304	0.7844
	Meppady	Savanah	78.13	1.00	0.0313	0.4484	0.3245	0.5724	0.1109	0.0895	0.1324
		Overall	SE	240.38	2.50	0.0385	1.3798	0.9985	1.7611	0.3413	0.2754
		Savanah	78.13	1.00	0.0313	0.4484	0.3245	0.5724	0.1109	0.0895	0.1324
Wayanad WLS	Muthanga	MDF	7950.00	5.30	0.6000	45.6330	33.0227	58.2433	11.2890	9.1075	13.4705
		Teak	6323.53	5.38	0.4706	36.2971	26.2667	46.3274	8.9794	7.2442	10.7146
		Eucalyptus	5250.00	3.23	0.6500	30.1350	21.8075	38.4626	7.4550	6.0144	8.8956
	S. Bathery	MDF	4396.55	4.64	0.3793	25.2362	18.2624	32.2100	6.2431	5.0367	7.4495
		DDF	4807.69	4.17	0.4615	27.5962	19.9702	35.2221	6.8269	5.5077	8.1462
		Teak	9711.54	5.05	0.7692	55.7442	40.3398	71.1487	13.7904	11.1255	16.4552
	Tholpettty	MDF	6437.50	4.68	0.5500	36.9513	26.7401	47.1624	9.1413	7.3748	10.9077
		Teak	8257.58	4.54	0.7273	47.3985	34.3003	60.4967	11.7258	9.4599	13.9916
		Eucalyptus	9500.00	4.75	0.8000	54.5300	39.4583	69.5989	13.4900	10.8832	16.0968

	Kurichiyath	MDF	13750.00	7.33	0.7500	78.9250	57.1148	100.7353	19.5250	15.7520	23.2980
		SE	11346.15	9.08	0.5000	65.1269	47.1297	83.1242	16.1115	12.9982	19.2249
		DDF	13421.05	7.29	0.7368	77.0368	55.7484	98.3253	19.0579	15.3752	22.7406
		Teak	13071.43	6.78	0.7714	75.0300	54.2961	95.7639	18.5614	14.9746	22.1482
	Overall	MDF	5075.76	5.08	0.4000	29.1348	21.0837	37.1860	7.2076	5.8148	8.6004
		DDF	9921.88	6.35	0.6250	56.9516	41.2135	72.6896	14.0891	11.3665	16.8116
		Teak	9819.82	5.52	0.7117	56.3658	40.7896	71.9420	13.9441	11.2496	16.6387
		Eucalyptus	6100.00	3.59	0.6800	35.0140	25.3382	44.6898	8.6620	6.9882	10.3358
		SE	11346.15	9.08	0.5000	65.1269	47.1297	83.1242	16.1115	12.9982	19.2249
	Kannur	Kannavam	MDF	28.57	2.00	0.0057	0.1640	0.1187	0.2093	0.0406	0.0327
Mixed			625.00	3.67	0.0682	3.5875	2.5961	4.5789	0.8875	0.7160	1.0590
Teak			384.62	2.00	0.0769	2.2077	1.5976	2.8178	0.5462	0.4406	0.6517
Kottiyur		MDF	1500.00	2.63	0.2286	8.6100	6.2307	10.9893	2.1300	1.7184	2.5416
		SE	120.97	2.00	0.0242	0.6944	0.5025	0.8862	0.1718	0.1386	0.2050
Overall		SE	72.82	2.00	0.0146	0.4180	0.3025	0.5335	0.1034	0.0834	0.1234
		MDF	134.03	2.56	0.0210	0.7693	0.5567	0.9820	0.1903	0.1535	0.2271
		Teak	81.97	2.00	0.0164	0.4705	0.3405	0.6005	0.1164	0.0939	0.1389
		Mixed	223.58	3.67	0.0244	1.2833	0.9287	1.6380	0.3175	0.2561	0.3788
		EG	41.2088	3	0.0055	0.2366	0.1712	0.3020	0.0585	0.0472	0.0699

**Table 3.1.27 Density, abundance and frequency of Solanum viarum, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						Estimate	LCL	UCL	Estimate	LCL	UCL
Vazhachal	Charpa	Teak	416.67	2.00	0.0833	12.10417	10.546	13.663	4.283333	3.956	4.61
	Overall	Teak	250.00	2.00	0.0500	7.2625	6.3275	8.1975	2.57	2.374	2.766



	Vellikulangara	Teak	781.25	2.00	0.1563	15.5391	8.7109	22.3672	2.2266	1.6145	2.8386
	Overall	Teak	517.24	2.25	0.0920	10.2879	5.7672	14.8086	1.4741	1.0689	1.8793
Peechi	Peechi	MDF	18.32	1.00	0.0073	0.3643	0.2042	0.5244	0.0522	0.0379	0.0665
	Overall	MDF	15.77	1.00	0.0063	0.3137	0.1759	0.4516	0.0450	0.0326	0.0573
Palakkad	Walayar	MDF	51.02	1.00	0.0204	1.0148	0.5689	1.4607	0.1454	0.1054	0.1854
	Ottappalam	Mixed	1250.00	2.67	0.1875	24.8625	13.9375	35.7875	3.5625	2.5833	4.5418
		Teak	333.33	1.00	0.1333	6.6300	3.7167	9.5433	0.9500	0.6889	1.2111
	Overall	MDF	22.12	1.00	0.0089	0.4400	0.2467	0.6334	0.0631	0.0457	0.0804
		Teak	238.10	1.00	0.0952	4.7357	2.6548	6.8167	0.6786	0.4920	0.8651
		Mixed	1250.00	2.67	0.1875	24.8625	13.9375	35.7875	3.5625	2.5833	4.5418
Mannarkkad	Agali	DDF	869.57	2.67	0.1304	17.2957	9.6957	24.8957	2.4783	1.7970	3.1595
	Attappady	MDF	119.05	1.00	0.0476	2.3679	1.3690	3.4083	0.3393	0.2460	0.4325
	Overall	DDF	869.57	2.67	0.1304	17.2957	9.6957	24.8957	2.4783	1.7970	3.1595
		MDF	53.19	1.00	0.0213	1.0580	0.5931	1.5229	0.1516	0.1099	0.1933
Nilambur(N)	Nilambur	Teak	69.44	2.00	0.0139	1.3875	0.7743	1.9882	0.1979	0.1435	0.2523
		Mixed	583.33	1.75	0.1333	11.6025	6.5042	16.7008	1.6625	1.2055	2.1195
	Overall	Mixed	583.33	1.75	0.1333	11.6025	6.5042	16.7008	1.6625	1.2055	2.1195
		Teak	45.45	2.00	0.0091	0.9041	0.5068	1.3014	0.1295	0.0939	0.1652
Wayanad S	Kalpetta	SE	92.59	1.00	0.0370	1.8417	1.0324	2.6509	0.2639	0.1914	0.3364
		Eucalyptus	200.00	1.00	0.0800	3.9780	2.2300	5.7260	0.5700	0.4133	0.7267
	Overall	SE	48.08	1.00	0.0192	0.9563	0.5361	1.3764	0.1370	0.0994	1.3764
		Eucalyptus	200.00	1.00	0.0800	3.9780	2.2300	5.7260	0.5700	0.4133	0.7267
Wayanad WLS	Muthanga	MDF	100.00	2.00	0.0200	1.9890	1.1150	2.8630	0.0392	0.2067	0.3633
	Overall	MDF	30.30	2.00	0.0061	0.6027	0.3379	0.8676	0.0864	0.0626	0.1101
Kannur	Kasaragod	Acacia	500.00	1.00	0.2000	9.9450	5.5750	14.3150	1.4250	1.0333	1.8167
	Overall	Acacia	277.78	1.00	0.1111	5.5250	3.0972	7.9528	0.7917	0.5741	1.0093

**Table 3.2.1.1 Distribution of *Holarrhena antidysenterica* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Saplings with gbh<10 cm		Diameter classes (cm)											
				3-5		5-10		10-15		15-20		20-25		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	101	100.00												
	Pattikkad	20	100.00												
	Wadakkancherry	59	100.00												
	Total	180	100.00												
Chalakkudy	Palappilly	1	100.00												
	Pariyaram	3	33.30	1	11.10	2	22.20	3	33.30						
	Vellikkulangara	6	66.70			2	22.70				1	11.10			
	Total	10	52.60	1	5.30	4	21.10	3	15.80		1	5.30			
Vazhachal	Kollathirumedu	1	100.00												
	Vazhachal	3	100.00												
	Total	4	100.00												
Peechi	Chimmini	8	66.70	3	25.00	1	8.30								
	Peechi	238	100.00												
	Total	246	98.40			3	1.20	1	0.40						
Nenmara	Alathur	8	100.00												
	Kollengode	2	28.60			4	57.10							1	14
	Total	10	66.70			4	26.70							1	7
Palakkad	Olavakkode	2	25.00	2	25.00	3	37.50	1	12.50						
	Ottappalam	6	100.00												

	Walayar	3	50.00	1	16.70	2	33.30										
	Total	11	55.00	3	15.00	5	25.00	1	50.00								
Mannarkkad	Attappady	1	100.00														
	Mannarkkad	17	85.00	2	10.00	1	5.00										
	Total	18	85.70	2	9.20	1	4.80										
Parambikulam	Sungam			2	66.70	1	33.30										
	Total			2	66.70	1	33.30										
Nilambur N	Edavanna	4	66.70			1	16.70	1	16.70								
	Nillambur	51	100.00														
	Vazhachal	19	100.00														
	Total	74	97.40			1	1.30	1	1.30								
Nilambur S	Karulai	16	94.10			1	5.90										
	Total	16	94.10			1	5.90										
Wayanad N	Begur	1	100.00														
	Total	1	100.00														
Wayanad S	Chedleth	14	100.00														
	Meppady	4	100.00														
	Total	18	100.00														
Wayanad WLS	Kurichiyath	11	100.00														
	Muthanga	4	100.00														
	S. Bathery	25	100.00														
	Tholpetty	3	100.00														
	Total	43	100.00														

**Table 3.2.1.2 Distribution of Helicteres isora across different diameter classes in different Forest Divisions**

Useful part: Fruit

Division	Range	Saplings with gbh < 10 cm		Diameter classes (cm)																		
				3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Thrissur	Machad	1373	69.13																			
	Pattikkad	572	28.80																			
	Wadakkancherry	41	2.06																			
	Total	1986	100.00																			
Chalakkudy	Pariyaram	296	95.17	6	1.90	8	2.57	1	0.32													
	Palappilly	137	100.00																			
	Vellikkulangara	179	89.50	6	3.00	12	6.00	3	1.50													
	Total	612	94.40	12	0.02	20	0.03	4	0.01													
Vazhachal	Charpa	107	84.25	12	9.45	8	6.30															
	Kollathirumedu	48	78.69	2	3.28	8	13.11	2	3.28	1	1.64											
	Sholayar	10	90.91	1	9.09																	
	Vazhachal	35	89.74	4	10.26																	
	Total	200	84.03	19	7.98	16	6.72	2	0.84	1	0.42											
Peechi	Peechi	2800	100.00																			
	Chimmini	285	93.14	17	5.56	4	1.31															
	Total	3085	99.32	17	0.55	4	0.13															
Nenmara	Alathur	437	100.00																			
	Kollengode	67	100.00																			
	Total	504	100.00																			
Palakkad	Olavakkode	154	96.86	5	3.14																	
	Walayar	283	94.33	12	4.00	5	1.67															
	Total	437	95.21	17	3.70	5	1.09															
Mannarkkad	Agali	68	100.00																			

	Attappady	117	98.32	1	0.84	1	0.84												
	Mannarkkad	151	92.64	10	6.13	2	1.23												
	Total	336	96.00	11	3.14	3	0.86												
Parambikulam	Karimala	27	100.00																
	Parambikulam	17	100.00																
	Sungam	30	100.00																
	Total	74	100.00																
Nilambur North	Edavanna	95	95.96	1	1.01	2	2.02	1	1.01										
	Nilambur	300	100.00																
	Vazhikkadavu	431	100.00																
	Total	826	99.52	1	0.12	2	0.24	1	0.12										
Nilambur South	Kalikkavu	282	100.00																
	Karulai	62	95.38	1	1.54	2	3.08												
	Total	344	99.14	1	0.29	2	0.58												
Wayanad North	Begur	206	100.00																
	Mananthavady	2	100.00																
	Total	208	100.00																
Wayanad South	Chedleth	147	100.00																
	Kalpetta	16	100.00																
	Meppady	1	100.00																
	Total	164	100.00																
Wayanad WLS	Aralam	2	100.00																
	Kurichiyath	335	100.00																
	Muthanga	95	100.00																
	S. Bathery	156	100.00																
	Tholpetti	223	100.00																
	Total	811	100.00																
Kannur	Kanjangad	203	100.00																
	Total	203	100.00																

**Table 3.2.2.1 Density, abundance and frequency of *Strobilanthes ciliatus*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability (kg/ha)			Availability of useful Products(Root)( kg/ha)		
						PE	LL	UL	PE	LL	UL
Chalakkudy	Pariyaram	MDF	112.50	9.00	0.0313	1.5266	1.4282	1.6250	0.5276	0.4116	0.6436
	Vellikkulangara	MDF	237.04	8.00	0.0741	3.2166	3.0092	3.4240	1.1117	0.8673	1.3561
		SE	829.63	11.20	0.1852	11.2581	10.5323	11.9838	3.8910	3.0354	4.7465
		EG	457.14	8.00	0.1429	6.2034	5.8035	6.6033	2.1440	1.6726	2.6154
	Overall	SE	622.22	11.20	0.1389	8.4436	7.8992	8.9879	2.9182	2.2766	3.5599
		MDF	169.49	8.33	0.0508	2.3000	2.1517	2.4483	0.7949	0.6201	0.9697
		EG	457.14	8.00	0.1429	6.2034	5.8035	6.6033	2.1440	1.6726	2.6154
Vazhachal	Charpa	SE	1675.00	9.57	0.4375	22.7298	21.2645	24.1950	7.8558	6.1285	9.5830
	Kollathirumedu	SE	630.30	5.78	0.2727	8.5532	8.0018	9.1046	2.9561	2.3062	3.6061
	Sholayar	SE	1695.24	8.48	0.5000	23.0044	21.5214	24.4874	7.9507	6.2025	9.6988
		EG	5200.00	15.60	0.8333	70.5640	66.0150	75.1130	24.3880	19.0258	29.7502
	Overall	SE	998.32	8.03	0.3109	13.5472	12.6739	14.4205	4.6821	3.6527	5.7116
		EG	2836.36	15.60	0.4545	38.5462	36.0082	40.9707	13.0189	10.3777	16.2274
Peechi	Chimmini	MDF	609.09	22.33	0.0682	8.2654	7.7325	8.7982	2.8566	2.2285	3.4847
		SE	936.59	10.67	0.2195	12.7095	11.8901	13.5288	4.3926	3.4268	5.3584
	Peechi	EG	866.67	6.50	0.3333	11.7607	11.0025	12.5188	4.0647	3.1710	4.9584
	Overall	SE	717.76	10.67	0.1682	9.7400	9.1121	10.3679	3.3663	2.6261	4.1064
		MDF	84.54	22.33	0.0095	1.1472	1.0733	1.2212	0.3965	0.3093	0.4837
		EG	866.67	6.50	0.3333	11.7607	11.0025	12.5188	4.0647	3.1710	4.9584
Nenmara	Nelliampathy	EG	5500.00	18.33	0.7500	74.6350	69.8401	79.4464	25.7950	20.1234	31.4666
		SE	3331.43	11.43	0.7286	45.2075	42.2932	48.1218	15.6244	12.1890	19.0598
	Overall	EG	5500.00	18.33	0.7500	74.6350	69.8401	79.4464	25.7950	20.1234	31.4666
		SE	3238.89	11.43	0.7083	43.9517	41.1183	46.7851	15.1904	11.8504	18.5303

Palakkad	Walayar	EG	3714.29	10.83	0.8571	50.4029	47.1536	53.6521	17.4200	13.5898	21.2502
		SE	3052.63	18.13	0.4211	41.4242	38.7538	44.0947	14.3168	11.1690	17.4647
	Overall	EG	3714.29	10.83	0.8571	50.4029	47.1536	53.6521	17.4200	13.5898	21.2502
		SE	3052.63	18.13	0.4211	41.4242	38.7538	44.0947	14.3168	11.1690	17.4647
Mannarkkad	Attappady	MDF	133.33	3.50	0.0952	1.8093	1.7287	1.9260	0.6253	0.4878	0.7628
	Overall	MDF	59.57	3.50	0.0426	0.8084	0.7563	0.8605	0.2794	0.2180	0.5196
Parambikulam	Karimala	MDF	155.56	7.00	0.0556	2.1109	1.9748	2.2470	0.7296	0.5691	0.8900
	Overall	MDF	43.75	7.00	0.0156	0.5937	0.5554	0.6320	0.2052	0.1601	0.2503
Nilambur(N)	Edevenna	EG	7600.00	19.00	1.0000	103.1320	96.4835	109.7805	35.6440	27.8069	43.4811
		MDF	103.23	8.00	0.0323	1.4008	1.3105	1.4911	0.4841	0.3777	0.5906
	Vazhikkadavu	MDF	210.53	10.00	0.0526	2.8568	2.6727	3.0410	0.9874	0.7703	1.2045
	Overall	EG	475.00	19.00	0.0625	6.4458	6.0302	6.8613	2.2278	1.7379	2.7176
		MDF	147.37	9.33	0.0395	1.4284	1.3363	1.5205	0.4937	0.3851	0.6022
Wayanad (N)	Begur	SE	1503.03	7.29	0.5152	20.3961	19.0813	21.7110	7.0492	5.4993	8.5991
	Mananthavady	SE	690.91	3.80	0.4545	9.3756	8.7712	9.9800	3.2404	2.5279	3.9528
	Periya	EG	1625.00	5.20	0.7813	22.0513	20.6297	23.4728	7.6213	5.9456	9.2970
		Acacia	800.00	3.60	0.5556	10.8560	10.1562	11.5558	3.7520	2.9270	4.5770
		Pine	1150.00	3.83	0.7500	15.6055	14.5995	16.6115	5.3935	4.2076	6.5794
		SE	600.00	4.00	0.3750	8.1420	7.6171	8.6669	2.8140	2.1953	3.4327
	Overall	SE	1113.33	5.96	0.4667	15.1079	14.1340	16.0819	5.2215	4.0735	6.3696
		Acacia	800.00	3.60	0.5556	10.8560	10.1562	11.5558	3.7520	2.9270	4.5770
		Pine	1150.00	3.83	0.7500	15.6055	14.5995	16.6115	5.3935	4.2076	6.5794
		EG	1625.00	5.20	0.7813	22.0513	20.6297	23.4728	7.6213	5.9456	9.2970
		SE	2977.78	7.44	1.0000	40.4084	37.8035	43.0134	13.9658	10.8951	17.0365
Wayanad (S)	Kalpetta	SE	2977.78	7.44	1.0000	40.4084	37.8035	43.0134	13.9658	10.8951	17.0365
		Sholay	981.82	4.50	0.5455	13.3233	12.4644	14.1819	4.6047	3.5923	5.6172
		Eucalyptus	192.00	4.00	0.1200	2.6054	2.4375	2.7734	0.9005	0.7025	1.0985

	Meppady	EG	906.67	4.86	0.4667	12.3035	11.5103	13.0966	4.2523	3.3173	5.1872
		SE	1120.00	5.83	0.4800	15.1424	14.2186	16.1782	5.2528	4.0979	6.4077
	Overall	Sholay	981.82	4.50	0.5455	13.3233	12.4644	14.1819	4.6047	3.5923	5.6172
		Eucalyptus	192.00	4.00	0.1200	2.6054	2.4375	2.7734	0.9005	0.7025	1.0985
		EG	906.67	4.86	0.4667	12.3035	11.5103	13.0966	4.2523	3.3173	5.1872
		SE	2084.62	6.95	0.7500	28.2882	26.4646	30.1119	9.7768	7.6272	5.6727
Wayanad WLS	Aralam	MDF	790.48	4.37	0.4524	10.7268	10.0353	11.4183	3.7073	2.8922	4.5225
	Kurichiyath	SE	1276.92	8.30	0.3846	17.3278	16.2108	18.4449	5.9888	4.6720	7.3055
	Overall	MDF	201.21	4.37	0.1152	2.7304	2.5544	2.9065	0.9437	0.7362	1.1512
		SE	1276.92	8.30	0.3846	17.3278	16.2108	18.4449	5.9888	4.6720	7.3055
Kannur	Kottiyur	SE	2551.61	7.39	0.8629	34.6254	32.3932	36.8575	11.9671	9.3358	14.5983
		MDF	80.00	2.33	0.0857	1.0856	1.0156	1.1556	0.3752	0.2927	0.4577
		Mixed	1500.00	6.88	0.5455	20.3550	19.0428	21.6672	7.0350	5.4882	8.5818
	Kannavam	EG	2597.10	7.34	0.8841	35.2427	329707.2232	37.5146	12.1804	9.5023	14.8585
		SE	2773.33	7.70	0.9000	37.6341	35.2080	40.0602	13.0069	10.1471	15.8668
		MDF	1051.43	6.05	0.4343	14.2679	13.3481	15.1877	4.9312	3.8470	6.0154
		Mixed	272.73	3.75	0.1818	3.7009	3.4623	3.9395	1.2791	0.9979	1.5603
	Kasaragod	Mahagony	160.00	4.00	0.1000	2.1712	2.0312	2.3112	0.7504	0.5854	0.9154
		SE	588.24	2.78	0.5294	7.9824	7.4678	8.4969	2.7588	2.1522	3.3654
	Kanjangad	EG	1466.67	8.25	0.4444	19.9027	18.6196	21.1857	6.8787	5.3662	8.3911
		SE	2171.43	11.18	0.4857	29.4663	27.5667	31.3659	10.1840	7.9448	12.4232
	Taliparamba	EG	512.00	3.76	0.3400	6.9478	6.4999	7.3957	2.4013	1.8733	2.9293
		SE	1687.59	6.72	0.6277	22.9006	21.4243	24.3769	7.9148	6.1746	9.6550
	Overall	EG	2357.28	7.59	0.7767	31.9883	29.9262	34.0505	11.0557	8.6248	13.4867
		Mixed	634.15	6.09	0.2602	8.6054	8.0506	9.1601	2.9741	2.3202	3.6281
		Mahagony	123.08	4.00	0.0769	1.6702	1.5625	1.7778	0.5772	0.4503	0.7041
MDF		435.43	5.91	0.1841	5.9088	5.5279	6.2897	2.0422	1.5932	2.4912	



**Table 3.2.2.2 Density, abundance and frequency of *Holarrhena antidysenterica*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability of useful Products (Bark) (kg/ha)		
						Estimates	LCL	UCL
Chalakkudy	Palappilly	Teak	55.81	6.00	0.0233			
	Pariyaram	Cashew	266.67	2.00	0.3333			
		MDF	150.00	2.40	0.1563	4.7207	1.9928	7.9041
	Vellikkulangara	MDF	177.78	1.71	0.2593	4.6910	1.3644	8.8146
		SE	44.44	1.00	0.1111	0.6721	0.2999	1.0982
	Overall	Cashew	266.67	2.00	0.3333			
		MDF	162.71	2.00	0.2034	4.7071	1.7075	80.3208
		SE	33.33	1.00	0.0833	0.5041	0.2249	0.8236
Teak		27.59	6.00	0.0115				
Peechi	Chimmini	MDF	236.36	2.89	0.2045	1.9249	0.8276	3.2005
		SE	9.76	1.00	0.0244	0.2866	0.1274	0.4698
	Peechi	MDF	725.27	3.26	0.5568			
		SE	112.00	1.75	0.1600			
		Teak	1827.45	5.68	0.8039			
	Overall	MDF	657.41	3.24	0.5079			
		SE	33.64	1.50	0.0561			
Teak		1827.45	5.68	0.8039				
Nenmara	Alathur	MDF	400.00	2.00	0.5000			
		Teak	123.08	1.71	0.1795			
	Kollengode	MDF	213.33	1.60	0.3333	16.0714	0.7877	36.1715
	Overall	MDF	235.29	1.67	0.3529	14.1806	0.6950	31.9160
Teak		100.00	1.71	0.1458				
Palakkad	Olavakkode	MDF	50.00	2.67	0.0469	1.6746	0.7207	2.7724
		Teak	133.33	2.00	0.1667			

	Ottappalam	Mixed	450.00	4.50	0.2500			
		Teak	2833.33	8.50	0.1333			
	Walayar	MDF	204.08	6.25	0.0816	0.9251	0.4021	1.5201
	Overall	MDF	116.81	4.71	0.0619	1.3496	0.5825	2.2294
		Mixed	450.00	4.50	0.2500			
		Teak	361.90	6.33	0.1429			
Mannarkkad	Attappady	MDF	19.05	1.00	0.0476			
	Mannarkkad	Acacia	192.59	2.17	0.2222			
		Cashew	168.42	2.00	0.2105			
		MDF	200.00	1.67	0.3000	0.9940	0.3654	1.6890
		SE	66.67	1.00	0.1667			
		Teak	66.67	1.00	0.1667			
	Overall	Acacia	192.59	2.17	0.2222			
		Cashew	168.42	2.00	0.2105			
		MDF	93.62	1.57	0.1489	0.4230	0.1555	0.7187
		SE	18.18	1.00	0.0455			
		Teak	66.67	1.00	0.1667			
Parambikulam	Sungam	MDF	29.27	1.50	0.0488	0.3815	0.1414	0.6470
	Overall	MDF	18.75	1.50	0.0313	0.2444	0.0906	0.4145
Nilambur N	Edavanna	Bamboo	114.29	1.00	0.2857			
		MDF	51.61	1.00	0.1290	2.0267	0.8751	3.3695
	Nilambur	Mixed	546.67	2.28	0.6000			
		SE	177.78	2.00	0.2222			
		Teak	350.00	2.03	0.4306			
	Vazhikkadavu	MDF	421.05	5.00	0.2105			
		Teak	357.89	3.09	0.2895			

	Overall	Bamboo	114.29	1.00	0.2857			
		MDF	231.58	3.67	0.1579	0.8267	0.3570	1.3744
		Mixed	546.67	2.28	0.6000			
		SE	133.33	2.00	0.1667			
		Teak	352.73	2.31	0.3818			
Nilambur S	Karulai	MDF	20.25	2.00	0.0253			
		Teak	144.19	2.07	0.1744	0.2110	0.0942	0.3448
	Overall	MDF	18.60	2.00	0.0233			
		Teak	144.19	2.07	0.1744	0.2110	0.0942	0.3448

**Table 3.2.2.3 Density, abundance and frequency of *Helicteres isora*, and availability in different Forest Divisions**

Division	Range	Habitat	Density	Abundance	Frequency	Availability of useful Products (Fruit) (kg/ha)		
						Estimates	LCL	UCL
Thrissur	Machad	MDF	2901.20	9.05	0.80			
		Mixed	2285.71	7.06	0.81			
		SE	10000.00	8.00	0.50			
		Teak	468.57	2.56	0.46			
	Pattikkd	MDF	2514.29	9.38	0.67			
	Wadakkancherry	Cashew	67.69	1.57	0.11			
		Eucalyptus	77.19	1.10	0.18			
		MDF	1266.67	9.50	0.33			
	Overall	Cashew	67.69	1.57	0.11			
		Eucalyptus	77.19	1.10	0.18			
		MDF	2730.04	9.16	0.75			
		Mixed	2285.71	7.06	0.81			

		SE	10000.00	8.00	0.50			
		Teak	390.48	2.56	0.38			
Chalakkudy	Pariyaram	MDF	2037.50	6.04	0.84	63.16	95.68	55.89
		Cashew	2933.33	7.33	1.00			
		Teak	3200.00	8.00	1.00			
		SE	1333.33	4.29	0.78			
		Palappilly	Teak	1274.42	6.52	0.49		
	Vellikkulangara	EG	1028.57	3.60	0.71	27.46	40.02	25.46
		SE	1125.93	3.80	0.74	105.55	151.32	80.45
		MDF	1659.26	4.87	0.85	18.21	32.40	21.51
	Overall	MDF	1864.41	5.50	0.85	34.26	51.90	30.31
		Cashew	2933.33	7.33	1.00			
		Teak	1071.26	7.06	0.38			
		EG	1028.57	3.60	0.71	27.46	40.02	25.46
		SE	1177.78	3.93	0.75	79.16	113.49	60.34
Vazhachal	Charpa	MDF	2711.11	8.71	0.78	27.44	51.44	34.53
		SE	600.00	6.00	0.25	0.64	4.23	3.51
		Teak	1366.67	6.83	0.50	123.60	167.41	97.85
	Kollathirumedu	SE	218.18	3.60	0.15	33.94	54.84	33.47
		MDF	1760.00	5.50	0.80	12.10	16.68	9.86
		Teak	1050.00	3.00	0.88	324.69	465.30	230.78
	Sholayar	SE	104.76	5.50	0.05	1.54	2.49	1.66
	Vazhachal	MDF	1600.00	6.29	0.64	21.22	35.61	24.00
		SE	71.43	1.67	0.11			
	Overall	SE	194.96	4.14	0.12	4.05	6.19	3.89
		MDF	2032.00	7.06	0.72	19.22	34.19	22.99
Teak		1240.00	4.77	0.65	204.03	286.57	151.02	

Peechi	Chimmini	MDF	2290.91	7.41	0.77	20.97	39.92	27.53
		SE	263.41	4.91	0.13	6.53	9.76	6.14
	Peechi	EG	66.67	1.00	0.17			
		MDF	2682.78	8.07	0.83			
		SE	1648.00	11.44	0.36			
	Overall	Teak	3392.16	8.56	0.99			
		EG	66.67	1.00	0.17			
		Teak	3392.16	8.56	0.99			
		MDF	2628.39	7.98	0.82	2.91	5.54	3.82
		SE	586.92	7.85	0.19	5.01	7.48	4.70
Nenmara	Alathur	MDF	5200.00	13.00	1.00			
		SE	3200.00	16.00	0.50			
		Teak	4051.28	10.13	1.00			
	Kollengode	MDF	1786.67	6.70	0.67			
	Overall	MDF	2188.24	7.75	0.71			
		SE	88.89	16.00	0.01			
Teak		3291.67	10.13	0.81				
Palakkad	Olavakkode	MDF	881.25	7.42	0.30	4.60	10.82	7.95
		Teak	1200.00	9.00	0.33			
	Walayar	MDF	2448.98	8.57	0.71	25.50	46.96	31.69
	Overall	MDF	1561.06	8.17	0.48	11.06	20.36	13.74
Teak		342.86	9.00	0.10				
Mannarkkad	Agali	MDF	2133.33	10.67	0.50			
		SE	1107.69	7.20	0.38			
	Attappady	MDF	1714.29	6.43	0.67	11.13	24.42	16.84
		SE	3866.67	9.67	1.00			
	Mannarkkad	Acacia	711.11	2.29	0.78			

		Cashew	1010.53	4.80	0.53			
		MDF	1040.00	3.71	0.70	19.54	29.01	19.16
		SE	800.00	12.00	0.17			
		Teak	200.00	3.00	0.17	32.15	42.48	24.36
	Overall	Acacia	711.11	2.29	0.78			
		Cashew	1010.53	4.80	0.53			
		MDF	1480.85	5.61	0.66	13.29	23.26	15.68
		SE	1400.00	8.56	0.41			
		Teak	200.00	3.00	0.17	32.15	42.48	24.36
Parambikulam	Karimala	MDF	422.22	3.17	0.33			
		SE	733.33	2.75	0.67			
	Parambikulam	SE	453.33	3.40	0.33			
	Sungam	MDF	263.41	3.38	0.20			
	Overall	MDF	287.50	3.29	0.22			
		SE	533.33	3.11	0.43			
Nilambur North	Edavanna	Bamboo	457.14	2.67	0.43			
		MDF	1148.39	6.85	0.42	7.59	16.68	11.53
	Nilambur	MDF	4171.43	10.43	1.00			
		Mixed	733.33	3.93	0.47			
		SE	2355.56	6.63	0.89			
		Teak	661.11	4.76	0.35			
	Vazhikkadavu	MDF	631.58	4.62	0.34			
		Teak	3905.26	13.25	0.74			
	Overall	Bamboo	457.14	2.67	0.43			
		MDF	1168.42	6.73	0.43	3.13	7.62	5.38
		Mixed	733.33	3.93	0.47			
		SE	1766.67	6.63	0.67			
Teak		1781.82	9.25	0.48				

Nilambur South	Kalikkavu	Acacia	1015.38	5.50	0.46			
		MDF	1657.14	5.80	0.71			
	Karulai	SE	225.00	3.00	0.19			
		Teak	2074.42	7.31	0.71	4.11	17.58	13.81
	Overall	Acacia	1015.38	5.50	0.46			
		MDF	669.77	6.26	0.27			
		SE	225.00	3.00	0.19			
Teak		2074.42	7.31	0.71	4.11	17.58	13.81	
Wayanad North	Begur	MDF	228.57	2.00	0.29			
		SE	933.33	5.13	0.45			
		Teak	806.45	3.57	0.56			
	Mananthavady	SE	72.73	2.00	0.09			
		MDF	100.00	2.00	0.13			
	Overall	SE	526.67	4.94	0.27			
Wayanad South	Chedleth	MDF	747.54	2.65	0.70			
		Teak	528.00	2.36	0.56			
	Kalpetta	Eucalyptus	240.00	1.67	0.36			
	Meppady	Savanah	12.50	1.00	0.03			
	Overall	Eucalyptus	240.00	1.67	0.36			
		MDF	747.54	2.65	0.70			
		Savanah	12.50	1.00	0.03			
Wayanad WLS	Aralam	Teak	528.00	2.36	0.56			
		MDF	19.05	2.00	0.02			
	Kurichiyath	DDF	1031.58	4.90	0.53			
		MDF	1500.00	5.00	0.75			
		SE	2938.46	10.05	0.73			
	Teak	914.29	3.64	0.63				

	Muthanga	Eucalyptus	300.00	3.75	0.20			
		MDF	504.00	4.20	0.30			
		Teak	400.00	4.25	0.24			
	S. Bathery	DDF	61.54	2.00	0.08			
		MDF	1627.59	5.13	0.79			
		Teak	553.85	4.50	0.31			
	Tholpetty	Eucalyptus	320.00	2.00	0.40			
		MDF	1440.00	4.80	0.75			
		Teak	909.09	3.57	0.64			
	Overall	DDF	637.50	4.64	0.34			
		Eucalyptus	304.00	3.17	0.24			
		MDF	829.09	4.75	0.44			
		SE	2938.46	10.05	0.73			
		Teak	749.55	3.78	0.50			
	Kannur	Kanjangad	Cashew	247.06	1.50	0.41		
MDF			637.84	3.11	0.51			
SE			57.14	2.50	0.06			
Kannavam		Mahagony	80.00	1.00	0.20			
		MDF	688.00	2.84	0.61			
		Mixed	654.55	3.00	0.55			
		SE	26.67	1.00	0.07			
		Teak	1107.69	2.77	1.00			
Kasaragod		Acacia	360.00	2.25	0.40			
		Cashew	273.17	1.65	0.41			
		Cinnamomum	360.00	2.25	0.40			
		MDF	409.09	2.05	0.50			
		Mixed	297.14	1.63	0.46			



		<b>SE</b>	<b>70.59</b>	<b>1.00</b>	<b>0.18</b>			
		Teak	204.88	1.62	0.32			
	Kottiyur	MDF	34.29	1.50	0.06			
		SE	6.45	1.00	0.02			
	Taliparamba	Acacia	100.00	2.00	0.13			
		Cashew	266.67	1.67	0.40			
		MDF	320.00	2.67	0.30			
	Overall	Acacia	244.44	2.20	0.28			
		Cashew	262.22	1.59	0.41			
		Cinnamomum	360.00	2.25	0.40			
		Mahagony	61.54	1.00	0.15			
		MDF	547.32	2.73	0.50			
		Mixed	318.70	2.45	0.33			
SE		23.30	1.33	0.04				
	Teak	380.33	2.15	0.44				

**Table 3.3.1.1 Distribution of *Acacia caesia* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																	
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	2	7.10	16	57.10	7	25.00	1	3.60	1	3.60	1	3.60						
	Pattikkad	9	12.70	37	52.10	16	22.50	5	7.00	4	5.60								
	Wadakkancherry			1	100.00														
	Total	11	11.00	54	54.00	23	23.00	6	6.00	5	5.00	1	1.00						
Chalakkudy	Pariyaram	1	100.00																
	Vellikkulangara			1	5.30	1	5.30	4	21.10	11	57.90	2	10.50						
	Total	1	5.00	1	5.00	1	5.00	4	20.00	11	55.00	2	10.00						

Vazhachal	Charpa	1	7.70	7	53.80	3	23.10	1	7.70	1	7.10							
	Kollathirumedu					1	25.00	1	25.00	2	50.00							
	Vazhachal			1	14.30	2	28.60	1	14.30	2	28.20	1	14.30					
	Total	1	4.20	8	33.30	6	25.00	3	12.50	5	20.80	1	4.20					
Peechi	Chimmini	1	3.80	10	38.50	11	42.30	2	7.70	2	7.70							
	Peechi	40	18.80	116	54.50	37	17.40	15	7.00	1	0.50	3	1.40			1	0.50	
	Total	41	17.20	126	52.70	48	20.10	17	7.10	3	1.30	3	1.30			1	0.40	
Nenmara	Alathur	3	50.00	2	33.30	1	16.70											
	Kollengode	2	40.00	3	60.00													
	Total	5	45.50	5	45.50	1	9.10											
Palakkad	Olavakkode			1	33.30	1	33.30			1	33.30							
	Walayar			2	50.00	2	50.00											
	Total			3	42.90	3	42.90			1	14.30							
Mannarkkad	Agali	4	20.00	12	60.00	3	15.00	1	5.00									
	Attappady			2	66.70	1	33.30											
	Total	4	17.40	14	60.90	4	17.40	1	4.30									
Parambikulam	Karimala					1	100.00											
	Orukomban					1	100.00											
	Parambikulam			3	75.00	1	25.00											
	Total			3	50.00	3	50.00											
Nilambur (N)	Edavanna			3	50.00	1	16.70	1	16.70	1	16.70							
	Nilambur			2	28.60	3	42.90	1	14.30	1	14.30							
	Vazhikkadavu					5	71.40			1	14.30	1	14.30					
	Total			5	25.00	9	45.00	2	10.00	3	15.00	1	50.00					
Nilambur(S)	Kalikavu			1	50.00											1	50.00	
	Total			1	50.00											1	50.00	

Wayanad(S)	Chedleth			9	29.00	22	71.00												
	Kalpetta			1	16.70	5	83.30												
	Meppady			2	50.00	2	50.00												
	Total			12	29.30	29	70.70												
Wayanad(N)	Mananthavady							2	66.70	1	33.30								
	Total							2	66.70	1	33.30								
Wayanad WLS	Aralam			9	10.00	45	50.00	36	40.00										
	Total			9	10.00	45	50.00	36	40.00										
Kannur	Kanjangad	9	5.20	151	86.80	14	8.00												
	Kannavam	2	0.70	66	24.10	150	54.70	54	19.70	2	0.70								
	Kasaragod			39	83.00	8	17.00												
	Kottiyur			4	3.80	76	73.10	24	23.10										
	Taliparamba	1	2.50	40	93.00	2	4.70												
	Total	12	1.90	300	46.70	250	38.90	78	12.10	2	0.30								

**Table 3.3.1.2 Distribution of *Acacia pennata* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																	
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	1	16.70	2	33.30	2	33.30	1	16.70										
	Pattikkad	2	8.70	14	60.90	6	26.10			1	4.30								
	Total	3	10.30	16	55.20	8	27.60	1	3.40	1	3.40								
Chalakkudy	Pariyaram	3	12.50	14	58.30	5	20.80	1	4.20	1	4.20								
	Vellikulangara	1	33.30	1	33.30	1	33.30												
	Total	4	14.80	15	55.60	6	22.20	1	3.70	1	3.70								

Vazhachal	Charpa					1	100.00												
	Kollathirumedu			2	50.00			1	25.00					1	25.00				
	Sholayar					1	100.00												
	Vazhachal									1	100.00								
	Total			2	28.60	2	28.60	1	14.30	1	14.30			1	14.30				
Peechi	Chimmini	1	10.00	4	40.00	2	20.00	2	20.00							1	10.00		
	Peechi	5	8.50	19	32.30	24	40.70	6	10.20	3	5.10					1	1.70	1	1.70
	Total	6	8.70	23	33.30	26	37.70	8	11.60	3	4.30					2	2.90	1	1.40
Nenmara	Kollengode			6	66.70	3	33.30												
	Total			6	66.70	3	33.30												
Palakkad	Olavakkode	1	5.00	11	55.00	8	40.00												
	Walayar	1	20.00	2	40.00	2	40.00												
	Total	2	8.00	13	52.00	10	40.00												
Mannarkkad	Agali	1	11.10	3	33.30	4	44.40	1	11.10										
	Attappady			5	35.70	6	42.90	2	14.30	1	7.10								
	Mannarkkad			4	44.40	4	44.40									1	11.10		
	Total	1	3.10	12	37.50	14	43.80	3	9.40	1	3.10					1	3.10		
Parambikulam	Karimala			1	50.00	1	50.00												
	Orukomban			3	50.00	3	50.00												
	Sungam			1	100.00														
	Total			5	55.60	4	44.40												
Nilambur(N)	Edavanna	2	6.70	7	23.30	18	60.00	1	3.30	1	3.30			1	3.30				
	Nilambur	1	20.00	3	60.00					1	20.00								
	Total	3	8.60	10	28.60	18	51.40	1	2.90	2	5.70			1	2.90				
Nilambur(S)	Kalikavu			2	50.00	2	50.00												
	Karulai			5	38.50	5	38.50	1	7.70									2	15.40
	Total			7	41.20	7	41.20	1	5.90									2	11.80

**Table 3.3.1.3 Distribution of *Acacia sinuata* across different diameter classes in different Forest Divisions**

Useful part: Fruit

Division	Range	Diameter classes (cm)																	
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Pattikkad			6	46.2	7	53.8												
	Total			6	46.2	7	53.8												
Chalakkudy	Pariyaram	4	16	17	68	4	16												
	Total	4	16	17	68	4	16												
Vazhachal	Sholayar					3	100												
	Total					3	100												
Peechi	Chimmin			3	27.3	4	36.4	1	9.1	3	27.3								
	Peechi			2	66.7			1	33.3										
	Total			5	35.7	4	28.6	2	14.3	3	21.4								
Nenmara	Neliyampathy									1	100								
	Total									1	100								
Palakkad	Olavakkode			7	53.8	6	46.2												
	Walayar	3	6.5	19	41.3	20	43.5	2	4.3	1	2.2	1	2.2						
	Total	3	5.1	26	44.1	26	44.1	2	3.4	1	1.7	1	1.7						
Mannarkkad	Agali			1	100														
	Mannarkkad	1	16.7	1	16.7	2	33.3	2	33.3										
	Total	1	14.3	2	28.6	2	28.6	2	28.6										
Nilambur North	Edavanna			7	38.9	7	38.9	4	22.2										
	Total			7	38.9	7	38.9	4	22.2										

Nilambur South	Kalikavu					1	100												
	Karulai	3	11.5	15	57.7	6	23.1	1	3.8	1	3.8								
	Total	3	11.1	15	55.6	7	25.9	1	3.7	1	3.7								
Wayanad North	Mananthavady					3	50	3	50										
	Total					3	50	3	50										
Wayanad South	Chedleth			2	33.3	4	66.7												
	Kalpetta			1	7.1	10	71.4	3	21.4										
	Meppadi			11	42.3	15	57.7												
	Total			14	30.4	29	63	3	6.5										
Kannur	Taliparamba	2	5.1	36	92.3	1	2.6												
	Total	2	5.1	36	92.3	1	2.6												

**Table 3.3.1.4 Distribution of *Acacia torta* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																	
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	4	15.40	11	42.30	7	26.9	3	11.5			1	3.8						
	Pattikkad	24	20.00	59	49.20	28	23.3	5	4.2	2	1.7	2	1.7						
	Total	28	19.20	70	47.90	35	24	8	5.5	2	1.4	3	2.1						
Chalakkudy	Pariyaram	3	37.50	4	50			1	12.5										
	Vellikkulangara			1	100.00														
	Total	3	33.30	5	55.60			1	11.1										
Vazhachal	Charpa	1	33.30			1	33.30			1	33.3								
	Kollathirumedu			1	100.00														
	Sholayar			3	37.50	4	50	1	12.50										

	<b>Vazhachal</b>			<b>3</b>	<b>37.50</b>	<b>5</b>	<b>62.5</b>												
	Total	1	5.00	7	35.00	10	50	1	5	1	5								
Peechi	Chimmini	4	26.70	5	33.30	5	33.3					1	6.7						
	Peechi	41	24.80	89	53.90	24	14.5	5	3	4	2.4			2	1.2				
	Total	45	25.00	94	52.20	29	16.1	5	2.8	4	2.2	1	0.6	2	1.1				
Nenmara	Alathur			1	100.00														
	Kollengode	1	50.00	1	50.00														
	Total	1	33.30	2	66.70														
Palakkad	Walayar	4	26.70	2	13.30	8	53.3	1	6.7										
	Total																		
Mannarkkad	Agali	1	33.30	1	33.30	1	33.3												
	Attappady	1	2.90	13	37.10	11	31.4	7	20	1	2.9						2	5.7	
	Mannarkkad			2	50.00	5	35.7	1	7.1					1	7.1				
	Total	2	3.80	21	40.40	17	32.7	8	15.4	1	1.9			1	2.9		2	3.8	
Parambikulam	Karimala	1	25.00	1	25.00	2	50												
	Orukomban			1	100.00														
	Parambikulam	1	100.00																
	Sungam	2	25.00	5	62.50	1	12.5												
	Total	4	28.60	7	50.00	3	21.4												
Nilambur (n)	Edavanna	1	12.50	3	37.50	2	25			2	25								
	Nilanbur	2	13.30	6	40.00	4	26.7									3	13.3	1	6.7
	Vazhikkadavu	1	5.30	8	42.10	6	31.6			3	15.8	1	5.3						
	Total	4	9.50	17	40.50	12	28.6			5	11.9	1	2.4			2	4.8	1	2.4
Kannur	Kanjangad	1	2.40	41	97.60														
	Taliparamba			7	100.00														
	Total	1	2.00	48	98.00														

**Table 3.3.1.5 Distribution of *Alstonia scholaris* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																					
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Chalakkudy	Pariyaram	1	20.00			2	40.00			1	20.00			1	20.00								
	Vellikkulangara	1	9.10	1	9.10	1	9.10	1	9.10	2	18.20			2	18.20			1	9.10	1	9.10	1	9.10
	Total	2	12.50	1	6.30	3	18.80	1	6.30	3	18.80			3	18.80			1	6.30	1	6.30	1	6.30
Mannarkkad	Mannarkkad	1	10.00			1	10.00			3	30.00	1	10.00	2	20.00	2	20.00						
	Total	1	10.00			1	10.00			3	30.00	1	10.00	2	20.00	2	20.00						
Nenmara	Alathur									1	100.00												
	Kollengode					2	33.30	3	50.00	1	16.70												
	Nelliyampathy	1	50.00	1	50.00																		
	Total	1	11.10	1	11.10	2	22.20	3	33.30	2	22.20												
Nilambur N	Edavanna	1	50.00	1	50.00																		
	Total	1	50.00	1	50.00																		
Nilambur S	Kalikavu									3	100.00												
	Karulai			1	33.30	2	66.70																
	Total			1	16.70	2	33.30			3	50.00												
Palakkad	Olavakkode	1	14.30	1	14.30					2	28.60	2	28.60									1	14.30
	Walayar			1	25.00									2	50.00	1	25.00						
	Total	1	9.10	2	18.20					2	18.20	2	18.20	2	18.20	1	9.10					1	9.10
Parambikulam	Orukomban									1	100.00												
	Sungam																				1	100.00	
	Total									1	50.00										1	50.00	
Peechi	Chimmini			2	16.70	1	8.30	3	25.00	3	25.00	1	8.30					2	16.70				



	Peechi	1	10.00	2	20.00	2	20.00	1	10.00			1	10.00					1	10.00	2	20.00		
	Total	1	4.50	4	18.20	3	13.60	4	18.20	3	13.60	2	9.10					2	9.10	1	4.50	2	9.10
Thrissur	Machad	6	13.60	12	27.30	5	11.40	6	13.60	3	6.80	5	11.40	2	4.50			1	2.30	2	4.50	2	4.50
	Pattikkad	2	20.00	6	60.00	1	10.00																
	Total	8	14.80	18	33.30	6	11.10	6	11.10	3	5.60	5	9.30	2	3.70			1	1.90	2	3.70	2	5.60
Vazhachal	Charpa					1	33.30	1	33.30													1	33.30
	Kollathirumedu							2	40.00	1	20.00	1	20.00						1	20.00			
	Sholayar					1	16.70			1	16.70			1	16.70	3	50.00						
	Vazhachal			2	11.80	2	11.80	4	23.50			4	23.50	3	17.60	2	11.80						
	Total			2	6.50	4	12.90	7	22.60	2	6.50	5	16.10	4	12.90	5	16.10			1	3.20	1	3.30
Wayanad N	Begur	1	100.00																				
	Mananthavady					2	100.00																
	Periya																					1	100.00
	Total	1	25.00			2	50.00															1	25.00
Wayanad S	Chedleth					1	50.00							1	50.00								
	Kalpetta					1	50.00	1	50.00														
	Meppady					1	100.00																
	Total					3	60.00	1	20.00					1	20.00								
Wayanad Wls	Aralam					1	100.00																
	Total					1	100.00																
Kannur	Kanjangad			4	57.10	2	28.60					1	14.30										
	Kannavam	1	5.90	3	17.60	2	11.80	6	35.30			1	5.90	3	17.60	1	5.90						
	Kasaragod			3	30.00	2	20.00	3	30.00	1	10.00	1	10.00										
	Kottiyur	3	33.30	2	22.20	2	22.20	1	11.10													1	11.10
	Total	4	9.30	12	27.90	10	23.30	10	23.30	1	2.30	3	7.00	3	70.00	1	2.30					1	2.30

**Table 3.3.1.6 Distribution of Bauhinia malabarica across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																							
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100			
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Thrissur	Machad	1	8.3			5	41.7	4	33.3	1.0	8.3	1	8.3												
	Total	1	8.3			5	41.7	4	33.3	1.0	8.3	1	8.3												
Chalakkudy	Pariyaram			1	50.0					1.0	50.0														
	Vellikkulangara					2	50.0	1	25.0	1.0	25.0														
	Total			1	16.7	2	33.3	1	16.7	2.0	33.3														
Vazhachal	Charpa			1	50.0	1	50.0																		
	Vazhachal									1.0	100.0														
	Total			1	33.3	1	33.3			1.0	33.3														
Peechi	Chimmini			2	100.0																				
	Peechi			1	25.0	1	25.0	1	25.0					1	25.0										
	Total			3	50.0	1	16.7	1	16.7					1	16.7										
Nenmara	Alathur									1.0	100.0														
	Kollengode			1	14.3	5	71.4			1.0	14.3														
	Total			1	12.5	5	62.5			2.0	25.0														
Palakkad	Olavakkode	1	7.1	9	64.3	1	7.1	1	7.1			1	7.1	1	7.1										
	Walayar			4	23.5	3	17.6	5	29.4	4.0	23.5	1	5.9												
	Total	1	3.2	13	41.9	4	12.9	6	19.4	4.0	12.9	2	6.5	1	3.2										
Mannarkkad	Agali			1	50.0	1	50.0																		
	Attappady	4	11.8	17	50.0	7	20.6	4	11.8	2.0	5.9														
	Total	4	11.1	18	50.0	8	22.2	4	11.1	2.0	5.6														
Parambikulam	Sungam	3	9.4	6	18.8	6	18.8	5	15.6	8.0	25.0	3	9.4	1	3.1										
	Total					6	18.8	5	15.6	8.0	25.0	3	9.4	1	3.1										





**Table 3.3.1.8 Distribution of *Butea monosperma* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																							
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100			
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Peechi	Peechi			1	50.0	1	50.0																		
	Total			1	50.0	1	50.0																		
Parambikulam	Sungam	1	5.6	1	5.6	4	22.2	4	22.2	4	22.2	3	16.7	1	5.6										
	Total	1	5.6	1	5.6	4	22.2	4	22.2	4	22.2	3	16.7	1	5.6										
Nilambur N	Vazhikkadavu	3	30.0	3	30.0	3	30.0	1	10.0																
	Total	3	30.0	3	30.0	3	30.0	1	10.0																
Nilambur S	Karulai	7	11.1	8	12.7	12	19.0	13	20.6	16	25.4	4	6.3			1	1.6	2	3.2						
	Total	7	11.1	8	12.7	12	19.0	13	20.6	16	25.4	4	6.3			1	1.6	2	3.2						
Wayanad S	Chedleth			3	30.0	5	50.0	2	20.0																
	Total			3	30.0	5	50.0	2	20.0																
Wayanad N	Begur					8	57.1	6	42.5																
	Total					8	57.1	6	42.5																
Wayanad WLS	Kurichiyath					1	16.7	3	20.0	2	33.3														
	Muthanga					1	50.0			1	50.0														
	S. Bathery			2	14.3	3	21.4	3	21.4					6	42.9										
	Tholpetty			1	4.8	6	28.6	10	47.6	3	14.3	1	4.8												
	Total			3	7.0	11	25.6	16	37.2	6	14.6	1	2.3	6	14.0										

**Table 3.3.1.9 Distribution of Cassia fistula across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																	
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	20	8.6	86	37.1	87	37.5	20	8.6	12	5.2	3	1.3	4	1.7				
	Pattikkad	11	22.0	20	40.0	12	24.0	6	12.0	1	20.0								
	Wadakkancherry			3	75.0	1	25.0												
	Total	31	10.8	109	38.1	100	35.0	26	9.1	13	4.5	3	1.0	4	1.4				
Chalakkudy	Pariyaram	6	35.3	4	23.5	3	17.6	3	17.6									1	5.9
	Vellikulangara			2	15.4	1	7.7	1	7.7			1	7.7	1	7.7	1	7.7	6	46.2
	Total	6	20.0	6	20.0	4	13.3	4	13.3			1	3.3	1	3.3	1	3.3	7	23.3
Vazhachal	Charpa			1	100.0														
	Sholayar					1	100.0												
	Vazhachal											1	100.0						
	Total			1	33.3	1	33.3					1	33.3						
Peechi	Chimmini					6	54.5	2	18.2	1	9.1	1	9.1			1	19.1		
	Peechi	9	8.6	42	40.0	16	15.2	13	12.4	7	6.7	5	4.8	1	1.0	6	5.7	6	5.7
	Total	9	7.8	42	36.2	22	19.0	15	12.9	8	6.9	6	5.2	1	0.9	7	6.0	6	5.2
Nenmara	Alathur	1	50.0	1	50.0														
	Kollengode					1	25.0	1	25.0	1	25.0							1	25.0
	Total	1	16.7	1	16.7	1	16.7	1	16.7	1	16.7							1	16.7
Palakkad	Olavakkode					2	100.0												
	Walayar			2	33.3	2	33.3							1	16.7			1	16.7
	Total			2	25.0	4	50.0							1	12.5			1	12.5
Mannarkkad	Agali	2	16.7	6	50.0	2	16.7			6	16.7								

	Attappady	1	5.9	7	41.2	6	35.3	2	11.8	1	5.9								
	Mannarkkad			1	20.0	2	40.0	1	20.0	1	20.0								
	Total	3	8.8	14	41.2	10	29.4	3	8.8	4	11.8								
Parambikulam	Karimala			1	9.1	2	27.3	2	18.2	2	18.2			2	18.2			1	9.1
	Orukomban	12	25.5	14	29.8	8	17.0	5	10.6	2	4.3	3	6.4			2	4.3	1	2.1
	Parambikulam					3	50.0	1	16.7	1	16.7	1	16.7						
	Sungam	27	24.8	48	44.0	29	26.6	5	4.6										
	Total	39	22.5	63	36.4	43	24.9	13	7.5	5	2.9	4	2.3	2	1.2	2	1.2	2	1.2
Nilambur N	Edavanna															1	50.0	1	50.0
	Nilambur							1	100.0										
	Vazhikkadavu												1	100.0					
	Total							1	25.0				1	25.0	1	25.0	1	25.0	
Nilambur S	Kalikavu			3	37.5	2	25.0	1	12.5	2	25.0								
	Karulai	8	33.3	10	31.3	5	15.6	2	6.3	6	18.8					1	3.1		
	Total	8	25.0	10	31.3	5	15.6	2	6.3	6	18.8					1	3.1		
Wayanad N	Begur			1	20.0			2	40.0	2	40.0								
	Total			1	20.0			2	40.0	2	40.0								
Wayanad S	Chedleth			41	71.9	13	22.8	2	3.5	1	1.8								
	Total			41	71.9	13	22.8	2	3.5	1	1.8								
Wayanad WLS	Kurichiyath			28	47.5	17	28.8	8	13.6	5	8.5			1	17.1				
	Muthanga	1	14.3	3	42.9	2	28.6			1	14.3								
	S. Bathery			5	35.7	6	42.9	1	7.1	2	14.3								
	Tholpetty			23	31.5	36	49.3	9	12.3	5	6.8								
	Total	1	0.7	59	38.6	61	39.9	18	11.8	13	8.5			1	0.1				
Kannur	Kanjangad					1	100.0												
	Total					1	100.0												

**Table 3.3.1.10 Distribution of Cinnamomum spp. across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																						
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Thrissur	Pattikkad	3	100.0																					
	Total	3	100.0																					
Chalakkudy	Praiyaram	7	77.8	2	22.2																			
	Vellikkulangara	10	52.6	3	15.8	4	21.1	1	5.3			1	5.3											
	Total	17	60.7	5	17.9	4	14.3	1	3.6			1	3.6											
Vazhachal	Charpa	3	42.9	2	28.6	1	14.3							1	14.3									
	Kollathirumedu	13	36.1	9	25.0	6	16.7	3	8.3	3	8.3			2	5.6									
	Sholayar	8	47.1	5	29.4	3	17.6	1	5.9															
	Vazhachal	10	33.3	7	23.3	5	16.7	3	13.3	2	6.7			2	6.7						1	33.3	1	33.30
	Total	34	37.8	23	25.6	15	16.7	8	8.9	5	5.6			5	5.6						1	1.1	1	1.10
Peechi	Chimmini	20	29.4	19	27.9	12	17.6	10	14.7	6	8.8	1	1.5											
	Peechi	21	80.8	5	19.2																			
	Total	41	43.6	24	25.5	12	12.8	10	10.6	6	6.4	1	1.1											
Nenmara	Nelliyampathy	6	9.4	12	38.7	3	9.7	4	12.9	2	6.5	2	6.5	2	6.5									
	Total	6	9.4	12	38.7	3	9.7	4	12.9	2	6.5	2	6.5	2	6.5									
Palakkad	Walayar	1	5.9	3	17.6	2	11.8	3	17.6	6	35.3			1	5.9	1	5.9							
	Total																							
Mannarkkad	Agali	3	100.0																					
	Attappady	1	25.0			1	25.0			2	50.0													
	Mannarkkad	7	70.0	1	10.0	1	10.0	1	10.0															
	Total	11	64.7	1	5.9	2	11.8	1	5.9	2	11.8													



Parambikulam	<b>Karimla</b>	<b>8</b>	<b>20.4</b>	<b>7</b>	<b>41.2</b>	<b>3</b>	<b>17.0</b>	<b>2</b>	<b>11.0</b>														
	Orukomban	18	78.3	4	17.4			1	4.3														
	Parambikulam	8	21.6	20	54.1	2	5.4	2	5.4	4	10.8	1	2.7										
	Sungam	1	50.0	1	50.0																		
	<b>Total</b>	<b>32</b>	<b>40.5</b>	<b>32</b>	<b>40.5</b>	<b>5</b>	<b>6.3</b>	<b>5</b>	<b>6.3</b>	<b>4</b>	<b>5.1</b>	<b>1</b>	<b>1.3</b>										
Nilambur(N)	Edavanna			3	28.3					1	9.1	1	9.1			3	27.3			2	18.2	1	9.10
	Vazhikkadavu	13	14.0	18	19.4	9	9.7	13	14.0	11	11.8	8	8.6	7	7.5	2	2.2	3	3.2	3	3.2	6	6.50
	<b>Total</b>	<b>13</b>	<b>12.5</b>	<b>21</b>	<b>20.2</b>	<b>9</b>	<b>8.7</b>	<b>13</b>	<b>12.5</b>	<b>12</b>	<b>11.5</b>	<b>9</b>	<b>8.7</b>	<b>7</b>	<b>6.7</b>	<b>5</b>	<b>4.8</b>	<b>3</b>	<b>2.9</b>	<b>5</b>	<b>4.8</b>	<b>7</b>	<b>6.70</b>
Nilambur(S)	Kalikavu									2	100.0												
	Karulai	2	66.7									1	33.3										
	<b>Total</b>	<b>2</b>	<b>40.0</b>							<b>2</b>	<b>40.0</b>	<b>1</b>	<b>20.0</b>										
Wayanad(S)	Chedleth	9	81.8	2	18.2																		
	Kalpetta	30	83.3	6	16.7																		
	Meppady	17	70.8	5	20.8	2	8.3																
	<b>Total</b>	<b>56</b>	<b>78.9</b>	<b>13</b>	<b>18.3</b>	<b>2</b>	<b>2.8</b>																
Wayanad(S)	Begur	15	65.2	5	21.7	3	13.0																
	Mananthavady	3	60.0	2	40.0																		
	Periya	8	66.7	2	16.7	1	8.3															1	8.30
	<b>Total</b>	<b>26</b>	<b>65.0</b>	<b>9</b>	<b>22.5</b>	<b>4</b>	<b>10.0</b>															<b>1</b>	<b>2.50</b>
Wayanad WLS	Aralam	9	69.2	4	30.8																		
	Kurichiyath	2	20.0	2	20.0	2	20.0	2	20.0	1	10.0	1	10.0										
	S. Bathery	3	100.0																				
	Tholpetty	2	40.0	2	40.0	1	20.0																
	<b>Total</b>	<b>16</b>	<b>51.6</b>	<b>8</b>	<b>25.8</b>	<b>3</b>	<b>9.7</b>	<b>2</b>	<b>6.5</b>	<b>1</b>	<b>3.2</b>	<b>1</b>	<b>3.2</b>										
Kannur	Kanjangad	3	75.0							1	25.0												
	Kannavam	8	42.1	10	52.6	1	5.3																
	Kasaragod	24	80.0	4	13.3	1	3.3																

	Kottiyur	67	57.8	45	38.8	4	34.0																
	Taliparamba	29	74.4	8	20.5			1	2.6	1	2.6												
	Total	131	63.0	67	32.2	6	2.9	2	1.0	2	1.0												

**Table 3.3.1.11 Distribution of Ficus racemosa across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																					
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Vazhachal	Kollathirumedu	1	17					5	83.3														
	Sholayar					1	100																
	Vazhachal							1	100														
	Total	1	13			1	12.5	6	75														
Peechi	Peechi	1	100																				
	Total	1	100																				
Nenmara	Kollengode	1	13			3	37.5	2	25	2	25												
	Total	1	13			3	37.5	2	25	2	25												
Palakkad	Olavakkode	4	9.1	8	18.2	10	22.7	4	9.1	9	20.5	3	6.8	1	2.3					2	4.5	3	6.8
	Walayar			4	8			6	12	13	26	11	22	8	16	3	6	3	6			2	4
	Total	4	4.3	12	12.8	10	10.6	10	10.6	22	23.4	14	14.9	9	9.6	3	3.2	3	3.2	2	2.1	5	5.3
Mannarkkad	Mannarkkad	1	50							1	50												
	Total	1	50							1	50												
Parambikulam	Parambikulam									1	100												
	Total									1	100												
Nilambur N	Vazhikkadavu	1	13	1	12.5	1	12.5	1	12.5							1	13			1	12.5	2	25
	Total	1	13	1	12.5	1	12.5	1	12.5							1	13			1	12.5	2	25

Nilambur S	Karual																						1	100	
	Total																							1	100
Wayanad N	Begur																							1	100
	Periya													1	33.3									1	33.3
	Total													1	25									1	25
Wayanad S	Chedleth													1	33.3									1	33.3
	Meppady																							1	50
	Total													1	20									1	20

**Table 3.3.1.12 Distribution of *Holoptelea integrifolia* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																						
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Thrissur	Machad	4	28.6	10	71.4																			
	Wadakkancherry	7	46.7	8	53.3																			
	Total	11	37.9	18	62.1																			
Chalakkudy	Vellikulangara											1	33.3										1	33.0
	Total											1	33.3										1	33.0
Vazhachal	Charpa											1	50.0										1	50.0
	Sholayar			1	100.0																			
	Total			1	33.3							1	33.3										1	33.3
Peechi	Chimmini	1	25.0	2	50.0	1	25.0																	
	Peechi	1	100.0																					
	Total	2	40.0	2	40.0	1	20.0																	

Palakkad	Olavakkode	1	12.5	3	37.5	2	25.0	1	12.5					1	12.5							
	Total	1	12.5	3	37.5	2	25.0	1	12.5					1	12.5							
Wayanad WLS	Aralam	2	22.2	4	44.4	1	11.1	1	11.1	1	11.1											
	Total	2	22.2	4	44.4	1	11.1	1	11.1	1	11.1											
Nilambur S	Karulai														1.0	100.0						
	Total														1.0	100.0						
Kannur	Kanjangad			1	50.0																1	50.0
	Kannavam			2	100.0																	
	Kasaragod																	2	33.3	2	33.3	
	Total			3	30.0	2	20.0											2	20.0	3	30.0	

**Table 3.3.1.13 Distribution of Lagerstroemia reginae across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																					
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	1	33.3													2	66.7						
	Pattikkad	1	12.5			1	12.5			2	25.0	3	37.5					1	12.5				
	Total	2	18.2			1	9.1			2	18.2	3	27.3			2	18.2	1	9.1				
Chalakkudy	Pariyaram							2	50.0	2	50.0												
	Vellikkulangara	4	52.0	2	2.6	12	15.6	7	9.1	22	28.6	15	19.5	5	6.5	4	5.2	3	3.9			3	3.9
	Total	4	4.9	2	2.5	12	14.8	9	11.1	24	29.6	15	18.5	5	6.2	4	4.9	3	3.7	3	3.7		
Vazhachal	Charpa			1	25.0	2	50.0															1	25.0
	Kollathirumedu	1	16.7	1	16.7	1	16.7	1	16.7					1	16.7	1	16.7						
	Total	1	9.1	2	18.2	2	27.3	2	18.2					1	9.1	1	9.1					1	9.1
Peechi	Chimmini							1	33.3	1	33.3	1	33.3										
	Peechi			2	33.3			1	16.7	1	16.7	2	33.3										
	Total			2	22.2			2	22.2	2	22.2	3	33.3										

Nenmara	Alathur							1	100.0															
	Total							1	100.0															
Parambikulam	Karimala	1	3.7	5	18.5	9	33.3	5	18.5	5	18.5	2	7.4											
	Orukomban			1	11.1	1	11.1	1	11.1	5	55.6	1	11.1											
	Total	1	2.8	6	16.7	10	27.8	6	16.7	10	27.8	3	8.3											
Nilambur(N)	Nilambur	1	12.5			1	12.5	3	37.5	2	25.0	1	12.5											
	Vazhikkadavu					2	4.3	10	21.3	20	42.6	6	12.8	3	6.4	1	2.1	1	2.1	1	2.1	3	6.4	
	Total	1	1.8			3	5.5	13	23.6	22	40.0	7	12.7	3	5.5	1	1.8	1	1.8	1	1.8	3	5.5	
Nilambur(s)	Karulai	1	1.7	5	8.5	7	11.9	11	18.6	15	25.4	7	11.9	6	10.2	2	3.4	2	3.4	2	3.4	1	1.7	
	Total	1	1.7	5	8.5	7	11.9	11	18.6	15	25.4	7	11.9	6	10.2	2	3.4	2	3.4	2	3.4	1	1.7	
Wayanad WLS	Aralam					5	12.2	16	39.0	5	12.2	5	12.2	9	22.0								1	2.4
	Total					5	12.2	16	39.0	5	12.2	5	12.2	9	22.0								1	
Kannur	Kannavam			3	12.5	5	20.8	7	29.2	3	12.5	4	16.7	1	4.2	1	4.2							
	Kasaragod			1	9.1	3	27.3	4	36.4	3	27.3													
	Kottiyur	1	5.6			1	5.6	3	16.7	1	5.6	4	22.2	4	22.2	4	22.2							
	Total	1	1.9	4	7.5	9	17.0	14	26.4	7	13.2	8	15.1	5	9.4	5	9.4							

**Table 3.3.1.14 Distribution of *Persea macrantha* over different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																						
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Thrissur	Machad	1	20.0	3	60.0	1	20.0																	
	Pattikkad	2	22.2			1	11.1	3	33.3	2	22.2	1	11.1											
	Total	3	21.4	3	21.4	2	14.3	2	21.4	2	14.3	1	7.1											
Chalakkudy	Vellikkulangara	10	41.7	5	20.8				3	12.5		1	4.2	1	4.2								4	16.7
	Total	10	41.7	5	20.8				3	12.5		1	4.2	1	4.2								4	16.7

Vazhachal	Charpa	1	25.0						1	25.0					1	25.0					1	25.0	
	Kollathirumedu			1	8.3	1	8.3	3	15.8	5	26.3	2	10.5	1	5.3	1	5.3	1	5.3				
	Sholayar	3	15.8	2	10.5	1	5.3	3	15.8	5	26.3	2	10.5	1	5.3	1	5.3	1	5.3				
	Vazhachal	1	33.3			2	66.7																
	Total																						
Peechi	Chimmini					1	50.0			1	50.0												
	Peechi			1	33.3	1	33.3					1	33.3										
	Total			1	20.0	2	40.0			1	20.0	1	20.0										
Palakkad	Olavakkode			1	100.0																		
	Walayar	1	25.0							1	25.0	1	25.0	1	25.0								
	Total	1	20.0	1	20.0					1	20.0	1	20.0	1	20.0								
Mannarkkad	Mannarkkad																					1	100.0
	Total																					1	100.0
Parambikulam	Karimala					1	12.5	2	25.0	4	50.0	1	12.5										
	Parambikulam	1	20.0	2	40.0	1	20.0	1	20.0														
	Sungam	3	37.5	4	50.0					1	12.5												
	Total	4	19.0	6	28.6	2	4.5	4	19.0	4	19.0	1	4.8										
Nilambur(N)	Nilambur							3	33.3					4	44.4	1	11.1					1	11.1
	Vazhikkadavu					1	25.0									1	25.0					1	25.0
	Total					1	7.7	2	23.1					4	30.8	2	15.4					2	15.4
Nilambur(S)	Karulai	4	14.3	3	10.7	4	14.3	2	7.1	4	14.3	6	21.4	2	7.1	1	3.6					1	3.6
	Total																						
Wayanad(S)	Chedleth							1	100.0														
	Kalpetta	5	50.0			1	10.0	1	10.0	2	20.0			1	10.0								
	Meppady	1	4.5	1	4.5	5	22.7	7	31.8	5	22.7	2	9.1	1	4.5								
	Total																						

Wayanad(N)	Begor	1	7.7	1	7.7	1	7.7	2	15.4			2	15.4	3	23.1	2	15.4	1	7.7					
	Mananthavady					1	100.0																	
	Periya					2	40.0	2	40.0												1	20.0		
	Total	1	5.3	1	5.3	4	21.1	4	21.1			2	10.5	3	15.8	2	10.5	1	5.3	1	5.3			
Wayanad WLS	Aralam											1	100.0											
	Kurichiyath	1	10.0			1	10.0			2	20.0	2	20.0	1	10.0	1	10.0	2	20.0					
	Muthanga							1	33.3					1	33.3						1	33.3		
	S. Bathery							3	37.5	1	12.5	1	12.5			1	12.5				2	25.0		
	Tholpetty							3	100.0															
	Total	1	4.0			1	4.0	7	28.0	3	12.0	4	16.0	2	8.0	2	8.0	2	8.0	2	8.0	3	12.0	
Kannur	Kanjangad			2	25.0					2	25.0	1	12.5	1	12.5	2	25.0							
	Kannavam							1	7.7	4	30.8	1	7.7	3	23.1	1	7.7				2	15.4	1	7.7
	Kasaragod													3	50.0	1	16.7	1	16.7				1	16.7
	Kottiyur													1	33.3	2	66.7							
	Taliparamba	1	16.7			2	33.3	1	15.7			1	16.7	1	16.7									
	Total	1	2.8	2	5.6	2	5.6	2	5.6	6	16.7	3	8.3	9	25.0	6	16.7	1	2.8	2	5.6	2	5.6	2

**Table 3.3.1.15 Distribution of Pongamia pinnata across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																						
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Thrissur	Machad	6	60.0	4	40.0																			
	Total	6	60.0	4	40.0																			
Chalakkudy	Pariyaram	2	50.0			1	25.0	1	25.0															
	Total	2	50.0			1	25.0	1	25.0															

Vazhachal	Kollathirumedu							2	66.7	1	33.3											
	Vazhachal			1	33.3			1	33.3	1	33.3											
	Total			1	16.7			3	50.0	2	33.3											
Peechi	Peechi	5	21.7	15	65.2	1	4.3			1	4.3	1	4.3									
	Total	5	21.7	15	65.2	1	4.3			1	4.3	1	4.3									
Mannarkkad	Mannarkkad	1	100.0																			
	Total	1	100.0																			
Parambikulam	Sungam			2	100.0																	
	Total			2	100.0																	
Nilambur (S)	Karulai	2	20.0	1	10.0	1	10.0	1	10.0	2	20.0	1	10.0	1	10.0					1	10.0	
	Total	2	20.0	1	10.0	1	10.0	1	10.0	2	20.0	1	10.0	1	10.0					1	10.0	
Wayanad (N)	Begur					2	12.5	8	50.0	2	12.5	2	12.5	2	12.5							
	Total					2	12.5	8	50.0	2	12.5	2	12.5	2	12.5							
Wayanad WLS	Tholpetty			2	40.0	2	40.0	1	20.0													
	Total			2	40.0	2	40.0	1	20.0													
Kannur	Kannavam					1	100.0															
	Kasaragod			1	16.7	2	33.3	1	16.7	1	16.7				1.0	16.7						
	Total			1	14.3	3	42.9	1	14.3	1	14.3				1.0	14.3						

**Table 3.3.1.16 Distribution of *Sarcostigma kleinii* across different diameter classes in different Forest Divisions**

Useful part: Fruit

Division	Range	Diameter classes (cm)																				
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40				
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
Thrissur	Machad					1	100															
	Pattikkad			2	16.7	8	66.7	2	16.7													
	Total			2	15.4	9	69.2	2	15.4													



Vazhachal	Charpa			1	50	1	50																
	Vazhachal										1	100											
	Total			1	33.3	1	33.3				1	33.3											
Peechi	Chimmini			14	58.3	7	29.2	1	4.2	1	4.2											1	4.2
	Total			14	58.3	7	29.2	1	4.2	1	4.2											1	4.2
Nenmara	Nelliampathy											1	100										
	Total											1	100										
Palakkad	Olavakkode			1	12.5	4	50	2	25	1	12.5												
	Walayar			6	75	2	25																
	Total			7	43.8	6	37.5	2	12.5	1	6.3												
Nilambur N	Edavanna					2	100																
	Vazhikkadavu							1	100														
	Total					2	66.7	1	33.3														
Wayanad North	Periya					1	100																
	Total					1	100																
Wayanad WLS	Aralam			2	66.7	1	33.3																
	Total			2	66.7	1	33.3																

**Table 3.3.1.17 Distribution of *Spondias pinnata* across different diameter classes in different Forest Divisions**

Useful part: Bark

Division	Range	Diameter classes (cm)																					
		0-10		10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		Above 100	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	3	15.0	7	35.0	2	10.0			1	5.0	2	10.0	3	15.0			1	5.0			1	5.0
	Pattikkad	18	43.9	9	22.0	3	7.3	1	2.4	7	17.1	1	2.4	2	4.9								
	Total	21	34.4	16	26.2	5	8.2	1	1.6	8	13.1	3	4.9	3	8.2	1	1.6	1	1.6				
Chalakkudy	Vellikkulangara													2	40.0			3	60.0				
	Total													2	40.0			3	60.0				

Vazhachal	Kollathirumedu																			1	100.0				
	Vazhachal			1	16.7	2	33.3	1	16.7	2	33.3														
	Total			1	14.3	2	28.6	1	14.3	2	28.6									1	14.3				
Peechi	Peechi	1	11.1	1	11.1			2	22.2	2	22.2	1	11.1									2	22.2		
	Chimmini	2	20.0	6	60.0	2	20.0																		
	Total	3	15.8	7	36.8	2	10.5	2	10.5	2	10.5	1	5.3	2	10.5										
Palakkad	Olavakkode					1	33.3	1	33.3	1	33.3														
	Walayar											1	100.0												
	Total					1	25.0	1	25.0	2	50.0														
Mannarkkad	Agali				1	100.0																			
	Attappady											2	100.0												
	Total				1	33.3						2	66.7												
Parambikulam	Orukomban	1	50.0	1	50.0																				
	Sungam											1	100.0												
	Total	1	33.3	1	33.3							1	33.3												
Nilambur N	Edavanna			1	14.3	1	42.9	1	14.3													1	14.3		
	Nilambur	3	37.5	1	12.5	1	12.5	1	12.5	1	12.5			1	12.5										
	Vazhikkadavu			1	11.1			1	11.1			1	11.1	2	22.2						1	11.1	1	11.1	
	Total	3	12.5	4	16.7	3	12.5	1	4.2	1	4.2	1	4.2	3	12.5						2	8.3	1	4.2	
Nilambur S	Karulai											1	100.0												
	Total											1	100.0												
Wayanad N	Begur	1	50.0																				1	50.0	
	Mananthavady																							1	100.0
	Total	1	33.3																				1	33.3	
Wayanad WLS	Kurichiyath							1	25.0														1	25.0	
	Total							1	25.0														1	25.0	

Kannur	Kanjangad									1	50.0									1	50.0
	Total																				

**Table 3.3.1.18 Distribution of *Wrightia tinctoria* across different diameter classes in different Forest Divisions**

Useful part: Leaf

Division	Range	Diameter classes (cm)																	
		3-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40		Above 40	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Thrissur	Machad	127	15.7	452	55.9	161	19.9	41	5.1	10	1.2	6	0.7	2	0.2	6	0.7	3	0.4
	Pattikkad	196	21.5	487	53.3	160	17.5	39	4.3	13	1.4	13	1.4	1	0.1	1	0.1	3	0.3
	Wadakkancherry	3	50.0	2	33.3	1	16.7												
	Total	326	18.9	941	54.5	322	18.6	80	4.6	23	1.3	19	1.1	3	0.2	7	0.4	6	0.3
Chalakkudy	Palappilly																		
	Pariyaram	6	27.3	10	45.5	3	13.6	2	9.1	1	4.5								
	Vellikkulangara			2	6.3	10	31.3	4	12.5	3	9.4	2	6.3	4	12.5	4	12.5	3	9.4
	Total	6	11.1	12	22.2	13	24.1	6	11.1	4	7.4	2	3.7	4	7.4	4	7.4	3	5.6
Vazhachal	Charpa					1	20.0	1	20.0	2	40.0	1	20.0						
	Sholayar					1	33.3			2	66.7								
	Vazhachal	3	50.0	2	33.0	1	16.7												
	Total			3	21.4	4	28.6	2	14.3	4	28.6	1	7.1						
Peechi	Chimmini	3	5.0	21	35.0	22	36.7	9	15.0	3	5.0	2	33.0						
	Peechi	263	11.3	953	41.1	561	24.2	237	10.2	153	6.6	65	2.8	33	1.4	30	1.3	23	1.0
	Total	266	11.2	974	41.0	583	24.5	246	10.3	156	6.6	67	2.8	33	1.4	30	1.3	23	1.0
Nenmara	Alathur			2	40.0	1	20.0	1	20.0	1	20.0								
	Kollengode	19	19.4	49	50.0	22	22.4	5	5.1	2	2.0	1	1.0						
	Nelliyampathy																		
	Total	19	18.4	51	49.5	23	22.3	6	5.8	3	2.9	1	1.0						

Palakkad	Olavakkode	12	5.2	63	27.5	81	35.4	27	11.8	21	9.2	10	4.4	8	2.8	4	1.7	5	2.2
	Walayar	27	8.1	169	50.8	91	27.3	28	8.4	11	3.3			1	0.3	5	1.5	1	0.3
	Total	39	6.9	232	41.3	172	30.6	55	9.8	32	5.7	10	1.8	7	1.2	9	1.6	6	1.1
Mannarkkad	Agali	6	37.5	5	31.3	3	18.8	1	6.3			1	6.3						
	Attappady	9	7.2	43	34.4	31	24.8	18	14.4	7	5.6	9	7.2	2	1.6	4	3.2	2	1.6
	Mannarkkad	5	9.1	17	30.9	19	34.5	8	14.5	3	5.5	2	3.6	1	1.8				
	Total	20	10.2	65	33.2	53	27.0	27	13.8	10	5.1	12	6.1	3	1.5	4	2.0	2	1.0
Parambikulam	Orukomban	1	4.2	7	29.2	10	41.7	6	25.0										
	Parambikulam	3	27.3	2	18.2	5	45.5	1	9.1										
	Sungam	4	8.0	18	36.0	8	16.0	7	14.0	1	20.0	4	80.0	1	20.0	3	60.0	4	80.0
	Karimala																		
	Total	8	9.4	27	31.8	23	27.0	14	16.5	1	1.2	4	4.7	1	1.2	3	3.5	4	4.7
Nilambur(N)	Edavanna	1	11.1	3	33.3	4	44.4	1	1.1									2	8.7
	Nilambur			10	43.5	8	34.8	1	4.3			1	4.3			1	4.3	2	14.3
	Vazhikkadavu	1	2.2	14	30.4	19	41.3	4	8.7	2	4.3	1	2.2			1	2.2	4	8.7
	Total																		
Nilambur(S)	Kalikavu																		
	Karulai	4	11.8	13	38.2	7	20.6	2	5.9	4	11.8	1	2.9			1	2.9	2	5.9
	Total	4	11.8	13	38.2	7	20.6	2	5.9	4	11.8	1	2.9			1	2.9	2	5.9
Wayanad(S)	Chedleth					1	33.3			2	66.7								
	Kalapetta																		
	Meppady											1	100.0						
	Total					1	25.0			2	50.0	1	25.0						
Kannur	Kanjangad									1	100.0								
	Kannavam					1	50.0			1	50.0								
	Kasaragod									2	100.0								
	Total					1	20.0			4	80.0								

**Table 3.3.2.1 Density, abundance and frequency of *Acacia caesia*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimate	LCL	UCL
Thrissur	Machad	MDF	120.48	1.14	0.0422	1.05	2.15	0.0783	0.1295	0.0330	0.2446
	Pattikkad	MDF	686.81	1.67	0.1648	4.88	5.07	0.1538	0.5657	0.1537	1.0557
	Wadakkancherry	MDF				1.04	1.00	0.1667	0.0788	0.0355	0.1279
	Overall	MDF	313.69	1.50	0.0837	2.39	3.57	0.1069	0.2821	0.0761	0.5272
Chalakkudy	Pariyaram	SE	416.67	2.00	0.0833	0.69	1.00	0.1111	0.0253	0.0090	0.0429
		Teak									
	Vellikulangara	MDF				3.24	1.40	0.3704	0.8020	-0.1536	2.0045
		SE				1.16	1.25	0.1481	0.2611	0.0043	0.5787
	Overall	MDF				1.48	1.40	0.1695	0.3670	-0.0703	0.9173
		SE				1.04	1.20	0.1389	0.2021	0.0055	0.4447
Teak			57.47	2.00	0.0115						
Vazhachal	Charpa	MDF	1111.11	2.00	0.2222	7.64	2.20	0.5556	1.5779	0.3083	3.1105
		SE				0.78	1.00	0.1250	0.0866	0.0384	0.1414
	Kollathirumedu	MDF				1.25	1.00	0.2000	0.2928	-0.0607	0.7381
		SE				0.57	1.00	0.0909	0.1454	0.0191	0.2997
	Vazhachal	MDF	1590.91	3.50	0.1818	3.41	2.00	0.2727	0.8153	0.0180	1.8012
		SE				0.22	1.00	0.0357	0.0401	-0.0372	0.0889
	Overall	MDF	1100.00	2.75	0.1600	4.50	2.00	0.3600	0.9853	0.1067	2.0599
		SE				0.32	1.00	0.0504	0.0614	0.0017	0.1351
Peechi	Chimmini	MDF	454.55	2.67	0.0682	2.56	1.38	0.2955	0.4103	0.1001	0.7822
		SE	152.44	2.50	0.0244	0.61	1.14	0.0854	0.0837	0.0284	0.1485
	Peechi	MDF	1117.22	2.77	0.1612	4.78	2.79	0.2747	0.4498	0.1080	0.8519
		SE	400.00	1.00	0.1600	1.00	2.00	0.0800	0.1553	0.0408	0.2922
		Teak	196.08	2.00	0.0392						

	Overall	MDF	1025.24	2.77	0.1483	4.48	2.58	0.2776	0.4420	0.1069	0.8422
		SE	210.28	1.50	0.0561	0.70	1.33	0.0841	0.1004	0.0313	0.1821
		Teak	196.08	2.00	0.0392						
Nenmara	Alathur	MDF				6.25	2.00	0.0931	0.8374	0.2880	1.4767
		SE				12.50	4.00	0.5000	1.0642	0.4516	1.7535
		Teak	1538.46	4.00	0.1538						
	Kollengode	MDF	500.00	1.00	0.2000	2.08	1.67	0.2000	0.1579	0.0675	0.2605
		MDF	441.18	1.00	0.1765	2.57	1.75	0.2353	0.2379	0.0934	0.4036
	Overall	SE				0.35	4.00	0.0139	0.0296	0.0125	0.0487
Teak		1250.00	4.00	0.1250							
Palakkad	Olavakode	MDF	234.38	3.00	0.0313	0.29	1.50	0.0313	0.0772	0.0053	0.1656
	Walayar	MDF				0.51	1.00	0.0816	0.0844	0.0255	0.1542
	Overall	MDF	132.74	3.00	0.0177	0.39	1.17	0.0531	0.0803	0.0141	0.1607
Mannarkkad	Agali	DDF				2.17	2.00	0.1739	0.1263	0.0512	0.2112
		MDF	416.67	1.00	0.1667	4.17	1.33	0.5000	0.5105	0.1902	0.8814
		SE				3.85	1.60	0.3846	0.4614	0.1283	0.8582
	Attappady	MDF				0.89	1.00	0.1429	0.0981	0.0406	0.1642
	Overall	DDF				2.17	2.00	0.1739	0.1263	0.0512	0.2112
		MDF	53.19	1.00	0.0213	0.93	1.17	0.1277	0.1090	0.0424	0.1859
		SE				2.27	1.60	0.2273	0.2726	0.0758	0.5071
Parambikulam	Karimala	SE	1666.67	4.00	0.1667	1.04	1.00	0.1667	0.2618	0.1031	0.4411
	Parambikulam	SE	166.67	1.00	0.0667	1.67	2.00	0.1333	0.3436	0.1307	0.5913
	Orukomban	MDF				0.35	1.00	0.0556	0.0922	0.0209	0.1783
	Overall	MDF				0.08	1.00	0.0122	0.0202	0.0046	0.0391
		SE	595.24	2.50	0.0952	1.49	1.67	0.1429	0.3203	0.1228	0.5498
Nilambur(N)	Edavanna	MDF	161.29	1.00	0.0645	1.21	2.00	0.0968	0.3052	0.0488	0.6169
	Nilambur	SE				4.86	2.33	0.3333	1.0111	0.2391	1.9390

	Vazhikkadavu	SE				14.98	3.50	0.0667	3.0926	0.0163	0.0010
		Teak	460.53	2.33	0.0789						
	Overall	MDF	65.79	1.00	0.0263	0.49	2.00	0.0395	0.1245	0.0199	0.2516
		SE				7.29	2.80	0.4167	1.5315	0.1839	3.1795
Nilambur(S)	Kalikavu	MDF				1.79	2.00	0.1429	0.3391	-0.9112	1.9955
		Teak	87.21	3.00	0.0116						
	Overall	MDF				0.15	2.00	0.0116	0.0276	-0.0742	0.1624
		Teak	87.21	3.00	0.0116						
Wayanad(S)	Chedleth	MDF				3.18	2.21	0.2295	0.4138	0.1421	0.7336
	Kalpetta	SE				1.39	1.50	0.1481	0.1937	0.0589	0.3540
	Meppady	EG				1.11	2.00	0.0667	0.1383	0.0516	0.2394
	Overall	EG				1.11	2.00	0.0667	0.1383	0.0516	0.2394
		MDF				3.18	2.21	0.2295	0.4138	0.1421	0.7336
		SE				0.72	1.50	0.0769	0.1006	0.0306	0.1838
Wayanad(N)	Mananthavady	MDF				2.08	1.50	0.2222	0.3926	-0.0567	0.9563
	Overall	MDF				1.17	1.50	0.1250	0.2208	-0.0319	0.5379
Wayanad WLS	Aralam	MDF				13.39	2.50	0.8571	2.0316	0.4311	3.9646
	Overall	MDF				3.41	2.50	0.2182	0.5171	0.1097	1.0092
Kannur	Kannavam	MDF				7.14	2.53	0.4514	1.0775	0.2737	2.0413
		EG				7.97	2.64	0.3623	0.7900	0.3027	1.3555
		SE				1.67	2.00	0.1333	0.2736	0.0296	0.5725
	Kottiyur	MDF				3.21	2.57	0.2000	0.4822	0.1237	0.9120
		SE				4.33	2.53	0.2742	0.6739	0.1715	1.2765
	Kasaragod	MDF				3.34	1.88	0.2841	0.2923	0.1225	0.4872

	Kanjangad	SE				8.21	2.42	0.5429	0.7571	0.3113	1.2708
		EG				2.31	1.67	0.1667	0.1462	0.0636	0.2391
		MDF				6.93	0.35	0.3514	0.5315	0.2324	0.8710
	Taliparamba	EG				4.00	2.40	0.2000	0.3539	0.1575	0.5765
		MDF				5.94	2.71	0.3500	0.5251	0.2306	0.8606
	Overall	EG				5.78	2.50	0.2774	0.5463	0.2183	0.9245
		SE				4.25	2.46	0.2767	0.5742	0.1604	1.0677
		MDF				5.93	2.59	0.3660	0.7008	0.2177	1.2725
	Kozhikode	Thamarassery	EG				2.976	1.9118	0.18681	0.153722	0.068913
MDF						5.432	2.2121	0.39286	0.255534	0.114277	0.411698
SE						6.922	2.2391	0.49462	0.320927	0.141347	0.519321

**Table 3.3.2.2 Density, abundance and frequency of *Acacia pennata*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)			
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL	
Thrissur	Machad	MDF	15.06	1.00	0.0060	0.23	2.00	0.0181	0.0274	0.0045	0.0561	
	Pattikkad	MDF	412.09	3.00	0.0549	1.58	3.29	0.0769	0.1656	0.0394	0.3203	
	Overall	MDF	0.69	2.90	0.0382	152.09	2.67	0.0228	0.0573	0.0136	0.1108	
Chalakkudy	Palappilly	Teak	174.42	1.00	0.0698							
	Pariyaram	MDF	781.25	1.67	0.1875	4.49	2.09	0.3438	0.5914	0.0946	1.2134	
		SE				0.69	1.00	0.1111	0.0780	0.0237	0.1428	
	Vellikulangara	Teak		208.33	1.00	0.0833						
		EG		1785.71	5.00	0.1429						
		MDF		92.59	1.00	0.0370	0.23	1.00	0.0370	0.0042	-0.0002	0.0090
		SE					0.46	1.00	0.0741	0.0550	0.0161	0.1014
	Teak		390.63	5.00	0.0313							



	Overall	EG	1785.71	5.00	0.1429						
		MDF	466.10	1.57	0.1186	2.54	2.00	0.2034	0.3227	0.0512	0.6622
		SE				0.52	1.00	0.0833	0.0607	0.0180	0.1118
		Teak	258.62	1.80	0.0575						
Vazhachal	Charpa	SE				0.39	1.00	0.0625	0.1091	0.0154	0.2284
		MDF				1.25	1.00	0.2000	0.6125	-0.6133	2.3827
	Kollathirumedu	SE				0.57	3.00	0.0303	0.1059	0.0230	0.2088
		SE				0.15	1.00	0.0238	0.0514	0.0067	0.1087
	Vazhachal	SE				0.22	1.00	0.0357	0.0564	-0.0051	0.1386
	Overall	MDF				0.25	1.00	0.0400	0.1225	-0.1227	0.4765
SE					0.32	1.50	0.0336	0.0573	0.0072	0.1212	
Peechi	Chimmini	MDF	511.36	3.00	0.0682	0.71	1.25	0.0909	0.1270	0.0168	0.2669
		SE	365.85	6.00	0.0244	0.38	1.25	0.0488	0.0597	-0.0134	0.1592
	Peechi	MDF				1.30	1.50	0.1392	0.2036	0.0095	0.4856
		SE				0.50	1.00	0.0800	0.1540	0.0191	0.3267
		Teak	171.57	2.33	0.0294						
	Overall	MDF	70.98	3.00	0.0095	1.22	1.48	0.1325	0.1930	-0.0058	0.4553
		SE	280.37	6.00	0.0187	0.41	1.17	0.0561	0.0458	-0.0103	0.1220
		Teak	171.57	2.33	0.0294						
Nenmara	Alathur	Teak	384.62	6.00	0.0256						
	Kollengode	MDF				3.75	2.25	0.2667	0.5447	0.1485	1.0233
	Overall	MDF				3.31	2.25	0.2353	0.4806	0.1310	0.9029
Mannarkkad	Agali	DDF	108.70	1.00	0.0435						
		MDF	1666.67	4.00	0.1667	5.21	5.00	0.1667	0.9916	0.1791	2.0091
		SE	192.31	1.00	0.0769	1.92	2.00	0.1538	0.3454	0.0729	0.6835
	Attappady	MDF				3.87	1.30	0.4762	0.7627	0.0864	1.6281
		SE				2.08	1.00	0.3333	0.5340	0.0981	1.0827

	Mannarkkad	MDF				2.19	2.33	0.1500	0.3739	-0.0707	0.9767	
		SE				2.08	2.00	0.1667	0.2220	0.0701	0.4010	
	Overall	DDF	108.70	1.00	0.0435							
		MDF	212.77	4.00	0.0213	3.32	1.79	0.2979	0.4674	0.0615	0.9839	
		SE	1.99	1.75	0.1818	113.64	1.00	0.0455	0.2769	0.0565	0.5515	
Palakkad	Olavakkode	MDF	507.81	3.25	0.0625	1.95	2.50	0.1250	0.3193	0.0824	0.6073	
	Walayar	EG				1.19	1.00	0.1429	0.1077	0.0702	0.1925	
		SE				1.32	1.00	0.2105	0.2481	0.0437	0.5031	
	Overall	EG				1.19	1.00	0.1429	0.1077	0.0702	0.1925	
		MDF	287.61	3.25	0.0354	1.11	2.50	0.0708	0.1809	0.0467	0.3440	
		SE				1.32	1.00	0.2105	0.2481	0.0437	0.5031	
	Parambikulam	Karimala	MDF	277.78	2.00	0.0556	0.69	2.00	0.0556	0.1550	0.0324	0.3071
		Orukomban	MDF	555.56	2.00	0.1111	2.08	3.00	0.1111	0.3284	0.0887	0.6196
Sungam		MDF	60.98	1.00	0.0244	0.15	1.00	0.0244	0.0155	-0.0006	0.0282	
Overall		MDF	213.41	1.75	0.0488	0.69	2.25	0.0488	0.1138	0.0290	0.2176	
Nilambur(n)	Edavanna	MDF	483.87	2.00	0.0968	6.05	2.14	0.4516	1.0994	0.1058	2.3748	
	Nilambur	MDF				4.46	1.25	0.5714	0.4323	-0.0147	2.9500	
	Vazhikkadavu	MDF	263.16	4.00	0.0263							
	Overall	MDF	328.95	2.50	0.0526	2.88	1.94	0.2368	0.4484	0.0432	0.9687	
Nilambur(s)	Kalikavu	MDF	357.14	1.00	0.1429	3.57	2.00	0.2857	0.6973	0.1800	1.3302	
	Karulai	MDF	158.23	1.67	0.0380	0.87	1.83	0.0759	0.1770	-0.0483	0.4857	
		SE	52.08	1.00	0.0208	0.26	1.00	0.0417	0.0327	0.0084	0.0625	
	Overall	MDF	174.42	1.50	0.0465	1.09	1.88	0.0930	0.2194	-0.0297	0.5544	
		SE	52.08	1.00	0.0208	0.26	1.00	0.0417	0.0327	0.0084	0.0625	

**Table 3.3.2.3 Density, abundance and frequency of *Acacia sinuata*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Fruit) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimate	UCL	LCL
Thrissur	Pattikkad	MDF				0.89	1.86	0.08	3.02	4.51	1.53
	Overall	MDF				0.31	1.86	0.03	1.05	1.56	0.53
Chalakkudy	Pariyaram	MDF	625.00	2.67	0.09	1.37	1.40	0.16	3.92	5.49	2.36
		SE				12.50	4.50	0.44	37.62	52.73	22.50
		Teak	625.00	3.00	0.08						
	Overall	MDF	338.98	2.67	0.05	0.74	1.40	0.08	2.13	2.98	1.28
		SE	86.21	3.00	0.01	3.13	4.50	0.11	9.40	13.18	5.63
Vazhachal	Sholayar	EG	416.67	2.00	0.08						
		SE	30.49	1.00	0.01	0.45	1.50	0.05	1.68	2.63	0.73
	Overall	EG	227.27	2.00	0.05						
		SE				0.16	1.50	0.02	0.59	0.93	0.26
Peechi	Chimmini	SE				0.38	1.25	0.05	1.33	2.07	0.59
		MDF				0.85	1.50	0.09	2.71	5.42	0.00
	Peechi	MDF	27.47	3.00	0.00	0.07	1.00	0.01	0.24	0.11	0.37
	Overall	MDF				0.18	1.29	0.02	0.38	0.75	0.00
		SE	23.36	1.00	0.01	0.29	1.25	0.04	1.02	1.58	0.45
Nenmara	Nelliyampathy	SE				0.09	1.00	0.01	0.27	0.71	-0.17
	Overall	SE				0.09	1.00	0.01	0.26	0.69	-0.17
Palakkad	Olavakkode	MDF	234.38	2.00	0.05	1.27	1.86	0.11	4.17	6.00	2.33
		Teak	416.67	1.00	0.17						
	Walayar	EG				4.76	4.00	0.14	15.47	21.88	9.06
		SE				4.28	2.17	0.32	14.23	20.97	7.48
		MDF				3.70	3.22	0.18	11.80	18.65	4.96
		Teak	153.06	1.50	0.04						

		<b>EG</b>				<b>4.75</b>	<b>4.00</b>	<b>0.14</b>	<b>15.47</b>	<b>21.88</b>	<b>9.06</b>	
	Overall	MDF	199.12	1.80	0.04	2.32	2.63	0.14	5.12	8.09	2.15	
		SE				4.28	2.17	0.32	14.23	20.97	7.48	
		Teak	119.05	1.00	0.05							
Mannarkkad	Agali	SE				0.48	1.00	0.08	1.36	1.83	0.89	
	Mannarkkad	MDF				1.56	2.50	0.10	5.34	8.65	2.04	
		SE				1.04	1.00	0.17	3.96	6.19	1.73	
	Overall	MDF				0.66	2.50	0.04	2.27	3.68	0.87	
		SE				0.57	1.00	0.09	1.88	2.77	1.00	
Nilambur N	Edavanna	MDF	1209.68	3.75	0.13	3.63	3.00	0.19	12.39	19.64	5.15	
	Overall	MDF	493.42	3.75	0.05	1.48	3.00	0.08	5.06	8.01	2.10	
Nilambur S	Kalikkavu	Acacia	384.62	2.00	0.08							
		MDF				0.89	1.00	0.14	3.45	5.58	1.32	
	Karulai	MDF	474.68	2.14	0.09	1.11	1.56	0.11	3.49	5.36	1.61	
		SE	2291.67	3.38	0.27	1.56	1.50	0.17	4.35	6.21	2.50	
		Teak	203.49	2.33	0.03							
	Overall	Acacia				384.62	2.00	0.08				
		MDF	436.05	2.14	0.08	1.09	1.50	0.12	3.48	5.38	1.59	
		SE	2291.67	3.38	0.27	1.56	1.50	0.17	4.35	6.21	2.50	
Teak		203.49	2.33	0.03								
Wayanad N	Mananthavady	SE				3.41	1.50	0.36	13.01	23.03	2.99	
	Overall	SE				0.63	1.50	0.07	2.39	4.22	0.55	
Wayanad S	Chthalayam	MDF				0.61	1.20	0.08	2.19	3.28	1.10	
	Kalpetta	SE				3.24	2.33	0.22	12.39	20.34	4.43	
	Meppady	EG				7.22	2.89	0.30	26.01	38.97	13.05	
		EG				7.22	2.89	0.30	26.01	38.97	13.05	
	Overall	MDF				0.61	1.20	0.08	2.19	3.28	1.10	
		SE				1.68	2.33	0.12	6.43	10.56	2.30	

Kannur	Talparamba	EG				6.50	2.79	0.20	19.30	26.84	12.07
	Overall	EG				2.37	2.79	0.10	7.05	9.68	4.41

**Table 3.3.2.4 Density, abundance and frequency of *Acacia torta*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	PE	LL	UL
Thrissur	Machad	MDF	45.18	1.00	0.02	0.98	2.36	0.07	0.09	-0.02	0.24
		Mixed	119.05	1.00	0.05						
	Pattikkad	MDF				8.24	4.44	0.30	0.71	-0.09	1.77
	Wadakancherry	Cashew	38.46	1.00	0.02						
		Cashew	38.46	1.00	0.02						
	Overall	MDF	28.52	1.00	0.01	3.48	3.84	0.15	0.25	-0.03	0.62
		Mixed	119.05	1.00	0.05						
Chalakkudy	Palappilly	Teak	697.67	4.00	0.07						
	Pariyaram	MDF	468.75	3.00	0.06	1.17	1.50	0.13	0.08	-0.01	0.19
		SE	1111.11	4.00	0.11	1.39	1.00	0.22	0.04	0.00	0.08
	Vellikkulangara	MDF				0.23	1.00	0.04	0.02	0.00	0.04
		Teak	1093.75	4.67	0.09						
	Overall	MDF	254.24	3.00	0.03	0.74	1.40	0.08	0.04	0.00	0.10
		SE	277.78	4.00	0.03	0.35	1.00	0.06	0.10	0.00	0.02
Teak		747.13	4.33	0.07							
Vazhachal	Charpa	MDF	1666.67	2.00	0.33	1.39	2.00	0.11	0.47	-0.21	1.43
		SE				0.39	1.00	0.06	0.00	0.00	0.01
	Kollathirumedu	MDF	2500.00	5.00	0.20						
		SE	303.03	1.33	0.09	0.19	1.00	0.03	0.07	0.00	0.01
	Sholayar	SE				1.19	1.60	0.12	0.24	-0.03	0.60
	Vazhachal	EG				5.56	1.33	0.50	1.36	-0.06	3.21
		SE				0.89	2.00	0.07	0.18	0.02	0.38

		EG				1.52	1.33	0.14	0.33	-0.01	0.77
	Overall	MDF	1100.00	2.75	0.16	0.50	2.00	0.04	0.17	-0.08	0.51
		SE	84.03	1.33	0.03	0.74	1.56	0.08	0.13	-0.01	0.31
Peechi	Chimmini	MDF	965.91	4.25	0.09	1.85	1.44	0.20	0.18	-0.05	0.48
		SE	304.88	2.50	0.05	0.15	1.00	0.02	0.01	0.00	0.03
	Peechi	MDF	320.51	2.69	0.05	3.75	3.81	0.16	0.25	-0.04	0.62
		SE				0.25	1.00	0.04	0.02	0.00	0.05
		Teak	171.57	1.40	0.05						
	Overall	MDF	410.09	3.06	0.05	3.49	3.40	0.16	0.24	-0.04	0.60
		SE	233.64	2.50	0.04	0.18	1.00	0.03	0.02	0.00	0.04
		Teak	171.57	1.40	0.05						
	Nenmara	Alathur	MDF				3.13	1.00	0.50	0.12	0.02
Teak			256.41	4.00	0.03						
Kollengode		MDF	333.33	1.00	0.13	0.83	2.00	0.07	0.04	0.00	0.09
Overall		MDF	294.12	1.00	0.12	1.10	1.50	0.12	0.01	0.00	0.03
		Teak	208.33	4.00	0.02						
Mannarkkad	Agali	DDF	326.09	3.00	0.04						
		MDF				1.04	1.00	0.17	0.04	0.00	0.08
		SE	576.92	3.00	0.08	0.96	1.00	0.15	0.08	0.00	0.17
	Attappady	MDF	3928.57	3.67	0.43	8.33	3.11	0.43	0.93	-0.59	3.10
		SE	3333.33	2.00	0.67	14.58	3.50	0.67	3.43	-1.14	9.73
	Mannarkkad	MDF	125.00	1.00	0.05	3.75	3.00	0.20	0.41	-0.12	1.15
		SE	416.67	1.00	0.17	2.08	1.00	0.33	0.32	0.04	0.66
	Overall	DDF	326.09	3.00	0.04						
		MDF	1808.51	3.40	0.21	5.45	2.93	0.30	0.42	-0.26	1.40
		SE	909.09	2.00	0.18	3.13	1.83	0.27	0.51	-0.15	1.43
Palakkad	Olavakkode	MDF	351.56	1.50	0.09						
	Walayar	MDF	969.39	3.80	0.10	1.28	1.00	0.20	0.20	-0.01	0.46
		SE	263.16	2.00	0.05	1.64	2.50	0.11	0.32	-0.01	0.75

	Overall	MDF	619.47	2.55	0.10	0.55	1.00	0.09	0.09	0.00	0.20	
		SE	263.16	2.00	0.05	1.64	2.50	0.11	0.32	-0.01	0.75	
Prambikulam	Karimala	MDF	416.67	3.00	0.06	0.69	2.00	0.06	0.06	-0.01	0.16	
		SE				2.08	2.00	0.17	0.46	0.03	1.00	
	Orukomban	MDF				0.35	1.00	0.06	0.03	0.00	0.06	
	Prambikulam	MDF	500.00	1.00	0.20							
		SE	333.33	2.00	0.07	0.42	1.00	0.07	0.00	0.00	0.00	
	Sungam	MDF	121.95	2.00	0.02	1.22	2.00	0.10	0.07	0.00	0.16	
	Overall	MDF	182.93	2.00	0.04	0.84	1.83	0.07	0.05	0.00	0.11	
		SE	238.10	2.00	0.05	0.89	1.50	0.10	0.13	0.01	0.29	
Nilambur (n)	Edavanna	MDF				1.61	2.67	0.10	0.19	-0.07	0.56	
	Nilambur	MDF	10714.29	6.00	0.71	8.04	3.00	0.43	0.70	-0.83	2.95	
		SE	833.33	3.00	0.11	4.17	3.00	0.22	0.44	-0.81	2.33	
		Mixed	83.33	1.00	0.03							
	Vazhikkadavu	MDF	131.58	2.00	0.03	2.80	4.25	0.11	0.39	-0.16	1.16	
		SE				4.17	2.00	0.33	0.45	-0.03	0.98	
	Overall	MDF	1052.63	5.33	0.08	2.80	3.40	0.13	0.34	-0.19	1.80	
		Mixed	83.33	1.00	0.03							
SE		625.00	3.00	0.08	4.17	2.67	0.25	0.11	0.01	0.25		
Kannur	Kanjangad	MDF				2.36	3.23	0.12	0.16	0.02	0.32	
	Taliparamba	MDF				2.19	1.75	0.20	0.18	0.02	0.36	
	Overall	MDF				0.71	2.88	0.04	0.04	0.01	0.09	

**Table 3.3.2.5 Density, abundance and frequency of *Alstonia scholaris*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Machad	MDF				1.62	1.34	0.19	0.51	0.10	1.04
		SE				3.13	1.00	0.50	0.05	-0.01	0.12
	Pattikkad	MDF				0.69	1.43	0.08	0.21	0.03	0.45
	Wadakancherry	Eucalyptus	43.86	1.00	0.02						
		Eucalyptus	43.86	1.00	0.02						
	Overall	MDF				1.26	1.36	0.15	0.20	0.04	0.41
SE					3.13	1.00	0.50	0.05	-0.01	0.12	
Chalakkudy	Pariyaram	MDF				0.98	1.25	0.13	0.42	0.10	0.82
	Vellikkulangara	MDF				1.62	1.40	0.19	1.82	0.36	3.78
		SE				0.93	1.33	0.11	0.43	0.09	0.89
	Overall	MDF				1.27	1.33	0.15	1.06	0.22	2.18
		SE				0.69	1.33	0.08	0.33	0.07	0.67
Vazhachal	Charpa	SE				1.17	1.00	0.19	1.01	0.18	2.12
	Kollathirumedu	SE				0.95	1.00	0.15	0.72	0.16	1.45
	Sholayar	SE				0.89	1.20	0.12	0.86	0.19	1.75
	Vazhachal	MDF				1.14	1.00	0.18	0.83	0.20	1.64
		SE	89.29	1.00	0.04	3.35	2.14	0.25	2.20	0.55	4.33
	Overall	MDF				0.50	1.00	0.08	0.36	0.09	0.72
SE		21.01	1.00	0.01	1.52	1.45	0.17	0.85	0.20	1.71	
Peechi	Chimmini	MDF				0.71	1.00	0.11	0.47	0.11	0.95
		SE				0.53	1.00	0.09	0.35	0.09	0.07
	Peechi	EG				1.39	1.00	0.17	1.23	0.33	2.39
		MDF				0.16	1.40	0.02	0.21	0.00	0.51
		SE				0.50	1.00	0.08	0.02	0.00	0.04



	Overall	EG				1.39	1.00	0.17	1.23	0.33	2.39
		MDF				0.24	1.20	0.03	0.25	0.02	0.57
		SE				0.53	1.00	0.08	0.27	0.07	0.53
Nenmara	Alathur	SE				3.13	1.00	0.50	1.81	0.52	3.44
	Kollengode	MDF				2.50	1.00	0.40	1.03	0.31	1.93
	Nelliyampathy	SE				0.18	1.00	0.03	0.00	0.00	0.01
	Overall	MDF				2.21	1.00	0.35	0.91	0.27	1.71
		SE				0.26	1.00	0.04	0.05	0.01	0.10
Palakkad	Olavakkode	MDF				0.68	1.00	0.11	0.46	0.10	0.94
	Walayar	MDF				0.26	1.00	0.04	0.30	0.06	0.60
		SE				0.66	1.00	0.11	0.41	0.08	0.84
	Overall	MDF				0.50	1.00	0.08	0.39	0.08	0.79
		SE				0.66	1.00	0.11	0.41	0.08	0.84
Mannrkkad	Mannrkkad	MDF				2.19	1.75	0.20	1.63	0.40	3.22
		SE				3.13	1.00	0.50	2.78	0.64	5.59
	Overall	MDF				0.93	1.75	0.09	0.69	0.17	1.37
		SE				0.85	1.00	0.14	0.76	0.17	1.52
Parambikulam	Orukomban	MDF				0.35	1.00	0.06	0.17	0.05	0.33
	Sungam	EG				0.76	1.00	0.09	1.24	0.20	2.65
	Overall	EG				0.76	1.00	0.09	1.24	0.20	2.65
		MDF				0.08	1.00	0.01	0.04	0.01	0.07
Nilambur N	Edavanna	MDF				0.40	1.00	0.06	0.02	0.01	0.05
	Overall	MDF				0.16	1.00	0.03	0.02	0.00	0.04
Nilambur S	Kalikavu	MDF				2.68	1.50	0.29	1.47	0.41	2.82
	Karulai	MDF				0.16	2.00	0.01	0.02	0.01	0.04
		SE				0.13	1.00	0.02	0.03	0.01	0.05
	Overall	MDF				0.36	1.67	0.03	0.02	0.01	0.04
		SE				0.13	1.00	0.02	0.03	0.01	0.05

Wayanad S	Chedleth	MDF				0.20	1.00	0.03	0.10	0.03	0.20
	Kalpetta	SE				0.46	1.00	0.07	0.16	0.05	0.30
	Meppady	Savanah				0.20	1.00	0.03	0.05	0.02	0.09
	Overall	MDF				0.20	1.00	0.03	0.10	0.03	0.20
		Savanah				0.20	1.00	0.03	0.05	0.02	0.09
		SE				0.24	1.00	0.04	0.08	0.03	0.16
Wayanad N	Begur	SE				0.19	1.00	0.03	0.00	0.00	0.01
	Mananthavady	SE				1.14	1.00	0.18	0.28	0.09	0.51
	Periya	EG				0.26	1.00	0.03	0.44	0.06	0.96
	Overall	EG				0.26	1.00	0.03	0.44	0.06	0.96
		SE				0.31	1.00	0.05	0.05	0.02	0.10
Wayanad WLS	Aralam	MDF				0.15	1.00	0.02	0.05	0.02	0.09
	Muthanga	Teak	147.06	1.00	0.06						
	Overall	MDF				0.04	1.00	0.01	0.01	0.00	0.02
		Teak	22.52	1.00	0.01						
Kannur	Kannavam	MDF				0.54	1.15	0.07	0.33	0.09	0.65
		EG				0.12	1.00	0.01	0.01	0.00	0.01
		SE				0.21	1.00	0.03	0.00	0.00	0.01
	Kottiyur	MDF				0.36	1.00	0.06	0.06	0.02	0.11
		SE				0.35	1.00	0.06	0.17	0.03	0.37
	Kasaragod	MDF				0.71	1.25	0.09	0.26	0.07	0.49
		SE				0.89	1.25	0.11	0.11	0.03	0.20
	Kanjangad	MDF				0.11	1.00	0.02	0.08	0.02	0.15
		EG				0.06	1.00	0.01	0.00	0.00	0.01
	Overall	EG				0.39	1.08	0.06	0.12	0.21	0.26
		SE				0.42	1.16	0.06	0.19	0.52	0.37
		MDF				0.27	1.20	0.03	0.16	0.04	0.32
Kozhikode	Thamarassery	EG									

**Table 3.3.2.6 Density, abundance and frequency of *Bauhinia malabarica*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Machad	MDF				0.45	4.00	0.02	0.48	0.16	0.92
	Overall					0.29	4.00	0.01	0.30	0.10	0.58
Chalakkudy	Pariyaram	MDF	156.25	2.00	0.03	0.39	1.00	0.06	0.47	0.15	0.89
		EG				2.38	2.00	0.14	3.79	1.22	7.33
	Vellikkulangara	MDF				0.23	1.00	0.04	0.28	0.10	0.52
		SE				0.23	1.00	0.04	0.13	0.05	0.23
	Overall	EG				2.38	2.00	0.14	3.79	1.22	7.33
		MDF	84.75	2.00	0.02	0.32	1.00	0.05	0.38	0.13	0.72
		SE				0.17	1.00	0.03	0.10	0.04	0.17
Vazhachal	Charpa	MDF				0.69	1.00	0.11	0.54	0.21	0.98
		SE				0.39	1.00	0.06	0.15	0.06	0.26
	Vazhachal	MDF				0.57	1.00	0.09	1.16	0.36	2.28
	Overall	MDF				0.50	1.00	0.08	0.71	0.23	1.35
		SE				0.05	1.00	0.01	0.02	0.01	0.03
Peechi	Chimmini	SE				0.15	1.00	0.02	0.06	0.02	0.10
	Peechi	MDF				0.09	1.00	0.01	0.15	0.04	0.30
	Overall	MDF				0.08	1.00	0.01	0.13	0.04	0.26
		SE				0.12	1.00	0.02	0.04	0.02	0.07
Nenmara	Alathur	SE				3.13	1.00	0.50	5.48	1.75	10.64
	Kollengode	MDF				2.92	1.75	0.27	2.58	0.91	4.80
	Overall	MDF				2.57	1.75	0.24	2.28	0.80	4.24
		SE				0.09	1.00	0.01	0.15	0.05	0.30
Palakkad	Olavakkode	MDF				1.37	3.50	0.06	1.14	0.35	2.24

	Walayar	MDF				2.17	2.83	0.12	2.70	0.90	5.14
	Overall	MDF				1.71	3.10	0.09	1.82	0.59	3.50
Mannarkkad	Agali	MDF				2.08	2.00	0.17	1.46	0.52	2.68
	Attappady	MDF				10.12	5.67	0.29	5.59	2.09	11.05
	Overall	MDF				4.79	5.14	0.15	2.85	1.00	5.28
Parambikulam	Sungam	MDF				4.88	6.40	0.12	6.17	1.69	12.04
	Overall	MDF				2.44	6.40	0.06	3.08	0.96	6.02
Nilambur (N)	Nilambur	SE				0.69	1.00	0.11	0.69	0.25	1.30
	Overall	SE				0.52	1.00	0.08	0.52	0.19	0.96
Nilambur (S)	Karulai	MDF				0.16	2.00	0.01	0.18	0.06	0.34
		SE				0.52	1.00	0.08	0.88	0.27	1.82
	Overall	MDF				0.15	2.00	0.01	0.17	0.06	0.31
		SE				0.52	1.00	0.08	0.88	0.27	1.82
Wayanad N	Begur	MDF				0.89	1.00	0.14	0.72	0.27	1.31
	Overall	MDF				0.39	1.00	0.06	0.32	0.12	0.57
Wayanad S	Chedleth	MDF				0.20	1.00	0.03	0.28	0.09	0.54
	Meppady	Savanah				0.39	1.00	0.06	0.20	0.07	0.35
	Overall	MDF				0.20	1.00	0.03	0.28	0.09	0.54
		Savanah				0.39	1.00	0.06	0.20	0.07	0.35
Wayanad WLS	Aralam	MDF				0.30	1.00	0.05	0.10	0.04	0.18
	Kurichiyath	DDF				2.30	1.40	0.26	2.60	0.92	4.81
		SE				1.20	1.25	0.15	1.72	0.54	3.34
	Muthanga	MDF				0.50	1.00	0.08	0.43	0.15	0.79
	S. Bathery	DDF				3.37	1.75	0.31	2.78	1.01	5.09
		MDF				1.94	1.00	0.31	2.37	0.83	4.42
Tholpetty	MDF				1.56	1.25	0.20	2.13	0.72	4.03	

Overall	DDF				2.73	1.56	0.28	2.67	0.96	4.93
	MDF				0.95	1.09	0.14	1.09	0.38	2.04
	SE				1.20	1.25	0.15	1.72	0.54	3.34

**Table 3.3.2.7 Density, abundance and frequency of *Bauhinia racemosa*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimate	LCL	UCL
Thrissur	Machad	MDF				0.34	1.13	0.0482	0.4207	0.1173	0.8348
	Pattikkad	MDF	27.47	1.00	0.0110	0.62	1.80	0.0549	0.3305	0.1003	0.6217
	Overall	MDF	9.51	1.00	0.0038	0.43	1.38	0.0496	0.2655	0.0741	0.5269
Vazhachal	Kollathirumedu	SE				0.76	2.00	0.0174	0.3440	0.1023	0.6513
		MDF				0.57	1.00	0.0270	0.4582	0.1515	0.8451
	Vazhachal	SE	89.29	1.00	0.0270						
		MDF				0.25	1.00	0.0400	0.2016	0.0667	0.3718
		Overall	SE	21.01	1.00	0.0084	0.21	2.00	0.0168	0.0954	0.0284
Peechi	Chimmini	MDF				0.57	1.00	0.0909	0.6202	0.1964	1.1705
		SE	91.46	1.50	0.0244	0.15	2.00	0.0122	0.1377	0.0416	0.2633
	Peechi	MDF	9.16	1.00	0.0037	0.71	1.19	0.0952	1.2922	0.2958	2.7277
		Teak	49.02	2.00	0.0098						
	Overall	MDF	7.89	1.00	0.0032	0.69	1.17	0.0946	1.1989	0.2820	2.5115
		SE	70.09	1.50	0.0107	0.12	2.00	0.0020	0.1055	0.0319	0.2018
		Teak	49.02	2.00	0.0029						
Palakkad	Olavakkode	MDF				0.29	1.50	0.0313	0.1405	0.0452	0.2578
	Walayar	MDF				3.95	3.88	0.1633	2.4907	0.7676	4.6846
	Overall	MDF				1.88	3.40	0.0885	1.0800	0.3329	2.0314
Mannarkkad	Agali	SE				0.48	1.00	0.0769	0.8313	0.2598	1.5871
	Attappady	MDF				5.06	3.40	0.2381	1.2402	0.3474	2.3255

		SE				29.17	7.00	0.6667	12.6120	3.4907	24.4527
	Mannrkkad	MDF				0.31	1.00	0.0500	0.1562	0.0517	0.2874
	Overall	MDF				2.39	3.00	0.1277	0.5541	0.1552	1.0391
		SE				4.26	5.00	0.1364	2.2111	0.6295	4.2723
Parambikulam	Orukomban	MDF				3.13	4.50	0.1111	3.9676	1.1710	7.6955
	Parambikulam	MDF				3.75	3.00	0.2000	1.8393	0.5239	3.5538
		SE				1.25	1.50	0.1333	0.8688	0.2555	1.6702
	Sungam	MDF				0.30	1.00	0.0488	0.3690	0.1192	0.6928
	Overall	MDF				1.07	2.80	0.0610	1.1676	0.3486	2.2524
		SE				0.89	1.50	0.0952	0.6206	0.1825	1.1930
Nilambur N	Nilambur	MDF				0.89	1.00	0.1429	2.4914	0.6203	5.1548
		SE	555.56	2.00	0.1111	2.08	1.50	0.2222	3.2504	0.9338	6.4026
	Vazhikkadavu	MDF	65.79	1.00	0.0263						
		Teak	65.79	1.00	0.0263						
	Overall	MDF	32.89	1.00	0.0132	0.08	1.00	0.0132	0.0695	0.0248	0.2059
		SE	416.67	2.00	0.0833	1.56	1.50	0.1667	2.4378	0.7003	4.8019
		Teak	22.73	1.00	0.0091						
Nilambur S	Karulai	MDF	94.94	1.50	0.0253	0.40	1.67	0.0380	0.1969	0.0596	0.3723
		SE				0.91	2.33	0.0625	0.4125	0.1318	0.7578
		Teak	29.07	1.00	0.0116						
	Overall	MDF	87.21	1.50	0.0233	0.36	1.67	0.0349	0.1809	0.0547	0.3420
		SE				0.91	2.33	0.0625	0.4125	0.1318	0.7578
		Teak	29.07	1.00	0.0116						
Wayanad WLS	Kurichiyath	DDF				0.33	1.00	0.0526	0.3519	0.1158	0.6532
		SE				0.48	2.00	0.0385	0.4150	0.1332	0.7732
	Muthanga	MDF				0.13	1.00	0.0200	0.1056	0.0349	0.1944
	Overall	DDF				0.20	1.00	0.0313	0.2090	0.0687	0.3878

		MDF				0.04	1.00	0.0061	0.0320	0.0106	0.0589
		SE				0.48	2.00	0.0385	0.4150	0.1332	0.7732
Kannur	Kannavam	MDF				0.07	1.00	0.0114	0.0391	0.0127	0.7164
	Kottiyur	SE				0.10	1.00	0.0161	0.0341	0.0101	0.0633
	Kanjangad	SE				0.06	1.00	0.0090	0.1042	0.0340	0.1907
		MDF				0.18	1.00	0.0286	0.0307	0.0101	0.0563
	Overall	SE				0.09	1.00	0.0146	0.0383	0.0119	0.0705
		MDF				0.04	1.00	0.0070	0.0853	0.0259	0.1635

**Table 3.3.2.8 Density, abundance and frequency of *Butea monosperma*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Peechi	Peechi	MDF				0.05	1.00	0.0073	0.0139	0.0061	0.0235
	Overall	MDF				0.04	1.00	0.0063	0.0161	0.0071	0.0272
Parambikulam	Sungam	MDF				2.74	2.57	0.1707	1.8594	0.5613	3.5666
	Overall	MDF				1.37	2.57	0.0854	0.9297	0.2806	1.7833
Nilambur S	Karulai	MDF				4.98	2.86	0.2785	2.9933	0.9180	5.7169
	Overall	MDF				4.58	2.86	0.2558	2.7497	0.8433	5.2516
Nilambur N	Nilambur	Teak	277.78	2.00	0.0556						
	Vazhikkadavu	MDF				1.64	1.43	0.1842	0.3569	0.1449	0.6206
	Overall	MDF				0.82	1.43	0.0921	0.1784	0.0725	0.3103
		Teak		181.82	2.00	0.0364					
Wayanad N	Begur	MDF				12.50	2.80	0.7143	6.1733	2.4636	10.8391
	Overall	MDF				5.47	2.80	0.3125	2.7008	1.0778	4.7421

Wayanad S	Chedleth	MDF				1.02	2.00	0.0820	0.3540	0.1453	0.6144
	Overall	MDF				1.02	2.00	0.0820	0.3540	0.1453	0.6144
Wayanad WLS	Kurichiyath	DDF				1.32	4.00	0.0526	0.9261	0.3294	1.6930
		SE				0.48	2.00	0.0385	0.3885	0.1246	0.7330
	Muthanga	MDF				0.25	1.00	0.0400	0.1882	0.0671	0.3440
	S. Bathery	DDF				1.44	1.50	0.1538	0.3256	0.1508	0.5357
		MDF				2.37	3.67	0.1034	2.2760	0.5451	4.6047
	Tholpetty	MDF				3.28	3.50	0.1500	2.0324	0.7290	3.7057
	Overall	DDF				1.37	2.33	0.0938	0.6821	0.2569	1.2228
		MDF				1.29	3.09	0.0667	0.9498	0.2929	1.8119
SE					0.48	2.00	0.0385	0.3885	0.1246	0.7330	

**Table 3.3.2.9 Density, abundance and frequency of *Cassia fistula*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Machad	MDF	45.18	1.00	0.0181	8.70	2.92	0.4759	0.6790	-0.1444	1.8203
		SE				3.13	1.00	0.5000	0.0055	-0.0597	0.0816
		Teak	142.86	1.00	0.0571						
	Pattikkad	MDF				3.43	1.79	0.3077	0.2066	-0.0565	0.5595
	Wadakkancherry	Cashew	38.46	1.00	0.0154						
		Eucalyptus	43.86	1.00	0.0175						
		MDF				4.17	1.33	0.5000	0.2345	-0.0556	0.6097
	Overall	Cashew	38.46	1.00	0.0154						
		Eucalyptus	43.86	1.00	0.0175						
		MDF	28.52	1.00	0.0114	6.80	2.59	0.4198	0.5478	-0.1216	1.4687
SE					3.13	1.00	0.5000	0.0055	-0.0597	0.0816	
	Teak	119.05	1.00	0.0476							



Chalakkudy	Pariyaram	MDF	156.25	1.00	0.0625	2.34	2.00	0.1875	0.2976	-0.1245	1.0081
		SE				3.47	1.25	0.4444	0.3101	-0.0639	0.8337
	Vellikulangara	MDF				2.31	1.25	0.2963	1.3533	-0.5724	4.8079
		SE				0.69	1.00	0.1111	0.6508	-0.3365	2.5019
	Overall	MDF	84.75	1.00	0.0339	2.33	1.57	0.2373	0.7807	-0.3295	2.7470
		SE				1.39	1.14	0.1944	0.5657	-0.2684	2.0849
Vazhachal	Charpa	SE				0.39	1.00	0.0625	0.0182	-0.0050	0.0477
	Sholayar	SE				0.15	1.00	0.0238	0.0108	-0.0025	0.0278
	Vazhachal	SE				0.22	1.00	0.0357	0.0889	-0.0146	0.2465
	Overall	SE				0.16	1.00	0.0252	0.0272	-0.0050	0.0742
Peechi	Chimmini	MDF	56.82	1.00	0.0227	0.85	1.20	0.1136	0.1522	-0.0238	0.4036
		SE				0.38	1.25	0.0488	0.0912	-0.0177	0.2571
	Peechi	MDF	36.63	1.00	0.0147	2.38	1.89	0.2015	0.4205	-0.1160	1.2646
		SE				0.25	1.00	0.0400	0.0173	-0.0031	0.0441
	Overall	Teak	98.04	1.33	0.0294						
		MDF	39.43	1.00	0.0158	2.17	1.83	0.1893	0.3832	-0.0999	1.0891
		SE				0.35	1.20	0.0467	0.0740	-0.0143	0.2074
	Nenmara	Alathur	SE				6.25	2.00	0.5000	0.0433	-0.0675
Teak			256.41	1.33	0.0769						
Overall		MDF				1.67	1.33	0.2000	0.5730	-0.1304	1.6838
		SE				0.17	2.00	0.0139	0.0012	-0.0019	0.0049
		Teak	208.33	1.33	0.0625						
Palakkad	Olavakkode	MDF				0.20	1.00	0.0313	0.0179	-0.0029	0.0454
	Ottappalam	Acacia	1000.00	2.00	0.2000						
		Mixed	781.25	1.67	0.1875						

	Walayar	MDF	255.10	1.67	0.0612	0.77	1.20	0.1020	0.1947	-0.0484	0.5805	
	Overall	Acacia	1000.00	2.00	0.2000							
		MDF	110.62	1.67	0.0265	0.44	1.14	0.0619	0.0844	-0.0210	0.2517	
		Mixed	781.25	1.67	0.1875							
Mannarkkad	Agali	DDF	108.70	1.00	0.0435							
		MDF	416.67	1.00	0.1667	8.33	2.67	0.5000	0.3357	-0.1309	0.9725	
		SE	192.31	1.00	0.0769	1.92	1.00	0.3077	0.2348	-0.0416	0.6280	
	Attappady	MDF	476.19	1.33	0.1429	5.36	1.64	0.5238	0.4417	-0.0895	1.1619	
	Mannarkkad	MDF				1.56	1.67	0.1500	0.1959	-0.0340	0.5188	
	Overall	DDF	108.70	1.00	0.0435							
		MDF	265.96	1.25	0.0851	4.12	1.82	0.3617	0.3236	-0.0712	0.8641	
		SE	113.64	1.00	0.0455	1.14	1.00	0.1818	0.1387	-0.0246	0.3711	
Parambikulam	Karimala	MDF	555.56	1.00	0.2222	1.39	1.33	0.1667	0.6523	-0.1463	1.9228	
		SE				7.29	1.75	0.6667	1.4246	-0.0209	3.7990	
	Orukomban	MDF				16.32	4.70	0.1538	2.2435	-0.5616	6.4942	
	Parambikulam	MDF				2.50	2.00	0.2000	0.5645	-0.0737	1.4913	
		SE				1.67	1.33	0.2000	0.3497	-0.0583	0.9438	
	Sungam	MDF	670.73	1.83	0.1463	16.62	4.36	0.6098	0.5200	-0.1904	1.4457	
	Overall	MDF	457.32	1.50	0.1220	12.35	4.15	0.4756	0.9301	-0.2551	2.6614	
		SE				3.27	1.57	0.3333	0.6568	-0.1048	1.7595	
Nilambur N	Edavanna	MDF				0.40	1.00	0.0645	0.3031	-0.0824	0.9415	
	Nilambur	Mixed	83.33	1.00	0.0333							
		SE				0.69	1.00	0.1111	0.1770	-0.0219	0.4620	
		Teak	208.33	3.00	0.0278							
	Vazhikkadavu	MDF				0.16	1.00	0.0263	0.0852	-0.0172	0.2465	
		Teak	65.79	1.00	0.0263							

	Overall	MDF				0.25	1.00	0.0395	0.1662	-0.0422	0.5073
		Mixed	83.33	1.00	0.0333						
		SE				0.52	1.00	0.0833	0.1327	-0.0164	0.3465
		Teak	159.09	2.33	0.0273						
Nilambur S	Kalikavu	Acacia	192.31	1.00	0.0769						
		MDF				7.14	1.60	0.7143	0.8913	-0.1439	2.3483
	Karulai	MDF	94.94	1.00	0.0380	1.27	1.78	0.1139	0.1614	-0.0378	0.4560
		SE				1.04	1.33	0.1250	0.0638	-0.0151	0.1711
		Teak	116.28	1.00	0.0465						
	Overall	Acacia	192.31	1.00	0.0769						
		MDF	87.21	1.00	0.0349	1.74	1.71	0.1628	0.2208	-0.0464	0.6100
		SE				1.04	1.33	0.1250	0.0638	-0.0151	0.1711
		Teak	116.28	1.00	0.0465						
	Wayanad N	Begur	MDF				2.68	1.50	0.2857	0.3192	-0.0445
SE						0.38	2.00	0.0303	0.1254	-0.0171	0.3350
Overall		MDF				1.17	1.50	0.1250	0.1396	-0.0195	0.3625
		SE				0.21	2.00	0.0167	0.0690	-0.0094	0.1843
Wayanad S	Chedleth	MDF	122.95	1.50	0.0328	5.84	2.85	0.3279	0.3025	-0.0886	0.8133
	Overall	MDF	122.95	1.50	0.0328	5.84	2.85	0.3279	0.3025	-0.0886	0.8133
Wayanad WLS	Kurichiyath	DDF	657.89	2.50	0.1053	11.18	3.09	0.5789	1.1649	-0.0212	3.0445
		SE				6.01	2.08	0.4615	0.6166	-0.1286	1.6685
		Teak	285.71	4.00	0.0286						
	Muthanga	Eucalyptus	375.00	3.00	0.0500						
		MDF	100.00	2.00	0.0200	0.88	1.40	0.1000	0.0639	-0.0169	0.1738
	S. Bathery	DDF				1.44	3.00	0.0769	0.2912	-0.0419	0.7675
		MDF	172.41	2.00	0.0345	2.37	1.57	0.2414	0.2039	-0.0403	0.5335
	Tholpetty	MDF	562.50	1.80	0.1250	11.41	2.92	0.6250	1.1081	-0.2034	2.8827
		Teak	75.76	1.00	0.0303						

	Vazhachal	EG				2.78	1.00	0.3333	0.8565	0.2978	1.6159	
		SE	178.57	1.00	0.0714	6.25	2.15	0.4643	1.9008	0.6108	3.7376	
	Overall	EG	227.27	1.00	0.0909	1.89	1.00	0.2273	0.4217	0.1418	0.7958	
		SE	693.28	1.94	0.1429	4.46	2.07	0.3445	0.6049	0.1917	1.1862	
Peechi	Chimmini	MDF	681.82	2.40	0.1136	1.70	1.33	0.2045	0.2403	0.0754	0.4527	
		SE	1341.46	2.32	0.2317	4.27	1.65	0.4146	0.9473	0.3168	1.7880	
	Peechi	EG	416.67	1.00	0.1667	2.78	1.00	0.3333	0.1004	0.0169	0.2001	
		MDF	54.95	2.00	0.0110	0.16	1.75	0.0147	0.0014	-0.0055	0.0037	
		SE	200.00	2.00	0.0400	4.25	2.43	0.2800	-0.0013	-0.0016	-0.0009	
	Overall	EG	416.67	1.00	0.1667	2.78	1.00	0.3333	0.1004	0.0169	0.2001	
		MDF	141.96	2.25	0.0252	0.37	1.46	0.0410	0.0345	0.0100	0.0660	
		SE	1074.77	2.30	0.1869	4.26	1.78	0.3832	0.7346	0.2398	1.3927	
	Nenmara	Nelliyampathy	EG				4.17	1.11	0.4500	1.0408	0.3413	2.0046
			SE	321.43	2.25	0.0571	1.88	1.05	0.2857	0.6412	0.2188	1.2208
Overall		EG				4.17	1.11	0.4500	1.0408	0.3413	2.0046	
		SE	312.50	2.25	0.0556	1.82	1.05	0.2778	0.6234	0.2127	1.1869	
Palakkad	Walayar	EG	4642.86	4.33	0.4286	13.10	2.20	0.7143	6.8838	5.3530	13.0230	
		SE	263.16	2.00	0.0526	1.97	1.50	0.2105	1.2226	0.4224	2.3458	
	Overall	EG	4642.86	4.33	0.4286	9.82	2.20	0.7143	6.8838	5.3530	13.0230	
		SE	263.16	2.00	0.0526	1.97	1.50	0.2105	1.2226	0.4224	2.3458	
Mannarkkad	Agali	DDF	108.70	1.00	0.0435							
		SE	192.31	1.00	0.0769	1.44	1.50	0.1538	-0.0059	-0.0097	-0.0019	
	Attappady	EG				5.56	1.33	0.5000	1.8154	0.6322	3.4091	
		SE				10.42	1.67	0.7500	1.0775	0.3307	2.0758	
	Mannarkkad	EG				5.21	1.67	0.5000	0.1851	0.0327	0.3715	
		SE										
Overall	DDF	108.70	1.00	0.0435								

		EG				7.50	1.50	0.6000	1.5202	0.5116	2.8758
		SE	113.64	1.00	0.0455	2.27	1.60	0.2273	0.0470	0.0032	0.1002
Parambikulam	Karimala	MDF	416.67	1.50	0.1111	1.74	5.00	0.0556	0.2319	0.0711	0.4411
		SE	833.33	1.00	0.3333	12.50	4.00	0.5000	1.6740	0.5211	3.1437
	Orukomban	MDF	138.89	1.00	0.0556	7.99	3.83	0.3333	0.2296	0.0249	0.4847
		SE				2.50	2.00	0.2000	0.2424	0.0684	0.4606
	Parambikulam	MDF									
		SE	1333.33	4.00	0.1333	14.58	3.89	0.6000	2.8160	0.9160	5.3376
	Sungam	EG				1.52	1.00	0.1818	0.1271	0.0257	0.2422
		SE				1.52	1.00	0.1818	0.1271	0.0257	0.2422
Overall	EG										
	MDF	121.95	1.33	0.0366	2.29	3.75	0.0976	0.1161	0.0252	0.2313	
	SE	1190.48	2.50	0.1905	13.99	3.92	0.5714	2.4897	0.8032	4.7107	
Nilambur(N)	Edavanna	EG	1666.67	2.00	0.3333	22.92	3.67	1.0000	40.3329	13.2308	80.8733
		MDF	322.58	4.00	0.0323						
	Vazhikkadavu	EG	888.89	2.67	0.1333	17.0139	2.5128	0.8125	12.5200	4.1804	26.6602
		SE				12.50	3.00	0.6667	18.5019	5.7694	38.1865
	Overall	EG	937.50	2.57	0.1458	12.76	2.51	0.8125	14.2664	4.7460	28.1735
		MDF	131.58	4.00	0.0132						
		SE				3.13	3.00	0.1667	4.6255	1.4425	9.5466
Nilambur(S)	Kalikavu	EG				5.56	2.00	0.3333	3.5477	1.2692	6.6512
	Karulai	MDF				0.16	1.00	0.0253	0.0894	0.0307	0.1727
		SE	52.08	1.00	0.0208	0.13	1.00	0.0208	0.0025	-0.0003	0.0058
	Overall	EG				1.52	2.00	0.0909	0.9676	0.3461	1.8140
		MDF				0.15	1.00	0.0233	0.0821	0.0284	0.1587
		SE	52.08	1.00	0.0208	0.13	1.00	0.0208	0.0025	-0.0003	0.0058
Wayanad(S)	Chedleth	MDF				1.13	1.38	0.1311	0.0150	-0.0040	0.0372
	Kalpetta	SE				7.87	2.43	0.5185	0.0712	-0.0378	0.1975
		Shola				1.14	2.00	0.0909	0.0858	0.0229	0.1628

	Meppady	EG				5.83	2.10	0.3333	0.0782	-0.0171	0.1895
		SE				0.75	1.00	0.1200	0.1365	0.0452	0.2539
	Overall	EG				5.83	2.10	0.3333	0.0782	-0.0171	0.1895
		MDF				1.13	1.38	0.1311	0.0150	-0.0040	0.0216
		SE				4.45	2.18	4.4471	0.1026	0.0021	0.2246
		Shola				1.14	2.00	0.0909	0.0858	0.0229	0.1628
Wayanad(N)	Begur	SE				4.36	2.09	0.3333	0.2040	0.0409	0.4047
		MDF				0.69	1.00	0.1111	0.0063	-0.0033	0.0173
	Mananthavady	SE				2.27	1.33	0.2727	0.0549	0.0005	0.1188
		EG				1.56	1.20	0.1563	0.6621	0.2054	1.3488
	Periya	SE				2.34	1.50	0.2500	0.0273	-0.0088	0.0693
		EG				1.56	1.20	0.1563	0.6621	0.2054	1.3488
	Overall	MDF				0.39	1.00	0.0625	0.0004	-0.0019	0.0097
		SE				3.44	1.83	0.3000	0.1296	0.0203	0.2628
EG					0.64	1.00	0.0769	0.0217	0.0019	0.0452	
Wayanad WLS	Aralam	MDF				1.79	1.50	0.1905	0.0217	-0.0057	0.0537
		SE	288.46	1.50	0.0769	199.28	138.17	0.2308	0.7987	0.2751	1.5063
	S. Bathery	MDF				0.65	1.50	0.0690	0.0056	-0.0042	0.0168
	Tholpetty	MDF				0.78	1.67	0.0750	0.0551	0.0137	0.1063
	Overall	EG				0.64	1.00	0.0769	0.0217	0.0019	0.0452
		MDF				0.76	1.54	0.0788	0.0199	0.0011	0.0424
		SE	288.46	1.50	0.0769	199.28	138.17	0.2308	0.7987	0.2751	1.5063
	Kannur	Kannavam	MDF				0.29	1.33	0.0343	0.0133	0.0026
EG						1.09	1.13	0.1159	0.0523	0.0099	10.3326
SE						0.42	1.00	0.0667	0.0077	-0.0063	0.0173
Kottiyur		SE				5.85	2.37	0.3952	0.2034	0.0268	0.4160

	Overall	DDF	390.63	2.50	0.0625	7.23	3.08	0.3750	0.8100	-0.1428	2.1195	
		Eucalyptus	300.00	3.00	0.0400							
		MDF	196.97	1.86	0.0424	3.45	2.46	0.2242	0.3238	-0.0615	0.8453	
		SE				6.01	2.08	0.4615	0.6166	-0.1286	1.6685	
		Teak	112.61	2.50	0.0180							
Kannur	Kanjangad	MDF				0.06	1.00	0.0090	0.0076	-0.0009	0.0191	
	Overall	MDF				0.01	1.00	0.0023	0.0020	-0.0002	0.0050	
Kozhikode	Thamarassery	MDF				0.45	1.2	0.0595	0.1399	-0.0283	0.4015	

**Table 3.3.2.10 Density, abundance and frequency of *Cinnamomum* spp., and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Pattikkad	MDF	109.89	1.33	0.0330	0.21	1.50	0.0220	-0.0006	-0.0025	0.0016
	Overall	MDF	38.02	1.33	0.0114	0.07	1.50	0.0076	-0.0002	-0.0009	0.0006
Chalakkudy	Pariyaram	MDF				0.59	1.50	0.0625	0.0227	0.0048	0.0443
		SE				4.17	1.20	0.5556	0.0031	-0.0262	0.0364
	Vellikkulangara	EG	1785.71	2.50	0.2857	14.29	4.00	0.4286	0.6204	0.1384	1.2232
		SE	277.78	1.50	0.0741	1.62	1.75	0.1481	0.4860	0.1646	0.9230
	Overall	EG	1785.71	2.50	0.2857	14.29	4.00	0.4286	0.6204	0.1384	1.2232
		MDF				0.32	1.50	0.0339	0.0123	0.0026	0.0242
Vazhachal	Charpa	EG	1250.00	1.00	0.5000	2.08	1.00	0.2500	0.0887	0.0148	0.1768
		SE	156.25	1.00	0.0625	2.34	1.20	0.3125	0.7703	0.2531	1.5061
	Kollathirumedu	SE	1742.42	2.30	0.3030	6.82	2.40	0.4545	1.4346	0.4719	2.7483
		Teak	5937.50	6.33	0.3750						
	Sholayar	EG				1.39	1.00	0.1667	0.3153	0.1061	0.5922
		SE	416.67	1.75	0.0952	2.23	1.88	0.1905	0.1533	0.0395	0.2953

	Kasaragod	SE				10.66	2.90	0.5882	0.3812	0.0497	0.7903
		MDF				0.07	1.00	0.0114	-0.0003	-0.0006	0.0001
	Kanjangad	MDF				0.06	1.00	0.0090	0.0436	0.0156	0.0821
		SE				0.54	1.50	0.0571	0.0038	-0.0030	0.0117
	Taliparamba	EG				6.50	2.44	0.3200	0.3141	0.0605	0.6385
	Overall	EG				2.92	2.00	0.1752	0.1410	-0.0356	0.2571
		SE				4.55	2.38	0.3058	0.1556	0.0196	0.3201
		MDF				0.15	1.25	0.0186	0.0166	0.0050	0.0320
Kozhikode	Thamarassery	EG				1.15	1.19	0.1154	0.1346	0.0381	0.2660
		SE				5.31	1.93	0.4409	0.8626	0.2677	1.6595

**Table 3.3.2.11 Density, abundance and frequency of *Ficus racemosa*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Vazhachal	Kollathirumedu	SE	75.7576	1.0000	0.0303	1.1364	3.00	0.0606	0.2940	-0.1307	0.8563
	Sholayar	EG				0.69	1.00	0.0833	0.2029	-0.1066	0.6012
	Vazhachal	SE				0.2232	1.00	0.0357	0.0765	-0.0368	0.2237
	Overall	EG				0.38	1.00	0.0455	0.1107	-0.0582	0.3279
		SE	21.0084	1.0000	0.0084	0.3676	2.33	0.0252	0.0815	-0.0362	0.2375
Peechi	Peechi	MDF				0.0229	1.00	0.0037	-0.0004	-0.0015	0.0009
	Overall	MDF				0.0197	1.00	0.0032	-0.0003	-0.0012	0.0008
Nenmara	Kollengode	MDF				3.3333	1.60	0.3333	1.2774	-0.5779	3.7461
	Overall	MDF				2.9412	1.60	0.2941	1.1271	-0.5099	3.3054
Palakkad	Olavakode	MDF				4.2969	1.83	0.3750	2.5787	-1.1828	7.9067
		EG				1.19	1.00	0.1429	0.6788	-0.2680	1.9481
	Walayar	MDF				6.1224	3.43	0.2857	6.7422	-2.7828	20.4277
		SE				0.3289	1.00	0.0526	0.1897	-0.0755	0.5446



	Overall	EG				1.19	1.00	0.1429	0.6788	-0.2680	1.9481
		MDF				5.0885	2.42	0.0909	2.9236	-0.6699	4.4781
		SE				0.3289	1.00	0.0526	0.1897	-0.0755	0.5446
Mannarkkad	Mannarkkad	MDF				0.6250	1.00	0.1000	0.1793	-0.0894	0.2874
	Overall	MDF				0.2660	1.00	0.0426	0.0763	-0.0381	0.2271
Parambikulam	Parambikulam	SE				0.4167	1.00	0.0667	0.3527	-0.1315	1.0153
	Overall	SE				0.2976	1.00	0.0476	0.2520	-0.0940	0.7552
Nilambur N	Vazhikkadavu	MDF				1.3158	4.00	0.0526	1.9189	-0.9063	6.1905
	Overall	MDF				0.6579	4.00	0.0263	0.9594	-0.4531	3.0952
Nilambur S	Karulai	MDF				0.0791	1.00	0.0127	0.0309	-0.0134	0.0893
	Overall	MDF				0.0727	1.00	0.0116	0.0284	-0.0123	0.0820
Wayanad N	Begur	SE				0.1894	1.00	0.0303	0.1137	-0.0456	0.3265
		SE				0.1894	1.00	0.0303	0.1137	-0.0456	0.3265
	Periya	EG				0.7813	3.00	0.0313	0.7922	-0.3046	2.3404
	Overall	EG				0.7813	3.00	0.0313	0.7922	-0.3046	2.3404
Wayanadd S	Chedleth	SE				0.1042	1.00	0.0167	0.0625	-0.0251	0.1796
		SE				0.1042	1.00	0.0167	0.0625	-0.0251	0.1796
	Meppady	MDF				0.3074	1.50	0.0328	0.4242	-0.1686	1.2892
	Overall	EG				0.56	1.00	0.0667	0.2609	-0.1123	0.7557
Kannur	Kannavam	EG				0.56	1.00	0.0667	0.2609	-0.1123	0.7557
		EG				0.56	1.00	0.0667	0.2609	-0.1123	0.7557
	Kasaragod	MDF				0.3074	1.50	0.0328	0.4242	-0.1686	1.2892
	Kanjangad	MDF				0.32	1.29	0.0400	0.1647	-0.0764	0.4999
Kannur	Taliparamba	EG				0.12	1.00	0.0145	0.1594	-0.0586	0.4663
		EG				0.12	1.00	0.0145	0.1594	-0.0586	0.4663
	Overall	MDF				0.0710	1.00	0.0113	0.0367	-0.0139	0.1054
	Overall	MDF				0.6193	1.57	0.0630	0.3055	-0.1353	0.8949
Kozhikode	Thamarassery	EG				0.17	1.00	0.02	0.0180	-0.0166	0.0609
		EG				0.12	1.00	0.0145	0.0869	-0.0356	0.2570
		MDF				0.3059	1.40	0.0349	0.1538	-0.0690	0.4571
		MDF				0.9157	1.25	0.0879	0.3878	-0.2026	1.2054
Kozhikode	Thamarassery	SE				0.1488	1	0.0238	0.0731	-0.0334	0.2151
		SE				0.0672	1	0.0107	0.0258	-0.0128	0.0758

**Table 3.3.2.12 Density, abundance and frequency of *Holoptelea integrifolia*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimate	LCL	UCL
Thrissur	Machad	MDF				0.49	1.30	0.0602	0.0524	0.0252	0.0836
		SE				3.13	1.00	0.5000	0.4918	0.2452	0.7729
	Wadakkancherry	Eucalyptus	43.86	1.00	0.0175						
		MDF				15.63	3.00	0.8333	1.1492	0.5206	1.8529
	Overall	Eucalyptus	43.86	1.00	0.0175						
		MDF				0.67	1.87	0.0573	0.0657	0.0310	0.1052
Chalakkudy	Vellikulangara	MDF				0.46	1.00	0.0741	0.7711	0.2280	1.4937
		SE				0.23	1.00	0.0370	0.6836	0.1813	1.3593
	Overall	MDF				0.21	1.00	0.0339	0.3529	0.1043	0.6836
		SE				0.17	1.00	0.0278	0.5127	0.1360	1.0195
Vazhachal	Charpa	SE				0.78	1.00	0.1250	1.8451	0.5085	3.6376
	Sholayar	SE				0.15	1.00	0.0238	0.0329	0.0165	0.0516
	Overall	SE				0.16	1.00	0.0252	0.2481	0.0684	0.4891
Peechi	Chimmini	MDF				0.14	1.00	0.0227	-0.0009	-0.0017	-0.0001
		SE				0.23	1.00	0.0366	0.0637	0.0307	0.1026
	Peechi	EG				1.39	1.00	0.1667	0.0428	0.0132	0.0753
		EG				1.39	1.00	0.1667	0.0428	0.0132	0.0753
	Overall	MDF				0.02	1.00	0.0032	-0.0001	-0.0002	0.0000
Palakkad	Overall	SE				0.18	1.00	0.0280	0.0488	0.0235	0.0786
		MDF				0.78	2.67	0.0469	0.3625	0.1550	0.6196
Mannarkkad	Agali	DDF				2.45	3.00	0.1304	0.7894	0.3651	1.3003
	Overall	DDF				2.45	3.00	0.1304	0.7894	0.3651	1.3003
Nilambur S	Karulai	MDF				0.08	1.00	0.0127	0.2267	0.0694	0.4351
	Overall	MDF				0.07	1.00	0.0116	0.2083	0.0637	0.3996

Kannur	Kannavam	MDF				0.07	1.00	0.0114	0.0103	0.0051	0.0163
	Kasaragod	SE				1.10	1.00	0.1765	3.4835	0.7735	7.1865
		MDF				0.21	1.00	0.0341	0.4829	-0.1420	0.9366
	Kanjangad	SE				0.36	1.00	0.0571	0.6581	0.1780	1.3024
	Overall	SE				0.07	1.00	0.0117	0.3993	0.0941	0.8143
		MDF				0.15	1.00	0.0243	0.1033	0.0312	0.1988

**Table 3.3.2.13 Density, abundance and frequency of Lagerstroemia reginae, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Machad	MDF				0.11	1.00	0.0181	0.0411	-0.0179	0.1171
	Pattikkad	MDF				0.55	1.60	0.0549	0.2929	-0.0185	0.6831
	Total	MDF				0.26	1.38	0.0305	0.1273	-0.0177	0.3103
Chalakkudy	Pariyaram	MDF	156.25	2.00	0.0313	0.78	4.00	0.0313	0.3355	0.0444	0.6918
	Vellikkulangara	EG				76.19	21.33	0.4286	32.3878	-6.9397	82.3366
		SE	92.59	1.00	0.0370	3.01	6.50	0.0741	1.0843	0.0365	2.3833
	Total	EG				76.19	21.33	0.4286	32.3878	-6.9397	82.3366
		MDF	84.75	2.00	0.0169	0.42	4.00	0.0169	0.1820	0.0241	0.3752
		SE	69.44	1.00	0.0278	2.26	6.50	0.0556	0.8132	0.0274	1.7875
Vazhachal	Charpa	EG				2.08	1.00	0.2500	1.0840	-1.3533	4.3103
		SE				1.17	3.00	0.0625	0.2414	0.0880	0.4191
	Kollathirumedu	SE				1.14	2.00	0.0909	0.3171	-0.0249	0.7461
	Sholayar	SE				0.15	1.00	0.0238	0.0452	0.0099	0.0879
	Total	EG				0.38	1.00	0.0455	0.1971	-0.2460	0.7837
		SE				0.53	2.00	0.0420	0.1364	0.0084	0.2943
Peechi	Chimmini	MDF	56.82	1.00	0.0227	0.14	1.00	0.0227	0.0392	0.0093	0.0751
		SE				0.15	2.00	0.0122	0.0800	0.0000	0.1796

	Peechi	MDF				0.11	1.67	0.0110	0.0294	0.0044	0.0598
		SE				0.25	1.00	0.0400	0.1275	-0.0108	0.3013
	Total	MDF	7.89	1.00	0.0032	0.12	1.50	0.0126	0.0307	0.0051	0.0619
		SE				0.18	1.50	0.0187	0.0911	-0.0025	0.2080
Nenmara	Alathur	SE				3.13	1.00	0.5000	1.1159	0.2053	2.2212
	Total	SE				0.09	1.00	0.0139	0.0310	0.0057	0.0617
Parambikulam	Karimala	MDF				0.69	2.00	0.0556	0.2636	0.0512	0.5209
		SE				26.04	12.50	0.3333	7.0843	1.4357	13.9022
	Orukomban	MDF				3.13	9.00	0.0556	1.1732	0.1651	2.4049
		Total	MDF				0.84	5.50	0.0244	0.2575	0.0362
		SE				7.44	12.50	0.0952	2.0241	0.4102	3.9721
Nilambur(N)	Nilambur	MDF				1.79	1.00	0.2857	0.7206	0.0033	1.6135
		SE				4.17	1.50	0.4444	1.2566	0.2792	2.7292
	Vazhikkadavu	MDF				7.73	3.36	0.3684	3.1328	-0.7251	8.0040
		Total	MDF				4.03	3.06	0.2105	1.5664	-0.3626
		SE				3.13	1.50	0.3333	0.9425	0.2094	1.8247
Nilambur(S)	Karulai	EG				32.29	15.50	0.2500	11.9837	0.7428	25.8763
		MDF				0.32	1.33	0.0380	0.1233	-0.1160	0.4376
		SE				3.13	2.67	0.1875	1.4459	-0.2429	3.5832
	Total	EG				23.48	15.50	0.1818	8.7176	0.5402	18.8191
MDF					0.29	1.33	0.0349	0.1132	-0.1065	0.4020	
SE					3.13	2.67	0.1875	1.4459	-0.2429	3.5832	
Wayanad WLS	Aralam	MDF				6.10	3.42	0.2857	2.8012	-0.0828	6.4045
	Total	MDF				1.55	3.42	0.0727	0.7130	-0.0003	1.6302
Kannur	Kannavam	MDF				0.39	1.57	0.0400	0.1079	0.0285	0.2026
		SE				2.71	2.60	0.1667	1.3715	-0.0139	3.0989
	Kottuyur	SE				0.91	2.25	0.0645	0.4827	-0.0763	1.1895

	Kasaragod	SE				0.74	2.00	0.0588	0.3331	0.0583	0.6671
		MDF				0.64	1.50	0.0682	0.2361	0.0502	0.4603
	Total	SE				0.29	1.54	0.0303	0.5178	-0.0432	1.2223
		MDF				1.00	2.36	0.0680	0.0924	0.0219	0.1771

**Table 3.3.2.14 Density, abundance and frequency of *Persea macrantha*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Machad	MDF	75.30	5.00	0.0060	0.15	1.00	0.0241	0.0157	0.0032	0.0313
		SE	0.62	1.80	0.0549	3.13	1.00	0.5000	0.0338	-0.0448	0.1237
	Overall	MDF				0.62	1.80	0.0549	0.5389	0.1693	1.0358
		MDF	47.53	5.00	0.0038	0.31	1.44	0.0344	0.1984	0.0608	0.3825
		SE				3.13	1.00	0.5000	0.0338	-0.0448	0.1237
Chalakkudy	Vellikulangara	EG	2142.86	3.00	0.2857	19.05	5.33	0.4286	1.0853	0.0914	2.3292
		SE	92.59	1.00	0.0370	1.85	1.33	0.2222	8.0765	2.2768	17.1034
	Overall	EG	2142.86	3.00	0.2857	19.05	5.33	0.4286	1.0853	0.0914	2.3292
		SE	69.44	1.00	69.4444	1.39	1.33	0.1667	6.0574	1.7076	12.8276
Vazhachal	Charpa	EG				2.08	1.00	0.2500	5.8633	1.8280	11.7189
		SE				1.17	1.00	0.1875	2.6010	0.7743	5.3216
	Kollathirumedu	MDF				1.25	1.00	0.2000	0.9366	0.2976	1.7794
		SE	75.76	1.00	0.0303	2.08	1.10	0.3030	3.2551	1.0116	6.4521
	Sholayar	EG	208.33	1.00	0.0833	8.33	1.50	0.6667	10.9572	3.4593	21.4116
		SE				1.04	1.40	0.1190	0.7198	0.2175	1.4157
	Vazhachal	SE				0.67	1.00	0.1071	0.1299	0.0331	0.2517
	Overall	EG	113.64	1.00	0.0455	4.92	1.44	0.4091	7.0427	2.2193	13.8098
		MDF				0.25	1.00	0.0400	0.1873	0.0595	0.3559
SE		21.01	1.00	0.0084	1.26	1.14	0.1765	1.5370	0.4690	3.0636	
Peechi	Chimmini	MDF				0.14	1.00	0.0227	0.0411	0.0106	0.0792

	Peechi	SE	60.98	1.00	0.0244	0.08	1.00	0.0122	0.0676	0.0217	0.1291
		EG	416.67	1.00	0.1667						
		MDF				0.02	1.00	0.0037	0.0052	0.0014	0.0099
	Overall	SE				0.50	1.00	0.0800	0.4132	0.1289	0.8029
		EG	416.67	1.00	0.1667						
		MDF				0.04	1.00	0.0063	0.0102	0.0026	0.0195
Palakkad	Olavakkode	SE	46.73	1.00	0.0187	0.18	1.00	0.0280	0.1484	0.0468	0.2865
		MDF				0.10	1.00	0.0156	0.0159	0.0037	0.0309
	Walayar	EG	357.14	1.00	0.1429	2.38	1.00	0.2857	1.3120	0.4044	2.5323
		SE				0.66	1.00	0.1053	1.2710	0.4064	2.4867
	Overall	EG	357.14	1.00	0.1429	2.38	1.00	0.2857	1.3120	0.4044	2.5323
		MDF				0.06	1.00	0.0089	0.0090	0.0021	0.0175
Mannarkkad	Overall	SE				0.66	1.00	0.1053	1.2710	0.4064	2.4867
		SE				1.04	1.00	0.1667	2.2637	0.7198	4.4535
Parambikulam	Karimala	SE				0.28	1.00	0.0455	0.6174	0.1963	1.2146
		SE				8.33	4.00	0.3333	8.8374	2.8335	16.9886
	Parambikulam	SE				2.08	2.50	0.1333	0.5715	0.1528	1.1109
		EG				5.30	1.00	0.6364	0.8115	0.1821	1.6212
	Sungam	MDF				0.15	1.00	0.0244	0.0256	0.0058	0.0329
		EG				5.30	1.00	0.6364	0.8115	0.1821	1.6212
Overall	MDF				0.08	1.00	0.0122	0.0128	0.0029	0.0249	
	SE				3.87	3.25	0.1905	2.9332	0.9187	5.6474	
	SE				6.25	3.00	0.3333	13.7489	4.2966	27.2918	
Nilambur(n)	Vazhikkadavu	EG	277.78	2.50	0.0444	0.56	1.00	0.0667	2.6689	0.7820	5.5338
		MDF				0.16	1.00	0.0263	0.0801	0.0244	0.1518
	Overall	EG	260.42	2.50	0.0417	0.5208	1.0000	0.0625	2.4993	0.7331	5.1879
		MDF				0.08	1.00	0.0132	0.0400	0.0122	0.0759

		SE				4.69	3.00	0.2500	10.3117	3.2225	20.4688
Nilambur(s)	Karulai	EG	312.50	1.00	0.1250	4.17	1.33	0.3750	6.4992	1.9800	13.0466
		SE	416.67	2.00	0.0833	3.13	1.60	0.3125	3.8436	1.1975	7.5608
		Teak	58.14	2.00	0.0116						
	Overall	EG	227.27	1.00	0.0909	3.03	1.33	0.2727	4.7267	1.4400	9.4884
		SE	416.67	2.00	0.0833	3.13	1.60	0.3125	3.8436	1.1975	7.5608
		Teak	58.14	2.00	0.0116						
Wayanad(s)	Chedleth	MDF				0.10	1.00	0.0164	0.0944	0.0303	0.1798
		SE				1.39	1.50	0.1481	0.4169	0.1127	0.8377
	Kalpetta	Shola				2.27	4.00	0.0909	1.7936	0.5721	3.4248
		EG				5.00	1.80	0.3333	4.6183	1.4632	8.8804
	Meppady	SE				1.00	2.00	0.0800	0.4144	0.1242	0.7865
		EG				5.00	1.80	0.3333	4.6183	1.4632	8.8804
	Overall	MDF				0.10	1.00	0.0164	0.0944	0.0303	0.1798
		SE				1.20	1.67	0.1154	0.4157	0.1183	0.8131
Shola					2.27	4.00	0.0909	1.7936	0.5721	3.4248	
EG					5.00	1.80	0.3333	4.6183	1.4632	8.8804	
Wayanad(n)	Begur	SE				2.46	1.18	0.3333	3.9102	1.2303	7.6991
	Mananthavady	SE				0.57	1.00	0.0909	0.1306	0.0354	0.2499
		EG				0.52	1.00	0.0625	1.1398	0.3484	2.9222
	Periya	SE				1.17	1.50	0.1250	0.5692	0.1696	1.0813
		EG				0.52	1.00	0.0625	1.1398	0.3484	2.9222
	Overall	SE				1.77	1.21	0.2333	2.3263	0.7284	4.5687
Wayanad WLS	Aralam	MDF				0.15	1.00	0.0238	0.2315	0.0746	0.4479
	Kurichiyath	SE				393.75	234.00	0.2692	3.9475	1.2390	7.7875
	Muthanga	MDF				0.38	3.00	0.0200	0.8869	0.2721	1.7826
	S. Bathery	MDF				1.72	1.60	0.1724	3.6978	1.1483	7.3549

	Tholpetty	MDF				0.47	1.00	0.0750	0.4027	0.1281	0.7654
	Overall	MDF				0.57	1.50	0.0606	1.0752	0.3343	2.1324
		SE				393.75	234.00	0.2692	3.9475	1.2390	7.7875
Kannur	Kannavam	MDF				0.36	1.11	0.0514	1.0207	0.3169	2.0403
		EG				0.24	1.00	0.0290	0.3206	0.1034	0.6155
		SE				0.21	1.00	0.0333	0.1645	0.0517	0.3120
	Kottiyur	SE				0.15	1.50	0.0161	0.4148	0.1307	0.8221
	Kasaragod	SE				0.21	1.50	0.0227	4.1509	1.2736	8.3819
		MDF				1.10	1.50	0.1176	0.6321	0.1976	1.2599
	Kanjangad	MDF				0.11	1.00	0.0180	0.2247	0.0721	0.4375
		SE				0.71	2.00	0.0571	1.6643	0.5278	3.2716
		EG				0.93	1.00	0.1111	0.0740	0.0040	0.1576
	Taliparamba	EG				0.83	1.00	0.1000	0.9710	0.3014	1.9030
		MDF				0.31	1.00	0.0500	0.2825	0.0906	0.5384
	Overall	EG				0.55	1.00	0.0657	0.5256	0.1626	1.0253
		SE				0.33	1.57	0.0340	0.8989	0.2810	1.7878
		MDF				0.23	1.14	0.0326	0.6173	0.1927	1.2290
Kozhikode	Thamarassery	MDF				0.45	1.11	0.0494	0.4077	0.1279	0.7830
		SE				0.26	1	0.0430	0.3268	0.1042	0.7224

**Table 3.3.2.15 Density, abundance and frequency of *Pongamia pinnata*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimate	LCL	UCL
Thrissur	Machad	MDF				0.38	3.33	0.0181	0.0098	-0.0006	0.0215
	Overall	MDF				0.24	3.33	0.0115	0.0086	-0.0004	0.0188
Chalakkudy	Pariyaram	MDF				0.59	1.50	0.0625	0.1074	-0.0243	0.2746
		SE				0.69	1.00	0.1111	0.0018	-0.0062	0.0105
	Overall	MDF				0.32	1.50	0.0339	0.0582	-0.0132	0.1490
		SE				0.17	1.00	0.0278	0.0004	-0.0015	0.0026
Vazhachal	Kollathirumedu	SE				0.57	1.00	0.0909	0.1710	-0.0565	0.4653



	Vazhachal	EG				2.78	1.00	0.3333	0.9920	-0.3914	2.7925
		SE				0.22	1.00	0.0357	0.0247	0.0022	0.0512
	Overall	EG				0.76	1.00	0.0909	0.2705	-0.1067	0.7616
		SE				0.21	1.00	0.0336	0.0532	-0.0152	0.1411
Peechi	Peechi	MDF				0.46	1.82	0.0403	0.0430	-0.0097	0.1091
		SE				0.75	1.50	0.0800	0.0055	-0.0015	0.0133
	Overall	MDF				0.39	1.82	0.0347	0.0371	-0.0084	0.0939
		SE				0.18	1.50	0.0187	0.0013	-0.0004	0.0003
Mannarkkad	Mannarkkad	MDF				0.31	1.00	0.0500	0.0140	-0.0001	0.0300
	Overall	MDF				0.13	1.00	0.0213	0.0060	-0.0001	0.0128
Parambikulam	Sungum	MDF	60.98	1.00	0.0244	0.30	2.00	0.0244	0.0157	0.0009	0.0329
	Overall	MDF	30.49	1.00	0.0122	0.15	2.00	0.0122	0.0079	0.0005	0.0164
Nilambur (s)	Karulai	MDF	63.29	2.00	0.0127						
		SE	260.42	1.67	0.0625	1.30	3.33	0.0625	0.3311	-0.3413	1.2404
		Teak	87.21	1.50	0.0233						
	Overall	MDF	58.14	2.00	0.0116						
		SE	260.42	1.67	0.0625	1.30	3.33	0.0625	0.3311	-0.3413	1.2404
		Teak	87.21	1.50	0.0233						
Wayanad (N)	Begur	MDF				14.29	2.67	0.8571	5.4749	-3.0297	16.6872
	Overall	MDF				6.25	2.67	0.3750	2.3940	-1.3255	7.3007
Wayanad WLS	Tholpetty	MDF				0.78	5.00	0.0250	0.1810	-0.0133	0.4223
	Overall	MDF				0.19	5.00	0.0061	0.0439	-0.0003	0.1024
Kannur	Kannavam	MDF				0.04	1.00	0.0057	0.0071	0.0000	0.0157
	Kasaragod	MDF				0.43	1.50	0.0455	0.1213	-0.0575	0.3552
	Overall	MDF				0.10	1.40	0.0117	0.0278	-0.0118	0.0793

**Table 3.3.2.16 Density, abundance and frequency of *Sarcostigma kleinii*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Fruit) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimate	UCL	LCL
Thrissur	Mahad	MDF				0.04	1.00	0.01	0.27	0.29	0.26
	Pattikkad	MDF	27.47	1.00	0.01	0.82	1.50	0.09	5.87	6.19	5.55

	Overall	MDF	9.51	1.00	0.00	0.31	1.44	0.03	2.20	2.32	2.08
Vazhachal	Charpa	EG				2.08	1.00	0.25	17.84	18.83	16.88
		SE				0.39	1.00	0.06	2.13	2.25	2.01
	Vazhachal	SE				0.22	1.00	0.04	3.13	3.30	2.96
	Overall	SE				0.11	1.00	0.02	1.02	1.08	0.97
		EG				0.38	1.00	0.05	3.24	3.42	3.07
Peechi	Chimmini	SE				0.43	1.00	0.07	12.00	12.67	11.36
		MDF				1.60	1.62	0.16	2.63	2.77	2.49
	Overall	MDF				0.06	1.00	0.01	0.36	0.38	0.34
		SE				1.23	1.62	0.12	9.20	9.71	8.70
Nenmara	Nelliyampathy	SE				0.09	1.00	0.01	1.18	1.25	1.12
	Kollengod		333.33	1.00	0.13						
	Overall	MDF	294.12	1.00	0.12						
		SE				0.09	1.00	0.01	1.15	1.21	1.09
Palkkad	Olavkkode	MDF				0.78	2.00	0.06	6.71	7.08	6.35
		EG				2.38	1.00	0.29	15.29	16.14	14.47
	Walayar	SE				1.97	1.50	0.21	10.05	10.61	9.51
		EG				2.38	1.00	0.29	15.29	16.14	14.47
	Overall	MDF				0.44	2.00	0.04	3.80	4.01	3.60
		SE				1.97	1.50	0.21	10.05	10.61	9.51
	Mannarkkad	Agali	SE	192.31	1.00	0.08					
Overall			113.64	1.00	0.05						
Nilambur N	Edavanna	EG				2.78	1.00	0.33	22.71	23.97	21.49
		MDF				0.20	1.00	0.03	1.57	1.66	1.49
	Vazhikkadavu	EG	166.67	1.00	0.07	0.19	1.00	0.02	1.43	1.51	1.36
	Overall	EG	156.25	1.00	0.06	0.35	1.00	0.04	1.79	1.89	1.69
MDF					0.08	1.00	0.01	0.64	0.68	0.61	
Wayanad N	Periya	EG				0.26	1.00	0.03	1.77	1.87	1.68
	Overall	EG				0.26	1.00	0.03	1.77	1.87	1.68
Wayanad WLS	Aralam	MDF				0.45	1.00	0.07	2.23	2.35	2.11

	Overall	MDF				0.11	1.00	0.02	0.57	0.60	0.54
Kannur	Kanjangad	MDF				0.06	1.00	0.01	0.34	0.32	0.36
		SE				0.18	1.00	0.03	0.11	0.15	0.08
		MDF				0.07	1.00	0.01	0.56	0.59	0.53
	Kannavam	SE				0.21	1.00	0.03	1.22	1.28	1.15
		EG				0.33	1.00	0.04	1.33	1.40	1.26
	Overall	EG				0.12	1.00	0.01	0.49	0.51	0.46
		MDF				0.04	1.00	0.01	0.31	0.33	0.30
		SE				0.06	1.00	0.01	0.34	0.36	0.32

**Table 3.3.2.17 Density, abundance and frequency of *Spondias pinnata*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Bark) (kg/ha)		
			Density	Abundance	Frequency	Density	Abundance	Frequency	Estimates	LCL	UCL
Thrissur	Machad	MDF	15.06	1.00	0.0060	0.68	1.29	0.0843	0.5238	0.2190	0.9109
		SE				6.25	2.00	0.5000	0.4104	0.0635	0.8030
	Pattikkad	MDF				2.75	1.67	0.2637	0.9277	0.3684	1.6053
	Overall	MDF	9.51	1.00	0.0038	1.38	1.53	0.1450	0.6516	0.2657	1.1304
		SE				6.25	2.00	0.5000	0.4104	0.0635	0.8030
Chalakkudy	Vellikulangara	MDF				0.46	1.00	0.0741	0.8938	0.3901	1.5297
		SE				0.69	1.00	0.1111	1.4960	0.6510	2.5697
	Overall	MDF				0.21	1.00	0.0339	0.4090	0.1785	0.7000
		SE				0.52	1.00	0.0833	1.1220	0.4882	1.9273
	Vazhachal	Kollathirumedu	SE				0.19	1.00	0.0303	0.2961	0.1298
Vazhachal		MDF				2.27	1.33	0.2727	0.6778	0.2595	1.1755
		SE				0.45	1.00	0.0714	0.2931	0.1259	0.4953
Overall		MDF				1.00	1.33	0.1200	0.2982	0.1142	0.5172
		SE				0.16	1.00	0.0252	0.1511	0.0656	0.2565
Peechi	Chimmini	SE				0.69	1.13	0.0976	0.5776	0.2475	0.9869
	Peechi	MDF				0.23	1.00	0.0366	0.0161	0.0028	0.0313

	Overall	MDF				0.20	1.00	0.0315	0.0139	0.0024	0.0269
		SE				0.53	1.13	0.0748	0.4427	0.1897	0.7563
Palakkad	Olavakkode	MDF				0.29	1.50	0.0313	0.1297	0.0538	0.2203
	Walayar	MDF				0.13	1.00	0.0204	0.1142	0.0497	0.1929
	Overall	MDF				0.22	1.33	0.0265	0.1230	0.0520	0.2084
Mannarkkad	Agali	SE				0.48	1.00	0.0769	0.0526	0.0129	0.0979
	Attappady	MDF				0.60	2.00	0.0476	0.3843	0.1646	0.6492
	Overall	MDF				0.27	2.00	0.0213	0.1717	0.0736	0.2271
		SE				0.28	1.00	0.0455	0.0311	0.0076	0.0579
Parambikulam	Orukomban	MDF				0.35	1.00	0.0556	0.2689	0.1166	0.4542
	Sungam	EG				0.76	1.00	0.0909	-0.0008	-0.0130	0.0126
		MDF				0.15	1.00	0.0244	0.0194	0.0056	0.0352
	Overall	EG				0.76	1.00	0.0909	-0.0006	-0.0010	0.0094
		MDF				0.15	1.00	0.0244	0.0590	0.0256	0.0997
Nilambur N	Edavanna	MDF				1.41	1.40	0.1613	1.3513	0.5647	2.3504
	Nilambur	MDF				6.25	2.33	0.4286	2.5250	1.0368	4.3441
		SE				0.69	1.00	0.1111	0.0007	-0.0135	0.0162
	Vazhikkadavu	EG				0.93	1.00	0.1111	1.5358	0.6670	2.6287
		MDF				0.49	1.50	0.0526	1.0483	0.4443	1.8326
		SE				2.08	1.00	0.3333	10.3376	4.3428	18.2817
	Overall	EG				0.87	1.00	0.1042	1.4396	0.6253	2.4644
		MDF				1.40	1.70	0.1316	1.3079	0.5480	2.2751
	SE				1.04	1.00	0.1667	2.5849	1.0756	4.5751	
Nilambur S	Karulai	SE				0.13	1.00	0.0208	0.1216	0.0529	0.2054
	Overall	SE				0.13	1.00	0.0208	0.1216	0.0529	0.2054
Wayanad N	Begur	SE				0.38	1.00	0.0606	0.3632	0.1560	0.6233
	Mananthavady	SE				0.57	1.00	0.0909	0.7835	0.3436	1.3297
	Overall	SE				0.31	1.00	0.0500	0.3434	0.1488	0.5866
Wayanad WLS	Kurichiyath	SE				0.96	1.00	0.1538	1.6807	0.7215	2.9049

	Overall	SE				0.96	1.00	0.1538	1.6807	0.7215	2.9049
Kannur	Kanjangad	MDF				0.11	1.00	0.0180	0.3305	0.1402	0.5777
	Overall	MDF				0.03	1.00	0.0047	0.0855	0.0363	0.1495
Kozhikode	Thamarassery	EG				0.59	1.18	0.0604	0.2579	0.1037	0.4409
		MDF				0.07	1	0.0119	0.0311	0.0121	0.0533
		SE				0.07	1	0.0107	0.0569	0.0242	0.0961

**Table 3.3.2.18 Density, abundance and frequency of *Wrightia tinctoria*, and availability in different Forest Divisions**

Division	Range	Habitat	Saplings			Trees			Availability of useful Products (Leaf) (kg/ha)
			Density	Abundance	Frequency	Density	Abundance	Frequency	
Thrissur	Machad	MDF	225.90	1.67	0.0542	30.01	7.31	0.6566	190.7945
		Mixed	238.10	2.00	0.0476				
		SE				25.00	8.00	0.5000	274.0548
	Pattikkad	MDF	333.33	1.50	0.0889	62.64	12.67	0.7912	435.6663
	Wadakancherry	Cashew	76.92	1.00	0.0308				
		MDF				6.25	1.50	0.6667	34.8298
	Overall	Cashew	76.92	1.00	0.0308				
		MDF	257.63	1.59	0.0649	40.91	9.27	0.7061	177.2668
		Mixed	238.10	2.00	0.0476				
		SE				25.00	8.00	0.5000	274.0548
Chalakkudy	Palappilly	Teak	406.98	3.50	0.0465				
	Pariyaram	MDF	234.38	1.50	0.0625	4.10	3.50	0.1875	27.6881
		SE				0.69	1.00	0.1111	10.8220
	Vellikkulangara	MDF				6.48	2.00	0.5185	85.2683
		SE				1.33	0.02	0.0261	12.9139
		Teak	78.13	1.00	0.0313				
	Overall	MDF	127.12	1.50	0.0339	5.19	2.45	0.3390	54.0383

		SE				0.87	1.25	0.1111	12.3909
		Teak	229.89	2.67	0.0345				
Vazhachal	Charpa	MDF				2.08	1.50	0.2222	32.2385
		SE				0.78	2.00	0.0625	13.3265
	Sholayar	MDF							
		SE				0.45	1.50	0.0476	7.0533
	Vazhachal	MDF				2.84	1.67	0.2727	27.5723
		SE				0.22	1.00	0.0357	3.1048
	Overall	MDF				2.00	1.60	0.0714	23.7377
		SE				0.32	1.50	0.0099	2.5223
Peechi	Chimmini	MDF	113.64	1.00	0.0455	7.53	3.53	0.3409	85.4130
		SE				1.75	0.01	0.0105	8.5063
	Peechi	EG				5.56	2.00	0.3333	54.1302
		MDF	2793.04	4.92	0.2271	49.68	9.00	0.8828	488.4711
		SE	2000.00	4.00	0.2000	36.00	8.47	0.6800	414.6993
		Teak	3063.73	3.29	0.3725				
	Overall	EG				5.56	2.00	0.3333	54.1302
		MDF	2421.14	4.80	0.2019	43.83	8.68	0.8076	432.5261
		SE	467.29	4.00	0.0467	8.82	7.19	0.1963	87.1294
		Teak	3063.73	3.29	0.3725				
Nenmara	Alathur	MDF				15.63	5.00	0.5000	209.1564
		Teak	833.33	1.44	0.2308				
	Kollengode	MDF	1833.33	2.20	0.3333	40.83	6.53	1.0000	308.7210
	Nelliyampathy								
	Overall	MDF	1617.65	2.20	0.2941	37.87	6.44	0.9412	297.0075
		677.08	1.44	0.1875					
Palakkad	Olavakode	MDF	507.81	1.30	0.1563	22.36	6.36	0.5625	271.4867
		Teak	833.33	1.00	0.3333				

	Walayar	SE				0.66	2.00	0.0526	1.7540
		MDF	1938.78	2.71	0.2857	42.22	8.71	0.7755	402.9209
	Overall	SE				0.66	2.00	0.0526	1.7540
		MDF	1128.32	2.13	0.2124	30.97	7.57	0.6549	328.480331
		Teak	238.10	1.00	0.0952				
Mannarkkad	Agali	MDF				5.21	1.67	0.5000	9.2233
		SE				0.48	1.00	0.0769	3.8555
		DDF				2.72	2.00	0.2174	28.0039
	Attappady	MDF	714.29	3.00	0.0952	36.90	8.27	0.7143	414.3095
		SE				2.08	1.00	0.3333	23.4502
	Mannarkkad	Acacia	277.78	1.00	0.1111				
		MDF	375.00	1.50	0.1000	16.56	3.31	0.8000	200.1931
		SE				2.08	2.00	0.1667	24.7757
		Cashew	394.74	1.50	0.1053				
	Overall	MDF	478.72	2.25	0.0851	24.20	5.35	0.7234	276.0130
		DDF				2.72	2.00	0.2174	28.0039
		SE				1.14	1.33	0.1364	12.2330
		Acacia	277.78	1.00	0.1111				
		Cashew	394.74	1.50	0.1053				
	Parambikulam	Karimala							
Parambikulam		SE				1.25	1.00	0.2000	12.6414
		MDF	500.00	1.00	0.2000	10.00	8.00	0.2000	79.9785
Orukomban		MDF				8.33	4.00	0.3333	104.3891
Sungam		MDF	60.98	1.00	0.0244	7.62	2.94	0.4146	64.0039
Overall		SE				0.89	1.00	0.1429	9.0296
	MDF	60.98	1.00	0.0244	6.25	3.42	0.2927	59.7934	
Nilambur(N)	Nilambur	MDF				16.07	4.50	0.5714	182.3029

		SE				3.47	2.50	0.2222	38.4287
		Teak	69.44	1.00	0.0278				
	Edavanna	MDF				1.81	2.25	0.1290	17.7880
		MDF				2.30	4.67	0.0789	30.6317
	Vazhikkadavu	Teak	65.79	1.00	0.0263				
		MDF				3.37	3.73	0.1447	32.1069
SE					2.60	2.50	0.1667	28.8216	
Overall	Teak	68.18	1.00	0.0273					
	MDF	63.29	1.00	0.0253	2.22	2.80	0.1266	19.7085	
	SE				0.78	2.00	0.0625	11.4851	
	Teak	145.35	2.50	0.0233					
	MDF	58.14	1.00	0.0233	2.03	2.80	0.1163	18.104299	
	SE				0.78	2.00	0.0625	11.4851	
Teak	Teak	145.35	2.50	0.0233					
	MDF								
	SE								
Wayanad(S)	Chedleth	MDF				0.31	1.00	0.0492	5.1552
		Savanah				0.20	1.00	0.0313	3.2369
	Overall	MDF				0.31	1.00	0.0492	5.1552
		Savanah				0.20	1.00	0.0313	3.2369
Wayanad WLS	Muthanga	MDF				0.13	1.00	0.0200	2.01
	Overall	MDF				0.04	1.00	0.0061	0.61
Kannur	Kannavam	MDF				0.07	1.00	0.0114	1.1163
		SE				0.18	1.00	0.0286	3.1797
		MDF				0.14	1.00	0.0227	2.5371
	Overall	MDF				0.06	1.00	0.0093	0.9758
		SE				0.03	1.00	0.0049	0.5402
Kozhikode	Thamarassery	EG	68.68	5	0.006	1.37	2.142	0.0892	11.68
		MDF				0.07	1	0.0119	1.25
		SE				0.06	1	0.0107	1.12



**Table 4.1.1 Diversity measures in different Forest types and Forest Ranges in Thrissur Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Machad	MDF	Herb	5.9560	1.0523	0.121208	2.5893	46	13.3200	8.2503	0.6763	0.2896	0.2738	0.6194	0.5885
Machad	MDF	Shrub	0.2734	0.0774	0.679379	0.5138	3	1.6716	1.4719	0.4677	0.5572	0.3358	0.8805	0.7027
Machad	MDF	Tree	4.8223	0.8197	0.186179	2.2816	38	9.7924	5.3712	0.6272	0.2577	0.2376	0.5485	0.4972
Machad	Mixed	Herb	2.4574	0.8689	0.189253	1.9790	15	7.2354	5.2839	0.7308	0.4824	0.4454	0.7303	0.6870
Machad	Mixed	Shrub	0.2048	0.1741	0.833449	0.3046	2	1.3561	1.1998	0.4395	0.6781	0.3561	0.8847	0.5611
Machad	SE	Herb	0.4024	0.5774	0.696970	0.4506	2	1.5692	1.4348	0.6500	0.7846	0.5692	0.9143	0.7639
Machad	SE	Shrub	0.0000	0.3536	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Machad	SE	Tree	3.3011	2.2678	0.121693	2.1536	12	8.6159	8.2174	0.8667	0.7180	0.6924	0.9537	0.9477
Machad	Teak	Herb	2.8257	0.8890	0.149645	2.1322	18	8.4330	6.6825	0.7377	0.4685	0.4372	0.7924	0.7645
Machad	Teak	Shrub	0.1978	0.1596	0.611628	0.5743	2	1.7758	1.6350	0.8285	0.8879	0.7758	0.9207	0.8185
Pattikkad	MDF	Herb	3.4973	0.7290	0.151397	2.2641	26	9.6220	6.6051	0.6949	0.3701	0.3449	0.6865	0.6501
Pattikkad	MDF	Shrub	0.1549	0.0792	0.816455	0.3295	2	1.3903	1.2248	0.4754	0.6952	0.3903	0.8809	0.5759
Pattikkad	MDF	Tree	4.7735	0.8522	0.257056	2.1656	37	8.7199	3.8902	0.4754	0.6952	0.3903	0.8809	0.5759
Wadakkancherry	Acacia	Herb	1.0771	0.7809	0.262195	1.4176	5	4.1274	3.8140	0.8808	0.8255	0.7818	0.9241	0.8998
Wadakkancherry	Acacia	Shrub	0.0000	0.4082	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Wadakkancherry	Cashew	Herb	3.5688	0.8662	0.136009	2.2844	25	9.8195	7.3524	0.7097	0.3928	0.3675	0.7488	0.7203
Wadakkancherry	Cashew	Shrub	0.2836	0.3430	0.549020	0.6295	2	1.8767	1.8214	0.9082	0.9383	0.8767	0.9706	0.9370
Wadakkancherry	Eucalyptus	Herb	3.0449	0.6996	0.263831	1.8022	22	6.0628	3.7903	0.5830	0.2756	0.2411	0.6252	0.5511
Wadakkancherry	Eucalyptus	Shrub	0.2054	0.1754	0.843888	0.2899	2	1.3363	1.1850	0.4182	0.6681	0.3363	0.8868	0.5501
Wadakkancherry	MDF	Herb	1.9874	1.2027	0.185714	1.8150	9	6.1410	5.3846	0.8260	0.6823	0.6426	0.8768	0.8529
Wadakkancherry	MDF	Shrub	0.3034	0.3849	0.566952	0.6077	2	1.8362	1.7638	0.8767	0.9181	0.8362	0.9606	0.9135
Wadakkancherry	MDF	Tree	2.5832	1.5877	0.147163	2.0498	11	7.7665	6.7952	0.8548	0.7060	0.6767	0.8749	0.8565
Wadakkancherry	Teak	Herb	1.7868	0.9594	0.169018	1.8569	9	6.4038	5.9165	0.8451	0.7115	0.6755	0.9239	0.9098
Wadakkancherry	Teak	Shrub	0.0000	0.2425	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.	

**Table 4.1.2 Diversity measures in different Forest types and Forest Ranges in Chalakkudy Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Palappilly	Teak	Herb	3.9851	1.3395	0.153271	2.4324	24	11.3859	6.5244	0.7654	0.4744	0.4516	0.5730	0.5319
Palappilly	Teak	Shrub	0.2015	0.1672	0.919039	0.1741	2	1.1902	1.0881	0.2512	0.5951	0.1902	0.9142	0.4632
Pariyaram	Cashew	Herb	1.6423	1.3093	0.214286	1.5391	6	4.6603	4.6667	0.8590	0.7767	0.7321	1.0014	1.0017
Pariyaram	Cashew	Shrub	0.3147	0.4082	0.840580	0.2868	2	1.3322	1.1897	0.4138	0.6661	0.3322	0.8930	0.5709
Pariyaram	MDF	Herb	4.2593	1.4940	0.230773	2.2089	25	9.1053	4.3333	0.6862	0.3642	0.3377	0.4759	0.4112
Pariyaram	MDF	Shrub	0.3835	0.2212	0.790271	0.4330	3	1.5419	1.2654	0.3941	0.5140	0.2709	0.8207	0.4898
Pariyaram	MDF	Tree	3.8464	1.4351	0.110966	2.5991	22	13.4514	9.0118	0.8408	0.6114	0.5929	0.6700	0.6434
Pariyaram	SE	Herb	2.4045	1.3750	0.107639	2.2362	11	9.3580	9.2903	0.9326	0.8507	0.8358	0.9928	0.9919
Pariyaram	SE	Shrub	0.0000	0.1826	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Pariyaram	SE	Tree	3.8472	1.9758	0.085219	2.5890	18	13.3162	11.7345	0.8957	0.7398	0.7245	0.8812	0.8716
Pariyaram	Teak	Herb	3.7405	1.7132	0.155271	2.3156	19	10.1313	6.4403	0.7864	0.5332	0.5073	0.6357	0.5958
Pariyaram	Teak	Shrub	0.0000	0.1021	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Vellikkulangara	EG	Herb	2.6550	1.5119	0.086022	2.3787	12	10.7907	11.625	0.9573	0.8992	0.8901	1.0773	1.0852
Vellikkulangara	EG	Shrub	0.3069	0.3922	0.556923	0.6172	2	1.8538	1.7956	0.8905	0.9269	0.8538	0.9686	0.9318
Vellikkulangara	EG	Tree	2.1275	0.9045	0.216818	1.8124	12	6.1253	4.6122	0.7294	0.5104	0.4659	0.7530	0.7048
Vellikkulangara	MDF	Herb	3.1067	0.9397	0.182998	1.9615	20	7.1098	5.4645	0.6548	0.3555	0.3216	0.7686	0.7307
Vellikkulangara	MDF	Shrub	0.4047	0.2535	0.657965	0.6370	3	1.8908	1.5198	0.5798	0.6303	0.4454	0.8038	0.5836
Vellikkulangara	MDF	Tree	3.2240	1.2890	0.209939	2.0662	18	7.8945	4.7633	0.7148	0.4386	0.4056	0.6034	0.5458
Vellikkulangara	SE	Herb	3.5260	1.1198	0.170648	2.1383	22	8.4851	5.8600	0.6918	0.3857	0.3564	0.6906	0.6493
Vellikkulangara	SE	Shrub	0.4077	0.2582	0.485683	0.7730	3	2.1663	2.0590	0.7037	0.7221	0.5832	0.9504	0.9079
Vellikkulangara	SE	Tree	3.7240	1.4322	0.099848	2.5850	21	13.2631	10.0152	0.8491	0.6316	0.6132	0.7551	0.7352
Vellikkulangara	Teak	Herb	3.6998	1.0722	0.172335	2.2069	24	9.0872	5.8026	0.6944	0.3786	0.3516	0.6385	0.5939

**Table 4.1.3 Diversity measures in different Forest types and Forest Ranges in Vazhachal Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Charpa	EG	Herb	1.1879	0.9285	0.270936	1.3703	5	3.9367	3.6909	0.8514	0.7873	0.7342	0.9376	0.9163
Charpa	EG	Shrub												
Charpa	EG	Tree	3.6831	2.5495	0.138462	2.1575	13	8.6494	7.2222	0.8411	0.6653	0.6375	0.8350	0.8134
Charpa	MDF	Herb	1.3470	0.7548	0.284542	1.4811	7	4.3977	3.5144	0.7611	0.6282	0.5663	0.7992	0.7400
Charpa	MDF	Shrub	0.0000	0.1280	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Charpa	MDF	Tree	2.4843	1.4699	0.211688	1.8085	11	6.1013	4.7239	0.7542	0.5547	0.5101	0.7743	0.7300
Charpa	SE	Herb	2.0450	1.2728	0.255510	1.5699	9	4.8059	3.9137	0.7145	0.5340	0.4757	0.8144	0.7656
Charpa	SE	Shrub	0.4423	0.3128	0.594123	0.6306	3	1.8788	1.6832	0.5740	0.6263	0.4394	0.8959	0.7774
Charpa	SE	Tree	4.6365	2.1448	0.112738	2.5100	23	12.3052	8.8701	0.8005	0.5350	0.5139	0.7208	0.6962
Charpa	Teak	Herb	2.5740	1.7408	0.134470	2.0079	10	7.4477	7.4366	0.8720	0.7448	0.7164	0.9985	0.9983
Charpa	Teak	Shrub	0.0000	0.1562	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kollathirumedu	MDF	Herb	1.8640	1.4000	0.183333	1.7178	7	5.5724	5.4545	0.8828	0.7961	0.7621	0.9789	0.9742
Kollathirumedu	MDF	Shrub	0.0000	0.2132	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kollathirumedu	MDF	Tree	1.1368	1.0690	0.604396	0.7550	4	2.1276	1.6545	0.5446	0.5319	0.3759	0.7777	0.5805
Kollathirumedu	SE	Herb	4.6679	2.0430	0.085052	2.7005	24	14.8876	11.7575	0.8497	0.6203	0.6038	0.7897	0.7746
Kollathirumedu	SE	Shrub	0.4692	0.3560	0.595171	0.6360	3	1.8890	1.6802	0.5790	0.6297	0.4445	0.8895	0.7651
Kollathirumedu	SE	Tree	4.7458	1.8667	0.108328	2.6171	26	13.6964	9.2313	0.8033	0.5268	0.5079	0.6740	0.6483
Kollathirumedu	Teak	Herb	1.4906	0.9354	0.207792	1.6765	7	5.3471	4.8125	0.8616	0.7639	0.7245	0.9000	0.8770
Kollathirumedu	Teak	Shrub	0.0000	0.2182	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Sholayar	EG	Herb	1.3847	0.9864	0.656156	0.7783	6	2.1777	1.5240	0.4344	0.3629	0.2355	0.6998	0.4450
Sholayar	EG	Shrub	0.1978	0.1596	0.987261	0.0386	2	1.0393	1.0129	0.0556	0.5197	0.0393	0.9746	0.3283
Sholayar	EG	Tree	3.0300	1.6386	0.159056	2.0811	14	8.0130	6.2871	0.7886	0.5724	0.5395	0.7846	0.7539
Sholayar	SE	Herb	3.2399	1.3059	0.207407	2.0623	18	7.8643	4.8214	0.7135	0.4369	0.4038	0.6131	0.5567
Sholayar	SE	Shrub	0.1908	0.1455	0.889789	0.2220	2	1.2486	1.1239	0.3203	0.6243	0.2486	0.9001	0.4983

Sholayar	SE	Tree	4.6754	1.7942	0.082160	2.7372	26	15.4431	12.1714	0.8401	0.5940	0.5777	0.7881	0.7735
Vazhachal	EG	Herb	0.0000	0.5774	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Vazhachal	EG	Shrub												
Vazhachal	EG	Tree	1.7548	1.0887	0.317959	1.4779	8	4.3838	3.1451	0.7107	0.5480	0.4834	0.7174	0.6339
Vazhachal	MDF	Herb	3.1850	1.5187	0.115479	2.3211	16	10.1865	8.6596	0.8371	0.6367	0.6124	0.8501	0.8338
Vazhachal	MDF	Shrub	0.5062	0.4160	0.722474	0.5360	3	1.7091	1.3841	0.4879	0.5697	0.3545	0.8099	0.5417
Vazhachal	MDF	Tree	2.7463	1.4626	0.267446	1.8171	13	6.1538	3.7391	0.7084	0.4734	0.4295	0.6076	0.5315
Vazhachal	SE	Herb	3.2667	1.4686	0.223319	2.0822	17	8.0217	4.4779	0.7349	0.4719	0.4389	0.5582	0.4953
Vazhachal	SE	Shrub	0.9102	1.0000	0.333333	0.9950	3	2.7048	3.0000	0.9057	0.9016	0.8524	1.1091	1.1732
Vazhachal	SE	Tree	5.3166	2.3412	0.090795	2.6927	27	14.7718	11.0138	0.8170	0.5471	0.5297	0.7456	0.7271

**Table 4.1.4 Diversity measures in different Forest types and Forest Ranges in Peechi Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Chimmini	MDF	Herb	4.5828	1.4716	0.103564	2.6474	28	14.1169	9.6558	0.7945	0.5042	0.4858	0.6840	0.6599
Chimmini	MDF	Shrub	0.5131	0.2150	0.572372	0.7602	4	2.1387	1.7471	0.5484	0.5347	0.3796	0.8169	0.6561
Chimmini	MDF	Tree	4.8650	1.5230	0.097232	2.6871	30	14.6895	10.2847	0.7901	0.4896	0.4721	0.7001	0.6782
Chimmini	SE	Herb	4.3468	1.3568	0.123117	2.4742	27	11.8721	8.1223	0.7507	0.4397	0.4182	0.6842	0.6551
Chimmini	SE	Shrub	0.5422	0.2515	0.620428	0.6548	4	1.9248	1.6118	0.4724	0.4812	0.3083	0.8374	0.6615
Chimmini	SE	Tree	5.0959	1.2452	0.119863	2.6207	35	13.7448	8.3428	0.7371	0.3927	0.3748	0.6070	0.5761
Peechi	EG	Herb	2.0665	1.2990	0.394504	1.2773	9	3.5869	2.5348	0.5813	0.3986	0.3234	0.7067	0.5933
Peechi	EG	Shrub	0.3789	0.5345	0.857143	0.2573	2	1.2935	1.1667	0.3712	0.6467	0.2935	0.9020	0.5679
Peechi	EG	Tree	2.8319	2.0412	0.141304	2.0010	10	7.3965	7.0769	0.8690	0.7397	0.7107	0.9568	0.9500
Peechi	MDF	Herb	4.5394	0.5004	0.253967	1.8734	41	6.5103	3.9375	0.5045	0.1588	0.1378	0.6048	0.5331
Peechi	MDF	Shrub	0.2579	0.0622	0.662531	0.5294	3	1.6979	1.5094	0.4819	0.5660	0.3490	0.8889	0.7298
Peechi	MDF	Tree	3.9619	0.5282	0.322095	1.7492	34	5.7501	3.1047	0.4960	0.1691	0.1439	0.5399	0.4431
Peechi	SE	Herb	2.6738	0.8532	0.328881	1.5353	17	4.6426	3.0406	0.5419	0.2731	0.2277	0.6549	0.5602

Peechi	SE	Shrub	0.2127	0.1907	0.879733	0.2369	2	1.2673	1.1367	0.3417	0.6336	0.2673	0.8970	0.5115
Peechi	SE	Tree	3.9830	1.3375	0.244732	1.9683	24	7.1585	4.0861	0.6193	0.2983	0.2678	0.5708	0.5011
Peechi	Teak	Herb	4.0535	0.6990	0.155830	2.1925	32	8.9579	6.4173	0.6326	0.2799	0.2567	0.7164	0.6807
Peechi	Teak	Shrub	0.2778	0.0820	0.538131	0.6802	3	1.9743	1.8583	0.6191	0.6581	0.4871	0.9413	0.8810

**Table 4.1.5 Diversity measures in different Forest types and Forest Ranges in Nenmara Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Alathur	MDF	Herb	0.2791	0.3333	0.796825	0.3488	2	1.4174	1.2550	0.5033	0.7087	0.4174	0.8854	0.6109
Alathur	MDF	Shrub	0.3001	0.3780	0.862434	0.2573	2	1.2935	1.1595	0.3712	0.6467	0.2935	0.8964	0.5435
Alathur	MDF	Tree	1.3839	1.1785	0.209150	1.4610	5	4.3101	4.7813	0.9078	0.8620	0.8275	1.1093	1.1423
Alathur	SE	Herb	0.0000	0.5000	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Alathur	SE	Shrub	0.0000	0.2500	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Alathur	SE	Tree	2.7960	2.0000	0.150000	1.9543	10	7.0590	6.6667	0.8487	0.7059	0.6732	0.9444	0.9352
Alathur	Teak	Herb	3.0544	0.8918	0.211654	2.0636	20	7.8744	4.7247	0.6889	0.3937	0.3618	0.6000	0.5418
Alathur	Teak	Shrub	0.1664	0.0991	0.942630	0.1329	2	1.1422	1.0609	0.1918	0.5711	0.1422	0.9288	0.4280
Kollengode	MDF	Herb	3.3253	1.6773	0.105250	2.4499	16	11.5870	9.5012	0.8836	0.7242	0.7058	0.8200	0.8030
Kollengode	MDF	Shrub	0.4604	0.3419	0.765550	0.4511	3	1.5701	1.3063	0.4106	0.5234	0.2850	0.8320	0.5372
Kollengode	MDF	Tree	2.5007	1.0406	0.310252	1.7917	14	5.9994	3.2232	0.6789	0.4285	0.3846	0.5373	0.4447
Kollengode	Teak	Herb	1.1335	0.4962	0.251358	1.5373	7	4.6522	3.9784	0.7900	0.6646	0.6087	0.8552	0.8155
Kollengode	Teak	Shrub												
Nelliyampathy	EG	Herb	2.3783	1.5076	0.260042	1.7007	10	5.4780	3.8455	0.7386	0.5478	0.4976	0.7020	0.6355
Nelliyampathy	EG	Shrub	0.0000	0.0603	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Nelliyampathy	EG	Tree	1.5798	0.8729	0.180436	1.8219	8	6.1837	5.5421	0.8762	0.7730	0.7405	0.8962	0.8762
Nelliyampathy	SE	Herb	2.9308	1.2381	0.178559	2.0433	16	7.7160	5.6004	0.7370	0.4823	0.4477	0.7258	0.6850
Nelliyampathy	SE	Shrub	0.1569	0.0827	0.993174	0.0228	2	1.0231	1.0069	0.0329	0.5115	0.0231	0.9841	0.2976
Nelliyampathy	SE	Tree	2.5934	0.8875	0.280152	1.6419	16	5.1652	3.5695	0.5922	0.3228	0.2777	0.6911	0.6169

**Table 4.1.6 Diversity measures in different Forest types and Forest Ranges in Palakkad Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Olavakkode	MDF	Herb	3.6019	0.8934	0.288604	1.9412	25	6.9672	3.4650	0.6031	0.2787	0.2486	0.4973	0.4131
Olavakkode	MDF	Shrub	0.1998	0.1638	0.897696	0.2092	2	1.2327	1.1140	0.3019	0.6164	0.2327	0.9036	0.4896
Olavakkode	MDF	Tree	4.2175	1.1402	0.180834	2.3457	28	10.4410	5.5299	0.7040	0.3729	0.3497	0.5296	0.4798
Olavakkode	Teak	Herb	2.0347	1.2603	0.185098	1.7965	9	6.0282	5.4025	0.8176	0.6698	0.6285	0.8962	0.8756
Olavakkode	Teak	Shrub	0.3338	0.4472	0.810526	0.3251	2	1.3841	1.2338	0.4690	0.6921	0.3841	0.8914	0.6085
Ottappalam	Acacia	Herb	1.1005	0.6189	0.580645	0.9205	6	2.5105	1.7222	0.5137	0.4184	0.3021	0.6860	0.4781
Ottappalam	Acacia	Shrub												
Ottappalam	Mixed	Herb	1.8636	0.7519	0.428371	1.3366	11	3.8059	2.3344	0.5574	0.3460	0.2806	0.6134	0.4756
Ottappalam	Mixed	Shrub	0.0000	0.2357	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Ottappalam	Teak	Herb	2.2032	0.8535	0.357367	1.4283	13	4.1715	2.7982	0.5568	0.3209	0.2643	0.6708	0.567
Ottappalam	Teak	Shrub	0.0000	0.2425	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Walayar	EG	Herb	0.9440	0.8165	0.413043	0.9647	4	2.6241	2.4211	0.6959	0.6560	0.5414	0.9226	0.8750
Walayar	EG	Shrub	0.0000	0.1240	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Walayar	EG	Tree	2.5969	1.7678	0.163306	1.9426	10	6.9767	6.1235	0.8437	0.6977	0.6641	0.8777	0.8572
Walayar	MDF	Herb	3.4411	1.2649	0.172916	2.1492	20	8.5776	5.7832	0.7174	0.4289	0.3988	0.6742	0.6312
Walayar	MDF	Shrub	0.1729	0.1109	0.857550	0.2712	2	1.3115	1.1661	0.3912	0.6558	0.3115	0.8891	0.5332
Walayar	MDF	Tree	2.9232	0.7756	0.284944	1.8549	20	6.3912	3.5095	0.6192	0.3196	0.2837	0.5491	0.4655
Walayar	SE	Herb	2.4045	1.3750	0.476190	1.3108	11	3.7092	2.1000	0.5466	0.3372	0.2709	0.5662	0.4060
Walayar	SE	Shrub	0.2004	0.1650	0.972975	0.0720	2	1.0746	1.0278	0.1038	0.5373	0.0746	0.9564	0.3722
Walayar	SE	Tree	2.7551	1.1822	0.268478	1.8478	15	6.3460	3.7247	0.6823	0.4231	0.3819	0.5869	0.5097

**Table 4.1.7 Diversity measures in different Forest types and Forest Ranges in Mannarkkad Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2		H'	N0	N1	N2	E1	E2	E3	E4	E5
Agali	DDF	Herb	3.3909	1.3368	0.204817	2.1799	19	8.8454	4.8824	0.7403	0.4655	0.4359	0.5520	0.4949
Agali	DDF	Shrub	0.0000	0.5774	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Agali	DDF	Tree	1.5586	0.5573	0.288868	1.5516	10	4.7192	3.4618	0.6739	0.4719	0.4132	0.7336	0.6619
Agali	MDF	Herb	2.9121	1.9757	0.221505	1.8506	11	6.3639	4.5146	0.7718	0.5785	0.5364	0.7094	0.6552
Agali	MDF	Shrub	0.0000	0.1768	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Agali	MDF	Tree	2.8415	1.7321	0.105496	2.2437	12	9.4282	9.4790	0.9029	0.7857	0.7662	1.0054	1.0060
Agali	SE	Herb	4.4669	2.2386	0.115987	2.4824	21	11.9700	8.6216	0.8154	0.5700	0.5485	0.7203	0.6948
Agali	SE	Shrub	0.0000	0.1667	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Agali	SE	Tree	4.5153	1.8798	0.086874	2.6444	24	14.0748	11.5109	0.8321	0.5864	0.5685	0.8178	0.8039
Attappady	EG	Herb	0.0000	0.5774	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Attappady	EG	Shrub												
Attappady	EG	Tree	1.7015	1.2005	0.176471	1.7217	7	5.5940	5.6667	0.8848	0.7991	0.7657	1.0130	1.0158
Attappady	MDF	Herb	3.5876	1.5462	0.120530	2.3922	19	10.9380	8.2967	0.8125	0.5757	0.5521	0.7585	0.7342
Attappady	MDF	Shrub	0.4362	0.3030	0.847044	0.3135	3	1.3682	1.1806	0.2854	0.4561	0.1841	0.8629	0.4904
Attappady	MDF	Tree	2.5990	0.8930	0.186507	2.1513	16	8.5958	5.3617	0.7759	0.5372	0.5064	0.6238	0.5742
Attappady	SE	Herb	1.4771	1.2910	0.180952	1.5066	5	4.5113	5.5263	0.9361	0.9023	0.8778	1.2250	1.2891
Attappady	SE	Shrub	0.0000	0.1857	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Attappady	SE	Tree	2.4924	1.6440	0.211712	1.7571	10	5.7958	4.7234	0.7631	0.5796	0.5329	0.8150	0.7764
Mannarkkad	Acacia	Herb	2.2586	0.7876	0.197971	1.8954	14	6.6553	5.0513	0.7182	0.4754	0.4350	0.7590	0.7164
Mannarkkad	Acacia	Shrub	0.4846	0.3810	0.637758	0.5923	3	1.8081	1.5680	0.5391	0.6027	0.4040	0.8672	0.7029
Mannarkkad	Cashew	Herb	2.5284	1.0706	0.189061	2.0492	14	7.7617	5.2893	0.7765	0.5544	0.5201	0.6815	0.6344
Mannarkkad	Cashew	Shrub	0.2484	0.2673	0.750649	0.4101	2	1.5070	1.3322	0.5917	0.7535	0.5070	0.8840	0.6552
Mannarkkad	EG	Herb	1.6981	1.3765	0.210526	1.5760	6	4.8357	4.7500	0.8796	0.8060	0.7671	0.9823	0.9777

Mannarkkad	EG	Shrub												
Mannarkkad	EG	Tree	1.8463	1.5492	0.161905	1.6397	6	5.1537	6.1765	0.9151	0.8589	0.8307	1.1985	1.2462
Mannarkkad	MDF	Herb	4.0132	1.7380	0.117147	2.4873	21	12.0284	8.5363	0.8170	0.5728	0.5514	0.7097	0.6834
Mannarkkad	MDF	Shrub	0.2423	0.2540	0.725013	0.4418	2	1.5555	1.3793	0.6374	0.7778	0.5555	0.8867	0.6828
Mannarkkad	MDF	Tree	4.0889	1.6873	0.135538	2.4395	22	11.4668	7.3780	0.7892	0.5212	0.4984	0.6434	0.6094
Mannarkkad	SE	Herb	1.2427	1.0000	0.376667	1.1407	5	3.1289	2.6549	0.7088	0.6258	0.5322	0.8485	0.7773
Mannarkkad	SE	Shrub	0.3899	0.5547	0.846154	0.2712	2	1.3115	1.1818	0.3912	0.6558	0.3115	0.9011	0.5836
Mannarkkad	SE	Tree	4.5124	2.5856	0.069881	2.6596	19	14.2911	14.3100	0.9033	0.7522	0.7384	1.0013	1.0014
Mannarkkad	Teak	Herb	1.4595	0.8963	0.278142	1.4844	7	4.4125	3.5953	0.7629	0.6304	0.5688	0.8148	0.7605
Mannarkkad	Teak	Shrub	0.7213	1.0000	0.500000	0.5623	2	1.7548	2.0000	0.8113	0.8774	0.7548	1.1398	1.3249

**Table 4.1.8 Diversity measures in different Forest types and Forest Ranges in Parambikulam Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Karimala	MDF	Herb	3.8231	1.6667	0.128205	2.4199	20	11.2452	7.8000	0.8078	0.5623	0.5392	0.6936	0.6637
Karimala	MDF	Shrub	0.3069	0.3922	0.590769	0.5825	2	1.7905	1.6927	0.8404	0.8952	0.7905	0.9454	0.8763
Karimala	MDF	Tree	2.4235	1.5617	0.132927	2.0755	10	7.9684	7.5229	0.9014	0.7968	0.7743	0.9441	0.9361
Karimala	SE	Herb	2.2668	1.3736	0.275762	1.6278	10	5.0925	3.6263	0.7069	0.5093	0.4547	0.7121	0.6417
Karimala	SE	Shrub	0.0000	0.3015	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Karimala	SE	Tree	2.3938	1.2060	0.181612	1.9347	12	6.9222	5.5062	0.7786	0.5769	0.5384	0.7954	0.7609
Orukomban	MDF	Herb	2.2599	1.0525	0.197973	1.8785	12	6.5435	5.0512	0.7560	0.5453	0.5040	0.7719	0.7308
Orukomban	MDF	Shrub												
Orukomban	MDF	Tree	3.2208	1.2857	0.114652	2.3981	18	11.0023	8.7220	0.8297	0.6112	0.5884	0.7927	0.7720
Parambikulam	MDF	Herb	2.6270	1.6398	0.240404	1.7322	11	5.6533	4.1597	0.7224	0.5139	0.4653	0.7358	0.6790
Parambikulam	MDF	Shrub												
Parambikulam	MDF	Tree	2.0581	1.4606	0.135632	1.8582	8	6.4123	7.3729	0.8936	0.8015	0.7732	1.1498	1.1775



Parambikulam	SE	Shrub	0.0000	0.2425	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Parambikulam	SE	Tree	2.7250	1.2888	0.113139	2.2845	14	9.8208	8.8387	0.8657	0.7015	0.6785	0.9000	0.8887
Parambikulam	SE	Tree	3.2331	1.4317	0.160790	2.2202	17	9.2094	6.2193	0.7836	0.5417	0.5131	0.6753	0.6358
Sungam	EG	Herb	2.5892	1.4343	0.144928	2.0792	12	7.9978	6.9000	0.8367	0.6665	0.6362	0.8627	0.8431
Sungam	EG	Shrub												
Sungam	EG	Tree	3.2295	1.8708	0.209091	2.0114	14	7.4736	4.7826	0.7622	0.5338	0.4980	0.6399	0.5843
Sungam	MDF	Herb	4.0565	1.4093	0.086267	2.6372	24	13.9738	11.5920	0.8298	0.5822	0.5641	0.8296	0.8164
Sungam	MDF	Shrub	0.2940	0.3651	0.813793	0.3251	2	1.3841	1.2288	0.4690	0.6921	0.3841	0.8878	0.5956
Sungam	MDF	Tree	3.5126	1.2185	0.197857	2.0063	21	7.4361	5.0542	0.6590	0.3541	0.3218	0.6797	0.6299
Sungam	Teak	Herb	0.9854	0.8729	0.257143	1.2912	4	3.6372	3.8889	0.9314	0.9093	0.8791	1.0692	1.0954
Sungam	Teak	Shrub												

**Table 4.1.9 Diversity measures in different Forest types and Forest Ranges in Nilambur North Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Edavanna	Bamboo	Herb	1.3554	0.9487	0.294872	1.3477	6	3.8487	3.3913	0.7522	0.6414	0.5697	0.8812	0.8394
Edavanna	Bamboo	Shrub	0.4343	0.6325	0.644444	0.5004	2	1.6494	1.5517	0.7219	0.8247	0.6494	0.9408	0.8496
Edavanna	EG	Herb	1.6743	1.6330	0.133333	1.3297	4	3.7798	7.5000	0.9591	0.9449	0.9266	1.9843	2.3383
Edavanna	EG	Shrub	0.0000	0.1325	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Edavanna	EG	Tree	2.0198	1.4142	0.235887	1.6006	8	4.9559	4.2393	0.7697	0.6195	0.5651	0.8554	0.8189
Edavanna	MDF	Herb	2.8054	1.2372	0.132606	2.2182	15	9.1905	7.5411	0.8191	0.6127	0.5850	0.8205	0.7986
Edavanna	MDF	Shrub	0.6446	0.3904	0.724542	0.5852	4	1.7954	1.3802	0.4222	0.4489	0.2651	0.7687	0.477953
Edavanna	MDF	Tree	3.1765	1.2392	0.130354	2.3635	18	10.6286	7.6714	0.8177	0.5905	0.5664	0.7218	0.6929
Nilambur	MDF	Herb	2.0153	1.0721	0.216787	1.7850	10	5.9594	4.6128	0.7752	0.5959	0.5510	0.7740	0.7285
Nilambur	MDF	Shrub	0.0000	0.1170	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Nilambur	MDF	Tree	3.1683	1.6465	0.101675	2.4000	15	11.0232	9.8353	0.8862	0.7349	0.7159	0.8922	0.8815

Nilambur	Mixed	Herb	3.2331	1.4317	0.082067	2.5603	17	12.9392	12.1852	0.9037	0.7611	0.7462	0.9417	0.9368
Nilambur	Mixed	Shrub	0.2191	0.2041	0.505482	0.6825	2	1.9788	1.9783	0.9846	0.9894	0.9788	0.9998	0.9995
Nilambur	SE	Herb	1.5302	0.8123	0.289948	1.4593	8	4.3028	3.4489	0.7018	0.5379	0.4718	0.8015	0.7415
Nilambur	SE	Shrub	0.2473	0.2649	0.867168	0.2541	2	1.2893	1.1532	0.3666	0.6446	0.2893	0.8944	0.5295
Nilambur	SE	Tree	3.3588	1.7154	0.100508	2.4385	16	11.4563	9.9495	0.8795	0.7160	0.6971	0.8685	0.8559
Nilambur	Teak	Herb	2.8345	0.7006	0.184314	2.0701	20	7.9252	5.4255	0.6910	0.3963	0.3645	0.6846	0.6390
Nilambur	Teak	Shrub	0.1922	0.1483	0.544836	0.6450	2	1.9061	1.8354	0.9306	0.9530	0.9061	0.9629	0.9220
Vazhikkadavu	EG	Herb	1.8186	0.8422	0.286120	1.5628	10	4.7723	3.4950	0.6787	0.4772	0.4191	0.7324	0.6614
Vazhikkadavu	EG	Shrub												
Vazhikkadavu	EG	Tree	2.3013	0.8307	0.322077	1.4882	14	4.4293	3.1048	0.5639	0.3164	0.2638	0.7010	0.6138
Vazhikkadavu	MDF	Herb	3.5831	1.1743	0.261490	1.9601	22	7.1001	3.8242	0.6341	0.3227	0.2905	0.5386	0.4630
Vazhikkadavu	MDF	Shrub	0.4178	0.2739	0.383754	1.0114	3	2.7495	2.6058	0.9206	0.9165	0.8747	0.9478	0.9179
Vazhikkadavu	MDF	Tree	2.7313	0.9087	0.203995	2.0826	17	8.0253	4.9021	0.7351	0.4721	0.4391	0.6108	0.5554
Vazhikkadavu	SE	Herb	1.2511	1.2060	0.200000	1.3421	4	3.8271	5.0000	0.9681	0.9568	0.9424	1.3065	1.4149
Vazhikkadavu	SE	Shrub												
Vazhikkadavu	SE	Tree	2.1747	1.6000	0.160000	1.8112	8	6.1178	6.2500	0.8710	0.7647	0.7311	1.0216	1.0258
Vazhikkadavu	Teak	Herb	3.1106	0.8434	0.307395	1.5832	21	4.8704	3.2531	0.5200	0.2319	0.1935	0.6679	0.5821
Vazhikkadavu	Teak	Shrub	0.3315	0.1469	0.798538	0.4105	3	1.5075	1.2523	0.3736	0.5025	0.2538	0.8307	0.4971

**Table 4.1.10 Diversity measures in different Forest types and Forest Ranges in Nilambur South Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Kalikavu	Acacia	Herb	1.7567	0.9234	0.460246	1.2188	9	3.3830	2.1727	0.5547	0.3759	0.2979	0.6423	0.4921
Kalikavu	Acacia	Shrub	0.0000	0.1741	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kalikavu	EG	Herb												
Kalikavu	EG	Shrub												
Kalikavu	EG	Tree	1.0278	1.1339	0.238095	1.0790	3	2.9417	4.2000	0.9821	0.9806	0.9709	1.4277	1.6480

Kalikavu	MDF	Herb	1.6157	1.0932	0.415854	1.2628	7	3.5352	2.4047	0.6489	0.5050	0.4225	0.6802	0.5541
Kalikavu	MDF	Shrub	0.0000	0.1857	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kalikavu	MDF	Tree	2.1016	1.3416	0.254545	1.6849	9	5.3918	3.9286	0.7668	0.5991	0.5490	0.7286	0.6668
Karulai	Bamboo	Herb												
Karulai	Bamboo	Shrub												
Karulai	EG	Herb	1.6053	1.0801	0.456446	1.1737	7	3.2339	2.1908	0.6032	0.4620	0.3723	0.6775	0.5331
Karulai	EG	Shrub	0.3460	0.4714	0.529412	0.6365	2	1.8899	1.8889	0.9183	0.9449	0.8899	0.9995	0.9989
Karulai	EG	Tree	0.8312	0.4508	0.538718	0.8202	5	2.2710	1.8563	0.5096	0.4542	0.3178	0.8174	0.6737
Karulai	MDF	Herb	3.6328	1.2222	0.254443	2.0752	22	7.9664	3.9301	0.6714	0.3621	0.3317	0.4933	0.4206
Karulai	MDF	Shrub	0.4178	0.2739	0.918908	0.1941	3	1.2142	1.0882	0.1766	0.4047	0.1071	0.8963	0.4121
Karulai	MDF	Tree	3.5707	1.0564	0.140784	2.3459	23	10.4427	7.1031	0.7482	0.4540	0.4292	0.6802	0.6463
Karulai	SE	Herb	3.8307	1.3021	0.141211	2.3696	23	10.69259	7.0816	0.7557	0.4649	0.4406	0.6623	0.6274
Karulai	SE	Shrub	0.5498	0.4867	0.537696	0.7914	3	2.2065	1.8598	0.7204	0.7355	0.6033	0.8429	0.7126
Karulai	SE	Tree	3.9153	1.0677	0.232704	2.0604	26	7.8487	4.2973	0.6324	0.3019	0.2740	0.5475	0.4814
Karulai	Teak	Herb	3.6816	0.7904	0.118372	2.4145	27	11.1839	8.4479	0.7326	0.4142	0.3917	0.7554	0.7313
Karulai	Teak	Shrub	0.136646	0.1369	0.860155	0.2957	3	1.3441	1.1626	0.2692	0.4480	0.1720	0.8650	0.4725

**Table 4.1.11 Diversity measures in different Forest types and Forest Ranges in Kozhikode Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Thamarassery	EG	Herb	2.0759	0.7222	0.4026	1.3581	13.0000	3.8889	2.4839	0.5295	0.2991	0.2407	0.6387	0.5137
Thamarassery	SE	Herb	0.9588	0.4423	0.5823	0.8662	6.0000	2.3779	1.7174	0.4834	0.3963	0.2756	0.7223	0.5207
Thamarassery	MDF	Herb	1.5357	0.6653	0.3124	1.4869	9.0000	4.4236	3.2007	0.6767	0.4915	0.4279	0.7235	0.6428
Thamarassery	EG	Shrub	0.5075	0.2082	0.7866	0.4578	4.0000	1.5806	1.2713	0.3302	0.3951	0.1935	0.8043	0.4673
Thamarassery	SE	Shrub	0.3663	0.1957	0.9097	0.2112	3.0000	1.2352	1.0992	0.1922	0.4117	0.1176	0.8899	0.4219

Thamarassery	MDF	Shrub	0.3649	0.1936	0.9115	0.2078	3.0000	1.2310	1.0970	0.1891	0.4103	0.1155	0.8912	0.4202
Thamarassery	EG	Tree	3.0062	0.7543	0.2664	1.9128	21.0000	6.7719	3.7535	0.6283	0.3225	0.2886	0.5543	0.4771
Thamarassery	SE	Tree	3.4825	1.1889	0.2170	1.8538	21.0000	6.3840	4.6078	0.6089	0.3040	0.2692	0.7218	0.6701
Thamarassery	MDF	Tree	2.8794	1.1828	0.2200	1.9394	16.0000	6.9546	4.5450	0.6995	0.4347	0.3970	0.6535	0.5953
Kuttiyadi	MDF	Herb	2.0480	0.9574	0.2475	1.6565	11.0000	5.2411	4.0402	0.6908	0.4765	0.4241	0.7709	0.7168
Kuttiyadi	SE	Herb	1.2399	0.4756	0.6441	0.8574	8.0000	2.3571	1.5525	0.4123	0.2946	0.1939	0.6586	0.4071
Kuttiyadi	EG	Herb	0.0000	0.2236	1.0000	0.0000	1.0000	1.0000	1.0000		1.0000		1.0000	
Kuttiyadi	Mixed	Herb	0.3396	0.4588	0.6491	0.5147	2.0000	1.6731	1.5405	0.7425	0.8365	0.6731	0.9208	0.8031
Kuttiyadi	MDF	Shrub	0.4008	0.2474	0.7615	0.4247	3.0000	1.5292	1.3131	0.3866	0.5097	0.2646	0.8587	0.5917
Kuttiyadi	SE	Shrub	0.1701	0.1059	0.9393	0.0807	2.0000	1.0840	1.0646	0.1164	0.5420	0.0840	0.9821	0.7689
Kuttiyadi	EG	Shrub	0.3607	0.5000	0.8750	0.2338	2.0000	1.2634	1.1429	0.3373	0.6317	0.2634	0.9046	0.5424
Kuttiyadi	Mixed	Shrub	0.5581	0.8165	0.4667	0.6365	2.0000	1.8899	2.1429	0.9183	0.9449	0.8899	1.1339	1.2843
Kuttiyadi	MDF	Tree	1.8928	0.7837	0.2892	1.5680	11.0000	4.7969	3.4574	0.6539	0.4361	0.3797	0.7208	0.6472
Kuttiyadi	SE	Tree	2.3589	0.7715	0.1773	2.0086	15.0000	7.4530	5.6389	0.7417	0.4969	0.4609	0.7566	0.7189
Kuttiyadi	EG	Tree	0.8909	0.7428	0.4901	0.9603	4.0000	2.6125	2.0402	0.6927	0.6531	0.5375	0.7809	0.6451
Peruvannamuzhi	MDF	Herb	2.5838	1.2748	0.1286	2.2610	13.0000	9.5924	7.7736	0.8815	0.7379	0.7160	0.8104	0.7883
Peruvannamuzhi	SE	Herb	1.3892	0.3919	0.8592	0.3886	10.0000	1.4749	1.1638	0.1688	0.1475	0.0528	0.7891	0.3450
Peruvannamuzhi	EG	Herb	0.2463	0.2626	0.9002	0.2036	2.0000	1.2258	1.1109	0.2937	0.6129	0.2258	0.9063	0.4912
Peruvannamuzhi	Teak	Herb	1.8519	0.8805	0.3594	1.4258	10.0000	4.1611	2.7826	0.6192	0.4161	0.3512	0.6687	0.5639
Peruvannamuzhi	MDF	Shrub	0.4539	0.3313	0.7967	0.4159	3.0000	1.5157	1.2551	0.3785	0.5052	0.2578	0.8281	0.4947
Peruvannamuzhi	SE	Shrub	0.4498	0.1425	0.8423	0.3680	4.0000	1.4449	1.1872	0.2655	0.3612	0.1483	0.8216	0.4207
Peruvannamuzhi	EG	Shrub	0.1902	0.1443	0.9896	0.0326	2.0000	1.0331	1.0105	0.0470	0.5166	0.0331	0.9781	0.3179
Peruvannamuzhi	Teak	Shrub	0.0000	0.1644	1.0000	0.0000	1.0000	1.0000	1.0000		1.0000		1.0000	
Peruvannamuzhi	MDF	Tree	2.6113	1.0278	0.1462	2.1209	15.0000	8.3386	6.8418	0.7832	0.5559	0.5242	0.8205	0.7960
Peruvannamuzhi	SE	Tree	3.2387	0.6888	0.1748	2.2040	24.0000	9.0614	5.7201	0.6935	0.3776	0.3505	0.6313	0.5855
Peruvannamuzhi	EG	Tree	2.3538	1.3148	0.1263	2.1464	11.0000	8.5541	7.9180	0.8951	0.7776	0.7554	0.9256	0.9158

**Table 4.1.12 Diversity measures in different Forest types and Forest Ranges in Wayanad South Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H' *	N0	N1	N2	E1	E2	E3	E4	E5
Chedleth	MDF	Herb	1.1793	0.5500	0.271222	1.5324	7	4.6293	3.6870	0.7875	0.6613	0.6049	0.7964	0.7404
Chedleth	MDF	Shrub	0.5987	0.3266	0.614049	0.6884	4	1.9906	1.6285	0.4966	0.4977	0.3302	0.8181	0.6345
Chedleth	MDF	Tree	2.9377	0.9969	0.130684	2.3016	18	9.9901	7.6520	0.7963	0.5550	0.5288	0.7660	0.7399
Chedleth	Teak	Herb	0.7420	0.5298	0.496867	0.9510	4	2.5883	2.0126	0.6860	0.6471	0.5294	0.7776	0.6375
Chedleth	Teak	Shrub	0.2836	0.3430	0.941176	0.1327	2	1.1419	1.0625	0.1914	0.5709	0.1419	0.9305	0.4405
Kalpetta	Eucalyptus	Herb	1.3554	0.9487	0.203846	1.6276	6	5.0917	4.9057	0.9084	0.8486	0.8183	0.9635	0.9545
Kalpetta	Eucalyptus	Shrub	0.3034	0.3849	0.487179	0.6870	2	1.9877	2.0526	0.9911	0.9938	0.9877	1.0327	1.0658
Kalpetta	Grassland	Herb	1.0379	0.9428	0.366013	1.0871	4	2.9656	2.7321	0.7842	0.7414	0.6552	0.9213	0.8812
Kalpetta	Grassland	Shrub	0.4343	0.6325	0.533333	0.6109	2	1.8420	1.8750	0.8813	0.9210	0.8420	1.0179	1.0392
Kalpetta	SE	Herb	1.3692	0.7826	0.553481	0.9981	7	2.7131	1.8067	0.5129	0.3876	0.2855	0.6659	0.4709
Kalpetta	SE	Shrub	0.0000	0.0705	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kalpetta	SE	Tree	2.2782	1.0733	0.149548	2.1060	12	8.2152	6.6868	0.8475	0.6846	0.6559	0.8140	0.7882
Kalpetta	Shola	Herb	0.3189	0.4170	0.762846	0.3872	2	1.4729	1.3109	0.5586	0.7364	0.4729	0.8900	0.6574
Kalpetta	Shola	Shrub	0.2940	0.3651	0.813793	0.3251	2	1.3841	1.2288	0.4690	0.6921	0.3841	0.8878	0.5956
Kalpetta	Shola	Tree	1.0075	0.6868	0.343977	1.2278	5	3.4137	2.9072	0.7629	0.6827	0.6034	0.8516	0.7901
Meppady	EG	Herb	0.0000	0.1443	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Meppady	EG	Shrub	0.0000	0.1213	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Meppady	EG	Tree	1.4065	0.6644	0.256609	1.6074	8	4.9899	3.8970	0.7730	0.6237	0.5700	0.7810	0.7261
Meppady	Grassland	Herb	0.4343	0.6325	0.644444	0.5004	2	1.6494	1.5517	0.7219	0.8247	0.6494	0.9408	0.8496
Meppady	Grassland	Shrub	0.5139	0.7559	0.523810	0.5983	2	1.8190	1.9091	0.8631	0.9095	0.8190	1.0495	1.1100
Meppady	Savanah	Herb	2.0020	1.3926	0.160985	1.8415	8	6.3059	6.2118	0.8856	0.7882	0.7580	0.9851	0.982263
Meppady	Savanah	Shrub	0.6213	0.8944	0.600000	0.5004	2	1.6494	1.6667	0.7219	0.8247	0.6494	1.0105	1.0266
Meppady	Savanah	Tree	0.9705	0.8528	0.666667	0.6632	4	1.9410	1.5000	0.4784	0.4852	0.3137	0.7728	0.5314
Meppady	SE	Herb	1.0028	0.6804	0.371768	1.2276	5	3.4129	2.6899	0.7627	0.6826	0.6032	0.7881	0.7003
Meppady	SE	Shrub	0.0000	0.1195	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Meppady	SE	Tree	1.4427	0.7071	0.326526	1.3534	8	3.8704	3.0625	0.6508	0.4838	0.4101	0.7913	0.7186

**Table 4.1.14 Diversity measures in different Forest types and Forest Ranges in Wayanad WLS Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Aralam	EG	Herb	0.2836	0.3430	0.885918	0.2237	2	1.2507	1.1288	0.3228	0.6254	0.2507	0.9025	0.5136
Aralam	EG	Tree	0.8312	0.4508	0.354125	1.1402	5	3.1274	2.8239	0.7084	0.6255	0.5319	0.9029	0.8573
Aralam	MDF	Herb	0.7494	0.3467	0.305927	1.2863	5	3.6193	3.2688	0.7992	0.7239	0.6548	0.9031	0.8662
Aralam	MDF	Shrub	0.2251	0.2169	0.953501	0.1115	2	1.1179	1.0488	0.1608	0.5590	0.1179	0.9381	0.4135
Aralam	MDF	Tree	2.9361	0.9954	0.140635	2.2373	18	9.3677	7.1106	0.7740	0.5204	0.4922	0.7591	0.7303
Kurichiyath	DDF	Herb	1.6604	0.6652	0.285664	1.5344	10	4.6385	3.5006	0.6664	0.4638	0.4043	0.7547	0.6873
Kurichiyath	DDF	Shrub	0.2354	0.2390	0.573913	0.6109	2	1.8420	1.7424	0.8813	0.9210	0.8420	0.9459	0.8817
Kurichiyath	DDF	Tree	1.8640	0.8944	0.204387	1.8206	10	6.1757	4.8927	0.7907	0.6176	0.5751	0.7922	0.7521
Kurichiyath	MDF	Herb	0.2659	0.3050	0.488372	0.6929	2	1.9995	2.0476	0.9996	0.9997	0.9995	1.0241	1.0482
Kurichiyath	MDF	Shrub	0.0000	0.2582	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kurichiyath	SE	Herb	2.1556	0.6864	0.345911	1.3681	14	3.9281	2.8909	0.5184	0.2806	0.2252	0.7360	0.6458
Kurichiyath	SE	Shrub	0.1782	0.1208	0.576134	0.6133	2	1.8465	1.7357	0.8848	0.9233	0.8465	0.9400	0.8691
Kurichiyath	SE	Tree	2.9448	1.2532	0.104446	2.4019	16	11.0442	9.5743	0.8663	0.6903	0.6696	0.8669	0.8537
Kurichiyath	Teak	Herb	1.9996	0.5425	0.286604	1.5715	14	4.8138	3.4891	0.5955	0.3438	0.2934	0.7248	0.6527
Kurichiyath	Teak	Shrub	0.4215	0.2798	0.562777	0.6812	3	1.976179	1.7769	0.6200	0.6587	0.4881	0.8992	0.7959
Muthanga	Eucalyptus	Herb	1.7334	0.8955	0.229505	1.7594	9	5.8087	4.3572	0.8007	0.6454	0.6011	0.7501	0.6981
Muthanga	Eucalyptus	Shrub	0.3607	0.5000	0.875000	0.2338	2	1.2634	1.1429	0.3373	0.6317	0.2634	0.9046	0.5424
Muthanga	MDF	Herb	1.3124	0.4271	0.431843	1.0451	9	2.8435	2.3157	0.4756	0.3160	0.2304	0.8144	0.7137
Muthanga	MDF	Shrub	0.2378	0.2443	0.886024	0.2261	2	1.253756	1.1286	0.3263	0.6269	0.2538	0.9002	0.5069
Muthanga	MDF	Tree	2.3236	0.8536	0.394857	1.4744	14	4.3682	2.5326	0.5587	0.3120	0.2591	0.5798	0.45501
Muthanga	Teak	Herb	1.9675	0.7330	0.340936	1.5100	12	4.5266	2.9331	0.6077	0.3772	0.3206	0.6480	0.5482
Muthanga	Teak	Shrub	0.6676	0.6708	0.721053	0.5182	3	1.6790	1.3869	0.4717	0.5597	0.3395	0.8260	0.5698
S. Bathery	DDF	Herb	1.0811	0.5941	0.417201	1.0871	6	2.9657	2.3969	0.6067	0.4943	0.3931	0.8082	0.7107
S. Bathery	DDF	Shrub	0.2860	0.3482	0.882576	0.2286	2	1.2569	1.1330	0.3298	0.6284	0.2569	0.9015	0.5179
S. Bathery	DDF	Tree	1.6708	0.9847	0.372494	1.3903	8	4.0159	2.6846	0.6686	0.5020	0.4308	0.6685	0.5586

S. Bathery	MDF	Herb	1.6820	0.5628	0.400599	1.3907	11	4.0177	2.4963	0.5800	0.3653	0.3018	0.6213	0.4958
S. Bathery	MDF	Shrub	0.3775	0.2121	0.468693	0.8561	3	2.3540	2.1336	0.7793	0.7847	0.6770	0.9064	0.8372
S. Bathery	MDF	Tree	2.4653	1.1402	0.123435	2.2354	13	9.3504	8.1014	0.8715	0.7193	0.6959	0.8664	0.8504
S. Bathery	Teak	Shrub	0.4170	0.2727	0.433884	0.9361	3	2.5500	2.3048	0.8521	0.8500	0.7750	0.9038	0.8418
S. Bathery	Teak	Herb	0.8548	0.3221	0.442655	1.0183	6	2.7684	2.2591	0.5683	0.4614	0.3537	0.8160	0.7120
Tholpetty	Eucalyptus	Herb	0.2543	0.2801	0.523137	0.6603	2	1.9354	1.9115	0.9526	0.9677	0.9354	0.9877	0.9745
Tholpetty	Eucalyptus	Shrub	0.6213	0.8944	0.600000	0.5004	2	1.6494	1.6667	0.7219	0.8247	0.6494	1.0105	1.0266
Tholpetty	MDF	Herb	2.0293	0.6758	0.218414	1.7566	13	5.7925	4.5785	0.6848	0.4456	0.3994	0.7904	0.7467
Tholpetty	MDF	Shrub	0.2009	0.1661	0.986207	0.0412	2	1.0421	1.0140	0.0594	0.5210	0.0421	0.9731	0.3325
Tholpetty	MDF	Tree	2.1749	0.8238	0.160092	2.0647	13	7.8831	6.2464	0.8050	0.6064	0.5736	0.7924	0.7622
Tholpetty	Teak	Herb	1.9197	0.6838	0.399277	1.2103	12	3.3545	2.5045	0.4871	0.2795	0.2140	0.7466	0.6390
Tholpetty	Teak	Shrub	0.2309	0.2294	0.973684	0.0701	2	1.0726	1.0270	0.1011	0.5363	0.0726	0.9575	0.3724

**Table 4.1.15 Diversity measures in different Forest Types in Kannur Division**

Range	Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
			R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Kanjangad	Cashew	Herb	0.8078	0.6247	0.386585	1.0957	4	2.9912	2.5868	0.7904	0.7478	0.6637	0.8648	0.7969
Kanjangad	Cashew	Shrub	0.0000	0.2182	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kanjangad	EG	Herb	0.0000	0.1601	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kanjangad	EG	Shrub	0.0000	0.1231	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kanjangad	EG	Tree	1.3847	0.9864	0.291291	1.3569	6	3.8841	3.4330	0.7573	0.6474	0.5768	0.8838	0.8436
Kanjangad	Grassland	Herb	0.5728	0.5222	0.678030	0.5899	3	1.8038	1.4749	0.5369	0.6013	0.4019	0.8177	0.5908
Kanjangad	MDF	Herb	1.0875	0.4436	0.347778	1.3782	7	3.9678	2.8754	0.7083	0.5668	0.4946	0.7247	0.6319
Kanjangad	MDF	Shrub	0.0000	0.0752	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kanjangad	MDF	Tree	3.0728	1.0156	0.195563	1.9560	19	7.0712	5.1134	0.6643	0.3722	0.3373	0.7231	0.6775
Kanjangad	SE	Herb	1.0980	0.6156	0.472564	0.9631	6	2.6199	2.1161	0.5375	0.4366	0.3240	0.8077	0.6890
Kanjangad	SE	Shrub	0.1896	0.1432	0.949775	0.1192	2	1.1266	1.0529	0.1720	0.5633	0.1266	0.9345	0.4175



Kanjangad	SE	Tree	3.1724	1.3655	0.154001	2.1642	17	8.7076	6.4935	0.7639	0.5122	0.4817	0.7457	0.7127
Kannavam	EG	Herb	0.3966	0.2410	0.877168	0.2715	3	1.3119	1.1400	0.2471	0.4373	0.1560	0.8690	0.44892
Kannavam	EG	Shrub	0.0000	0.0472	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kannavam	EG	Tree	2.0377	0.6842	0.317836	1.3536	13	3.8713	3.1463	0.5277	0.2978	0.2393	0.8127	0.7475
Kannavam	Mahagony	Herb	0.7750	0.5774	0.768617	0.4852	4	1.6245	1.3010	0.3500	0.4061	0.2082	0.8009	0.4820
Kannavam	Mahagony	Shrub	0.4024	0.5774	0.515152	0.6365	2	1.8899	1.9412	0.9183	0.9449	0.8899	1.0271	1.0576
Kannavam	MDF.	Herb	3.0806	0.8174	0.211579	1.9714	21	7.1807	4.7264	0.6475	0.3419	0.3090	0.6582	0.6029
Kannavam	MDF	Shrub	0.4514	0.1442	0.509152	0.7331	4	2.0816	1.9641	0.5288	0.5204	0.3605	0.9435	0.8913
Kannavam	MDF	Tree	3.5639	0.9524	0.202111	2.0900	24	8.0849	4.9478	0.6576	0.3369	0.3080	0.6120	0.5572
Kannavam	Mixed	Herb	2.1028	0.8775	0.293255	1.6717	12	5.3214	3.4100	0.6728	0.4434	0.3929	0.6408	0.5577
Kannavam	Mixed	Shrub	0.4215	0.2798	0.468192	0.8901	3	2.4355	2.1359	0.8102	0.8118	0.7177	0.8770	0.7913
Kannavam	SE	Herb	0.4551	0.3333	0.858642	0.3112	3	1.3651	1.1646	0.2833	0.4550	0.1825	0.8532	0.4510
Kannavam	SE	Shrub	0.3737	0.2065	0.971745	0.0836	3	1.0872	1.0291	0.0761	0.3624	0.0436	0.9465	0.3333
Kannavam	SE	Tree	2.2493	1.0405	0.467305	1.2393	12	3.4533	2.1399	0.4987	0.2878	0.2230	0.6197	0.4646
Kannavam	Teak	Herb	0.8372	0.6667	0.655556	0.6784	4	1.9708	1.5254	0.4894	0.4927	0.3236	0.7740	0.5412
Kannavam	Teak	Shrub	0.0000	0.1667	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kasaragod	Acacia	Herb	1.3839	1.1785	0.209150	1.4610	5	4.3101	4.7813	0.907752	0.8620	0.8275	1.1093	1.1423
Kasaragod	Acacia	Shrub	0.0000	0.3333	1.000000	0	1	1.0000	1.0000		1.0000		1.0000	
Kasaragod	Cashew	Herb	0.4053	0.2545	0.565843	0.7218	3	2.0581	1.7673	0.6570	0.6860	0.5291	0.8587	0.7251
Kasaragod	Cashew	Shrub	0.2970	0.3714	0.931034	0.1500	2	1.1618	1.0741	0.2164	0.5809	0.1618	0.9245	0.4577
Kasaragod	Cinnamomum	Herb	0.4551	0.6667	0.611111	0.5297	2	1.6984	1.6364	0.7642	0.8492	0.6984	0.9635	0.9111
Kasaragod	Cinnamomum	Shrub	0.0000	0.3333	1.000000	0	1	1.0000	1.0000		1.0000		1.0000	
Kasaragod	Mahagony	Herb	0.7213	1.0000	0.500000	0.5623	2	1.7548	0.8113	0.8774	0.7548	1.1398	1.3249	
Kasaragod	Mahagony	Shrub	0.0000	0.4472	1.000000	0	1	1.0000	1.0000		1.0000		1.0000	
Kasaragod	MDF	Herb	1.6743	0.6804	0.351206	1.3919	10	4.0225	2.8473	0.6045	0.4023	0.3358	0.7079	0.6112
Kasaragod	MDF	Shrub	0.4334	0.2985	0.798020	0.4193	3	1.5209	1.2531	0.3816	0.5070	0.2604	0.8239	0.4859
Kasaragod	MDF	Tree	3.2956	1.1198	0.174523	2.1624	20	8.6916	5.7299	0.7218	0.4346	0.4048	0.6592	0.6149



Kasaragod.	Mixed	Herb	0.6771	0.4364	0.419105	0.9701	4	2.6383	2.3860	0.6998	0.6596	0.5461	0.9044	0.8460
Kasaragod	Mixed	Shrub	0.2940	0.3651	0.760920	0.3927	2	1.4809	1.3142	0.5665	0.7405	0.4809	0.8874	0.6533
Kasaragod	SE	Herb	0.8078	0.6247	0.589024	0.7745	4	2.1696	1.6977	0.5587	0.5424	0.3899	0.7825	0.5965
Kasaragod	SE	Shrub	0.3001	0.3780	0.801587	0.3405	2	1.4057	1.2475	0.4912	0.7028	0.4057	0.8875	0.6102
Kasaragod	SE	Tree	2.4269	1.2443	0.203834	1.8289	12	6.2268	4.9060	0.7360	0.5189	0.4752	0.7879	0.7473
Kasaragod	Teak	Herb	1.2163	0.7682	0.259016	1.4228	6	4.1486	3.8608	0.7941	0.6914	0.6297	0.9306	0.9086
Kasaragod	Teak	Shrub	0.3189	0.4170	0.833992	0.2954	2	1.3437	1.1991	0.4262	0.6719	0.3437	0.8923	0.5791
Kottiyur	MDF	Herb	2.4269	1.2443	0.158719	2.0089	12	7.4548	6.3004	0.8084	0.6212	0.5868	0.8452	0.8212
Kottiyur	MDF	Shrub	0.7797	0.8321	0.346154	1.0101	3	2.7459	2.8889	0.9194	0.9153	0.8729	1.0521	1.0819
Kottiyur	MDF	Tree	1.8283	1.1795	0.232850	1.6422	8	5.1668	4.2946	0.7898	0.6458	0.5953	0.8312	0.7907
Kottiyur	Mixed	Herb	1.1368	0.5000	0.666667	0.7494	7	2.11577	1.5000	0.3851	0.3023	0.1860	0.7090	0.4481
Kottiyur	Mixed	Shrub	0.0000	0.0779	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Kottiyur	SE	Herb	1.9309	0.5814	0.562188	1.0484	13	2.8530	1.7788	0.4087	0.2195	0.1544	0.6235	0.4203
Kottiyur	SE	Shrub	0.2994	0.1063	0.987481	0.0423	3	1.0432	1.0127	0.0385	0.3477	0.0216	0.9707	0.2931
Kottiyur	SE	Tree	2.7636	0.7319	0.263773	1.7977	19	6.0358	3.7911	0.6105	0.3177	0.2798	0.6281	0.5543
Kottiyur	Teak	Herb	0.7385	0.7746	0.438095	0.8532	3	2.3472	2.2826	0.7767	0.7824	0.6736	0.9725	0.9520
Taliparamba	Acacia	Herb	0.0000	0.2887	1.000000	0	1	1.0000	1.		1.0000		1.0000	
Taliparamba	Acacia	Shrub	0.9102	1.1547	0.333333	0.6365	2	1.8899	3.0000	0.9183	0.9449	0.8899	1.5874	2.2475
Taliparamba	Cashew	Herb	0.0000	0.1925	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Taliparamba	Cashew	Shrub	0.0000	0.3162	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Taliparamba	EG	Herb	0.8934	0.5330	0.680512	0.6634	5	1.9413	1.4695	0.4122	0.3883	0.2353	0.7569	0.4987
Taliparamba	EG	Shrub	0.2387	0.2462	0.940326	0.1358	2	1.1454	1.0635	0.1959	0.5727	0.1454	0.9284	0.43632
Taliparamba	EG	Tree	2.1929	0.8427	0.25866	1.6936	13	5.4392	3.8661	0.6603	0.4184	0.3699	0.7108	0.6456
Taliparamba	Grassland	Herb	0.4809	0.7071	0.464286	0.6616	2	1.9378	2.1538	0.9544	0.9689	0.9378	1.1115	1.2304
Taliparamba	MDF	Herb	0.3147	0.4082	0.608696	0.5623	2	1.7548	1.6429	0.8113	0.8774	0.7548	0.9362	0.8517
Taliparamba	MDF	Shrub	0.3460	0.4714	0.790850	0.3488	2	1.4174	1.2645	0.5033	0.7087	0.4174	0.8921	0.6336
Taliparamba	MDF	Tree	1.4063	1.0142	0.337815	1.3152	6	3.7253	2.9602	0.7340	0.6209	0.5451	0.7946	0.7193

**Table 4.2.1 Diversity measures in different Forest Types in Thrissur Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Acacia	Herb	1.0771	0.7809	0.262195	1.4176	5	4.1274	3.8140	0.8808	0.8255	0.7818	0.9241	0.8998
Acacia	Shrub	0.0000	0.4082	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Cashew	Herb	3.5688	0.8662	0.136009	2.2844	25	9.8195	7.3524	0.7097	0.3928	0.3675	0.7488	0.7203
Cashew	Shrub	0.2836	0.3430	0.549020	0.6295	2	1.8767	1.8214	0.9082	0.9383	0.8767	0.9706	0.9370
Eucalyptus	Herb	3.0449	0.6996	0.263831	1.8022	22	6.0628	3.7903	0.5830	0.2756	0.2411	0.6252	0.5511
Eucalyptus	Shrub	0.2054	0.1754	0.843888	0.2899	2	1.3363	1.1850	0.4182	0.6681	0.3363	0.8868	0.5501
MDF	Herb	6.4337	0.9315	0.121271	2.5737	53	13.1147	8.2460	0.6482	0.2474	0.2330	0.6288	0.5981
MDF	Shrub	0.2604	0.0644	0.714345	0.4693	3	1.5989	1.3999	0.4272	0.5330	0.2995	0.8755	0.6677
MDF	Tree	5.6529	0.7513	5.652882	0.7513	48	10.2115	4.7851	0.6002	0.2127	0.1960	0.4686	0.4109
Mixed	Herb	2.4574	0.8689	0.189253	1.9790	15	7.2354	5.2839	0.7308	0.4824	0.4454	0.7303	0.6870
Mixed	Shrub	0.2048	0.1741	0.833449	0.3046	2	1.3561	1.1998	0.4395	0.6781	0.3561	0.8847	0.5611
Teak	Herb	2.8983	0.8514	0.141144	2.2057	19	9.0768	7.0850	0.7491	0.4777	0.4487	0.7806	0.7534
Teak	Shrub	0.1938	0.1516	0.637698	0.5460	2	1.7263	1.5681	0.7877	0.8632	0.7263	0.9084	0.7822
SE	Herb	0.4024	0.5774	0.696970	0.4506	2	1.5692	1.4348	0.6500	0.7846	0.5692	0.9143	0.7639
SE	Shrub	0.0000	0.3536	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
SE	Tree	3.3011	2.2678	0.121693	2.1536	12	8.6159	8.2174	0.8667	0.7180	0.6924	0.9537	0.9477

**Table 4.2.2 Diversity measures in different Forest Types in Chalakkudy Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Cashew	Herb	1.6423	1.3093	0.214286	1.5391	6	4.6603	4.6667	0.8590	0.7767	0.7321	1.0014	1.0017
Cashew	Shrub	0.3147	0.4082	0.840580	0.2868	2	1.3322	1.1897	0.4138	0.6661	0.3322	0.8930	0.5709
EG	Herb	2.6550	1.5119	0.086022	2.3787	12	10.7907	11.6250	0.9573	0.8992	0.8901	1.0773	1.0852

EG	Shrub	0.3069	0.3922	0.556923	0.6172	2	1.8538	1.7956	0.8905	0.9269	0.8538	0.9686	0.9318
EG	Tree	2.1275	0.9045	0.216818	1.8124	12	6.1253	4.6122	0.7294	0.5104	0.4659	0.7530	0.7048
MDF	Herb	4.6990	1.1819	0.172403	2.2797	32	9.7735	5.8004	0.6578	0.3054	0.2830	0.5935	0.5471
MDF	Shrub	0.3460	0.1667	0.731013	0.5296	3	1.6983	1.3680	0.4821	0.5661	0.3492	0.8055	0.5269
MDF	Tree	4.1228	1.2538	0.145259	2.5167	26	12.3874	6.8842	0.7724	0.4764	0.4555	0.5557	0.5167
SE	Herb	3.9285	1.1785	0.144281	2.3267	25	10.2439	6.9309	0.7228	0.4098	0.3852	0.6766	0.6416
SE	Shrub	0.3917	0.2336	0.525351	0.7239	3	2.0624	1.9035	0.6589	0.6875	0.5312	0.9229	0.8504
SE	Tree	4.3882	1.5061	0.081283	2.7693	26	15.9475	12.3028	0.8500	0.6134	0.5979	0.7715	0.7562
Teak	Herb	4.6707	1.0735	0.137320	2.5147	33	12.3632	7.2823	0.7192	0.3746	0.3551	0.5890	0.5529
Teak	Shrub	0.1826	0.1294	0.950846	0.1173	2	1.1244	1.0517	0.1692	0.5622	0.1244	0.9353	0.4154

**Table 4.2.3 Diversity measures in different Forest Types in Vazhachal Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
EG	Herb	2.3618	1.3242	0.387894	1.4639	11	4.3229	2.5780	0.6105	0.3930	0.3323	0.5964	0.4749
EG	Shrub	0.1978	0.1596	0.987261	0.0386	2	1.0393	1.0129	0.0556	0.5197	0.0393	0.9746	0.3283
EG	Tree	3.7770	1.6169	0.184297	2.2281	20	9.2824	5.4260	0.7438	0.4641	0.4359	0.5846	0.5344
MDF	Herb	3.3317	1.2752	0.152949	2.2446	19	9.4362	6.5381	0.7623	0.4966	0.4687	0.6929	0.6565
MDF	Shrub	0.4077	0.2582	0.885904	0.2660	3	1.3047	1.1288	0.2421	0.4349	0.1524	0.8651	0.4226
MDF	Tree	3.3973	1.4746	0.256485	1.9296	18	6.8871	3.8989	0.6676	0.3826	0.3463	0.5661	0.4924
SE	Herb	5.6105	1.5910	0.118273	2.6030	36	13.5044	8.4550	0.7264	0.3751	0.3573	0.6261	0.5962
SE	Shrub	0.6792	0.2632	0.701954	0.5392	5	1.7147	1.4246	0.3350	0.3429	0.1787	0.8308	0.5941
SE	Tree	5.7098	1.4882	0.070321	2.9881	38	19.8487	14.2205	0.8215	0.5223	0.5094	0.7164	0.7014
Teak	Herb	3.1190	1.5900	0.111849	2.3348	15	10.3275	8.9406	0.8622	0.6885	0.6662	0.8657	0.8513
Teak	Shrub	0.0000	0.1270	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	

**Table 4.2.4 Diversity measures in different Forest Types in Peechi Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
EG	Herb	2.0665	1.2990	0.394504	1.2773	9	3.5869	2.5348	0.5813	0.3986	0.3234	0.7067	0.5933
EG	Shrub	0.3789	0.5345	0.857143	0.2573	2	1.2935	1.1667	0.3712	0.6467	0.2935	0.9020	0.5679
EG	Tree	2.8319	2.0412	0.141304	2.0010	10	7.3965	7.0769	0.8690	0.7397	0.7107	0.9568	0.9500
MDF	Herb	5.4151	0.5826	0.239942	1.9662	49	7.1436	4.1677	0.5052	0.1458	0.1280	0.5834	0.5156
MDF	Shrub	0.5068	0.0967	0.644309	0.6186	5	1.8563	1.5520	0.3843	0.3713	0.2141	0.8361	0.6447
MDF	Tree	4.7512	0.6090	0.288913	1.8942	41	6.6469	3.4613	0.5101	0.1621	0.1412	0.5207	0.4359
SE	Herb	4.7934	1.1719	0.149624	2.4275	33	11.3309	6.6834	0.6943	0.3434	0.3228	0.5898	0.5501
SE	Shrub	0.5090	0.2099	0.466158	0.8501	4	2.3398	2.1452	0.6132	0.5850	0.4466	0.9168	0.8547
SE	Tree	4.9901	1.0796	0.108678	2.6612	36	14.3128	9.2015	0.7426	0.3976	0.3804	0.6429	0.6161
Teak	Herb	4.0535	0.6990	0.155830	2.1925	32	8.9579	6.4173	0.6326	0.2799	0.2567	0.7164	0.6807
Teak	Shrub	0.2778	0.0820	0.538131	0.6802	3	1.9743	1.8583	0.6191	0.6581	0.4871	0.9413	0.8810

**Table 4.2.5 Diversity measures in different Forest Types in Nenmara Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
EG	Herb	2.3783	1.5076	0.260042	1.7007	10	5.4780	3.8455	0.7386	0.5478	0.4976	0.7020	0.6355
EG	Shrub	0.0000	0.0603	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Tree	1.5798	0.8729	0.180436	1.8219	8	6.1837	5.5421	0.8762	0.7730	0.7405	0.8962	0.8762
MDF	Herb	3.3029	1.5085	0.144607	2.3060	17	10.0340	6.9153	0.8139	0.5902	0.5646	0.6892	0.6548
MDF	Shrub	0.4297	0.2928	0.791941	0.4069	3	1.5021	1.2627	0.3704	0.5007	0.2511	0.8406	0.5232
MDF	Tree	2.6449	1.0633	0.287295	1.8766	15	6.5313	3.4807	0.6930	0.4354	0.3951	0.5329	0.4485

SE	Herb	3.1118	1.3000	0.170691	2.1065	17	8.2192	5.8585	0.7435	0.4835	0.4512	0.7128	0.6730
SE	Shrub	0.3126	0.1224	0.941620	0.1450	3	1.1561	1.0620	0.1320	0.3854	0.0780	0.9186	0.3973
SE	Tree	3.9263	1.2829	0.242341	1.9090	24	6.7460	4.1264	0.6007	0.2811	0.2498	0.6117	0.5441
Teak	Herb	3.0516	0.7926	0.197744	2.1359	21	8.4648	5.0571	0.7016	0.4031	0.3732	0.5974	0.5435
Teak	Shrub	0.1664	0.0991	0.942630	0.1329	2	1.1422	1.0609	0.1918	0.5711	0.1422	0.9288	0.4280

**Table 4.2.6 Diversity measures in different Forest Types in Palakkad Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Acacia	Herb	1.1005	0.6189	0.580645	0.9205	6	2.5105	1.7222	0.5137	0.4184	0.3021	0.6860	0.4781
Acacia	Shrub												
EG	Herb	0.9440	0.8165	0.413043	0.9647	4	2.6241	2.4211	0.6959	0.6560	0.5414	0.9226	0.8750
EG	Shrub	0.0000	0.1240	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Tree	2.5969	1.7678	0.163306	1.9426	10	6.9767	6.1235	0.8437	0.6977	0.6641	0.8777	0.8572
MDF	Herb	5.0431	1.1201	0.195082	2.2973	36	9.9468	5.1261	0.6411	0.2763	0.2556	0.5153	0.4612
MDF	Shrub	0.1623	0.0919	0.870180	0.2527	2	1.2874	1.1492	0.3645	0.6437	0.2874	0.8926	0.5190
MDF	Tree	3.9187	0.8144	0.226387	2.1910	29	8.9437	4.4172	0.6507	0.3084	0.2837	0.4939	0.4302
Mixed	Herb	1.8636	0.7519	0.428371	1.3366	11	3.8059	2.3344	0.5574	0.3460	0.2806	0.6134	0.4756
Mixed	Shrub	0.0000	0.2357	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
SE	Herb	2.4045	1.3750	0.476190	1.3108	11	3.7092	2.1000	0.5466	0.3372	0.2709	0.5662	0.4060
SE	Shrub	0.2004	0.1650	0.972975	0.0720	2	1.0746	1.0278	0.1038	0.5373	0.0746	0.9564	0.3722
SE	Tree	2.7551	1.1822	0.268478	1.8478	15	6.3460	3.7247	0.6823	0.4231	0.3819	0.5869	0.5097
Teak	Herb	3.3655	1.1889	0.290304	1.7389	20	5.6909	3.4447	0.5805	0.2845	0.2469	0.6053	0.5211
Teak	Shrub	0.2769	0.3288	0.486486	0.6928	2	1.9993	2.0556	0.9995	0.9996	0.9993	1.0282	1.0563

**Table 4.2.7 Diversity measures in different Forest Types in Mannarkkad Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Acacia	Herb	2.2586	0.7876	0.197971	1.8954	14	6.6553	5.0513	0.7182	0.4754	0.4350	0.7590	0.7164
Acacia	Shrub	0.4846	0.3810	0.637758	0.5923	3	1.8081	1.5680	0.5391	0.6027	0.4040	0.8672	0.7029
Cashew	Herb	2.5284	1.0706	0.189061	2.0492	14	7.7617	5.2893	0.7765	0.5544	0.5201	0.6815	0.6344
Cashew	Shrub	0.2484	0.2673	0.750649	0.4101	2	1.5070	1.3322	0.5917	0.7535	0.5070	0.8840	0.6552
DDF	Herb	3.3909	1.3368	0.204817	2.1799	19	8.8454	4.8824	0.7403	0.4655	0.4359	0.5520	0.4949
DDF	Shrub	0.0000	0.5774	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
DDF	Tree	1.5586	0.5573	0.288868	1.5516	10	4.7192	3.4618	0.6739	0.4719	0.4132	0.7336	0.6619
EG	Herb	1.6176	1.2792	0.181818	1.6572	6	5.2445	5.5000	0.9249	0.8741	0.8489	1.0487	1.0602
EG	Shrub												
EG	Tree	1.5417	1.0000	0.172619	1.7506	7	5.7583	5.7931	0.8997	0.8226	0.7931	1.0060	1.0073
MDF	Herb	5.3513	1.7669	0.064873	2.9632	32	19.3604	15.4148	0.8550	0.6050	0.5923	0.7962	0.7851
MDF	Shrub	0.3804	0.2165	0.824989	0.3738	3	1.4532	1.2121	0.3402	0.4844	0.2266	0.8341	0.4681
MDF	Tree	4.2927	1.2060	0.146864	0.3767	28	11.7640	6.8090	0.7398	0.4201	0.3987	0.5788	0.5397
SE	Herb	4.7403	2.1213	0.096457	0.3767	24	13.8567	10.3673	0.8272	0.5774	0.5590	0.7482	0.7286
SE	Shrub	0.2295	0.2265	0.974359	0.3767	2	1.0710	1.0263	0.0990	0.5355	0.0710	0.9583	0.3706
SE	Tree	5.0566	1.8196	0.064766	0.3767	29	18.4176	15.4402	0.8652	0.6351	0.6221	0.8383	0.8291
Teak	Herb	1.4595	0.8963	0.278142	0.3767	7	4.4125	3.5953	0.7629	0.6304	0.5688	0.8148	0.7605
Teak	Shrub	0.7213	1.0000	0.500000	0.3767	2	1.7548	2.0000	0.8113	0.8774	0.7548	1.1398	1.3249

**Table 4.2.8 Diversity measures in different Forest Types in Parambikulam Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
EG	Herb	2.5892	1.4343	0.144928	2.0792	12	7.9978	6.9000	0.8367	0.6665	0.6362	0.8627	0.8431
EG	Shrub												
EG	Tree	3.2295	1.8708	0.209091	2.0114	14	7.4736	4.7826	0.7622	0.5338	0.4980	0.6399	0.5843

MDF	Herb	4.9908	1.3372	0.099997	2.6655	33	14.3747	10.0003	0.7623	0.4356	0.4180	0.6957	0.6729
MDF	Shrub	0.4969	0.4009	0.687662	0.5783	3	1.7830	1.4542	0.5264	0.5943	0.3915	0.8156	0.5801
MDF	Tree	4.2620	1.1790	0.137863	2.4039	28	11.0667	7.2536	0.7214	0.3952	0.3728	0.6554	0.6212
SE	Herb	2.9173	1.2236	0.130306	2.2612	16	9.5943	7.6742	0.8155	0.5996	0.5730	0.7999	0.7766
SE	Shrub	0.0000	0.1890	1.000000	0.0000	1	1.0000	1.0000		1.		1.0000	
SE	Tree	3.4667	1.2910	0.118863	2.4158	20	11.1991	8.4130	0.8064	0.5600	0.5368	0.7512	0.7268
Teak	Herb	0.9854	0.8729	0.257143	1.2912	4	3.6372	3.8889	0.9314	0.9093	0.8791	1.0692	1.0954
Teak	Shrub												

**Table 4.2.9 Diversity measures in different Forest Types in Nilambur North Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Bamboo	Herb	1.3554	0.9487	0.294872	1.3477	6	3.8487	3.3913	0.7522	0.6414	0.5697	0.8812	0.8394
Bamboo	Shrub	0.4343	0.6325	0.644444	0.5004	2	1.6494	1.5517	0.7219	0.8247	0.6494	0.9408	0.8496
EG	Herb	2.0038	0.9073	0.281614	1.5886	11	4.8969	3.5510	0.6625	0.4452	0.3897	0.7251	0.6546
EG	Shrub	0.0000	0.1325	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Tree	2.7798	0.9563	0.313542	1.5377	17	4.6537	3.1894	0.5427	0.2737	0.2284	0.6853	0.5992
MDF	Herb	4.3945	1.1990	0.139240	2.4724	29	11.8508	7.1818	0.7342	0.4086	0.3875	0.6060	0.5697
MDF	Shrub	0.5266	0.2317	0.584390	0.7818	4	2.1855	1.7112	0.5640	0.5464	0.3952	0.7830	0.5999
MDF	Tree	4.0200	1.0639	0.102881	2.6136	27	13.6487	9.7200	0.7930	0.5055	0.4865	0.7122	0.6894
Mixed	Herb	3.2331	1.4317	0.082067	2.5603	17	12.9392	12.1852	0.9037	0.7611	0.7462	0.9417	0.9368
Mixed	Shrub	0.2191	0.2041	0.505482	0.6825	2	1.9788	1.9783	0.9846	0.9894	0.9788	0.9998	0.9995
SE	Herb	1.9222	0.9623	0.259952	1.6232	10	5.0695	3.8469	0.7050	0.5069	0.4522	0.7588	0.6996
SE	Shrub	0.2473	0.2649	0.867168	0.2541	2	1.2893	1.1532	0.3666	0.6446	0.2893	0.8944	0.5295
SE	Tree	3.8148	1.7953	0.079151	2.6509	19	14.1666	12.6341	0.9003	0.7456	0.7315	0.8918	0.8836
Teak	Herb	4.1272	0.8183	0.216457	2.0360	31	7.6596	4.6198	0.5929	0.2471	0.2220	0.6031	0.5436
Teak	Shrub	0.3127	0.1226	0.695289	0.5375	3	1.7116	1.4383	0.4892	0.5706	0.3558	0.8403	0.6158

**Table 4.2.10 Diversity measures in different Forest Types in Nilambur South Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Acacia	Herb	1.7567	0.9234	0.460246	1.2188	9	3.3830	2.1727	0.5547	0.3759	0.2979	0.6423	0.4921
Acacia	Shrub	0.0000	0.1741	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Bamboo	Herb												
Bamboo	Shrub												
EG	Herb	1.6053	1.0801	0.456446	1.1737	7	3.2339	2.1908	0.6032	0.4620	0.3723	0.6775	0.5331
EG	Shrub	0.3460	0.4714	0.529412	0.6365	2	1.8899	1.8889	0.9183	0.9449	0.8899	0.9995	0.9989
EG	Tree	1.4381	0.7016	0.482648	1.0439	8	2.8401	2.0719	0.5020	0.3550	0.2629	0.7295	0.5825
MDF	Herb	3.5594	1.1515	0.270405	2.0226	22	7.5578	3.6982	0.6543	0.3435	0.3123	0.4893	0.4114
MDF	Shrub	0.3997	0.2458	0.934337	0.1637	3	1.1778	1.0703	0.1490	0.3926	0.0889	0.9087	0.3952
MDF	Tree	3.6789	1.0535	0.123604	2.4731	24	11.8590	8.0903	0.7782	0.4941	0.4721	0.6822	0.6529
SE	Herb	3.8307	1.3021	0.141211	2.3696	23	10.6926	7.0816	0.7557	0.4649	0.4406	0.6623	0.6274
SE	Shrub	0.5498	0.4867	0.537696	0.7914	3	2.2065	1.8598	0.7204	0.7355	0.6033	0.8429	0.7126
SE	Tree	3.9153	1.0677	0.232704	2.0604	26	7.8487	4.2973	0.6324	0.3019	0.2740	0.5475	0.4814
Teak	Herb	3.6816	0.7904	0.118372	2.4145	27	11.1839	8.4479	0.7326	0.4142	0.3917	0.7554	0.7313
Teak	Shrub	0.1366	0.1369	0.860155	0.2957	3	1.34406	1.1626	0.2692	0.448	0.172	0.865	0.4725

**Table 4.2.11 Diversity measures in different Forest Types in Wayanad WLS Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Cashew	Herb	1.6423	1.3093	0.214286	1.5391	6	4.6603	4.6667	0.8590	0.7767	0.7321	1.0014	1.0017
Cashew	Shrub	0.3147	0.4082	0.840580	0.2868	2	1.3322	1.1897	0.4138	0.6661	0.3322	0.8930	0.5709
EG	Herb	2.6550	1.5119	0.086022	2.3787	12	10.7907	11.6250	0.9573	0.8992	0.8901	1.0773	1.0852
EG	Shrub	0.3069	0.3922	0.556923	0.6172	2	1.8538	1.7956	0.8905	0.9269	0.8538	0.9686	0.9318
EG	Tree	2.1275	0.9045	0.216818	1.8124	12	6.1253	4.6122	0.7294	0.5104	0.4659	0.7530	0.7048



MDF	Herb	4.6990	1.1819	0.172403	2.2797	32	9.7735	5.8004	0.6578	0.3054	0.2830	0.5935	0.5471
MDF	Shrub	0.3460	0.1667	0.731013	0.5296	3	1.6983	1.3680	0.4821	0.5661	0.3492	0.8055	0.5269
MDF	Tree	4.1228	1.2538	0.145259	2.5167	26	12.3874	6.8842	0.7724	0.4764	0.4555	0.5557	0.5167
SE	Herb	3.9285	1.1785	0.144281	2.3267	25	10.2439	6.9309	0.7228	0.4098	0.3852	0.6766	0.6416
SE	Shrub	0.3917	0.2336	0.525351	0.7239	3	2.0624	1.9035	0.6589	0.6875	0.5312	0.9229	0.8504
SE	Tree	4.3882	1.5061	0.081283	2.7693	26	15.9475	12.3028	0.8500	0.6134	0.5979	0.7715	0.7562
Teak	Herb	4.6707	1.0735	0.137320	2.5147	33	12.3632	7.2823	0.7192	0.3746	0.3551	0.5890	0.5529
Teak	Shrub	0.1826	0.1294	0.950846	0.1173	2	1.1244	1.0517	0.1692	0.5622	0.1244	0.9353	0.4154

**Table 4.2.12 Diversity measures in different Forest Types in Wayanad South Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
EG	Herb	0.0000	0.1443	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Shrub	0.0000	0.1213	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Tree	1.4065	0.6644	0.256609	1.6074	8	4.9899	3.8970	0.7730	0.6237	0.5700	0.7810	0.7261
Eucalyptus	Herb	1.3554	0.9487	0.203846	1.6276	6	5.0917	4.9057	0.9084	0.8486	0.8183	0.9635	0.9545
Eucalyptus	Shrub	0.3034	0.3849	0.487179	0.6870	2	1.9877	2.0526	0.9911	0.9938	0.9877	1.0327	1.0658
Grassland	Herb	0.9003	0.7559	0.441799	1.0195	4	2.7718	2.2635	0.7354	0.6929	0.5906	0.8166	0.7131
Grassland	Shrub	0.3530	0.4851	0.558824	0.6058	2	1.8327	1.7895	0.8740	0.9164	0.8327	0.9764	0.9481
MDF	Herb	1.1793	0.5500	0.271222	1.5324	7	4.6293	3.6870	0.7875	0.6613	0.6049	0.7964	0.7404
MDF	Shrub	0.5987	0.3266	0.614049	0.6884	4	1.9906	1.6285	0.4966	0.4977	0.3302	0.8181	0.6345
MDF	Tree	2.9377	0.9969	0.130684	2.3016	18	9.9901	7.6520	0.7963	0.5550	0.5288	0.7660	0.7399
Savanah	Herb	2.0020	1.3926	0.160985	1.8415	8	6.3059	6.2118	0.8856	0.7882	0.7580	0.9851	0.9823
Savanah	Shrub	0.6213	0.8944	0.600000	0.5004	2	1.649384	1.6667	0.7219	0.8247	0.6494	1.0105	1.0266
Savanah	Tree	0.9705	0.8528	0.666667	0.6632	4	1.9410	1.5000	0.4784	0.4852	0.3137	0.7728	0.5314
SE	Herb	1.6334	0.7775	0.470654	1.2004	9	3.3214	2.1247	0.5463	0.3690	0.2902	0.6397	0.4845
SE	Shrub	0.	0.0607	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	

SE	Tree	2.168653	0.8173	0.146841	2.1413	13	8.5102	6.8101	0.8348	0.6546	0.6258	0.8002	0.7736
Shola	Herb	0.3189	0.4170	0.762846	0.3872	2	1.47287	1.310881	0.5586	0.7364	0.4729	0.8900	0.6574
Shola	Shrub	0.2940	0.3651	0.813793	0.3251	2	1.3841	1.2288	0.4690	0.6921	0.3841	0.8878	0.5956
Shola	Tree	1.0075	0.6868	0.343977	1.2278	5	3.4137	2.9072	0.7629	0.6827	0.6034	0.8516	0.7901
Teak	Herb	0.7420	0.5298	0.496867	0.9510	4	2.5883	2.0126	0.6860	0.6471	0.5294	0.7776	0.6375
Teak	Shrub	0.2836	0.3430	0.941176	0.1327	2	1.1419	1.0625	0.1914	0.5709	0.1419	0.9305	0.4405

**Table 4.2.13 Diversity measures in different Forest Types in Wayanad North Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Acacia	Herb	0.5581	0.8165	0.666667	0.4506	2	1.5692	1.5000	0.6500	0.7846	0.5692	0.9559	0.8784
Acacia	Shrub	0.0000	0.2357	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Cashew	Herb	0.0000	0.3780	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Herb	0.6514	0.4000	0.902626	0.2460	4	1.2789	1.1079	0.1775	0.3197	0.0930	0.8662	0.3867
EG	Shrub	0.0000	0.0877	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Tree	2.4312	0.9661	0.369059	1.4902	14	4.4379	2.7096	0.5647	0.3170	0.2645	0.6106	0.4973
Eucalyptus	Herb	1.5762	1.0435	0.545455	1.0021	7	2.7240	1.8333	0.5150	0.3891	0.2873	0.6730	0.4834
Grassland	Herb	0.8341	0.9045	0.272727	1.0901	3	2.9745	3.6667	0.9922	0.9915	0.9872	1.2327	1.3506
MDF	Herb	1.3933	0.6489	0.230045	1.6750	8	5.3390	4.3470	0.8055	0.6674	0.6199	0.8142	0.7714
MDF	Shrub	0.2912	0.3592	0.767742	0.3845	2	1.4689	1.3025	0.5548	0.7345	0.4689	0.8867	0.6451
MDF	Tree	2.2630	1.2074	0.253306	1.6760	11	5.3440	3.9478	0.6989	0.4858	0.4344	0.7387	0.6786
Pine	Herb	0.0000	0.5000	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
Pine	Shrub	0.0000	0.2085	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
SE	Herb	1.9755	0.7414	0.329443	1.6379	12	5.1442	3.0354	0.6591	0.4287	0.3767	0.5901	0.4911
SE	Shrub	0.5338	0.2408	0.456416	0.9299	4	2.5342	2.1910	0.6708	0.6336	0.5114	0.8646	0.7763
SE	Tree	3.3311	1.1547	0.162988	2.2998	20	9.9721	6.1354	0.7677	0.4986	0.4722	0.6153	0.5724
Teak	Herb	1.2084	0.4417	0.331338	1.3609	8	3.8995	3.0181	0.6544	0.4874	0.4142	0.7740	0.6960
Teak	Shrub	0.2058	0.1761	0.939438	0.1382	2	1.1482	1.0645	0.1994	0.5741	0.148238	0.9270	0.4349

**Table 4.2.14 Diversity measures in different Forest Types in Wayanad WLS Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
DDF	Herb	1.5536	0.5522	0.282110	1.4878	10	4.4272	3.5447	0.6461	0.4427	0.3808	0.8007	0.7425
DDF	Shrub	0.2158	0.1971	0.495146	0.6931	2	1.9999	2.0196	0.9999	1.0000	0.9999	1.0099	1.0197
DDF	Tree	2.0943	0.86829	0.231469	1.8311	12	6.2407	4.3202	0.7369	0.5201	0.4764	0.6923	0.6336
EG	Herb	0.2836	0.3430	0.885918	0.2237	2	1.2507	1.1288	0.3228	0.6254	0.2507	0.9025	0.5136
EG	Tree	0.8312	0.4508	0.354125	1.1402	5	3.1274	2.8239	0.7084	0.6255	0.5319	0.9029	0.8573
Eucalyptus	Herb	1.5924	0.7300	0.259324	1.6188	9	5.0472	3.8562	0.7368	0.5608	0.5059	0.7640	0.7057
Eucalyptus	Shrub	0.3285	0.4364	0.819048	0.3145	2	1.3696	1.2209	0.4537	0.6848	0.3696	0.8915	0.5978
MDF	Herb	3.0231	0.6046	0.257207	1.8516	23	6.3698	3.8879	0.5905	0.2769	0.2441	0.6104	0.5378
MDF	Shrub	0.4809	0.1768	0.493005	0.9373	4	2.5531	2.0284	0.6761	0.6383	0.5177	0.7945	0.66213
MDF	Tree	3.9230	0.8967	0.097722	2.7250	28	15.2564	10.2331	0.8178	0.5449	0.5280	0.6707	0.6476
SE	Herb	2.1556	0.6864	0.345911	1.3681	14	3.9281	2.8909	0.5184	0.2806	0.2252	0.7360	0.6458
SE	Shrub	0.1782	0.1208	0.576134	0.6133	2	1.8465	1.7357	0.8848	0.9233	0.8465	0.9400	0.8691
SE	Tree	2.9448	1.2532	0.104446	2.4019	16	11.0442	9.5743	0.8663	0.6903	0.6696	0.8669	0.8537
Teak	Herb	2.5777	0.5017	0.268575	1.6288	20	5.0978	3.7234	0.5437	0.2549	0.2157	0.7304	0.6646
Teak	Shrub	0.6890	0.274411	0.458086	0.9679	5	2.6323	2.183	0.6014	0.52646	0.4081	0.8293	0.7247

**Table 4.2.15 Diversity measures in different Forest Types in Kannur Division**

Habitat	Habit	Richness Indices		Diversity Indices		Hill's Diversity Nos.			Evenness Indices				
		R1	R2	$\lambda$	H'	N0	N1	N2	E1	E2	E3	E4	E5
Acacia	Herb	1.1761	0.9129	0.252874	1.4321	5	4.1874	3.9545	0.8898	0.8375	0.7968	0.9444	0.9269
Acacia	Shrub	0.4024	0.5774	0.833333	0.2868	2	1.3322	1.2000	0.4138	0.6661	0.3322	0.9008	0.6020
Cashew	Herb	0.5626	0.2780	0.360537	1.1104	4	3.0357	2.7736	0.8010	0.7589	0.6786	0.9137	0.8713
Cashew	Shrub	0.2442	0.2582	0.966667	0.0848	2	1.0885	1.0345	0.1223	0.5442	0.0885	0.9504	0.3898

Cinnamomum	Herb	0.4551	0.6667	0.611111	0.5297	2	1.6984	1.6364	0.7642	0.8492	0.6984	0.9635	0.9111
Cinnamomum	Shrub	0.0000	0.3333	1.000000	0.0000	1	1.0000	1.0000		1.0000		1.0000	
EG	Herb	0.8862	0.3573	0.826279	0.4267	6	1.5321	1.2102	0.2381	0.2554	0.1064	0.7899	0.3951
EG	Shrub	0.1572	0.0830	0.993115	0.0230	2	1.0233	1.0069	0.0332	0.5116	0.0233	0.9840	0.2980
EG	Tree	2.634	0.7137	0.261294	1.6741	18	5.3339	3.82711	0.5792	0.2963	0.2549	0.7175	0.6523
Grassland	Herb	0.5386	0.4685	0.575610	0.7088	3	2.0315	1.7373	0.6451	0.6772	0.5157	0.8552	0.7148
Mahagony	Herb	1.0123	0.6934	0.658371	0.7191	5	2.0525	1.5189	0.4468	0.41051	0.2631	0.7400	0.4930
Mahagony	Shrub	0.7059	0.7276	0.323529	1.0551	3	2.8723	3.0909	0.9604	0.9574	0.9361	1.0761	1.1168
MDF	Herb	3.3687	0.7094	0.167816	2.1728	25	8.7830	5.9589	0.6750	0.3513	0.3243	0.6785	0.6372
MDF	Shrub	0.7159	0.1827	0.482995	0.8084	6	2.2442	2.0704	0.4512	0.3740	0.2488	0.9226	0.8603
MDF	Tree	4.2856	0.8599	0.156201	2.3399	32	10.3799	6.4020	0.6751	0.3244	0.3026	0.6168	0.5759
Mixed	Herb	2.1151	0.6478	0.415574	1.4367	14	4.2068	2.4063	0.5444	0.3005	0.2467	0.5720	0.4385
Mixed	Shrub	0.5230	0.2272	0.495918	0.8448	4	2.3275	2.0165	0.6094	0.5819	0.4425	0.8664	0.7657
SE	Herb	2.2813	0.5975	0.574402	1.0415	16	2.8334	1.7409	0.3756	0.1771	0.1222	0.6144	0.4041
SE	Shrub	0.4217	0.1141	0.974234	0.0786	4	1.0817	1.0264	0.0567	0.2704	0.0272	0.9489	0.3237
SE	Tree	3.4476	0.7697	0.208515	2.0958	25	8.1322	4.7958	0.6511	0.3253	0.2972	0.5897	0.5322
Teak	Herb	1.4835	0.7559	0.323359	1.4669	8	4.3357	3.0925	0.7054	0.5420	0.4765	0.7133	0.6273
Teak	Shrub	0.2442	0.2582	0.934463	0.1461	2	1.1574	1.0701	0.2108	0.5787	0.1574	0.9246	0.4457

**Table 5.1.1 Density, abundance, frequency and availability of usefulparts of NWFPs in different Forest Ranges of Thrissur Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Machad	MDF	Herb	<i>Aristolochia indica</i>	3	45.18	1.00	0.0181	0.19						
Machad	MDF	Herb	<i>Asparagus racemosa</i>	4	60.24	2.00	0.0120	1.70						
Machad	MDF	Herb	<i>Baliospermum montanum</i>	37	557.23	4.63	0.0482	4.75						
Machad	MDF	Herb	<i>Barleria prattensis</i>	37	557.23	3.08	0.0723	0.67						
Machad	MDF	Herb	<i>Biophytum sp.</i>	93	1400.60	3.88	0.1446		0.40					
Machad	MDF	Herb	<i>Costus speciosus</i>	11	165.66	2.20	0.0301	3.73						
Machad	MDF	Herb	<i>Cyathula prostrata</i>	93	1400.60	3.88	0.1446	0.43		2.27				
Machad	MDF	Herb	<i>Cyclea peltata</i>	32	481.93	2.46	0.0783	7.35						
Machad	MDF	Herb	<i>Desmodium gangeticum</i>	12	180.72	2.00	0.0361	1.66						
Machad	MDF	Herb	<i>Desmodium gyrans</i>	7	105.42	1.75	0.0241	0.07						
Machad	MDF	Herb	<i>Desmodium velutnium</i>	8	120.48	4.00	0.0120	1.40						
Machad	MDF	Herb	<i>Elephantopus scaber</i>	200	3012.05	8.00	0.1506	7.74						
Machad	MDF	Herb	<i>Hemidesmus indicus</i>	167	2515.06	2.61	0.3855	2.37						
Machad	MDF	Herb	<i>Ichnocarpus frutescens</i>	106	1596.39	5.30	0.1205	0.72						
Machad	MDF	Herb	<i>Naregamia alata</i>	296	4457.83	5.92	0.3012	3.13						
Machad	MDF	Herb	<i>Piper longum</i>	492	7409.64	12.00	0.2470	5.53		8.45				
Machad	MDF	Herb	<i>Piper sp.</i>	8	120.48	8.00	0.0060			12.67				
Machad	MDF	Herb	<i>Pseudarthria viscida</i>	78	1174.70	5.57	0.0843	0.95						
Machad	MDF	Herb	<i>Rauwolfia serpentina</i>	2	30.12	1.00	0.0120	0.22						
Machad	MDF	Herb	<i>Sida rhombifolia</i>	77	1159.64	3.35	0.1386	1.65						
Machad	MDF	Herb	<i>Tragia involucrata</i>	1	15.06	1.00	0.0060	0.04						
Machad	MDF	Shrub	<i>Holarrhena antidysenterica</i>	296	713.25	3.84	0.4639							
Machad	MDF	Tree	<i>Acacia caesia</i>	28	1.05	2.15	0.0783				0.13			

Machad	MDF	Tree	Acacia pennata	6	0.23	2.00	0.0181				0.03			
Machad	MDF	Tree	Acacia torta	26	0.98	2.36	0.0663				0.09			
Machad	MDF	Tree	Alstonia scholaris	43	1.62	1.34	0.1928				0.51			
Machad	MDF	Tree	Bauhinia malabarica	12	0.45	4.00	0.0181				0.48			
Machad	MDF	Tree	Bauhinia racemosa	9	0.34	1.13	0.0482				0.42			
Machad	MDF	Tree	Cassia fistula	231	8.70	2.92	0.4759				0.68			
Machad	MDF	Tree	Holoptelea integrifolia	13	0.49	1.30	0.0602				0.05			
Machad	MDF	Tree	Lagerstroemia reginae	3	0.11	1.00	0.0181				0.04			
Machad	MDF	Tree	Persea macrantha	4	0.15	1.00	0.0241				0.02			
Machad	MDF	Tree	Pongamia pinnata	10	0.38	3.33	0.0181				0.01			
Machad	MDF	Tree	Spondias pinnata	18	0.68	1.29	0.0843				0.52			
Machad	MDF	Tree	Wrightia tinctoria	797	30.01	7.31	0.6566				190.79			
Machad	Mixed	Herb	Biophytum sp.	22	2619.05	22.00	0.0476		0.75					
Machad	Mixed	Herb	Cyclea peltata	13	1547.62	2.17	0.2857				23.60			
Machad	Mixed	Herb	Desmodium velutnium	2	238.10	2.00	0.0476				2.77			
Machad	Mixed	Herb	Elephantopus scaber	15	1785.71	3.75	0.1905				4.59			
Machad	Mixed	Herb	Hemidesmus indicus	57	6785.71	4.38	0.6190				6.40			
Machad	Mixed	Herb	Ichnocarpus frutescens	104	12380.95	8.00	0.6190				5.59			
Machad	Mixed	Herb	Naregamia alata	33	3928.57	8.25	0.1905				2.76			
Machad	Mixed	Herb	Pseudarthria viscida	2	238.10	2.00	0.0476				0.19			
Machad	Mixed	Herb	Sida rhombifolia	29	3452.38	4.14	0.3333				4.90			
Machad	Mixed	Herb	Tragia involucrata	4	476.19	2.00	0.0952	1.36						
Machad	Mixed	Shrub	Holarrhena antidysenterica	12	228.57	2.00	0.2857				-			
Machad	SE	Tree	Alstonia scholaris	1	3.13	1.00	0.5000				0.51			
Machad	SE	Tree	Cassia fistula	1	3.13	1.00	0.5000				0.68			
Machad	SE	Tree	Holoptelea integrifolia	1	3.13	1.00	0.5000				0.05			

Machad	SE	Tree	Persea macrantha	1	3.13	1.00	0.5000				0.02			
Machad	SE	Tree	Spondias pinnata	2	6.25	2.00	0.5000				0.52			
Machad	SE	Tree	Wrightia tinctoria	8	25.00	8.00	0.5000					274.05		
Machad	SE	Herb	Piper longum	10	12500.00	10.00	0.5000	5.53			8.45			
Machad	Teak	Herb	Aristolochia indica	1	71.43	1.00	0.0286	0.31						
Machad	Teak	Herb	Baliospermum montanum	1	71.43	1.00	0.0286	0.61						
Machad	Teak	Herb	Biophytum sp.	17	1214.29	3.40	0.1429				0.35			
Machad	Teak	Herb	Cyclea peltata	4	285.71	1.00	0.1143	4.36						
Machad	Teak	Herb	Desmodium gangeticum	9	642.86	2.25	0.1143	5.90						
Machad	Teak	Herb	Elephantopus scaber	74	5285.71	4.93	0.4286	13.58						
Machad	Teak	Herb	Hemidesmus indicus	100	7142.86	4.17	0.6857	6.74						
Machad	Teak	Herb	Ichnocarpus frutescens	76	5428.57	4.47	0.4857	2.45						
Machad	Teak	Herb	Naregamia alata	45	3214.29	4.09	0.3143	2.26						
Machad	Teak	Herb	Piper longum	19	1357.14	4.75	0.1143	1.01			1.55			
Machad	Teak	Herb	Pseudarthria viscida	1	71.43	1.00	0.0286	0.06						
Machad	Teak	Herb	Sida rhombifolia	26	1857.14	3.25	0.2286	2.64						
Machad	Teak	Herb	Tragia involucrata	2	142.86	2.00	0.0286	0.41						
Machad	Teak	Shrbb.	Holarrhena antidysenterica	116	1325.71	6.44	0.5143							
Pattikkad	MDF	Herb	Baliospermum montanum	5	137.36	2.50	0.0220	1.17						
Pattikkad	MDF	Herb	Biophytum sp.	332	9120.88	7.72	0.4725				2.58			
Pattikkad	MDF	Herb	Costus speciosus	15	412.09	3.00	0.0549	9.27						
Pattikkad	MDF	Herb	Cyathula prostrata	1	27.47	1.00	0.0110	0.01			0.04			
Pattikkad	MDF	Herb	Cyclea peltata	21	576.92	1.31	0.1758	8.80						
Pattikkad	MDF	Herb	Elephantopus scaber	109	2994.51	12.11	0.0989	7.70						
Pattikkad	MDF	Herb	Hemidesmus indicus	80	2197.80	1.90	0.4615	2.07						
Pattikkad	MDF	Herb	Ichnocarpus frutescens	78	2142.86	3.55	0.2418	0.97						

Pattikkad	MDF	Herb	Naregamia alata	151	4148.35	5.81	0.2857	2.92						
Pattikkad	MDF	Herb	Phyllanthus amarus	20	549.45	2.22	0.0989	0.07						
Pattikkad	MDF	Herb	Piper longum	288	7912.09	8.00	0.3956	5.90			9.02			
Pattikkad	MDF	Herb	Pseudarthria viscida	15	412.09	3.00	0.0549	0.33						
Pattikkad	MDF	Herb	Sida rhombifolia	53	1456.04	2.79	0.2088	2.07						
Pattikkad	MDF	Herb	Tragia involucrata	2	54.95	2.00	0.0110	0.16						
Pattikkad	MDF	Shrub	Holarrhena antidysenterica	65	285.71	3.25	0.2198							
Pattikkad	MDF	Tree	Acacia caesia	71	4.88	5.07	0.1538					0.57		
Pattikkad	MDF	Tree	Acacia pennata	23	1.58	3.29	0.0769					0.17		
Pattikkad	MDF	Tree	Acacia torta	120	8.24	4.44	0.2967					0.71		
Pattikkad	MDF	Tree	Alstonia scholaris	10	0.69	1.43	0.0769					0.21		
Pattikkad	MDF	Tree	Bauhinia racemosa	9	0.62	1.80	0.0549					0.33		
Pattikkad	MDF	Tree	Cassia fistula	50	3.43	1.79	0.3077					0.21		
Pattikkad	MDF	Tree	Cinnamomum spp.	3	0.21	1.50	0.0220					-		
Pattikkad	MDF	Tree	Lagerstroemia reginae	8	0.55	1.60	0.0549					0.29		
Pattikkad	MDF	Tree	Persea macrantha	9	0.62	1.80	0.0549					0.54		
Pattikkad	MDF	Tree	Spondias pinnata	40	2.75	1.67	0.2637					0.93		
Pattikkad	MDF	Tree	Wrightia tinctoria	912	62.64	12.67	0.7912					435.67		
Wadakkancherry	Acacia	Herb	Elephantopus scaber	4	1428.57	2.00	0.2857	3.67						
Wadakkancherry	Acacia	Herb	Hemidesmus indicus	3	1071.43	1.50	0.2857	1.01						
Wadakkancherry	Acacia	Herb	Ichnocarpus frutescens	6	2142.86	3.00	0.2857	0.97						
Wadakkancherry	Acacia	Herb	Naregamia alata	11	3928.57	3.67	0.4286	2.76						
Wadakkancherry	Acacia	Herb	Sida rhombifolia	17	6071.43	3.40	0.7143	8.62						
Wadakkancherry	Acacia	Shrub	Holarrhena antidysenterica	6	342.86	2.00	0.4286							
Wadakkancherry	Cashew	Herb	Aristolochia indica	13	500.00	1.44	0.1385	2.15						
Wadakkancherry	Cashew	Herb	Baliospermum montanum	59	2269.23	8.43	0.1077	19.33						



Wadakkancherry	Cashew	Herb	Cyathula prostrata	33	1269.23	3.30	0.1538	0.39		2.06				
Wadakkancherry	Cashew	Herb	Cyclea peltata	27	1038.46	2.25	0.1846	13.49						
Wadakkancherry	Cashew	Herb	Desmodium gangeticum	1	38.46	1.00	0.0154	0.35						
Wadakkancherry	Cashew	Herb	Desmodium gyrans	1	38.46	1.00	0.0154	0.03						
Wadakkancherry	Cashew	Herb	Elephantopus scaber	27	1038.46	3.38	0.1231	2.67						
Wadakkancherry	Cashew	Herb	Hemidesmus indicus	64	2461.54	3.37	0.2923	2.32						
Wadakkancherry	Cashew	Herb	Ichnocarpus frutescens	214	8230.77	5.49	0.6000	3.71						
Wadakkancherry	Cashew	Herb	Naregamia alata	103	3961.54	5.72	0.2769	2.78						
Wadakkancherry	Cashew	Herb	Piper longum	131	5038.46	8.19	0.2462	3.76		5.74				
Wadakkancherry	Cashew	Herb	Piper sp.	2	76.92	2.00	0.0154			8.09				
Wadakkancherry	Cashew	Herb	Pseudarthria viscida	24	923.08	2.40	0.1538	0.75						
Wadakkancherry	Cashew	Herb	Rauvolfia serpentina	1	38.46	1.00	0.0154	0.08						
Wadakkancherry	Cashew	Herb	Rubia cordifolia	2	76.92	1.00	0.0308	0.22						
Wadakkancherry	Cashew	Herb	Sida rhombifolia	102	3923.08	3.92	0.4000	5.57						
Wadakkancherry	Cashew	Herb	Tragia involucrata	2	76.92	1.00	0.0308	0.22						
Wadakkancherry	Cashew	Shrub	Holarrhena antidysenterica	23	141.54	1.64	0.2154							
Wadakkancherry	Eucalyptus	Herb	Aristolochia indica	12	526.32	2.40	0.0877	2.26						
Wadakkancherry	Eucalyptus	Herb	Biophytum sp.	1	43.86	1.00	0.0175		0.01					
Wadakkancherry	Eucalyptus	Herb	Cyathula prostrata	2	87.72	2.00	0.0175	0.03		0.14				
Wadakkancherry	Eucalyptus	Herb	Cyclea peltata	12	526.32	1.33	0.1579	3.34						
Wadakkancherry	Eucalyptus	Herb	Desmodium gangeticum	7	307.02	1.75	0.0702	2.01						
Wadakkancherry	Eucalyptus	Herb	Elephantopus scaber	11	482.46	3.67	0.0526	1.24						
Wadakkancherry	Eucalyptus	Herb	Hemidesmus indicus	93	4078.95	3.72	0.4386	3.85						
Wadakkancherry	Eucalyptus	Herb	Ichnocarpus frutescens	137	6008.77	4.72	0.5088	2.71						
Wadakkancherry	Eucalyptus	Herb	Naregamia alata	450	19736.84	10.98	0.7193	13.88						
Wadakkancherry	Eucalyptus	Herb	Piper longum	18	789.47	18.00	0.0175	0.59		0.90				

Wadakkancherry	Eucalyptus	Herb	Piper sp.	4	175.44	4.00	0.0175			18.45				
Wadakkancherry	Eucalyptus	Herb	Pseudarthria viscida	4	175.44	2.00	0.0351	0.14						
Wadakkancherry	Eucalyptus	Herb	Sida rhombifolia	163	7149.12	4.94	0.5789	10.15						
Wadakkancherry	Eucalyptus	Herb	Tragia involucrata	9	394.74	1.50	0.1053	1.13						
Wadakkancherry	Eucalyptus	Shrub	Holarrhena antidysenterica	119	835.09	3.61	0.5789							
Wadakkancherry	MDF	Herb	Aristolochia indica	1	416.67	1.00	0.1667	1.79						
Wadakkancherry	MDF	Herb	Cyathula prostrata	4	1666.67	4.00	0.1667	0.51		2.70				
Wadakkancherry	MDF	Herb	Elephantopus scaber	4	1666.67	4.00	0.1667	4.28						
Wadakkancherry	MDF	Herb	Hemidesmus indicus	10	4166.67	3.33	0.5000	3.93						
Wadakkancherry	MDF	Herb	Ichnocarpus frutescens	3	1250.00	1.50	0.3333	0.56						
Wadakkancherry	MDF	Herb	Naregamia alata	16	6666.67	5.33	0.5000	4.69						
Wadakkancherry	MDF	Herb	Piper longum	15	6250.00	15.00	0.1667	4.66		7.13				
Wadakkancherry	MDF	Herb	Sida rhombifolia	2	833.33	2.00	0.1667	1.18						
Wadakkancherry	MDF	Shrub	Holarrhena antidysenterica	8	533.33	2.00	0.6667							
Wadakkancherry	MDF	Tree	Acacia caesia	1	1.04	1.00	0.1667			0.08				
Wadakkancherry	MDF	Tree	Cassia fistula	4	4.17	1.33	0.5000			0.23				
Wadakkancherry	MDF	Tree	Holoptelea integrifolia	15	15.63	3.00	0.8333			1.15				
Wadakkancherry	MDF	Tree	Wrightia tinctoria	6	6.25	1.50	0.6667					34.83		
Wadakkancherry	Teak	Herb	Desmodium gangeticum	1	357.14	1.00	0.1429	3.28						
Wadakkancherry	Teak	Herb	Elephantopus scaber	6	2142.86	6.00	0.1429	5.51						
Wadakkancherry	Teak	Herb	Hemidesmus indicus	18	6428.57	4.50	0.5714	6.06						
Wadakkancherry	Teak	Herb	Ichnocarpus frutescens	19	6785.71	3.80	0.7143	3.06						
Wadakkancherry	Teak	Herb	Pseudarthria viscida	20	7142.86	5.00	0.5714	5.78						
Wadakkancherry	Teak	Herb	Sida rhombifolia	5	1785.71	2.50	0.2857	2.54						
Wadakkancherry	Teak	Herb	Tragia involucrata	3	1071.43	1.50	0.2857	3.05						
Wadakkancherry	Teak	Shrub	Holarrhena antidysenterica	17	971.43	3.40	0.7143							

**Table 5.1.2 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Chalakkudy Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Palappilly	Teak	Herb	Amorphophallus paeoniifolius	3	174.42	3.00	0.0233	51.48						
Palappilly	Teak	Herb	Aristolochia indica	1	58.14	1.00	0.0233	0.25						
Palappilly	Teak	Herb	Biophytum sp.	112	6511.63	6.22	0.4186	1.46						
Palappilly	Teak	Herb	Costus speciosus	18	1046.51	4.50	0.0930	23.55						
Palappilly	Teak	Herb	Cyathula prostrata	9	523.26	3.00	0.0698	0.16		0.85				
Palappilly	Teak	Herb	Cyclea peltata	2	116.28	1.00	0.0465	1.77						
Palappilly	Teak	Herb	Desmodium gangeticum	1	58.14	1.00	0.0233	0.53						
Palappilly	Teak	Herb	Desmodium velutnium	5	290.70	1.67	0.0698	3.38						
Palappilly	Teak	Herb	Elephantopus scaber	4	232.56	2.00	0.0465	0.60						
Palappilly	Teak	Herb	Hemidesmus indicus	7	406.98	2.33	0.0698	0.33						
Palappilly	Teak	Herb	Ichnocarpus frutescens	21	1220.93	3.00	0.1628	0.47						
Palappilly	Teak	Herb	Naregamia alata	24	1395.35	3.00	0.1860	0.57						
Palappilly	Teak	Herb	Phyllanthus amarus	6	348.84	3.00	0.0465		0.11					
Palappilly	Teak	Herb	Piper longum	26	1511.63	5.20	0.1163	1.13		1.72				
Palappilly	Teak	Herb	Pseudarthria viscida	6	348.84	1.50	0.0930	0.28						
Palappilly	Teak	Herb	Sida rhombifolia	17	988.37	2.83	0.1395	1.40						
Palappilly	Teak	Herb	Tragia involucrata	3	174.42	1.50	0.0465	0.50						
Pariyaram	Cashew	Herb	Biophytum sp.	5	4166.67	5.00	0.3333	1.19						
Pariyaram	Cashew	Herb	Costus speciosus	8	6666.67	8.00	0.3333	150.00						
Pariyaram	Cashew	Herb	Naregamia alata	1	833.33	1.00	0.3333	0.59						
Pariyaram	Cashew	Herb	Pseudarthria viscida	2	1666.67	2.00	0.3333	1.35						
Pariyaram	MDF	Herb	Biophytum sp.	129	10078.13	9.21	0.4375	2.87						

Pariyaram	MDF	Herb	Costus speciosus	12	937.50	3.00	0.1250	21.09						
Pariyaram	MDF	Herb	Curcuma zedoaria	20	1562.50	4.00	0.1563	25.80						
Pariyaram	MDF	Herb	Cyathula prostrata	4	312.50	4.00	0.0313	0.10		0.51				
Pariyaram	MDF	Herb	Desmodium gangeticum	5	390.63	1.67	0.0938	3.58						
Pariyaram	MDF	Herb	Hemidesmus indicus	1	78.13	1.00	0.0313	0.07						
Pariyaram	MDF	Herb	Ichnocarpus frutescens	13	1015.63	4.33	0.0938	0.46						
Pariyaram	MDF	Herb	Naregamia alata	9	703.13	1.80	0.1563	0.49						
Pariyaram	MDF	Herb	Piper longum	17	1328.13	5.67	0.0938	0.99		1.51				
Pariyaram	MDF	Herb	Pseudarthria viscida	12	937.50	1.71	0.2188	0.76						
Pariyaram	MDF	Herb	Sida rhombifolia	12	937.50	2.00	0.1875	1.33						
Pariyaram	MDF	Shrub	Holarrhena antidysenterica	12	150.00	2.40	0.1563	4.72						
Pariyaram	MDF	Shrub	Strobilanthes ciliatus	9	112.50	9.00	0.0313	0.53						
Pariyaram	MDF	Tree	Acacia pennata	23	4.49	2.09	0.3438					0.59		
Pariyaram	MDF	Tree	Acacia torta	6	1.17	1.50	0.1250					0.08		
Pariyaram	MDF	Tree	Alstonia scholaris	5	0.98	1.25	0.1250					0.42		
Pariyaram	MDF	Tree	Bauhinia malabarica	2	0.39	1.00	0.0625					0.47		
Pariyaram	MDF	Tree	Cassia fistula	12	2.34	2.00	0.1875					0.30		
Pariyaram	MDF	Tree	Cinnamomum spp.	3	0.59	1.50	0.0625					0.02		
Pariyaram	MDF	Tree	Lagerstroemia reginae	4	0.78	4.00	0.0313					0.34		
Pariyaram	MDF	Tree	Pongamia pinnata	3	0.59	1.50	0.0625					0.11		
Pariyaram	MDF	Tree	Wrightia tinctoria	21	4.10	3.50	0.1875						27.69	
Pariyaram	SE	Herb	Biophytum sp.	6	1666.67	2.00	0.3333	0.48						
Pariyaram	SE	Herb	Costus speciosus	9	2500.00	3.00	0.3333	56.25						
Pariyaram	SE	Herb	Cyathula prostrata	2	555.56	2.00	0.1111	0.17		0.90				
Pariyaram	SE	Herb	Desmodium gangeticum	2	555.56	2.00	0.1111	5.09						
Pariyaram	SE	Herb	Naregamia alata	6	1666.67	3.00	0.2222	1.17						

Pariyaram	SE	Herb	Phyllanthus amarus	7	1944.44	7.00	0.1111		0.62				
Pariyaram	SE	Herb	Piper longum	6	1666.67	3.00	0.2222	1.24		1.90			
Pariyaram	SE	Herb	Pseudarthria viscida	2	555.56	2.00	0.1111	0.45					
Pariyaram	SE	Herb	Sida rhombifolia	14	3888.89	4.67	0.3333	5.52					
Pariyaram	SE	Tree	Acacia caesia	1	0.69	1.00	0.1111				0.03		
Pariyaram	SE	Tree	Acacia pennata	1	0.69	1.00	0.1111				0.08		
Pariyaram	SE	Tree	Acacia torta	2	1.39	1.00	0.2222				0.04		
Pariyaram	SE	Tree	Cassia fistula	5	3.47	1.25	0.4444				0.31		
Pariyaram	SE	Tree	Cinnamomum spp.	6	4.17	1.20	0.5556				0.00		
Pariyaram	SE	Tree	Pongamia pinnata	1	0.69	1.00	0.1111				0.00		
Pariyaram	SE	Tree	Wrightia tinctoria	1	0.69	1.00	0.1111					10.82	
Pariyaram	Teak	Herb	Biophytum sp.	42	8750.00	8.40	0.4167	2.09					
Pariyaram	Teak	Herb	Costus speciosus	4	833.33	2.00	0.1667	18.75					
Pariyaram	Teak	Herb	Curcuma zedoaria	5	1041.67	2.50	0.1667	17.20					
Pariyaram	Teak	Herb	Cyathula prostrata	3	625.00	3.00	0.0833	0.19		1.01			
Pariyaram	Teak	Herb	Desmodium gangeticum	2	416.67	1.00	0.1667	3.82					
Pariyaram	Teak	Herb	Ichnocarpus frutescens	4	833.33	2.00	0.1667	0.38					
Pariyaram	Teak	Herb	Naregamia alata	6	1250.00	2.00	0.2500	0.88					
Pariyaram	Teak	Herb	Phyllanthus amarus	2	416.67	2.00	0.0833		0.13				
Pariyaram	Teak	Herb	Piper longum	17	3541.67	8.50	0.1667	2.64		4.04			
Pariyaram	Teak	Herb	Piper spp.	6	1250.00	6.00	0.0833			131.44			
Pariyaram	Teak	Herb	Pseudarthria viscida	4	833.33	2.00	0.1667	0.67					
Pariyaram	Teak	Herb	Sida rhombifolia	1	208.33	1.00	0.0833	0.30					
Pariyaram	Teak	Herb	Tragia involucrata	5	1041.67	5.00	0.0833	2.97					
Vellikkulangara	EG	Herb	Costus speciosus	7	2500.00	3.50	0.2857	56.25					
Vellikkulangara	EG	Herb	Cyathula prostrata	8	2857.14	8.00	0.1429	0.88		4.63			

Vellikkulangara	EG	Herb	Desmodium gangeticum	3	1071.43	3.00	0.1429	9.83						
Vellikkulangara	EG	Herb	Piper longum	10	3571.43	5.00	0.2857	2.66		4.07				
Vellikkulangara	EG	Herb	Pseudarthria viscida	5	1785.71	5.00	0.1429	1.45						
Vellikkulangara	EG	Shrub	Strobilanthes ciliatus	8	457.14	8.00	0.1429	2.14						
Vellikkulangara	EG	Tree	Bauhinia malabarica	2	2.38	2.00	0.1429				3.79			
Vellikkulangara	EG	Tree	Cinnamomum spp.	12	14.29	4.00	0.4286				0.62			
Vellikkulangara	EG	Tree	Lagerstroemia reginae	64	76.19	21.33	0.4286				32.39			
Vellikkulangara	EG	Tree	Persea macrantha	16	19.05	5.33	0.4286				1.09			
Vellikkulangara	MDF	Herb	Asparagus recemosa	1	92.59	1.00	0.0370	2.62						
Vellikkulangara	MDF	Herb	Baliospermum montanum	4	370.37	4.00	0.0370	3.16						
Vellikkulangara	MDF	Herb	Barleria prattensis	40	3703.70	3.33	0.4444	4.48						
Vellikkulangara	MDF	Herb	Biophytum sp.	123	11388.89	11.18	0.4074	3.25						
Vellikkulangara	MDF	Herb	Costus speciosus	7	648.15	1.75	0.1481	14.58						
Vellikkulangara	MDF	Herb	Curcuma zedoaria	4	370.37	4.00	0.0370	6.11						
Vellikkulangara	MDF	Herb	Cyathula prostrata	77	7129.63	9.63	0.2963	2.19		11.55				
Vellikkulangara	MDF	Herb	Cyclea peltata	3	277.78	1.50	0.0741	4.24						
Vellikkulangara	MDF	Herb	Desmodium gangeticum	3	277.78	3.00	0.0370	2.55						
Vellikkulangara	MDF	Herb	Hemidesmus indicus	2	185.19	2.00	0.0370	0.17						
Vellikkulangara	MDF	Herb	Ichnocarpus frutescens	1	92.59	1.00	0.0370	0.04						
Vellikkulangara	MDF	Herb	Naregamia alata	106	9814.81	13.25	0.2963	6.90						
Vellikkulangara	MDF	Herb	Nervilia aragoana	4	370.37	4.00	0.0370	1.17						
Vellikkulangara	MDF	Herb	Piper longum	62	5740.74	7.75	0.2963	4.28		6.54				
Vellikkulangara	MDF	Herb	Pseudarthria viscida	6	555.56	3.00	0.0741	0.45						
Vellikkulangara	MDF	Herb	Sida rhombifolia	3	277.78	3.00	0.0370	0.39						
Vellikkulangara	MDF	Shrub	Holarrhena antidysenterica	12	177.78	1.71	0.2593	4.69						
Vellikkulangara	MDF	Shrub	Strobilanthes ciliatus	16	237.04	8.00	0.0741	1.11						

Vellikkulangara	MDF	Tree	Acacia caesia	14	3.24	1.40	0.3704				0.80			
Vellikkulangara	MDF	Tree	Acacia pennata	1	0.23	1.00	0.0370				0.00			
Vellikkulangara	MDF	Tree	Acacia torta	1	0.23	1.00	0.0370				0.02			
Vellikkulangara	MDF	Tree	Alstonia scholaris	7	1.62	1.40	0.1852				1.82			
Vellikkulangara	MDF	Tree	Bauhinia malabarica	1	0.23	1.00	0.0370				0.28			
Vellikkulangara	MDF	Tree	Cassia fistula	10	2.31	1.25	0.2963				1.35			
Vellikkulangara	MDF	Tree	Holoptelea integrifolia	2	0.46	1.00	0.0741				0.77			
Vellikkulangara	MDF	Tree	Spondias pinnata	2	0.46	1.00	0.0741				0.89			
Vellikkulangara	MDF	Tree	Wrightia tinctoria	28	6.48	2.00	0.5185					85.27		
Vellikkulangara	SE	Herb	Barleria prattensis	30	2777.78	5.00	0.2222	3.36						
Vellikkulangara	SE	Herb	Biophytum sp.	18	1666.67	4.50	0.1481	0.48						
Vellikkulangara	SE	Herb	Costus speciosus	37	3425.93	6.17	0.2222	77.08						
Vellikkulangara	SE	Herb	Curcuma zedoaria	8	740.74	4.00	0.0741	12.23						
Vellikkulangara	SE	Herb	Cyathula prostrata	82	7592.59	6.83	0.4444	2.33		12.30				
Vellikkulangara	SE	Herb	Cyclea peltata	3	277.78	3.00	0.0370	4.24						
Vellikkulangara	SE	Herb	Desmodium gangeticum	2	185.19	1.00	0.0741	1.70						
Vellikkulangara	SE	Herb	Elephantopus scaber	6	555.56	6.00	0.0370	1.43						
Vellikkulangara	SE	Herb	Naregamia alata	50	4629.63	16.67	0.1111	3.25						
Vellikkulangara	SE	Herb	Piper longum	117	10833.33	14.63	0.2963	8.08		12.35				
Vellikkulangara	SE	Herb	Piper spp.	6	555.56	6.00	0.0370			58.42				
Vellikkulangara	SE	Herb	Pseudarthria viscida	6	555.56	6.00	0.0370	0.45						
Vellikkulangara	SE	Herb	Rauvolfia serpentina	3	277.78	1.50	0.0741	0.59						
Vellikkulangara	SE	Herb	Sida rhombifolia	4	370.37	4.00	0.0370	0.53						
Vellikkulangara	SE	Shrub	Holarrhena antidysenterica	3	44.44	1.00	0.1111	0.67						
Vellikkulangara	SE	Tree	Acacia caesia	5	1.16	1.25	0.1481				0.80			
Vellikkulangara	SE	Tree	Acacia pennata	2	0.46	1.00	0.0741				0.00			

Vellikkulangara	SE	Tree	<i>Alstonia scholaris</i>	4	0.93	1.33	0.1111				1.82			
Vellikkulangara	SE	Tree	<i>Bauhinia malabarica</i>	1	0.23	1.00	0.0370				0.13			
Vellikkulangara	SE	Tree	<i>Cassia fistula</i>	3	0.69	1.00	0.1111				0.65			
Vellikkulangara	SE	Tree	<i>Cinnamomum spp.</i>	7	1.62	1.75	0.1481				0.49			
Vellikkulangara	SE	Tree	<i>Holoptelea integrifolia</i>	1	0.23	1.00	0.0370				0.68			
Vellikkulangara	SE	Tree	<i>Lagerstroemia reginae</i>	13	3.01	6.50	0.0741				1.08			
Vellikkulangara	SE	Tree	<i>Persea macrantha</i>	8	1.85	1.33	0.2222				8.08			
Vellikkulangara	SE	Tree	<i>Spondias pinnata</i>	3	0.69	1.00	0.1111				1.50			
Vellikkulangara	SE	Tree	<i>Wrightia tinctoria</i>	4	0.93	1.33	0.1111					12.91		
Vellikkulangara	Teak	Herb	<i>Amorphophallus paeoniifolius</i>	3	234.38	1.50	0.0625	51.48						
Vellikkulangara	Teak	Herb	<i>Aristolochia indica</i>	1	78.13	1.00	0.0313	0.34						
Vellikkulangara	Teak	Herb	<i>Biophytum sp.</i>	128	10000.00	8.53	0.4688	2.85						
Vellikkulangara	Teak	Herb	<i>Costus speciosus</i>	8	625.00	2.67	0.0938	14.06						
Vellikkulangara	Teak	Herb	<i>Cyathula prostrata</i>	26	2031.25	3.71	0.2188	0.62		3.29				
Vellikkulangara	Teak	Herb	<i>Cyclea peltata</i>	1	78.13	1.00	0.0313	1.19						
Vellikkulangara	Teak	Herb	<i>Desmodium velutnium</i>	5	390.63	1.67	0.0938	4.54						
Vellikkulangara	Teak	Herb	<i>Elephantopus scaber</i>	148	11562.50	14.80	0.3125	29.72						
Vellikkulangara	Teak	Herb	<i>Ichnocarpus frutescens</i>	16	1250.00	3.20	0.1563	0.56						
Vellikkulangara	Teak	Herb	<i>Naregamia alata</i>	12	937.50	3.00	0.1250	0.66						
Vellikkulangara	Teak	Herb	<i>Phyllanthus amarus</i>	21	1640.63	4.20	0.1563		0.52					
Vellikkulangara	Teak	Herb	<i>Piper longum</i>	6	468.75	6.00	0.0313	0.35		0.53				
Vellikkulangara	Teak	Herb	<i>Pseudarthria viscida</i>	1	78.13	1.00	0.0313	0.06						
Vellikkulangara	Teak	Herb	<i>Sida rhombifolia</i>	42	3281.25	4.67	0.2813	4.66						
Vellikkulangara	Teak	Herb	<i>Tragia involucrata</i>	10	781.25	2.00	0.1563	2.23						



**Table 5.1.3 Density, abundance, frequency and availability of usefulparts of NWFPs In different Forest Ranges of Vazhachal Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Charpa	EG	Herb	piper longum	9	5625.00	4.50	0.5000	4.20	6.41					
Charpa	EG	Herb	Piper sp.	12	7500.00	12.00	0.2500	788.63						
Charpa	EG	Herb	Pseudarthria viscida	4	2500.00	4.00	0.2500	2.02						
Charpa	EG	Tree	Cinnamomum spp.	1	2.08	1.00	0.2500				0.09			
Charpa	EG	Tree	Lagerstroemia reginae	1	2.08	1.00	0.2500				1.08			
Charpa	EG	Tree	Persea macrantha	1	2.08	1.00	0.2500				5.86			
Charpa	MDF	Herb	Cyclea peltata	2	555.56	1.00	0.2222	8.47						
Charpa	MDF	Herb	Desmodium velutnium	2	555.56	2.00	0.1111	6.46						
Charpa	MDF	Herb	Hemidesmus indicus	12	3333.33	3.00	0.4444	3.15						
Charpa	MDF	Herb	Ichnocarpus frutescens	39	10833.33	9.75	0.4444	4.89						
Charpa	MDF	Herb	Naregamia alata	21	5833.33	7.00	0.3333	4.10						
Charpa	MDF	Tree	Acacia caesia	11	7.64	2.20	0.5556				1.58			
Charpa	MDF	Tree	Acacia torta	2	1.39	2.00	0.1111				0.47			
Charpa	MDF	Tree	Bauhinia malabarica	1	0.69	1.00	0.1111				0.54			
Charpa	MDF	Tree	Wrightia tinctoria	3	2.08	1.50	0.2222					32.24		
Charpa	SE	Herb	Cyathula prostrata	7	1093.75	2.33	0.1875	0.34		1.77				
Charpa	SE	Herb	Hemidesmus indicus	3	468.75	3.00	0.0625	0.44						
Charpa	SE	Herb	Naregamia alata	1	156.25	1.00	0.0625	0.11						
Charpa	SE	Herb	piper longum	17	2656.25	3.40	0.3125	1.98	3.03					
Charpa	SE	Herb	Piper sp.	18	2812.50	3.60	0.3125	296.92						
Charpa	SE	Shrub	Strobilanthes ciliatus	67	1675.00	9.57	0.4375	7.86						
Charpa	SE	Tree	Acacia caesia	2	0.78	1.00	0.1250				0.09			
Charpa	SE	Tree	Acacia pennata	1	0.39	1.00	0.0625				0.11			

Charpa	SE	Tree	Acacia torta	1	0.39	1.00	0.0625					-		
Charpa	SE	Tree	Alstonia scholaris	3	1.17	1.00	0.1875					1.01		
Charpa	SE	Tree	Bauhinia malabarica	1	0.39	1.00	0.0625					0.15		
Charpa	SE	Tree	Cassia fistula	1	0.39	1.00	0.0625					0.02		
Charpa	SE	Tree	Cinnamomum spp.	6	2.34	1.20	0.3125					0.77		
Charpa	SE	Tree	Holoptelea integrifolia	2	0.78	1.00	0.1250					1.85		
Charpa	SE	Tree	Lagerstroemia reginae	3	1.17	3.00	0.0625					0.24		
Charpa	SE	Tree	Persea macrantha	3	1.17	1.00	0.1875					2.60		
Charpa	SE	Tree	Wrightia tinctoria	2	0.78	2.00	0.0625						13.33	
Charpa	Teak	Herb	Biophytum sp.	1	208.33	1.00	0.0833			0.06				
Charpa	Teak	Herb	Cyathula prostrata	5	1041.67	2.50	0.1667	0.32			1.69			
Charpa	Teak	Herb	Cyclea peltata	5	1041.67	2.50	0.1667	15.89						
Charpa	Teak	Herb	Desmodium gangeticum	2	416.67	2.00	0.0833	3.82						
Charpa	Teak	Herb	Piper sp.	1	208.33	1.00	0.0833	21.91						
Charpa	Teak	Herb	Pseudarthria viscida	7	1458.33	2.33	0.2500	1.18						
Charpa	Teak	Herb	Sida rhombifolia	1	208.33	1.00	0.0833	0.30						
Charpa	Teak	Herb	Solanum Varium	2	416.67	2.00	0.0833	4.28						
Kollathirumedu	MDF	Herb	Cyclea peltata	2	1000.00	2.00	0.2000	15.25						
Kollathirumedu	MDF	Herb	Desmodium velutnium	1	500.00	1.00	0.2000	5.81						
Kollathirumedu	MDF	Herb	Hemidesmus indicus	4	2000.00	4.00	0.2000	1.89						
Kollathirumedu	MDF	Herb	Naregamia alata	9	4500.00	4.50	0.4000	3.16						
Kollathirumedu	MDF	Tree	Acacia caesia	1	1.25	1.00	0.2000					0.29		
Kollathirumedu	MDF	Tree	Acacia pennata	1	1.25	1.00	0.2000					0.61		
Kollathirumedu	MDF	Tree	Persea macrantha	1	1.25	1.00	0.2000					0.94		
Kollathirumedu	SE	Herb	Amorphophallus paeoniifolius	1	75.76	1.00	0.0303	22.36						
Kollathirumedu	SE	Herb	Biophytum sp.	6	454.55	6.00	0.0303			0.13				

Kollathirumedu	SE	Herb	Costus speciosus	2	151.52	2.00	0.0303	3.41						
Kollathirumedu	SE	Herb	Curcuma zedoaria	23	1742.42	4.60	0.1515	28.77						
Kollathirumedu	SE	Herb	Cyathula prostrata	13	984.85	6.50	0.0606	0.30		1.60				
Kollathirumedu	SE	Herb	Cyclea peltata	2	151.52	2.00	0.0303	2.31						
Kollathirumedu	SE	Herb	Desmodium gangeticum	6	454.55	6.00	0.0303	4.17						
Kollathirumedu	SE	Herb	Desmodium velutnium	1	75.76	1.00	0.0303	0.88						
Kollathirumedu	SE	Herb	Hemidesmus indicus	6	454.55	3.00	0.0606	0.43						
Kollathirumedu	SE	Herb	Ichnocarpus frutescens	1	75.76	1.00	0.0303	0.03						
Kollathirumedu	SE	Herb	Naregamia alata	9	681.82	3.00	0.0909	0.48						
Kollathirumedu	SE	Herb	Piper longum	3	227.27	3.00	0.0303	0.17		0.26				
Kollathirumedu	SE	Herb	Piper sp.	14	1060.61	3.50	0.1212	111.52						
Kollathirumedu	SE	Herb	Sida rhombifolia	2	151.52	2.00	0.0303	0.22						
Kollathirumedu	SE	Shrub	Strobilanthes ciliatus	52	630.30	5.78	0.2727	2.96						
Kollathirumedu	SE	Tree	Acacia caesia	3	0.57	1.00	0.0909					0.15		
Kollathirumedu	SE	Tree	Acacia pennata	3	0.57	3.00	0.0303					0.11		
Kollathirumedu	SE	Tree	Acacia torta	1	0.19	1.00	0.0303					0.07		
Kollathirumedu	SE	Tree	Alstonia scholaris	5	0.95	1.00	0.1515					0.72		
Kollathirumedu	SE	Tree	Bauhinia racemosa	4	0.76	2.00	0.0606					0.34		
Kollathirumedu	SE	Tree	Cinnamomum spp.	36	6.82	2.40	0.4545					1.43		
Kollathirumedu	SE	Tree	Ficus racemosa	6	1.14	3.00	0.0606					0.29		
Kollathirumedu	SE	Tree	Lagerstroemia reginae.	6	1.14	2.00	0.0909					0.32		
Kollathirumedu	SE	Tree	Persea macrantha	11	2.08	1.10	0.3030					3.26		
Kollathirumedu	SE	Tree	Pongamia pinnata	3	0.57	1.00	0.0909					0.02		
Kollathirumedu	SE	Tree	Spondias pinnata	1	0.19	1.00	0.0303					0.29		
Kollathirumedu	Teak	Herb	Cyclea peltata	9	2812.50	2.25	0.5000	42.89						
Kollathirumedu	Teak	Herb	Desmodium velutnium	5	1562.50	2.50	0.2500	18.16						

Kollathirumedu	Teak	Herb	Hemidesmus indicus	14	4375.00	4.67	0.3750	4.13						
Kollathirumedu	Teak	Herb	Ichnocarpus frutescens	2	625.00	2.00	0.1250	0.28						
Kollathirumedu	Teak	Herb	Naregamia alata	5	1562.50	5.00	0.1250	1.10						
Sholayar	EG	Herb	Curcuma zedoaria	2	416.67	2.00	0.0833	11.09						
Sholayar	EG	Herb	Cyclea peltata	1	208.33	1.00	0.0833	3.18						
Sholayar	EG	Herb	Piper sp.	30	6250.00	3.33	0.7500	372.41						
Sholayar	EG	Tree	Cinnamomum spp.	2	1.39	1.00	0.1667					0.32		
Sholayar	EG	Tree	Ficus racemosa	1	0.69	1.00	0.0833					0.20		
Sholayar	EG	Tree	Persea macrantha	12	8.33	1.50	0.6667					10.96		
Sholayar	SE	Herb	Amorphophallus paeoniifolius	8	476.19	2.67	0.0714	140.56						
Sholayar	SE	Herb	Curcuma zedoaria	20	1190.48	4.00	0.1190	19.65						
Sholayar	SE	Herb	Cyathula prostrata	16	952.38	3.20	0.1190	0.29			1.54			
Sholayar	SE	Herb	Desmodium velutnium	9	535.71	3.00	0.0714	6.23						
Sholayar	SE	Herb	Piper longum	24	1428.57	4.80	0.1190	1.07		1.63				
Sholayar	SE	Herb	Piper sp.	78	4642.86	3.71	0.5000	438.13						
Sholayar	SE	Tree	Acacia pennata	1	0.15	1.00	0.0238					0.05		
Sholayar	SE	Tree	Acacia torta	8	1.19	1.60	0.1190					0.24		
Sholayar	SE	Tree	Alstonia scholaris	6	0.89	1.20	0.1190					0.86		
Sholayar	SE	Tree	Cassia fistula	1	0.15	1.00	0.0238					0.01		
Sholayar	SE	Tree	Cinnamomum spp.	15	2.23	1.88	0.1905					0.15		
Sholayar	SE	Tree	Holoptelea integrifolia	1	0.15	1.00	0.0238					0.03		
Sholayar	SE	Tree	Lagerstroemia reginae	1	0.15	1.00	0.0238					0.05		
Sholayar	SE	Tree	Persea macrantha	7	1.04	1.40	0.1190					0.72		
Sholayar	SE	Tree	Wrightia tinctoria	3	0.45	1.50	0.0476					7.05		
Vazhachal	EG	Tree	Acacia torta	4	5.56	1.33	0.5000					1.36		
Vazhachal	EG	Tree	Cinnamomum spp.	2	2.78	1.00	0.3333					0.86		

Vazhachal	EG	Tree	Pongamia pinnata	2	2.78	1.00	0.3333					0.99		
Vazhachal	MDF	Herb	Amorphophallus paeoniifolius	2	454.55	2.00	0.0909	134.17						
Vazhachal	MDF	Herb	Costus speciosus	11	2500.00	5.50	0.1818	56.25						
Vazhachal	MDF	Herb	Cyathula prostrata	8	1818.18	4.00	0.1818	0.56		2.95				
Vazhachal	MDF	Herb	Cyclea peltata	1	227.27	1.00	0.0909	3.47						
Vazhachal	MDF	Herb	Desmodium velutnium	1	227.27	1.00	0.0909	2.64						
Vazhachal	MDF	Herb	Hemidesmus indicus	9	2045.45	3.00	0.2727	1.93						
Vazhachal	MDF	Herb	Ichnocarpus frutescens	20	4545.45	10.00	0.1818	2.05						
Vazhachal	MDF	Herb	Naregamia alata	24	5454.55	6.00	0.3636	3.83						
Vazhachal	MDF	Herb	Phyllanthus amarus	8	1818.18	8.00	0.0909	0.58						
Vazhachal	MDF	Herb	Piper longum	12	2727.27	6.00	0.1818	2.03		3.11				
Vazhachal	MDF	Herb	Pseudarthria viscida	3	681.82	3.00	0.0909	3.34						
Vazhachal	MDF	Tree	Acacia caesia	6	3.41	2.00	0.2727					0.82		
Vazhachal	MDF	Tree	Alstonia scholaris	2	1.14	1.00	0.1818					0.83		
Vazhachal	MDF	Tree	Bauhinia malabarica	1	0.57	1.00	0.0909					1.16		
Vazhachal	MDF	Tree	Bauhinia racemosa	1	0.57	1.00	0.0909					0.46		
Vazhachal	MDF	Tree	Spondias pinnata	4	2.27	1.33	0.2727					0.68		
Vazhachal	MDF	Tree	Wrightia tinctoria	5	2.84	1.67	0.2727					27.57		
Vazhachal	MDF	Tree	Acacia caesia	7	1590.91	3.50	0.1818	3.10						
Vazhachal	SE	Herb	Curcuma zedoaria	60	5357.14	8.57	0.2500	88.45						
Vazhachal	SE	Herb	Cyathula prostrata	11	982.14	5.50	0.0714	0.30		1.59				
Vazhachal	SE	Herb	Desmodium gangeticum	4	357.14	4.00	0.0357	13.69		3.28				
Vazhachal	SE	Herb	Desmodium velutnium	2	178.57	2.00	0.0357	6.52		2.08				
Vazhachal	SE	Herb	Hemidesmus indicus	10	892.86	5.00	0.0714	0.84						
Vazhachal	SE	Herb	Ichnocarpus frutescens	3	267.86	1.50	0.0714	0.12						
Vazhachal	SE	Herb	Naregamia alata	6	535.71	3.00	0.0714	0.38						

Vazhachal	SE	Herb	Piper longum	10	892.86	1.67	0.2143	0.67	1.02						
Vazhachal	SE	Herb	Piper sp.	4	357.14	1.33	0.1071	37.55							
Vazhachal	SE	Tree	Acacia caesia	1	0.22	1.00	0.0357					0.04			
Vazhachal	SE	Tree	Acacia pennata	1	0.22	1.00	0.0357					0.06			
Vazhachal	SE	Tree	Acacia torta	4	0.89	2.00	0.0714					0.18			
Vazhachal	SE	Tree	Alstonia scholaris	15	3.35	2.14	0.2500					2.20			
Vazhachal	SE	Tree	Cassia fistula	1	0.22	1.00	0.0357					0.09			
Vazhachal	SE	Tree	Cinnamomum spp.	28	6.25	2.15	0.4643					1.90			
Vazhachal	SE	Tree	Ficus racemosa	1	0.22	1.00	0.0357					0.08			
Vazhachal	SE	Tree	Persea macrantha	3	0.67	1.00	0.1071					0.13			
Vazhachal	SE	Tree	Pongamia pinnata	1	0.22	1.00	0.0357					0.02			
Vazhachal	SE	Tree	Spondias pinnata	2	0.45	1.00	0.0714					0.29			
Vazhachal	SE	Tree	Wrightia tinctoria	1	0.22	1.00	0.0357								3.10

**Table 5.1.4 Density, abundance, frequency and availability of usefulparts of NWFPs in different Forest Ranges of Peechi Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)							
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed	
Chimmini	MDF	Herb	Asparagus racemosa		56.82	1.00	0.0227	1.61							
Chimmini	MDF	Herb	Biophytum spp.	50	2840.91	16.67	0.0682		0.81						
Chimmini	MDF	Herb	Costus speciosus	1	56.82	1.00	0.0227	5.11							
Chimmini	MDF	Herb	Cyathula prostrata	10	568.18	5.00	0.0455	0.17			0.92				
Chimmini	MDF	Herb	Cyclea peltata	8	454.55	1.60	0.1136	6.93							
Chimmini	MDF	Herb	Desmodium gangeticum	6	340.91	1.50	0.0909	2.08							
Chimmini	MDF	Herb	Desmodium gyrans	1	56.82	1.00	0.0227	0.04							
Chimmini	MDF	Herb	Hemidesmus indicus	31	1761.36	3.44	0.2045	1.45							
Chimmini	MDF	Herb	Ichnocarpus frutescens	17	965.91	4.25	0.0909	0.28							

Chimmini	MDF	Herb	Naregamia alata	83	4715.91	7.55	0.2500	3.32						
Chimmini	MDF	Herb	Piper longum	41	2329.55	4.56	0.2045	1.74		2.66				
Chimmini	MDF	Herb	Piper sp.	7	397.73	3.50	0.0455			23.90				
Chimmini	MDF	Herb	Pseudarthria viscida	5	284.09	2.50	0.0455	0.23						
Chimmini	MDF	Shrub	Holarrhena antidysenterica	26	236.36	2.89	0.2045				1.92			
Chimmini	MDF	Shrub	Strobilanthes ciliatus	67	609.09	22.33	0.0682	2.86						
Chimmini	MDF	Tree	Acacia caesia	18	2.56	1.38	0.2955				0.41			
Chimmini	MDF	Tree	Acacia pennata	5	0.71	1.25	0.0909				0.13			
Chimmini	MDF	Tree	Acacia torta	13	1.85	1.44	0.2045				0.18			
Chimmini	MDF	Tree	Alstonia scholaris	5	0.71	1.00	0.1136				0.47			
Chimmini	MDF	Tree	Bauhinia racemosa	4	0.57	1.00	0.0909				0.62			
Chimmini	MDF	Tree	Cassia fistula	6	0.85	1.20	0.1136				0.15			
Chimmini	MDF	Tree	Cinnamomum spp.	12	1.70	1.33	0.2045				0.24			
Chimmini	MDF	Tree	Holoptelea integrifolia	1	0.14	1.00	0.0227				-			
Chimmini	MDF	Tree	Lagerstroemia reginae	1	0.14	1.00	0.0227				0.04			
Chimmini	MDF	Tree	Persea macrantha	1	0.14	1.00	0.0227				0.04			
Chimmini	MDF	Tree	Wrightia tinctoria	53	7.53	3.53	0.3409					60.14		
Chimmini	SE	Herb	Amorphophallus paeoniifolius	2	60.98	2.00	0.0122	18.00						
Chimmini	SE	Herb	Asparagus racemosa	2	60.98	2.00	0.0122	1.73						
Chimmini	SE	Herb	Biophytum sp.	9	274.39	4.50	0.0244		0.08					
Chimmini	SE	Herb	Cyathula prostrata	39	1189.02	6.50	0.0732	0.37		1.93				
Chimmini	SE	Herb	Cyclea peltata	3	91.46	1.50	0.0244	1.39						
Chimmini	SE	Herb	Desmodium gangeticum	8	243.90	8.00	0.0122	2.24						
Chimmini	SE	Herb	Desmodium gyrans	4	121.95	4.00	0.0122	0.08						
Chimmini	SE	Herb	Ichnocarpus frutescens	5	152.44	2.50	0.0244	0.07						
Chimmini	SE	Herb	Naregamia alata	3	91.46	3.00	0.0122	0.06						
Chimmini	SE	Herb	Piper longum	53	1615.85	5.30	0.1220	1.21		1.84				

Chimmini	SE	Herb	Piper sp.	99	3018.29	4.13	0.2927			317.37			
Chimmini	SE	Shrub	Holarrhena antidysenterica	2	9.76	1.00	0.0244				0.29		
Chimmini	SE	Shrub	Strobilanthes ciliatus	192	936.59	10.67	0.2195	4.39					
Chimmini	SE	Tree	Acacia caesia	8	0.61	1.14	0.0854				0.09		
Chimmini	SE	Tree	Acacia pennata	5	0.38	1.25	0.0488				0.06		
Chimmini	SE	Tree	Acacia torta	2	0.15	1.00	0.0244				0.01		
Chimmini	SE	Tree	Alstonia scholaris	7	0.53	1.00	0.0854				0.35		
Chimmini	SE	Tree	Bauhinia malabarica	2	0.15	1.00	0.0244				0.06		
Chimmini	SE	Tree	Bauhinia racemosa	2	0.15	2.00	0.0122				0.14		
Chimmini	SE	Tree	Cassia fistula	5	0.38	1.25	0.0488				0.09		
Chimmini	SE	Tree	Cinnamomum spp.	56	4.27	1.65	0.4146				0.95		
Chimmini	SE	Tree	Holoptelea integrifolia	3	0.23	1.00	0.0366				0.06		
Chimmini	SE	Tree	Lagerstroemia reginae	2	0.15	2.00	0.0122				0.08		
Chimmini	SE	Tree	Persea macrantha	1	0.08	1.00	0.0122				0.07		
Chimmini	SE	Tree	Spondias pinnata	9	0.69	1.13	0.0976				0.58		
Chimmini	SE	Tree	Wrightia tinctoria	7	0.53	1.75	0.0488					5.99	
Peechi	EG	Herb	Biophytum sp.	28	11666.67	28.00	0.1667		3.33				
Peechi	EG	Herb	Hemidesmus indicus	1	416.67	1.00	0.1667	0.39					
Peechi	EG	Herb	Piper longum	12	5000.00	12.00	0.1667	3.73		5.70			
Peechi	EG	Herb	Sida rhombifolia	1	416.67	1.00	0.1667	0.59					
Peechi	EG	Shrub	Strobilanthes ciliatus	13	866.67	6.50	0.3333	4.06					
Peechi	EG	Tree	Alstonia scholaris	1	1.39	1.00	0.1667				1.23		
Peechi	EG	Tree	Cinnamomum spp.	2	2.78	1.00	0.3333				0.10		
Peechi	EG	Tree	Holoptelea integrifolia	1	1.39	1.00	0.1667				0.04		
Peechi	EG	Tree	Wrightia tinctoria	4	5.56	2.00	0.3333					38.11	
Peechi	MDF	Herb	Amorphophallus paeoniifolius	7	64.10	1.75	0.0147	18.92					
Peechi	MDF	Herb	Asparagus racemosa	11	100.73	1.57	0.0256	2.85					



Peechi	MDF	Herb	Baliospermum montanum	31	283.88	1.72	0.0659	2.42						
Peechi	MDF	Herb	Biophytum sp.	1262	11556.78	13.01	0.3553		3.29					
Peechi	MDF	Herb	Costus speciosus	116	1062.27	4.14	0.1026	23.90						
Peechi	MDF	Herb	Curcuma zedoaria	1	9.16	1.00	0.0037	0.15						
Peechi	MDF	Herb	Cyathula prostrata	10	91.58	5.00	0.0073	0.03		0.15				
Peechi	MDF	Herb	Cyclea peltata	59	540.29	1.90	0.1136	8.24						
Peechi	MDF	Herb	Desmodium velutnium	17	155.68	1.55	0.0403	1.81						
Peechi	MDF	Herb	Elephantopus scaber	17	155.68	3.40	0.0183		0.40					
Peechi	MDF	Herb	Hemidesmus indicus	434	3974.36	3.47	0.4579	3.75						
Peechi	MDF	Herb	Ichnocarpus frutescens	248	2271.06	3.59	0.2527	1.02						
Peechi	MDF	Herb	Naregamia alata	854	7820.51	10.05	0.3114	5.50						
Peechi	MDF	Herb	Phyllanthus amarus	35	320.51	2.92	0.0440	0.10						
Peechi	MDF	Herb	Piper longum	2956	27069.60	21.27	0.5092	20.19		30.86				
Peechi	MDF	Herb	Pseudarthria viscida	11	100.73	3.67	0.0110	0.08						
Peechi	MDF	Herb	Rauvolfia serpentina	11	100.73	5.50	0.0073	0.21						
Peechi	MDF	Herb	Sida rhombifolia	11	100.73	1.83	0.0220	0.14						
Peechi	MDF	Herb	Tragia involucrata	2	18.32	1.00	0.0073	0.05						
Peechi	MDF	Shrub	Holarrhena antidysenterica	495	725.27	3.26	0.5568							
Peechi	MDF	Tree	Acacia caesia	209	4.78	2.79	0.2747			0.45				
Peechi	MDF	Tree	Acacia pennata	57	1.30	1.50	0.1392			0.20				
Peechi	MDF	Tree	Acacia torta	164	3.75	3.81	0.1575			0.25				
Peechi	MDF	Tree	Alstonia scholaris	7	0.16	1.40	0.0183			0.21				
Peechi	MDF	Tree	Bauhinia malabarica	4	0.09	1.00	0.0147			0.15				
Peechi	MDF	Tree	Bauhinia racemosa	31	0.71	1.19	0.0952			1.29				
Peechi	MDF	Tree	Butea monosperma	2	0.05	1.00	0.0073			0.02				
Peechi	MDF	Tree	Cassia fistula	104	2.38	1.89	0.2015			0.42				
Peechi	MDF	Tree	Cinnamomum spp.	7	0.16	1.75	0.0147			0.00				

Peechi	MDF	Tree	<i>Ficus racemosa</i>	1	0.02	1.00	0.0037					-				
Peechi	MDF	Tree	<i>Lagerstroemia reginae</i>	5	0.11	1.67	0.0110					0.03				
Peechi	MDF	Tree	<i>Persea macrantha</i>	1	0.02	1.00	0.0037					0.01				
Peechi	MDF	Tree	<i>Pongamia pinnata</i>	20	0.46	1.82	0.0403					0.04				
Peechi	MDF	Tree	<i>Spondias pinnata</i>	10	0.23	1.00	0.0366					0.02				
Peechi	MDF	Tree	<i>Wrightia tinctoria</i>	2170	49.68	9.00	0.8828						343.88			
Peechi	SE	Herb	<i>Asparagus racemosa</i>	1	100.00	1.00	0.0400	2.83								
Peechi	SE	Herb	<i>Baliospermum montanum</i>	2	200.00	2.00	0.0400	1.70								
Peechi	SE	Herb	<i>Biophytum sp.</i>	123	12300.00	12.30	0.4000			3.51						
Peechi	SE	Herb	<i>Cyclea peltata</i>	9	900.00	2.25	0.1600	13.73								
Peechi	SE	Herb	<i>Hemidesmus indicus</i>	9	900.00	1.29	0.2800	0.85								
Peechi	SE	Herb	<i>Ichnocarpus frutescens</i>	9	900.00	1.80	0.2000	0.41								
Peechi	SE	Herb	<i>Naregamia alata</i>	10	1000.00	5.00	0.0800	0.70								
Peechi	SE	Herb	<i>Phyllanthus amarus</i>	4	400.00	2.00	0.0800	0.13								
Peechi	SE	Herb	<i>Piper longum</i>	190	19000.00	13.57	0.5600	21.66								
Peechi	SE	Shrub	<i>Holarrhena antidysenterica</i>	7	112.00	1.75	0.1600						-			
Peechi	SE	Tree	<i>Acacia caesia</i>	4	1.00	2.00	0.0800						0.29			
Peechi	SE	Tree	<i>Acacia pennata</i>	2	0.50	1.00	0.0800						0.15			
Peechi	SE	Tree	<i>Acacia torta</i>	1	0.25	1.00	0.0400						0.02			
Peechi	SE	Tree	<i>Alstonia scholaris</i>	2	0.50	1.00	0.0800						0.02			
Peechi	SE	Tree	<i>Cassia fistula</i>	1	0.25	1.00	0.0400						0.02			
Peechi	SE	Tree	<i>Cinnamomum spp.</i>	17	4.25	2.43	0.2800						-			
Peechi	SE	Tree	<i>Lagerstroemia reginae</i>	1	0.25	1.00	0.0400						0.13			
Peechi	SE	Tree	<i>Persea macrantha</i>	2	0.50	1.00	0.0800						0.41			
Peechi	SE	Tree	<i>Pongamia pinnata</i>	3	0.75	1.50	0.0800						0.01			
Peechi	SE	Tree	<i>Wrightia tinctoria</i>	144	36.00	8.47	0.6800							291.91		
Peechi	Teak	Herb	<i>Asparagus racemosa</i>	2	49.02	1.00	0.0196	1.39								

Peechi	Teak	Herb	Baliospermum montanum	13	318.63	1.30	0.0980	2.71											
Peechi	Teak	Herb	Biophytum sp.	136	3333.33	7.16	0.1863		0.95										
Peechi	Teak	Herb	Costus speciosus	16	392.16	3.20	0.0490	8.82											
Peechi	Teak	Herb	Curcuma zedoaria	1	24.51	1.00	0.0098	0.40											
Peechi	Teak	Herb	Cyathula prostrata	1	24.51	1.00	0.0098	0.01	0.04										
Peechi	Teak	Herb	Cyclea peltata	43	1053.92	2.69	0.1569	16.07											
Peechi	Teak	Herb	Desmodium gyrans	1	24.51	1.00	0.0098	0.02											
Peechi	Teak	Herb	Desmodium velutnium	4	98.04	1.33	0.0294	1.14											
Peechi	Teak	Herb	Elephantopus scaber	1	24.51	1.00	0.0098		0.06										
Peechi	Teak	Herb	Hemidesmus indicus	470	11519.61	6.53	0.7059	10.87											
Peechi	Teak	Herb	Ichnocarpus frutescens	272	6666.67	6.63	0.4020	3.01											
Peechi	Teak	Herb	Naregamia alata	306	7500.00	6.00	0.5000	5.50											
Peechi	Teak	Herb	Phyllanthus amarus	10	245.10	2.50	0.0392	0.08											
Peechi	Teak	Herb	Piper longum	505	12377.45	24.05	0.2059	9.23	14.11										
Peechi	Teak	Herb	Pseudarthria viscida	5	122.55	1.67	0.0294	0.08											
Peechi	Teak	Herb	Sida rhombifolia	6	147.06	2.00	0.0294	0.14											
Peechi	Teak	Shrub	Holarrhena antidysenterica	466	1827.45	5.68	0.8039												

**Table 5.1.5 Density, abundance, frequency and availability of usefulparts of NWFPs in different Forest Ranges of Nenmara Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)											
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed					
Alathur	MDF	Herb	Biophytum sp.	32	40000.00	16.00	1.0000		11.40										
Alathur	MDF	Herb	Ichnocarpus frutescens	4	5000.00	4.00	0.5000	2.26											
Alathur	MDF	Shrub	Holarrhena antidysenterica	2	400.00	2.00	0.5000												
Alathur	MDF	Tree	Acacia caesia	2	6.25	2.00	0.5000					0.84							
Alathur	MDF	Tree	Acacia torta	1	3.13	1.00	0.5000					0.12							

Alathur	MDF	Tree	Wrightia tinctoria	5	15.63	5.00	0.5000					209.16		
Alathur	SE	Herb	Biophytum sp.	4	5000.00	4.00	0.5000			1.43				
Alathur	SE	Tree	Acacia caesia	4	12.50	4.00	0.5000					1.06		
Alathur	SE	Tree	Alstonia scholaris	1	3.13	1.00	0.5000					1.81		
Alathur	SE	Tree	Bauhinia malabarica	1	3.13	1.00	0.5000					5.48		
Alathur	SE	Tree	Cassia fistula	2	6.25	2.00	0.5000					0.04		
Alathur	SE	Tree	Lagerstroemia reginae	1	3.13	1.00	0.5000					1.12		
Alathur	Teak	Herb	Biophytum sp.	206	13205.13	17.17	0.3077			11.40				
Alathur	Teak	Herb	Costus speciosus	56	3589.74	8.00	0.1795	80.77						
Alathur	Teak	Herb	Cyathula prostrata	5	320.51	2.50	0.0513	0.10			0.52			
Alathur	Teak	Herb	Cyclea peltata	1	64.10	1.00	0.0256	0.98						
Alathur	Teak	Herb	Desmodium gangeticum	14	897.44	2.33	0.1538	8.23						
Alathur	Teak	Herb	Elephantopus scaber	1	64.10	1.00	0.0256			0.16				
Alathur	Teak	Herb	Hemidesmus indicus	34	2179.49	2.62	0.3333	2.06						
Alathur	Teak	Herb	Ichnocarpus frutescens	32	2051.28	5.33	0.1538	0.93						
Alathur	Teak	Herb	Naregamia alata	8	512.82	4.00	0.0513	0.36						
Alathur	Teak	Herb	Phyllanthus amarus	5	320.51	5.00	0.0256	0.10						
Alathur	Teak	Herb	Piper longum	70	4487.18	10.00	0.1795	3.35			5.12			
Alathur	Teak	Herb	Pseudarthria viscida	4	256.41	2.00	0.0513	0.21						
Alathur	Teak	Shrub	Holarrhena antidysenterica	12	123.08	1.71	0.1795							
Kollengode	MDF	Herb	Biophytum sp.	7	1166.67	3.50	0.1333			0.33				
Kollengode	MDF	Herb	Desmodium gangeticum	6	1000.00	6.00	0.0667	0.98						
Kollengode	MDF	Herb	Elephantopus scaber	5	833.33	5.00	0.0667			2.14				
Kollengode	MDF	Herb	Hemidesmus indicus	7	1166.67	7.00	0.0667	1.10						
Kollengode	MDF	Herb	Piper longum	23	3833.33	5.75	0.2667	2.86			4.37			
Kollengode	MDF	Herb	Piper spp.	2	333.33	1.00	0.1333				35.05			
Kollengode	MDF	Herb	Sida rhombifolia	2	333.33	2.00	0.0667	0.47						

Kollengode	MDF	Shrub	Holarrhena antidysenterica	8	213.33	1.60	0.3333				16.07			
Kollengode	MDF	Tree	Acacia caesia	5	2.08	1.67	0.2000				0.16			
Kollengode	MDF	Tree	Acacia pennata	9	3.75	2.25	0.2667				0.54			
Kollengode	MDF	Tree	Acacia torta	2	0.83	2.00	0.0667				0.04			
Kollengode	MDF	Tree	Alstonia scholaris	6	2.50	1.00	0.4000				1.03			
Kollengode	MDF	Tree	Bauhinia malabarica	7	2.92	1.75	0.2667				2.58			
Kollengode	MDF	Tree	Cassia fistula	4	1.67	1.33	0.2000				0.57			
Kollengode	MDF	Tree	Ficus racemosa	8	3.33	1.60	0.3333				1.28			
Kollengode	MDF	Tree	Wrightia tinctoria	98	40.83	6.53	1.0000				308.72			
Kollengode	Teak	Herb	Biophytum sp.	70	19444.44	23.33	0.3333		5.54					
Kollengode	Teak	Herb	Elephantopus scaber	21	5833.33	7.00	0.3333		14.99					
Kollengode	Teak	Herb	Hemidesmus indicus	2	555.56	2.00	0.1111	0.52						
Kollengode	Teak	Herb	Ichnocarpus frutescens	61	16944.44	7.63	0.8889	7.64						
Kollengode	Teak	Herb	Piper longum	4	1111.11	4.00	0.1111	0.83			1.27			
Kollengode	Teak	Herb	Sida rhombifolia	11	3055.56	5.50	0.2222	4.34						
Nelliyampathy	EG	Herb	Cyathula prostrata	3	375.00	1.00	0.1500	0.12			0.61			
Nelliyampathy	EG	Herb	Piper longum	2	250.00	2.00	0.0500	0.19			0.29			
Nelliyampathy	EG	Herb	Piper spp.	21	2625.00	2.10	0.5000				170.87			
Nelliyampathy	EG	Shrub	Strobilanthes ciliatus	275	5500.00	18.33	0.7500	25.80						
Nelliyampathy	EG	Tree	Cinnamomum spp.	10	4.17	1.11	0.4500				1.04			
Nelliyampathy	SE	Herb	Desmodium gangeticum	3	107.14	3.00	0.0143	0.98						
Nelliyampathy	SE	Herb	Piper longum	16	571.43	3.20	0.0714	0.43			0.65			
Nelliyampathy	SE	Herb	Piper spp.	54	1928.57	2.25	0.3429				112.66			
Nelliyampathy	SE	Herb	Solanum viarum	1	35.71	1.00	0.0143	0.37						
Nelliyampathy	SE	Shrub	Strobilanthes ciliatus	583	3331.43	11.43	0.7286	15.62						
Nelliyampathy	SE	Tree	Alstonia scholaris	2	0.18	1.00	0.0286				-			
Nelliyampathy	SE	Tree	Cinnamomum spp.	21	1.88	1.05	0.2857				0.64			

**Table 5.1.6 Density, abundance, frequency and availability of usefulparts of NWFPs in different Forest Ranges of Palakkad Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Olavakkode	MDF	Herb	Barleria prattensis	2	78.13	2.00	0.0156	0.09						
Olavakkode	MDF	Herb	Biophytum sp.	43	1679.69	5.38	0.1250		0.48					
Olavakkode	MDF	Herb	Costus speciosus	10	390.63	5.00	0.0313	8.79						
Olavakkode	MDF	Herb	Curcuma zedoaria	16	625.00	2.67	0.0938	10.32						
Olavakkode	MDF	Herb	Cyathula prostrata	13	507.81	3.25	0.0625	0.16		0.82				
Olavakkode	MDF	Herb	Desmodium gangeticum	12	468.75	4.00	0.0469	4.30						
Olavakkode	MDF	Herb	Desmodium velutnium	2	78.13	2.00	0.0156	0.91						
Olavakkode	MDF	Herb	Elephantopus scaber	3	117.19	3.00	0.0156		0.30					
Olavakkode	MDF	Herb	Hemidesmus indicus	36	1406.25	4.00	0.1406	1.33						
Olavakkode	MDF	Herb	Ichnocarpus frutescens	96	3750.00	5.05	0.2969	1.69						
Olavakkode	MDF	Herb	Naregamia alata	40	1562.50	2.86	0.2188	1.10						
Olavakkode	MDF	Herb	Piper longum	401	15664.06	14.32	0.4375	11.68		17.86				
Olavakkode	MDF	Herb	Piper sp.	38	1484.38	2.71	0.2188			156.08				
Olavakkode	MDF	Herb	Sida rhombifolia	7	273.44	2.33	0.0469	0.39						
Olavakkode	MDF	Shrub	Holarrhena antidysenterica	8	50.00	2.67	0.0469	1.67						
Olavakkode	MDF	Tree	Acacia caesia	3	0.29	1.50	0.0313				0.08			
Olavakkode	MDF	Tree	Acacia pennata	20	1.95	2.50	0.1250				0.32			
Olavakkode	MDF	Tree	Alstonia scholaris	7	0.68	1.00	0.1094				0.46			
Olavakkode	MDF	Tree	Bauhinia malabarica	14	1.37	3.50	0.0625				1.14			
Olavakkode	MDF	Tree	Bauhinia racemosa	3	0.29	1.50	0.0313				0.14			
Olavakkode	MDF	Tree	Cassia fistula	2	0.20	1.00	0.0313				0.02			
Olavakkode	MDF	Tree	Ficus racemosa	44	4.30	1.83	0.3750				2.58			
Olavakkode	MDF	Tree	Holoptelea integrifolia	8	0.78	2.67	0.0469				0.36			

Olavakkode	MDF	Tree	Persea macrantha	1	0.10	1.00	0.0156				0.02			
Olavakkode	MDF	Tree	Spondias pinnata	3	0.29	1.50	0.0313				0.13			
Olavakkode	MDF	Tree	Wrightia tinctoria	229	22.36	6.36	0.5625					271.49		
Olavakkode	Teak	Herb	Cyathula prostrata	15	6250.00	7.50	0.3333	1.92			10.13			
Olavakkode	Teak	Herb	Desmodium gangeticum	3	1250.00	3.00	0.1667	11.46						
Olavakkode	Teak	Herb	Elephantopus scaber	7	2916.67	7.00	0.1667			7.50				
Olavakkode	Teak	Herb	Ichnocarpus frutescens	13	5416.67	6.50	0.3333	2.44						
Olavakkode	Teak	Herb	Naregamia alata	8	3333.33	2.00	0.6667	2.34						
Ottappalam	Acacia	Herb	Ichnocarpus frutescens	6	3000.00	2.00	0.6000	1.35						
Ottappalam	Acacia	Herb	Naregamia alata	71	35500.00	17.75	0.8000	24.96						
Ottappalam	Acacia	Herb	Pseudarthria viscida	7	3500.00	2.33	0.6000	2.83						
Ottappalam	Acacia	Herb	Sida rhombifolia	6	3000.00	6.00	0.2000	4.26						
Ottappalam	Mixed	Herb	Cyclea peltata	2	312.50	2.00	0.0625	4.77						
Ottappalam	Mixed	Herb	Elephantopus scaber	2	312.50	2.00	0.0625			0.80				
Ottappalam	Mixed	Herb	Hemidesmus indicus	1	156.25	1.00	0.0625	0.15						
Ottappalam	Mixed	Herb	Ichnocarpus frutescens	26	4062.50	3.71	0.4375	1.83						
Ottappalam	Mixed	Herb	Naregamia alata	136	21250.00	17.00	0.5000	14.94						
Ottappalam	Mixed	Herb	Pseudarthria viscida	6	937.50	6.00	0.0625	0.76						
Ottappalam	Mixed	Herb	Sida rhombifolia	20	3125.00	2.86	0.4375	4.44						
Ottappalam	Mixed	Herb	Tragia involucrata	8	1250.00	2.67	0.1875	3.56						
Ottappalam	Teak	Herb	Aristolochia indica	1	166.67	1.00	0.0667	0.72						
Ottappalam	Teak	Herb	Desmodium velutium	1	166.67	1.00	0.0667	1.94						
Ottappalam	Teak	Herb	Hemidesmus indicus	2	333.33	2.00	0.0667	0.31						
Ottappalam	Teak	Herb	Ichnocarpus frutescens	60	10000.00	6.67	0.6000	4.51						
Ottappalam	Teak	Herb	Naregamia alata	124	20666.67	17.71	0.4667	14.53						
Ottappalam	Teak	Herb	Pseudarthria viscida	3	500.00	3.00	0.0667	0.40						
Ottappalam	Teak	Herb	Rauvolfia serpentina	4	666.67	1.33	0.2000	1.42						

Ottappalam	Teak	Herb	<i>Sida rhombifolia</i>	16	2666.67	5.33	0.2000	3.79						
Ottappalam	Teak	Herb	<i>Tragia involucrata</i>	2	333.33	1.00	0.1333	0.68						
Walayar	EG	Herb	<i>Piper sp.</i>	9	3214.29	3.00	0.4286			156.08				
Walayar	EG	Shrub	<i>Strobilanthes ciliatus</i>	65	3714.29	10.83	0.8571	17.42						
Walayar	EG	Tree	<i>Acacia pennata</i>	1	1.19	1.00	0.1429					0.32		
Walayar	EG	Tree	<i>Cinnamomum spp.</i>	11	13.10	2.20	0.7143					6.88		
Walayar	EG	Tree	<i>Ficus racemosa</i>	1	1.19	1.00	0.1429					0.68		
Walayar	EG	Tree	<i>Persea macrantha</i>	2	2.38	1.00	0.2857					1.31		
Walayar	MDF	Herb	<i>Asparagus racemosa</i>	1	51.02	1.00	0.0204					1.44		
Walayar	MDF	Herb	<i>Costus speciosus</i>	2	102.04	2.00	0.0204					2.30		
Walayar	MDF	Herb	<i>Cyclea peltata</i>	1	51.02	1.00	0.0204					0.78		
Walayar	MDF	Herb	<i>Desmodium gangeticum</i>	3	153.06	1.50	0.0408					1.40		
Walayar	MDF	Herb	<i>Desmodium velutnium</i>	16	816.33	3.20	0.1020					9.49		
Walayar	MDF	Herb	<i>Hemidesmus indicus</i>	41	2091.84	3.15	0.2653					1.97		
Walayar	MDF	Herb	<i>Ichnocarpus frutescens</i>	83	4234.69	5.93	0.2857					1.91		
Walayar	MDF	Herb	<i>Tragia involucrata</i>	1	51.02	1.00	0.0204	0.15						
Walayar	MDF	Shrub	<i>Holarrhena antidysenterica</i>	25	204.08	6.25	0.0816					1.91		
Walayar	MDF	Tree	<i>Acacia caesia</i>	4	0.51	1.00	0.0816					0.08		
Walayar	MDF	Tree	<i>Acacia torta</i>	10	1.28	1.00	0.2041					0.20		
Walayar	MDF	Tree	<i>Alstonia scholaris</i>	2	0.26	1.00	0.0408					0.30		
Walayar	MDF	Tree	<i>Bauhinia malabarica</i>	17	2.17	2.83	0.1224					2.70		
Walayar	MDF	Tree	<i>Bauhinia racemosa</i>	31	3.95	3.88	0.1633					2.49		
Walayar	MDF	Tree	<i>Cassia fistula</i>	6	0.77	1.20	0.1020					0.19		
Walayar	MDF	Tree	<i>Ficus racemosa</i>	48	6.12	3.43	0.2857					6.74		
Walayar	MDF	Tree	<i>Spondias pinnata</i>	1	0.13	1.00	0.0204					0.11		
Walayar	MDF	Tree	<i>Wrightia tinctoria</i>	331	42.22	8.71	0.7755					402.92		
Walayar	SE	Herb	<i>Costus speciosus</i>	1	131.58	1.00	0.0526	2.96						



Walayar	SE	Herb	Cyclea peltata	2	263.16	2.00	0.0526	4.01						
Walayar	SE	Herb	Desmodium velutnium	2	263.16	2.00	0.0526	3.06						
Walayar	SE	Herb	Ichnocarpus frutescens	2	263.16	2.00	0.0526	0.12						
Walayar	SE	Herb	Piper sp.	44	5789.47	4.40	0.5263			608.76				
Walayar	SE	Herb	Pseudarthria viscida	1	131.58	1.00	0.0526	0.11						
Walayar	SE	Shrub	Strobilanthes ciliatus	145	3052.63	18.13	0.4211	14.32						
Walayar	SE	Tree	Acacia pennata	4	1.32	1.00	0.2105				0.25			
Walayar	SE	Tree	Acacia torta	5	1.64	2.50	0.1053				0.32			
Walayar	SE	Tree	Alstonia scholaris	2	0.66	1.00	0.1053				0.41			
Walayar	SE	Tree	Cinnamomum spp.	6	1.97	1.50	0.2105				1.22			
Walayar	SE	Tree	Ficus racemosa	1	0.33	1.00	0.0526				0.19			
Walayar	SE	Tree	Persea macrantha	2	0.66	1.00	0.1053				1.27			
Walayar	SE	Tree	Wrightia tinctoria	2	0.66	2.00	0.0526					1.75		

**Table 5.1.7 Density, abundance, frequency and availability of usefulparts of NWFPs in different Forest Ranges of Mannarkkad Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Agali	DDF	Herb	Aristolochia indica	3	326.09	3.00	0.0435	1.40						
Agali	DDF	Herb	Asparagus racemosa	2	217.39	2.00	0.0435	6.15						
Agali	DDF	Herb	Boerhavia diffusa	6	652.17	3.00	0.0870	11.16						
Agali	DDF	Herb	Cyathula prostrata	13	1413.04	2.17	0.2609	0.43			2.29			
Agali	DDF	Herb	Cyclea peltata	1	108.70	1.00	0.0435	1.66						
Agali	DDF	Herb	Hemidesmus indicus	5	543.48	1.67	0.1304	0.51						
Agali	DDF	Herb	Ichnocarpus frutescens	5	543.48	2.50	0.0870	0.25						
Agali	DDF	Herb	Naregamia alata	7	760.87	7.00	0.0435	0.53						
Agali	DDF	Herb	Phyllanthus amarus	84	9130.43	21.00	0.1739	2.91						

Agali	DDF	Herb	<i>Pseudarthria viscida</i>	10	1086.96	2.00	0.2174	0.88												
Agali	DDF	Herb	<i>Rauvolfia serpentina</i>	3	326.09	3.00	0.0435	0.69												
Agali	DDF	Herb	<i>Sida rhombifolia</i>	29	3152.17	4.83	0.2609	4.48												
Agali	DDF	Herb	<i>Tragia involucrata</i>	8	869.57	2.67	0.1304	2.48												
Agali	DDF	Tree	<i>Acacia caesia</i>	8	2.17	2.00	0.1739												0.13	
Agali	DDF	Tree	<i>Holoptelea integrifolia</i>	9	2.45	3.00	0.1304												0.79	
Agali	MDF	Herb	<i>Asparagus racemosa</i>	1	416.67	1.00	0.1667	11.79												
Agali	MDF	Herb	<i>Cyclea peltata</i>	1	416.67	1.00	0.1667	6.35												
Agali	MDF	Herb	<i>Desmodium gangeticum</i>	1	416.67	1.00	0.1667	3.82												
Agali	MDF	Herb	<i>Hemidesmus indicus</i>	1	416.67	1.00	0.1667	0.39												
Agali	MDF	Herb	<i>Pseudarthria viscida</i>	3	1250.00	3.00	0.1667	1.01												
Agali	MDF	Herb	<i>Sida rhombifolia</i>	14	5833.33	14.00	0.1667	8.28												
Agali	MDF	Tree	<i>Acacia caesia</i>	4	4.17	1.33	0.5000												0.51	
Agali	MDF	Tree	<i>Acacia pennata</i>	5	5.21	5.00	0.1667												0.99	
Agali	MDF	Tree	<i>Acacia torta</i>	1	1.04	1.00	0.1667												0.04	
Agali	MDF	Tree	<i>Bauhinia malabarica</i>	2	2.08	2.00	0.1667												1.46	
Agali	MDF	Tree	<i>Cassia fistula</i>	8	8.33	2.67	0.5000												0.34	
Agali	MDF	Tree	<i>Wrightia tinctoria</i>	5	5.21	1.67	0.5000												9.22	
Agali	SE	Herb	<i>Asparagus racemosa</i>	2	384.62	1.00	0.1538	10.88												
Agali	SE	Herb	<i>Amorphophallus paeoniifolius</i>	1	192.31	1.00	0.0769	56.76												
Agali	SE	Herb	<i>Costus speciosus</i>	24	4615.38	4.80	0.3846	103.85												
Agali	SE	Herb	<i>Curcuma zedoaria</i>	10	1923.08	3.33	0.2308	31.75												
Agali	SE	Herb	<i>Elephantopus scaber</i>	9	1730.77	9.00	0.0769						4.45							
Agali	SE	Herb	<i>Hemidesmus indicus</i>	8	1538.46	4.00	0.1538	1.45												
Agali	SE	Herb	<i>Ichnocarpus frutescens</i>	2	384.62	1.00	0.1538	0.17												
Agali	SE	Herb	<i>Nervilia aragoana</i>	10	1923.08	5.00	0.1538	6.06												

Agali	SE	Herb	Pseudarthria viscida	3	576.92	1.00	0.2308	0.47												
Agali	SE	Herb	Rauvolfia serpentina	2	384.62	2.00	0.0769	0.82												
Agali	SE	Herb	Sida rhombifolia	1	192.31	1.00	0.0769	0.27												
Agali	SE	Tree	Acacia caesia	8	3.85	1.60	0.3846													0.46
Agali	SE	Tree	Acacia pennata	4	1.92	2.00	0.1538													0.35
Agali	SE	Tree	Acacia torta	2	0.96	1.00	0.1538													0.08
Agali	SE	Tree	Bauhinia racemosa	1	0.48	1.00	0.0769													0.83
Agali	SE	Tree	Cassia fistula	4	1.92	1.00	0.3077													0.23
Agali	SE	Tree	Cinnamomum spp.	3	1.44	1.50	0.1538													-
Agali	SE	Tree	Spondias pinnata	1	0.48	1.00	0.0769													0.05
Agali	SE	Tree	Wrightia tinctoria	1	0.48	1.00	0.0769													3.86
Attappady	EG	Tree	Cinnamomum spp.	4	5.56	1.33	0.5000													1.82
Attappady	MDF	Herb	Baliospermum montanum	13	1547.62	4.33	0.1429	13.19												
Attappady	MDF	Herb	Biophytum sp.	27	3214.29	13.50	0.0952					0.92								
Attappady	MDF	Herb	Costus speciosus	25	2976.19	4.17	0.2857	48.21												
Attappady	MDF	Herb	Curcuma zedoaria	9	1071.43	4.50	0.0952	17.69												
Attappady	MDF	Herb	Cyathula prostrata	7	833.33	2.33	0.1429	0.26												1.35
Attappady	MDF	Herb	Cyclea peltata	1	119.05	1.00	0.0476	1.82												
Attappady	MDF	Herb	Desmodium gangeticum	1	119.05	1.00	0.0476	3.82												
Attappady	MDF	Herb	Naregamia alata	4	476.19	4.00	0.0476	0.33												
Attappady	MDF	Herb	Piper longum	4	476.19	2.00	0.0952	0.36												0.54
Attappady	MDF	Herb	Pseudarthria viscida	2	238.10	2.00	0.0476	0.19												
Attappady	MDF	Herb	Rubia cordifolia	1	119.05	1.00	0.0476	0.34												
Attappady	MDF	Herb	Sida rhombifolia	5	595.24	2.50	0.0952	0.85												
Attappady	MDF	Herb	Tragia involucrata	1	119.05	1.00	0.0476	0.34												
Attappady	MDF	Shrub	Strobilanthes ciliatus	7	133.33	3.50	0.0952	0.63												

Attappady	MDF	Tree	Acacia caesia	3	0.89	1.00	0.1429				0.10			
Attappady	MDF	Tree	Acacia pennata	13	3.87	1.30	0.4762				0.76			
Attappady	MDF	Tree	Acacia torta	28	8.33	3.11	0.4286				0.93			
Attappady	MDF	Tree	Bauhinia malabarica	34	10.12	5.67	0.2857				5.59			
Attappady	MDF	Tree	Bauhinia racemosa	17	5.06	3.40	0.2381				1.24			
Attappady	MDF	Tree	Cassia fistula	18	5.36	1.64	0.5238				0.44			
Attappady	MDF	Tree	Spondias pinnata	2	0.60	2.00	0.0476				0.38			
Attappady	MDF	Tree	Wrightia tinctoria	124	36.90	8.27	0.7143					414.31		
Attappady	SE	Herb	Costus speciosus	4	3333.33	4.00	0.3333	75.00						
Attappady	SE	Herb	Curcuma zedoaria	2	1666.67	2.00	0.3333	27.52						
Attappady	SE	Herb	Cyathula prostrata	4	3333.33	4.00	0.3333	1.02		5.40				
Attappady	SE	Herb	Pseudarthria viscida	1	833.33	1.00	0.3333	0.67						
Attappady	SE	Tree	Acacia pennata	1	2.08	1.00	0.3333				0.53			
Attappady	SE	Tree	Acacia torta	7	14.58	3.50	0.6667				3.43			
Attappady	SE	Tree	Bauhinia racemosa	14	29.17	7.00	0.6667				12.61			
Attappady	SE	Tree	Wrightia tinctoria	1	2.08	1.00	0.3333					23.45		
Mannarkkad	Acacia	Herb	Barleria prattensis	2	185.19	2.00	0.0370	0.22						
Mannarkkad	Acacia	Herb	Aristolochia indica	8	740.74	2.00	0.1481	3.19						
Mannarkkad	Acacia	Herb	Boerhavia diffusa	2	185.19	2.00	0.0370	3.17						
Mannarkkad	Acacia	Herb	Cyathula prostrata	1	92.59	1.00	0.0370	0.03		0.15				
Mannarkkad	Acacia	Herb	Cyclea peltata	3	277.78	1.50	0.0741	4.24						
Mannarkkad	Acacia	Herb	Elephantopus scaber	13	1203.70	6.50	0.0741		3.09					
Mannarkkad	Acacia	Herb	Hemidesmus indicus	106	9814.81	5.05	0.7778	9.26						
Mannarkkad	Acacia	Herb	Ichnocarpus frutescens	57	5277.78	3.56	0.5926	2.38						
Mannarkkad	Acacia	Herb	Naregamia alata	63	5833.33	6.30	0.3704	4.10						
Mannarkkad	Acacia	Herb	Pseudarthria viscida	27	2500.00	9.00	0.1111	2.02						

Mannarkkad	Acacia	Herb	Sida rhombifolia	7	648.15	2.33	0.1111	0.92					
Mannarkkad	Cashew	Herb	Aristolochia indica	8	1052.63	2.67	0.1579	4.53					
Mannarkkad	Cashew	Herb	Cyathula prostrata	65	8552.63	9.29	0.3684	2.63		13.86			
Mannarkkad	Cashew	Herb	Cyclea peltata	4	526.32	1.33	0.1579	8.03					
Mannarkkad	Cashew	Herb	Desmodium gangeticum	1	131.58	1.00	0.0526	1.21					
Mannarkkad	Cashew	Herb	Hemidesmus indicus	16	2105.26	2.29	0.3684	1.99					
Mannarkkad	Cashew	Herb	Naregamia alata	21	2763.16	4.20	0.2632	1.94					
Mannarkkad	Cashew	Herb	Piper longum	19	2500.00	6.33	0.1579	1.86		2.85			
Mannarkkad	Cashew	Herb	Piper spp.	2	263.16	2.00	0.0526			27.67			
Mannarkkad	Cashew	Herb	Pseudarthria viscida	15	1973.68	7.50	0.1053	1.60					
Mannarkkad	Cashew	Herb	Sida rhombifolia	8	1052.63	4.00	0.1053	1.49					
Mannarkkad	EG	Herb	Costus speciosus	3	1875.00	3.00	0.2500	42.19					
Mannarkkad	EG	Herb	Elephantopus scaber	8	5000.00	8.00	0.2500			12.85			
Mannarkkad	EG	Herb	Piper longum	3	1875.00	3.00	0.2500	1.40		2.14			
Mannarkkad	EG	Herb	Piper spp.	2	1250.00	2.00	0.2500			131.44			
Mannarkkad	EG	Tree	Cinnamomum spp.	5	10.42	1.67	0.7500				1.82		
Mannarkkad	MDF	Herb	Aristolochia indica	4	500.00	2.00	0.1000	2.15					
Mannarkkad	MDF	Herb	Asparagus racemosa	1	125.00	1.00	0.0500	3.54					
Mannarkkad	MDF	Herb	Costus speciosus	7	875.00	3.50	0.1000	19.69					
Mannarkkad	MDF	Herb	Cyathula prostrata	26	3250.00	8.67	0.1500	1.00		5.27			
Mannarkkad	MDF	Herb	Cyclea peltata	1	125.00	1.00	0.0500	1.91					
Mannarkkad	MDF	Herb	Elephantopus scaber	2	250.00	2.00	0.0500			0.64			
Mannarkkad	MDF	Herb	Hemidesmus indicus	13	1625.00	6.50	0.1000	1.53					
Mannarkkad	MDF	Herb	Naregamia alata	10	1250.00	5.00	0.1000	0.88					
Mannarkkad	MDF	Herb	Piper longum	4	500.00	2.00	0.1000	0.37		0.57			
Mannarkkad	MDF	Herb	Piper spp.	4	500.00	2.00	0.1000			52.58			

Mannarkkad	MDF	Herb	<i>Pseudarthria viscida</i>	8	1000.00	8.00	0.0500	0.81						
Mannarkkad	MDF	Herb	<i>Rubia cordifolia</i>	2	250.00	2.00	0.0500	0.71						
Mannarkkad	MDF	Shrub	<i>Holarrhena antidysenterica</i>	10	200.00	1.67	0.3000	0.99						
Mannarkkad	MDF	Tree	<i>Acacia pennata</i>	7	2.19	2.33	0.1500					0.37		
Mannarkkad	MDF	Tree	<i>Acacia torta</i>	12	3.75	3.00	0.2000					0.41		
Mannarkkad	MDF	Tree	<i>Alstonia scholaris</i>	7	2.19	1.75	0.2000					1.63		
Mannarkkad	MDF	Tree	<i>Bauhinia racemosa</i>	1	0.31	1.00	0.0500					0.16		
Mannarkkad	MDF	Tree	<i>Cassia fistula</i>	5	1.56	1.67	0.1500					0.20		
Mannarkkad	MDF	Tree	<i>Ficus racemosa</i>	2	0.63	1.00	0.1000					0.18		
Mannarkkad	MDF	Tree	<i>Pongamia pinnata</i>	1	0.31	1.00	0.0500					0.01		
Mannarkkad	MDF	Tree	<i>Wrightia tinctoria</i>	53	16.56	3.31	0.8000						200.19	
Mannarkkad	MDF	Herb	<i>Sida rhombifolia</i>	8	1000.00	2.00	0.2000	1.42						
Mannarkkad	SE	Herb	<i>Costus speciosus</i>	2	833.33	2.00	0.1667	18.75						
Mannarkkad	SE	Herb	<i>Ichnocarpus frutescens</i>	7	2916.67	7.00	0.1667	1.32						
Mannarkkad	SE	Tree	<i>Acacia pennata</i>	2	2.08	2.00	0.1667					0.37		
Mannarkkad	SE	Tree	<i>Acacia torta</i>	2	2.08	1.00	0.3333					0.32		
Mannarkkad	SE	Tree	<i>Alstonia scholaris</i>	3	3.13	1.00	0.5000					2.78		
Mannarkkad	SE	Tree	<i>Cinnamomum spp.</i>	5	5.21	1.67	0.5000					0.19		
Mannarkkad	SE	Tree	<i>Persea macrantha</i>	1	1.04	1.00	0.1667					2.26		
Mannarkkad	SE	Tree	<i>Wrightia tinctoria</i>	2	2.08	2.00	0.1667						24.78	
Mannarkkad	Teak	Herb	<i>Elephantopus scaber</i>	3	1250.00	3.00	0.1667			3.21				
Mannarkkad	Teak	Herb	<i>Hemidesmus indicus</i>	4	1666.67	2.00	0.3333	1.57						
Mannarkkad	Teak	Herb	<i>Ichnocarpus frutescens</i>	1	416.67	1.00	0.1667	0.19						
Mannarkkad	Teak	Herb	<i>Naregamia alata</i>	27	11250.00	6.75	0.6667	7.91						
Mannarkkad	Teak	Herb	<i>Pseudarthria viscida</i>	16	6666.67	8.00	0.3333	5.40						
Mannarkkad	Teak	Herb	<i>Sida rhombifolia</i>	8	3333.33	2.67	0.5000	4.73						

**Table 5.1.8 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Parambikulam Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Karimala	MDF	Herb	Biophytum sp.	27	3750.00	6.75	0.2222		1.07					
Karimala	MDF	Herb	Costus speciosus	39	5416.67	13.00	0.1667	121.88						
Karimala	MDF	Herb	Curcuma zedoaria	10	1388.89	3.33	0.1667	22.93						
Karimala	MDF	Herb	Cyathula prostrata	5	694.44	2.50	0.1111	0.21		1.13				
Karimala	MDF	Herb	Cyclea peltata	11	1527.78	2.20	0.2778	23.30						
Karimala	MDF	Herb	Desmodium gangeticum	1	138.89	1.00	0.0556	1.27						
Karimala	MDF	Herb	Elephantopus scaber	11	1527.78	5.50	0.1111	3.93						
Karimala	MDF	Herb	Hemidesmus indicus	5	694.44	5.00	0.0556	0.66						
Karimala	MDF	Herb	Ichnocarpus frutescens	2	277.78	2.00	0.0556	0.13						
Karimala	MDF	Herb	Piper longum	7	972.22	7.00	0.0556	0.73		1.11				
Karimala	MDF	Herb	Piper spp.	1	138.89	1.00	0.0556			14.60				
Karimala	MDF	Herb	Pseudarthria viscida	2	277.78	2.00	0.0556	0.22						
Karimala	MDF	Herb	Sida rhombifolia	6	833.33	1.20	0.2778	1.18						
Karimala	MDF	Shrub	Strobilanthes ciliatus	7	155.56	7.00	0.0556	0.73						
Karimala	MDF	Tree	Acacia pennata	2	0.69	2.00	0.0556				0.15			
Karimala	MDF	Tree	Acacia torta	2	0.69	2.00	0.0556				0.06			
Karimala	MDF	Tree	Cassia fistula	4	1.39	1.33	0.1667				0.65			
Karimala	MDF	Tree	Cinnamomum spp.	5	1.74	5.00	0.0556				0.23			
Karimala	MDF	Tree	Lagerstroemia reginae	2	0.69	2.00	0.0556				0.26			
Karimala	SE	Herb	Biophytum sp.	4	1666.67	4.00	0.1667		0.48					
Karimala	SE	Herb	Costus speciosus	2	833.33	2.00	0.1667	18.75						
Karimala	SE	Herb	Curcuma zedoaria	12	5000.00	4.00	0.5000	82.55						
Karimala	SE	Herb	Cyathula prostrata	25	10416.67	8.33	0.5000	0.77		4.05				

Karimala	SE	Herb	Piper longum	1	416.67	1.00	0.1667	0.31		0.48				
Karimala	SE	Herb	Piper spp.	1	416.67	1.00	0.1667			43.81				
Karimala	SE	Herb	Sida rhombifolia	1	416.67	1.00	0.1667	0.59						
Karimala	SE	Tree	Acacia caesia	1	1.04	1.00	0.1667				0.26			
Karimala	SE	Tree	Acacia torta	2	2.08	2.00	0.1667				0.46			
Karimala	SE	Tree	Cassia fistula	7	7.29	1.75	0.6667				1.42			
Karimala	SE	Tree	Cinnamomum spp.	12	12.50	4.00	0.5000				2.82			
Karimala	SE	Tree	Lagerstroemia reginae	25	26.04	12.50	0.3333				7.08			
Karimala	SE	Tree	Persea macrantha	8	8.33	4.00	0.3333				8.84			
Orukomban	MDF	Herb	Biophytum sp.	41	5694.44	5.86	0.3889		1.62					
Orukomban	MDF	Herb	Costus speciosus	10	1388.89	5.00	0.1111	31.25						
Orukomban	MDF	Herb	Curcuma zedoaria	12	1666.67	3.00	0.2222	27.52						
Orukomban	MDF	Herb	Cyathula prostrata	11	1527.78	2.75	0.2222	0.47		2.48				
Orukomban	MDF	Herb	Hemidesmus indicus	2	277.78	2.00	0.0556	0.26						
Orukomban	MDF	Herb	Ichnocarpus frutescens	9	1250.00	4.50	0.1111	0.56						
Orukomban	MDF	Herb	Phyllanthus amarus	1	138.89	1.00	0.0556	0.04						
Orukomban	MDF	Herb	Rubia cordifolia	1	138.89	1.00	0.0556	0.0869						
Orukomban	MDF	Herb	Sida rhombifolia	36	5000.00	3.00	0.6667	7.10						
Orukomban	MDF	Tree	Acacia caesia	1	0.35	1.00	0.0556				0.09			
Orukomban	MDF	Tree	Acacia pennata	6	2.08	3.00	0.1111				0.33			
Orukomban	MDF	Tree	Acacia torta	1	0.35	1.00	0.0556				0.03			
Orukomban	MDF	Tree	Alstonia scholaris	1	0.35	1.00	0.0556				0.17			
Orukomban	MDF	Tree	Bauhinia racemosa	9	3.13	4.50	0.1111				3.97			
Orukomban	MDF	Tree	Cassia fistula	47	16.32	4.70	0.5556				2.24			
Orukomban	MDF	Tree	Cinnamomum spp.	23	7.99	3.83	0.3333				0.24			
Orukomban	MDF	Tree	Lagerstroemia reginae	9	3.13	9.00	0.0556				1.17			



Orukomban	MDF	Tree	Spondias pinnata	1	0.35	1.00	0.0556				0.27			
Orukomban	MDF	Tree	Wrightia tinctoria	24	8.33	4.00	0.3333					104.39		
Parambikulam	MDF	Herb	Biophytum sp.	18	9000.00	18.00	0.2000		2.57					
Parambikulam	MDF	Herb	Costus speciosus	13	6500.00	6.50	0.4000	146.25						
Parambikulam	MDF	Herb	Cyathula prostrata	1	500.00	1.00	0.2000	0.15		0.81				
Parambikulam	MDF	Herb	Desmodium velutnium	1	500.00	1.00	0.2000	5.81						
Parambikulam	MDF	Herb	Piper longum	3	1500.00	3:00	0.2000	1.12		1.71				
Parambikulam	MDF	Herb	Pseudarthria viscida	3	1500.00	3.00	0.2000	0.10						
Parambikulam	MDF	Herb	Sida rhombifolia	2	1000.00	2.00	0.2000	1.42						
Parambikulam	MDF	Herb	Solanum viarum	1	500.00	1.00	0.2000	5.14						
Parambikulam	MDF	Tree	Bauhinia racemosa	3	3.75	3.00	0.2000				1.84			
Parambikulam	MDF	Tree	Cassia fistula	2	2.50	2.00	0.2000				0.56			
Parambikulam	MDF	Tree	Cinnamomum spp.	2	2.50	2.00	0.2000				0.24			
Parambikulam	MDF	Tree	Wrightia tinctoria	8	10.00	8.00	0.2000					79.98		
Parambikulam	SE	Herb	Biophytum sp.	15	2500.00	3.75	0.2667		0.71					
Parambikulam	SE	Herb	Costus speciosus	23	3833.33	5.75	0.2667	86.25						
Parambikulam	SE	Herb	Curcuma zedoaria	19	3166.67	3.80	0.3333	52.28						
Parambikulam	SE	Herb	Cyathula prostrata	15	2500.00	5.00	0.2000	0.77		4.05				
Parambikulam	SE	Herb	Cyclea peltata	1	166.67	1.00	0.0667	2.54						
Parambikulam	SE	Herb	Elephantopus scaber	8	1333.33	8.00	0.0667	3.43						
Parambikulam	SE	Herb	Phyllanthus amarus	4	666.67	4.00	0.0667	0.21						
Parambikulam	SE	Herb	Piper longum	1	166.67	1.00	0.0667	0.12		0.19				
Parambikulam	SE	Herb	Pseudarthria viscida	6	1000.00	3.00	0.1333	0.81						
Parambikulam	SE	Herb	Sida rhombifolia	3	500.00	1.50	0.1333	0.71						
Parambikulam	SE	Tree	Acacia caesia	4	1.67	2.00	0.1333				0.34			
Parambikulam	SE	Tree	Acacia torta	1	0.42	1.00	0.0667				-			

Parambikulam	SE	Tree	Bauhinia racemosa	3	1.25	1.50	0.1333				0.87			
Parambikulam	SE	Tree	Cassia fistula	4	1.67	1.33	0.2000				0.35			
Parambikulam	SE	Tree	Cinnamomum spp.	35	14.58	3.89	0.6000				2.82			
Parambikulam	SE	Tree	Ficus racemosa	1	0.42	1.00	0.0667				0.35			
Parambikulam	SE	Tree	Persea macrantha	5	2.08	2.50	0.1333				0.57			
Parambikulam	SE	Tree	Wrightia tinctoria	3	1.25	1.00	0.2000					12.64		
Sungam	EG	Herb	Amorphophallus paeoniifolius	1	227.27	1.00	0.0909	67.08						
Sungam	EG	Herb	Biophytum sp.	9	2045.45	9.00	0.0909		0.48					
Sungam	EG	Herb	Costus speciosus	2	454.55	2.00	0.0909	10.23						
Sungam	EG	Herb	Cyathula prostrata	13	2954.55	3.25	0.3636	0.91		4.79				
Sungam	EG	Herb	Cyclea peltata	2	454.55	2.00	0.0909	6.93						
Sungam	EG	Herb	Desmodium gangeticum	1	227.27	1.00	0.0909	2.08						
Sungam	EG	Herb	Elephantopus scaber	18	4090.91	3.60	0.4545	10.51						
Sungam	EG	Herb	Nervilia aragoana	5	1136.36	2.50	0.1818	3.58						
Sungam	EG	Herb	Pseudarthria viscida	2	454.55	2.00	0.0909	0.37						
Sungam	EG	Tree	Alstonia scholaris	1	0.76	1.00	0.0909				1.24			
Sungam	EG	Tree	Cinnamomum Spp.	2	1.52	1.00	0.1818				0.13			
Sungam	EG	Tree	Persea macrantha	7	5.30	1.00	0.6364				0.81			
Sungam	EG	Tree	Spondias pinnata	1	0.76	1.00	0.0909				-			
Sungam	MDF	Herb	Amorphophallus paeoniifolius	3	182.93	1.50	0.0488	67.08						
Sungam	MDF	Herb	Asparagus recemosa	6	365.85	2.00	0.0732	10.35						
Sungam	MDF	Herb	Biophytum sp.	43	2621.95	7.17	0.1463		0.75					
Sungam	MDF	Herb	Boerhavia diffusa	2	121.95	1.00	0.0488	2.0866						
Sungam	MDF	Herb	Costus speciosus	6	365.85	1.50	0.0976	8.23						
Sungam	MDF	Herb	Curcuma zedoaria	25	1524.39	5.00	0.1220	25.17						
Sungam	MDF	Herb	Cyathula prostrata	25	1524.39	3.57	0.1707	0.47		2.47				

Sungam	MDF	Herb	Cyclea peltata	2	121.95	1.00	0.0488	1.86							
Sungam	MDF	Herb	Desmodium gangeticum	15	914.63	3.00	0.1220	8.39							
Sungam	MDF	Herb	Elephantopus scaber	23	1402.44	3.29	0.1707	3.60							
Sungam	MDF	Herb	Hemidesmus indicus	20	1219.51	2.86	0.1707	1.15							
Sungam	MDF	Herb	Ichnocarpus frutescens	30	1829.27	3.75	0.1951	0.83							
Sungam	MDF	Herb	Nervilia aragoana	7	426.83	7.00	0.0244	3.58							
Sungam	MDF	Herb	Phyllanthus amarus	18	1097.56	3.00	0.1463	0.35							
Sungam	MDF	Herb	Piper longum	2	121.95	2.00	0.0244	0.09		0.14					
Sungam	MDF	Herb	Pseudarthria viscida	2	121.95	1.00	0.0488	0.10							
Sungam	MDF	Herb	Sida rhombifolia	42	2560.98	2.80	0.3659	3.64							
Sungam	MDF	Shrub	Holarrhena antidysenterica	3	29.27	1.50	0.0488	0.38							
Sungam	MDF	Tree	Acacia pennata	1	0.15	1.00	0.0244						0.02		
Sungam	MDF	Tree	Acacia torta	8	1.22	2.00	0.0976						0.07		
Sungam	MDF	Tree	Bauhinia malabarica	32	4.88	6.40	0.1220						6.17		
Sungam	MDF	Tree	Bauhinia racemosa	2	0.30	1.00	0.0488						0.37		
Sungam	MDF	Tree	Butea monosperma	18	2.74	2.57	0.1707						1.86		
Sungam	MDF	Tree	Cassia fistula	109	16.62	4.36	0.6098						0.52		
Sungam	MDF	Tree	Persea macrantha	1	0.15	1.00	0.0244						0.81		
Sungam	MDF	Tree	Pongamia pinnata	2	0.30	2.00	0.0244						0.02		
Sungam	MDF	Tree	Spondias pinnata	1	0.15	1.00	0.0244						0.02		
Sungam	MDF	Tree	Wrightia tinctoria	50	7.62	2.94	0.4146							64.00	
Sungam	Teak	Herb	Desmodium gangeticum	8	10000.00	8.00	0.5000	91.70							
Sungam	Teak	Herb	Desmodium velutnium	6	7500.00	6.00	0.5000	87.15							
Sungam	Teak	Herb	Hemidesmus indicus	5	6250.00	2.50	1.0000	5.90							
Sungam	Teak	Herb	Sida rhombifolia	2	2500.00	2.00	0.5000	14.35							

**Table 5.1.9 Density, abundance, frequency and availability of usefulparts of NWFPs in different Forest Ranges of Nilambur North Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Edavanna	Bamboo	Herb	Cyclea peltata	6	2142.86	2.00	0.4286	32.68						
Edavanna	Bamboo	Herb	Elephantopus scaber	13	4642.86	4.33	0.4286		11.93					
Edavanna	Bamboo	Herb	Hemidesmus indicus	17	6071.43	2.83	0.8571	5.73						
Edavanna	Bamboo	Herb	Ichnocarpus frutescens	1	357.14	1.00	0.1429	0.16						
Edavanna	Bamboo	Herb	Sida rhombifolia	2	714.29	2.00	0.1429	1.01						
Edavanna	EG	Herb	Piper longum	2	1666.67	2.00	0.3333	1.24		1.90				
Edavanna	EG	Shrub	Strobilanthes ciliatus	57	7600.00	19.00	1.0000	35.64						
Edavanna	EG	Tree	Cinnamomum spp.	11	30.56	3.67	1.0000				40.33			
Edavanna	MDF	Herb	Asparagus racemosa	2	161.29	2.00	0.0323	4.56						
Edavanna	MDF	Herb	Cyclea peltata	1	80.65	1.00	0.0323	1.23						
Edavanna	MDF	Herb	Desmodium gangeticum	2	161.29	2.00	0.0323	1.48						
Edavanna	MDF	Herb	Hemidesmus indicus	28	2258.06	3.50	0.2581	2.13						
Edavanna	MDF	Herb	Ichnocarpus frutescens	6	483.87	6.00	0.0323	0.22						
Edavanna	MDF	Herb	Naregamia alata	28	2258.06	4.67	0.1935	1.59						
Edavanna	MDF	Herb	Piper longum	29	2338.71	4.83	0.1935	1.74		2.67				
Edavanna	MDF	Herb	Piper spp.	15	1209.68	2.50	0.1935	127.20						
Edavanna	MDF	Herb	Pseudarthria viscida	2	161.29	2.00	0.0323	0.13						
Edavanna	MDF	Shrub	Strobilanthes ciliatus	8	103.23	8.00	0.0323	0.48						
Edavanna	MDF	Tree	Acacia caesia	6	1.21	2.00	0.0968				0.31			
Edavanna	MDF	Tree	Acacia pennata	30	6.05	2.14	0.4516				1.10			
Edavanna	MDF	Tree	Acacia torta	8	1.61	2.67	0.0968				0.19			
Edavanna	MDF	Tree	Alstonia scholaris	2	0.40	1.00	0.0645				0.02			
Edavanna	MDF	Tree	Cassia fistula	2	0.40	1.00	0.0645				0.30			

Edavanna	MDF	Tree	Spondias pinnata	7	1.41	1.40	0.1613				1.35			
Edavanna	MDF	Tree	Wrightia tinctoria	9	1.81	2.25	0.1290					17.79		
Nilambur	MDF	Herb	Cyclea peltata	5	1785.71	1.67	0.4286	27.23						
Nilambur	MDF	Herb	Elephantopus scaber	4	1428.57	4.00	0.1429		3.67					
Nilambur	MDF	Herb	Hemidesmus indicus	10	3571.43	3.33	0.4286	3.37						
Nilambur	MDF	Herb	Naregamia alata	2	714.29	2.00	0.1429	0.50						
Nilambur	MDF	Herb	Piper longum	25	8928.57	6.25	0.5714	6.66		10.18				
Nilambur	MDF	Herb	Piper spp.	5	1785.71	2.50	0.2857	187.77						
Nilambur	MDF	Tree	Acacia pennata	5	4.46	1.25	0.5714					0.43		
Nilambur	MDF	Tree	Acacia torta	9	8.04	3.00	0.4286					0.70		
Nilambur	MDF	Tree	Bauhinia racemosa	1	0.89	1.00	0.1429					2.49		
Nilambur	MDF	Tree	Lagerstroemia reginae	2	1.79	1.00	0.2857					0.72		
Nilambur	MDF	Tree	Spondias pinnata	7	6.25	2.33	0.4286					2.53		
Nilambur	MDF	Tree	Wrightia tinctoria	18	16.07	4.50	0.5714					182.30		
Nilambur	Mixed	Herb	Cyathula prostrata	6	500.00	3.00	0.0667	0.81	0.1536			0.8100		
Nilambur	Mixed	Herb	Cyclea peltata	14	1166.67	2.00	0.2333	17.79						
Nilambur	Mixed	Herb	Elephantopus scaber	6	500.00	6.00	0.0333		1.29					
Nilambur	Mixed	Herb	Hemidesmus indicus	17	1416.67	2.83	0.2000	1.34						
Nilambur	Mixed	Herb	Ichnocarpus frutescens	4	333.33	2.00	0.0667	0.15						
Nilambur	Mixed	Herb	Naregamia alata	18	1500.00	4.50	0.1333	1.05						
Nilambur	Mixed	Herb	Piper longum	10	833.33	3.33	0.1000	0.62		0.95				
Nilambur	Mixed	Herb	Pseudarthria viscida	6	500.00	3.00	0.0667	0.40						
Nilambur	Mixed	Herb	Sida rhombifolia	12	1000.00	2.40	0.1667	1.42						
Nilambur	Mixed	Herb	Tragia involucrata	7	583.33	1.75	0.1333	1.66						
Nilambur	SE	Herb	Cyathula prostrata	33	9166.67	11.00	0.3333	2.82	2.8151			14.8500		
Nilambur	SE	Herb	Naregamia alata	12	3333.33	6.00	0.2222	2.34						
Nilambur	SE	Herb	Piper longum	39	10833.33	9.75	0.4444	8.08		12.35				

Nilambur	SE	Tree	Acacia caesia	7	4.86	2.33	0.3333				1.01		
Nilambur	SE	Tree	Acacia torta	6	4.17	3.00	0.2222				0.44		
Nilambur	SE	Tree	Bauhinia malabarica	1	0.69	1.00	0.1111				0.69		
Nilambur	SE	Tree	Bauhinia racemosa	3	2.08	1.50	0.2222				3.25		
Nilambur	SE	Tree	Cassia fistula	1	0.69	1.00	0.1111				0.18		
Nilambur	SE	Tree	Lagerstroemia reginae	6	4.17	1.50	0.4444				1.26		
Nilambur	SE	Tree	Persea macrantha	9	6.25	3.00	0.3333				13.75		
Nilambur	SE	Tree	Spondias pinnata	1	0.69	1.00	0.1111				0.00		
Nilambur	SE	Tree	Wrightia tinctoria	5	3.47	2.50	0.2222					38.43	
Nilambur	Teak	Herb	Boerhavia diffusa	7	243.06	2.33	0.0417	4.1587					
Nilambur	Teak	Herb	Cyathula prostrata	2	69.44	2.00	0.0139	0.02	0.0213		0.1125		
Nilambur	Teak	Herb	Cyclea peltata	15	520.83	1.67	0.1250	7.94					
Nilambur	Teak	Herb	Desmodium gangeticum	53	1840.28	4.82	0.1528	16.88					
Nilambur	Teak	Herb	Elephantopus scaber	125	4340.28	11.36	0.1528		11.15				
Nilambur	Teak	Herb	Hemidesmus indicus	136	4722.22	4.00	0.4722	4.45					
Nilambur	Teak	Herb	Ichnocarpus frutescens	277	9618.06	7.91	0.4861	4.34					
Nilambur	Teak	Herb	Naregamia alata	18	625.00	4.50	0.0556	0.44					
Nilambur	Teak	Herb	Piper longum	14	486.11	7.00	0.0278	0.36		0.55			
Nilambur	Teak	Herb	Pseudarthria viscida	1	34.72	1.00	0.0139	0.03					
Nilambur	Teak	Herb	Sida rhombifolia	29	1006.94	3.22	0.1250	1.43					
Nilambur	Teak	Herb	Tragia involucrata	2	69.44	2.00	0.0139	0.20					
Vazhikkadavu	EG	Herb	Cyathula prostrata	4	222.22	2.00	0.0444	0.07	0.0682		0.3600		
Vazhikkadavu	EG	Herb	Piper longum	62	3444.44	3.10	0.4444	3.93					
Vazhikkadavu	EG	Tree	Cinnamomum spp.	87	16.11	2.42	0.8000				12.52		
Vazhikkadavu	EG	Tree	Persea macrantha	3	0.56	1.00	0.0667				2.67		
Vazhikkadavu	EG	Tree	Spondias pinnata	5	0.93	1.00	0.1111				1.54		

Vazhikkadavu	MDF	Herb	Asparagus racemosa	1	65.79	1.00	0.0263	1.86						
Vazhikkadavu	MDF	Herb	Costus speciosus	23	1513.16	7.67	0.0789	34.05						
Vazhikkadavu	MDF	Herb	Curcuma zedoaria	3	197.37	3.00	0.0263	3.26						
Vazhikkadavu	MDF	Herb	Cyclea peltata	4	263.16	2.00	0.0526	4.01						
Vazhikkadavu	MDF	Herb	Desmodium gangeticum	3	197.37	1.50	0.0526	1.81						
Vazhikkadavu	MDF	Herb	Desmodium velutinum	20	1315.79	3.33	0.1579	15.29						
Vazhikkadavu	MDF	Herb	Hemidesmus indicus	42	2763.16	8.40	0.1316	3.37						
Vazhikkadavu	MDF	Herb	Ichnocarpus frutescens	169	11118.42	9.39	0.4737	5.02						
Vazhikkadavu	MDF	Herb	Naregamia alata	10	657.89	3.33	0.0789	0.46						
Vazhikkadavu	MDF	Herb	Piper longum	24	1578.95	4.80	0.1316	1.18		1.80				
Vazhikkadavu	MDF	Herb	Sida rhombifolia	17	1118.42	5.67	0.0789	1.59						
Vazhikkadavu	MDF	Tree	Acacia torta	17	2.80	4.25	0.1053					0.39		
Vazhikkadavu	MDF	Tree	Butea monosperma	10	1.64	1.43	0.1842					0.36		
Vazhikkadavu	MDF	Tree	Cassia fistula	1	0.16	1.00	0.0263					0.09		
Vazhikkadavu	MDF	Tree	Ficus racemosa	8	1.32	4.00	0.0526					1.92		
Vazhikkadavu	MDF	Tree	Lagerstroemia reginae	47	7.73	3.36	0.3684					3.13		
Vazhikkadavu	MDF	Tree	Persea macrantha	1	0.16	1.00	0.0263					0.08		
Vazhikkadavu	MDF	Tree	Spondias pinnata	3	0.49	1.50	0.0526					1.05		
Vazhikkadavu	MDF	Tree	Wrightia tinctoria	14	2.30	4.67	0.0789						30.63	
Vazhikkadavu	SE	Herb	Cyclea peltata	2	1666.67	2.00	0.3333	25.42						
Vazhikkadavu	SE	Herb	Naregamia alata	2	1666.67	2.00	0.3333	1.17						
Vazhikkadavu	SE	Herb	Piper longum	3	2500.00	3.00	0.3333	1.86		2.85				
Vazhikkadavu	SE	Tree	Acacia caesia	7	14.58	3.50	0.6667					3.09		
Vazhikkadavu	SE	Tree	Acacia torta	2	4.17	2.00	0.3333					0.45		
Vazhikkadavu	SE	Tree	Cinnamomum spp.	6	12.50	3.00	0.6667					18.50		
Vazhikkadavu	SE	Tree	Spondias pinnata	1	2.08	1.00	0.3333					10.34		

Vazhikkadavu	Teak	Herb	Aristolochia indica	1	65.79	1.00	0.0263	0.28						
Vazhikkadavu	Teak	Herb	Asparagus racemosa	6	394.74	2.00	0.0789	11.17						
Vazhikkadavu	Teak	Herb	Costus speciosus	10	657.89	10.00	0.0263	14.80						
Vazhikkadavu	Teak	Herb	Cyclea peltata	4	263.16	1.33	0.0789	25.42						
Vazhikkadavu	Teak	Herb	Desmodium gangeticum	8	526.32	1.60	0.1316	4.83						
Vazhikkadavu	Teak	Herb	Desmodium velutinum	9	592.11	1.80	0.1316	6.88						
Vazhikkadavu	Teak	Herb	Elephantopus scaber	3	197.37	1.50	0.0526		0.51					
Vazhikkadavu	Teak	Herb	Hemidesmus indicus	114	7500.00	6.71	0.4474	7.08						
Vazhikkadavu	Teak	Herb	Ichnocarpus frutescens	298	19605.26	9.61	0.8158	8.84						
Vazhikkadavu	Teak	Herb	Naregamia alata	127	8355.26	6.35	0.5263	5.87						
Vazhikkadavu	Teak	Herb	Rauvolfia serpentina	1	65.79	1.00	0.0263	0.14						

**Table 5.1.10 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Nilambur South Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)							
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed	
Kalikavu	Acacia	Herb	Asparagus racemosa	3	576.92	1.00	0.2308	40.4286							
Kalikavu	Acacia	Herb	Cyclea peltata	2	384.62	1.00	0.1538	10.8929							
Kalikavu	Acacia	Herb	Desmodium gangeticum	8	1538.46	2.67	0.2308	0.5240							
Kalikavu	Acacia	Herb	Hemidesmus indicus	3	576.92	1.50	0.1538	1.3477							
Kalikavu	Acacia	Herb	Ichnocarpus frutescens	63	12115.38	5.25	0.9231	4.1888							
Kalikavu	Acacia	Herb	Naregamia alata	12	2307.69	2.40	0.3846	1.6223							
Kalikavu	EG	Tree	Cinnamomum spp.	2	5.56	2.00	0.3333				3.5477				
Kalikavu	MDF	Herb	Asparagus racemosa	4	1428.57	1.33	0.4286	40.4286							
Kalikavu	MDF	Herb	Cyclea peltata	2	714.29	1.00	0.2857	10.8929							
Kalikavu	MDF	Herb	Desmodium gangeticum	1	357.14	1.00	0.1429	3.2750							
Kalikavu	MDF	Herb	Hemidesmus indicus	4	1428.57	1.33	0.4286	1.3477							



Kalikavu	MDF	Herb	<i>Ichnocarpus frutescens</i>	26	9285.71	4.33	0.8571	4.1888						
Kalikavu	MDF	Tree	<i>Acacia caesia</i>	2	1.79	2.00	0.1429					0.1429		
Kalikavu	MDF	Tree	<i>Acacia pennata</i>	4	3.57	2.00	0.2857					0.6973		
Kalikavu	MDF	Tree	<i>Alstonia scholaris</i>	3	2.68	1.50	0.2857					1.47		
Kalikavu	MDF	Tree	<i>Cassia fistula</i>	8	7.14	1.60	0.7143					0.8913		
Karulai	EG	Herb	<i>Desmodium gangeticum</i>	1	312.50	1.00	0.1250	2.8656						
Karulai	EG	Herb	<i>Hemidesmus indicus</i>	4	1250.00	2.00	0.2500	1.1793						
Karulai	EG	Herb	<i>Ichnocarpus frutescens</i>	28	8750.00	7.00	0.5000	3.9471						
Karulai	EG	Tree	<i>Lagerstroemia reginae</i>	31	32.29	15.50	0.2500					11.9837		
Karulai	EG	Tree	<i>Persea macrantha</i>	4	4.17	1.33	0.3750					6.4992		
Karulai	MDF	Herb	<i>Asparagus racemosa</i>	6	189.87	3.00	0.0253	5.3734						
Karulai	MDF	Herb	<i>Cyclea peltata</i>	9	284.81	1.50	0.0759	9.5313						
Karulai	MDF	Herb	<i>Desmodium gangeticum</i>	7	221.52	3.50	0.0253	2.0313						
Karulai	MDF	Herb	<i>Desmodium velutnium</i>	8	253.16	2.67	0.0380	2.9418						
Karulai	MDF	Herb	<i>Elephantopus scaber</i>	2	63.29	2.00	0.0127			0.4016				
Karulai	MDF	Herb	<i>Hemidesmus indicus</i>	33	1044.30	2.75	0.1519	0.8061						
Karulai	MDF	Herb	<i>Ichnocarpus frutescens</i>	156	4936.71	8.67	0.2278	1.7701						
Karulai	MDF	Herb	<i>Naregamia alata</i>	15	474.68	2.50	0.0759	0.3337						
Karulai	MDF	Herb	<i>Piper longum</i>	4	126.58	2.00	0.0253	0.0944				0.1443		
Karulai	MDF	Herb	<i>Piper spp.</i>	4	126.58	2.00	0.0253					13.3101		
Karulai	MDF	Shrub	<i>Holarrhena antidysenterica</i>	4	20.25	2.00	0.0253					-		
Karulai	MDF	Tree	<i>Acacia pennata</i>	11	0.87	1.83	0.0759					0.1770		
Karulai	MDF	Tree	<i>Alstonia scholaris</i>	2	0.16	2.00	0.0127					0.02		
Karulai	MDF	Tree	<i>Bauhinia malabarica</i>	2	0.16	2.00	0.0127					0.18		
Karulai	MDF	Tree	<i>Bauhinia racemosa</i>	5	0.40	1.67	0.0380					0.1969		
Karulai	MDF	Tree	<i>Butea monosperma</i>	63	4.98	2.86	0.2785					2.9933		
Karulai	MDF	Tree	<i>Cassia fistula</i>	16	1.27	1.78	0.1139					0.1614		

Karulai	MDF	Tree	Cinnamomum spp.	2	0.16	1.00	0.0253				0.0894			
Karulai	MDF	Tree	Ficus racemosa	1	0.08	1.00	0.0127				0.0309			
Karulai	MDF	Tree	Holoptelea integrifolia	1	0.08	1.00	0.0127				0.2267			
Karulai	MDF	Tree	Lagerstroemia reginae	4	0.32	1.33	0.0380				0.1233			
Karulai	MDF	Tree	Wrightia tinctoria	28	2.22	2.80	0.1266					19.7085		
Karulai	SE	Herb	Curcuma zedoaria	10	520.83	2.50	0.0833	8.5990						
Karulai	SE	Herb	Cyclea peltata	12	625.00	3.00	0.0833	9.5313						
Karulai	SE	Herb	Elephantopus scaber	3	156.25	3.00	0.0208		0.4016					
Karulai	SE	Herb	Hemidesmus indicus	8	416.67	2.00	0.0833	0.3931						
Karulai	SE	Herb	Ichnocarpus frutescens	88	4583.33	7.33	0.2500	2.0675						
Karulai	SE	Herb	Naregamia alata	4	208.33	1.33	0.0625	0.1465						
Karulai	SE	Herb	Piper longum	54	2812.50	6.75	0.1667	2.0976			3.2063			
Karulai	SE	Herb	Piper spp.	16	833.33	2.67	0.1250				87.6250			
Karulai	SE	Herb	Pseudarthria viscida	7	364.58	2.33	0.0625	0.2951						
Karulai	SE	Tree	Acacia pennata	2	0.26	1.00	0.0417				0.0327			
Karulai	SE	Tree	Alstonia scholaris	1	0.13	1.00	0.0208				0.03			
Karulai	SE	Tree	Bauhinia malabarica	4	0.52	1.00	0.0833				0.88			
Karulai	SE	Tree	Bauhinia racemosa	7	0.91	2.33	0.0625				0.4125			
Karulai	SE	Tree	Cassia fistula	8	1.04	1.33	0.1250				0.0638			
Karulai	SE	Tree	Cinnamomum spp.	1	0.13	1.00	0.0208				0.0025			
Karulai	SE	Tree	Lagerstroemia reginae	24	3.13	2.67	0.1875				1.4459			
Karulai	SE	Tree	Persea macrantha	24	3.13	1.60	0.3125				3.8436			
Karulai	SE	Tree	Pongamia pinnata	10	1.30	3.33	0.0625				0.3311			
Karulai	SE	Tree	Spondias pinnata	1	0.13	1.00	0.0208				0.1216			
Karulai	SE	Tree	Wrightia tinctoria	6	0.78	2.00	0.0625					11.4851		
Karulai	Teak	Herb	Costus speciosus	2	58.14	2.00	0.0116	1.3081						
Karulai	Teak	Herb	Curcuma zedoaria	4	116.28	2.00	0.0233	1.9198						

Karulai	Teak	Herb	Cyclea peltata	32	930.23	2.29	0.1628	14.1860							
Karulai	Teak	Herb	Desmodium gangeticum	62	1802.33	4.77	0.1512	3.2750							
Karulai	Teak	Herb	Desmodium gyrans	29	843.02	4.14	0.0814	0.5155							
Karulai	Teak	Herb	Desmodium velutnium	8	232.56	2.00	0.0465	2.7023							
Karulai	Teak	Herb	Elephantopus scaber	201	5843.02	11.17	0.2093		15.0166						
Karulai	Teak	Herb	Hemidesmus indicus	231	6715.12	5.37	0.5000	6.0334							
Karulai	Teak	Herb	Ichnocarpus frutescens	163	4738.37	4.79	0.3953	1.5998							
Karulai	Teak	Herb	Naregamia alata	117	3401.16	7.80	0.1744	2.3910							
Karulai	Teak	Herb	Piper longum	28	813.95	2.80	0.1163	0.6070		0.9279					
Karulai	Teak	Herb	Pseudarthria viscida	11	319.77	2.75	0.0465	0.2589							
Karulai	Teak	Herb	Sida rhombifolia	32	930.23	3.56	0.1047	1.3209							
Karulai	Teak	Shrub	Holarrhena antidysenterica	31	144.186	2.067	0.1744								

**Table 5.1.11 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Kozhikode Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)							
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed	
Thamarassery	EG	Herb	Adenia hondala	3	41.2088	3.0000	0.0055								
Thamarassery	EG	Herb	Asparagus racemosa	1	13.7363	1.0000	0.0055	0.3887							
Thamarassery	EG	Herb	Biophytum sp.	16	219.7802	16.0000	0.0055		0.0626						
Thamarassery	EG	Herb	Centrosema pubescens	4	54.9451	4.0000	0.0055								
Thamarassery	EG	Herb	Costus speciosus	58	796.7033	3.8667	0.0824	17.9258							
Thamarassery	EG	Herb	Cyclea peltata	26	357.1429	1.5294	0.0934	5.4464							
Thamarassery	EG	Herb	Elephantopus scaber	3	41.2088	1.5000	0.0110		0.1059						
Thamarassery	EG	Herb	Oroxylum indicum	1	13.7363	1.0000	0.0055								
Thamarassery	EG	Herb	Piper longum	8	109.8901	2.0000	0.0220	0.0820							
Thamarassery	EG	Herb	Piper spp	195	2678.5714	1.7568	0.6099	281.6518							

Thamarassery	EG	Herb	Rotula aquatica	1	13.7363	1.0000	0.0055							
Thamarassery	EG	Herb	Sida rhombifolia	3	41.2088	3.0000	0.0055	0.0585						
Thamarassery	EG	Tree	Wrightia tinctoria	5	68.6813	5.0000	0.0055							
Thamarassery	SE	Herb	Adenia hondala	4	97.0874	1.3333	0.0291							
Thamarassery	SE	Herb	Costus speciosus	2	48.5437	2.0000	0.0097	1.0922						
Thamarassery	SE	Herb	Cyclea peltata	19	461.1650	1.7273	0.1068	7.0328						
Thamarassery	SE	Herb	Piper longum	19	461.1650	2.1111	0.0874	0.3439		0.5257				
Thamarassery	SE	Herb	Piper sp.	138	3349.5146	1.9714	0.6796	352.2015						
Thamarassery	SE	Tree	Tinospora cordifolia	2	48.5437	2.0000	0.0097							
Thamarassery	MDF	Herb	Asparagus racemosa	3	89.2857	1.0000	0.0357	2.5268						
Thamarassery	MDF	Herb	Cyclea peltata	92	2738.0952	1.8039	0.6071	41.7560						
Thamarassery	MDF	Herb	Hemidesmus indicus	30	892.8571	2.0000	0.1786	0.8423						
Thamarassery	MDF	Herb	Ichnocarpus frutescens	32	952.3810	2.0000	0.1905	0.4296						
Thamarassery	MDF	Herb	Naregamia alata	9	267.8571	2.2500	0.0476	0.1883						
Thamarassery	MDF	Herb	Piper spp	5	148.8095	1.2500	0.0476	15.6473						
Thamarassery	MDF	Herb	Pseudarthria viscida	9	267.8571	3.0000	0.0357	0.2168						
Thamarassery	MDF	Herb	Rauvolfia serpentina	1	29.7619	1.0000	0.0119	0.0634						
Thamarassery	MDF	Herb	Uraria hamosa	2	59.5238	2.0000	0.0119							
Thamarassery	EG	Shrub	Embelia ribes	13	28.5714	2.1667	0.0330							
Thamarassery	EG	Shrub	Helicteres isora	27	59.3407	6.7500	0.0220							
Thamarassery	EG	Shrub	Holarrhena antidysenterica	3	6.5934	3.0000	0.0055							
Thamarassery	EG	Shrub	Strobilanthes ciliatus	326	716.4835	4.8657	0.3681							
Thamarassery	SE	Shrub	Embelia ribes	2	7.7670	2.0000	0.0097							
Thamarassery	SE	Shrub	Helicteres isora	9	34.9515	3.0000	0.0291							
Thamarassery	SE	Shrub	Strobilanthes ciliatus	224	869.9029	6.5882	0.3301							
Thamarassery	MDF	Shrub	Helicteres isora	229	1090.4762	3.8167	0.7143							

Thamarassery	MDF	Shrub	Holarrhena antidysenterica	2	9.5238	2.0000	0.0119							
Thamarassery	MDF	Shrub	Strobilanthes ciliatus	9	42.8571	9.0000	0.0119							
Thamarassery	EG	Tree	Aphanamixis polystachya	1	0.0458	1.0000	0.0055							
Thamarassery	EG	Tree	Acacia caesia	65	2.9762	1.9118	0.1868				0.1153			
Thamarassery	EG	Tree	Alstonia scholaris	6	0.2747	1.2000	0.0275				0.1232			
Thamarassery	EG	Tree	Cinnamomum .sp	25	1.1447	1.1905	0.1154				0.1010			
Thamarassery	EG	Tree	Dillenia pentagyna	1	0.0458	1.0000	0.0055							
Thamarassery	EG	Tree	Dysoxylum malabaricum	2	0.0916	1.0000	0.0110							
Thamarassery	EG	Tree	Ficus racemosa	20	0.9158	1.2500	0.0879							
Thamarassery	EG	Tree	Garcinia gummi-gutta	3	0.1374	1.0000	0.0165							
Thamarassery	EG	Tree	Kingiodendron pinnatum	2	0.0916	1.0000	0.0110							
Thamarassery	EG	Tree	Mesua ferrea	10	0.4579	1.0000	0.0549							
Thamarassery	EG	Tree	Myristica dactyloides	113	5.1740	2.0926	0.2967							
Thamarassery	EG	Tree	Oroxylum indicum	1	0.0458	1.0000	0.0055							
Thamarassery	EG	Tree	Palaquium ellipticum	34	1.5568	1.4783	0.1264							
Thamarassery	EG	Tree	Persea macrantha	10	0.4579	1.1111	0.0495				0.3058			
Thamarassery	EG	Tree	Sarcostigma kleinii	25	1.1447	1.1905	0.1154							
Thamarassery	EG	Tree	Schleichera oleosa	4	0.1832	2.0000	0.0110							
Thamarassery	EG	Tree	Spondias pinnata	13	0.5952	1.1818	0.0604				0.1934			
Thamarassery	EG	Tree	Stereospermum colais	6	0.2747	1.5000	0.0220							
Thamarassery	EG	Tree	Terminalia bellirica	32	1.4652	1.8824	0.0934							
Thamarassery	EG	Tree	Vateria indica	372	17.0330	3.6117	0.5659							
Thamarassery	EG	Tree	Wrightia tinctoria	30	1.3736	2.1429	0.0769				12.4445			
Thamarassery	SE	Tree	Acacia caesia	103	6.2500	2.2391	0.4466				0.2898			
Thamarassery	SE	Tree	Anamirta cocculus	5	0.3034	1.2500	0.0388							
Thamarassery	SE	Tree	Aporusa lindleyana	3	0.1820	1.5000	0.0194							

Thamarassery	SE	Tree	Cinnamomum sp.	79	4.7937	1.9268	0.3981				0.7788		
Thamarassery	SE	Tree	Dillenia pentagyna	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Entada rheedei	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Ficus racemosa	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Hydnocarpus pentandra	5	0.3034	1.6667	0.0291						
Thamarassery	SE	Tree	Kingiodendron pinnatum	2	0.1214	2.0000	0.0097						
Thamarassery	SE	Tree	Mesua ferrea	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Myristica dactyloides	29	1.7597	1.3810	0.2039						
Thamarassery	SE	Tree	Oroxylum indicum	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Palaquium ellipticum	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Persea macrantha	4	0.2427	1.0000	0.0388				0.2951		
Thamarassery	SE	Tree	Sapindus trifoliata	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Sarcostigma kleinii	10	0.6068	1.4286	0.0680						
Thamarassery	SE	Tree	Schleichera oleosa	1	0.0607	1.0000	0.0097						
Thamarassery	SE	Tree	Spondias pinnata	1	0.0607	1.0000	0.0097				0.0514		
Thamarassery	SE	Tree	Stereospermum colais	3	0.1820	1.0000	0.0291						
Thamarassery	SE	Tree	Vateria indica	59	3.5801	3.2778	0.1748						
Thamarassery	SE	Tree	Wrightia tinctoria	1	0.0607	1.0000	0.0097					1.0818	
Thamarassery	MDF	Tree	Acacia caesia	73	5.4315	2.2121	0.3929				0.2555		
Thamarassery	MDF	Tree	Aporosa lindleyana	7	0.5208	1.4000	0.0595						
Thamarassery	MDF	Tree	Cassia fistula	6	0.4464	1.2000	0.0595				0.1400		
Thamarassery	MDF	Tree	Dillenia pentagyna	39	2.9018	1.6957	0.2738						
Thamarassery	MDF	Tree	Ficus racemosa	2	0.1488	1.0000	0.0238						
Thamarassery	MDF	Tree	Hydnocarpus pentandra	3	0.2232	1.0000	0.0357						
Thamarassery	MDF	Tree	Kingiodendron pinnatum	2	0.1488	1.0000	0.0238						
Thamarassery	MDF	Tree	Phyllanthus emblica	12	0.8929	1.3333	0.1071						

Thamarassery	MDF	Tree	Sapindus trifoliata	5	0.3720	1.2500	0.0476							
Thamarassery	MDF	Tree	Sarcostigma kleinii	1	0.0744	1.0000	0.0119							
Thamarassery	MDF	Tree	Schleichera oleosa	3	0.2232	1.0000	0.0357							
Thamarassery	MDF	Tree	Spondias pinnata	1	0.0744	1.0000	0.0119				0.0311			
Thamarassery	MDF	Tree	Stereospermum colais	16	1.1905	1.2308	0.1548							
Thamarassery	MDF	Tree	Strychnos nux-vomica	1	0.0744	1.0000	0.0119							
Thamarassery	MDF	Tree	Terminalia bellirica	11	0.8185	1.2222	0.1071							
Thamarassery	MDF	Tree	Wrightia tinctoria	1	0.0744	1.0000	0.0119					1.3315		
Kuttiyadi	MDF	Herb	Adenia hondala	3	166.6667	1.0000	0.0667							
Kuttiyadi	MDF	Herb	Chonemorpha fragrans	2	111.1111	1.0000	0.0444							
Kuttiyadi	MDF	Herb	Costus speciosus	4	222.2222	1.3333	0.0667	5.0000						
Kuttiyadi	MDF	Herb	Cyclea peltata	17	944.4444	1.7000	0.2222	14.4028						
Kuttiyadi	MDF	Herb	Elephantopus scaber	44	2444.4444	4.4000	0.2222		6.2822					
Kuttiyadi	MDF	Herb	Gloriosa superba	1	55.5556	1.0000	0.0222							
Kuttiyadi	MDF	Herb	Hemidesmus indicus	11	611.1111	2.2000	0.1111	0.5765						
Kuttiyadi	MDF	Herb	Naragamia alata	3	166.6667	1.5000	0.0444	0.1172						
Kuttiyadi	MDF	Herb	Narevelia zeylanica	45	2500.0000	2.1429	0.4667	8.0000						
Kuttiyadi	MDF	Herb	Rauvolfia serpentina	1	55.5556	1.0000	0.0222	0.1183						
Kuttiyadi	MDF	Herb	Sida rhombifolia	1	55.5556	1.0000	0.0222	0.0789						
Kuttiyadi	SE	Herb	Costus speciosus	5	86.8056	1.2500	0.0278	1.9531						
Kuttiyadi	SE	Herb	Cyclea peltata	15	260.4167	1.8750	0.0556	3.9714						
Kuttiyadi	SE	Herb	Elephantopus scaber	12	208.3333	6.0000	0.0139		0.5354					
Kuttiyadi	SE	Herb	Embelia ribes	1	17.3611	1.0000	0.0069							
Kuttiyadi	SE	Herb	Narevelia zeylanica	12	208.3333	1.5000	0.0556	0.6667						
Kuttiyadi	SE	Herb	Piper sp.	226	3923.6111	1.8080	0.8681	412.5677						
Kuttiyadi	SE	Herb	Pseudarthra viscida	5	86.8056	2.5000	0.0139							

Kuttiyadi	SE	Herb	<i>Sida rhombifolia</i>	7	121.5278	3.5000	0.0139							
Kuttiyadi	EG	Herb	<i>Piper sp.</i>	20	3571.4286	1.6667	0.8571	375.5357						
Kuttiyadi	Mixed	Herb	<i>Cyclea peltata</i>	4	666.6667	1.3333	0.2000	10.1667						
Kuttiyadi	Mixed	Herb	<i>Narevelia zeylanica</i>	15	2500.0000	1.5000	0.6667	8.0000						
Kuttiyadi	MDF	Shrub	<i>Helicteres isora</i>	127	1128.8889	3.4324	0.8222							
Kuttiyadi	MDF	Shrub	<i>Holarrhena pubescence</i>	19	168.8889	1.9000	0.2222							
Kuttiyadi	MDF	Shrub	<i>Salacia oblonga</i>	1	8.8889	1.0000	0.0222							
Kuttiyadi	SE	Shrub	<i>Salacia oblonga</i>	4	11.1111	2.0000	0.0139							
Kuttiyadi	SE	Shrub	<i>Strobilanthes ciliatus</i>	346	961.1111	7.3617	0.3264							
Kuttiyadi	EG	Shrub	<i>Salacia oblonga</i>	1	28.5714	1.0000	0.0714							
Kuttiyadi	EG	Shrub	<i>Strobilanthes ciliatus</i>	15	428.5714	7.5000	0.1429							
Kuttiyadi	Mixed	Shrub	<i>Helicteres isora</i>	2	53.3333	2.0000	0.0667							
Kuttiyadi	Mixed	Shrub	<i>Holarrhena pubescence</i>	4	106.6667	1.0000	0.2667							
Kuttiyadi	MDF	Tree	<i>Acacia caesia</i>	72	10.0000	2.2500	0.7111					0.4426		
Kuttiyadi	MDF	Tree	<i>Alstonia scholaris</i>	2	0.2778	1.0000	0.0444					0.0194		
Kuttiyadi	MDF	Tree	<i>Anamirta cocculus</i>	2	0.2778	1.0000	0.0444							
Kuttiyadi	MDF	Tree	<i>Aporosa lindleyana</i>	76	10.5556	2.6207	0.6444							
Kuttiyadi	MDF	Tree	<i>Cinnamomum sp.</i>	3	0.4167	1.0000	0.0667					0.0004		
Kuttiyadi	MDF	Tree	<i>Dillinia pentagyna</i>	13	1.8056	1.4444	0.2000							
Kuttiyadi	MDF	Tree	<i>Gmelina arborea</i>	3	0.4167	1.0000	0.0667							
Kuttiyadi	MDF	Tree	<i>Schleichera oleosa</i>	2	0.2778	2.0000	0.0222							
Kuttiyadi	MDF	Tree	<i>Stereospermum colaise</i>	6	0.8333	1.2000	0.1111							
Kuttiyadi	MDF	Tree	<i>Strychnos nux-vomica</i>	7	0.9722	1.4000	0.1111							
Kuttiyadi	MDF	Tree	<i>Terminalia belirica</i>	11	1.5278	1.2222	0.2000							
Kuttiyadi	SE	Tree	<i>Acacia caesia</i>	33	1.4323	1.9412	0.1181					0.0639		
Kuttiyadi	SE	Tree	<i>Alstonia scholaris</i>	2	0.0868	1.0000	0.0139					0.0338		



Kuttiyadi	SE	Tree	Anamirta cocculus	2	0.0868	2.0000	0.0069							
Kuttiyadi	SE	Tree	Cinnamomum sp.	57	2.4740	1.3902	0.2847			0.3215				
Kuttiyadi	SE	Tree	Ficus racemosa	19	0.8247	2.1111	0.0625							
Kuttiyadi	SE	Tree	Garcinia gummi-gutta	19	0.8247	1.1875	0.1111							
Kuttiyadi	SE	Tree	Kingiodendron pinnatum	1	0.0434	1.0000	0.0069							
Kuttiyadi	SE	Tree	Mesua ferrea	14	0.6076	1.1667	0.0833							
Kuttiyadi	SE	Tree	Myristica dactyloides	113	4.9045	1.9825	0.3958							
Kuttiyadi	SE	Tree	Oroxylum indicum	2	0.0868	1.0000	0.0139							
Kuttiyadi	SE	Tree	Palaquium ellipticum	9	0.3906	1.1250	0.0556							
Kuttiyadi	SE	Tree	Persea macrantha	17	0.7378	1.1333	0.1042			1.1287				
Kuttiyadi	SE	Tree	Sarcostigma kleinii	4	0.1736	1.3333	0.0208							
Kuttiyadi	SE	Tree	Stereospermum colais	1	0.0434	1.0000	0.0069							
Kuttiyadi	SE	Tree	Vateria indica	85	3.6892	3.0357	0.1944							
Kuttiyadi	EG	Tree	Cinnamomum sp.	3	1.7857	1.0000	0.2143			0.5591				
Kuttiyadi	EG	Tree	Garcinia gummi-gutta	3	1.7857	1.5000	0.1429							
Kuttiyadi	EG	Tree	Mesua ferrea	3	1.7857	1.0000	0.2143							
Kuttiyadi	EG	Tree	Myristica dactyloides	20	11.9048	2.0000	0.7143							
Pruvannamuzhi	MDF	Herb	Asparagus racemosa	4	151.5152	1.3333	0.0455	4.2879						
Peruvannamuzhi	MDF	Herb	Costus speciosus	5	189.3939	1.6667	0.0455	4.2614						
Peruvannamuzhi	MDF	Herb	Curcuma zedoaria	3	113.6364	1.0000	0.0455	1.8761						
Peruvannamuzhi	MDF	Herb	Cyclea peltata	18	681.8182	1.8000	0.1515	10.3977						
Peruvannamuzhi	MDF	Herb	Desmodium gangeticum	6	227.2727	1.5000	0.0606	2.0841						
Peruvannamuzhi	MDF	Herb	Elephantopus scaber	28	1060.6061	3.5000	0.1212		2.7258					
Peruvannamuzhi	MDF	Herb	Hemidesmus indicus	5	189.3939	1.2500	0.0606	0.1787						
Peruvannamuzhi	MDF	Herb	Ichnocarpus frutescence	4	151.5152	1.3333	0.0455	0.0683						
Peruvannamuzhi	MDF	Herb	Naragamia alata	7	265.1515	1.7500	0.0606	0.1864						



Peruvannamuzhi	MDF	Shrub	Helicteres isora	73	442.4242	1.8718	0.5909							
Peruvannamuzhi	MDF	Shrub	Holarhena pubescence	3	18.1818	3.0000	0.0152							
Peruvannamuzhi	MDF	Shrub	Holarrhena pubescence	6	36.3636	1.2000	0.0758							
Peruvannamuzhi	SE	Shrub	Ardisia solanacea	12	13.5977	1.7143	0.0198							
Peruvannamuzhi	SE	Shrub	Salacia oblonga	15	16.9972	1.6667	0.0255							
Peruvannamuzhi	SE	Shrub	Stobilanthes ciliatus	39	44.1926	3.5455	0.0312							
Peruvannamuzhi	SE	Shrub	Strobilanthes ciliatus	722	818.1303	7.6809	0.2663							
Peruvannamuzhi	EG	Shrub	Salacia oblonga	1	13.3333	1.0000	0.0333							
Peruvannamuzhi	EG	Shrub	Strobilanthes ciliatus	191	2546.6667	7.0741	0.9000							
Peruvannamuzhi	Teak	Shrub	Helicteres isora	37	360.9756	1.3704	0.6585							
Peruvannamuzhi	MDF	Tree	Acacia caesia	33	3.1250	1.7368	0.2879					0.1137		
Peruvannamuzhi	MDF	Tree	acacia torta	1	0.0947	1.0000	0.0152					0.0053		
Peruvannamuzhi	MDF	Tree	Aporusa lindleyana	30	2.8409	1.7647	0.2576							
Peruvannamuzhi	MDF	Tree	Casia fistula	2	0.1894	1.0000	0.0303					0.2582		
Peruvannamuzhi	MDF	Tree	Dillenia pentagyna	18	1.7045	1.3846	0.1970							
Peruvannamuzhi	MDF	Tree	Dillinia pentagyna	20	1.8939	2.2222	0.1364							
Peruvannamuzhi	MDF	Tree	Hydnocarpus pentandra	9	0.8523	1.1250	0.1212							
Peruvannamuzhi	MDF	Tree	Lagerstroemia reginae	1	0.0947	1.0000	0.0152					0.0156		
Peruvannamuzhi	MDF	Tree	Sapindus trifoliata	1	0.0947	1.0000	0.0152							
Peruvannamuzhi	MDF	Tree	Sarcostigma kleinii	1	0.0947	1.0000	0.0152							
Peruvannamuzhi	MDF	Tree	Schleichera oleosa	1	0.0947	1.0000	0.0152							
Peruvannamuzhi	MDF	Tree	Stereospermum colais	58	5.4924	1.6571	0.5303							
Peruvannamuzhi	MDF	Tree	Strichnos nux-vomica	21	1.9886	1.2353	0.2576							
Peruvannamuzhi	MDF	Tree	Terminalia bellerica	3	0.2841	1.5000	0.0303							
Peruvannamuzhi	MDF	Tree	Wrightia tinctoria	14	1.3258	1.5556	0.1364						17.0991	
Peruvannamuzhi	SE	Tree	Acacia caesia	83	1.4695	1.9762	0.1190					0.0627		

Peruvannamuzhi	SE	Tree	<i>Alstonia scholaris</i>	2	0.0354	1.0000	0.0057				0.0050			
Peruvannamuzhi	SE	Tree	<i>Anamirta cocculus</i>	11	0.1948	1.3750	0.0227							
Peruvannamuzhi	SE	Tree	<i>Aphanamixis polystachya</i>	1	0.0177	1.0000	0.0028							
Peruvannamuzhi	SE	Tree	<i>Canarium strictum</i>	7	0.1239	1.1667	0.0170							
Peruvannamuzhi	SE	Tree	<i>Cinnamomum sp.</i>	89	1.5758	1.1266	0.2238				0.1311			
Peruvannamuzhi	SE	Tree	<i>Dysoxylum malabaricum</i>	6	0.1062	1.0000	0.0170							
Peruvannamuzhi	SE	Tree	<i>Entada rheedei</i>	5	0.0885	1.2500	0.0113							
Peruvannamuzhi	SE	Tree	<i>Gacinia morella</i>	2	0.0354	1.0000	0.0057							
Peruvannamuzhi	SE	Tree	<i>Garcinia gummi-gutta</i>	21	0.3718	1.0500	0.0567							
Peruvannamuzhi	SE	Tree	<i>Garcinia morella</i>	2	0.0354	1.0000	0.0057							
Peruvannamuzhi	SE	Tree	<i>Kingiodendron pinnatum</i>	39	0.6905	1.2188	0.0907							
Peruvannamuzhi	SE	Tree	<i>Lagerstroemia reginae</i>	14	0.2479	1.7500	0.0227				0.2092			
Peruvannamuzhi	SE	Tree	<i>Mesua ferrea</i>	98	1.7351	1.5556	0.1785							
Peruvannamuzhi	SE	Tree	<i>Myristica datyloides</i>	291	5.1523	2.1556	0.3824							
Peruvannamuzhi	SE	Tree	<i>Palaquium ellipticum</i>	53	0.9384	1.5143	0.0992							
Peruvannamuzhi	SE	Tree	<i>Palaquium ellipticum</i>	13	0.2302	1.3000	0.0283							
Peruvannamuzhi	SE	Tree	<i>Persea macrantha</i>	15	0.2656	1.5000	0.0283				0.1953			
Peruvannamuzhi	SE	Tree	<i>Sapindus trifoliata</i>	7	0.1239	1.7500	0.0113							
Peruvannamuzhi	SE	Tree	<i>Sarcostigma kleinii</i>	32	0.5666	1.2308	0.0737							
Peruvannamuzhi	SE	Tree	<i>Spondias pinnata</i>	10	0.1771	1.0000	0.0283				0.0099			
Peruvannamuzhi	SE	Tree	<i>Stereospermum colais</i>	19	0.3364	1.1875	0.0453							
Peruvannamuzhi	SE	Tree	<i>Symplocos cochinchinensis</i>	17	0.3010	1.5455	0.0312							
Peruvannamuzhi	SE	Tree	<i>Vateria indica</i>	377	6.6749	2.7122	0.3938							
Peruvannamuzhi	EG	Tree	<i>Canarium strictum</i>	2	0.5556	1.0000	0.0667							
Peruvannamuzhi	EG	Tree	<i>Cinnamomum sp.</i>	15	4.1667	1.3636	0.3667				0.0749			
Peruvannamuzhi	EG	Tree	<i>Dysoxylum malabaricum</i>	3	0.8333	1.0000	0.1000							

Peruvannamuzhi	EG	Tree	<i>Garcinia gummi-gutta</i>	8	2.2222	1.0000	0.2667							
Peruvannamuzhi	EG	Tree	<i>Garcinia morella</i>	3	0.8333	1.0000	0.1000							
Peruvannamuzhi	EG	Tree	<i>Kingiodendron pinnatum</i>	2	0.5556	1.0000	0.0667							
Peruvannamuzhi	EG	Tree	<i>Mesua ferrea</i>	10	2.7778	1.1111	0.3000							
Peruvannamuzhi	EG	Tree	<i>Myristica datyloides</i>	4	1.1111	1.0000	0.1333							
Peruvannamuzhi	EG	Tree	<i>Palaquium ellipticum</i>	2	0.5556	1.0000	0.0667							
Peruvannamuzhi	EG	Tree	<i>Persea macrantha</i>	14	3.8889	1.1667	0.4000					1.9079		
Peruvannamuzhi	EG	Tree	<i>Sarcostigma kleinii</i>	7	1.9444	1.4000	0.1667							

**Table 5.1.12 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Wayanad South Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Chedleth	MDF	Herb	<i>Asparagus racemosa</i>	6	245.90	2.00	0.0492	6.96						
Chedleth	MDF	Herb	<i>Cyclea peltata</i>	43	1762.30	1.48	0.4754	26.88						
Chedleth	MDF	Herb	<i>Elephantopus scaber</i>	16	655.74	1.78	0.1475		1.69					
Chedleth	MDF	Herb	<i>Hemidesmus indicus</i>	69	2827.87	2.65	0.4262	1.01						
Chedleth	MDF	Herb	<i>Ichnocarpus frutescens</i>	15	614.75	1.50	0.1639	0.28						
Chedleth	MDF	Herb	<i>Rubia cordifolia</i>	10	409.84	2.00	0.0820	1.17						
Chedleth	MDF	Shrub	<i>Holarrhena antidysenterica</i>	29	190.16	2.23	0.2131				-			
Chedleth	MDF	Tree	<i>Acacia caesia</i>	31	3.18	2.21	0.2295				0.39			
Chedleth	MDF	Tree	<i>Alstonia scholaris</i>	2	0.20	1.00	0.0328				0.10			
Chedleth	MDF	Tree	<i>Bauhinia malabarica</i>	2	0.20	1.00	0.0328				0.28			
Chedleth	MDF	Tree	<i>Butea monosperma</i>	10	1.02	2.00	0.0820				0.35			
Chedleth	MDF	Tree	<i>Cassia fistula</i>	57	5.84	2.85	0.3279				0.30			
Chedleth	MDF	Tree	<i>Cinnamomum spp.</i>	11	1.13	1.38	0.1311				0.01			
Chedleth	MDF	Tree	<i>Ficus racemosa</i>	3	0.31	1.50	0.0328				0.42			

Chedleth	MDF	Tree	Persea macrantha	1	0.10	1.00	0.0164				0.09			
Chedleth	MDF	Tree	Wrightia tinctoria	3	0.31	1.00	0.0492					5.16		
Chedleth	Teak	Herb	Cyclea peltata	9	900.00	1.29	0.2800	13.73						
Chedleth	Teak	Herb	Elephantopus scaber	4	400.00	1.33	0.1200			1.03				
Chedleth	Teak	Herb	Hemidesmus indicus	39	3900.00	2.44	0.6400	3.68						
Chedleth	Teak	Herb	Ichnocarpus frutescens	5	500.00	1.25	0.1600	0.23						
Chedleth	Teak	Shrub	Holarrhena antidysenterica	1	16.00	1.00	0.0400							
Kalpetta	Eucalyptus	Herb	Asparagus racemosa	4	400.00	2.00	0.0800	11.32						
Kalpetta	Eucalyptus	Herb	Cyclea peltata	14	1400.00	1.27	0.4400	11.21						
Kalpetta	Eucalyptus	Herb	Elephantopus scaber	9	900.00	2.25	0.1600			2.31				
Kalpetta	Eucalyptus	Herb	Piper sp.	5	500.00	1.25	0.1600				52.58			
Kalpetta	Eucalyptus	Herb	Rubia cordifolia	6	600.00	1.50	0.1600	1.71						
Kalpetta	Eucalyptus	Herb	Tragia involucrata	2	200.00	1.00	0.0800	0.57						
Kalpetta	Eucalyptus	Shrub	Strobilanthes ciliatus	12	192.00	4.00	0.1200	0.90						
Kalpetta	Grassland	Herb	Asparagus racemosa	1	92.59	1.00	0.0370	2.62						
Kalpetta	Grassland	Herb	Biophytum sp.	5	462.96	1.67	0.1111			0.13				
Kalpetta	Grassland	Herb	Cyclea peltata	2	185.19	2.00	0.0370	2.82						
Kalpetta	SE	Herb	Asparagus racemosa	6	555.56	1.50	0.1481	15.72						
Kalpetta	SE	Herb	Costus speciosus	1	92.59	1.00	0.0370	2.08						
Kalpetta	SE	Herb	Cyclea peltata	5	462.96	2.50	0.0741	7.06						
Kalpetta	SE	Herb	Piper sp.	59	5462.96	2.57	0.8519				574.43			
Kalpetta	SE	Herb	Rubia cordifolia	3	277.78	3.00	0.0370	0.79						
Kalpetta	SE	Herb	Sida rhombifolia	5	462.96	2.50	0.0741	0.66						
Kalpetta	SE	Herb	Tragia involucrata	1	92.59	1.00	0.0370	0.26						
Kalpetta	SE	Shrub	Strobilanthes ciliatus	201	2977.78	7.44	1.0000	13.97						
Kalpetta	SE	Tree	Acacia caesia	6	1.39	1.50	0.1481					0.19		
Kalpetta	SE	Tree	Alstonia scholaris	2	0.46	1.00	0.0741					0.16		
Kalpetta	SE	Tree	Cinnamomum spp.	34	7.87	2.43	0.5185					0.07		

Kalpetta	SE	Tree	Persea macrantha	6	1.39	1.50	0.1481				0.42		
Kalpetta	Shola	Herb	Piper sp.	20	4545.45	2.00	0.9091			477.95			
Kalpetta	Shola	Shrub	Strobilanthes ciliatus	27	981.82	4.50	0.5455	4.60					
Kalpetta	Shola	Tree	Cinnamomum spp.	2	1.14	2.00	0.0909				0.09		
Kalpetta	Shola	Tree	Persea macrantha	4	2.27	4.00	0.0909				1.79		
Meppady	EG	Herb	Piper sp.	48	4000.00	1.85	0.8667			219.06			
Meppady	EG	Shrub	Strobilanthes ciliatus	68	906.67	4.86	0.4667	4.25					
Meppady	EG	Tree	Acacia caesia	4	1.11	2.00	0.0667				0.14		
Meppady	EG	Tree	Cinnamomum spp.	21	5.83	2.10	0.3333				0.08		
Meppady	EG	Tree	Ficus racemosa	2	0.56	1.00	0.0667				0.26		
Meppady	EG	Tree	Persea macrantha	18	5.00	1.80	0.3333				4.62		
Meppady	Grassland	Herb	Asparagus racemosa	2	312.50	1.00	0.1250	8.84					
Meppady	Savanah	Herb	Asparagus racemosa	3	234.38	1.00	0.0938	6.63					
Meppady	Savanah	Herb	Biophytum sp.	2	156.25	1.00	0.0625		0.04				
Meppady	Savanah	Herb	Cyclea peltata	8	625.00	1.14	0.2188	9.53					
Meppady	Savanah	Herb	Hemidesmus indicus	9	703.13	2.25	0.1250	0.66					
Meppady	Savanah	Herb	Rubia cordifolia	2	156.25	1.00	0.0625	0.45					
Meppady	Savanah	Herb	Sida rhombifolia	1	78.13	1.00	0.0313	0.11					
Meppady	Savanah	Shrub	Holarrhena antidysenterica	4	50.00	1.00	0.1250				-		
Meppady	Savanah	Tree	Alstonia scholaris	1	0.20	1.00	0.0313				0.05		
Meppady	Savanah	Tree	Bauhinia malabarica	2	0.39	1.00	0.0625				0.20		
Meppady	Savanah	Tree	Wrightia tinctoria	1	0.20	1.00	0.0313					3.24	
Meppady	SE	Herb	Asparagus racemosa	9	900.00	1.50	0.2400	25.47					
Meppady	SE	Herb	Cyclea peltata	6	600.00	1.50	0.1600	9.15					
Meppady	SE	Herb	Piper sp.	31	3100.00	1.94	0.6400			219.06			
Meppady	SE	Shrub	Strobilanthes ciliatus	70	1120.00	5.83	0.4800	5.25					
Meppady	SE	Tree	Cinnamomum spp.	3	0.75	1.00	0.1200				0.14		
Meppady	SE	Tree	Persea macrantha	4	1.00	2.00	0.0800				0.41		

**Table 5.1.13 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Wayanad North Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Begur	MDF	Herb	Elephantopus scaber	59	21071.43	8.43	1.0000		54.15					
Begur	MDF	Herb	Hemidesmus indicus	3	1071.43	3.00	0.1429	0.39						
Begur	MDF	Herb	Rubia cordifolia	13	4642.86	6.50	0.2857	13.23						
Begur	MDF	Herb	Sida rhombifolia	14	5000.00	4.67	0.4286	13.23						
Begur	MDF	Tree	Bauhinia malabarica	1	0.89	1.00	0.1429				0.72			
Begur	MDF	Tree	Butea monosperma	14	12.50	2.80	0.7143				6.17			
Begur	MDF	Tree	Cassia fistula	3	2.68	1.50	0.2857				0.32			
Begur	MDF	Tree	Pongamia pinnata	16	14.29	2.67	0.8571				5.47			
Begur	SE	Herb	Asparagus racemosa	6	454.55	2.00	0.0909	12.86						
Begur	SE	Herb	Costus speciosus	4	303.03	1.33	0.0909	6.82						
Begur	SE	Herb	Cyclea peltata	5	378.79	2.50	0.0606	5.78						
Begur	SE	Herb	Desmodium gangeticum	6	454.55	3.00	0.0606	4.17						
Begur	SE	Herb	Elephantopus scaber	26	1969.70	5.20	0.1515		5.06					
Begur	SE	Herb	Hemidesmus indicus	3	227.27	3.00	0.0303	0.21						
Begur	SE	Herb	Piper sp.	129	9772.73	4.16	0.9394			1027.60				
Begur	SE	Herb	Rubia cordifolia	23	1742.42	5.75	0.1212	4.97						
Begur	SE	Shrub	Strobilanthes ciliatus	124	1503.03	7.29	0.5152	7.05						
Begur	SE	Tree	Alstonia scholaris	1	0.19	1.00	0.0303				-			
Begur	SE	Tree	Cassia fistula	2	0.38	2.00	0.0303				0.13			
Begur	SE	Tree	Cinnamomum spp.	23	4.36	2.09	0.3333				0.20			
Begur	SE	Tree	Ficus racemosa	1	0.19	1.00	0.0303				0.11			
Begur	SE	Tree	Persea macrantha	13	2.46	1.18	0.3333				3.91			
Begur	SE	Tree	Spondias pinnata	2	0.38	1.00	0.0606				0.36			



Begur	Teak	Herb	Asparagus racemosa	2	80.65	1.00	0.0323	2.28					
Begur	Teak	Herb	Biophytum sp.	16	645.16	2.67	0.0968		0.18				
Begur	Teak	Herb	Costus speciosus	18	725.81	2.57	0.1129	16.33					
Begur	Teak	Herb	Cyathula prostrata	4	161.29	4.00	0.0161	0.05		0.26			
Begur	Teak	Herb	Cyclea peltata	16	645.16	1.78	0.1452	9.84					
Begur	Teak	Herb	Elephantopus scaber	125	5040.32	3.79	0.5323		12.95				
Begur	Teak	Herb	Hemidesmus indicus	8	322.58	2.00	0.0645	0.30					
Begur	Teak	Herb	Sida rhombifolia	139	5604.84	3.86	0.5806	7.96					
Begur	Teak	Shrub	Holarrhena antidysenterica	4	25.81	4.00	0.0161			-			
Mananthavady	Grassland	Herb	Asparagus racemosa	4	2000.00	1.33	0.6000	56.60					
Mananthavady	MDF	Herb	Asparagus racemosa	24	6666.67	3.43	0.7778	188.67					
Mananthavady	MDF	Herb	Biophytum sp.	6	1666.67	6.00	0.1111		0.48				
Mananthavady	MDF	Herb	Piper sp.	31	8611.11	3.88	0.8889			905.46			
Mananthavady	MDF	Tree	Acacia caesia	3	2.08	1.50	0.2222				0.39		
Mananthavady	MDF	Tree	Cinnamomum spp.	1	0.69	1.00	0.1111				0.01		
Mananthavady	SE	Herb	Biophytum sp.	20	4545.45	6.67	0.2727		1.30				
Mananthavady	SE	Herb	Costus speciosus	4	909.09	1.00	0.3636	6.82					
Mananthavady	SE	Herb	Nervilia aragoana	2	454.55	2.00	0.0909	1.43					
Mananthavady	SE	Herb	Piper sp.	6	1363.64	1.50	0.3636			143.39			
Mananthavady	SE	Herb	Sida rhombifolia	4	909.09	2.00	0.1818	1.29					
Mananthavady	SE	Shrub	Strobilanthes ciliatus	19	690.91	3.80	0.4545	3.24					
Mananthavady	SE	Tree	Alstonia scholaris	2	1.14	1.00	0.1818				0.28		
Mananthavady	SE	Tree	Cinnamomum spp.	4	2.27	1.33	0.2727				0.05		
Mananthavady	SE	Tree	Persea macrantha	1	0.57	1.00	0.0909				0.13		
Mananthavady	SE	Tree	Spondias pinnata	1	0.57	1.00	0.0909				0.78		
Periya	Acacia	Herb	Cyclea peltata	5	1388.89	1.25	0.4444	21.18					
Periya	Acacia	Herb	Piper sp.	1	277.78	1.00	0.1111			29.21			

Periya	Acacia	Shrub	<i>Strobilanthes ciliatus</i>	18	800.00	3.60	0.5556	3.75						
Periya	Cashew	Herb	<i>Elephantopus scaber</i>	7	5833.33	2.33	1.0000		14.99					
Periya	EG	Herb	<i>Costus speciosus</i>	3	234.38	1.50	0.0625	5.27						
Periya	EG	Herb	<i>Piper sp.</i>	95	7421.88	3.06	0.9688			780.41				
Periya	EG	Shrub	<i>Strobilanthes ciliatus</i>	130	1625.00	5.20	0.7813	7.62						
Periya	EG	Tree	<i>Alstonia scholaris</i>	1	0.26	1.00	0.0313				0.44			
Periya	EG	Tree	<i>Cinnamomum sp</i>	6	1.56	1.20	0.1563				0.66			
Periya	EG	Tree	<i>Ficus racemosa</i>	3	0.78	3.00	0.0313				0.79			
Periya	EG	Tree	<i>Persea macrantha</i>	2	0.52	1.00	0.0625				1.14			
Periya	Eucalyptus	Herb	<i>Asparagus racemosa</i>	1	147.06	1.00	0.0588	4.16						
Periya	Eucalyptus	Herb	<i>Costus speciosus</i>	2	294.12	1.00	0.1176	6.62						
Periya	Eucalyptus	Herb	<i>Cyclea peltata</i>	5	735.29	1.00	0.2941	11.21						
Periya	Eucalyptus	Herb	<i>Elephantopus scaber</i>	33	4852.94	2.36	0.8235		12.47					
Periya	Eucalyptus	Herb	<i>Hemidesmus indicus</i>	2	294.12	2.00	0.0588	0.28						
Periya	Eucalyptus	Herb	<i>Piper sp.</i>	1	147.06	1.00	0.0588			15.46				
Periya	Eucalyptus	Herb	<i>Rubia cordifolia</i>	1	147.06	1.00	0.0588	0.42						
Periya	Pine	Herb	<i>Elephantopus scaber</i>	4	1250.00	2.00	0.2500		3.21					
Periya	Pine	Shrub	<i>Strobilanthes ciliatus</i>	23	1150.00	3.83	0.7500	5.39						
Periya	SE	Herb	<i>Asparagus racemosa</i>	1	156.25	1.00	0.0625	4.42						
Periya	SE	Herb	<i>Costus speciosus</i>	3	468.75	1.50	0.1250	5.27						
Periya	SE	Herb	<i>Elephantopus scaber</i>	2	312.50	1.00	0.1250		0.80					
Periya	SE	Herb	<i>Piper sp.</i>	9	1406.25	1.00	0.5625			147.87				
Periya	SE	Shrub	<i>Strobilanthes ciliatus</i>	24	600.00	4.00	0.3750	2.81						
Periya	SE	Tree	<i>Cinnamomum spp.</i>	6	2.34	1.50	0.2500				0.03			
Periya	SE	Tree	<i>Persea macrantha</i>	3	1.17	1.50	0.1250				0.57			

**Table 5.1.14 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Wayanad (WL) Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Aralam	EG	Herb	Piper sp.	32	6153.85	2.67	0.9231			647.08				
Aralam	EG	Tree	Cinnamomum spp.	1	0.64	1.00	0.0769				0.02			
Aralam	MDF	Herb	Cyclea peltata	9	535.71	1.80	0.1190	8.17						
Aralam	MDF	Herb	Elephantopus scaber	43	2559.52	4.30	0.2381		6.58					
Aralam	MDF	Herb	Piper longum	79	4702.38	3.29	0.5714	3.51		5.36				
Aralam	MDF	Herb	Piper sp.	72	4285.71	3.13	0.5476			450.64				
Aralam	MDF	Shrub	Strobilanthes ciliatus	83	790.48	4.37	0.4524	3.71						
Aralam	MDF	Tree	Acacia caesia	90	13.39	2.50	0.8571				2.03			
Aralam	MDF	Tree	Alstonia scholaris	1	0.15	1.00	0.0238				0.05			
Aralam	MDF	Tree	Bauhinia malabarica	2	0.30	1.00	0.0476				1.09			
Aralam	MDF	Tree	Cinnamomum spp.	12	1.79	1.50	0.1905				0.02			
Aralam	MDF	Tree	Lagerstroemia reginae	41	6.10	3.42	0.2857				2.80			
Aralam	MDF	Tree	Persea macrantha	1	0.15	1.00	0.0238				0.23			
Kurichiyath	DDF	Herb	Asparagus racemosa	1	131.58	1.00	0.0526	3.72						
Kurichiyath	DDF	Herb	Biophytum sp.	48	6315.79	8.00	0.3158		0.71					
Kurichiyath	DDF	Herb	Costus speciosus	6	789.47	6.00	0.0526	17.76						
Kurichiyath	DDF	Herb	Cyclea peltata	3	394.74	1.00	0.1579	6.02						
Kurichiyath	DDF	Herb	Desmodium gyrans	14	1842.11	2.80	0.2632	1.26						
Kurichiyath	DDF	Herb	Elephantopus scaber	42	5526.32	7.00	0.3158		14.20					
Kurichiyath	DDF	Herb	Hemidesmus indicus	3	394.74	3.00	0.0526	0.37						
Kurichiyath	DDF	Herb	Rubia cordifolia	2	263.16	2.00	0.0526	0.75						
Kurichiyath	DDF	Herb	Sida rhombifolia	102	13421.05	7.29	0.7368	19.06						
Kurichiyath	DDF	Shrub	Holarrhena antidysenterica	21	442.11	4.20	0.2632							
Kurichiyath	DDF	Tree	Bauhinia malabarica	7	2.30	1.40	0.2632				2.60			

Kurichiyath	DDF	Tree	Bauhinia racemosa	1	0.33	1.00	0.0526				0.35		
Kurichiyath	DDF	Tree	Butea monosperma	4	1.32	4.00	0.0526				0.93		
Kurichiyath	DDF	Tree	Cassia fistula	34	11.18	3.09	0.5789				1.16		
Kurichiyath	MDF	Herb	Elephantopus scaber	21	13125.00	5.25	1.0000		31.35				
Kurichiyath	MDF	Herb	Sida rhombifolia	22	13750.00	7.33	0.7500	19.53					
Kurichiyath	SE	Herb	Asparagus racemosa	2	192.31	2.00	0.0385	5.44					
Kurichiyath	SE	Herb	Biophytum sp.	52	5000.00	4.73	0.4231		1.43				
Kurichiyath	SE	Herb	Costus speciosus	6	576.92	1.50	0.1538	12.98					
Kurichiyath	SE	Herb	Cyclea peltata	2	192.31	2.00	0.0385	2.93					
Kurichiyath	SE	Herb	Desmodium gyrans	2	192.31	1.00	0.0769	1.26					
Kurichiyath	SE	Herb	Elephantopus scaber	208	20000.00	8.00	1.0000		31.35				
Kurichiyath	SE	Herb	Piper sp.	9	865.38	2.25	0.1538			91.00			
Kurichiyath	SE	Herb	Rauvolfia serpentina	1	96.15	1.00	0.0385	0.20					
Kurichiyath	SE	Herb	Rubia cordifolia	1	96.15	1.00	0.0385	0.20					
Kurichiyath	SE	Herb	Sida rhombifolia	118	11346.15	9.08	0.5000	16.11					
Kurichiyath	SE	Herb	Solanum viarum	1	96.15	1.00	0.0385	0.99					
Kurichiyath	SE	Shrub	Strobilanthes ciliatus	83	1276.92	8.30	0.3846	5.99					
Kurichiyath	SE	Tree	Bauhinia malabarica	5	1.20	1.25	0.1538				1.72		
Kurichiyath	SE	Tree	Bauhinia racemosa	2	0.48	2.00	0.0385				0.42		
Kurichiyath	SE	Tree	Butea monosperma	2	0.48	2.00	0.0385				0.39		
Kurichiyath	SE	Tree	Cassia fistula	25	6.01	2.08	0.4615				0.62		
Kurichiyath	SE	Tree	Cinnamomum spp.	10	2.40	1.67	0.2308				0.80		
Kurichiyath	SE	Tree	Persea macrantha	10	2.40	1.43	0.2692				3.95		
Kurichiyath	SE	Tree	Spondias pinnata	4	0.96	1.00	0.1538				1.68		
Kurichiyath	Teak	Herb	Asparagus racemosa	32	2285.71	2.29	0.4000	64.69					
Kurichiyath	Teak	Herb	Baliospermum montanum	18	1285.71	3.60	0.1429	10.95					
Kurichiyath	Teak	Herb	Biophytum sp.	290	20714.29	11.15	0.7429		5.90				
Kurichiyath	Teak	Herb	Costus speciosus	9	642.86	3.00	0.0857	14.46					

Kurichiyath	Teak	Herb	Cyclea peltata	5	357.14	1.25	0.1143	5.45						
Kurichiyath	Teak	Herb	Desmodium gyrans	24	1714.29	3.43	0.2000	1.17						
Kurichiyath	Teak	Herb	Elephantopus scaber	89	6357.14	5.93	0.4286		16.34					
Kurichiyath	Teak	Herb	Hemidesmus indicus	1	71.43	1.00	0.0286	0.07						
Kurichiyath	Teak	Herb	Ichnocarpus frutescens	5	357.14	2.50	0.0571	0.16						
Kurichiyath	Teak	Herb	Pseudarthria viscida	1	71.43	1.00	0.0286	0.06						
Kurichiyath	Teak	Herb	Rauvolfia serpentina	1	71.43	1.00	0.0286	0.15						
Kurichiyath	Teak	Herb	Sida rhombifolia	183	13071.43	6.78	0.7714	18.56						
Kurichiyath	Teak	Shrub	Holarrhena antidysenterica	33	377.14	6.60	0.1429					-		
Muthanga	Eucalyptus	Herb	Asparagus racemosa	12	1500.00	3.00	0.2000	42.45						
Muthanga	Eucalyptus	Herb	Cyclea peltata	18	2250.00	1.80	0.5000	34.31						
Muthanga	Eucalyptus	Herb	Elephantopus scaber	11	1375.00	3.67	0.1500		3.53					
Muthanga	Eucalyptus	Herb	Hemidesmus indicus	4	500.00	4.00	0.0500	0.47						
Muthanga	Eucalyptus	Herb	Ichnocarpus frutescens	4	500.00	2.00	0.1000	0.23						
Muthanga	Eucalyptus	Herb	Rauvolfia serpentina	3	375.00	3.00	0.0500	0.80						
Muthanga	Eucalyptus	Herb	Sida rhombifolia	42	5250.00	3.23	0.6500	7.46						
Muthanga	Eucalyptus	Shrub	Holarrhena antidysenterica	1	20.00	1.00	0.0500					-		
Muthanga	MDF	Herb	Biophytum sp.	10	500.00	1.67	0.1200		0.14					
Muthanga	MDF	Herb	Cyclea peltata	4	200.00	2.00	0.0400	3.05						
Muthanga	MDF	Herb	Elephantopus scaber	244	12200.00	8.13	0.6000		31.35					
Muthanga	MDF	Herb	Hemidesmus indicus	21	1050.00	3.00	0.1400	0.99						
Muthanga	MDF	Herb	Sida rhombifolia	159	7950.00	5.30	0.6000	11.29						
Muthanga	MDF	Herb	Tragia involucrata	2	100.00	2.00	0.0200	0.04						
Muthanga	MDF	Shrub	Holarrhena antidysenterica	4	32.00	2.00	0.0400					-		
Muthanga	MDF	Tree	Bauhinia malabarica	4	0.50	1.00	0.0800					0.43		
Muthanga	MDF	Tree	Bauhinia racemosa	1	0.13	1.00	0.0200					0.11		
Muthanga	MDF	Tree	Butea monosperma	2	0.25	1.00	0.0400					0.19		
Muthanga	MDF	Tree	Cassia fistula	7	0.88	1.40	0.1000					0.06		

Muthanga	MDF	Tree	Persea macrantha	3	0.38	3.00	0.0200				0.89			
Muthanga	MDF	Tree	Wrightia tinctoria	1	0.13	1.00	0.0200					2.01		
Muthanga	Teak	Herb	Asparagus racemosa	3	441.18	1.00	0.1765	12.49						
Muthanga	Teak	Herb	Biophytum sp.	32	4705.88	5.33	0.3529		1.34					
Muthanga	Teak	Herb	Desmodium gangeticum	3	441.18	1.50	0.1176	4.05						
Muthanga	Teak	Herb	Elephantopus scaber	146	21470.59	9.13	0.9412		55.18					
Muthanga	Teak	Herb	Hemidesmus indicus	6	882.35	3.00	0.1176	0.83						
Muthanga	Teak	Herb	Ichnocarpus frutescens	5	735.29	5.00	0.0588	0.33						
Muthanga	Teak	Herb	Nervilia aragoana	19	2794.12	6.33	0.1765	8.80						
Muthanga	Teak	Herb	Rauvolfia serpentina	3	441.18	3.00	0.0588	0.94						
Muthanga	Teak	Herb	Sida rhombifolia	43	6323.53	5.38	0.4706	8.98						
Muthanga	Teak	Shrub	Holarrhena antidysenterica	1	23.53	1.00	0.0588				-			
S. Bathery	DDF	Herb	Biophytum sp.	13	2500.00	6.50	0.1538		0.71					
S. Bathery	DDF	Herb	Cyclea peltata	1	192.31	1.00	0.0769	2.93						
S. Bathery	DDF	Herb	Desmodium gyrans	1	192.31	1.00	0.0769	0.13						
S. Bathery	DDF	Herb	Elephantopus scaber	60	11538.46	5.45	0.8462		29.65					
S. Bathery	DDF	Herb	Hemidesmus indicus	2	384.62	2.00	0.0769	0.36						
S. Bathery	DDF	Herb	Sida rhombifolia	25	4807.69	4.17	0.4615	6.83						
S. Bathery	DDF	Shrub	Holarrhena antidysenterica	31	953.85	3.88	0.6154				-			
S. Bathery	DDF	Tree	Bauhinia malabarica	7	3.37	1.75	0.3077				2.78			
S. Bathery	DDF	Tree	Butea monosperma	3	1.44	1.50	0.1538				0.33			
S. Bathery	DDF	Tree	Cassia fistula	3	1.44	3.00	0.0769				0.29			
S. Bathery	MDF	Herb	Asparagus racemosa	19	1637.93	2.38	0.2759				46.35			
S. Bathery	MDF	Herb	Biophytum sp.	6	517.24	6.00	0.0345		0.15					
S. Bathery	MDF	Herb	Cyclea peltata	19	1637.93	2.71	0.2414				24.98			
S. Bathery	MDF	Herb	Elephantopus scaber	233	20086.21	8.63	0.9310		51.62					
S. Bathery	MDF	Herb	Hemidesmus indicus	28	2413.79	4.67	0.2069				2.28			

S. Bathery	MDF	Herb	<i>Ichnocarpus frutescens</i>	2	172.41	2.00	0.0345				0.08			
S. Bathery	MDF	Herb	<i>Nervilia aragoana</i>	7	603.45	3.50	0.0690				1.90			
S. Bathery	MDF	Herb	<i>Piper sp.</i>	1	86.21	1.00	0.0345			9.06				
S. Bathery	MDF	Herb	<i>Rubia cordifolia</i>	14	1206.90	4.67	0.1034				3.44			
S. Bathery	MDF	Herb	<i>Sida rhombifolia</i>	51	4396.55	4.64	0.3793				6.24			
S. Bathery	MDF	Shrub	<i>Holarrhena antidysenterica</i>	69	951.72	5.31	0.4483				-			
S. Bathery	MDF	Tree	<i>Bauhinia malabarica</i>	9	1.94	1.00	0.3103				2.37			
S. Bathery	MDF	Tree	<i>Butea monosperma</i>	11	2.37	3.67	0.1034				2.28			
S. Bathery	MDF	Tree	<i>Cassia fistula</i>	11	2.37	1.57	0.2414				0.20			
S. Bathery	MDF	Tree	<i>Cinnamomum spp.</i>	3	0.65	1.50	0.0690				0.01			
S. Bathery	MDF	Tree	<i>Persea macrantha</i>	8	1.72	1.60	0.1724				0.89			
S. Bathery	Teak	Herb	<i>Biophytum sp.</i>	28	2692.31	7.00	0.1538			0.71				
S. Bathery	Teak	Herb	<i>Cyclea peltata</i>	2	192.31	2.00	0.0385	2.93						
S. Bathery	Teak	Herb	<i>Elephantopus scaber</i>	206	19807.69	7.92	1.0000			50.91				
S. Bathery	Teak	Herb	<i>Hemidesmus indicus</i>	8	769.23	1.60	0.1923	0.36						
S. Bathery	Teak	Herb	<i>Ichnocarpus frutescens</i>	2	192.31	2.00	0.0385	0.09						
S. Bathery	Teak	Herb	<i>Sida rhombifolia</i>	101	9711.54	5.05	0.7692	6.83						
S. Bathery	Teak	Shrub	<i>Holarrhena antidysenterica</i>	15	230.77	3.75	0.1538				-			
Tholpetty	Eucalyptus	Herb	<i>Elephantopus scaber</i>	32	16000.00	8.00	0.8000			41.12				
Tholpetty	Eucalyptus	Herb	<i>Sida rhombifolia</i>	19	9500.00	4.75	0.8000	13.49						
Tholpetty	Eucalyptus	Shrub	<i>Holarrhena antidysenterica</i>	1	80.00	1.00	0.2000				-			
Tholpetty	MDF	Herb	<i>Asparagus racemosa</i>	6	375.00	1.50	0.1000	10.61						
Tholpetty	MDF	Herb	<i>Baliospermum montanum</i>	2	125.00	2.00	0.0250	1.07						
Tholpetty	MDF	Herb	<i>Biophytum sp.</i>	10	625.00	5.00	0.0500			0.18				
Tholpetty	MDF	Herb	<i>Costus speciosus</i>	101	6312.50	5.05	0.5000	142.03						
Tholpetty	MDF	Herb	<i>Curcuma zedoaria</i>	15	937.50	15.00	0.0250	15.48						
Tholpetty	MDF	Herb	<i>Desmodium gangeticum</i>	1	62.50	1.00	0.0250	0.57						
Tholpetty	MDF	Herb	<i>Elephantopus scaber</i>	91	5687.50	7.00	0.3250			14.62				

Tholpetty	MDF	Herb	Rubia cordifolia	5	312.50	2.50	0.0500	0.57												
Tholpetty	MDF	Herb	Sida rhombifolia	103	6437.50	4.68	0.5500	9.14												
Tholpetty	MDF	Shrub	Holarrhena antidysenterica	1	10.00	1.00	0.0250													-
Tholpetty	MDF	Tree	Bauhinia malabarica	10	1.56	1.25	0.2000													2.13
Tholpetty	MDF	Tree	Butea monosperma	21	3.28	3.50	0.1500													2.03
Tholpetty	MDF	Tree	Cassia fistula	73	11.41	2.92	0.6250													1.11
Tholpetty	MDF	Tree	Cinnamomum spp.	5	0.78	1.67	0.0750													0.06
Tholpetty	MDF	Tree	Persea macrantha	3	0.47	1.00	0.0750													0.40
Tholpetty	MDF	Tree	Pongamia pinnata	5	0.78	5.00	0.0250													0.18
Tholpetty	Teak	Herb	Asparagus racemosa	3	227.27	1.00	0.0909	6.43												
Tholpetty	Teak	Herb	Baliospermum montanum	13	984.85	2.17	0.1818	8.39												
Tholpetty	Teak	Herb	Costus speciosus	4	303.03	4.00	0.0303	6.82												
Tholpetty	Teak	Herb	Cyclea peltata	4	303.03	1.33	0.0909	4.62												
Tholpetty	Teak	Herb	Elephantopus scaber	161	12196.97	8.47	0.5758													31.35
Tholpetty	Teak	Herb	Hemidesmus indicus	2	151.52	2.00	0.0303	0.14												
Tholpetty	Teak	Herb	Ichnocarpus frutescens	2	151.52	2.00	0.0303	0.07												
Tholpetty	Teak	Herb	Nervilia aragoana	1	75.76	1.00	0.0303	0.24												
Tholpetty	Teak	Herb	Pseudarthria viscida	2	151.52	2.00	0.0303	0.12												
Tholpetty	Teak	Herb	Sida rhombifolia	109	8257.58	4.54	0.7273	11.73												
Tholpetty	Teak	Shrub	Holarrhena antidysenterica	1	12.12	1.00	0.0303													-

**Table 5.1.15 Density, abundance, frequency and availability of useful parts of NWFPs in different Forest Ranges of Kannur Division**

Range	Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)												
								Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed						
Kanjangad	Cashew	Herb	Cyclea peltata	23	1691.18	1.21	0.5588	25.79												
Kanjangad	Cashew	Herb	Elephantopus scaber	3	220.59	3.00	0.0294													15.51
Kanjangad	Cashew	Herb	Hemidesmus indicus	11	808.82	1.22	0.2647	0.76												



Kanjangad	Cashew	Herb	<i>Ichnocarpus frutescens</i>	4	294.12	2.00	0.0588	0.13						
Kanjangad	EG	Herb	<i>Piper sp.</i>	39	5416.67	2.17	1.0000	569.56						
Kanjangad	EG	Shrub	<i>Strobilanthes ciliatus</i>	66	1466.67	8.25	0.4444	6.88						
Kanjangad	EG	Tree	<i>Acacia caesia</i>	5	2.31	1.67	0.1667				0.15			
Kanjangad	EG	Tree	<i>Persea macrantha</i>	2	0.93	1.00	0.1111				0.07			
Kanjangad	Grassland	Herb	<i>Cyclea peltata</i>	4	1000.00	1.33	0.3000	25.79	15.25					
Kanjangad	Grassland	Herb	<i>Hemidesmus indicus</i>	27	6750.00	2.70	1.0000	0.76	6.37					
Kanjangad	Grassland	Herb	<i>Ichnocarpus frutescens</i>	2	500.00	1.00	0.2000	0.23	0.23					
Kanjangad	MDF	Herb	<i>Asparagus racemosa</i>	7	157.66	1.17	0.0541	4.46						
Kanjangad	MDF	Herb	<i>Cyclea peltata</i>	135	3040.54	1.96	0.6216	46.37						
Kanjangad	MDF	Herb	<i>Elephantopus scaber</i>	23	518.02	4.60	0.0450		8.40					
Kanjangad	MDF	Herb	<i>Hemidesmus indicus</i>	49	1103.60	1.81	0.2432	1.04						
Kanjangad	MDF	Herb	<i>Ichnocarpus frutescens</i>	16	360.36	2.00	0.0721	0.23						
Kanjangad	MDF	Herb	<i>Piper longum</i>	3	67.57	3.00	0.0090	0.05		0.08				
Kanjangad	MDF	Herb	<i>Piper sp.</i>	16	360.36	1.78	0.0811	37.89						
Kanjangad	MDF	Tree	<i>Acacia caesia</i>	123	6.93	3.15	0.3514				0.53			
Kanjangad	MDF	Tree	<i>Acacia torta</i>	42	2.36	3.23	0.1171				0.16			
Kanjangad	MDF	Tree	<i>Alstonia scholaris</i>	2	0.11	1.00	0.0180				0.08			
Kanjangad	MDF	Tree	<i>Bauhinia racemosa</i>	1	0.06	1.00	0.0090				0.03			
Kanjangad	MDF	Tree	<i>Cassia fistula</i>	1	0.06	1.00	0.0090				0.01			
Kanjangad	MDF	Tree	<i>Cinnamomum spp.</i>	1	0.06	1.00	0.0090				0.04			
Kanjangad	MDF	Tree	<i>Ficus racemosa</i>	11	0.62	1.57	0.0631				0.31			
Kanjangad	MDF	Tree	<i>Persea macrantha</i>	2	0.11	1.00	0.0180				0.22			
Kanjangad	MDF	Tree	<i>Spondias pinnata</i>	2	0.11	1.00	0.0180				0.33			
Kanjangad	SE	Herb	<i>Asparagus racemosa</i>	1	71.43	1.00	0.0286	2.02						
Kanjangad	SE	Herb	<i>Cyclea peltata</i>	1	71.43	1.00	0.0286	15.25						
Kanjangad	SE	Herb	<i>Elephantopus scaber</i>	26	1857.14	4.33	0.1714		4.77					
Kanjangad	SE	Herb	<i>Naregamia alata</i>	1	71.43	1.00	0.0286	0.05						

Kanjangad	SE	Herb	Piper longum	6	428.57	3.00	0.0571	0.32		0.49				
Kanjangad	SE	Herb	Piper sp.	60	4285.71	2.40	0.7143	450.64						
Kanjangad	SE	Shrub	Strobilanthes ciliatus	190	2171.43	11.18	0.4857	10.18						
Kanjangad	SE	Tree	Acacia caesia	46	8.21	2.42	0.5429				0.76			
Kanjangad	SE	Tree	Alstonia scholaris	5	0.89	1.25	0.1143				0.11			
Kanjangad	SE	Tree	Bauhinia racemosa	1	0.18	1.00	0.0286				0.10			
Kanjangad	SE	Tree	Cinnamomum spp.	3	0.54	1.50	0.0571				0.00			
Kanjangad	SE	Tree	Holoptelea integrifolia	2	0.36	1.00	0.0571				0.66			
Kanjangad	SE	Tree	Persea macrantha	4	0.71	2.00	0.0571				1.66			
Kanjangad	SE	Tree	Wrightia tinctoria	1	0.18	1.00	0.0286					3.18		
Kannavam	EG	Herb	Costus speciosus	8	289.86	1.33	0.0870	6.52						
Kannavam	EG	Herb	Cyclea peltata	2	72.46	1.00	0.0290	1.11						
Kannavam	EG	Herb	Piper sp.	145	5253.62	2.46	0.8551	552.42						
Kannavam	EG	Tree	Acacia caesia	66	7.97	2.64	0.3623				0.79			
Kannavam	EG	Tree	Alstonia scholaris	1	0.12	1.00	0.0145				0.01			
Kannavam	EG	Tree	Cinnamomum spp.	9	1.09	1.13	0.1159				0.05			
Kannavam	EG	Tree	Ficus racemosa	1	0.12	1.00	0.0145				0.16			
Kannavam	EG	Tree	Persea macrantha	2	0.24	1.00	0.0290				0.32			
Kannavam	Mahagony	Herb	Cyclea peltata	1	125.00	1.00	0.0500	1.91						
Kannavam	Mahagony	Herb	Elephantopus scaber	4	500.00	2.00	0.1000		1.29					
Kannavam	Mahagony	Herb	Piper sp.	42	5250.00	2.33	0.9000	552.04						
Kannavam	Mahagony	Shrub	Strobilanthes ciliatus	8	160.00	4.00	0.1000	0.75						
Kannavam	MDF	Herb	Asparagus racemosa	13	185.71	1.30	0.0571	0.80						
Kannavam	MDF	Herb	Costus speciosus	16	228.57	1.23	0.0743	5.14						
Kannavam	MDF	Herb	Cyathula prostrata	4	57.14	4.00	0.0057	0.02		0.09				
Kannavam	MDF	Herb	Cyclea peltata	30	428.57	1.30	0.1314	6.54						
Kannavam	MDF	Herb	Desmodium gangeticum	4	57.14	4.00	0.0057	0.52						
Kannavam	MDF	Herb	Elephantopus scaber	240	3428.57	3.38	0.4057		8.81					

Kannavam	MDF	Herb	Hemidesmus indicus	19	271.43	2.11	0.0514	0.26									
Kannavam	MDF	Herb	Ichnocarpus frutescens	25	357.14	1.67	0.0857	0.87									
Kannavam	MDF	Herb	Piper longum	82	1171.43	2.65	0.1771	0.87			1.34						
Kannavam	MDF	Herb	Piper sp.	156	2228.57	2.29	0.3886	234.33									
Kannavam	MDF	Herb	Pseudarthria viscida	38	542.86	2.38	0.0914	0.44									
Kannavam	MDF	Herb	Rauvolfia serpentina	1	14.29	1.00	0.0057	0.03									
Kannavam	MDF	Herb	Sida rhombifolia	2	28.57	2.00	0.0057	0.04									
Kannavam	MDF	Shrub	Strobilanthes ciliatus	460	1051.43	6.05	0.4343	4.93									
Kannavam	MDF	Tree	Acacia caesia	200	7.14	2.53	0.4514						1.08				
Kannavam	MDF	Tree	Alstonia scholaris	15	0.54	1.15	0.0743						0.33				
Kannavam	MDF	Tree	Bauhinia racemosa	2	0.07	1.00	0.0114						0.03				
Kannavam	MDF	Tree	Cinnamomum spp.	8	0.29	1.33	0.0343						0.01				
Kannavam	MDF	Tree	Ficus racemosa	9	0.32	1.29	0.0400						0.16				
Kannavam	MDF	Tree	Holoptelea integrifolia	2	0.07	1.00	0.0114						0.01				
Kannavam	MDF	Tree	Lagerstroemia reginae	11	0.39	1.57	0.0400						0.11				
Kannavam	MDF	Tree	Persea macrantha	10	0.36	1.11	0.0514						1.02				
Kannavam	MDF	Tree	Pongamia pinnata	1	0.04	1.00	0.0057						0.01				
Kannavam	MDF	Tree	Wrightia tinctoria	2	0.07	1.00	0.0114								1.12		
Kannavam	Mixed	Herb	Asparagus racemosa	1	56.82	1.00	0.0227	1.61									
Kannavam	Mixed	Herb	Costus speciosus	4	227.27	1.00	0.0909	5.11									
Kannavam	Mixed	Herb	Cyclea peltata	10	568.18	1.43	0.1591	8.66									
Kannavam	Mixed	Herb	Desmodium gangeticum	3	170.45	1.50	0.0455	1.56									
Kannavam	Mixed	Herb	Elephantopus scaber	94	5340.91	3.76	0.5682				13.73						
Kannavam	Mixed	Herb	Hemidesmus indicus	1	56.82	1.00	0.0227	0.05									
Kannavam	Mixed	Herb	Ichnocarpus frutescens	5	284.09	1.67	0.0682	0.13									
Kannavam	Mixed	Herb	Piper longum	7	397.73	1.75	0.0909	0.30			0.45						
Kannavam	Mixed	Herb	Piper sp.	28	1590.91	1.65	0.3864	167.28									
Kannavam	Mixed	Herb	Pseudarthria viscida	21	1193.18	3.00	0.1591	0.97									

Kannavam	Mixed	Herb	Sida rhombifolia	11	625.00	3.67	0.0682	0.89											
Kannavam	Mixed	Shrub	Strobilanthes ciliatus	30	272.73	3.75	0.1818	1.28											
Kannavam	SE	Herb	Piper longum	2	166.67	2.00	0.0333	0.12			0.19								
Kannavam	SE	Herb	Piper sp.	75	6250.00	2.59	0.9667	657.19											
Kannavam	SE	Shrub	Strobilanthes ciliatus	208	2773.33	7.70	0.9000	4.93											
Kannavam	SE	Tree	Acacia caesia	8	1.67	2.00	0.1333												0.27
Kannavam	SE	Tree	Cinnamomum spp.	2	0.42	1.00	0.0667												0.01
Kannavam	SE	Tree	Lagerstroemia reginae	13	2.71	2.60	0.1667												1.37
Kannavam	SE	Tree	Persea macrantha	1	0.21	1.00	0.0333												0.16
Kannavam	Teak	Herb	Costus speciosus	4	769.23	2.00	0.1538	17.31											
Kannavam	Teak	Herb	Cyclea peltata	1	192.31	1.00	0.0769	5.45											
Kannavam	Teak	Herb	Elephantopus scaber	29	5576.92	2.42	0.9231				14.33								
Kannavam	Teak	Herb	Sida rhombifolia	2	384.62	2.00	0.0769	0.55											
Kasaragod	Acacia	Herb	Amorphophallus paeoniifolius	6	1500.00	1.50	0.4000	442.76											
Kasaragod	Acacia	Herb	Cyclea peltata	1	250.00	1.00	0.1000	3.81											
Kasaragod	Acacia	Herb	Elephantopus scaber	5	1250.00	2.50	0.2000				3.21								
Kasaragod	Acacia	Herb	Hemidesmus indicus	4	1000.00	1.33	0.3000	0.94											
Kasaragod	Acacia	Herb	Tragia involucrata	2	500.00	1.00	0.2000	1.43											
Kasaragod	Cashew	Herb	Cyclea peltata	6	365.85	1.50	0.0976	5.58											
Kasaragod	Cashew	Herb	Elephantopus scaber	99	6036.59	3.00	0.8049				3.21								
Kasaragod	Cashew	Herb	Hemidesmus indicus	34	2073.17	1.70	0.4878	3.38											
Kasaragod	Cinnamomum	Herb	Hemidesmus indicus	2	500.00	1.00	0.2000	0.47											
Kasaragod	Cinnamomum	Herb	Piper sp.	7	1750.00	1.17	0.6000	184.01											
Kasaragod	Mahagony	Herb	Cyclea peltata	3	1250.00	1.50	0.3333	11.44											
Kasaragod	Mahagony	Herb	Hemidesmus indicus	1	416.67	1.00	0.1667	0.24											
Kasaragod	MDF	Herb	Amorphophallus paeoniifolius	2	56.82	1.00	0.0227	16.77											
Kasaragod	MDF	Herb	Cyclea peltata	7	198.86	1.17	0.0682	3.03											
Kasaragod	MDF	Herb	Elephantopus scaber	115	3267.05	3.03	0.4318				2.64								

Kasaragod	MDF	Herb	Hemidesmus indicus	52	1477.27	1.63	0.3636	1.39						
Kasaragod	MDF	Herb	Naregamia alata	20	568.18	1.67	0.1364	0.40						
Kasaragod	MDF	Herb	Piper sp.	11	312.50	2.20	0.0568	479.36						
Kasaragod	MDF	Herb	Pseudarthria viscida	2	56.82	2.00	0.0114	0.05						
Kasaragod	MDF	Tree	Acacia caesia	47	3.34	1.88	0.2841					0.29		
Kasaragod	MDF	Tree	Alstonia scholaris	10	0.71	1.25	0.0909					0.26		
Kasaragod	MDF	Tree	Ficus racemosa	1	0.07	1.00	0.0114					0.04		
Kasaragod	MDF	Tree	Holoptelea integrifolia	3	0.21	1.00	0.0341					0.48		
Kasaragod	MDF	Tree	Lagerstroemia reginae	9	0.64	1.50	0.0682					0.24		
Kasaragod	MDF	Tree	Persea macrantha	3	0.21	1.50	0.0227					0.63		
Kasaragod	MDF	Tree	Pongamia pinnata	6	0.43	1.50	0.0455					0.12		
Kasaragod	MDF	Tree	Wrightia tinctoria	2	0.14	1.00	0.0227						2.54	
Kasaragod	Mixed	Herb	Cyclea peltata	2	142.86	1.00	0.0571	2.18						
Kasaragod	Mixed	Herb	Elephantopus scaber	41	2928.57	2.73	0.4286			7.53				
Kasaragod	Mixed	Herb	Hemidesmus indicus	36	2571.43	1.57	0.6571	2.43						
Kasaragod	Mixed	Herb	Pseudarthria viscida	5	357.14	2.50	0.0571	0.29						
Kasaragod	SE	Herb	Cyclea peltata	1	147.06	1.00	0.0588	2.24						
Kasaragod	SE	Herb	Elephantopus scaber	6	882.35	3.00	0.1176			2.27				
Kasaragod	SE	Herb	Naregamia alata	3	441.18	1.50	0.1176	0.31						
Kasaragod	SE	Herb	Piper sp.	31	4558.82	2.21	0.8235	479.36						
Kasaragod	SE	Shrub	Strobilanthes ciliatus	25	588.24	2.78	0.5294	2.76						
Kasaragod	SE	Tree	Cinnamomum spp.	29	10.66	2.90	0.5882					0.38		
Kasaragod	SE	Tree	Holoptelea integrifolia	3	1.10	1.00	0.1765					3.48		
Kasaragod	SE	Tree	Lagerstroemia reginae	2	0.74	2.00	0.0588					0.33		
Kasaragod	SE	Tree	Persea macrantha	3	1.10	1.50	0.1176					4.15		
Kasaragod	Teak	Herb	Cyathula prostrata	1	60.98	1.00	0.0244	0.02			0.10			
Kasaragod	Teak	Herb	Cyclea peltata	6	365.85	1.00	0.1463	5.58						
Kasaragod	Teak	Herb	Elephantopus scaber	21	1280.49	3.00	0.1707			3.29				

Kasaragod	Teak	Herb	Hemidesmus indicus	19	1158.54	1.36	0.3415	1.09						
Kasaragod	Teak	Herb	Ichnocarpus frutescens	1	60.98	1.00	0.0244	0.03						
Kasaragod	Teak	Herb	Naregamia alata	13	792.68	2.17	0.1463	0.56						
Kottiyur	MDF	Herb	Costus speciosus	12	857.14	1.71	0.2000	19.29						
Kottiyur	MDF	Herb	Cyathula prostrata	10	714.29	2.00	0.1429	1.16						
Kottiyur	MDF	Herb	Cyclea peltata	25	1785.71	1.56	0.4571	27.23						
Kottiyur	MDF	Herb	Elephantopus scaber	9	642.86	2.25	0.1143		1.65					
Kottiyur	MDF	Herb	Hemidesmus indicus	1	71.43	1.00	0.0286	0.07						
Kottiyur	MDF	Herb	Ichnocarpus frutescens	1	71.43	1.00	0.0286	0.16						
Kottiyur	MDF	Herb	Piper sp.	6	428.57	1.20	0.1429	45.06						
Kottiyur	MDF	Herb	Sida rhombifolia	21	1500.00	2.63	0.2286	2.13						
Kottiyur	MDF	Shrub	Strobilanthes ciliatus	7	80.00	2.33	0.0857				0.38			
Kottiyur	MDF	Tree	Acacia caesia	18	3.21	2.57	0.2000				0.48			
Kottiyur	MDF	Tree	Alstonia scholaris	2	0.36	1.00	0.0571				0.06			
Kottiyur	Mixed	Herb	Asparagus racemosa	2	113.64	1.00	0.0455	3.22						
Kottiyur	Mixed	Herb	Costus speciosus	15	852.27	1.25	0.2727	19.18						
Kottiyur	Mixed	Herb	Cyclea peltata	8	454.55	1.33	0.1364	6.93						
Kottiyur	Mixed	Herb	Desmodium gyrans	1	56.82	1.00	0.0227	0.04						
Kottiyur	Mixed	Herb	Elephantopus scaber	159	9034.09	5.30	0.6818		23.22					
Kottiyur	Mixed	Herb	Piper sp.	10	568.18	1.43	0.1591	59.74						
Kottiyur	Mixed	Shrub	Strobilanthes ciliatus	165	1500.00	6.88	0.5455	7.04						
Kottiyur	SE	Herb	Costus speciosus	27	544.35	2.25	0.0968	12.25						
Kottiyur	SE	Herb	Cyathula prostrata	9	181.45	4.50	0.0161	0.06		0.29				
Kottiyur	SE	Herb	Cyclea peltata	4	80.65	1.33	0.0242	1.23						
Kottiyur	SE	Herb	Elephantopus scaber	51	1028.23	8.50	0.0484		2.64					
Kottiyur	SE	Herb	Hemidesmus indicus	2	40.32	2.00	0.0081	2.64						
Kottiyur	SE	Herb	Piper longum	2	40.32	2.00	0.0081	0.03		0.05				
Kottiyur	SE	Herb	Piper sp.	370	7459.68	3.36	0.8871	784.39						

Kottiyur	SE	Herb	<i>Sida rhombifolia</i>	6	120.97	2.00	0.0242	0.17						
Kottiyur	SE	Shrub	<i>Strobilanthes ciliatus</i>	791	2551.61	7.39	0.8629	11.97						
Kottiyur	SE	Tree	<i>Acacia caesia</i>	86	4.33	2.53	0.2742				0.67			
Kottiyur	SE	Tree	<i>Alstonia scholaris</i>	7	0.35	1.00	0.0565				0.17			
Kottiyur	SE	Tree	<i>Bauhinia racemosa</i>	2	0.10	1.00	0.0161				0.03			
Kottiyur	SE	Tree	<i>Cinnamomum spp.</i>	116	5.85	2.37	0.3952				0.20			
Kottiyur	SE	Tree	<i>Lagerstroemia reginae</i>	18	0.91	2.25	0.0645				0.48			
Kottiyur	SE	Tree	<i>Persea macrantha</i>	3	0.15	1.50	0.0161				0.41			
Kottiyur	Teak	Herb	<i>Cyclea peltata</i>	1	357.14	1.00	0.1429	5.45						
Kottiyur	Teak	Herb	<i>Elephantopus scaber</i>	9	3214.29	1.80	0.7143		8.26					
Kottiyur	Teak	Herb	<i>Ichnocarpus frutescens</i>	5	1785.71	2.50	0.2857	0.81						
Taliparamba	Cashew	Herb	<i>Cyclea peltata</i>	27	4500.00	1.93	0.9333	68.63						
Taliparamba	EG	Herb	<i>Asparagus racemosa</i>	3	150.00	1.50	0.0400	4.25						
Taliparamba	EG	Herb	<i>Cyclea peltata</i>	10	500.00	1.25	0.1600	7.63						
Taliparamba	EG	Herb	<i>Piper sp.</i>	72	3600.00	1.95	0.7400	378.54						
Taliparamba	EG	Shrub	<i>Strobilanthes ciliatus</i>	64	512.00	3.76	0.3400	2.40						
Taliparamba	EG	Tree	<i>Acacia caesia</i>	24	4	2.4	0.2				0.35			
Taliparamba	EG	Tree	<i>Cinnamomum spp.</i>	39	6.5	2.438	0.32				0.31			
Taliparamba	EG	Tree	<i>Ficus racemosa</i>	1	0.16667	1	0.02				0.02			
Taliparamba	EG	Tree	<i>Persea macrantha</i>	5	0.83333	1	0.1				0.97			
Taliparamba	MDF	Herb	<i>Asparagus racemosa</i>	6	750.00	1.50	0.2000	21.23						
Taliparamba	MDF	Herb	<i>Cyclea peltata</i>	18	2250.00	1.64	0.5500	34.31						
Taliparamba	MDF	Tree	<i>Acacia caesia</i>	19	5.94	2.71	0.3500				0.35			
Taliparamba	MDF	Tree	<i>Acacia torta</i>	7	2.19	1.75	0.2000				0.18			
Taliparamba	MDF	Tree	<i>Persea macrantha</i>	1	0.31	1.00	0.0500				0.28			

**Table 5.2.1 Density, abundance, frequency and availability of useful parts of NWFP species in Thrissur Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Acacia	Herb	Elephantopus scaber	4	1428.57	2.00	0.2857		3.67					
Acacia	Herb	Hemidesmus indicus	3	1071.43	1.50	0.2857	1.01						
Acacia	Herb	Ichnocarpus frutescens	6	2142.86	3.00	0.2857	0.97						
Acacia	Herb	Naregamia alata	11	3928.57	3.67	0.4286	2.76						
Acacia	Herb	Sida rhombifolia	17	6071.43	3.40	0.7143	8.62						
Cashew	Herb	Aristolochia indica	13	500.00	1.44	0.1385	2.15						
Cashew	Herb	Baliospermum montanum	59	2269.23	8.43	0.1077	19.33						
Cashew	Herb	Cyathula prostrata	33	1269.23	3.30	0.1538	0.39	2.06					
Cashew	Herb	Cyclea peltata	27	1038.46	2.25	0.1846	13.49						
Cashew	Herb	Desmodium gangeticum	1	38.46	1.00	0.0154	0.35						
Cashew	Herb	Desmodium gyrans	1	38.46	1.00	0.0154	0.03						
Cashew	Herb	Elephantopus scaber	27	1038.46	3.38	0.1231		2.67					
Cashew	Herb	Hemidesmus indicus	64	2461.54	3.37	0.2923	2.32						
Cashew	Herb	Ichnocarpus frutescens	214	8230.77	5.49	0.6000	3.71						
Cashew	Herb	Naregamia alata	103	3961.54	5.72	0.2769	2.78						
Cashew	Herb	Piper longum	131	5038.46	8.19	0.2462	3.76	5.74					
Cashew	Herb	Piper sp.	2	76.92	2.00	0.0154	8.09						
Cashew	Herb	Pseudarthria viscida	24	923.08	2.40	0.1538	0.75						
Cashew	Herb	Rauvolfia serpentina	1	38.46	1.00	0.0154	0.08						
Cashew	Herb	Rubia cordifolia	2	76.92	1.00	0.0308	0.22						
Cashew	Herb	Sida rhombifolia	102	3923.08	3.92	0.4000	5.57						
Cashew	Herb	Tragia involucrata	2	76.92	1.00	0.0308	0.22						



Eucalyptus	Herb	Aristolochia indica	12	526.32	2.40	0.0877	2.26						
Eucalyptus	Herb	Biophytum sp.	1	43.86	1.00	0.0175		0.01					
Eucalyptus	Herb	Cyathula prostrata	2	87.72	2.00	0.0175	0.03	0.14					
Eucalyptus	Herb	Cyclea peltata	12	526.32	1.33	0.1579	3.34						
Eucalyptus	Herb	Desmodium gangeticum	7	307.02	1.75	0.0702	2.01						
Eucalyptus	Herb	Elephantopus scaber	11	482.46	3.67	0.0526		1.24					
Eucalyptus	Herb	Hemidesmus indicus	93	4078.95	3.72	0.4386	3.85						
Eucalyptus	Herb	Ichnocarpus frutescens	137	6008.77	4.72	0.5088	2.71						
Eucalyptus	Herb	Naregamia alata	450	19736.84	10.98	0.7193	13.88						
Eucalyptus	Herb	Piper longum	18	789.47	18.00	0.0175	0.59	0.90					
Eucalyptus	Herb	Piper sp.	4	175.44	4.00	0.0175	18.45						
Eucalyptus	Herb	Pseudarthria viscida	4	175.44	2.00	0.0351	0.14						
Eucalyptus	Herb	Sida rhombifolia	163	7149.12	4.94	0.5789	10.15						
Eucalyptus	Herb	Tragia involucrata	9	394.74	1.50	0.1053	1.13						
MDF	Herb	Aristolochia indica	4	38.022814	1	0.01521		0.16					
MDF	Herb	Asparagus racemosa	4	38.022814	2	0.00761		1.08					
MDF	Herb	Baliospermum montanum	42	399.23954	4.2	0.03802		3.40					
MDF	Herb	Barleria prattensis	37	351.71103	3.08333	0.04563		0.43					
MDF	Herb	Biophytum sp.	425	4039.924	6.34328	0.25475		1.15					
MDF	Herb	Costus speciosus	26	247.14829	2.6	0.03802		18.11					
MDF	Herb	Cyathula prostrata	98	931.55894	3.76923	0.09886		0.29					
MDF	Herb	Cyclea peltata	53	503.80228	1.82759	0.11027		7.68					
MDF	Herb	Desmodium gangeticum	12	114.06844	2	0.02281		1.05					
MDF	Herb	Desmodium gyrans	7	66.539924	1.75	0.01521		0.01					
MDF	Herb	Desmodium velutnium	8	76.045627	4	0.00761		0.88					
MDF	Herb	Elephantopus scaber	313	2975.2852	8.94286	0.13308		7.6465					

MDF	Herb	Hemidesmus indicus	257	2442.9658	2.3578	0.41445		3.93					
MDF	Herb	Ichnocarpus frutescens	187	1777.5665	4.25	0.1673		0.80					
MDF	Herb	Naregamia alata	463	4401.1407	5.86076	0.30038		3.09					
MDF	Herb	Phyllanthus amarus	20	190.11407	2.22222	0.03422		0.04					
MDF	Herb	Piper longum	795	7557.0342	10.1923	0.29658		5.64					
MDF	Herb	Piper sp.	8	76.045627	8	0.0038		8.00					
MDF	Herb	Pseudarthria viscida	93	884.03042	4.89474	0.07224		0.72					
MDF	Herb	Rauvolfia serpentina	2	19.011407	1	0.00761		0.04					
MDF	Herb	Sida rhombifolia	132	1254.7529	3.06977	0.1635		1.78					
MDF	Herb	Tragia involucrata	3	28.51711	1.5	0.00761	0.08						
MDF	Tree	Acacia caesia	100	2.385496	3.57143	0.10687				0.28			
MDF	Tree	Acacia pennata	29	0.691794	2.9	0.03817				0.06			
MDF	Tree	Acacia torta	146	3.482824	3.84211	0.14504				0.25			
MDF	Tree	Alstonia scholaris	53	1.264313	1.35897	0.14886				0.20			
MDF	Tree	Bauhinia malabarica	12	0.28626	4	0.01145				0.30			
MDF	Tree	Bauhinia racemosa	18	0.429389	1.38462	0.04962				0.27			
MDF	Tree	Cassia fistula	285	6.798664	2.59091	0.41985				0.55			
MDF	Tree	Cinnamomum spp.	3	0.071565	1.5	0.00763				-			
MDF	Tree	Holoptelea integrifolia	28	0.667939	1.86667	0.05725				0.07			
MDF	Tree	Lagerstroemia reginae	11	0.262405	1.375	0.03053				0.13			
MDF	Tree	Persea macrantha	13	0.310115	1.44444	0.03435				0.20			
MDF	Tree	Pongamia pinnata	10	0.23855	3.33333	0.01145				0.01			
MDF	Tree	Spondias pinnata	58	1.383588	1.52632	0.14504				0.65			
MDF	Tree	Wrightia tinctoria	1715	40.91126	9.27027	0.70611				177.27			
Mixed	Herb	Biophytum sp.	22	2619.05	22.00	0.0476		0.75					
Mixed	Herb	Cyclea peltata	13	1547.62	2.17	0.2857	23.60						

Mixed	Herb	Desmodium velutnium	2	238.10	2.00	0.0476	2.77							
Mixed	Herb	Elephantopus scaber	15	1785.71	3.75	0.1905		4.59						
Mixed	Herb	Hemidesmus indicus	57	6785.71	4.38	0.6190	6.40							
Mixed	Herb	Ichnocarpus frutescens	104	12380.95	8.00	0.6190	5.59							
Mixed	Herb	Naregamia alata	33	3928.57	8.25	0.1905	2.76							
Mixed	Herb	Pseudarthria viscida	2	238.10	2.00	0.0476	0.19							
Mixed	Herb	Sida rhombifolia	29	3452.38	4.14	0.3333	4.90							
Mixed	Herb	Tragia involucrata	4	476.19	2.00	0.0952	1.36							
SE	Tree	Alstonia scholaris	1	3.13	1.00	0.5000				0.05				
SE	Tree	Cassia fistula	1	3.13	1.00	0.5000				0.0055				
SE	Tree	Holoptelea integrifolia	1	3.13	1.00	0.5000				0.4918				
SE	Tree	Persea macrantha	1	3.13	1.00	0.5000				0.1984				
SE	Tree	Spondias pinnata	2	6.25	2.00	0.5000				0.4104				
SE	Tree	Wrightia tinctoria	8	25.00	8.00	0.5000					274.0548			
Teak	Herb	Aristolochia indica	1	59.52	1.00	0.0238	0.26							
Teak	Herb	Baliospermum montanum	1	59.52	1.00	0.0238	0.51							
Teak	Herb	Biophytum sp.	17	1011.90	3.40	0.1190		0.29						
Teak	Herb	Cyclea peltata	4	238.10	1.00	0.0952	3.63							
Teak	Herb	Desmodium gangeticum	10	595.24	2.00	0.1190	5.46							
Teak	Herb	Elephantopus scaber	80	4761.90	5.00	0.3810		12.24						
Teak	Herb	Hemidesmus indicus	118	7023.81	4.21	0.6667	6.63							
Teak	Herb	Ichnocarpus frutescens	95	5654.76	4.32	0.5238	2.55							
Teak	Herb	Naregamia alata	45	2678.57	4.09	0.2619	1.88							
Teak	Herb	Piper longum	19	1130.95	4.75	0.0952	0.84	1.29						
Teak	Herb	Pseudarthria viscida	21	1250.00	4.20	0.1190	5.83							
Teak	Herb	Sida rhombifolia	31	1845.24	3.10	0.2381	2.62							
Teak	Herb	Tragia involucrata	5	297.62	1.67	0.0714	0.85							

**Table 5.2.2 Density, abundance, frequency and availability of useful parts of NWFP species in Chalakkudy Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Cashew	Herb	Biophytum sp.	5	4166.67	5.00	0.3333		1.19					
Cashew	Herb	Costus speciosus	8	6666.67	8.00	0.3333	150.00						
Cashew	Herb	Naregamia alata	1	833.33	1.00	0.3333	0.59						
Cashew	Herb	Pseudarthria viscida	2	1666.67	2.00	0.3333	1.35						
EG	Herb	Costus speciosus	7	2500.00	3.50	0.2857	56.25						
EG	Herb	Cyathula prostrata	8	2857.14	8.00	0.1429	0.88		4.63				
EG	Herb	Desmodium gangeticum	3	1071.43	3.00	0.1429	9.83						
EG	Herb	Piper longum	10	3571.43	5.00	0.2857	2.66		4.07				
EG	Herb	Pseudarthria viscida	5	1785.71	5.00	0.1429	1.45						
EG	Shrub	Strobilanthes ciliatus	8	457.14	8.00	0.1429	2.14						
EG	Tree	Bauhiniã malabarica	2	2.38	2.00	0.1429				3.79			
EG	Tree	Cinnamomum spp.	12	14.29	4.00	0.4286				0.62			
EG	Tree	Lagerstroemia reginae	64	76.19	21.33	0.4286				32.39			
EG	Tree	Persea macrantha	16	19.05	5.33	0.4286				1.09			
MDF	Herb	Asparagus recemosa	1	42.37	1.00	0.0169	1.20			1.06			
MDF	Herb	Baliospermum montanum	4	169.49	4.00	0.0169	3.16						
MDF	Herb	Barleria prattensis	40	1694.92	3.33	0.2034	2.05			0.38			
MDF	Herb	Biophytum sp.	252	10677.97	10.08	0.4237		1.56		0.78			
MDF	Herb	Centrosema pubescens	6	254.24	1.50	0.0678				0.01			
MDF	Herb	Costus speciosus	19	805.08	2.38	0.1356	18.11						
MDF	Herb	Curcuma zedoaria	24	1016.95	4.00	0.1017	16.79						
MDF	Herb	Cyathula prostrata	81	3432.20	9.00	0.1525	1.05		5.56	0.35			
MDF	Herb	Cyclea peltata	3	127.12	1.50	0.0339	1.94						

MDF	Herb	Desmodium gangeticum	8	338.98	2.00	0.0678	3.11			0.18			
MDF	Herb	Ichnocarpus frutescens	14	593.22	3.50	0.0678	0.25						
MDF	Herb	Naregamia alata	115	4872.88	8.85	0.2203	3.43			0.06			
MDF	Herb	Nervilia aragoana	4	169.49	4.00	0.0169	0.53						
MDF	Herb	Piper longum	79	3347.46	7.18	0.1864	2.50		3.82				
MDF	Herb	Pseudarthria viscida	18	762.71	2.00	0.1525	0.62			0.41			
MDF	Herb	Sida rhombifolia	15	635.59	2.14	0.1186	0.90						
MDF	Shrub	Holarrhena antidysenterica	24	162.71	2.00	0.2034	4.71			0.20			
MDF	Shrub	Strobilanthes ciliatus	25	169.49	8.33	0.0508	0.79			0.06			
MDF	Tree	Acacia caesia	14	1.48	1.40	0.1695				0.37			
MDF	Tree	Acacia pennata	24	2.54	2.00	0.2034				0.32			
MDF	Tree	Acacia torta	7	0.74	1.40	0.0847				0.04			
MDF	Tree	Alstonia scholaris	12	1.27	1.33	0.1525				1.06			
MDF	Tree	Bauhinia malabarica	3	0.32	1.00	0.0508				0.38			
MDF	Tree	Cassia fistula	22	2.33	1.57	0.2373				0.78			
MDF	Tree	Cinnamomum spp.	3	0.32	1.50	0.0339				0.01			
MDF	Tree	Holoptelea integrifolia	2	0.21	1.00	0.0339				0.35			
MDF	Tree	Lagerstroemia reginae	4	0.42	4.00	0.0169				0.18			
MDF	Tree	Pongamia pinnata	3	0.32	1.50	0.0339				0.06			
MDF	Tree	Spondias pinnata	2	0.21	1.00	0.0339				0.41			
MDF	Tree	Wrightia tinctoria	49	5.19	2.45	0.3390					54.04		
MDF	Herb	Hemidesmus indicus	3	127.12	1.50	0.0339	0.04						
SE	Herb	Barleria prattensis	30	2083.33	5.00	0.1667	2.52						
SE	Herb	Biophytum sp.	24	1666.67	3.43	0.1944			0.12				
SE	Herb	Costus speciosus	46	3194.44	5.11	0.2500	71.88						
SE	Herb	Curcuma zedoaria	8	555.56	4.00	0.0556	9.17						

SE	Herb	<i>Cyathula prostrata</i>	84	5833.33	6.46	0.3611	1.79		9.45				
SE	Herb	<i>Cyclea peltata</i>	3	208.33	3.00	0.0278	3.18						
SE	Herb	<i>Desmodium gangeticum</i>	4	277.78	1.33	0.0833	2.55						
SE	Herb	<i>Elephantopus scaber</i>	6	416.67	6.00	0.0278			1.07				
SE	Herb	<i>Naregamia alata</i>	56	3888.89	11.20	0.1389	2.73						
SE	Herb	<i>Phyllanthus amarus</i>	7	486.11	7.00	0.0278			0.15				
SE	Herb	<i>Piper longum</i>	123	8541.67	12.30	0.2778	6.37		9.74				
SE	Herb	<i>Piper spp.</i>	6	416.67	6.00	0.0278			43.81				
SE	Herb	<i>Pseudarthria viscida</i>	8	555.56	4.00	0.0556	0.45						
SE	Herb	<i>Rauvolfia serpentina</i>	3	208.33	1.50	0.0556	0.44						
SE	Herb	<i>Sida rhombifolia</i>	18	1250.00	4.50	0.1111	1.78						
SE	Shrub	<i>Holarrhena antidysenterica</i>	3	33.33	1.00	0.0833	0.50						
SE	Shrub	<i>Strobilanthes ciliatus</i>	56	622.22	11.20	0.1389	2.92						
SE	Tree	<i>Acacia caesia</i>	6	1.04	1.20	0.1389				0.20			
SE	Tree	<i>Acacia pennata</i>	3	0.52	1.00	0.0833				0.06			
SE	Tree	<i>Acacia torta</i>	2	0.35	1.00	0.0556				0.10			
SE	Tree	<i>Alstonia scholaris</i>	4	0.69	1.33	0.0833				0.33			
SE	Tree	<i>Bauhinia malabarica</i>	1	0.17	1.00	0.0278				0.10			
SE	Tree	<i>Cassia fistula</i>	8	1.39	1.14	0.1944				0.57			
SE	Tree	<i>Cinnamomum spp.</i>	13	2.26	1.44	0.2500				0.37			
SE	Tree	<i>Holoptelea integrifolia</i>	1	0.17	1.00	0.0278				0.51			
SE	Tree	<i>Lagerstroemia reginae</i>	13	2.26	6.50	0.0556				0.81			
SE	Tree	<i>Persea macrantha</i>	8	1.39	1.33	0.1667				6.06			
SE	Tree	<i>Pongamia pinnata</i>	1	0.17	1.00	0.0278				0.00			
SE	Tree	<i>Spondias pinnata</i>	3	0.52	1.00	0.0833				1.12			
SE	Tree	<i>Wrightia tinctoria</i>	5	0.87	1.25	0.1111						12.39	

Teak	Herb	Amorphophallus paeoniifolius	6	172.41	2.00	0.0345	50.89						
Teak	Herb	Aristolochia indica	2	57.47	1.00	0.0230	0.25						
Teak	Herb	Biophytum sp.	282	8103.45	7.42	0.4368		0.54					
Teak	Herb	Costus speciosus	30	862.07	3.33	0.1034	19.40						
Teak	Herb	Curcuma zedoaria	5	143.68	2.50	0.0230	2.37						
Teak	Herb	Cyathula prostrata	38	1091.95	3.45	0.1264	0.34	1.77					
Teak	Herb	Cyclea peltata	3	86.21	1.00	0.0345	1.31						
Teak	Herb	Desmodium gangeticum	3	86.21	1.00	0.0345	0.79						
Teak	Herb	Desmodium velutnium	10	287.36	1.67	0.0690	1.67						
Teak	Herb	Elephantopus scaber	152	4367.82	12.67	0.1379		11.23					
Teak	Herb	Hemidesmus indicus	7	201.15	2.33	0.0345	0.03						
Teak	Herb	Ichnocarpus frutescens	41	1178.16	2.93	0.1609	0.49						
Teak	Herb	Naregamia alata	42	1206.90	2.80	0.1724	0.53						
Teak	Herb	Phyllanthus amarus	29	833.33	3.63	0.0920		0.27					
Teak	Herb	Piper longum	49	1408.05	6.13	0.0920	1.05	1.61					
Teak	Herb	Piper spp.	6	172.41	6.00	0.0115		18.13					
Teak	Herb	Pseudarthria viscida	11	316.09	1.57	0.0805	0.26						
Teak	Herb	Sida rhombifolia	60	1724.14	3.75	0.1839	2.45						
Teak	Herb	Tragia involucrata	18	517.24	2.25	0.0920	1.47						

**Table 5.2.3 Density, abundance, frequency and availability of useful parts of NWFP species in Vazhachal Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
EG	Herb	Curcuma zedoaria	2	227.27	2.00	0.0455	3.75						
EG	Herb	Cyclea peltata	1	113.64	1.00	0.0455	1.73						
EG	Herb	Piper longum	9	1022.73	4.50	0.0909	0.76			1.17			

EG	Herb	Piper sp.	42	4772.73	4.20	0.4545			155.34				
EG	Herb	Pseudarthria viscida	4	454.55	4.00	0.0455	0.37						
EG	Shrub	Strobilanthes ciliatus	156	2836.36	15.60	0.4545	13.02						
EG	Tree	Acacia torta	4	1.52	1.33	0.1364				0.33			
EG	Tree	Cinnamomum spp.	5	1.89	1.00	0.2273				0.42			
EG	Tree	Ficus racemosa	1	0.38	1.00	0.0455				0.11			
EG	Tree	Lagerstroemia reginae	1	0.38	1.00	0.0455				0.20			
EG	Tree	Persea macrantha	13	4.92	1.44	0.4091				7.04			
EG	Tree	Pongamia pinnata	2	0.76	1.00	0.0909				0.27			
MDF	Herb	Amorphophallus paeoniifolius	2	200.00	2.00	0.0400	59.03						
MDF	Herb	Costus speciosus	11	1100.00	5.50	0.0800	24.75						
MDF	Herb	Cyathula prostrata	8	800.00	4.00	0.0800	0.25		1.30				
MDF	Herb	Cyclea peltata	5	500.00	1.25	0.1600	4.58						
MDF	Herb	Desmodium velutnium	4	400.00	1.33	0.1200	3.11						
MDF	Herb	Hemidesmus indicus	25	2500.00	3.13	0.3200	2.36						
MDF	Herb	Ichnocarpus frutescens	59	5900.00	9.83	0.2400	2.66						
MDF	Herb	Naregamia alata	54	5400.00	6.00	0.3600	1.48						
MDF	Herb	Phyllanthus amarus	8	800.00	8.00	0.0400		0.25					
MDF	Herb	Piper longum	12	1200.00	6.00	0.0800	0.89		1.37				
MDF	Herb	Pseudarthria viscida	3	300.00	3.00	0.0400	0.24						
MDF	Shrub	Holarrhena antidysenterica	4	64.00	4.00	0.0400				-			
MDF	Tree	Acacia caesia	18	4.50	2.00	0.3600				0.99			
MDF	Tree	Acacia pennata	1	0.25	1.00	0.0400				0.12			
MDF	Tree	Acacia torta	2	0.50	2.00	0.0400				0.17			
MDF	Tree	Alstonia scholaris	2	0.50	1.00	0.0800				0.36			
MDF	Tree	Bauhinia malabarica	2	0.50	1.00	0.0800				0.71			



MDF	Tree	Bauhinia racemosa	1	0.25	1.00	0.0400				0.20			
MDF	Tree	Persea macrantha	1	0.25	1.00	0.0400				0.19			
MDF	Tree	Spondias pinnata	4	1.00	1.33	0.1200				0.30			
MDF	Tree	Wrightia tinctoria	8	2.00	1.60	0.2000					23.74		
SE	Herb	Amorphophallus paeoniifolius	9	189.08	2.25	0.0336	137.75						
SE	Herb	Biophytum sp.	6	126.05	6.00	0.0084			0.04				
SE	Herb	Costus speciosus	2	42.02	2.00	0.0084	0.95						
SE	Herb	Curcuma zedoaria	103	2163.87	6.06	0.1429	35.73						
SE	Herb	Cyathula prostrata	47	987.39	3.92	0.1008	0.20			1.06			
SE	Herb	Cyclea peltata	2	42.02	2.00	0.0084	0.64						
SE	Herb	Desmodium gangeticum	10	210.08	5.00	0.0168	1.93						
SE	Herb	Desmodium velutnium	12	252.10	2.40	0.0420	2.93						
SE	Herb	Hemidesmus indicus	19	399.16	3.80	0.0420	0.38						
SE	Herb	Ichnocarpus frutescens	4	84.03	1.33	0.0252	0.04						
SE	Herb	Naregamia alata	16	336.13	2.67	0.0504	0.22						
SE	Herb	Piper longum	54	1134.45	3.18	0.1429	0.85			1.29			
SE	Herb	Piper sp.	114	2394.96	3.45	0.2773				234.16			
SE	Herb	Sida rhombifolia	2	42.02	2.00	0.0084	0.06						
SE	Shrub	Holarrhena antidysenterica	3	10.08	1.00	0.0252				-			
SE	Tree	Acacia caesia	6	0.32	1.00	0.0504				0.06			
SE	Tree	Acacia pennata	6	0.32	1.50	0.0336				0.06			
SE	Tree	Acacia torta	14	0.74	1.56	0.0756				0.13			
SE	Tree	Alstonia scholaris	29	1.52	1.45	0.1681				0.85			
SE	Tree	Bauhinia malabarica	1	0.05	1.00	0.0084				0.02			
SE	Tree	Bauhinia racemosa	4	0.21	2.00	0.0168				0.10			
SE	Tree	Cassia fistula	3	0.16	1.00	0.0252				0.03			

SE	Tree	Cinnamomum spp.	85	4.46	2.07	0.3445				0.60			
SE	Tree	Ficus racemosa	7	0.37	2.33	0.0252				0.08			
SE	Tree	Holoptelea integrifolia	3	0.16	1.00	0.0252				0.25			
SE	Tree	Lagerstroemia reginae	10	0.53	2.00	0.0420				0.14			
SE	Tree	Persea macrantha	24	1.26	1.14	0.1765				1.54			
SE	Tree	Spondias pinnata	3	0.16	1.00	0.0252				0.15			
SE	Tree	Wrightia tinctoria	6	0.32	1.50	0.0336					2.52		
Teak	Herb	Biophytum sp.	1	125.00	1.00	0.0500		0.04					
Teak	Herb	Cyathula prostrata	5	625.00	2.50	0.1000	0.19		1.01				
Teak	Herb	Cyclea peltata	14	1750.00	2.33	0.3000	17.16						
Teak	Herb	Desmodium gangeticum	2	250.00	2.00	0.0500	2.29						
Teak	Herb	Desmodium velutnium	5	625.00	2.50	0.1000	7.26						
Teak	Herb	Hemidesmus indicus	14	1750.00	4.67	0.1500	1.65						
Teak	Herb	Ichnocarpus frutescens	2	250.00	2.00	0.0500	0.11						
Teak	Herb	Naregamia alata	5	625.00	5.00	0.0500	0.44						
Teak	Herb	Piper sp.	1	125.00	1.00	0.0500			13.14				
Teak	Herb	Pseudarthria viscida	7	875.00	2.33	0.1500	0.71						
Teak	Herb	Sida rhombifolia	1	125.00	1.00	0.0500	0.18						
Teak	Herb	Solanum viarum	2	250.00	2.00	0.0500	2.57						

**Table 5.2.4 Density, abundance, frequency and availability of useful parts of NWFP species in Peechi Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
EG	Herb	Biophytum sp.	28	11666.67	28.00	0.1667		3.33					
EG	Herb	Hemidesmus indicus	1	416.67	1.00	0.1667	0.39						
EG	Herb	Piper longum	12	5000.00	12.00	0.1667	3.73		5.70				

EG	Herb	<i>Sida rhombifolia</i>	1	416.67	1.00	0.1667	0.59						
EG	Shrub	<i>Strobilanthes ciliatus</i>	13	866.67	6.50	0.3333	4.06						
EG	Tree	<i>Alstonia scholaris</i>	1	1.39	1.00	0.1667				1.23			
EG	Tree	<i>Cinnamomum spp.</i>	2	2.78	1.00	0.3333				0.10			
EG	Tree	<i>Holoptelea integrifolia</i>	1	1.39	1.00	0.1667				0.04			
EG	Tree	<i>Wrightia tinctoria</i>	4	5.56	2.00	0.3333					54.13		
MDF	Herb	<i>Amorphophallus paeoniifolius</i>	7	55.21	1.75	0.0126	13.79						
MDF	Herb	<i>Asparagus racemosa</i>	12	94.64	1.50	0.0252	1.32						
MDF	Herb	<i>Baliospermum montanum</i>	31	244.48	1.72	0.0568	2.08						
MDF	Herb	<i>Biophytum sp.</i>	1312	10347.00	13.12	0.3155		2.95					
MDF	Herb	<i>Costus speciosus</i>	117	922.71	4.03	0.0915	20.58						
MDF	Herb	<i>Curcuma zedoaria</i>	1	7.89	1.00	0.0032	0.13						
MDF	Herb	<i>Cyathula prostrata</i>	20	157.73	5.00	0.0126	0.02		0.13				
MDF	Herb	<i>Cyclea peltata</i>	67	528.39	1.86	0.1136	7.10						
MDF	Herb	<i>Desmodium gangeticum</i>	6	47.32	1.50	0.0126	0.14						
MDF	Herb	<i>Desmodium gyrans</i>	1	7.89	1.00	0.0032	0.06						
MDF	Herb	<i>Desmodium velutnium</i>	17	134.07	1.55	0.0347	1.56						
MDF	Herb	<i>Elephantopus scaber</i>	17	134.07	3.40	0.0158		0.34					
MDF	Herb	<i>Hemidesmus indicus</i>	465	3667.19	3.47	0.4227	0.20						
MDF	Herb	<i>Ichnocarpus frutescens</i>	265	2089.91	3.63	0.2303	0.92						
MDF	Herb	<i>Naregamia alata</i>	937	7389.59	9.76	0.3028	4.73						
MDF	Herb	<i>Nervilia aragoana</i>	3	23.66	1.50	0.0063	0.07						
MDF	Herb	<i>Phyllanthus amarus</i>	35	276.03	2.92	0.0379		0.09					
MDF	Herb	<i>Piper longum</i>	2997	23635.65	20.25	0.4669	17.39		26.58				
MDF	Herb	<i>Piper Sp.</i>	7	55.21	3.50	0.0063	3.32						
MDF	Herb	<i>Pseudarthria viscida</i>	16	126.18	3.20	0.0158	0.03						

MDF	Herb	<i>Rauvolfia serpentina</i>	11	86.75	5.50	0.0063	0.18						
MDF	Herb	<i>Sida rhombifolia</i>	11	86.75	1.83	0.0189	0.12						
MDF	Herb	<i>Tragia involucrata</i>	2	15.77	1.00	0.0063	0.04						
MDF	Shrub	<i>Holarrhena antidysenterica</i>	521	657.41	3.24	0.5079					-		
MDF	Tree	<i>Acacia caesia</i>	227	4.48	2.58	0.2776					0.44		
MDF	Tree	<i>Acacia pennata</i>	62	1.22	1.48	0.1325					0.18		
MDF	Tree	<i>Acacia torta</i>	177	3.49	3.40	0.1640					0.24		
MDF	Tree	<i>Alstonia scholaris</i>	12	0.24	1.20	0.0315					0.25		
MDF	Tree	<i>Bauhinia malabarica</i>	4	0.08	1.00	0.0126					0.13		
MDF	Tree	<i>Bauhinia racemosa</i>	35	0.69	1.17	0.0946					1.20		
MDF	Tree	<i>Butea monosperma</i>	2	0.04	1.00	0.0063					0.02		
MDF	Tree	<i>Cassia fistula</i>	110	2.17	1.83	0.1893					0.38		
MDF	Tree	<i>Cinnamomum spp.</i>	19	0.37	1.46	0.0410					0.03		
MDF	Tree	<i>Ficus racemosa</i>	1	0.02	1.00	0.0032					-		
MDF	Tree	<i>Holoptelea integrifolia</i>	1	0.02	1.00	0.0032					-		
MDF	Tree	<i>Lagerstroemia reginae</i>	6	0.12	1.50	0.0126					0.03		
MDF	Tree	<i>Persea macrantha</i>	2	0.04	1.00	0.0063					0.01		
MDF	Tree	<i>Pongamia pinnata</i>	20	0.39	1.82	0.0347					0.04		
MDF	Tree	<i>Spondias pinnata</i>	10	0.20	1.00	0.0315					0.01		
MDF	Tree	<i>Wrightia tinctoria</i>	2223	43.83	8.68	0.8076						432.53	
SE	Herb	<i>Amorphophallus paeoniifolius</i>	2	46.73	2.00	0.0093	13.79						
SE	Herb	<i>Asparagus racemosa</i>	3	70.09	1.50	0.0187	1.32						
SE	Herb	<i>Baliospermum montanum</i>	2	46.73	2.00	0.0093	0.40						
SE	Herb	<i>Biophytum sp.</i>	132	3084.11	11.00	0.1122				0.88			
SE	Herb	<i>Cyathula prostrata</i>	39	911.21	6.50	0.0561	0.28				1.48		
SE	Herb	<i>Cyclea peltata</i>	12	280.37	2.00	0.0561	3.21						

SE	Herb	<i>Desmodium gangeticum</i>	8	186.92	8.00	0.0093	1.71						
SE	Herb	<i>Desmodium gyrans</i>	4	93.46	4.00	0.0093	0.06						
SE	Herb	<i>Hemidesmus indicus</i>	9	210.28	1.29	0.0654	0.20						
SE	Herb	<i>Ichnocarpus frutescens</i>	14	327.10	2.00	0.0654	0.15						
SE	Herb	<i>Naregamia alata</i>	13	303.74	4.33	0.0280	0.16						
SE	Herb	<i>Phyllanthus amarus</i>	4	93.46	2.00	0.0187		0.03					
SE	Herb	<i>Piper longum</i>	243	5677.57	10.13	0.2243	3.31		6.26				
SE	Herb	<i>Piper sp.</i>	99	2313.08	4.13	0.2243	243.22						
SE	Shrub	<i>Holarrhena antidysenterica</i>	9	33.64	1.50	0.0561							
SE	Shrub	<i>Strobilanthes ciliatus</i>	192	717.76	10.67	0.1682	3.37						
SE	Tree	<i>Acacia caesia</i>	12	0.70	1.33	0.0841				0.10			
SE	Tree	<i>Acacia pennata</i>	7	0.41	1.17	0.0561				0.05			
SE	Tree	<i>Acacia torta</i>	3	0.18	1.00	0.0280				0.02			
SE	Tree	<i>Alstonia scholaris</i>	9	0.53	1.00	0.0841				0.27			
SE	Tree	<i>Bauhinia malabarica</i>	2	0.12	1.00	0.0187				0.04			
SE	Tree	<i>Bauhinia racemosa</i>	2	0.12	2.00	0.0093				0.11			
SE	Tree	<i>Cassia fistula</i>	6	0.35	1.20	0.0467				0.07			
SE	Tree	<i>Cinnamomum spp.</i>	73	4.26	1.78	0.3832				0.73			
SE	Tree	<i>Holoptelea integrifolia</i>	3	0.18	1.00	0.0280				0.05			
SE	Tree	<i>Lagerstroemia reginae</i>	3	0.18	1.50	0.0187				0.09			
SE	Tree	<i>Persea macrantha</i>	3	0.18	1.00	0.0280				0.15			
SE	Tree	<i>Pongamia pinnata</i>	3	0.18	1.50	0.0187				0.00			
SE	Tree	<i>Spondias pinnata</i>	9	0.53	1.13	0.0748				0.44			
SE	Tree	<i>Wrightia tinctoria</i>	151	8.82	7.19	0.1963					87.13		
Teak	Herb	<i>Asparagus racemosa</i>	2	49.02	1.00	0.0196	1.39						
Teak	Herb	<i>Baliospermum montanum</i>	13	318.63	1.30	0.0980	2.71						

Teak	Herb	Biophytum sp.	136	3333.33	7.16	0.1863		0.95						
Teak	Herb	Costus speciosus	16	392.16	3.20	0.0490	8.82							
Teak	Herb	Curcuma zedoaria	1	24.51	1.00	0.0098	0.40							
Teak	Herb	Cyathula prostrata	1	24.51	1.00	0.0098	0.01		0.04					
Teak	Herb	Cyclea peltata	43	1053.92	2.69	0.1569	16.07							
Teak	Herb	Desmodium gyrans	1	24.51	1.00	0.0098	0.02							
Teak	Herb	Desmodium velutnium	4	98.04	1.33	0.0294	1.14							
Teak	Herb	Elephantopus scaber	1	24.51	1.00	0.0098		0.06						
Teak	Herb	Hemidesmus indicus	470	11519.61	6.53	0.7059	10.87							
Teak	Herb	Ichnocarpus frutescens	272	6666.67	6.63	0.4020	3.01							
Teak	Herb	Naregamia alata	306	7500.00	6.00	0.5000	5.27							
Teak	Herb	Phyllanthus amarus	10	245.10	2.50	0.0392		0.08						
Teak	Herb	Piper longum	505	12377.45	24.05	0.2059	9.23		14.11					
Teak	Herb	Pseudarthria viscida	5	122.55	1.67	0.0294	0.10							
Teak	Herb	Sida rhombifolia	6	147.06	2.00	0.0294	0.21							
Teak	Shrub	Holarrhena antidysenterica	466	1827.45	5.68	0.8039								

**Table 5.2.5 Density, abundance, frequency and availability of useful parts of NWFP species in Nenmara Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)							
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed	
EG	Herb	Cyathula prostrata	3	375.00	1.00	0.1500	0.12		0.61					
EG	Herb	Piper longum	2	250.00	2.00	0.0500	0.19		0.29					
EG	Herb	Piper spp.	21	2625.00	2.10	0.5000			170.87					
EG	Shrub	Strobilanthes ciliatus	275	5500.00	18.33	0.7500	25.80							
EG	Tree	Cinnamomum spp.	10	4.17	1.11	0.4500				1.04				
MDF	Herb	Biophytum sp.	39	5735.29	9.75	0.2353			1.63					

MDF	Herb	Desmodium gangeticum	6	882.35	6.00	0.0588	8.09						
MDF	Herb	Elephantopus scaber	5	735.29	5.00	0.0588		1.89					
MDF	Herb	Hemidesmus indicus	7	1029.41	7.00	0.0588	0.97						
MDF	Herb	Ichnocarpus frutescens	4	588.24	4.00	0.0588	0.27						
MDF	Herb	Piper longum	23	3382.35	5.75	0.2353	2.52			3.86			
MDF	Herb	Piper spp.	2	294.12	1.00	0.1176				30.93			
MDF	Herb	Sida rhombifolia	2	294.12	2.00	0.0588	0.42						
MDF	Shrub	Holarrhena antidysenterica	10	235.29	1.67	0.3529					14.18		
MDF	Tree	Acacia caesia	7	2.57	1.75	0.2353					0.24		
MDF	Tree	Acacia pennata	9	3.31	2.25	0.2353					0.48		
MDF	Tree	Acacia torta	3	1.10	1.50	0.1176					0.01		
MDF	Tree	Alstonia scholaris	6	2.21	1.00	0.3529					0.91		
MDF	Tree	Bauhinia malabarica	7	2.57	1.75	0.2353					2.28		
MDF	Tree	Cassia fistula	4	1.47	1.33	0.1765					0.51		
MDF	Tree	Ficus racemosa	8	2.94	1.60	0.2941					1.13		
MDF	Tree	Wrightia tinctoria	103	37.87	6.44	0.9412						297.01	
SE	Herb	Biophytum sp.	4	138.89	4.00	0.0139		0.04					
SE	Herb	Desmodium gangeticum	3	104.17	3.00	0.0139	0.96						
SE	Herb	Piper longum	16	555.56	3.20	0.0694	0.41			0.63			
SE	Herb	Piper spp.	54	1875.00	2.25	0.3333				87.63			
SE	Herb	Solanum viarum	1	34.72	1.00	0.0139	0.36						
SE	Shrub	Strobilanthes ciliatus	583	3238.89	11.43	0.7083	15.19						
SE	Tree	Acacia caesia	4	0.35	4.00	0.0139					0.03		
SE	Tree	Alstonia scholaris	3	0.26	1.00	0.0417					0.05		
SE	Tree	Bauhinia malabarica	1	0.09	1.00	0.0139					0.15		
SE	Tree	Cassia fistula	2	0.17	2.00	0.0139					0.00		

SE	Tree	Cinnamomum spp.	21	1.82	1.05	0.2778				0.62			
SE	Tree	Lagerstroemia reginae	1	0.09	1.00	0.0139				0.03			
Teak	Herb	Biophytum sp.	276	14375.00	18.40	0.3125		4.10					
Teak	Herb	Costus speciosus	56	2916.67	8.00	0.1458	65.63						
Teak	Herb	Cyathula prostrata	5	260.42	2.50	0.0417	0.08		0.42				
Teak	Herb	Cyclea peltata	1	52.08	1.00	0.0208	0.79						
Teak	Herb	Desmodium gangeticum	14	729.17	2.33	0.1250	6.69						
Teak	Herb	Elephantopus scaber	22	1145.83	5.50	0.0833		2.94					
Teak	Herb	Hemidesmus indicus	36	1875.00	2.57	0.2917	1.77						
Teak	Herb	Ichnocarpus frutescens	93	4843.75	6.64	0.2917	2.19						
Teak	Herb	Naregamia alata	38	1979.17	5.43	0.1458	1.39						
Teak	Herb	Phyllanthus amarus	5	260.42	5.00	0.0208	0.08						
Teak	Herb	Piper longum	74	3854.17	9.25	0.1667	2.72		4.16				
Teak	Herb	Pseudarthria viscida	4	208.33	2.00	0.0417	0.17						
Teak	Herb	Sida rhombifolia	11	572.92	5.50	0.0417	0.81						
Teak	Shrub	Holarrhena antidysenterica	12	100.00	1.71	0.1458							

**Table 5.2.6 Density, abundance, frequency and availability of useful parts of NWFP species in Palakkad Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Acacia	Herb	Ichnocarpus frutescens	6	3000.00	2.00	0.6000	1.35						
Acacia	Herb	Naregamia alata	71	35500.00	17.75	0.8000	24.96						
Acacia	Herb	Pseudarthria viscida	7	3500.00	2.33	0.6000	2.83						
Acacia	Herb	Sida rhombifolia	6	3000.00	6.00	0.2000	4.26						
EG	Herb	Piper sp.	9	3214.29	3.00	0.4286			52.58				
EG	Shrub	Strobilanthes ciliatus	65	3714.29	10.83	0.8571	17.42						



EG	Tree	Acacia pennata	1	1.19	1.00	0.1429				0.11			
EG	Tree	Cinnamomum spp.	11	13.10	2.20	0.7143				6.88			
EG	Tree	Ficus racemosa	1	1.19	1.00	0.1429				0.68			
EG	Tree	Persea macrantha	2	2.38	1.00	0.2857				1.31			
MDF	Herb	Asparagus racemosa	1	22.12	1.00	0.0089	0.63						
MDF	Herb	Barleria prattensis	2	44.25	2.00	0.0089	0.05						
MDF	Herb	Biophytum sp.	43	951.33	5.38	0.0708		0.27					
MDF	Herb	Costus speciosus	12	265.49	4.00	0.0265	5.97						
MDF	Herb	Curcuma zedoaria	16	353.98	2.67	0.0531	5.84						
MDF	Herb	Cyathula prostrata	13	287.61	3.25	0.0354	0.09		0.47				
MDF	Herb	Cydea peltata	1	22.12	1.00	0.0089	0.34						
MDF	Herb	Desmodium gangeticum	15	331.86	3.00	0.0442	3.04						
MDF	Herb	Desmodium velutnium	18	398.23	3.00	0.0531	4.11						
MDF	Herb	Elephantopus scaber	3	66.37	3.00	0.0089		0.17					
MDF	Herb	Hemidesmus indicus	77	1703.54	3.50	0.1947	1.61						
MDF	Herb	Ichnocarpus frutescens	179	3960.18	5.42	0.2920	1.79						
MDF	Herb	Naregamia alata	40	884.96	2.86	0.1239	0.62						
MDF	Herb	Piper longum	401	8871.68	14.32	0.2478	17.39		26.58				
MDF	Herb	Piper sp.	38	840.71	2.71	0.1239			88.40				
MDF	Herb	Sida rhombifolia	7	154.87	2.33	0.0265	0.22						
MDF	Herb	Tragia involucrata	1	22.12	1.00	0.0089	0.06						
MDF	Shrub	Holarrhena antidysenterica	33	116.81	4.71	0.0619				1.35			
MDF	Tree	Acacia caesia	7	0.39	1.17	0.0531				0.08			
MDF	Tree	Acacia pennata	20	1.11	2.50	0.0708				0.18			
MDF	Tree	Acacia torta	10	0.55	1.00	0.0885				0.09			
MDF	Tree	Alstonia scholaris	9	0.50	1.00	0.0796				0.39			

MDF	Tree	Bauhinia malabarica	31	1.71	3.10	0.0885				1.82			
MDF	Tree	Bauhinia racemosa	34	1.88	3.40	0.0885				1.08			
MDF	Tree	Cassia fistula	8	0.44	1.14	0.0619				0.08			
MDF	Tree	Ficus racemosa	92	5.09	2.42	0.3363				2.92			
MDF	Tree	Holoptelea integrifolia	8	0.44	2.67	0.0265				0.21			
MDF	Tree	Persea macrantha	1	0.06	1.00	0.0089				0.01			
MDF	Tree	Spondias pinnata	4	0.22	1.33	0.0265				0.12			
MDF	Tree	Wrightia tinctoria	560	30.97	7.57	0.6549					328.48		
Mixed	Herb	Cyclea peltata	2	312.50	2.00	0.0625	4.77						
Mixed	Herb	Elephantopus scaber	2	312.50	2.00	0.0625		0.80					
Mixed	Herb	Hemidesmus indicus	1	156.25	1.00	0.0625	0.15						
Mixed	Herb	Ichnocarpus frutescens	26	4062.50	3.71	0.4375	1.83						
Mixed	Herb	Naregamia alata	136	21250.00	17.00	0.5000	14.94						
Mixed	Herb	Pseudarthria viscida	6	937.50	6.00	0.0625	0.76						
Mixed	Herb	Sida rhombifolia	20	3125.00	2.86	0.4375	4.44						
Mixed	Herb	Tragia involucrata	8	1250.00	2.67	0.1875	3.56						
Mixed	Shrub	Holarrhena antidysenterica	18	450.00	4.50	0.2500							
SE	Herb	Costus speciosus	1	131.58	1.00	0.0526	2.96						
SE	Herb	Cyclea peltata	2	263.16	2.00	0.0526	4.01						
SE	Herb	Desmodium velutnium	2	263.16	2.00	0.0526	3.06						
SE	Herb	Ichnocarpus frutescens	2	263.16	2.00	0.0526	0.12						
SE	Herb	Piper sp.	44	5789.47	4.40	0.5263			608.76				
SE	Herb	Pseudarthria viscida	1	131.58	1.00	0.0526	0.11						
SE	Shrub	Strobilanthes ciliatus	145	3052.63	18.13	0.4211				14.32			
SE	Tree	Acacia pennata	4	1.32	1.00	0.2105				0.25			
SE	Tree	Acacia torta	5	1.64	2.50	0.1053				0.32			

SE	Tree	<i>Alstonia scholaris</i>	2	0.66	1.00	0.1053				0.41		
SE	Tree	<i>Cinnamomum</i> spp.	6	1.97	1.50	0.2105				1.22		
SE	Tree	<i>Ficus racemosa</i>	1	0.33	1.00	0.0526				0.19		
SE	Tree	<i>Persea macrantha</i>	2	0.66	1.00	0.1053				1.27		
SE	Tree	<i>Wrightia tinctoria</i>	2	0.66	2.00	0.0526					1.75	
Teak	Herb	<i>Aristolochia indica</i>	1	119.05	1.00	0.0476	0.51					
Teak	Herb	<i>Cyathula prostrata</i>	15	1785.71	7.50	0.0952	0.55		2.89			
Teak	Herb	<i>Desmodium gangeticum</i>	3	357.14	3.00	0.0476	3.28					
Teak	Herb	<i>Desmodium velutnium</i>	1	119.05	1.00	0.0476	1.38					
Teak	Herb	<i>Elephantopus scaber</i>	7	833.33	7.00	0.0476		2.14				
Teak	Herb	<i>Hemidesmus indicus</i>	2	238.10	2.00	0.0476	0.22					
Teak	Herb	<i>Ichnocarpus frutescens</i>	73	8690.48	6.64	0.5238	3.92					
Teak	Herb	<i>Naregamia alata</i>	132	15714.29	12.00	0.5238	10.38					
Teak	Herb	<i>Pseudarthria viscida</i>	3	357.14	3.00	0.0476	0.29					
Teak	Herb	<i>Rauvolfia serpentina</i>	4	476.19	1.33	0.1429	1.01					
Teak	Herb	<i>Sida rhombifolia</i>	16	1904.76	5.33	0.1429	2.70					
Teak	Herb	<i>Tragia involucrata</i>	2	238.10	1.00	0.0952	0.68					
Teak	Shrub	<i>Holarrhena antidysenterica</i>	19	361.90	6.33	0.1429						

**Table 5.2.7 Density, abundance, frequency and availability of useful parts of NWFP species in Mannarkkad Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Acacia	Herb	<i>Barleria prattensis</i>	2.00	185.19	2.00	0.0370	0.22						
Acacia	Herb	<i>Aristolochia indica</i>	8.00	740.74	2.00	0.1481	3.19						
Acacia	Herb	<i>Boerhavia diffusa</i>	2.00	185.19	2.00	0.0370	3.17						
Acacia	Herb	<i>Cyathula prostrata</i>	1.00	92.59	1.00	0.0370	0.03			0.15			

Acacia	Herb	Cyclea peltata	3.00	277.78	1.50	0.0741	1.66						
Acacia	Herb	Elephantopus scaber	13.00	1203.70	6.50	0.0741		3.67					
Acacia	Herb	Hemidesmus indicus	106.00	9814.81	5.05	0.7778	9.26						
Acacia	Herb	Ichnocarpus frutescens	57.00	5277.78	3.56	0.5926	2.38						
Acacia	Herb	Naregamia alata	63.00	5833.33	6.30	0.3704	4.10						
Acacia	Herb	Pseudarthria viscida	27.00	2500.00	9.00	0.1111	2.02						
Acacia	Herb	Sida rhombifolia	7.00	648.15	2.33	0.1111	0.92						
Acacia	Shrub	Holarrhena antidysenterica	13.00	192.59	2.17	0.2222							
Cashew	Herb	Pseudarthria viscida	2.00	263.16	1.00	0.1053	1.60						
Cashew	Herb	Aristolochia indica	8.00	1052.63	2.67	0.1579	4.53						
Cashew	Herb	Cyathula prostrata	65.00	8552.63	9.29	0.3684	2.63	13.86					
Cashew	Herb	Cyclea peltata	4.00	526.32	1.33	0.1579	8.03						
Cashew	Herb	Desmodium gangeticum	1.00	131.58	1.00	0.0526	1.21						
Cashew	Herb	Hemidesmus indicus	16.00	2105.26	2.29	0.3684	1.99						
Cashew	Herb	Naregamia alata	21.00	2763.16	4.20	0.2632	1.94						
Cashew	Herb	Piper longum	19.00	2500.00	6.33	0.1579	1.86	2.85					
Cashew	Herb	Piper spp.	2.00	263.16	2.00	0.0526		27.67					
Cashew	Herb	Pseudarthria viscida	13.00	1710.53	6.50	0.1053	1.60						
Cashew	Herb	Sida rhombifolia	8.00	1052.63	4.00	0.1053	1.49						
Cashew	Shrub	Holarrhena antidysenterica	8.00	168.42	2.00	0.2105							
DDF	Herb	Aristolochia indica	3.00	326.09	3.00	0.0435	1.40						
DDF	Herb	Asparagus racemosa	2.00	217.39	2.00	0.0435	6.15						
DDF	Herb	Boerhavia diffusa	6.00	652.17	3.00	0.0870	11.16						
DDF	Herb	Cyathula prostrata	13.00	1413.04	2.17	0.2609	0.43	2.29					
DDF	Herb	Cyclea peltata	1.00	108.70	1.00	0.0435	1.66						
DDF	Herb	Hemidesmus indicus	5.00	543.48	1.67	0.1304	0.51						

DDF	Herb	<i>Ichnocarpus frutescens</i>	5.00	543.48	2.50	0.0870	0.25						
DDF	Herb	<i>Naregamia alata</i>	7.00	760.87	7.00	0.0435	0.53						
DDF	Herb	<i>Phyllanthus amarus</i>	84.00	9130.43	21.00	0.1739	2.91						
DDF	Herb	<i>Pseudarthria viscida</i>	10.00	1086.96	2.00	0.2174	0.88						
DDF	Herb	<i>Rauvolfia serpentina</i>	3.00	326.09	3.00	0.0435	0.69						
DDF	Herb	<i>Sida rhombifolia</i>	29.00	3152.17	4.83	0.2609	4.48						
DDF	Herb	<i>Tragia involucrata</i>	8.00	869.57	2.67	0.1304	2.48						
DDF	Tree	<i>Acacia caesia</i>	8.00	2.17	2.00	0.1739	0.13						
DDF	Tree	<i>Holoptelea integrifolia</i>	9.00	2.45	3.00	0.1304	0.79						
DDF	Tree	<i>Wrightia tinctoria</i>	10.00	2.72	2.00	0.2174	19.71						
EG	Herb	<i>Costus speciosus</i>	3.00	750.00	3.00	0.1000	16.88						
EG	Herb	<i>Elephantopus scaber</i>	8.00	2000.00	8.00	0.1000		5.14					
EG	Herb	<i>Piper longum</i>	3.00	750.00	3.00	0.1000	0.56		0.86				
EG	Herb	<i>Piper spp.</i>	2.00	500.00	2.00	0.1000			52.58				
EG	Tree	<i>Cinnamomum spp.</i>	9	7.50	1.50	0.6000	1.52						
MDF	Herb	<i>Aristolochia indica</i>	4.00	212.77	2.00	0.0426	0.91						
MDF	Herb	<i>Asparagus racemosa</i>	2.00	106.38	1.00	0.0426	1.51						
MDF	Herb	<i>Baliospermum montanum</i>	13.00	691.49	4.33	0.0638	5.89						
MDF	Herb	<i>Biophytum sp.</i>	27.00	1436.17	13.50	0.0426		0.41					
MDF	Herb	<i>Costus speciosus</i>	32.00	1702.13	4.00	0.1702	16.76						
MDF	Herb	<i>Curcuma zedoaria</i>	9.00	478.72	4.50	0.0426	7.90						
MDF	Herb	<i>Cyathula prostrata</i>	33.00	1755.32	5.50	0.1277	0.54		2.84				
MDF	Herb	<i>Cyclea peltata</i>	3.00	159.57	1.00	0.0638	0.81						
MDF	Herb	<i>Desmodium gangeticum</i>	2.00	106.38	1.00	0.0426	0.49						
MDF	Herb	<i>Elephantopus scaber</i>	2.00	106.38	2.00	0.0213		0.27					
MDF	Herb	<i>Hemidesmus indicus</i>	14.00	744.68	4.67	0.0638	0.65						

MDF	Herb	Naregamia alata	14.00	744.68	4.67	0.0638	0.52							
MDF	Herb	Piper longum	8.00	425.53	2.00	0.0851	0.32		0.32					
MDF	Herb	Piper spp.	4.00	212.77	2.00	0.0426			22.37					
MDF	Herb	Pseudarthria viscida	13.00	691.49	4.33	0.0638	0.56							
MDF	Herb	Rubia cordifolia	3.00	159.57	1.50	0.0426	0.45							
MDF	Herb	Sida rhombifolia	27.00	1436.17	3.86	0.1489	2.04							
MDF	Herb	Tragia involucrata	1.00	53.19	1.00	0.0213	0.15							
MDF	Shrub	Holarrhena antidysenterica	11.00	93.62	1.57	0.1489			0.42					
MDF	Shrub	Strobilanthes ciliatus	7.00	59.57	3.50	0.0426	14.32							
MDF	Tree	Acacia caesia	7.00	0.93	1.17	0.1277	0.11							
MDF	Tree	Acacia pennata	25.00	3.32	1.79	0.2979	0.47							
MDF	Tree	Acacia torta	41.00	5.45	2.93	0.2979	0.42							
MDF	Tree	Alstonia scholaris	7.00	0.93	1.75	0.0851	0.69							
MDF	Tree	Bauhinia malabarica	36.00	4.79	5.14	0.1489	2.85							
MDF	Tree	Bauhinia racemosa	18.00	2.39	3.00	0.1277	0.55							
MDF	Tree	Cassia fistula	31.00	4.12	1.82	0.3617	0.32							
MDF	Tree	Ficus racemosa	2.00	0.27	1.00	0.0426	0.08							
MDF	Tree	Pongamia pinnata	1.00	0.13	1.00	0.0213	0.01							
MDF	Tree	Spondias pinnata	2.00	0.27	2.00	0.0213	0.17							
MDF	Tree	Wrightia tinctoria	182.00	24.20	5.35	0.7234	194.31							
SE	Herb	Amorphophallus paeoniifolius	1.00	113.64	1.00	0.0455	33.54							
SE	Herb	Asparagus racemosa	2.00	227.27	1.00	0.0909	6.43							
SE	Herb	Costus speciosus	30.00	3409.09	4.29	0.3182	76.70							
SE	Herb	Curcuma zedoaria	12.00	1363.64	3.00	0.1818	22.51							
SE	Herb	Cyathula prostrata	4.00	454.55	4.00	0.0455	0.14		0.74					
SE	Herb	Elephantopus scaber	9.00	1022.73	9.00	0.0455		2.63						



**Table 5.2.8 Density, abundance, frequency and availability of useful parts of NWFP species in Parambikulam Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
EG	Herb	<i>Amorphophallus paeoniifolius</i>	1	227.27	1.00	0.0909	67.08						
EG	Herb	<i>Biophytum sp.</i>	9	2045.45	9.00	0.0909		0.58					
EG	Herb	<i>Costus speciosus</i>	2	454.55	2.00	0.0909	10.23						
EG	Herb	<i>Cyathula prostrata</i>	13	2954.55	3.25	0.3636	0.91	4.79					
EG	Herb	<i>Cyclea peltata</i>	2	454.55	2.00	0.0909	6.93						
EG	Herb	<i>Desmodium gangeticum</i>	1	227.27	1.00	0.0909	2.08						
EG	Herb	<i>Elephantopus scaber</i>	18	4090.91	3.60	0.4545		10.51					
EG	Herb	<i>Pseudarthria viscida</i>	2	454.55	2.00	0.0909	0.37						
EG	Tree	<i>Alstonia scholaris</i>	1	0.76	1.00	0.0909				1.24			
EG	Tree	<i>Cinnamomum Spp.</i>	2	1.52	1.00	0.1818				0.13			
EG	Tree	<i>Persea macrantha</i>	7	5.30	1.00	0.6364				0.81			
EG	Tree	<i>Spondias pinnata</i>	1	0.76	1.00	0.0909				-			
MDF	Herb	<i>Amorphophallus paeoniifolius</i>	3	91.46	1.50	0.0244	27.00						
MDF	Herb	<i>Asparagus recemosa</i>	6	182.93	2.00	0.0366	5.18						
MDF	Herb	<i>Biophytum sp.</i>	129	3932.93	7.17	0.2195		1.12					
MDF	Herb	<i>Boerhavia diffusa</i>	2	60.98	1.00	0.0244	1.04						
MDF	Herb	<i>Costus speciosus</i>	68	2073.17	6.18	0.1341	37.73						
MDF	Herb	<i>Curcuma zedoaria</i>	47	1432.93	3.92	0.1463	17.62						
MDF	Herb	<i>Cyathula prostrata</i>	42	1280.49	3.00	0.1707	0.38		2.03				
MDF	Herb	<i>Cyclea peltata</i>	13	396.34	1.86	0.0854	6.04						
MDF	Herb	<i>Desmodium gangeticum</i>	16	487.80	2.67	0.0732	4.47						
MDF	Herb	<i>Desmodium velutnium</i>	1	30.49	1.00	0.0122	0.35						
MDF	Herb	<i>Elephantopus scaber</i>	34	1036.59	3.78	0.1098		2.66					



MDF	Herb	Hemidesmus indicus	27	823.17	3.00	0.1098	0.78						
MDF	Herb	Ichnocarpus frutescens	41	1250.00	3.73	0.1341	0.41						
MDF	Herb	Nervilia aragoana	7	213.41	7.00	0.0122	0.67						
MDF	Herb	Phyllanthus amarus	19	579.27	2.71	0.0854		0.18					
MDF	Herb	Piper longum	12	365.85	4.00	0.0366	0.27		0.42				
MDF	Herb	Piper spp.	1	30.49	1.00	0.0122			3.21				
MDF	Herb	Pseudarthria viscida	7	213.41	1.75	0.0488	37.73						
MDF	Herb	Rubia cordifolia	1	30.49	1.00	0.0122	0.09						
MDF	Herb	Sida rhombifolia	86	2621.95	2.61	0.4024	1.82						
MDF	Herb	Solanum viarum	1	30.49	1.00	0.0122	0.31						
MDF	Shrub	Holarrhena antidysenterica	3	18.75	1.50	0.0313	0.24						
MDF	Shrub	Strobilanthes ciliatus	7	43.75	7.00	0.0156	0.21						
MDF	Tree	Acacia caesia	1	0.08	1.00	0.0122				0.02			
MDF	Tree	Acacia pennata	9	0.69	2.25	0.0488				0.11			
MDF	Tree	Acacia torta	11	0.84	1.83	0.0732				0.05			
MDF	Tree	Alstonia scholaris	1	0.08	1.00	0.0122				0.04			
MDF	Tree	Bauhinia malabarica	32	2.44	6.40	0.0610				3.08			
MDF	Tree	Bauhinia racemosa	14	1.07	2.80	0.0610				1.17			
MDF	Tree	Butea monosperma	18	1.37	2.57	0.0854				0.93			
MDF	Tree	Cassia fistula	162	12.35	4.15	0.4756				0.93			
MDF	Tree	Cinnamomum spp.	30	2.29	3.75	0.0976				0.12			
MDF	Tree	Lagerstroemia reginae	11	0.84	5.50	0.0244				0.26			
MDF	Tree	Persea macrantha	1	0.08	1.00	0.0122				0.01			
MDF	Tree	Pongamia pinnata	2	0.15	2.00	0.0122				0.01			
MDF	Tree	Spondias pinnata	2	0.15	1.00	0.0244				0.06			
MDF	Tree	Wrightia tinctoria	82	6.25	3.42	0.2927						59.79	

SE	Herb	<i>Blophytum</i> sp.	19	2261.90	3.80	0.2381		0.64					
SE	Herb	<i>Costus speciosus</i>	25	2976.19	5.00	0.2381	5.36						
SE	Herb	<i>Curcuma zedoaria</i>	31	3690.48	3.88	0.3810	37.34						
SE	Herb	<i>Cyathula prostrata</i>	40	4761.90	6.67	0.2857	0.91	4.82					
SE	Herb	<i>Cyclea peltata</i>	1	119.05	1.00	0.0476	1.82						
SE	Herb	<i>Elephantopus scaber</i>	8	952.38	8.00	0.0476		2.45					
SE	Herb	<i>Phyllanthus amarus</i>	4	476.19	4.00	0.0476		0.15					
SE	Herb	<i>Piper longum</i>	2	238.10	1.00	0.0952	0.18	0.27					
SE	Herb	<i>Piper</i> spp.	1	119.05	1.00	0.0476	12.52						
SE	Herb	<i>Pseudarthria viscida</i>	6	714.29	3.00	0.0952	0.58						
SE	Herb	<i>Sida rhombifolia</i>	4	476.19	1.33	0.1429	0.68						
SE	Tree	<i>Acacia caesia</i>	5	1.49	1.67	0.1429				0.32			
SE	Tree	<i>Acacia torta</i>	3	0.89	1.50	0.0952				0.13			
SE	Tree	<i>Bauhinia racemosa</i>	3	0.89	1.50	0.0952				0.62			
SE	Tree	<i>Cassia fistula</i>	11	3.27	1.57	0.3333				0.66			
SE	Tree	<i>Cinnamomum</i> spp.	47	13.99	3.92	0.5714				2.49			
SE	Tree	<i>Ficus racemosa</i>	1	0.30	1.00	0.0476				0.25			
SE	Tree	<i>Lagerstroemia reginae</i>	25	7.44	12.50	0.0952				2.02			
SE	Tree	<i>Persea macrantha</i>	13	3.87	3.25	0.1905				2.93			
SE	Tree	<i>Wrightia tinctoria</i>	3	0.89	1.00	0.1429					9.03		
Teak	Herb	<i>Desmodium gangeticum</i>	8	10000.00	8.00	0.3810	4.4732						
Teak	Herb	<i>Desmodium velutnium</i>	6	7500.00	6.00	0.2857	0.3543						
Teak	Herb	<i>Hemidesmus indicus</i>	5	6250.00	2.50	0.2381	0.7766						
Teak	Herb	<i>Sida rhombifolia</i>	2	2500.00	2.00	0.0952	1.8183						

**Table 5.2.9 Density, abundance, frequency and availability of useful parts of NWFP species in Nilambur North Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Bamboo	Herb	<i>Cyclea peltata</i>	6	2142.86	2.00	0.4286	32.68						
Bamboo	Herb	<i>Elephantopus scaber</i>	13	4642.86	4.33	0.4286		11.93					
Bamboo	Herb	<i>Hemidesmus indicus</i>	17	6071.43	2.83	0.8571	5.73						
Bamboo	Herb	<i>Ichnocarpus frutescens</i>	1	357.14	1.00	0.1429	0.16						
Bamboo	Herb	<i>Sida rhombifolia</i>	2	714.29	2.00	0.1429	1.01						
EG	Herb	<i>Cyathula prostrata</i>	4	208.33	2.00	0.0417	0.07		0.36				
EG	Herb	<i>Piper longum</i>	64	3333.33	3.05	0.4375	2.41		3.68				
EG	Shrub	<i>Strobilanthes ciliatus</i>	57	475.00	19.00	0.0625	2.23						
EG	Tree	<i>Cinnamomum spp.</i>	98	17.0139	2.5128	0.8125				14.27			
EG	Tree	<i>Persea macrantha</i>	3	0.5208	1.0000	0.0625				2.50			
EG	Tree	<i>Spondias pinnata</i>	5	0.8681	1.0000	0.1042				1.44			
MDF	Herb	<i>Asparagus racemosa</i>	3	98.68	1.50	0.0263	2.79						
MDF	Herb	<i>Costus speciosus</i>	23	756.58	7.67	0.0395	17.02						
MDF	Herb	<i>Curcuma zedoaria</i>	3	98.68	3.00	0.0132	1.63						
MDF	Herb	<i>Cyclea peltata</i>	10	328.95	1.67	0.0789	5.02						
MDF	Herb	<i>Desmodium gangeticum</i>	5	164.47	1.67	0.0395	1.51						
MDF	Herb	<i>Desmodium velutinum</i>	20	657.89	3.33	0.0789	7.64						
MDF	Herb	<i>Elephantopus scaber</i>	4	131.58	4.00	0.0132		0.34					
MDF	Herb	<i>Hemidesmus indicus</i>	80	2631.58	5.00	0.2105	2.48						
MDF	Herb	<i>Ichnocarpus frutescens</i>	175	5756.58	9.21	0.2500	2.60						
MDF	Herb	<i>Naregamia alata</i>	40	1315.79	4.00	0.1316	0.93						
MDF	Herb	<i>Piper longum</i>	78	2565.79	5.20	0.1974	0.71						
MDF	Herb	<i>Piper spp.</i>	20	657.89	2.50	0.1053	69.18						

MDF	Herb	<i>Pseudarthria viscida</i>	2	65.79	2.00	0.0132	0.05								
MDF	Shrub	<i>Holarrhena antidysenterica</i>	44	231.58	3.67	0.1579	0.83								
MDF	Shrub	<i>Strobilanthès ciliatus</i>	28	147.37	9.33	0.0395	0.49								
MDF	Tree	<i>Acacia caesia</i>	6	0.49	2.00	0.0395	0.12								
MDF	Tree	<i>Acacia pennata</i>	35	2.88	1.94	0.2368	0.45								
MDF	Tree	<i>Acacia torta</i>	34	2.80	3.40	0.1316	0.34								
MDF	Tree	<i>Alstonia scholaris</i>	2	0.16	1.00	0.0263	0.02								
MDF	Tree	<i>Bauhinia racemosa</i>	1	0.08	1.00	0.0132	0.07								
MDF	Tree	<i>Butea monosperma</i>	10	0.82	1.43	0.0921	0.18								
MDF	Tree	<i>Cassia fistula</i>	3	0.25	1.00	0.0395	0.17								
MDF	Tree	<i>Ficus racemosa</i>	8	0.66	4.00	0.0263	0.96								
MDF	Tree	<i>Lagerstroemia reginae</i>	49	4.03	3.06	0.2105	1.57								
MDF	Tree	<i>Persea macrantha</i>	1	0.08	1.00	0.0132	0.04								
MDF	Tree	<i>Spondias pinnata</i>	17	1.40	1.70	0.1316	1.31								
MDF	Tree	<i>Wrightia tinctoria</i>	41	3.37	3.73	0.1447							32.11		
MDF	Herb	<i>Sida rhombifolia</i>	17	559.21	5.67	0.0395	0.79								
Mixed	Herb	<i>Cyathula prostrata</i>	6	500.00	3.00	0.0667	0.15		0.81						
Mixed	Herb	<i>Cyclea peltata</i>	14	1166.67	2.00	0.2333	17.79								
Mixed	Herb	<i>Elephantopus scaber</i>	6	500.00	6.00	0.0333		1.29							
Mixed	Herb	<i>Hemidesmus indicus</i>	17	1416.67	2.83	0.2000	1.34								
Mixed	Herb	<i>Ichnocarpus frutescens</i>	4	333.33	2.00	0.0667	0.15								
Mixed	Herb	<i>Naregamia alata</i>	18	1500.00	4.50	0.1333	1.05								
Mixed	Herb	<i>Piper longum</i>	10	833.33	3.33	0.1000	0.62								
Mixed	Herb	<i>Pseudarthria viscida</i>	6	500.00	3.00	0.0667	0.40								
Mixed	Herb	<i>Sida rhombifolia</i>	12	1000.00	2.40	0.1667	1.42								
Mixed	Herb	<i>Tragia involucrata</i>	7	583.33	1.75	0.1333	1.66								

SE	Herb	Cyathula prostrata	33	6875.00	11.00	0.2500	2.11		11.14				
SE	Herb	Cyclea peltata	2	416.67	2.00	0.0833	6.35						
SE	Herb	Naregamia alata	14	2916.67	4.67	0.2500	2.05						
SE	Herb	Piper longum	42	8750.00	8.40	0.4167	6.53						
SE	Tree	Acacia caesia	14	7.29	2.80	0.4167				0.42			
SE	Tree	Acacia torta	8	4.17	2.67	0.2500				0.11			
SE	Tree	Bauhinia malabarica	1	0.52	1.00	0.0833				0.52			
SE	Tree	Bauhinia racemosa	3	1.56	1.50	0.1667				2.44			
SE	Tree	Cassia fistula	1	0.52	1.00	0.0833				0.13			
SE	Tree	Cinnamomum spp.	6	3.13	3.00	0.1667				4.63			
SE	Tree	Lagerstroemia reginae	6	3.13	1.50	0.3333				0.94			
SE	Tree	Persea macrantha	9	4.69	3.00	0.2500				10.31			
SE	Tree	Spondias pinnata	2	1.04	1.00	0.1667				2.58			
SE	Tree	Wrightia tinctoria	5	2.60	2.50	0.1667					28.82		
Teak	Herb	Aristolochia indica	1	22.73	1.00	0.0091	0.10						
Teak	Herb	Asparagus racemosa	6	136.36	2.00	0.0273	3.86						
Teak	Herb	Boerhavia diffusa	7	159.09	2.33	0.0273	4.16						
Teak	Herb	Costus speciosus	10	227.27	10.00	0.0091	5.11						
Teak	Herb	Cyathula prostrata	2	45.45	2.00	0.0091	0.01		0.07				
Teak	Herb	Cyclea peltata	19	431.82	1.58	0.1091	6.59						
Teak	Herb	Desmodium gangeticum	61	1386.36	3.81	0.1455	12.71						
Teak	Herb	Desmodium velutinum	9	204.55	1.80	0.0455	2.38						
Teak	Herb	Elephantopus scaber	128	2909.09	9.85	0.1182		7.48					
Teak	Herb	Hemidesmus indicus	250	5681.82	4.90	0.4636	5.36						
Teak	Herb	Ichnocarpus frutescens	575	13068.18	8.71	0.6000	3.92						
Teak	Herb	Naregamia alata	145	3295.45	6.04	0.2182	2.32						

Teak	Herb	Piper longum	14	318.18	7.00	0.0182	0.24		0.36				
Teak	Herb	Pseudarthria viscida	1	22.73	1.00	0.0091	0.36						
Teak	Herb	Rauvolfia serpentina	1	22.73	1.00	0.0091	0.05						
Teak	Herb	Sida rhombifolia	29	659.09	3.22	0.0818	0.94						
Teak	Herb	Tragia involucrata	2	45.45	2.00	0.0091	0.13						

**Table 5.2.10 Density, abundance, frequency and availability of useful parts of NWFP species in Nilambur South Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Acacia	Herb	Asparagus racemosa	3	576.92	1.00	0.2308	16.33						
Acacia	Herb	Cyclea peltata	2	384.62	1.00	0.1538	4.34						
Acacia	Herb	Desmodium gangeticum	8	1538.46	2.67	0.2308	2.03						
Acacia	Herb	Hemidesmus indicus	3	576.92	1.50	0.1538	0.81						
Acacia	Herb	Ichnocarpus frutescens	63	12115.38	5.25	0.9231	1.77						
Acacia	Herb	Naregamia alata	12	2307.69	2.40	0.3846	0.33						
EG	Herb	Desmodium gangeticum	1	227.27	1.00	0.0909	2.08						
EG	Herb	Hemidesmus indicus	4	909.09	2.00	0.1818	0.86						
EG	Herb	Ichnocarpus frutescens	28	6363.64	7.00	0.3636	3.95						
EG	Tree	Cinnamomum spp.	2	1.52	2.00	0.0909				0.97			
EG	Tree	Lagerstroemia reginae	31	23.48	15.50	0.1818				8.72			
EG	Tree	Persea macrantha	4	3.03	1.33	0.2727				4.73			
MDF	Herb	Asparagus racemosa	10	290.70	2.00	0.0581	8.23						
MDF	Herb	Desmodium gangeticum	8	232.56	2.67	0.0349	2.13						
MDF	Herb	Desmodium velutnium	8	232.56	2.67	0.0349	2.70						
MDF	Herb	Elephantopus scaber	2	58.14	2.00	0.0116			0.15				
MDF	Herb	Hemidesmus indicus	37	1075.58	2.47	0.1744	0.74						

MDF	Herb	<i>Ichnocarpus frutescens</i>	182	5290.70	7.58	0.2791	1.97							
MDF	Herb	<i>Naregamia alata</i>	15	436.05	2.50	0.0698	0.31							
MDF	Herb	<i>Piper longum</i>	4	116.28	2.00	0.0233	0.09			0.13				
MDF	Herb	<i>Piper spp.</i>	4	116.28	2.00	0.0233				12.23				
MDF	Shrub	<i>Holarrhena antidysenterica</i>	4	18.60	2.00	0.0233				-				
MDF	Tree	<i>Acacia caesia</i>	2	0.15	2.00	0.0116				0.03				
MDF	Tree	<i>Acacia pennata</i>	15	1.09	1.88	0.0930				0.22				
MDF	Tree	<i>Alstonia scholaris</i>	5	0.36	1.67	0.0349				0.02				
MDF	Tree	<i>Bauhinia malabarica</i>	2	0.15	2.00	0.0116				0.17				
MDF	Tree	<i>Bauhinia racemosa</i>	5	0.36	1.67	0.0349				0.18				
MDF	Tree	<i>Butea monosperma</i>	63	4.58	2.86	0.2558				2.75				
MDF	Tree	<i>Cassia fistula</i>	24	1.74	1.71	0.1628				0.22				
MDF	Tree	<i>Cinnamomum spp.</i>	2	0.15	1.00	0.0233				0.08				
MDF	Tree	<i>Ficus racemosa</i>	1	0.07	1.00	0.0116				0.03				
MDF	Tree	<i>Holoptelea integrifolia</i>	1	0.07	1.00	0.0116				0.21				
MDF	Tree	<i>Lagerstroemia reginae</i>	4	0.29	1.33	0.0349				0.11				
MDF	Tree	<i>Wrightia tinctoria</i>	28	2.03	2.80	0.1163					18.10			
SE	Herb	<i>Curcumā zedoaria</i>	10	520.83	2.50	0.0833	8.60							
SE	Herb	<i>Cyclea peltata</i>	12	625.00	3.00	0.0833	9.53							
SE	Herb	<i>Elephantopus scaber</i>	3	156.25	3.00	0.0208			0.40					
SE	Herb	<i>Hemidesmus indicus</i>	8	416.67	2.00	0.0833	0.39							
SE	Herb	<i>Ichnocarpus frutescens</i>	88	4583.33	7.33	0.2500	2.07							
SE	Herb	<i>Naregamia alata</i>	4	208.33	1.33	0.0625	0.15							
SE	Herb	<i>Piper longum</i>	54	2812.50	6.75	0.1667	2.10			3.21				
SE	Herb	<i>Piper spp.</i>	16	833.33	2.67	0.1250				87.63				
SE	Herb	<i>Pseudarthria viscida</i>	7	364.58	2.33	0.0625	0.30							

SE	Tree	Acacia pennata	2	0.26	1.00	0.0417				0.03			
SE	Tree	Alstonia scholaris	1	0.13	1.00	0.0208				0.03			
SE	Tree	Bauhinia malabarica	4	0.52	1.00	0.0833				0.88			
SE	Tree	Bauhinia racemosa	7	0.91	2.33	0.0625				0.41			
SE	Tree	Cassia fistula	8	1.04	1.33	0.1250				0.06			
SE	Tree	Cinnamomum spp.	1	0.13	1.00	0.0208				0.00			
SE	Tree	Lagerstroemia reginae	24	3.13	2.67	0.1875				1.45			
SE	Tree	Persea macrantha	24	3.13	1.60	0.3125				3.84			
SE	Tree	Pongamia pinnata	10	1.30	3.33	0.0625				0.33			
SE	Tree	Spondias pinnata	1	0.13	1.00	0.0208				0.12			
SE	Tree	Wrightia tinctoria	6	0.78	2.00	0.0625					11.49		
Teak	Herb	Costus speciosus	2	58.14	2.00	0.0116	1.31						
Teak	Herb	Curcuma zedoaria	4	116.28	2.00	0.0233	1.92						
Teak	Herb	Cyclea peltata	32	930.23	2.29	0.1628	14.19						
Teak	Herb	Desmodium gangeticum	62	1802.33	4.77	0.1512	-3.28						
Teak	Herb	Desmodium gyrans	29	843.02	4.14	0.0814	0.52						
Teak	Herb	Desmodium velutnium	8	232.56	2.00	0.0465	2.70						
Teak	Herb	Elephantopus scaber	201	5843.02	11.17	0.2093		15.02					
Teak	Herb	Hemidesmus indicus	231	6715.12	5.37	0.5000	6.03						
Teak	Herb	Ichnocarpus frutescens	163	4738.37	4.79	0.3953	1.60						
Teak	Herb	Naregamia alata	117	3401.16	7.80	0.1744	2.39						
Teak	Herb	Piper longum	28	813.95	2.80	0.1163	0.61		0.93				
Teak	Herb	Pseudarthria viscida	11	319.77	2.75	0.0465	0.26						
Teak	Herb	Sida rhombifolia	32	930.23	3.56	0.1047	1.32						
Teak	Shrub	Holarrhena antidysenterica	31	144.19	2.07	0.1744				0.21			



**Table 5.2.11 Density, abundance, frequency and availability of useful parts of NWFP species in Kozhikode Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
MDF	Herb	<i>Adenia hondala</i>	3	38.4615	1.0000	0.0154							
MDF	Herb	<i>Asparagus racemosa</i>	7	89.7436	1.1667	0.0308	2.5397						
MDF	Herb	<i>Chonemorpha fragrans</i>	2	25.6410	1.0000	0.0103							
MDF	Herb	<i>Costus speciosus</i>	9	115.3846	1.5000	0.0308	2.5962						
MDF	Herb	<i>Curcuma zedoria</i>	3	38.4615	1.0000	0.0154	0.6350						
MDF	Herb	<i>Cyclea peltata</i>	127	1628.2051	1.7887	0.3641	24.8301						
MDF	Herb	<i>Desmodium gangiticum</i>	6	76.9231	1.5000	0.0205	0.7054						
MDF	Herb	<i>Elephantopus scaber</i>	72	923.0769	4.0000	0.0923		2.3723					
MDF	Herb	<i>Gloriosa superba</i>	1	12.8205	1.0000	0.0051							
MDF	Herb	<i>Hemidesmus indicus</i>	46	589.7436	1.9167	0.1231	0.5564						
MDF	Herb	<i>Ichnocarpus frutescence</i>	4	51.2821	1.3333	0.0154	0.1851						
MDF	Herb	<i>Ichnocarpus frutescens</i>	32	410.2564	2.0000	0.0821							
MDF	Herb	<i>Naragamia alata</i>	10	128.2051	1.6667	0.0308	0.1893						
MDF	Herb	<i>Naravelja zeylanica</i>	8	102.5641	1.1429	0.0359	2.2974						
MDF	Herb	<i>Naregamia alata</i>	11	141.0256	2.2000	0.0256							
MDF	Herb	<i>Narevelia zeylanica</i>	48	615.3846	2.0870	0.1179							
MDF	Herb	<i>Piper spp</i>	5	64.1026	1.2500	0.0205	6.7404						
MDF	Herb	<i>Pseudarthria viscida</i>	9	115.3846	3.0000	0.0154	0.0934						
MDF	Herb	<i>Rauvolfia serpentina</i>	2	25.6410	1.0000	0.0103	0.0546						
MDF	Herb	<i>Sida rhombifolia</i>	12	153.8462	4.0000	0.0154	0.2185						
MDF	Herb	<i>Uraria hamosa</i>	2	25.6410	2.0000	0.0051							
SE	Herb	<i>Adenia hondala</i>	4	16.6667	1.3333	0.0050							
SE	Herb	<i>Cosciniium fenestratum</i>	6	25.0000	1.2000	0.0083							

SE	Herb	Costus speciosus	30	125.0000	1.7647	0.0283	2.8125						
SE	Herb	Cyclea peltata	34	141.6667	1.7895	0.0317	2.1604						
SE	Herb	Elephantopus scaber	12	50.0000	6.0000	0.0033		0.1285					
SE	Herb	Embelia ribes	5	20.8333	1.2500	0.0067							
SE	Herb	Ichnocarpus frutescence	4	16.6667	2.0000	0.0033	0.0075						
SE	Herb	Malaxis rheedei	1	4.1667	1.0000	0.0017							
SE	Herb	Naravelia alata	4	16.6667	1.3333	0.0050	0.0060						
SE	Herb	Narevelia zeylanica	12	50.0000	1.5000	0.0133	0.2133						
SE	Herb	Piper longum	19	79.1667	2.1111	0.0150	0.0590	0.0903					
SE	Herb	Piper sp.	967	4029.1667	1.9938	0.8083	423.6669						
SE	Herb	Pseudarthra viscida	5	20.8333	2.5000	0.0033	0.0169						
SE	Herb	Sida rhombifolia	7	29.1667	3.5000	0.0033	0.0414						
SE	Tree(s)	Tinospora cordifolia	2	8.3333	2.0000	0.0017							
EG	Herb	Adenia hondala	3	33.1858	3.0000	0.0044							
EG	Herb	Asparagus racemosa	1	11.0619	1.0000	0.0044	0.3131						
EG	Herb	Biophytum sp.	16	176.9912	16.0000	0.0044		0.0504					
EG	Herb	Centrosema pubescens	4	44.2478	4.0000	0.0044							
EG	Herb	Costus speciosus	61	674.7788	3.8125	0.0708	15.1825						
EG	Herb	Cyclea peltata	26	287.6106	1.5294	0.0752	4.3861						
EG	Herb	Elephantopus scaber	3	33.1858	1.5000	0.0089		0.0853					
EG	Herb	Oroxylum indicum	1	11.0619	1.0000	0.0044							
EG	Herb	Piper longum	8	88.4956	2.0000	0.0177	0.0660	0.1009					
EG	Herb	Piper sp.	270	2986.7257	1.7881	0.6681	314.0542						
EG	Herb	Rotula aquatica	1	11.0619	1.0000	0.0044							
EG	Herb	Sida rhombifolia	3	33.1858	3.0000	0.0044	0.0471						
EG	Tree(s)	Wrightia tinctoria	5	55.3097	5.0000	0.0044							



Teak	Shrub	Helicteres isora	37	360.9756	1.3704	0.6585						
Mixed	Shrub	Helicteres isora	2	53.3333	2.0000	0.0667						
Mixed	Shrub	Holarrhena pubescence	4	106.6667	1.0000	0.2667						
MDF	Tree	Acacia caesia	178	5.7051	2.1190	0.4308				0.2507		
MDF	Tree	acacia torta	1	0.0321	1.0000	0.0051				0.0018		
MDF	Tree	Alstonia scholaris	2	0.0641	1.0000	0.0103				0.0045		
MDF	Tree	Anamirta cocculus	2	0.0641	1.0000	0.0103						
MDF	Tree	Aporusa lindleyana	113	3.6218	2.2157	0.2615						
MDF	Tree	Cassia fistula	8	0.2564	1.1429	0.0359				0.0603		
MDF	Tree	Cinnamomum sp.	3	0.0962	1.0000	0.0154				0.0001		
MDF	Tree	Dillenia pentagyna	90	2.8846	1.6667	0.2769						
MDF	Tree	Ficus racemosa	2	0.0641	1.0000	0.0103						
MDF	Tree	Gmelina arborea	3	0.0962	1.0000	0.0154						
MDF	Tree	Hydnocarpus pentandra	12	0.3846	1.0909	0.0564						
MDF	Tree	Kingiodendron pinnatum	2	0.0641	1.0000	0.0103						
MDF	Tree	Lagerstroemia reginae	1	0.0321	1.0000	0.0051				0.0053		
MDF	Tree	Phyllanthus emblica	12	0.3846	1.3333	0.0462						
MDF	Tree	Sapindus trifoliata	6	0.1923	1.2000	0.0256						
MDF	Tree	Sarcostigma kleinii	2	0.0641	1.0000	0.0103						
MDF	Tree	Schleichera oleosa	6	0.1923	1.2000	0.0256						
MDF	Tree	Spondias pinnata	1	0.0321	1.0000	0.0051				0.0134		
MDF	Tree	Stereospermum colais	80	2.5641	1.5094	0.2718						
MDF	Tree	Strychnos nux-vomica	29	0.9295	1.2609	0.1179						
MDF	Tree	Terminalia bellirica	25	0.8013	1.2500	0.1026						
MDF	Tree	Wrightia tinctoria	15	0.4808	1.5000	0.0513					6.3610	
SE	Tree	Acacia caesia	219	2.2813	2.0857	0.1750				0.1020		

SE	Tree	<i>Alstonia scholaris</i>	4	0.0417	1.0000	0.0067				0.0111		
SE	Tree	<i>Anamirta cocculus</i>	18	0.1875	1.3846	0.0217						
SE	Tree	<i>Aphanamixis polystachya</i>	1	0.0104	1.0000	0.0017						
SE	Tree	<i>Aporosa lindleyana</i>	3	0.0313	1.5000	0.0033						
SE	Tree	<i>Canarium strictum</i>	7	0.0729	1.1667	0.0100						
SE	Tree	<i>Cinnamomum sp.</i>	225	2.3438	1.3975	0.2683				0.2880		
SE	Tree	<i>Dillenia pentagyna</i>	1	0.0104	1.0000	0.0017						
SE	Tree	<i>Dysoxylum malabaricum</i>	6	0.0625	1.0000	0.0100						
SE	Tree	<i>Entada rheedei</i>	6	0.0625	1.2000	0.0083						
SE	Tree	<i>Ficus racemosa</i>	20	0.2083	2.0000	0.0167						
SE	Tree	<i>Garcinia gummi-gutta</i>	40	0.4167	1.1111	0.0600						
SE	Tree	<i>Garcinia morella</i>	4	0.0417	1.0000	0.0067						
SE	Tree	<i>Hydnocarpus pentandra</i>	5	0.0521	1.6667	0.0050						
SE	Tree	<i>Kingiodendron pinnatum</i>	42	0.4375	1.2353	0.0567						
SE	Tree	<i>Lagerstroemia reginae</i>	14	0.1458	1.7500	0.0133				0.0590		
SE	Tree	<i>Mesua ferrea</i>	113	1.1771	1.4868	0.1267						
SE	Tree	<i>Myristica dactyloides</i>	142	1.4792	1.8205	0.1300						
SE	Tree	<i>Myristica dactyloides</i>	291	3.0313	2.1556	0.2250						
SE	Tree	<i>Oroxylum indicum</i>	3	0.0313	1.0000	0.0050						
SE	Tree	<i>Palaquium ellipticum</i>	76	0.7917	1.4074	0.0900						
SE	Tree	<i>Persea macrantha</i>	36	0.3750	1.2414	0.0483				0.4365		
SE	Tree	<i>Sapindus trifoliata</i>	8	0.0833	1.6000	0.0083						
SE	Tree	<i>Sarcostigma kleinii</i>	42	0.4375	1.2727	0.0550						
SE	Tree	<i>Sarcostigma kleinii</i>	4	0.0417	1.3333	0.0050						
SE	Tree	<i>Schleichera oleosa</i>	1	0.0104	1.0000	0.0017						
SE	Tree	<i>Spondias pinnata</i>	11	0.1146	1.0000	0.0183				0.1271		

SE	Tree	<i>Stereospermum colais</i>	23	0.2396	1.1500	0.0333						
SE	Tree	<i>Symplocos cochinchinensis</i>	17	0.1771	1.5455	0.0183						
SE	Tree	<i>Vateria indica</i>	521	5.4271	2.8162	0.3083						
SE	Tree	<i>Wrightia tinctoria</i>	1	0.0104	1.0000	0.0017					0.1857	
EG	Tree	<i>Aphanamixis polystachya</i>	1	0.0369	1.0000	0.0044						
EG	Tree	<i>Acacia caesia</i>	65	2.3968	1.9118	0.1504				0.0928		
EG	Tree	<i>Alstonia scholaris</i>	6	0.2212	1.2000	0.0221				0.0992		
EG	Tree	<i>Canarium strictum</i>	2	0.0737	1.0000	0.0089						
EG	Tree	<i>Cinnamomum spp.</i>	43	1.5855	1.2286	0.1549				0.1259		
EG	Tree	<i>Dillenia pentagyna</i>	1	0.0369	1.0000	0.0044						
EG	Tree	<i>Dysoxylum malabaricum</i>	5	0.1844	1.0000	0.0221						
EG	Tree	<i>Ficus racemosa</i>	20	0.7375	1.2500	0.0708						
EG	Tree	<i>Garcinia gummi-gutta</i>	14	0.5162	1.0769	0.0575						
EG	Tree	<i>Garcinia morella</i>	3	0.1106	1.0000	0.0133						
EG	Tree	<i>Kingiodendron pinnatum</i>	4	0.1475	1.0000	0.0177						
EG	Tree	<i>Mesua ferrea</i>	23	0.8481	1.0455	0.0973						
EG	Tree	<i>Myristica dactyloides</i>	137	5.0516	2.0147	0.3009						
EG	Tree	<i>Oroxylum indicum</i>	1	0.0369	1.0000	0.0044						
EG	Tree	<i>Palaquium ellipticum</i>	36	1.3274	1.4400	0.1106						
EG	Tree	<i>Persea macrantha</i>	24	0.8850	1.1429	0.0929				0.4995		
EG	Tree	<i>Sarcostigma kleinii</i>	32	1.1799	1.2308	0.1150						
EG	Tree	<i>Schleichera oleosa</i>	4	0.1475	2.0000	0.0089						
EG	Tree	<i>Spondias pinnata</i>	13	0.4794	1.1818	0.0487				0.1558		
EG	Tree	<i>Stereospermum colais</i>	6	0.2212	1.5000	0.0177						
EG	Tree	<i>Terminalia bellirica</i>	32	1.1799	1.8824	0.0752						
EG	Tree	<i>Vateria indica</i>	372	13.7168	3.6117	0.4558						
EG	Tree	<i>Wrightia tinctoria</i>	30	1.1062	2.1429	0.0619					10.0217	

**Table 5.2.12 Density, abundance, frequency and availability of useful parts of NWFP species in Wayanad South Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
EG	Herb	Piper sp.	48	4000.00	1.85	0.8667			219.06				
EG	Shrub	Strobilanthes ciliatus	68	906.67	4.86	0.4667	4.25						
EG	Tree	Acacia caesia	4	1.11	2.00	0.0667				0.14			
EG	Tree	Cinnamomum spp.	21	5.83	2.10	0.3333				0.08			
EG	Tree	Ficus racemosa	2	0.56	1.00	0.0667				0.26			
EG	Tree	Persea macrantha	18	5.00	1.80	0.3333				4.62			
Eucalyptus	Herb	Asparagus racemosa	4	400.00	2.00	0.0800	11.32						
Eucalyptus	Herb	Cyclea peltata	14	1400.00	1.27	0.4400	11.21						
Eucalyptus	Herb	Elephantopus scaber	9	900.00	2.25	0.1600		2.31					
Eucalyptus	Herb	Piper sp.	5	500.00	1.25	0.1600			52.58				
Eucalyptus	Herb	Rubia cordifolia	6	600.00	1.50	0.1600	1.71						
Eucalyptus	Herb	Tragia involucrata	2	200.00	1.00	0.0800	0.57						
Eucalyptus	Shrub	Strobilanthes ciliatus	12	192.00	4.00	0.1200	0.90						
Grassland	Herb	Asparagus racemosa	3	174.42	1.00	0.0698	4.94						
Grassland	Herb	Biophytum sp.	5	290.70	1.67	0.0698		0.08					
Grassland	Herb	Cyclea peltata	2	116.28	2.00	0.0233	1.77						
MDF	Herb	Asparagus racemosa	6	245.90	2.00	0.0492	6.96						
MDF	Herb	Cyclea peltata	43	1762.30	1.48	0.4754	26.88						
MDF	Herb	Elephantopus scaber	16	655.74	1.78	0.1475		1.69					
MDF	Herb	Hemidesmus indicus	69	2827.87	2.65	0.4262	1.01						
MDF	Herb	Ichnocarpus frutescens	15	614.75	1.50	0.1639	0.28						
MDF	Herb	Rubia cordifolia	10	409.84	2.00	0.0820	1.17						
MDF	Shrub	Holarrhena antidysenterica	29	190.16	2.23	0.2131							

MDF	Tree	Acacia caesia	31	3.18	2.21	0.2295				0.39			
MDF	Tree	Alstonia scholaris	2	0.20	1.00	0.0328				0.10			
MDF	Tree	Bauhinia malabarica	2	0.20	1.00	0.0328				0.28			
MDF	Tree	Butea monosperma	10	1.02	2.00	0.0820				0.35			
MDF	Tree	Cassia fistula	57	5.84	2.85	0.3279				0.30			
MDF	Tree	Cinnamomum spp.	11	1.13	1.38	0.1311				0.01			
MDF	Tree	Ficus racemosa	3	0.31	1.50	0.0328				0.42			
MDF	Tree	Persea macrantha	1	0.10	1.00	0.0164				0.09			
MDF	Tree	Wrightia tinctoria	3	0.31	1.00	0.0492					5.16		
Savanah	Herb	Asparagus racemosa	3	234.38	1.00	0.0938					6.63		
Savanah	Herb	Biophytum sp.	2	156.25	1.00	0.0625					0.04		
Savanah	Herb	Cyclea peltata	8	625.00	1.14	0.2188					9.53		
Savanah	Herb	Hemidesmus indicus	9	703.13	2.25	0.1250					0.66		
Savanah	Herb	Rubia cordifolia	2	156.25	1.00	0.0625					0.45		
Savanah	Herb	Sida rhombifolia	1	78.13	1.00	0.0313					0.11		
Savanah	Shrub	Holarrhena antidysenterica	4	50.00	1.00	0.1250							
Savanah	Tree	Alstonia scholaris	1	0.20	1.00	0.0313				0.05			
Savanah	Tree	Bauhinia malabarica	2	0.39	1.00	0.0625				0.20			
Savanah	Tree	Wrightia tinctoria	1	0.20	1.00	0.0313					3.24		
SE	Herb	Asparagus racemosa	15	721.15	1.50	0.1923	20.41						
SE	Herb	Costus speciosus	1	48.08	1.00	0.0192	1.08						
SE	Herb	Cyclea peltata	11	528.85	1.83	0.1154	8.06						
SE	Herb	Piper sp.	90	4326.92	2.31	0.7500			454.98				
SE	Herb	Rubia cordifolia	3	144.23	3.00	0.0192	0.41						
SE	Herb	Sida rhombifolia	5	240.38	2.50	0.0385	0.34						
SE	Herb	Tragia involucrata	1	48.08	1.00	0.0192	0.14						



SE	Shrub	<i>Strobilanthes ciliatus</i>	271	2084.62	6.95	0.7500		9.78					
SE	Tree	<i>Acacia caesia</i>	6	0.72	1.50	0.0769				0.10			
SE	Tree	<i>Alstonia scholaris</i>	2	0.24	1.00	0.0385				0.08			
SE	Tree	<i>Cinnamomum spp.</i>	37	4.45	2.18	0.3269				0.10			
SE	Tree	<i>Persea macrantha</i>	10	1.20	1.67	0.1154				0.42			
Shola	Herb	<i>Piper sp.</i>	20	4545.45	2.00	0.9091		477.95					
Shola	Shrub	<i>Strobilanthes ciliatus</i>	27	981.82	4.50	0.5455	4.60						
Shola	Tree	<i>Cinnamomum spp.</i>	2	1.14	2.00	0.0909				0.09			
Shola	Tree	<i>Persea macrantha</i>	4	2.27	4.00	0.0909				1.79			
Teak	Herb	<i>Cyclea peltata</i>	9	900.00	1.29	0.2800	13.73						
Teak	Herb	<i>Elephantopus scaber</i>	4	400.00	1.33	0.1200		1.03					
Teak	Herb	<i>Hemidesmus indicus</i>	39	3900.00	2.44	0.6400	3.68						
Teak	Herb	<i>Ichnocarpus frutescens</i>	5	500.00	1.25	0.1600	0.23						
Teak	Shrub	<i>Holarrhena antidysenterica</i>	1	16.00	1.00	0.0400							

**Table 5.2.13 Density, abundance, frequency and availability of useful parts of NWFP species in Wayanad North Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Acacia	Herb	<i>Cyclea peltata</i>	5	1388.89	1.25	0.4444	21.18						
Acacia	Herb	<i>Piper sp.</i>	1	277.78	1.00	0.1111			29.21				
Acacia	Shrub	<i>Strobilanthes ciliatus</i>	18	800.00	3.60	0.5556	3.75						
Cashew	Herb	<i>Elephantopus scaber</i>	7	5833.33	2.33	1.0000		14.99					
EG	Herb	<i>Costus speciosus</i>	3	234.38	1.50	0.0625	5.27						
EG	Herb	<i>Piper sp.</i>	95	7421.88	3.06	0.9688			780.41				
EG	Shrub	<i>Strobilanthes ciliatus</i>	130	1625.00	5.20	0.7813	7.62						
EG	Tree	<i>Alstonia scholaris</i>	1	0.26	1.00	0.0313	0.44			0.44			
EG	Tree	<i>Cinnamomum spp.</i>	6	1.56	1.20	0.1563	0.66			0.66			

EG	Tree	<i>Ficus racemosa</i>	3	0.78	3.00	0.0313	0.79			0.79		
EG	Tree	<i>Persea macrantha</i>	2	0.52	1.00	0.0625	1.14			1.14		
Eucalyptus	Herb	<i>Asparagus racemosa</i>	1	147.06	1.00	0.0588	4.16					
Eucalyptus	Herb	<i>Costus speciosus</i>	2	294.12	1.00	0.1176	6.62					
Eucalyptus	Herb	<i>Cyclea peltata</i>	5	735.29	1.00	0.2941	11.21					
Eucalyptus	Herb	<i>Elephantopus scaber</i>	33	4852.94	2.36	0.8235		12.47				
Eucalyptus	Herb	<i>Hemidesmus indicus</i>	2	294.12	2.00	0.0588	0.28					
Eucalyptus	Herb	<i>Piper sp.</i>	1	147.06	1.00	0.0588			15.46			
Eucalyptus	Herb	<i>Rubia cordifolia</i>	1	147.06	1.00	0.0588	0.42					
Grassland	Herb	<i>Asparagus racemosa</i>	4	2000.00	1.33	0.6000	56.60					
MDF	Herb	<i>Asparagus racemosa</i>	24	3750.00	3.43	0.4375	94.33					
MDF	Herb	<i>Biophytum sp.</i>	6	937.50	6.00	0.0625		0.27				
MDF	Herb	<i>Elephantopus scaber</i>	59	9218.75	8.43	0.4375		21.06				
MDF	Herb	<i>Hemidesmus indicus</i>	3	468.75	3.00	0.0625	0.39					
MDF	Herb	<i>Nervilia aragoana</i>	2	312.50	2.00	0.0625	0.88					
MDF	Herb	<i>Piper sp.</i>	31	4843.75	3.88	0.5000			452.73			
MDF	Herb	<i>Rubia cordifolia</i>	13	2031.25	6.50	0.1250	5.15					
MDF	Herb	<i>Sida rhombifolia</i>	14	2187.50	4.67	0.1875	2.76					
MDF	Tree	<i>Acacia caesia</i>	3	1.17	1.50	0.1250	0.41			0.41		
MDF	Tree	<i>Bauhinia malabarica</i>	1	0.39	1.00	0.0625	0.32			0.32		
MDF	Tree	<i>Butea monosperma</i>	14	5.47	2.80	0.3125	2.70			2.70		
MDF	Tree	<i>Cassia fistula</i>	3	1.17	1.50	0.1250	0.14			0.14		
MDF	Tree	<i>Cinnamomum spp.</i>	1	0.39	1.00	0.0625	0.00			0.00		
MDF	Tree	<i>Pongamia pinnata</i>	16	6.25	2.67	0.3750	2.39			2.39		
Pine	Herb	<i>Elephantopus scaber</i>	4	1250.00	2.00	0.2500		3.21				
Pine	Shrub	<i>Strobilanthes ciliatus</i>	23	1150.00	3.83	0.7500	5.39					
SE	Herb	<i>Asparagus racemosa</i>	7	291.67	1.75	0.0667	8.25					

SE	Herb	Biophytum sp.	20	833.33	6.67	0.0500		0.24						
SE	Herb	Costus speciosus	11	458.33	1.22	0.1500	10.31							
SE	Herb	Cyclea peltata	5	208.33	2.50	0.0333	3.18							
SE	Herb	Desmodium gangeticum	6	250.00	3.00	0.0333	2.29							
SE	Herb	Elephantopus scaber	28	1166.67	4.00	0.1167		3.00						
SE	Herb	Hemidesmus indicus	3	125.00	3.00	0.0167	0.12							
SE	Herb	Nervilia aragoana	2	83.33	2.00	0.0167	0.26							
SE	Herb	Piper sp.	144	6000.00	3.27	0.7333			630.90					
SE	Herb	Rubia cordifolia	23	958.33	5.75	0.0667	2.73							
SE	Herb	Sida rhombifolia	4	166.67	2.00	0.0333	0.24							
SE	Shrub	Strobilanthes ciliatus	167	1113.33	5.96	0.4667	7.62							
SE	Tree	Alstonia scholaris	3	0.31	1.00	0.0500	0.05			0.05				
SE	Tree	Cassia fistula	2	0.21	2.00	0.0167	0.07			0.07				
SE	Tree	Cinnamomum spp.	33	3.44	1.83	0.3000	0.13			0.13				
SE	Tree	Ficus racemosa	1	0.10	1.00	0.0167	0.06			0.06				
SE	Tree	Persea macrantha	17	1.77	1.21	0.2333	10.31			10.31				
SE	Tree	Spondias pinnata	3	0.31	1.00	0.0500	0.34			0.34				
Teak	Herb	Asparagus racemosa	2	80.65	1.00	0.0323	2.28							
Teak	Herb	Biophytum sp.	16	645.16	2.67	0.0968		0.18						
Teak	Herb	Costus speciosus	18	725.81	2.57	0.1129	16.33							
Teak	Herb	Cyathula prostrata	4	161.29	4.00	0.0161	0.05			0.26				
Teak	Herb	Cyclea peltata	16	645.16	1.78	0.1452	9.84							
Teak	Herb	Elephantopus scaber	125	5040.32	3.79	0.5323		12.95						
Teak	Herb	Hemidesmus indicus	8	322.58	2.00	0.0645	0.30							
Teak	Herb	Sida rhombifolia	139	5604.84	3.86	0.5806	7.96							
Teak	Shrub	Holarrhena antidysenterica	4	25.81	4.00	0.0161								

**Table 5.2.14 Density, abundance, frequency and availability of useful parts of NWFP species in Wayanad (WL) Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
DDF	Herb	<i>Asparagus racemosa</i>	1	78.13	1.00	0.0313	2.21						
DDF	Herb	<i>Biophytum</i> sp.	61	4765.63	7.63	0.2500		1.36					
DDF	Herb	<i>Costus speciosus</i>	6	468.75	6.00	0.0313	10.55						
DDF	Herb	<i>Cyclea peltata</i>	4	312.50	1.00	0.1250	4.77						
DDF	Herb	<i>Desmodium gyrans</i>	15	1171.88	2.50	0.1875	0.80						
DDF	Herb	<i>Elephantopus scaber</i>	102	7968.75	6.00	0.5313		20.48					
DDF	Herb	<i>Hemidesmus indicus</i>	5	390.63	2.50	0.0625	0.37						
DDF	Herb	<i>Rubia cordifolia</i>	2	156.25	2.00	0.0313	0.45						
DDF	Herb	<i>Sida rhombifolia</i>	127	9921.88	6.35	0.6250	14.09						
DDF	Shrub	<i>Holarrhena antidysenterica</i>	52	650.00	4.00	0.4063				-			
DDF	Tree	<i>Bauhinia malabarica</i>	14	2.73	1.56	0.2813				2.67			
DDF	Tree	<i>Bauhinia racemosa</i>	1	0.20	1.00	0.0313				0.21			
DDF	Tree	<i>Butea monosperma</i>	7	1.37	2.33	0.0938				0.68			
DDF	Tree	<i>Cassia fistula</i>	37	7.23	3.08	0.3750				0.81			
EG	Herb	<i>Piper</i> sp.	32	6153.85	2.67	0.9231	647.08						
EG	Tree	<i>Cinnamomum</i> spp.	1	0.64	1.00	0.0769	0.02						
Eucalyptus	Herb	<i>Asparagus racemosa</i>	12	1200.00	3.00	0.1600	33.96						
Eucalyptus	Herb	<i>Cyclea peltata</i>	18	1800.00	1.80	0.4000	27.45						
Eucalyptus	Herb	<i>Elephantopus scaber</i>	43	4300.00	6.14	0.2800		11.05					
Eucalyptus	Herb	<i>Hemidesmus indicus</i>	4	400.00	4.00	0.0400	0.38						
Eucalyptus	Herb	<i>Ichnocarpus frutescens</i>	4	400.00	2.00	0.0800	0.18						
Eucalyptus	Herb	<i>Rauvolfia serpentina</i>	3	300.00	3.00	0.0400	0.64						
Eucalyptus	Herb	<i>Sida rhombifolia</i>	61	6100.00	3.59	0.6800	8.66						
Eucalyptus	Shrub	<i>Holarrhena antidysenterica</i>	2	32.00	1.00	0.0800				-			

MDF	Herb	<i>Asparagus racemosa</i>	25	378.79	2.08	0.0727	10.72													
MDF	Herb	<i>Baliospermum montanum</i>	2	30.30	2.00	0.0061	0.26													
MDF	Herb	<i>Biophytum</i> sp.	26	393.94	2.89	0.0545				0.11										
MDF	Herb	<i>Costus speciosus</i>	101	1530.30	5.05	0.1212	34.43													
MDF	Herb	<i>Curcuma zedoaria</i>	15	227.27	15.00	0.0061	3.75													
MDF	Herb	<i>Cyclea peltata</i>	32	484.85	2.29	0.0848	7.39													
MDF	Herb	<i>Desmodium gangeticum</i>	1	15.15	1.00	0.0061	0.14													
MDF	Herb	<i>Elephantopus scaber</i>	632	9575.76	7.52	0.5091				24.61										
MDF	Herb	<i>Hemidesmus indicus</i>	49	742.42	3.77	0.0788	0.70													
MDF	Herb	<i>Ichnocarpus frutescens</i>	2	30.30	2.00	0.0061	0.01													
MDF	Herb	<i>Nervilia aragoana</i>	7	106.06	3.50	0.0121	0.33													
MDF	Herb	<i>Piper longum</i>	79	1196.97	3.29	0.1455	0.89			1.36										
MDF	Herb	<i>Piper</i> sp.	73	1106.06	3.04	0.1455	116.30													
MDF	Herb	<i>Rubia cordifolia</i>	19	287.88	3.80	0.0303	0.82													
MDF	Herb	<i>Sida rhombifolia</i>	335	5075.76	5.08	0.4000	7.21													
MDF	Herb	<i>Tragia involucrata</i>	2	30.30	2.00	0.0061	0.09													
MDF	Shrub	<i>Holarrhena antidysenterica</i>	74	179.39	4.63	0.0970														-
MDF	Shrub	<i>Strobilanthus ciliatus</i>	83	201.21	4.37	0.1152														0.94
MDF	Tree	<i>Acacia caesia</i>	90	3.41	2.50	0.2182														0.52
MDF	Tree	<i>Alstonia scholaris</i>	1	0.04	1.00	0.0061														0.01
MDF	Tree	<i>Bauhinia malabarica</i>	25	0.95	1.09	0.1394														1.09
MDF	Tree	<i>Bauhinia racemosa</i>	1	0.04	1.00	0.0061														0.03
MDF	Tree	<i>Butea monosperma</i>	34	1.29	3.09	0.0667														0.95
MDF	Tree	<i>Cassia fistula</i>	91	3.45	2.46	0.2242														0.32
MDF	Tree	<i>Cinnamomum</i> spp.	20	0.76	1.54	0.0788														0.02
MDF	Tree	<i>Lagerstroemia reginae</i>	41	1.55	3.42	0.0727														0.71
MDF	Tree	<i>Persea macrantha</i>	15	0.57	1.50	0.0606														1.08

MDF	Tree	Pongamia pinnata	5	0.19	5.00	0.0061				0.04			
MDF	Tree	Wrightia tinctoria	1	0.04	1.00	0.0061					0.61		
SE	Herb	Asparagus racemosa	2	192.31	2.00	0.0385	5.44						
SE	Herb	Biophytum sp.	52	5000.00	4.73	0.4231		1.43					
SE	Herb	Costus speciosus	6	576.92	1.50	0.1538	12.98						
SE	Herb	Cyclea peltata	2	192.31	2.00	0.0385	2.93						
SE	Herb	Desmodium gyrans	2	192.31	1.00	0.0769	1.26						
SE	Herb	Elephantopus scaber	208	20000.00	8.00	1.0000		31.35					
SE	Herb	Piper sp.	9	865.38	2.25	0.1538	91.00						
SE	Herb	Rauvolfia serpentina	1	96.15	1.00	0.0385	0.20						
SE	Herb	Rubia cordifolia	1	96.15	1.00	0.0385	0.20						
SE	Herb	Sida rhombifolia	118	11346.15	9.08	0.5000	16.11						
SE	Herb	Solanum viarum	1	96.15	1.00	0.0385	0.99						
SE	Shrub	Strobilanthes ciliatus	83	1276.92	8.30	0.3846	5.99						
SE	Tree	Bauhinia malabarica	5	1.20	1.25	0.1538				1.72			
SE	Tree	Bauhinia racemosa	2	0.48	2.00	0.0385				0.42			
SE	Tree	Butea monosperma	2	0.48	2.00	0.0385				0.39			
SE	Tree	Cassia fistula	25	6.01	2.08	0.4615				0.62			
SE	Tree	Cinnamomum spp.	10	2.40	1.67	0.2308				0.80			
SE	Tree	Persea macrantha	10	2.40	1.43	0.2692				3.95			
SE	Tree	Spondias pinnata	4	0.96	1.00	0.1538				1.68			
Teak	Herb	Asparagus racemosa	38	855.86	1.90	0.1802	24.22						
Teak	Herb	Baliospermum montanum	31	698.20	2.82	0.0991	5.95						
Teak	Herb	Biophytum sp.	350	7882.88	9.72	0.3243		2.25					
Teak	Herb	Costus speciosus	13	292.79	3.25	0.0360	6.59						
Teak	Herb	Cyclea peltata	11	247.75	1.38	0.0721	3.78						
Teak	Herb	Desmodium gangeticum	3	67.57	1.50	0.0180	0.62						
Teak	Herb	Desmodium gyrans	24	540.54	3.43	0.0631	0.37						

Teak	Herb	Elephantopus scaber	602	13558.56	7.92	0.6847		34.85					
Teak	Herb	Hemidesmus indicus	17	382.88	1.89	0.0811	0.36						
Teak	Herb	Ichnocarpus frutescens	14	315.32	2.80	0.0450	0.14						
Teak	Herb	Nervilia aragoana	20	450.45	5.00	0.0360	1.42						
Teak	Herb	Pseudarthria viscida	3	67.57	1.50	0.0180	0.05						
Teak	Herb	Rauvolfia serpentina	4	90.09	2.00	0.0180	0.19						
Teak	Herb	Sida rhombifolia	436	9819.82	5.52	0.7117	0.12						

**Table 5.2.15 Density, abundance, frequency and availability of useful parts of NWFP species in Kannur Division**

Habitat	Habit	Species	N	D	A	F	Availability of useful part (kg/ha)						
							Root	Entire plant	Stem	Bark	Leaves	Flowers	Seed
Acacia	Herb	Amorphophallus paeoniifolius	6	833.33	1.50	0.2222	245.98						
Acacia	Herb	Cyclea peltata	13	1805.56	1.63	0.4444	27.53						
Acacia	Herb	Elephantopus scaber	5	694.44	2.50	0.1111		1.78					
Acacia	Herb	Hemidesmus indicus	4	555.56	1.33	0.1667	0.52						
Acacia	Herb	Tragia involucrata	2	277.78	1.00	0.1111	0.79						
Cashew	Herb	Cyclea peltata	56	1555.56	1.51	0.4111	23.72						
Cashew	Herb	Elephantopus scaber	102	2833.33	3.00	0.3778		7.28					
Cashew	Herb	Hemidesmus indicus	45	1250.00	1.55	0.3222	1.18						
Cashew	Herb	Ichnocarpus frutescens	4	111.11	2.00	0.0222	0.05						
Cashew	Shrub	Holarrhena antidysenterica	1	4.44	1.00	0.0111							
Cinnamomum	Herb	Hemidesmus indicus	2	500.00	1.00	0.2000	0.47						
Cinnamomum	Herb	Piper sp.	7	1750.00	1.17	0.6000			184.01				
EG	Herb	Asparagus racemosa	3	54.74	1.50	0.0146	1.55						
EG	Herb	Costus speciosus	8	145.99	1.33	0.0438	3.28						
EG	Herb	Cyclea peltata	12	218.98	1.20	0.0730	3.34						
EG	Herb	Piper sp.	256	4671.53	2.25	0.8321			491.21				

EG	Shrub	<i>Strobilanthes ciliatus</i>	578	1687.59	6.72	0.6277	11.06							
EG	Tree	<i>Acacia caesia</i>	95	5.77859	2.5	0.2774					0.55			
EG	Tree	<i>Alstonia scholaris</i>	1	0.06083	1	0.0073					-			
EG	Tree	<i>Cinnamomum spp.</i>	48	2.91971	2	0.1752					0.14			
EG	Tree	<i>Ficus racemosa</i>	2	0.12166	1	0.0146					0.09			
EG	Tree	<i>Persea macrantha</i>	9	0.54745	1	0.0657					0.53			
Mahagony	Herb	<i>Cyclea peltata</i>	4	384.62	1.33	0.1154	5.87							
Mahagony	Herb	<i>Elephantopus scaber</i>	4	384.62	2.00	0.0769			0.99					
Mahagony	Herb	<i>Hemidesmus indicus</i>	1	96.15	1.00	0.0385	0.09							
Mahagony	Herb	<i>Piper sp.</i>	42	4038.46	2.33	0.6923				424.64				
Mahagony	Shrub	<i>Strobilanthes ciliatus</i>	8	123.08	4.00	0.0769	0.58							
MDF	Herb	<i>Amorphophallus paeoniifolius</i>	2	11.66	1.00	0.0047	3.44							
MDF	Herb	<i>Asparagus racemosa</i>	26	151.52	1.30	0.0466	4.29							
MDF	Herb	<i>Costus speciosus</i>	28	163.17	1.40	0.0466	3.67							
MDF	Herb	<i>Cyathula prostrata</i>	14	81.59	2.33	0.0140	0.13			0.13				
MDF	Herb	<i>Cyclea peltata</i>	215	1252.91	1.72	0.2914	19.11							
MDF	Herb	<i>Desmodium gangeticum</i>	4	23.31	4.00	0.0023	0.21							
MDF	Herb	<i>Elephantopus scaber</i>	387	2255.24	3.28	0.2751			5.80					
MDF	Herb	<i>Hemidesmus indicus</i>	121	705.13	1.75	0.1608	0.67							
MDF	Herb	<i>Ichnocarpus frutescens</i>	42	244.76	1.75	0.0559	0.00							
MDF	Herb	<i>Naregamia alata</i>	20	116.55	1.67	0.0280	0.08							
MDF	Herb	<i>Piper longum</i>	85	495.34	2.66	0.0746	0.37			0.56				
MDF	Herb	<i>Piper sp.</i>	189	1101.40	2.17	0.2028				115.81				
MDF	Herb	<i>Pseudarthria viscida</i>	40	233.10	2.35	0.0396	0.19							
MDF	Herb	<i>Rauvolfia serpentina</i>	1	5.83	1.00	0.0023	0.01							
MDF	Herb	<i>Sida rhombifolia</i>	23	134.03	2.56	0.0210	0.19							
MDF	Shrub	<i>Holarrhena antidysenterica</i>	5	4.66	1.00	0.0117					-			
MDF	Shrub	<i>Strobilanthes ciliatus</i>	467	435.43	5.91	0.1841	2.04							



MDF	Tree	Acacia caesia	407	5.93	2.59	0.3660					0.70			
MDF	Tree	Acacia torta	49	0.71	2.88	0.0396					0.04			
MDF	Tree	Alstonia scholaris	29	0.42	1.16	0.0583					0.19			
MDF	Tree	Bauhinia racemosa	3	0.04	1.00	0.0070					0.09			
MDF	Tree	Cassia fistula	1	0.01	1.00	0.0023					0.00			
MDF	Tree	Cinnamomum spp.	10	0.15	1.25	0.0186					0.02			
MDF	Tree	Ficus racemosa	21	0.31	1.40	0.0350					0.15			
MDF	Tree	Holoptelea integrifolia	5	0.07	1.00	0.0117					0.10			
MDF	Tree	Lagerstroemia reginae	20	0.29	1.54	0.0303					0.09			
MDF	Tree	Persea macrantha	16	0.23	1.14	0.0326					0.62			
MDF	Tree	Pongamia pinnata	7	0.10	1.40	0.0117					0.03			
MDF	Tree	Spondias pinnata	2	0.03	1.00	0.0047					0.09			
MDF	Tree	Wrightia tinctoria	4	0.06	1.00	0.0093						0.98		
Mixed	Herb	Asparagus racemosa	3	60.98	1.00	0.0244	1.73							
Mixed	Herb	Costus speciosus	19	386.18	1.19	0.1301	8.69							
Mixed	Herb	Cyclea peltata	20	406.50	1.33	0.1220	6.20							
Mixed	Herb	Desmodium gangeticum	3	60.98	1.50	0.0163	0.56							
Mixed	Herb	Desmodium gyrans	1	20.33	1.00	0.0081	0.01							
Mixed	Herb	Elephantopus scaber	294	5975.61	4.20	0.5691		15.32						
Mixed	Herb	Hemidesmus indicus	37	752.03	1.54	0.1951	0.71							
Mixed	Herb	Ichnocarpus frutescens	5	101.63	1.67	0.0244	0.05							
Mixed	Herb	Piper longum	7	142.28	1.75	0.0325	0.11			0.16				
Mixed	Herb	Piper sp.	38	772.36	1.58	0.1951				81.21				
Mixed	Herb	Pseudarthria viscida	26	528.46	2.89	0.0732	0.43							
Mixed	Herb	Sida rhombifolia	11	223.58	3.67	0.0244	0.32							
Mixed	Shrub	Holarrhena antidysenterica	4	13.01	1.00	0.0325								
Mixed	Shrub	Strobilanthes ciliatus	195	634.15	6.09	0.2602	2.97							
SE	Herb	Asparagus racemosa	1	12.14	1.00	0.0049	0.34							

SE	Herb	<i>Costus speciosus</i>	27	327.67	2.25	0.0583	7.37							
SE	Herb	<i>Cyathula prostrata</i>	9	109.22	4.50	0.0097	0.18		0.18					
SE	Herb	<i>Cyclea peltata</i>	6	72.82	1.20	0.0243	1.11							
SE	Herb	<i>Elephantopus scaber</i>	83	1007.28	5.93	0.0680		2.59						
SE	Herb	<i>Hemidesmus indicus</i>	2	24.27	2.00	0.0049	0.02							
SE	Herb	<i>Naregamia alata</i>	4	48.54	1.33	0.0146	0.03							
SE	Herb	<i>Piper longum</i>	10	121.36	2.50	0.0194	0.09		0.14					
SE	Herb	<i>Piper sp.</i>	536	6504.85	3.01	0.8641			683.99					
SE	Herb	<i>Sida rhombifolia</i>	6	72.82	2.00	0.0146	0.10							
SE	Shrub	<i>Strobilanthes ciliatus</i>	1214	2357.28	7.59	0.7767	11.06							
SE	Tree	<i>Acacia caesia</i>	140	4.25	2.46	0.2767				0.57				
SE	Tree	<i>Alstonia scholaris</i>	13	0.39	1.08	0.0583				0.12				
SE	Tree	<i>Bauhinia racemosa</i>	3	0.09	1.00	0.0146				0.04				
SE	Tree	<i>Cinnamomum spp.</i>	150	4.55	2.38	0.3058				0.16				
SE	Tree	<i>Holoptelea integrifolia</i>	5	0.15	1.00	0.0243				0.40				
SE	Tree	<i>Lagerstroemia reginae</i>	33	1.00	2.36	0.0680				0.52				
SE	Tree	<i>Persea macrantha</i>	11	0.33	1.57	0.0340				0.90				
SE	Tree	<i>Wrightia tinctoria</i>	1	0.03	1.00	0.0049					0.54			
Teak	Herb	<i>Costus speciosus</i>	4	163.93	2.00	0.0328	3.69							
Teak	Herb	<i>Cyathula prostrata</i>	1	40.98	1.00	0.0164	0.01		0.07					
Teak	Herb	<i>Cyclea peltata</i>	8	327.87	1.00	0.1311	5.00							
Teak	Herb	<i>Elephantopus scaber</i>	59	2418.03	2.46	0.3934		6.21						
Teak	Herb	<i>Hemidesmus indicus</i>	19	778.69	1.36	0.2295	0.73							
Teak	Herb	<i>Ichnocarpus frutescens</i>	6	245.90	2.00	0.0492	0.02							
Teak	Herb	<i>Naregamia alata</i>	13	532.79	2.17	0.0984	0.37							
Teak	Herb	<i>Sida rhombifolia</i>	2	81.97	2.00	0.0164	0.12							
Teak	Shrub	<i>Holarrhena antidysenterica</i>	2	13.11	1.00	0.0328								

**Appendix 6. List of NWFPs Proposed for Quantitative Inventory**

<b>No.</b>	<b>Botanical name</b>	<b>Local name(s)</b>	<b>Habit</b>	<b>Part(s) collected</b>
1.	<i>Acacia caesia</i>	Incha, Palinja	Woody climber	Bark
2.	<i>Acacia catechu</i>	Karingali, Kadiram	Tree	Wood
3.	<i>Acacia pennata</i>	Kakkinja, Kareencha	Woody climber	Bark
4.	<i>Acacia sinuata</i>	Cheenikka, Cheevikka	Woody climber	Fruit
5.	<i>Acacia torta</i>	Kallinja, Pattincha	Woody climber	Bark
6.	<i>Adenia hondala</i>	Karimuthukku, Muthukku	Herbaceous climber	Tuberous rootstock
7.	<i>Aerva lanata</i>	Cherula	Herb	Root
8.	<i>Ailanthus triphysa</i>	Matti, Perumaram	Tree	Resin
9.	<i>Alangium salvifolium</i>	Ankolam, Arinjil	Small tree	Root
10.	<i>Albizia amara</i>	Nenmenivaka, Oonjal	Small tree	Leaf
11.	<i>Albizia lebeck</i>	Vaka, Karimthakara	Tree	Leaf
12.	<i>Alstonia scholaris</i>	Ezhilamppala, Yekshippala	Tree	Bark
13.	<i>Amorphophallus paeoniifolius</i>	Kattuchena	Herb	Corm
14.	<i>Anamirta cocculus</i>	Nanchuvalli, Pollakai	Climber	Seed
15.	<i>Aphanamixis polystachya</i>	Chemmaram	Medium tree	Bark
16.	<i>Aporosa lindleyana</i>	Vetti	Tree	Root bark
17.	<i>Ardisia solanacea</i>	Adimundan	Shrub	Root
18.	<i>Argyreia speciosa</i>	Samudrappacha	Medium climber	Stem
19.	<i>Aristolochia indica</i>	Karalagam, Urithoogi	Small climber	Root
20.	<i>Asparagus racemosa</i>	Sathavari	Climber	Root
21.	<i>Balanophora indica</i>	Athithippali, Nilamchakka	Herb	Fruit
22.	<i>Baliospermum montanum</i>	Nagadhanthi	Herb	Root
23.	<i>Barleria prattensis</i>	Madhurakurinji	Herb	Root
24.	<i>Bauhinia malabarica</i>	Arapuli	Tree	Bark
25.	<i>Bauhinia racemosa</i>	Malamandaram	Tree	Bark
26.	<i>Biophytum sp.</i>	Mukkutti	Herb	Entire plant
27.	<i>Boerhavia diffusa</i>	Thazhuthanra	Herb	Root
28.	<i>Butea monosperma</i>	Plash, Chamatha	Small tree	Bark/fruits
29.	<i>Caesalpinia bonduc</i>	Kazhanji	Climber	Seed
30.	<i>Canarium strictum</i>	Thellipayin	Tree	Gum resin
31.	<i>Cassia fistula</i>	Kanikonna	Tree	Bark
32.	<i>Celastrus paniculatus</i>	Cherupunna, Jyothishmathi, Killithinipanji	Woody climber	Seeds

33.	<i>Centratherum anthelminticum</i>	Karinjeerakam	Herb	Seeds
34.	<i>Centrosema pubescens</i>	Kattupayar	Herbaceous climber	Seed
35.	<i>Chonemorpha fragrans</i>	Novunni, Perumkurumba	Medium climber	Stem
36.	<i>Cinnamomum spp.</i>	Illavangam, Vayana	Tree	Bark & flowers
37.	<i>Cissus quadrangularis</i>	Changalamparanda	Climber	Stem
38.	<i>Clerodendrum serratum</i>	Cheruthekku	Shrubs	Root
39.	<i>Coffea travancorensis</i>	Pushkaramoolam	Herb	Root
40.	<i>Cosciniium fenestratum</i>	Maramanjil	Climber	Stem
41.	<i>Costus speciosus</i>	Channakkoova	Herb	Rhizome
42.	<i>Crataeva magna</i>	Neermathalam	Small tree	Root
43.	<i>Cucumis prophetarum</i>	Andanga	Small climber	Fruit
44.	<i>Curcuma aromatica</i>	Kasthurimanjal	Herb	Rhizome
45.	<i>Curcuma zedoaria</i>	Manjakoova	Herb	Rhizome
46.	<i>Cyathula prostrata</i>	Cherukadaladi	Herb	Stem & root
47.	<i>Cyclea peltata</i>	Padakizhangu	Herb	Rhizome
48.	<i>Datura metel</i>	Ummam	Shrub	Entire plant
49.	<i>Decalepis hamiltonii</i>	Mahalikizhangu	Herbaceous climber	Tuberous roots
50.	<i>Desmodium gangeticum</i>	Orila	Herb	Root
51.	<i>Desmodium gyrans</i>	Thozhukanni	Herb	Root
52.	<i>Desmodium velutnium</i>	Orila	Shrub	Root
53.	<i>Dillenia pentagyna</i>	Malampunna, Vazhapunna	Tree	Flowers
54.	<i>Drosera peltata</i>	Azhukanni, Kosuvettipullu	Herb	Entire plants
55.	<i>Drypetes roxburghii</i>	Poothilanji, Puthrajeevi	Small tree	Seed
56.	<i>Dysoxylum malabaricum</i>	Vellakil	Tree	Wood
57.	<i>Eclipta alba</i>	Kaithonni, Kanjunni Kayyunni	Herb	Whole plant
58.	<i>Elephantopus scaber</i>	Aanayadi, Aanachuvadi	Herb	Entire plant
59.	<i>Elettaria cardamomum</i>	Elam	Herb	Fruit
60.	<i>Embelia ribes</i>	Vizhal	Climber	Fruit
61.	<i>Entada rheedei</i>	Kukkumkai, Parandaka-valli	Climber	Seed
62.	<i>Evolvulus alsinoides</i>	Krishnkranti, Vishnukranthi	Herb	Entire plant
63.	<i>Ficus gibbosa</i>	Itthi	Small tree	Bark
64.	<i>Ficus racemosa</i>	Atthi	Tree	Bark

65.	<i>Garcinia gummi-gutta</i>	Kodampuli	Tree	Fruit
66.	<i>Garcinia morella</i>	Chigiri, Daramba	Tree	Latex
67.	<i>Gaultheria fragrantissima</i>	Kolakkattachedi, Kolgate-chedi	Shrub	Stem & leaves
68.	<i>Gloriosa superba</i>	Karthikapoovu, Menthonni	Herbaceous climber	Rhizome/ fruits
69.	<i>Gmelina arborea</i>	Kumbil, Kumizhu	Tree	Root
70.	<i>Gymnacranthera canarica</i>	Udaipanu, Undappayin	Tree	Seed-mace
71.	<i>Helicteres isora</i>	Edampiri-Valampiri, Eeswaramoori	Shrub	Fruit
72.	<i>Hemidesmus indicus</i>	Narunandi, Naruneendi, Nannari	Climber	Root
73.	<i>Heracleum ringes</i>	Chittelam	Herb	Fruit
74.	<i>Holarrhena antidysenterica</i>	Kudagapala	Shrub	Bark & seeds
75.	<i>Holoptelea integrifolia</i>	Aavel, Njettaval	Medium tree	Bark
76.	<i>Holostemma ada-kodien</i>	Adakkodien, Adapathiyam	Herbaceous climber	Root
77.	<i>Hydnocarpus pentandra</i>	Marotti, Neeratti	Tree	Fruit
78.	<i>Ichnocarpus frutescens</i>	Palvalli	Climber	Root
79.	<i>Indigofera tinctoria</i>	Amari, Neelayamari	Herb	Leaf
80.	<i>Kingiodendron pinnatum</i>	Ennappayin, Kiyavu, Kulavu	Tree	Wood oil
81.	<i>Lagerstroemia reginae</i>	Manimaruthu, Poomaruthu	Tree	Bark
82.	<i>Malaxis rheedei</i>	Jeevakam	Herb	Stem
83.	<i>Merremia tridentata</i>	Prasarani, Thalaneeli	Herbaceous climber	Entire plant
84.	<i>Mesua ferrea</i>	Churuli, Nangu, Nagachempakam	Tree	Flowers & seeds
85.	<i>Mimusops elengi</i>	Elangi, Ilanji	Tree	Fruits & flowers
86.	<i>Mucuna pruriens</i>	Naikurana	Climber	Seed
87.	<i>Myristica dactyloides</i>	Kothappayin, Painpoo Pasupathi, Pathiripoovu	Tree	Seed-mace
88.	<i>Naravelia zeylanica</i>	Vathakodi	Climber	Root
89.	<i>Naregamia alata</i>	Nilanarakam	Herb	Root
90.	<i>Neolamarckia cadamba</i>	Aattuthekkku, Kadambu	Tree	Root bark
91.	<i>Nervilia aragoana</i>	Orilathamara	Herb	Tuberous root
92.	<i>Ocimum gratissimum</i>	Kattuthulasi, Kattuthrithavu	Herb	Root

93.	<i>Oroxylum indicum</i>	Palakappayani, Valpathiri	Medium tree	Root
94.	<i>Palaquium ellipticum</i>	Pali	Tree	Seed
95.	<i>Parmelia dilatata</i>	Kalpassam	Herb (lichen)	Whole plant
96.	<i>Persea macrantha</i>	Kulamavu, Ooravu	Tree	Bark
97.	<i>Phoenix loureirii</i>	Chitteenthal	Shrub	Leaf
98.	<i>Phyllanthus amarus</i>	Keezharnelli	Herb	Whole plant
99.	<i>Phyllanthus emblica</i>	Nelli	Tree	Fruit
100.	<i>Piper longum</i>	Thippali, Pippali	Herbaceous climber	Fruit, stem & root
101.	<i>Piper spp.</i>	Kattukurumulagu	Climber	Stem
102.	<i>Pongamia pinnata</i>	Ungu	Small tree	Bark & seeds
103.	<i>Pseudarthria viscida</i>	Moovila	Herb	Root
104.	<i>Rauvolfia serpentina</i>	Sarpaganthi, Amalpori	Herb	Root
105.	<i>Ricinus communis</i>	Avanukku	Shrub	Seed and root
106.	<i>Rotula aquatica</i>	Kalloorvanchi	Herb	Root
107.	<i>Rubia cordifolia</i>	Manchatti	Herb	Root
108.	<i>Salacia oblonga</i>	Ponkorandi	Medium climber	Root
109.	<i>Sapindus trifoliata</i>	Pasakotta, Urulungi, Soapinkaimaram	Tree	Fruit
110.	<i>Sarcostemma acidum</i>	Somalatha	Climber	Stem
111.	<i>Sarcostemma brunonianum</i>	Somalatha	Climber	Stem
112.	<i>Sarcostigma kleinii</i>	Odal, Vellodal	Climber	Fruits
113.	<i>Schleichera oleosa</i>	Doodalam, Poovanam Poovam	Tree	Seed
114.	<i>Semecarpus anacardium</i>	Alakkucheru, Cherkuru, Temprakkai, Thenkotta	Tree	Fruit
115.	<i>Sida rhombifolia ssp. retusa</i>	Kurumthotti	Shrub	Root
116.	<i>Solanum torvum</i>	Chunda, Parachunda, Chithiramchunda Malamchunda	Shrub	Root
117.	<i>Solanum trilobatum</i>	Thothuvala	Shrub	Root
118.	<i>Solanum viarum</i>	Kandakarichunda	Herb	Root/entire plant
119.	<i>Spondias pinnata</i>	Ambazham	Tree	Bark & fruits
120.	<i>Stereospermum colais</i>	Paathiri, Kaingazha	Medium to large tree	Root
121.	<i>Strobilanthes ciliatus</i>	Karimkuringi	Shrub	Root

122.	<i>Strychnos nux-vomica</i>	Kanjiram, Karaskaram	Tree	Seed
123.	<i>Strychnos potatorum</i>	Thettamparel, Chillam	Tree	Seed
124.	<i>Symplocos cochinchinensis</i>	Pachotti, Parala	Small tree	Bark
125.	<i>Terminalia arjuna</i>	Attumaruthu, Puzhamatthi Neermaruthu, Vellamaruthu	Medium to large tree	Bark
126.	<i>Terminalia bellirica</i>	Thaanni	Tree	Fruit
127.	<i>Terminalia chebula</i>	Kadukka	Tree	Fruit
128.	<i>Tiliacora acuminata</i>	Vallikanjiram	Climber	Leaves &
129.	<i>Tinospora cordifolia</i>	Amruthu, Chittamruthu	Climber	Stem
130.	<i>Tragia involucrata</i>	Kodithuva, Vallichoriyanam	Herb	Root
131.	<i>Trichopus zeylanicus</i>	Arogyapachha	Herb	Leaves & seeds
132.	<i>Trichosanthes cucumerina</i>	Kaippanpadavalam	Herbaceous climber	Entire plant
133.	<i>Tylophora indica</i>	Vallippala	Herbaceous climber	Leaves
134.	<i>Uraria hamosa</i>	Moovila	Herb	Root
135.	<i>Vateria indica</i>	Vellappayin, Vellathelly, Vellakundirikkam	Tree	Resin
136.	<i>Wrightia tinctoria</i>	Dhanthappala, Neelappala, Kambippala, Vettupala Thondappala, Thattan-chavana	Small tree	Leaves
137.	<i>Zingiber zerumbet</i>	Malayinchi	Herb	Rhizome

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