

**UTILIZATION PATTERN OF NON-TIMBER FOREST
PRODUCTS AND THEIR IMPACTS ON SOCIO-ECONOMIC
STATUS OF ETHNIC COMMUNITIES IN WEST GARO HILLS,
MEGHALAYA**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY**

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MZU REGISTRATION NO. 66 OF 2012

PH.D. REGISTRATION NO. MZU/Ph.D./778 OF 19.05.2015



**DEPARTMENT OF FORESTRY
SCHOOL OF EARTH SCIENCES AND NATURAL RESOURCES
MANAGEMENT
JUNE 2022**

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BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE
DEGREE OF DOCTOR OF PHILOSOPHY IN
FORESTRY OF MIZORAM UNIVERSITY, AIZAWL.

ACKNOWLEDGEMENT

First of all, a huge thank you to God Almighty for blessing me with the people and all I need for my research work and for providing me with the strength I need to complete my Ph.D. research work successfully.

I am grateful to my supervisor, Professor Lalnundanga of the Department of Forestry, Mizoram University (currently Registrar, Mizoram University) for his guidance and mentorship.

I thank Professor Kalidas Upadhyaya (Head, Department of Forestry), Professor S.K. Tripathi, Professor U.K. Sahoo, Dr. Nagaraj Hedge, and Dr. David C. Vanlalfakawma (Department of Forestry), as well as Professor Lalnilawma (Department of Extension Education and Rural Development), and Dr. N. Lyngdoh (Department of Environmental Science) for their valuable suggestions and supports.

I am obliged to the laboratory and office staff of the Department of Forestry for providing some of the necessary requirements for my research work.

I appreciate the Additional Principal Chief Conservator of Forests, Wildlife and Chief Wildlife Warden, Meghalaya, Shillong for granting the permission to carry out the fieldwork in and around Nokrek Biosphere Reserve and giving me the permission to collect plant specimens for the herbarium.

I am thankful to the Botanical Survey of India (BSI), Shillong for helping and guiding me in the identification of plant specimens.

I thank the Department of Energy, Tezpur University for accepting my wood samples for analysis using Auto Bomb Calorimeter. Thanks to Baiar and Vegonia for helping me to submit my samples for analysis. Much appreciated to Sir, Lahon for analyzing my wood samples.

The financial support from the University Grants Commission through the National Fellowship for Higher Education (NFHE) of ST students is highly acknowledged.

Special thanks to Professor Caroline R. Marak (Retired Professor, Department of Garo, NEHU Tura campus), my grandmother, who is an inspiration to me to follow in her footsteps and for always supporting and encouraging me throughout my research work.

I thank the Nokmas/Headmen and local leaders of all the surveyed villages for granting me permission to carry out my research work in their villages. I am thankful to the villagers for providing their valuable knowledge and cooperation during the field study.

Immense acknowledgement to my two cousins Tomleslie and Oleg Salenko for always being there for my fieldwork. I would also like to thank my cousins Bilkam, Jagring, Harvy, Danvy, Tejam, Kunal, Walesa, and Akkui; my aunties, Shamla and Wimbie; my uncle, Lt. Stephen; my grandpa, Fervent R. Marak, and my friends Junno, Abuna, Tensy, Tenang, Lacto, Jiew, Sahen, Leang, Sabiron for helping me in my fieldwork. Sushil, Tengme, Cheangku, Reuben, Wachiov, Raisa and Sengme are also acknowledged.

Teachers and staff of KGBV School, Tikrikilla namely, Nire, Anita, Sengchi, Momota, Archana, Besila and Samuel are appreciated. The accommodation and hospitality provided by the family in Kujikura and Sakalgre villages in order to carry out my fieldwork is greatly obliged as well as relatives from Sellsella, Asanang, Nawalgre, Baljek Agal, and Dorenggre villages. I am grateful to Mikseng T. Sangma for helping me in the collection of plant specimens and wood samples required for the research work. Nilbin T. Sangma is also appreciated for his helping hand for plant collection in and around Nokrek Biosphere Reserve.

Thanks to Brilliant, Tony, Sugara, Everdith, Senganku, Nikjrang, and Sarikokba for rendering their help in the cutting and preparation of wood samples into small pieces required for the laboratory work.

Thank you, James, and Walseng, for helping in the identification of animals.

Thank you so much, Pentile (Ale) for helping me with statistical work and in the making of maps. You are also appreciated for always being there for me throughout my Ph.D. journey.

To my MZU friends, Wistful, Henchai, Hriati, Alice, Feda, Naldarine, Uttam, Sengjrang, Bidanchi, Siami, Khuppi, Liza, Jyoti, Chuckles, Jopi, Nikrang, Rock, Jerry, Chowhani, Thethem, Milica, Emylin, Polbi, Rozar, Devan, Baleshwar, Anudip, Somen, Sangi, Tremie, Kanchan, A. John, Mary, Grace, and other friends whom I may have missed out, thank you all for your moral support and your friendships.

I am grateful to everyone who remembers me in their prayers.

Thanks a million to my mother and my siblings for helping me financially as well as for their never-ending love and support.

I am also grateful to my uncle Peniwei for always lending a helping hand with computer work whenever necessary.

Cheers to my girls, Yvette, Alana, Keshia, Kasanchi, Fatiana, Sali, and Silme for being there for me through my ups and downs.

Last but not the least; I thank Eleanor and Dipchon Bloodlines from the bottom of my heart for their care and support.

Date:

Place: Aizawl.

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DECLARATION

I, Antica Jarangchi T. Sangma hereby declares that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the Mizoram University for the degree of Doctor of Philosophy in Forestry.

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Dated Aizawl, the 29th June, 2022

Supervisor's Certificate

This is to certify that a Ph. D. thesis entitled, **“Utilization pattern of Non-timber forest products and their impacts on socio-economic status of ethnic communities in West Garo Hill, Meghalaya”** submitted by Ms. Antica Jarangchi T. Sangma, Research Scholar in the Department of Forestry, Mizoram University, Aizawl, embodied the record of original investigation under my supervision. The content of the thesis has not been submitted to for the award of any degree in this or any other University or Institute.

She is allowed to submit the Thesis for examination for the award of the Degree of Doctor of Philosophy in Forestry.

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ABSTRACT

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Submitted

In partial fulfillment of the requirement of the degree of Doctor of Philosophy in
Forestry of Mizoram University, Aizawl.

ABSTRACT

Forest presents a great number of advantages to native communities and societies in an enormous way (Miah *et al.*, 2012). People depend on forests for different purposes like timber, non-timber forest products, amusement experience, air, water, biodiversity, soil protection, carbon sequestration, and many other ecological services (Adam and Tayeb, 2014). Non-Timber Forest Products (NTFPs) bestow vast benefits for the livelihood of the people. These wild products can be beneficial directly or indirectly both for rural and urban living. NTFPs include plants as well as animal materials, like food, fuelwood, storage and fodder, medicine, cottage and wrapping materials, biochemical, birds, reptiles, fish and feathers (Adepoju and Salau, 2007).

The present study has taken up to focus more on the NTFPs of West Garo Hills, Meghalaya with the following objectives-

1. To construct a socio-economic profile and to document the available NTFPs in the study area.
2. To document the consumption pattern of Non-Timber Forest Products (NTFPs) across different Socio-economic strata.
3. To quantify extraction of fuelwood and characterize some important fuelwood species.

The following is a brief description of study area and the methodology followed for the present study:

The district of West Garo Hills in Garo Hills, Meghalaya is the study area for the present research work. The district West Garo Hills is situated approximately between the latitudes of 25°34'4.88"N and the longitudes of 90°13'28.02"E (Google Earth). The majority of the original inhabitants of West Garo Hills are the Garos and most of the surveyed villages in the present study are the Garo villages except for very few villages occupied by Bodos and Hajongs.

A field survey was done from October, 2015 to June, 2018. Data based on socio-economic conditions and utilization of NTFPs was collected through house-to-house interviews with the villagers using pre-tested semi-structured questionnaires as well as group discussions in the local dialect. Techniques like transect walks and preference ranking were also used. 72 villages from the West Garo Hills district were

surveyed and 17-30 households were selected from each village which comes to a total of 1783 households. Identification of the majority of plant specimens was done in the Botanical Survey of India (BSI), Shillong. Some plants were identified with the help of books authored by Page *et al.* 2022 (Trees of Arunachal Pradesh), Sawmliana, 2013 (The Book of Mizoram Plants), Changkija and Gurung, 2017 (Flora of Nagaland Volume I), Kanjilal, 2005 (Flora of Assam, Volume III) and some journals and published thesis. All the identified plants were rechecked with Plant List/World Flora Online. Animal species were identified and documented with the help of some books, Avibase-Birds' Checklist of the world as well as by some local experts.

For the fuelwood consumption study, 10 households from each village were randomly selected. In order to know/study the fuelwood consumption by the households for a day, the weight survey method was used for a period of 24 hours. The fuelwood measured for them to use for a day was 30 kg.

Ranking of preferred fuelwood was done by asking each household their preferred fuelwood and the reasons for preferring the particular species. Wood samples were collected from the forests of West Garo Hills for determining the Fuelwood Value Index. A total of 22 locally preferred and common tree species were selected for the study. Branches of each species measuring 4-5 cm long and >10 cm diameter were collected for laboratory work purposes. Moisture content, density and ash content work were done in the Mizoram University laboratory and the calorific value of wood samples was done in the Department of Energy, Tezpur University.

In order to verify the availability of NTFPs in the local markets, four important markets from West Garo Hills were surveyed.

The following are the findings of the study:

The socio-economic life of the ethnic communities in the West Garo Hills district along with Non-Timber Forest Products play an interesting role in the present study. Their way of living showed typical tribal living as well as a modern way of life. The gender of respondents showed more females than males as in most of the villages' females or wives stayed at home for household work and males go out for their job or for their income from their occupation. The population of the surveyed villages also showed that females are higher in number when compared to males. The

average family size of the present study is 6. Education is an important part of life in most of the studied villages and the highest literacy percentage was recorded at 93.08%. West Garo Hills consists of different communities but the major communities belong to the Garo tribe which consists of 95.85% in the present study. Assets are also part of the socio-economic condition of the households. 85.98% of mobile phones were owned by the studied households which is the highest percentage among all the assets recorded. Among the villagers, the highest being the farmers they mostly depend on Plantation crops like areca nut, cashew nut, and rubber for their income. The annual income earned by the head of households' occupation is highest in the range of ₹100000 or less which is the lowest range. Since most of the households earned less for their livelihood, they were also involved in the collection of NTFPs from the forests mostly for their consumption and some for their cash income.

The exploration revealed that the ethnic communities used as many as 177 plant species (differing from 138 genera and 67 families) as vegetables, fodders, fruits, fuelwoods, brooms, house building materials, wrapping materials, medicinal plants, handicrafts, and other purposes. The communities used a maximum number of species for fuelwood purposes (101 species), followed by vegetables (54 species), medicinal plants (52 species), fruits (51 species), fodder (18 species), house building materials and handicrafts (8 species each), wrapping material (6 species), and broom (2 species). Other NTFPs like plant species used for fencing, rope, gum, fishing, and those used for making wine, traditional necklaces, baskets etc. (10 species) were also collected by the communities. Among 177 plant species, 138 genera were recorded with the genus *Ficus* having the highest number of plant species of 7 numbers. The NTFPs recorded were mostly trees of a total of 101 species, out of which 25.42% of species were medium-sized trees, 21.47% of species were small trees and 10.17% of species were large trees. Shrubs account for 14.69%, herbs (11.86%), a climber (6.21%), Bamboo (3.39%), a woody climber (2.82%), fern (1.69%), grass (1.13%), an aquatic plant (0.56%), and palm tree with 0.56%. The present research work recorded 98 plant species which are still not assessed, 75 plant species of least concern, 2 plant species which is near threatened, 1 species which is vulnerable and 1 species under indeterminate in the IUCN Red List. 9 endemic plant species used as

NTFPs were recorded from the studied communities. A total of 24 NTFPs of animal origin were also recorded from the present study.

Some species were found in almost all the studied villages such as *Phyllanthus emblica* L. (Ambare segun), *Colocasia esculenta* (L.) Schott (Chigi), *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Amorphophallus bulbifer* (Roxb.) Blume (Songru), *Protium serratum* (Wall.ex Colebr.) Engl. (Te'kring), *Melocanna baccifera* (Roxb.) Kurz (Wa-tre/Wa-mande) etc., whereas some species like *Saurauia napaulensis* DC. (Adambok), and *Pandanus odorifer* (Forssk.) Kuntze. (Burungni anaros) were found only from Sakalgre village, *Justicia adhatoda* L. (Alot gipok) from Apalgre village, *Castanopsis tribuloides* (Sm.) A. DC. (Chaku metchri) from Waribok village, and so on. The highest number of NTFPs was recorded from Waribok village with a total of 73 species followed by Sakalgre village with 66 species, Karonggre village with 62 species, and Asanang and Wakringtonggre villages with 61 species each. Kathalbari village was recorded with the least number of NTFPs of only 2 species and Nawalgre village with 20 species.

A total of 106 wild edible plants were reported from the present study belonging to 49 families and 84 genera. It includes 51 wild fruits, 54 wild vegetables, 18 fodder species, and 52 medicinal plants.

Some important non-edible wild plant products like 6 species of wrapping materials, 8 species of house building materials, 8 species for handicrafts, 2 broom species, and 101 fuelwood species were found to be collected from the forests and utilized by the ethnic communities of the studied villages.

11 NTFPs used for other purposes include those which were used for making gum, wine, fencing, traditional necklace, handle for the traditional basket, etc.

The study showed that Waribok village had the maximum daily consumption of fuelwood at 2070 kg. A total of 85322 kg of fuelwood was consumed by the 72 villages daily. The fuelwood per capita consumption per year was highest in Chekwatgre village with 346.07 tonnes/cap/year. The total per capita per year consumption of fuelwood in 72 villages was 9291.06 tonnes/cap/year.

The quantity collected which is lesser than 3kg was highest for vegetables with 32.4% followed by fruits with 29.7% and broom with 2.7%, those between 3-5 kg was more for fruits (5.4%) comparing to vegetables, fodders and winemaking with

2.7% each, and those >5kg was higher for fruits and vegetables with 8.1% each as compared to fodders and thatching with 2.7% each. . Household involvement in the collection of animal products was highest for freshwater fish (598) followed by the collection of honey from giant honey bees (297). The collection of freshwater snails and crabs involved 16 households each and 17 households for freshwater prawns. Electric eel, honey from stingless bees etc. were also collected but in lesser quantities.

In the present investigation, fuelwood ranking was done on the basis of local preference using 20 quality criteria as well as on the basis of the Fuelwood Value Index (FVI). According to local preference, *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak) rank first but on the basis of FVI, this species rank sixth. Considering the FVI, *Shorea robusta* Gaertn. (Bolsal) rank first whereas, on the basis of local preference, it ranks sixth.

20 reasons/quality criteria for fuelwood preference were used in the present research work and the most important criteria for fuelwood ranking were “Good in burning/hot flame/bright flame” with 565 times (31.69%) mentioned by the respondents followed by “Good embers” with 514 times (28.83%). “Easy to burn/Fast burning”, “Easy to split/cut” and “Long burning” were also some of the important quality criteria for fuelwood preference with 226 (12.68%), 199 (11.16%) and 138 times (7.74%) recorded by the respondents respectively.

Normally, good quality fuelwood should have low moisture content, high density, low ash content, high biomass ash ratio, and high calorific value. *Shorea robusta* Gaertn. (Bolsal) seems to be the best fuelwood species on account of its high calorific value, high density, highest biomass ash ratio and lowest ash percentage.

A total of 35 NTFP species were recorded from the local markets, where 19 species were sold for vegetables, 8 species for fruits, 4 species for handicrafts, 2 species each for animals and brooms as well as 1 species of edible mushroom. Species like *Colocasia esculenta* (L.) Schott (Chigi) and *Zanthoxylum oxyphyllum* Edgew. (Me'cheng) were present in all the markets which shows the high market demand in West Garo Hills.

The use of fuelwood is still a significant part of the household requirements where 99.27% of households in the present study still use fuelwood in their daily life even

though some few households used fuelwood along with other fuel energy which comes to around only 16.43%. 14.58% used LPG, 7.57% used electrical products like rice cookers, heaters, etc., and 0.11% used kerosene as their fuel energy. Out of 1783 households, only 13 (0.73%) households did not use fuelwood.

Fuelwood was consumed for different purposes by the ethnic communities such as for cooking food for their own consumption, cooking food for piggery, water heating and warming up the room and own self, especially during the winter season. The highest percentage of 99.21% was used for cooking food for own consumption, followed by 29.16% for cooking piggery food, 4.37% for warming up the room and own self, and 2.64% for water heating.

The majority of the households were non-NTFP sellers at 81.88% (1460 households) and NTFP sellers at only 18.00% (321 households). NTFPs sold by the households were highest for fuelwood with 56.70% followed by those grouped into more than one NTFP category with 25.86%, other NTFPs like mushroom, honey etc. with 5.61%, bamboo poles with 4.67%, vegetables with 3.74%, handicrafts with 1.25%, fruits with 0.62%, and broom with 0.31%.

12.15% of households reported that the demand for NTFP was highest during the winter (Nov-Feb) season which was followed by 8.10% for the whole year, 7.17% for more than one season, 4.36% during the monsoon/rainy season (June-Sept), 3.12% during summer (April-June), 0.93% during autumn (Oct-early Nov), and 0.31% during spring (Mid Feb-March).

The average annual income from NTFP business from the households who were involved in business for their income where 53.58% earned < ₹25000, followed by not recorded (those who earned from NTFP business but the amount was not recorded) with 24.92%, those who earned between ₹25001-50,000 with 13.08%, and those households who earned the maximum amount i.e. >₹50000 with 8.41%.

The Pearson correlation coefficients of household/socio-economic condition and NTFPs for the selected variables showed significant correlation coefficients. All the two variables are linearly correlated at the 0.01 level (2-tailed). The One-Way ANOVA also showed a significant effect between household/socio-economic conditions to almost all the parameters of NTFPs.

The present research study reveals that Non-Timber Forest Products contributed to or impacted the livelihood of the ethnic communities of West Garo Hills in many ways directly or indirectly.

The findings of the study highlight the relative importance of utilization, consumption, marketing, and income from different categories of Non-Timber Forest Products. Studies on the socio-economic conditions relating to NTFPs can contribute to a larger level of a better livelihood both for the direct and indirect users of NTFPs by conserving and maintaining the NTFPs in forests and on the villagers' land. 177 plant species, 24 edible animals, and 1 fungus species have been documented and there are still many species yet to be documented from the present study area. Awareness to the villagers as well as to future readers and researchers is suggested to learn and conserve the NTFPs for eco-friendly surroundings and for the better livelihood of the villagers.

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CHAPTER 1

INTRODUCTION

We are living in a world full of God's blessings. Forest and its products are a part of it. Forest presents a great number of advantages to native communities and societies in an enormous way (Miah *et al.*, 2012). People depend on forests for different purposes like timber, non-timber forest products, amusement experience, air, water, biodiversity, soil protection, carbon sequestration, and many other ecological services (Adam and Tayeb, 2014).

Non-Timber Forest Products (NTFPs) bestow vast benefits for the livelihood of the people. These wild products can be beneficial directly or indirectly both for rural and urban living. Special Forest Products, Minor Forest Products, Multi-use Forest Produce, Vernacular Forest Products, and Non-Wood Forest Products are also some of the similar terms used for Non-Timber Forest Products (Tan *et al.*, 1996). According to De Beer and McDermott (1996), "Non-Timber Forest Products encompasses all biological materials other than timber which are extracted from forests for human use." NTFPs include plants as well as animal materials, like food, fuelwood, storage and fodder, medicine, cottage and wrapping materials, biochemical, birds, reptiles, fish and feathers (Adepoju and Salau, 2007). In Nepal, the elevation and climatic differences are bestowed on the diversity of NTFPs (Shrestha *et al.*, 2020). In Odisha, NTFP gathering and trade, done mostly by women produced great income (Panigrahi *et al.*, 2019). NTFPs are important as it is the source of income, nourishment, and sustenance for a large number of people throughout the world (Melese, 2016). NTFPs also have an excessive industrial and trade utility (Vongkhamsoo, 2006).

NTFPs are either edible or non-edible. In the opinion of DeBeer and McDermott, 1996; Rawat, 2008, NTFP can be classified as follows:

1. Edible Plant Products:

(a). Food (This can be whole plants, leaves, fruits, nuts, roots, shoots, mushrooms, seeds, rhizomes, tubers, and corms).

(b). Edible oils (mostly from nuts and seeds).

(c). Spices and flavourings.

(d). Fodder / Animal feed.

2. Edible Animal Products:

(a). Terrestrial animals (vertebrates/mammals, birds, insects, reptiles, and larva).

(b). Animal products (eggs, bird's nest, honey).

(c). Fish and invertebrates water animals.

3. Medicinal Products:

(a). Plant products.

(b). Animal products.

4. Non-Edible Plant Products:

(a). Rattan / Climbing palms.

(b). Bamboo.

(c). Ornamental plants.

(d). Chemical components- Extracts (essential oils, tannins, and dyes).

- Exudates (resins, gums, and latex).

(e). Wood / Non-industrial timber (poles for construction of houses, storage for crops, fencing, tools, instruments, furniture and handicrafts, fuelwood, and charcoal).

(f). Fibres and leaves (clothing, baskets, mats, roofing, and wrapping materials, etc.).

5. Non-Edible Animal Products:

(a). Insect products (wax, pollen, royal jelly, venom, and lac).

(b). Wildlife products and living animals (pets, trophies, objects of decoration, traditional ceremonies, and clothing).

Whole plants or parts of a plant that is suitable for eating can be referred to as wild edible plants (Shaheen *et al.*, 2017). In Himalayan areas, wild edible plants are in plenty from which food and nutrition can be obtained and these are an essential part of their traditions (Joshi *et al.*, 2018). Many wild fruits and vegetables provide a healthy balanced diet because of the rich phytochemicals present in them (Bvenura and Sivakumar, 2017). Economically important wild fruits which are seldom found in wild like *Diospyros ramiflora*, *Haematocarpus validus*, *Mangifera sylvatica*, *Xerospermum laevigatum*, and *Terminalia chebula* are found in the Kaptai Reserve forest in Rangmati, Bangladesh (Abdullah *et al.*, 2018). Studies done in Manipur by Thongam *et al.*, 2016, observed that leaves are mostly used as vegetables followed by shoots and stems. These vegetables are mainly consumed in cooked form. There is a belief that mushrooms appear suddenly associated with thunder and lightning (Singh and Kamal, 2012). *Auricularia polytricha*, *Lactifluus corrugis*, and *Pleurotus pulmonarius* are some of the mushroom species collected and consumed by tribal communities (Borah *et al.*, 2018). Nuts and seeds are a significant source of edible oils. Illipe nuts are an example of wild edible oils (De Beer and McDermott, 1996). Spices are flavouring or colouring agents used in food (Heperkan, 2006). Livestock depends mostly on fodder extracted from agroforestry and agricultural lands, forests and grasslands (Nautiyal *et al.*, 2017). Mithun (*Bos frontalis*) prefers fodder from tree species like *Saurauia polyneura*, *Debregeasia orientalis*, and *Rubus species* (Geng *et al.*, 2017).

Wild animals are hunted mainly for their protein content. Wildlife can furnish extremely good quality meat (Mattiello *et al.*, 2018). The demand for wild meat is high in society (Drury, 2009). Mammals, fishes, reptiles, frogs/toads, birds, and insects are among the fauna which is eaten by the tribal people. Besides, edible animal products like honey, larvae, crocodile eggs, and bird eggs are also consumed by the local people (Yesodharan *et al.*, 2011).

Plants played an indispensable part in medicine (Mazid *et al.*, 2012). For a long time, medicinal plant data or information has been passed on from generation to generation

(Jamshidi-Kia *et al.*, 2018). In Asi Ganga sub-basin medicinal plants also contributed 35%-40% of income apart from curing diseases (Nand and Naithani, 2018). *Eryngium foetidum* commonly known as Spiny coriander is used for curing some diseases like fevers, chills, burns, vomiting, headache, stomach ache, earache, hypertension, asthma, diarrhoea, malaria, snake bites, epilepsy, arthritis, and scorpion stings (Singh *et al.*, 2014).

Non-Edible Plant Products include some of the most significant NTFPs like rattan, bamboo, fuelwood, fibres, essential oils, and many other products. Rattans and bamboos are NTFPs used as building substances and are used for making household objects like baskets, furniture, beds, dolls, stools, combs, and local games (Pentsil *et al.*, 2016). Rattans are climbing palms with spines that belong to the sub-family Calamoideae (Peters and Henderson, 2014). There are about 600 species of rattans in the world and out of these species 20 rattan species are originated in the North-eastern part of India (Raj *et al.*, 2014). Bamboos are perennial and woody-stemmed grasses (Kaiser and Ernst, 2019). It is among the rapidly growing woody plants which belong to the Poaceae family and Bambusoideae sub-family (National Bamboo Policy, 2019). In North-eastern India, the deciduous and semi-evergreen areas harbour around 90 bamboo species and 41 species are endemic (Loushambam *et al.*, 2017). Ornamental plants are mainly grown for beautifying purposes and for their pleasant smell. Several ornamental plants having attractive flowers are *Bonamia semidigyna*, *Cressa cretica*, *Ipomoea alba*, and *Merremia aegyptia* (Reddy *et al.*, 2015). Chemical compounds are grouped into two- Exudates and Extracts. Exudates like resins, gums, and latexes are naturally produced by plants whereas extracts like essential oils, tannins, and dyes are acquired with the assistance of chemical solvents (De Beer and McDermott, 1996). Resins are sticky liquid plant exudates that thicken when it is exposed to air (Langenheim, 2003). According to Srivastava and Ray (2015), gums are a combination of polysaccharides (carbohydrates) that are soluble in water or form mucilage (gluey substance). The milky white colour fluid which is generally obtained by making the plant bleed by cutting is referred to as latex. Latex-producing plants belong mostly to Apocynaceae, Sapotaceae, and Euphorbiaceae families (Coppen, 1995). Essential oils are produced from parts of the plants such as flowers, leaves, fruits, roots, seeds, resin, or bark which are volatile and extremely concentrated substances (Rao and Pandey, 2006-2007). Seth (2004), said about tannins as “soluble, astringent, bitter and complex phenolic

substances of plant origin.” Natural dyes are used for colouring and printing since ancient times and it is composed of colourants which are obtained from plants and animals (Kumar and Tripathi, 2011). Wood from forests is also collected and used for different reasons like the construction of houses, handicrafts, furniture, fuelwood, charcoal, fencing, and so on. In the study made by Bhattarai *et al.*, 2007, *Berberi slyceum*, *Juniperus indica*, and *Hippophaesa licifolia* are some of the species used as fences. Fuelwood also called firewood is woody biomass that is not processed and utilized to make fire mainly for cooking and keeping warm, while charcoal is formed from burning wood (May-Tobin, 2011). Furniture and handicrafts are made and sold in the market for income or used in homes (De Beer and McDermott, 1996). Tree bark is employed to make hats, steamers, shoes, and ropes but it is not followed that much traditionally now. Bamboo species are mostly used for making baskets and the branches of the willow trees are utilized for brushing off the husks during the winnowing of the wheat (Kang *et al.*, 2017). Long before, fibres are being used for spinning thread and ropes and weaving rough fabrics (Mehta, 1981). Thatching is one of the oldest ways of covering roofs and walls (Katabami, 2017). Traditionally, reeds and grasses are good materials, easily available, and extensively used for thatching (Zamolyi and Herbig, 2011). The leaves of *Phrynium capitatum* are used for wrapping and packaging edible items like jaggery (gur), fish, salt, lentil, meat, fruits, vegetables, betel leaf, lime, and the like (Tynsong and Tiwari, 2011).

Apart from animals being hunted for food and medicines, it is also served as trophies, pets, clothing, beeswax, and more (Rawat, 2008).

The leading issue around the world mainly in developing countries is socio-economic status and characteristics. Socio-economic status explains the real condition of the population in a specific region (Ismail and Mustaquim, 2013). The demographic constitution of households can be inspected by their demographic details, such as sex, sex ratio, family size, occupational status, caste composition, and others (Mishra *et al.*, 2008). A livelihood encloses the skills, assets, and approaches which are used by communities or by a single person for their survival (Elizondo, 2017). The tribes of India stretch all over the forests, hills, and plains and differ from each other in race, dialect, society, beliefs and present a scene of distinctive diversity (Digal, 2016). NTFPs play a big role in assisting rural food

supply and income (Verma and Paul, 2016). The average yearly income from the sale of NTFP is greatest at Rs. 38,750 per household and the majority of the income is from fuelwood as well as medicinal plants, and products from animals (Sharma *et al.*, 2015).

Consumption of NTFPs differs from one item to another item. Consumption of fodder per household per year is 39kg, for vegetables 19kg/hh/year, broom grass 18kg/hh/year, medicinal plants and fruits with 4kg/hh/year each (Lalhmingsangi and Sahoo, 2016). The consumption of NTFPs for constructing houses also varies within a community. 25-67 bamboo culms/hh/year is required for building a house and cane consumption varied from 40-124m/hh/year (Saha and Sundriyal, 2012). Fuelwood is burnt for several purposes, namely, for cooking, heating, lighting, animal rearing, etc., and maximum energy is required for cooking (Bhatt and Sachan, 2004). Rural households depend 100% on fuelwood whereas in the urban population 59% depend fully on fuelwood and 28% use wood along with other heat energy. In rural areas, the average consumption of fuelwood is 1.2 kg/person/day while in town is 0.80 kg/person/day (NJITI and KEMCHA, 2002).

In the review made by Kumar *et al.*, (2020), some of the preferred fuelwood species which are locally available in Western Himalaya are *Quercus leucotrichophora*, *Pinus roxburghii*, *Rhododendron arboretum*, *Alnus nepalensis*, *Pyrus pashia*, *Juglans regia*, and *Lyonia ovalifolia*. The preferred fuelwood species in the tribal communities living in Arunachal Pradesh are *Schima wallichii*, *Castanopsis indica*, *Dillinia indica*, and *Dendrocalamus hamiltonii* (Maikhuri, 1991).

The dominant source of income for the communities near the forest is by marketing the NTFPs. Various marketing NTFPs are *Acacia concinna*, *Canarium strictum*, *Parmelia dilatata*, *Phyllanthus emblica*, and many more. Wax and honey are also sold in the market (Alex and Vidyasagaran, 2016). The selling of fuelwood is a regular source of earning for the livelihood of the people as it provides income for the entire year (Ahmed *et al.*, 2016). Market surveys are done to know the significance of NTFPs and to find out their worth (Talukdar *et al.*, 2021).

Wood density, moisture content, ash content, and calorific values are used to estimate Fuelwood Value Index or FVI (Rai *et al.*, 2002). Purohit and Nautiyal, 1987 defined FVI as

“(Calorific Value \times Density)/Ash Content \times Water Content) to identify trees with potential for fuelwood production.” The density of wood is mass by volume (Krajnc, 2015). The water present in the wood is the moisture content which is indicated as a percentage of the oven-dried mass of the wood (Annual Book of ASTM Standards, 2003). The inorganic residue left after dry oxidation at 575°C is called ash content (Sluiter *et al.*, 2005). Calorific value or heating value (q) is referred to as “the amount of energy per unit mass or volume released on complete combustion” (Krajnc, 2015).

Meghalaya is among the states in the North-Eastern parts of India. West Garo Hills district in Meghalaya is so wealthy in natural resources. A great number of floras and faunas are available in this area. The ethnic group living in this part of the state depends on the forest products by direct consumption from it or by earning income from the forest products. NTFPs are one of the ways that provide for their sustenance. The ethnic community who enjoy these forest products in copious amounts are the Garos who are preferably called A'chiks. Garos are the hill people which occupy most parts of West Garo Hills. The Boro and Hajong ethnic communities are also a part of the present study and they occupy a small part of the plains.

Since a huge number of population benefits from NTFPs in terms of consumption and income but there are limited studies in West Garo Hills presently, so the researcher seeks to generate, understand and create knowledge about the importance of NTFPs and the livelihood of people through this study. With increasing population pressure, the consumption of fuelwood is also high. Fuelwood/Energy plantation can be done to meet the higher need and supply. This study also aims to understand the quality of fuelwood which will be helpful for the Fuelwood/Energy plantation ideas for future generations. Plantation for other interesting NTFPs can also be created for conservation and to improve the supply for the consumers. Detailed information about the availability and types of NTFPs present in the area is not known, leaving many of the potential products remain unexploited.

Therefore, the present study has taken up to focus more on the NTFPs of West Garo Hills, Meghalaya with the following objectives-

1. To construct a socio-economic profile and to document the available NTFPs in the study area.
2. To document the consumption pattern of Non-Timber Forest Products (NTFPs) across different Socio-economic strata.
3. To quantify extraction of fuelwood and characterize some important fuelwood species.

CHAPTER 2

REVIEW OF LITERATURE

Forests provide enormous socio-economic and environmental advantages to host and nearby communities, of which 71 % obtained forest resources for their living (Ullah *et al.*, 2021). In the Tharawady district of Myanmar, important Non-Timber Forests Products (NTFPs) were bamboo, thatch, fuelwood, charcoal, bamboo shoot, broom grass, bark and root, and others. (Moe and Liu, 2016). NTFP categories like traditional medicine, household utensil, honey, fuelwood, farm implement, animal fodder, edible wild food, smoking/flavouring products, and spices were identified in Jello-Muktar Forest, Southeastern Ethiopia. (Reshad *et al.*, 2017). 80.90 % of flowers and seeds were recorded with maximum economic value and a minimum economic value for bamboo with only 0.003% in Chhotaudepur Forest Division of Gujarat, India (Yadav *et al.*, 2019). Interestingly, communities of the West Kameng district of Arunachal Pradesh, North East India, could sell around 76 plant species in the markets for their cash income (Saha and Sundriyal, 2013). NTFPs collection and production are higher during the summer season in rural Meghalaya (Lynser and Tiwari, 2016).

In Ethiopia, 77 wild edible plants were identified for consumption where the highest percentage of 59.7% was harvested for fruits (Berihun and Molla, 2017). Wild edible plants were collected by the tribal people mainly for the nutrition required for them for a long time and still, the collection did not stop (Thakur *et al.*, 2017). Wild edible plants such as *Lentinula lateritia* (Berk.) Pegler and *Docynia indica* (Wall.) Decne. showed the highest monetary value according to the study made in the Senapati district of Manipur (Pfoze *et al.*, 2012). Some of the edible plants are greatly associated with socio-economic growth of the ethnic communities (Momin *et al.*, 2016). The consumption of wild edible fruits is decreasing in the eastern part of Bhutan which is endowed with a great diversity of wild fruits. A total of 52 wild edible fruits were reported from the study (Yangdon *et al.*, 2022). According to the valuable traditional knowledge of the tribal communities of Western Ghats, the wild fruits are high in minerals and carbohydrates which is a good source of medicine for some diseases (Deshmukh and Waghmode, 2011). Wild edible fruits found in the state of Tripura remain as the important food available seasonally which plays a significant part in maintaining the health conditions of people living in that area

(Biswas *et al.*, 2018). Some of the fruits available in East and West Khasi Hills districts of Meghalaya are *Agapetes obovata* (Wight) Benth. & Hk.f., *Baccaurea ramiflora* Lour., *Calamus erectus* Roxb., *Docynia indica* (Wall.) Decne., *Elaeagnus latifolia* L., *Flacourtia jangomas* (Lour.) Raeusch., *Garcinia cowa* Roxb., *Hodgsonia macrocarpa* (Bl.) Cogn., *Mahonia pycnophylla* (Fedde) Takeda, and *Pinanga gracilis* Blume (Kharshandi *et al.*, 2015).

In the Mediterranean area, the consumption of wild vegetables is of great attention again for their benefits in the condition of a person's well-being (Sa'nchez-Mata, 2011). According to the study made by Lalmuanpuui *et al.*, 2017, wild vegetables were mostly available during the months from March to August and reduced from the month of September to February. Wild vegetables were prepared in different ways for consumption such as in dried form, boiled, and by mixing with other vegetables, meat, and rice grain. Based on the study done by Thongam *et al.*, 2016, some of the vegetables utilized are *Euryale ferox*, *Houttuynia cordata*, *Eryngium foetidum*, etc.

Wild fodder plants contribute a significant feed for the livestock owned by the farmers. The fodder species with a higher amount of crude protein was recorded for *Fagopyrum dibotrys* (Geng *et al.*, 2020). A total of 43 species were reported as fodder species which were collected generally from the nearby forest. Some species used as fodder for livestock were *Shorea robusta*, *Tetrameles nudiflora*, *Phanera variegata*, *Phyllanthus emblica*, *Toona ciliata* and *Trema orientalis* (Sangma, 2017). The use of medicinal plants by the Nepali people is high and during the Covid-19 pandemic, the use of medicinal plants rise higher in private homes. *Zingiber officinale* was reported with the maximum use for curing covid-19 (Khadka, *et al.*, 2021). The Messiwa people of Morocco utilized 56% of wild edible plants for medicinal purposes (Ghanimi *et al.*, 2022). The study made during 2019-2020 on wild medicinal plants from Nargu Wildlife Sanctuary in Himachal Pradesh, observed that the common parts used for medicine belong to leaves. The local people used medicinal plants to cure some diseases like coughs, colds, snakebites etc. (Radha, *et al.*, 2021). Out of the 120 ethno medicinal plants found to be used from the sacred groves of Manipur, 42% of medicinal plants belong to tree species and 33% belong to herbs (Khumbongmayum *et al.*, 2005). Besides, the study done by Singh *et al.*, 2014, found 157 medicinal plants traditionally utilized by the indigenous people of Garo Hills. Commonly used plant parts were leaves, roots, tuber, and rhizome and

the mostly used method of preparation was found to be decoction. For example, boiled leaves of *Smilax ovalifolia* were used as a remedy for jaundice and the decoction of the species *Pyrrosia adnascens*' rhizome was used for curing cough and cold.

Other than wild edible plants, non-edible wild plant products are also a part of Non-Timber Forest Products such as wrapping materials, house building materials, handicrafts, broom, fuelwood etc.

In Southeast Asia, leaves of many plant species are used for wrapping food which produces flavour to the food wrapped and cooked in them. Some of the species used for wrapping food are palms, water lotus, bamboo, macarangas, cordylines and so on. Many species belonging to the family Marantaceae are used as wrapping materials (Keat-Chuan Ng, 2015). The leaves of many plants are used to wrap food during the cooking of several dishes in India (Kora, 2019).

Bamboo could be used as a house-building material for several purposes like floors, walls, ceilings, doors, roofing, windows etc. (Koko and Dakur 2019). In India, bamboos are available in plenty and bamboos produce a great number of qualities which can be used for solving the need for shelter by the local people (Parikh *et al.* 2016). In Namibia, grass species such as *Eragrostis pallens*, *Cymbopogon caesius*, *Hyperthelia dissoluta* and other grasses are used for thatching houses which also contribute to the thatching industry (Strohbach and Walters, 2015).

In the village of Brajan, Yogyakarta, bamboo handicrafts contributed greatly to the communities. The traditional handicrafts knowledge was passed down by the parents to their children for a long time (Putri and Prihadi, 2019). The bamboo and cane handicrafts are highly artistic and valuable which shows the fine works of the Apatani tribe of Arunachal Pradesh (Yamang, 2022). Traditional bamboo handicrafts create good potential for the livelihood of the people living in Tripura. Some of the handicrafts include Jamatia firewood baskets, Rieng carrying baskets, date baskets, bamboo root show pieces, rhizome artefacts, bamboo jewellery, bamboo mat, bamboo purse, bamboo half-circle fan, etc. (Sil, *et al.*, 2020).

Harvesting of broom grass (*Thysanolaena latifolia* (Roxb.ex Hornem.) Honda is usually during the months of January to April when the colour of panicles changes and matures. Broom grass is available plenty in Mizoram and it provides the basic necessity for all households (Lalhmingangi and Sahoo, 2018).

Firewood is a principal resource for the ethnic minority communities of Vietnam. Among the Thai, Muong, and Mong communities, firewood consumption was highest among the Thai communities with 187.62 kg/household/month (Techato and Techato, 2018). The fuelwood species available frequently and in abundance in the foothills of the Indian Eastern Himalayas are *Sapindus detergens* and *Machilus fasciculata* (Roy *et al.*, 2021). It was reported that the villagers in a different altitudinal gradient from Garhwal Himalaya used fuelwood for several purposes like boiling water, space heating, and cooking (Dhanai *et al.*, 2015). Among the four communities studied from Arunachal Pradesh, the main activity in all households was cooking which result in the highest demand for fuelwood (Maikhuri 1991).

Fuelwood local preference using the pair-wise ranking tools showed that the tree species which were most desirable by them were *Quercus* species and *Rhododendron* species. The knowledge provided by the local people and the assessment made through Fuelwood Value Index were found to be somewhat matching to each other which revealed that the locally preferred fuelwood species produce a good quality fuelwood (Chettri and Sharma, 2007). According to a study from Central Ethiopia, some of the indigenous high-quality fuelwood species were *Acacia Senegal*, *Acacia robusta*, and *Acacia tortilis* (Bahru *et al.*, 2021).

Arunachal Pradesh provides a large number of fuelwood tree species such as *Castanopsis indica*, *Dysoxylum binectariferum*, *Celtis australis*, *Syzygium cerasoids*, *Mallotus phillipensis*, *Litsea polyantha*, *Bauhinia variegata*, *Magnolia hodgsonii* and other species (Sedai *et al.*, 2016). *Combretum collinum* was reported to be suitable fuelwood species by all the respondents from the Masindi and Nebbi districts of Uganda. For the selection of fuelwood species moisture presence of the wood and the density are significant properties to be taken into consideration compared to calorific value based on the study reported by Ojelel *et al.*, 2015. The study made among the broad-leaved and fruit tree species in Kashmir Valley observed *Robinia pseudoacacia* with the highest FVI value of 948.05 for broad-leaved tree species and *Prunus dulcis* with FVI value of 1067.42 for fruit tree species (Nabi *et al.*, 2017). The investigation of 1-year to 5 years age gradation of fuelwood species *Melia dubia* for the evaluation of fuelwood properties based on the Fuelwood Value index revealed that the 5-year-old fuelwood was with the maximum calorific value, carbon content, and FVI. It was also reported to have minimum moisture content, volatile matter, and ash content (Saravanan *et al.*, 2013). Comparing temperate and tropical

fuelwood species in Garhwal Himalaya, the temperate species are most suitable for fuelwood because of their high density and low ash and nitrogen content. But the species from the tropical part of the Himalayas like *Premna barbata* have the highest value since it has high calorific value and low ash and nitrogen content (Bhatt and Todaria, 1990).

Studies from 6 different markets and 13 villages in Turkey showed 61 wild food plants belonging to 25 families (Polat *et al.*, 2017). The market price of wild fruits in Nagaland varies from market to market as well as from season to season. Some of the fruits sold in the local markets are greatly accepted and in high demand (Khruomo and Deb, 2018). 279 wild edible plants were found in Mizoram and out of these a total of 35 species were found to be sold in the local market (Kar *et al.*, 2013). 47 wild edible plants belonging to 30 families were sold in the local markets of Garo Hills in Meghalaya (Kar *et al.*, 2012). In the Ima market of Manipur, 26 wild fruits and 25 edible animal products were reported to be sold for consumption (Devi *et al.*, 2010).

Plants, fungi as well as animals from the forest not only provide food but also generate income for the communities (Asprilla-Perea and Díaz-Puente). In Indonesia, 18 wild edible animal products were recorded which were consumed for their protein and these include different kinds of insects, fish, birds and mammals (Adi *et al.*, 2020).

20-60 per cent of the total income of the sampled households in Kano, Nigeria comes from Non-Timber Forest Products (Suleiman *et al.*, 2017). Among NTFPs, bush meat contributed the highest income for the forest communities from the remote parts of Central Africa (Endamana *et al.*, 2016). In Southern Meghalaya, income from NTFPs was highest for poor families at 9.89%. It was revealed that 100% of the households depend on the NTFP directly or indirectly. The annual income from NTFPs per household was Rs. 10008 where fruits were the main contributors of Rs. 4800 (Tynsong *et al.*, 2012).

The studies on Non-Timber Forest Products in India as well as in other parts of the world show a great number of advantages to the livelihood of the local people, especially those residing near the forests. There are few studies of NTFPs in Meghalaya and are still very less in parts of Garo Hills so the present study on the life of the ethnic communities and NTFPs in Garo Hills, Meghalaya was done. This study will be of great help and knowledge to the present and future generations.

MATERIALS AND METHODS

3.1. Study area.

The Garo Hills forms the western part of the state of Meghalaya which is densely forested and constitutes the vast source of livelihood to the people living in the region. The district of West Garo Hills in Garo Hills, Meghalaya is the study area for the present research work. West Garo Hills is the place which is inhabited mostly by the ethnic Garo/A'chik communities. The district headquarter of West Garo Hills is Tura, which is the second largest town in Meghalaya after Shillong.

3.1.1. Location.

The district West Garo Hills is situated approximately between the latitudes of 25°34'4.88"N and the longitudes of 90°13'28.02"E (Google Earth). The district is bounded by the East Garo Hills district on the east, the South Garo Hills district on the south-east, the state of Assam on the north and north-west, the South West Garo Hills district on the south west and is bounded internationally by the country of Bangladesh on the south. Most part of the district is hilly areas but some parts bordering Assam and Bangladesh are plains. It has a total area of 3677 sq. km (District Census Handbook, West Garo Hills, 2011). 72 villages from 6 developmental blocks of West Garo Hills were studied for this present research work. The following table shows the location of each village in their respective blocks along with the major ethnic group in the area and its dates of survey and **Fig. 3.1.** also shows the map of West Garo Hills along with the locations of the surveyed villages.

Table 3.1: List of selected villages/ study sites in their respective blocks along with locations, major ethnic group and date of survey.

Sl. No.	Name of the surveyed villages/Study site	Block	Location		Major ethnic group	Surveyed date
			Latitude	Longitude		
1	BaljekAgal	Rongram	25°39'26.33"N	90°21'17.52"E	Garo	28.10.15-30.10.15
2	Dorenggre	Rongram	25°32'7.28"N	90° 9'29.07"E	Garo	29.10.15-31.10.15
3	Bolbokgre	Rongram	25°39'52.58"N	90°22'17.30"E	Garo	3.11.15-

						5.11.15
4	Masumatagre	Rongram	25°32'51.48"N	90°15'44.04"E	Garos	13.11.15-15.11.15
5	Waribok	Rongram	25°36'39.07"N	90°19'12.58"E	Garos	17.11.15-19.11.15
6	Asanang	Rongram	25°36'1.48"N	90°16'25.47"E	Garos	28.1.16-30.1.16
7	Tebronggre	Rongram	25°38'59.74"N	90°15'36.73"E	Garos	20.6.16-22.6.16
8	Rombagre	Rongram	25°33'7.56"N	90°22'44.23"E	Garos	11.10.16-13.10.16
9	Chibragre	Rongram	25°34'56.83"N	90°13'42.42"E	Garos	25.10.16-27.10.16
10	Wakringtonggre	Rongram	25°37'3.14"N	90°23'39.59"E	Garos	29.10.16-31.10.16
11	Chandigre	Rongram	25°32'10.56"N	90°19'32.36"E	Garos	5.11.16-7.11.16
12	Sakalgre	Rongram	25°30'51.65"N	90°22'50.71"E	Garos	9.2.17-11.2.17
13	Balamagre	Gambagre	25°28'42.71"N	90°15'4.21"E	Garos	26.11.15-28.11.15
14	Darengre (Upper/Lower)	Gambagre	25°29'41.09"N	90°16'1.20"E	Garos	8.6.16, 10.6.16, 15.6.16
15	Nengja Bolchugre	Gambagre	25°27'32.76"N	90° 8'18.83"E	Garos	12.7.16, 13.7.16, 14.7.16
16	Chekwatgre	Gambagre	25°26'27.91"N	90°15'15.11"E	Garos	28.11.16-30.11.16
17	Aminda Rangsagre	Gambagre	25°26'26.96"N	90°11'52.95"E	Garos	27.6.17-29.6.17
18	Dagugre/Rongjugre	Gambagre	25°23'51.93"N	90°17'0.76"E	Garos	3.7.17-5.7.17
19	Deblongagre/Dibilonggagre	Gambagre	25°26'28.96"N	90°13'39.85"E	Garos	10.7.17-12.7.17
20	Chigitchakgre	Gambagre	25°24'59.81"N	90°11'38.09"E	Garos	17.7.17-19.7.17
21	Somonpara/Meguagre	Gambagre	25°25'37.06"N	90°10'3.37"E	Garos	3.8.17-5.8.17
22	Babagre	Gambagre	25°23'28.15"N	90° 8'51.71"E	Garos	17.8.17-19.8.17
23	Rongbretgre	Gambagre	25°26'12.59"N	90°15'28.80"E	Garos	22.8.17-24.8.17
24	Gimbilgre	Gambagre	25°29'26.10"N	90°14'45.30"E	Garos	29.8.17-31.8.17
25	Dilsigre	Dadenggre	25°45'15.60"N	90°14'58.78"E	Garos	1.2.16, 3.2.16, 5.2.16
26	Damal asim	Dadenggre	25°44'40.39"N	90°21'13.06"E	Garos	2.2.16-4.2.16
27	Ajrigre	Dadenggre	25°43'25.82"N	90°11'40.15"E	Garos	4.2.16, 8.2.16-10.2.16, 22.11.16
28	Rongchugre	Dadenggre	25°41'53.59"N	90°11'24.31"E	Garos	2.2.17-4.2.17
29	Kalsingre	Dadenggre	25°42'41.67"N	90° 9'31.05"E	Garos	20.2.17-22.2.17
30	Upper Baljek Aduma	Dadenggre	25°45'32.81"N	90°22'24.11"E	Garos	29.11.17-1.12.17
31	Asimgre	Dadenggre	25°46'12.32"N	90°13'20.13"E	Garos	6.12.17-8.12.17

32	Romgre	Dadenggre	25°42'50.16"N	90° 9'11.51"E	Garos	12.12.17-14.12.17
33	Rongkhongre	Dadenggre	25°48'9.28"N	90° 5'42.94"E	Garos	13.12.17-15.12.17
34	Amingokgre	Dadenggre	25°41'19.88"N	90°15'3.86"E	Garos	21.12.17-23.12.17
35	Sategre	Dadenggre	25°43'33.80"N	90°13'39.88"E	Garos	28.12.17-30.12.17
36	Dallanggre	Dadenggre	25°43'33.24"N	90°15'35.55"E	Garos	8.1.18-10.1.18
37	Selsella Singimari	Selsella	25°41'26.94"N	90° 0'48.88"E	Garos	21.1.17-23.1.17, 28.1.17
38	Damjonggre	Selsella	25°40'28.83"N	90° 4'34.43"E	Garos	5.9.17-7.9.17
39	Boldokagre	Selsella	25°40'58.67"N	90° 5'13.21"E	Garos	6.9.17-8.9.17
40	Bolsalgre	Selsella	25°40'1.55"N	90° 2'1.40"E	Garos	13.9.17-15.9.17
41	Nawalgre	Selsella	25°40'4.32"N	90° 2'41.61"E	Garos	16.9.17-18.9.17
42	Nokatgre	Selsella	25°41'36.62"N	90° 0'45.50"E	Garos	27.1.18-29.1.18
43	Apalgre	Selsella	25°41'14.67"N	90° 0'54.47"E	Garos	1.2.18-3.2.18
44	Mandagre	Selsella	25°43'19.02"N	90° 5'9.43"E	Garos	6.2.18-8.2.18
45	Simbukolgre (Milsigre)	Selsella	25°40'55.32"N	90° 1'53.54"E	Garos	7.5.18-9.5.18
46	Damalgre	Selsella	25°40'23.08"N	90° 1'19.84"E	Garos	8.5.18-10.5.18
47	Wajadagre	Selsella	25°42'19.00"N	90° 5'54.14"E	Garos	14.5.18-16.5.18
48	Indrapara	Selsella	25°42'33.28"N	90° 5'30.34"E	Garos	31.5.18-2.6.18
49	Bogadol	Tikrikilla	25°55'42.38"N	90°10'34.00"E	Garos	24.7.17-26.7.17
50	Tikrikilla A'chik gittim	Tikrikilla	25°56'54.93"N	90°12'48.47"E	Garos	25.7.17-27.7.17
51	Borodoldonga	Tikrikilla	25°56'9.51"N	90°17'56.19"E	Boros	6.3.18-8.3.18
52	Lower Khamari (Garos)	Tikrikilla	25°56'42.63"N	90° 9'36.76"E	Garos	7.3.18-9.3.18
53	Raksamgre	Tikrikilla	25°54'44.70"N	90°18'2.44"E	Garos	10.3.18-12.3.18
54	Kathalbari	Tikrikilla	25°56'59.46"N	90°12'25.58"E	Boros and Hajong	13.3.18-15.3.18
55	Kanchonkona	Tikrikilla	25°56'4.77"N	90°13'33.52"E	Garos	14.3.18-16.3.18
56	Lower Damachiga	Tikrikilla	25°55'48.20"N	90°15'34.08"E	Garos	15.3.18-17.3.18
57	Rongmali	Tikrikilla	25°54'46.08"N	90°23'50.90"E	Garos and Boro	17.3.18-19.3.18
58	Dakop	Tikrikilla	25°55'38.43"N	90°13'49.30"E	Garos	20.3.18-22.3.18
59	Chokdenggre	Tikrikilla	25°55'52.60"N	90°16'0.16"E	Garos	21.3.18-23.3.18
60	Jengrip	Tikrikilla	25°55'57.28"N	90°12'6.34"E	Garos	22.3.18-24.3.18
61	Kherapara songma	Dalu	25°20'5.27"N	90°12'10.26"E	Garos	20.6.17-22.6.17

62	Rangdapara	Dalu	25°18'37.56"N	90°16'50.97"E	Garos	24.1.18-26.1.18
63	Josipara (Christian, Songsarek and Songma)	Dalu	25°15'28.89"N	90°13'35.55"E	Garos	14.2.18-16.2.18
64	Magupara (Nokmagittim)	Dalu	25°15'39.98"N	90° 9'29.16"E	Garos	15.2.18-17.2.18
65	Kujikura	Dalu	25°14'37.43"N	90°15'46.64"E	Garos	15.2.18, 16.2.18, 17.2.18
66	Songmagre	Dalu	25°18'15.05"N	90°16'23.21"E	Garos	10.4.18-12.4.18
67	Rengsipara	Dalu	25°18'14.41"N	90°14'48.75"E	Garos	28.5.18-30.5.18
68	Baburambil	Dalu	25°15'53.77"N	90°17'31.28"E	Garos	5.6.18, 6.6.18, 7.6.18
69	Dapgre	Dalu	25°16'1.17"N	90°15'35.40"E	Garos	6.6.18-8.6.18
70	Kongtokpara	Dalu	25°14'52.42"N	90°17'23.56"E	Garos	6.6.18-8.6.18
71	Dalugaon	Dalu	25°14'32.09"N	90°14'29.29"E	Garos and Hajong	7.6.18, 8.6.18, 9.6.18
72	Karonggre	Dalu	25°17'44.16"N	90°14'50.49"E	Garos	7.6.18-9.6.18

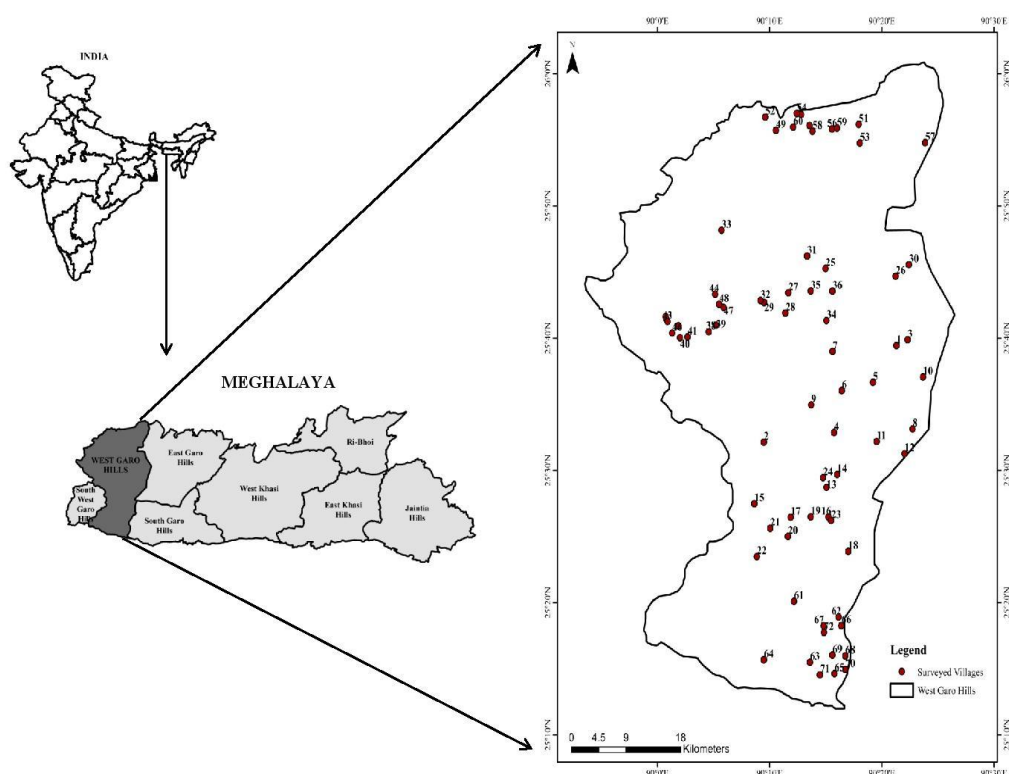


Fig. 3.1. Map showing the locations of West Garo Hills and the surveyed villages.

3.1.2. Climate.

The South-West monsoon and seasonal winds govern the climate of West Garo Hills. For most part of the year the district experiences somewhat high temperature (Inventory of Agriculture, 2015). Cool to quite cold winter is for a short time usually from the end of November to February. According to Automatic Weather Station, KVK, Tura (2014), the maximum temperature reached up to 33.2°C during the month of April and minimum temperature of 12.89°C in the month of February. Spring season in this area is during mid-February to March. Summer starts from April and ends during the month of June. Monsoon or rainy season is normally from June to September with average rainfall of 2800-3300 mm. Autumn season is just for a little while in the month of October and the beginning of November.

3.1.3. The Forest.

Meghalaya has a forest cover of 17,118.79 sq. km. The forest of West Garo Hills district has the second highest total forest cover in Meghalaya state after West Khasi Hills district. According to Forest Survey of India, 2019 assessment, the district West Garo Hills has a forest cover of 2,860.22 sq. km which is 77.79% of the district's geographical area. The district has 1,260.41 sq. km of Moderately Dense Forest (MDF) and 1,599.81 sq. km of Open Forest (OF). Forest cover in the district has increased by 23.22 sq. km as compared to the assessment reported previously in ISFR 2017.

The district forest area is categorised into Reserved Forest and Protected Forest. Hollaidanga Beat-Dibru Hills and Nokrek Biosphere Reserve comes under Reserved Forest whereas Tura Peak catchment area and Botanical Garden belongs to Protected Forest (Inventory of Agriculture, 2015).

The forest of West Garo Hills produce many timber and Non-Timber Forest Products. Some of the common plant species found in the forest of West Garo Hills are *Toona ciliata*, *Schima wallichii*, *Shorea robusta*, *Gmelina arborea*, *Callicarpa arborea*, *Bauhinia variegata* and many more. Animals like elephants, deer, slow loris, wild cat, hoolock gibbon etc. are present in the forest.

3.1.4. The Tribes.

Majority of the original inhabitants of West Garo Hills are the Garos and most of the surveyed villages in the present study are the Garo villages except for very few villages occupied by Bodos, Hajongs and few other tribes.

3.1.4.1. The Garos or A·chiks.

The Garos are originally from Tibet and they belong to the Tibeto-Burman race (Sangma, 2012 and Sangma, 2015). They migrated to the present Garo Hills around 1000 BC (Sangma, 2015).

In view during the field visit, the way of life of Garos shows that they are helpful, generous, social and cooperative. They are friendly and pleasant in their manner (Playfair, 2016). It is also mentioned that the Garos are cheerful, peace-loving and hospitable people (Meghalaya Tourism). They are also simple and trusting (Sangma, 2015). The Garos possess the Mongolian type of feature (Playfair, 2016). The Garos speak Garo language and they had their own scripts and alphabet letters in the past but during their journey south-eastwards, they ate it because of their hunger (Sangma, 2015). So the English alphabet letters are being used in later days. According to the geographical location and dialect, the sub-divisions of Garo tribe are Abengs, Akawes, Kochus, Atiagas, Matabengs, Chisaks, Matchis, Duals, Chiboks, Rugas, Ganchings and Atongs (Marak, 2019).

The Garo community practice the unique matrilineal system where the youngest daughter lives and look after the parents (Sangma, 2015). After marriage, the husband or the groom has to stay with the wife and the children inherit the mother's title (Mawkhroh, 2013).

The popular festival of the Garos is called Wangala Dance or Hundred Drums Wangala Festival where many kinds of dances are performed during this festival. Dancing which is accompanied by music is a part of their life (Sangma, 2012). Traditional musical instruments of Garos include drums, bamboo and horn wind instruments, metal gongs and cymbals. Tree species usually used for making drums is locally called 'Gimbil'. Its scientific name is *Careya arborea*. The heads of the drums are made of cowhide. Most commonly used drum is called 'Dama'. Other drums include kram, nadik and nagra. Trumpets played along with drums are adil

and singga and flutes includes otokra, ilongma, bangsi, imbingi and gongmina or Jew's Harp. Two kinds of cymbals used by them are kakwa and nenggilsil. Besides, Rangs or gongs are used as musical instruments for various purposes (Playfair, 2016 and Sangma, 2012). The weapons used by the Garos are the two-edged sword called Mil'am, two kinds of shields called Sepi and Danil and a spear. Bows and arrows are also used by them. Daos or choppers called Atte, Attema (a bigger size and shape than ate) and an axe called Rua are also being used by the tribe. The traditional dress of Garo men is called Gando and women dress is called Re'king. Nowadays, the dress called Dakmanda is popular among the Garo women. Ornaments worn by the Garos are nadongbi or otongga, nadirong, natapsi, jaksan or bangles, ripok or necklaces, jaksil or elbow ring, penta, sengki and pilni or sachak-maldong. Different kinds of games and sports are also played by the Garos. Some of them are wa'ponkal'a, Garomakalpala, sue goa, ja'kolkal'a etc. (Sangma, 2012).

Earlier, the Garos were spirit worshippers where they believed in supreme deity called Tatara Rabuga (Sangma, 2015). Presently, majority of the Garos are Christians with a percentage of 95.86 % (https://en.wikipedia.org/wiki/Christianity_in_Meghalaya).

3.1.4.2. The Hajongs.

The Hajong tribe belongs to a small community inhabiting the plain areas of West Garo Hills. They are also found in some parts of Assam, Arunachal Pradesh, and Bangladesh. They belong to the Mongoloid race and the language they speak is a part of Indo-Aryan Linguistic family. (Devi, 2020 and Sonowal, 2014). They are also considered as ancient tribal forest community and males mainly collect the forest resources for their livelihood (Rana *et al.*, 2009).

3.1.4.3. The Bodos.

The Bodo tribe also belongs to a small community in the plain parts of West Garo Hills. Some groups of Bodo tribe lived in Assam, Burma, Bangladesh, Sikkim and Bhutan. The real root of Assamese culture is from Bodos (Kalita, 2019). The language spoken by them is Bodo which belong to the Sino-Tibetan language group and they follow the Batho religion. Some of the clans of Bodo tribe are Ramchiary, Mosahary, Narzary, Basumatary, Borgoyary etc. (Tripathy, 2020).

3.1.5. Agriculture.

Agriculture practices by the ethnic communities of West Garo Hills are mainly shifting cultivation and crop plantations. Some of the plantation crops which produce income for the villagers are areca nut, cashew nut, rubber, tea, rice etc. Livestock is also a part of their livelihood.

3.2. Methodology.

Methodology for the present study includes the following:

3.2.1. Field survey.

Field survey was done during October, 2015 to June, 2018. Data based on socio-economic condition and utilization of NTFPs was collected through house to house interview with the villagers using pre-tested semi structured questionnaire as well as group discussions in local dialect. Techniques like transect walks and preference ranking were also used. 72 villages from West Garo Hills district were surveyed where 17-30 households were selected from each village which comes to a total of 1783 households. The information gathered was again crosschecked with all the other selected villages. The study was carried out to understand the people's dependence on Non-Timber Forest Products with special emphasis on fuelwood consumption pattern.

3.2.2. Collection, processing, and preparation of plant specimens for herbarium.

Collection of plant specimens was done during the field work as far as possible. Some community forests were also explored for the collection of plant specimens. Thorough studies on the nature of the plants, its distribution and their phenotype were recorded during the field work. The plant specimens that were collected from different study areas and forests were tagged immediately and pressed in newspapers at the spot or collected in polythene bags and pressed after leaving the site. The field characters and locality were also recorded.

Processing of plant specimens was done by pressing between the newspapers or absorbents by spreading out all the parts of the plants such as leaves, fruits, or flowers etc. Regular checking and changing of newspapers or absorbents were done

till the plant is properly dried. Chemical preservatives like formaldehyde were used for poisoning some plants.

After drying, the plant specimens were mounted for permanent record on herbarium sheet of the standard size 29cm×45cm and paste a label (10cm×12cm) on the lower right hand corner.

3.2.3. Identification, preservation, and documentation of plant specimens.

Identification of majority of plant specimens were done in Botanical Survey of India (BSI), Shillong. Some few plants were identified with the help of books authored by Page *et al.* 2022 (Trees of Arunachal Pradesh), Sawmliana, 2013 (The Book of Mizoram Plants), Changkija and Gurung, 2017 (Flora of Nagaland Volume I), Kanjilal, 2005 (Flora of Assam, Volume III) and some journals and published thesis. All the identified plants were rechecked with Plant List/World Flora Online. The identified plant specimens mounted in herbarium sheet was submitted and preserved in Mizoram University Herbarium. The plants included in the present study were supported with photographs.

3.2.4. Identification of animal species.

Animal species were identified and documented with the help of some books, Avibase-Birds' Checklist of the world as well as by some local experts.

3.2.5. Consumption pattern of fuelwood.

For fuelwood consumption study, 10 households from each village were randomly selected. In order to know/study the fuelwood consumption by the households for a day, weight survey method was used for a period of 24 hours. The household head or the household member who usually used fuelwood mostly was told to monitor the fuelwood consumption/utilization for the particular day. The fuelwood measured for them to use for a day was 30 kg. It was measured by using suspension weighing scale. They were being instructed to burn or use the fuelwood only from the 30 kg bundle measured for them. The fuelwood was measured and kept without using the first day of survey and was requested to use the measured fuelwood the next day in order to check the exact per day consumption. In that way, the person using the measured fuelwood will not be confused to use for one day. The remaining

measured fuelwood after one day was requested to keep separately for measuring again. The other day, each household were visited again and the fuelwood which were remaining was weighed again. The remaining fuelwood bundle was deducted from the original 30 kg fuelwood bundle to calculate the fuelwood consumption per day per household.

For the calculation of per capita per day consumption, the following formula was used:

Per capita per day fuelwood consumption (kg/person/day),

$$= \frac{\text{Fuelwood consumption in a day (kg) per village (kg/village/day)}}{\text{Total no. of surveyed population for fuelwood consumption (Tpop)}}$$

The daily consumption in each village is calculated by using the following formula-

Daily consumption,

= Fuelwood consumption in a day (kg) per village (kg/village/day) × Total no. of household surveyed for fuelwood consumption (*hh*).

The weight of one bundle of fuelwood in kg (*Wt.b*) was taken as 5 kg for the present study.

The average number of days one person goes with one bundle (*Db*) is calculated by dividing weight of one bundle by per capita per day consumption.

Per capita use in tonnes/cap/year for fuelwood was determined by using the following formula (Nibbering *et al.* 1980):

$$Pcap = \frac{365 \text{ days} \times hh \times Wt.b}{Db \times Tpop}$$

Where:

Pcap = per capita use (tonnes/cap/year).

hh = Total no. of household surveyed for fuelwood consumption.

Wt.b = Weight of one bundle of fuelwood (kg).

Db = Average no. of days' one person goes with one bundle.

Tpop = Total no. of surveyed population for fuelwood consumption.

3.2.6. Fuelwood preference ranking.

Ranking of preferred fuelwood was done by asking each household their preferred fuelwood and the reasons for preferring the particular species. Some households responded more than one fuelwood species along with the reasons for each species. The point given for each household was 1 each and the total points of all the households' responses for fuelwood preference per species were used for ranking. Among the reasons the villagers provided, 20 fuelwood quality criteria were produced. It includes easily available/plenty, easy to burn/fast burning, easy to split/cut, fragrance, fast drying, good embers, flame not smoky, non-sparking, light weight when dry, long burning, good charcoal, good ash, good in burning/hot flame/bright flame, long storage/good for storage, not easily attack by insects, strong wood, using since long time, good to burn when still fresh, less ash and others.

3.2.7. Determination of Fuelwood Value Index (FVI).

Wood samples were collected from the forests of Wests Garo Hills for determining the Fuelwood Value Index. A total of 22 locally preferred and common tree species were selected for the study. Branches of each species measuring 4-5 cm long and >10 cm diameter were collected. The wood samples were divided into 3 replicates. The species selected and collected for laboratory work were *Albizia odoratissima* (Lf) Benth. (siso), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Bauhinia variegata* L. (Me'gong), *Callicarpa arborea* Roxb. (Makanchi/Kimbal), *Careya arborea* Roxb. (Gimbil), *Croton joufra* Roxb. (Matmi), *Dalbergia stipulacea* Roxb. (Palwang), *Dillenia pentagyna* Roxb. (Agatchi), *Eurya acuminata* DC. (Cha'misi), *Ficus hispida* L.f. (Sa'kap/Kan'tap), *Gmelina arborea* Roxb. (Gambare), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Mallotus tetracoccus* (Roxb.) Kurz (A'tipra), *Rhus chinensis* Mill. (Kitma), *Schima wallichii* Choisy (Boldak), *Shorea robusta* Gaertn. (Bolsal), *Syzygium cumini* (L.) Skeels (Chambu), *Toona ciliata* M.Roem. (Bolbret), *Trema orientalis* (L.) Blume (Pakkram), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), and *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa).

Wood moisture content percentage was determined by comparing the weight of fresh wood sample of each species against the dry wood samples. In order to measure the weight of dry wood samples, it was dried in hot air oven at 80°C for 24 hours. For calculation of moisture content percentage, the following formula was used,

$$\frac{\text{Fresh weight} - \text{dry weight}}{\text{Fresh weight}} \times 100 \%$$

Wood density (g/cc) was calculated by water displacement method using the dried wood samples. The volume of water was calculated by subtracting initial water level from final water level.

For determining ash content percentage, the wood samples were again dried, cut into small pieces and grinded in electric grinder, and passed through 2mm mesh sieve. 2 grams of each wood sample was then burnt in a muffle furnace at 550°C for 3 hours. The following calculations were made for ash content,

Ash value of 2 gm of wood sample = (weight of crucible with ash-weight of empty crucible).

So ash content (%) was determined by the following formula,

$$\frac{\text{Ash value of 2 gm}}{2} \times 100$$

The biomass-ash ratios were calculated by dividing dry weights (2gms) by ash weights.

Calorific value (KJ/g) for all the wood samples was estimated by Auto bomb calorimeter at Department of Energy-Tezpur University. The estimation of Fuelwood Value Index was estimated by the following formula of Purohit and Nautiyal, 1987.

$$FVI = \frac{\text{Calorific value } \left(\frac{kJ}{g}\right) \times \text{density } \left(\frac{g}{cm^3}\right)}{\text{ash content } \left(\frac{g}{g}\right) \times \text{moisture content } \left(\frac{g}{g}\right)}$$

3.2.8. Market survey.

In order to verify the availability of NTFPs in the local markets, four important markets from West Garo Hills were surveyed. The surveyed local markets include Tura bazaar, Rongram bazaar, Najing bazaar, and Tikrikilla bazaar. Information on NTFP product sold, prices of NTFPs, market demand etc. were recorded during the survey.

3.2.9. Statistical analysis.

For statistical analysis, Microsoft excels and SPSS were used and in order to compare the selected variables, Pearson Correlation coefficient were used as well as One-Way ANOVA to know the effect of the relation.

4.1. Socio-economic profile.

The socio-economic condition of the ethnic communities of the present study is described as follows:

4.1.1. Demographic profile of the studied villages.

The number of households surveyed, gender of the respondent, population, average family size and literacy percentage surveyed of the 72 studied villages based on the actual pre-tested semi-structured interview from October, 2015- June, 2018 is shown in **Table 4.1**. It shows that the majority of the surveyed households were 25 in number but in some cases like Balamagre village of Gambegre block showed the highest number of households surveyed with 30 numbers and villages like Darrengre of Gambegre block, Damalgre of Selsella block, Borodoldonga and Lower Damachiga of Tikrikilla block as well as Rangdapara and Kongtokpara villages of Dalu block included 26 households each. Babagre of Gambegre block and Raksamgre of Tikrikilla block included 24 households each whereas villages like Dorrengre and Sakalgre of Rongram block and Kalsingre of Dadenggre block has 19 households each in the village. Songmagre village of Dalu block has the lowest number of households with 17 in total. Overall, female respondents of a total of 1003 show more numbers compared to male respondents of 786 in the present study. Male respondents were highest in Baljek agal and Masumatagre villages of Rongram block with 22 respondents each whereas Kanchonkona and Chokdenggre villages of Tikrikilla villages show 22 respondents each being females. A total of 21 villages were reported to have a higher number of male respondents and a total of 51 villages with a higher number of female respondents. The population of males and females shows that females were comparatively more with 5149 population than the male population of 5085. Balamagre village of Gambegre block has the highest population surveyed with a total of 191 villagers from 30 households followed by Mandagre village with 179 numbers of villagers from 25 households and Kujikura village with 168 villagers from 25 households. Kalsingre village has the lowest population with a total of 88

villagers from 19 households. Dorenggre village of Rongram block, Bolsalgre and Mandagre villages of Selsella block, as well as Josipara and Kujikura villages of Dalu block, was recorded with a largest average family size of 7 and the smallest average family size of 4 in Simbukolgre village of Selsella block and Rongmali village of Tikrikilla block. The overall average family size of the present study is 6. The literacy rate was highest in Nokatgre village of Selsella block with 93.08% followed by Dapgre of Dalu block with 91.30% and Bolsalgre village of Selsella block with 90.24%. The village with the highest literacy % had more of secondary education followed by higher secondary and upper primary. There are some who were in undergraduate education and other educations as well. The lowest literacy rate was in Bolbokgre village with only 41.35% where illiteracy is more and only a few were recorded for lower and upper primary education and very few for secondary, higher secondary and other education. To a large extent, the literacy percentage of the presently studied villages comes to 70.88% which is a little lower than the state's literacy percentage of 74.43% (Census, 2011).

4.1.2. Literacy.

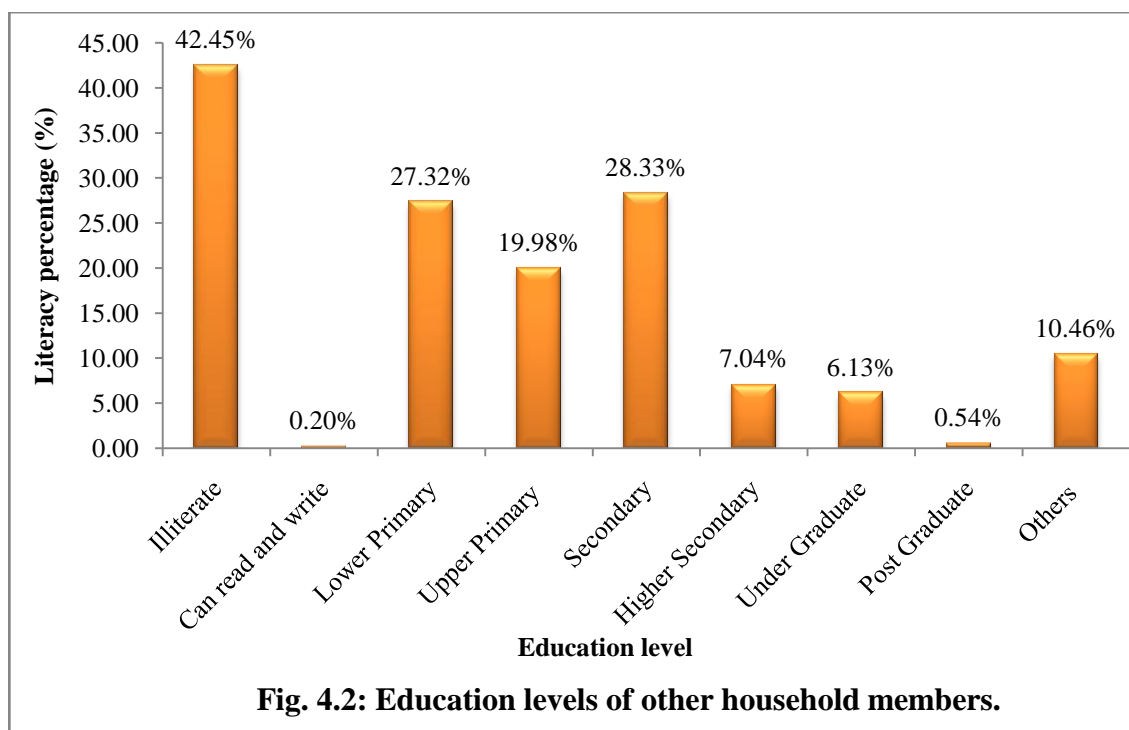
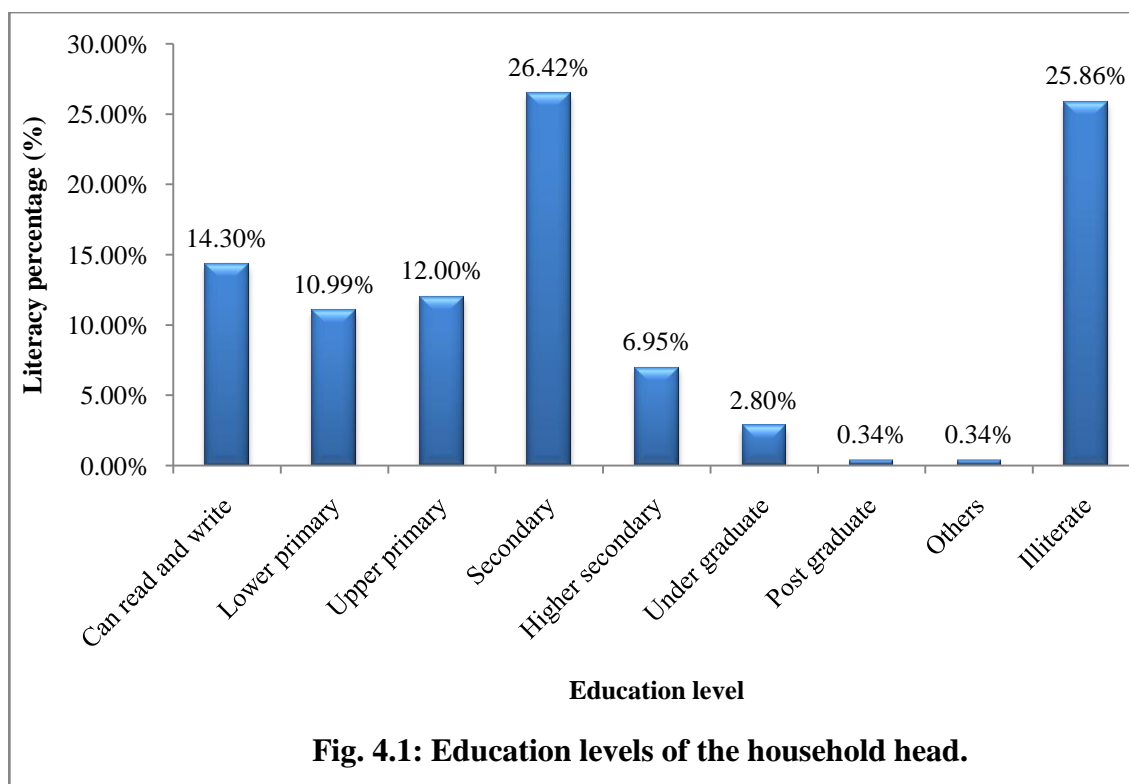
Fig. 4.1. shows the education levels of the head of a household in the studied villages where the highest literacy percentage of 26.42 studied upto secondary level followed by those who can read and write (14.30%), upper primary (12.00%), lower primary (10.99%), higher secondary (6.95%), undergraduate (2.80%), postgraduate (0.34%) and others like diploma in engineering etc. with 0.34%. Household head illiteracy in the present surveyed villages comes to around 25.86%. **Fig. 4.2.** is the bar graph showing the education level of other members of the household where the highest percentage was recorded for illiteracy at 42.45%. Those household members recorded for the highest literacy percentage belongs to those who were in secondary level with 28.33% followed by lower primary (27.32%), upper primary (19.98%), others like diplomas in Computer Science, GNM/ANM/Nursing, Civil engineering, DIET, M.Phil, Ph.D. and lower classes (Nursery and Kindergarten) with 10.46%, higher secondary (7.04%), undergraduate (6.13%), postgraduate (0.54%), and can read and write with 0.20%.

Table 4.1.: Demographic profile of the studied villages.

Sl. No.	Name of the surveyed villages	Block	No. of households surveyed	Gender of the respondent		Population			Average family size	Literacy surveyed (%)
				Male	Female	Male	Female	Total		
1	Baljek Agal	Rongram	25	22	3	73	87	160	6	67.50
2	Dorenggre	Rongram	19	15	4	61	63	124	7	57.26
3	Bolbokgre	Rongram	25	21	4	61	72	133	5	41.35
4	Masumatagre	Rongram	25	22	3	76	75	151	6	62.91
5	Waribok	Rongram	25	11	14	71	73	144	6	52.08
6	Asanang	Rongram	25	13	12	68	84	152	6	59.21
7	Tebronggre	Rongram	25	14	11	69	75	144	6	68.06
8	Rombagre	Rongram	25	8	17	74	82	156	6	53.85
9	Chibragre	Rongram	25	15	10	72	65	137	5	57.66
10	Wakringtonggre	Rongram	25	14	11	65	73	138	6	64.49
11	Chandigre	Rongram	25	12	13	82	79	161	6	65.84
12	Sakalgre	Rongram	19	11	8	58	60	118	6	54.24
13	Balamagre	Gambegre	30	22	9	99	92	191	6	57.59
14	Darrengre (Upper/Lower)	Gambegre	26	9	17	86	80	166	6	66.27
15	Nengja Bolchugre	Gambegre	25	10	15	73	77	150	6	57.33
16	ChekWatgre	Gambegre	25	11	14	64	64	128	5	71.09
17	Aminda Rangsagre	Gambegre	25	7	18	71	74	145	6	73.10
18	Dagugre/ Rongjugre	Gambegre	25	12	14	68	71	139	6	74.10
19	Deblongagre/ Dibilonggagre	Gambegre	25	6	19	80	77	157	6	80.25
20	Chigitchakgre	Gambegre	25	8	17	75	83	158	6	74.05
21	Somonpara/ Meguagre	Gambegre	25	14	11	74	76	150	6	81.33
22	Babagre	Gambegre	24	6	18	57	74	131	5	83.97
23	Rongbretgre	Gambegre	25	12	13	58	67	125	5	69.60
24	Gimbilgre	Gambegre	25	8	17	82	77	159	6	73.58
25	Dilsigre	Dadenggre	25	12	13	77	84	161	6	63.98
26	Damal asim	Dadenggre	25	11	15	85	75	160	6	52.50

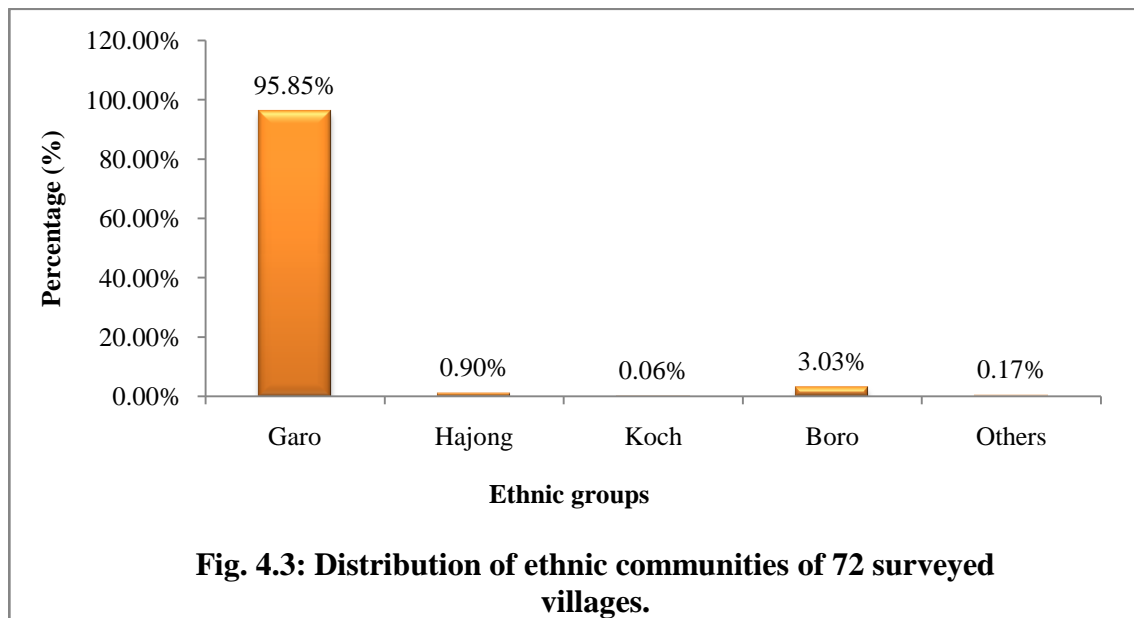
27	Ajrigre	Dadenggre	25	8	17	77	73	150	6	66.67
28	Rongchugre	Dadenggre	25	11	14	82	65	147	6	59.18
29	Kalsingre	Dadenggre	19	5	14	40	48	88	5	55.68
30	Upper Baljek Aduma	Dadenggre	25	19	6	62	59	121	5	80.99
31	Asimgre	Dadenggre	25	6	19	71	59	130	5	64.62
32	Romgre	Dadenggre	25	14	11	62	73	135	5	61.48
33	Rongkongre	Dadenggre	25	11	14	52	71	123	5	64.23
34	Amingokgre	Dadenggre	25	15	10	63	62	125	5	70.40
35	Sategre	Dadenggre	25	13	12	58	71	129	5	72.87
36	Dallanggre	Dadenggre	25	12	13	68	58	126	5	62.70
37	Selsella Singimari	Selsella	25	10	15	79	71	156	6	60.26
38	Damjonggre	Selsella	25	16	9	76	74	150	6	80.67
39	Boldokagre	Selsella	25	10	15	74	68	142	6	61.27
40	Bolsalgre	Selsella	25	9	16	81	83	164	7	90.24
41	Nawalgre	Selsella	25	18	8	77	72	149	6	72.48
42	Nokatgre	Selsella	25	11	14	64	66	130	5	93.08
43	Apalgre	Selsella	25	11	14	74	82	156	6	86.54
44	Mandagre	Selsella	25	10	15	83	96	179	7	80.45
45	Simbukolgre (Milsigre)	Selsella	25	8	17	56	49	105	4	65.71
46	Damalgre	Selsella	26	11	15	75	87	162	6	85.19
47	Wajadagre	Selsella	25	7	18	65	55	120	5	62.50
48	Indrapara	Selsella	25	7	19	65	71	136	5	76.47
49	Bogadol	Tikrikilla	25	7	18	66	77	143	6	81.82
50	Tikrikilla A'chik gittim	Tikrikilla	25	10	15	61	69	130	5	84.62
51	Borolddonga	Tikrikilla	26	12	15	73	64	137	5	73.72
52	Lower Khamari (Garo)	Tikrikilla	25	5	20	62	75	137	5	75.91
53	Raksamgre	Tikrikilla	24	17	7	52	68	120	5	41.67
54	Kathalbari	Tikrikilla	25	9	16	61	66	127	5	78.74
55	Kanchonkona	Tikrikilla	25	3	22	68	69	137	5	72.99
56	Lower Damachiga	Tikrikilla	26	14	12	83	74	157	6	74.52
57	Rongmali	Tikrikilla	25	9	16	56	56	112	4	74.11
58	Dakop	Tikrikilla	25	6	19	73	72	145	6	72.41

59	Chokdenggre	Tikrikilla	25	3	22	83	71	154	6	82.47
60	Jengrip	Tikrikilla	25	10	15	73	67	140	6	76.43
61	Kherapara songma	Dalu	25	11	14	69	81	150	6	66.67
62	Rangdapara	Dalu	26	11	15	79	69	148	6	74.32
63	Josipara (Christian, Songsarek and Songma)	Dalu	25	13	12	86	78	164	7	82.32
64	Magupara (Nokma gittim)	Dalu	25	11	14	81	73	154	6	73.38
65	Kujikura	Dalu	25	8	17	87	81	168	7	88.10
66	Songmagre	Dalu	17	12	5	47	46	93	5	69.89
67	Rengsipara	Dalu	25	9	16	68	66	134	5	81.34
68	Baburambil	Dalu	25	8	17	86	74	160	6	72.50
69	Dapgre	Dalu	25	6	19	74	87	161	6	91.30
70	Kongtokpara	Dalu	26	8	18	86	74	160	6	76.25
71	Dalugaon	Dalu	25	7	18	63	58	121	5	81.82
72	Karonggre	Dalu	25	9	16	65	62	127	5	80.31
Total			1783	786	1003	5085	5149	10240	6	70.88



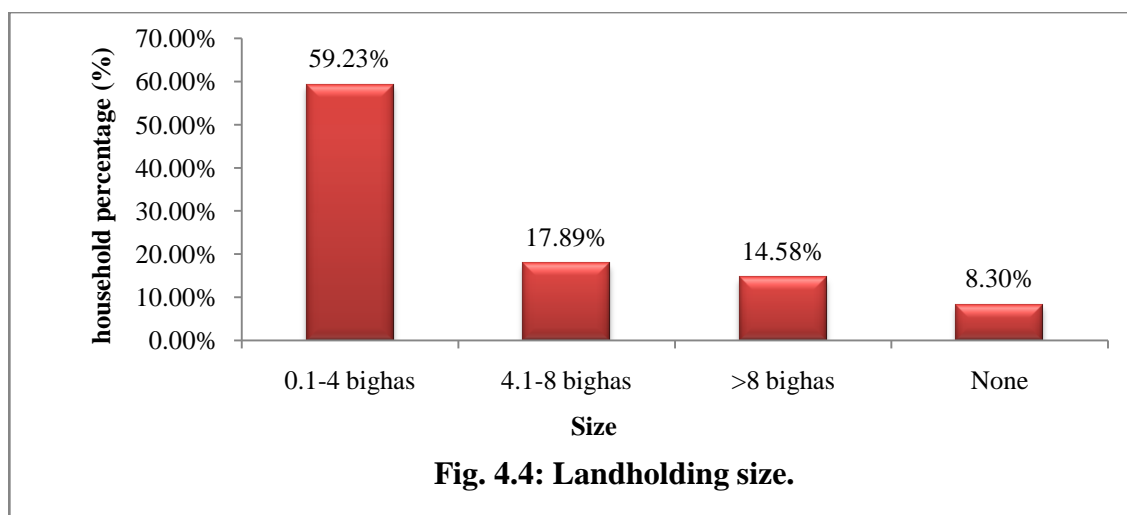
4.1.3. Ethnic communities.

Ethnic communities residing in West Garo Hills, Meghalaya are Garos/A'chiks in most parts. Out of the 72 villages surveyed for the present study, 95.85% belong to the Garo tribe community whereas only 3.03% belong to the Boro tribe community which is followed by a lower percentage of the Hajong community (0.90%), others communities which includes Assamese and Rabha with (0.17%), and Koch community with only 0.06% (**Fig. 4.3.**).



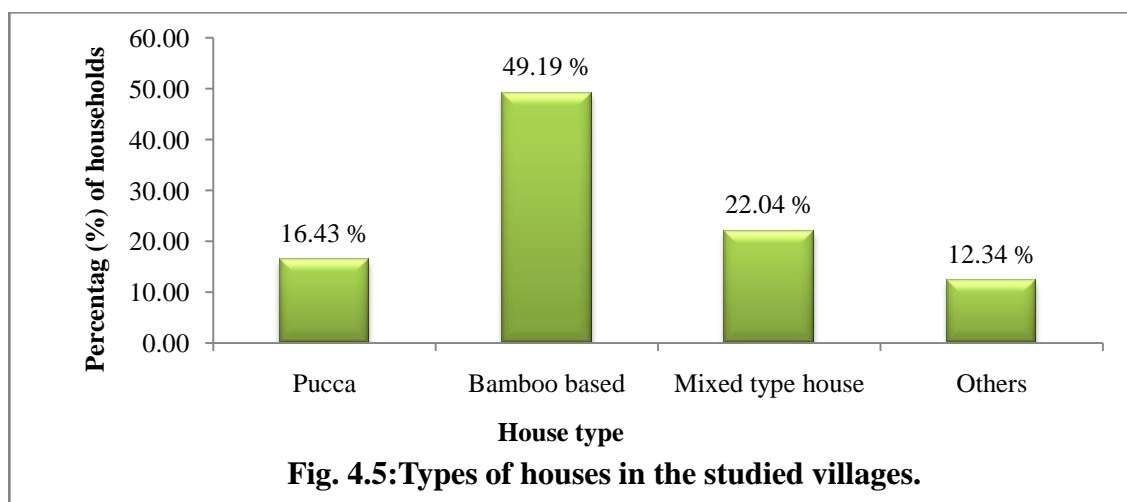
4.1.4. Landholding size.

In the present study, land holding size is measured in bighas where 1 bigha is equal to 0.13 hectares or 1 bigha is equal to 0.33 acres (District Statistical Handbook, 2011). The land holding size for the present study is grouped into 0.1-4 bighas, 4.1-8 bighas, >8 bighas and none for those who don't own the land. The households who own land of 0.1-4 bighas showed the highest percentage of 59.23% and those having a land holding size of 4.1-8 bighas showed 17.89%, and household with land area >8 bighas was recorded with 14.58%. 8.30% of households did not own land (**Fig: 4.4**).



4.1.5. House type.

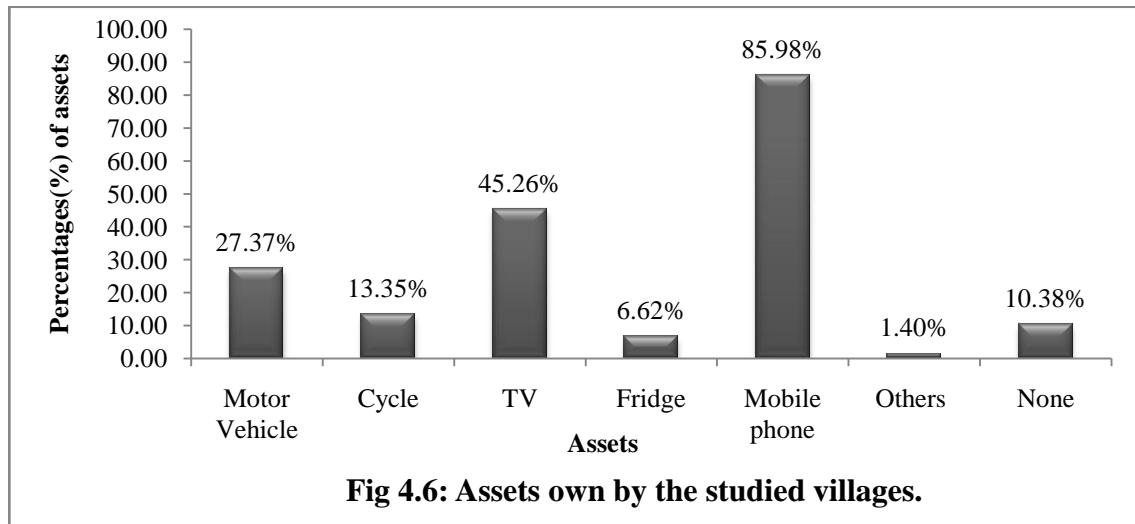
Fig. 4.5. shows the overall types of houses in the studied villages with bamboo-based houses being the highest percentage at 49.19, followed by mixed-type houses at 22.04%, pucca houses at 16.43%, and others (wooden, mud, tin, etc.) with 12.34%.



4.1.6. Assets.

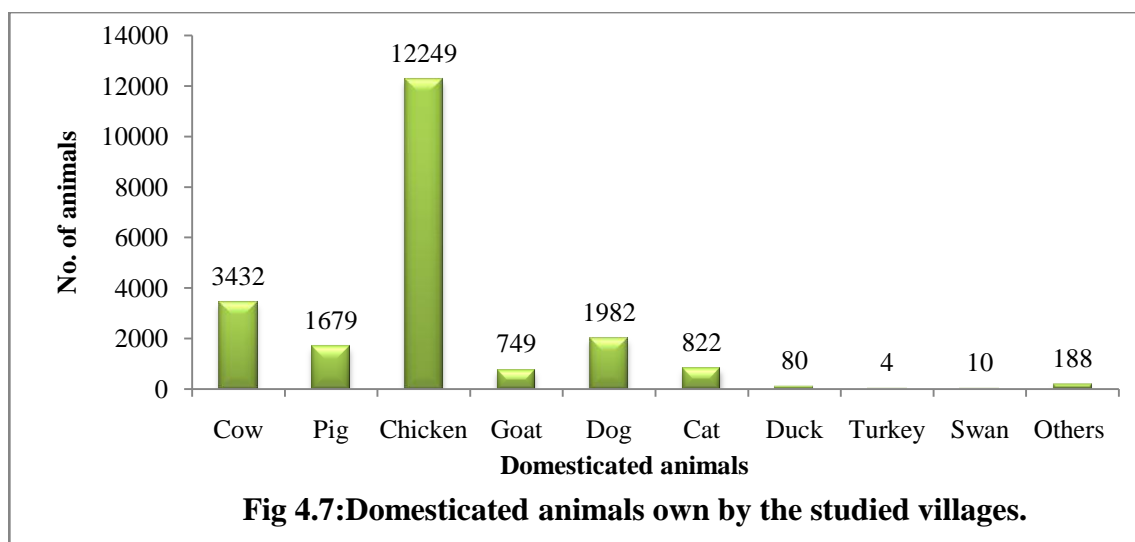
From the survey, it has been found out that all the villages have more mobile phones compared to the other assets. It has been recorded that Tikrikilla A'chik gittim village has the highest assets, followed by Kathalbari and Lower Dama chiga villages of Tikrikilla block. Sakalgre village of Rongram block and Songmagre village of Dalu block has the least assets including a few mobile phones and only 1 television in Sakalgre village with

only mobile phones in Songmagre village. The overall assets recorded from the present study showed that mobile phone user households were maximum with 85.98% whereas television owners with 45.26%, motor vehicle (27.37%), cycle (13.35%), fridge (6.62%) and others (Computer/Laptop, tractor, Rice mill machine, Radio, Tela (Cart) with only 1.40%. About 10.38% of households did not own any assets (**Fig. 4.6.**).



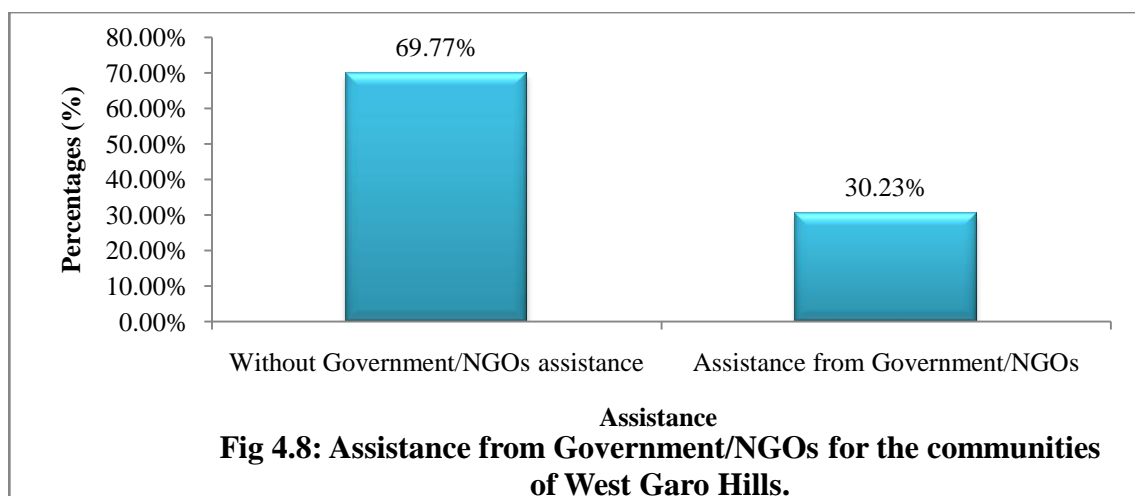
4.1.7. Domesticated animals.

Domesticated animals were also a part of the villagers' livelihood. Among the studied villages, Mandagre village was recorded with the highest number of domesticated animals with a total of 959 which were followed by Apalgre village with a total of 574 domesticated animals and the least domesticated animals of a total of 115 in Gimbilgre village. A maximum number of domesticated animals was recorded for Chicken (12249), followed by a cow (3432), dog (1982), pig (1679), cat (822), goat (749), and others (188) which includes animals like Rabbit, wild birds, Parrot, Stingless bee, Owl, Honey bee, Tortoise, Sheep, Love bird, Myna, fish, White mouse, etc., duck (80), swan (10), and 4 turkeys (**Fig. 4.7.**).



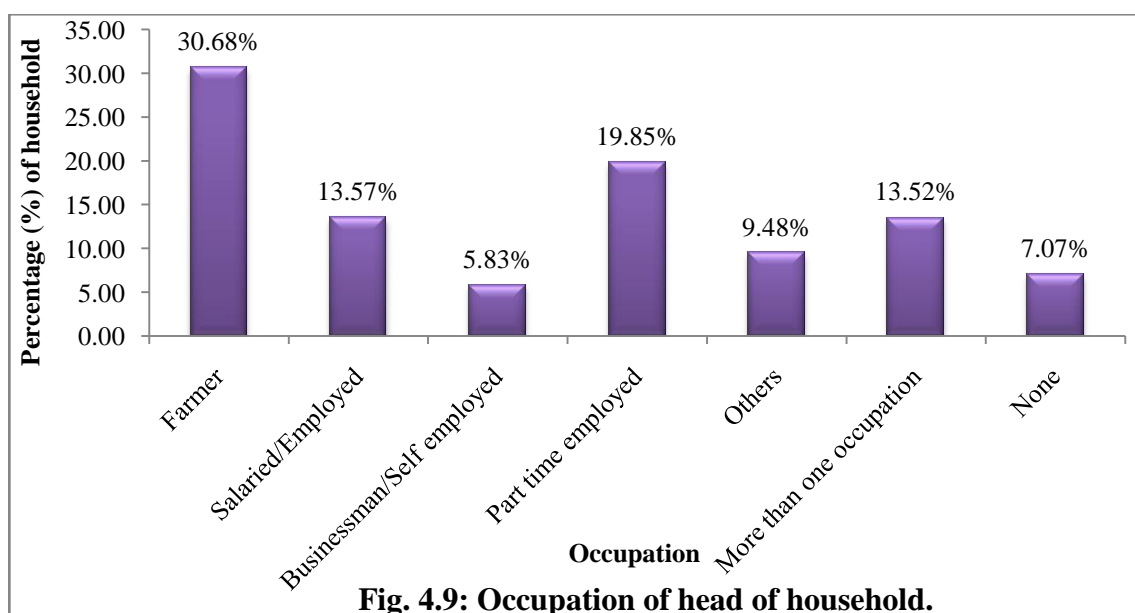
4.1.8. Assistance from Government/NGOs.

Fig. 4.8. shows the percentage of Government/NGO assistance for the studied villages of the West Garo Hills district. 69.77% of households were without the assistance from Government/NGOs and only 30.23% of households were getting assistance from the Government/NGOs. Some of the assistance which the studied villages got from the Government/NGOs were Old age pensions, BPL-Below Poverty Line (rice, LPG, electricity, house, sugar, wheat flour, kerosene, tin, toilet, bulb, and fishery.), Job card, AAY- Antyodaya Anna Yojana (Rice), IAY- Indira Awaas Yojana (house), rice from Agriculture department, silkworm rearing from Sericulture department, greenhouse from horticulture department, widow pension from ICDS-Integrated Child Development Services, MLA schemes, MGNREGA- Mahatma Gandhi National Rural Employment Guarantee Act, Child education allowance, subsidies for piggery, pigsty, sheds for cows, coffee nursery etc.



4.1.9. Occupation.

Fig. 4.9. shows that 30.68% of the occupation of the head of households were farmers. Some of the heads of households were part-time employed like daily labours (19.85%), some were salaried or employed (13.57%), some were involved in more than one occupation (13.52%), others include retired pension or other pensions (9.48%), and 5.83% were businessman or self-employed. 7.07% of households were without their own occupation. Other than these occupations, the villagers collected Non-Timber Forest Products mainly for consumption in almost all the villages and in some villages NTFPs were collected for their income.



4.1.10. Annual income from occupation.

In order to know the annual income from the head of the household's occupation, the income range was grouped into 100000 or less, 100001-200000, 200001-300000, 300001-400000, 400001-500000, 500001 and above, as well as those without income as none group. In the present studied villages, the families with 100000 or less annual income have the highest percentage of 69.38, followed by 100001-200000 with 11.05%, 200001-300000 (5.72%), 400001-500000 (2.47%), 300001-400000 (2.41%), 500001 and above with only 1.91%. There were even 7.07% of families who were not earning any income (**Fig. 4.10.**). The highest earning families with an annual income of Rs. 500001 and above including 3 households were Bolsalgre and Apalgre of Selsella block, Borodoldonga of Tikrikilla block and Karonggre of Dalu block, those including 2 households belong to Indrapara village of Selsella block and Tikrikilla A'chik gittim and Dapgre villages of Tikrikilla block, and those which include only 1 household or families were Asanang village of Rongram block, Babagre village of Gambegre block, Ajrigre, Upper Baljek Aduma and Rongkhongre villages of Dadenggre block, Mandagre and Damalgre villages of Selsella block, Lower Khamari, Kathalbari, Lower Damachiga and Dakop of Tikrikilla block as well as Josipara, Kujikura, Rengsipara, Kongtokpara and Dalugaon of Dalu block. Bolbokgre, Waribok and Asanang villages of Rongram block were among the villages with the least annual income or families without income from their occupation. In Asanang village, even though it has 1 family with a high annual income, there were more families without earning any income.

The overall infrastructure was somewhat better in Tikrikilla A'chik gittim and Kathalbari villages of Tikrikilla block compared to the other villages with better house types and assets as well as good electricity, but the road connection from Tura to these villages was very bad and water connections were not so good. Sakalgre of Rongram block and Songmagre of Dalu block had the lowest infrastructure with low assets and house types, and bad road connection. Both the villages have electricity connection as well as good water connection.

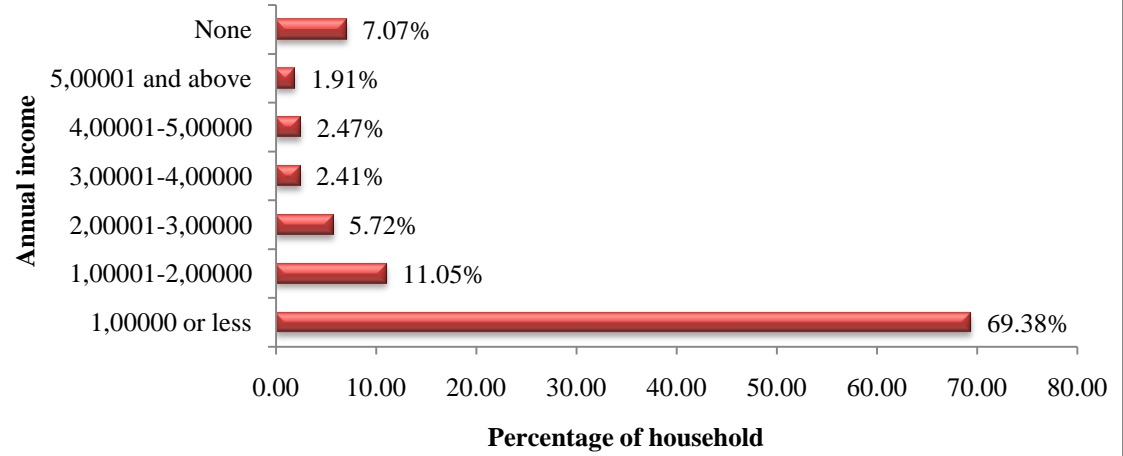


Fig. 4.10: Annual income from the head of household's occupation.

4.2. Availability of Non-Timber Forest Products of plant origin.

Collection of Non-Timber Forest Products was very common in all the studied villages of West Garo Hills, Meghalaya. The scientific names, local names, common names, family, habit, use category, IUCN Red List status, status in Plant List/The World Flora Online (WFO) and Botanical Survey of India (BSI) accession numbers as well as plant species identified references of NTFPs collected by the villagers are listed in **Table 4.2**. The exploration revealed that the ethnic communities used as many as 177 plant species (differing from 138 genera and 67 families) as vegetables, fodders, fruits, fuelwoods, brooms, house-building materials, wrapping materials, medicinal plants, handicrafts, and other purposes. The communities used a maximum number of species for fuelwood purposes (101 species), followed by vegetables (54 species), medicinal plants (52 species), fruits (51 species), fodder (18 species), house building materials and handicrafts (8 species each), wrapping material (6 species), and broom (2 species). Other NTFPs like plant species used for fencing, rope, gum, fishing, and those used for making wine, traditional necklaces, baskets etc. (10 species) were also collected by the communities (**Fig. 4.11**). The most commonly used species for different purposes was *Melocanna baccifera* (Roxb.) Kurz (Wa-tre/Wa-mande) was collected for vegetables, fodder, fuelwood, house-building material, medicinal plant, and handicrafts as well as for other purposes like making fencing (**Table 4.2**).

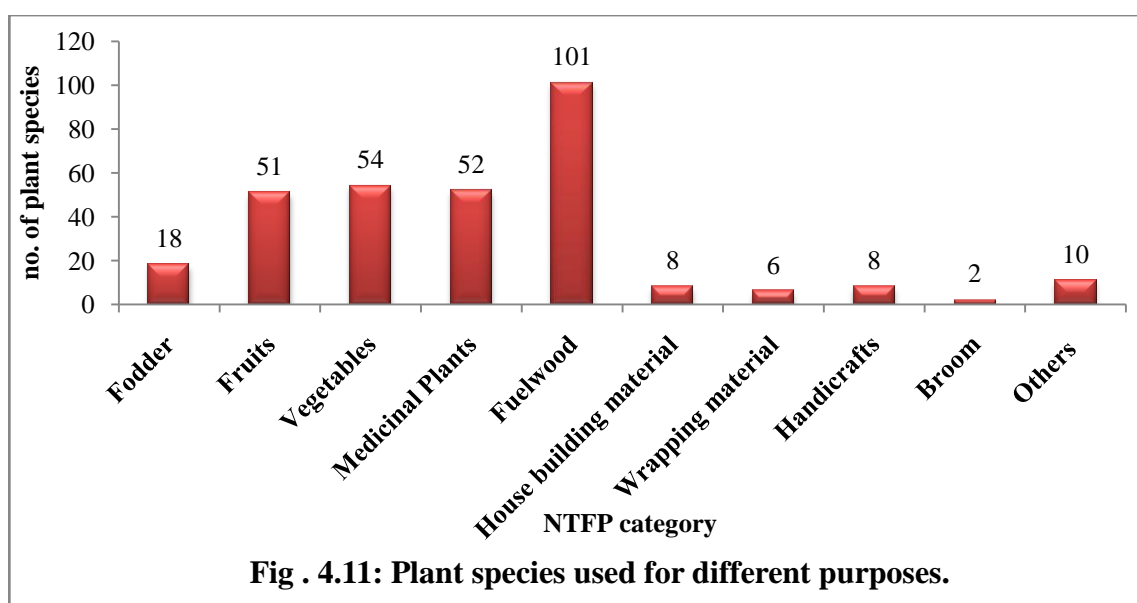


Table 4.2: List of Non-Timber Products of plant origin documented from the forests of West Garo Hills.

Sl. no.	Scientific name	Local name	Common name	Family	Habit	Use category	IUCN Red List Status	Status in Plant list/The World Flora Online (WFO)	BSI accession no. and reference for identified plants.
1	<i>Acacia concinna</i> (Willd.) DC.	Surengki/ Suchengkil	Soap pod	Fabaceae	Shrub	V,	Not assessed	Accepted	9141
2	<i>Achyranthus aspera</i> L.	Me mang katchi	Prickly chaff flower	Amaranthaceae	Herb	MP	Not assessed	Accepted	50773
3	<i>Acmella paniculata</i> (Wall.ex DC.) R. K. Jansen.	Wagam sam	Toothache plant	Compositae	Herb	MP	Least concern	Accepted	73940
4	<i>Actinodaphne gullavara</i> (Buch.-Ham.ex Nees) M.R. Almeida	Namiaga dal'gipa	-	Lauraceae	Medium sized tree	FW	Least concern	Accepted	72318
5	<i>Aegle marmelos</i> (L.) Corrêa	Selpri	Wood apple	Rutaceae	Medium sized tree	F, MP	Near threatened	Accepted	85452
6	<i>Aglaia edulis</i> (Roxb.) Wall.	Sampal	Aglaia	Meliaceae	Medium sized tree	F, FW	Near threatened	Accepted	4692
7	<i>Alangium chinense</i> (Lour.) Harms	Bolchiring	Chinese alangium	Cornaceae	Small tree	FW	Not assessed	Accepted	36640
8	<i>Albizia chinensis</i> (Osbeck) Merr.	Bolpu	Chinese albizia	Fabaceae	Large tree	FW, MP	Not assessed	Accepted	89492
9	<i>Albizia odorattissima</i> (L.f.) Benth.	Siso	Black siris	Fabaceae	Medium sized tree	Fd, FW	Not assessed	Accepted	9247
10	<i>Albizia procera</i> (Roxb.) Benth.	Kelwi	White siris	Fabaceae	Medium sized tree	FW	Least concern	Accepted	Page <i>et al.</i> (2022) Trees of Arunachal Pradesh.
11	<i>Alstonia scholaris</i> (L.) R. Br.	Sokchon	Blackboard tree	Apocynaceae	Medium sized tree	FW	Least concern	Accepted	74507

12	<i>Amaranthus spinosus</i> L.	Chandile bu'su donggipa	Spiny amaranth	Amaranthaceae	Herb	V	Not assessed	Accepted	73154
13	<i>Amaranthus viridis</i> L.	Chandile bu'su donggija- gipa	Slender amaranth	Amaranthaceae	Herb	V	Not assessed	Accepted	73156
14	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Voodoo lily	Araceae	Herb	V, Fd,	Not assessed	Accepted	41579
15	<i>Antidesma acidum</i> Retz.	Adurak	Sour currant shrub	Phyllanthaceae	Small tree	V, MP	Least concern	Accepted	52061
16	<i>Aporosa octandra</i> (Buch.- Ham.ex D. Don) Vickery	Chamolja	Indo-China Alder	Phyllanthaceae	Small tree	FW	Least concern	Accepted	75012
17	<i>Argyreia nervosa</i> (Burm. f.) Bojer	Do·stip	Elephant creeper	Convolvulaceae	Climber	V	Not assessed	Accepted	85379
18	<i>Artocarpus chama</i> Buch.-Ham	Chram	Chaplash tree	Moraceae	Medium sized tree	F, FW	Not assessed	Accepted	28432
19	<i>Artocarpus lacucha</i> Buch.- Ham.	Arimu	Monkey jack	Moraceae	Large tree	Fd, F, FW	Not assessed	Accepted	28421
20	<i>Baccaurea ramiflora</i> Lour.	Gasampe	Burmese grape	Phyllanthaceae	Medium sized tree	F	Least concern	Accepted	37683
21	<i>Balakata baccata</i> (Roxb.) Esser	Sangsim	Boloch	Euphorbiaceae	Medium sized tree	FW	Least concern	Accepted	Page <i>et al.</i> (2022) Trees of Arunachal Pradesh.
22	<i>Bambusa bambos</i> (L.) Voss	Wa·kanta	Giant thorny bamboo	Poaceae	Bamboo	V, FW, HBM	Not assessed	Accepted	32186
23	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	-	Poaceae	Bamboo	V, FW, HBM, Hd	Not assessed	Accepted	75582
24	<i>Bambusa tulda</i> Roxb.	Wa·ge	Spineless Indian	Poaceae	Bamboo	V, FW, HBM,	Not assessed	Accepted	Sharma and Borthakur

			bamboo			MP, Hd			(2010).Bamboo Flora of Garo Hills.
25	<i>Bauhinia malabarica</i> Roxb.	Me'gong tak	Malabar bauhinia	Fabaceae	Medium sized tree	V, Fd, FW	Least concern	Accepted	70182
26	<i>Bauhinia variegata</i> L.	Me'gong	Orchid tree	Fabaceae	Medium sized tree	V, Fd, FW	Least concern	Accepted	70178
27	<i>Bischofia javanica</i> Blume	Achri	Bishop wood	Phyllanthaceae	Large tree	FW	Least concern	Accepted	72072
28	<i>Bombax ceiba</i> L.	Bolchu	Silk cotton tree	Malvaceae	Large tree	FW, Hd	Least concern	Accepted	76063
29	<i>Calamus acanthospathus</i> Griff.	Re	-	Arecaceae	Climber	F, MP, Hd	Not assessed	Accepted	34071
30	<i>Calamus erectus</i> Roxb.	Sokmil	Viagra palm	Arecaceae	Climber	F, MP, Hd	Not assessed	Accepted	84248
31	<i>Callicarpa arborea</i> Roxb.	Makanchi/ Kimbal	Indian beautyberry tree	Lamiaceae	Small tree	FW, MP	Least concern	Accepted	68467
32	<i>Careya arborea</i> Roxb.	Gimbil	Wild guava	Lecythidaceae	Medium sized tree	FW, MP	Not assessed	Accepted	52261
33	<i>Caryota urens</i> L.	Bol- namgija	Fishtail palm	Arecaceae	Palm tree	V	Least concern	Accepted	44562
34	<i>Cassia fistula</i> L.	Sinaru	Golden shower tree	Fabaceae	Medium sized tree	FW, MP	Least concern	Accepted	70169
35	<i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC.	Chaku jongsu	Indian chestnut	Fagaceae	Medium sized tree	F, FW, MP	Least concern	Accepted	73212
36	<i>Castanopsis tribuloides</i> (Sm.) A. DC.	Chaku metchri	-	Fagaceae	Medium sized tree	FW	Not assessed	Accepted	73225
37	<i>Centella asiatica</i> (L.) Urb.	Manamuni	Indian pennywort	Apiaceae	Herb	V, MP	Least concern	Accepted	46305

38	<i>Chromolaena odorata</i> (L.) R. M. King & H. Rob.	Sambang-guri	Siam weed	Compositae	Herb	MP	Not assessed	Accepted	87427
39	<i>Chrysophyllum roxburghii</i> G. Don	Te'wan	-	Sapotaceae	Large tree	F	Least concern	Accepted	17474
40	<i>Cissus repens</i> Lam.	Me'kem-kem	Creeping treebine	Vitaceae	Climber	V	Not assessed	Accepted	Marak, 2018
41	<i>Citrus indica</i> Yu. Tanaka	Me'mang narang	Indian wild orange	Rutaceae	Small tree	F, MP	Not assessed	Accepted	85996
42	<i>Citrus medica</i> L.	Te'matchi	Citron	Rutaceae	Shrub	F, MP	Least concern	Accepted	85450
43	<i>Clausena excavata</i> Burm.f.	Badambol	Pink Lime-Berry	Rutaceae	Small tree	FW	Not assessed	Accepted	4195
44	<i>Clerodendrum glandulosum</i> Lindl.	Donggam	East Indian Glory Bower	Lamiaceae	Shrub	V, MP	Not assessed	Accepted	52918
45	<i>Clerodendrum infortunatum</i> L.	Samaki	Hill Glory Bower	Lamiaceae	Shrub	MP, O	Least concern	Accepted	43058
46	<i>Clerodendrum laevifolium</i> Blume	Balmatchi	Wallich's glorybower	Lamiaceae	Shrub	V	Not assessed	Accepted	68492
47	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Taro	Araceae	Herb	V, Fd	Least concern	Accepted	78333
48	<i>Corchorus capsularis</i> L.	Kosta/Meka	White jute	Malvaceae	Shrub	Fd, FW, Hd	Not assessed	Accepted	47570
49	<i>Cordia dichotoma</i> G. Forst.	Attabol	Fragrant manjack	Boraginaceae	Medium sized tree	FW, O	Least concern	Accepted	87274
50	<i>Croton joufra</i> Roxb	Matmi	-	Euphorbiaceae	Small tree	FW	Not assessed	Accepted	73275
51	<i>Curcuma amada</i> Roxb.	Dikge te'gatchu	Mango ginger	Zingiberaceae	Herb	MP	Not assessed	Accepted	Marak, 2018
52	<i>Cuscuta reflexa</i> Roxb.	Nawang bibik	Giant dodder	Convolvulaceae	Climber	MP	Least concern	Accepted	66951
53	<i>Dalbergia stipulacea</i> Roxb.	Palwang	East	Fabaceae	Woody	FW	Least	Accepted	73298

			Himalayan Dalbergia		climber		concern		
54	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa·nok/ Wa·ma	Tama bamboo	Poaceae	Bamboo	V, FW, HBM, MP	Not assessed	Accepted	68241
55	<i>Dicranopteris linearis</i> (Burm.f.) Underw.	Rikwareng	False staghorn fern	Gleicheniaceae	Fern	O	Least concern	Accepted	Sawmliana, (2013) The Book of Mizoram Plants.
56	<i>Dillenia indica</i> L.	Agatchi badura	Elephant apple	Dilleniaceae	Large tree	F, FW	Least concern	Accepted	36360
57	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Dog teak	Dilleniaceae	Medium sized tree	V, F, FW, Wp	Not assessed	Accepted	52360
58	<i>Diospyros malabarica</i> (Desr.) Kostel.	Gap	Gaub Persimon	Ebenaceae	Medium sized tree	FW	Not assessed	Accepted	17582
59	<i>Diospyros racemosa</i> Roxb.	Bolgisim	Kaluwella	Ebenaceae	Medium sized tree	FW	Not assessed	Accepted	17603
60	<i>Diplazium esculentum</i> (Retz.) Sw.	Gonggin-jak	Vegetable fern	Athyriaceae	Fern	V	Least concern	Accepted	36563
61	<i>Dischidia bengalensis</i> Colebr.	Gominda bitchil	-	Apocynaceae	Climber	MP	Not assessed	Accepted	42950
62	<i>Drynaria quercifolia</i> (L.) J. Sm.	Do'reng gangpak	Oak leaf fern	Polypodiaceae	Fern	MP	Not assessed	Accepted	36853
63	<i>Duabanga grandiflora</i> Walp.	Bolchim	Duabanga	Lythraceae	Large tree	FW	Least concern	Accepted	87622
64	<i>Ehretia acuminata</i> R. Br.	Bolmigam	Koda tree	Boraginaceae	Medium sized tree	FW	Least concern	Accepted	46877
65	<i>Eichhornia crassipes</i> (Mart.) Solms	Gachili	Common water hyacinth	Pontederiaceae	Aquatic plant	V	Not assessed	Accepted	65391
66	<i>Elaeagnus latifolia</i> L.	Sokkua	Bastard oleaster	Elaeagnaceae	Shrub	F	Not assessed	Accepted	68400

67	<i>Elaeocarpus floribundus</i> Blume.	Jorpai	Indian olive	Elaeocarpaceae	Medium sized tree	F	Not assessed	Accepted	91368
68	<i>Eryngium foetidum</i> L.	Samskal	Culantro	Apiaceae	Herb	V	Not assessed	Accepted	73178
69	<i>Erythrina stricta</i> Roxb.	Bolmandal gitchak	Corky coral tree	Fabaceae	Small tree	FW, MP	Not assessed	Accepted	88074
70	<i>Eurya acuminata</i> DC.	Cha'misi	Tapering Leaf Eurya	Pentaphylacaceae	Small tree	FW	Not assessed	Accepted	91988
71	<i>Ficus auriculata</i> Lour.	Te'bil	Elephant ear fig tree	Moraceae	Small tree	Fd, F, FW, Wp, O	Least concern	Accepted	88074
72	<i>Ficus benghalensis</i> L.	Prap dal'gipa	Indian banyan	Moraceae	Large tree	FW	Not assessed	Accepted	91067
73	<i>Ficus benjamina</i> L.	Prap rapseng	Weeping fig	Moraceae	Medium sized tree	FW	Least concern	Accepted	53126
74	<i>Ficus curtipes</i> Corner.	Prap tapsi	Eastern Laurel Fig	Moraceae	Medium sized tree	FW	Not assessed	Accepted	71032
75	<i>Ficus hispida</i> L.f.	Sa'kap/Kan'tap	Hairy fig	Moraceae	Small tree	V, Fd, F, FW, MP	Least concern	Accepted	91063
76	<i>Ficus semicordata</i> Buch.-Ham.ex Sm.	Aminsep	Drooping fig	Moraceae	Small tree	F, FW	Least concern	Accepted	90912
77	<i>Ficus variegata</i> Blume.	Te'wek	Common Red-Stem Fig	Moraceae	Medium sized tree	F, FW	Least concern	Accepted	Page <i>et al.</i> (2022) Trees of Arunachal Pradesh.
78	<i>Firmiana colorata</i> (Roxb.) R.Br.	Sengsu	Scarlet sterculia	Malvaceae	Medium sized tree	FW	Not assessed	Accepted	2797
79	<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Darichik	Indian coffee plum	Salicaceae	Small tree	F, FW, MP	Not assessed	Accepted	71282
80	<i>Garcinia cowa</i> Roxb.ex Choisy	Dengadote	Cowa mangosteen	Clusiaceae	Small tree	F, FW	Least concern	Accepted	53201

81	<i>Garcinia indica</i> (Thouars) Choisy	Soksima- reng	Kokum butter tree	Clusiaceae	Medium sized tree	F, FW	Vulnerable	Accepted	Changkija and Gurung, (2017) Flora of Nagaland Volume I.
82	<i>Garcinia sopsopia</i> (Buch.- Ham.) Mabb.	Te'sru	-	Clusiaceae	Medium sized tree	F, FW	Not assessed	Accepted	1847
83	<i>Garcinia xanthochymus</i> Hook f.ex T. Anderson	Aruak	False mangosteen	Clusiaceae	Medium sized tree	F	Least concern	Accepted	1929
84	<i>Garuga pinnata</i> Roxb.	Jiga	Grey downy balsam	Burseraceae	Small tree	FW	Not assessed	Accepted	81664
85	<i>Glochidion sphaerogynum</i> (Müll. Arg.) Kurz	Bolchidek	-	Phyllanthaceae	Small tree	FW	Not assessed	Accepted	26411
86	<i>Gmelina arborea</i> Roxb.	Gambare	White teak	Lamiaceae	Medium sized tree	V, Fd, FW	Least concern	Accepted	36835
87	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	Elm-Leaf Grewia	Malvaceae	Small tree	F, FW	Least concern	Accepted	83702
88	<i>Grewia serrulata</i> DC.	Bolmeng- go	Serrulate- Leaf Grewia	Malvaceae	Small tree	Fd, FW	Not assessed	Accepted	2934
89	<i>Gymnopetalum chinense</i> (Lour.) Merr.	Apolka	-	Cucurbitaceae	Climber	V, F	Not assessed	Accepted	Marak, 2018
90	<i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman)	Te'patang	Blood fruit	Menisperma- ceae	Woody climber	F	Not assessed	Unresolved/Am- biguous	44779
91	<i>Haldina cordifolia</i> (Roxb.) Ridsdale	Boldoreng	Heart-leaf adina	Rubiaceae	Medium sized tree	FW	Not assessed	Accepted	44713
92	<i>Hibiscus macrophyllus</i> Roxb.ex Hornem.	Mao	Large leaf rose mallow	Malvaceae	Medium sized tree	FW, Wp	Least concern	Accepted	38085
93	<i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson	Te'be	Chinese lardplant	Cucurbitaceae	Climber	F	Not assessed	Accepted	Sawmliana, (2013) The Book of Mizoram Plants.
94	<i>Holmskioldia sanguinea</i> Retz.	Mese nachil	Chinese hat plant	Lamiaceae	Shrub	O	Not assessed	Accepted	16925

95	<i>Houttuynia cordata</i> Thunb.	Matcha-duri	Chameleon plant	Saururaceae	Herb	V, MP	Not assessed	Accepted	23698
96	<i>Illex excelsa</i> (Wall.) Voigt	Boltajong	-	Aquifoliaceae	Medium sized tree	FW	Not assessed	Accepted	22197
97	<i>Imperata cylindrica</i> (L.) Raeusch	Am'pang	Cogon grass	Poaceae	Herb/ Grass	HBM	Not assessed	Accepted	34172
98	<i>Ixora nigricans</i> R. Br.ex Wight & Arn.	Bolmang-gal	Black ixora	Rubiaceae	Small tree	FW	Not assessed	Accepted	90919
99	<i>Jatropha curcas</i> L.	Chimandal	Barbados nut	Euphorbiaceae	Shrub	O	Least concern	Accepted	54909
100	<i>Justicia adhatoda</i> L.	Alot gipok	Malabar nut	Acanthaceae	Shrub	V	Least concern	Accepted	16650
101	<i>Justicia gendarussa</i> Burm.f.	Do'jagipe	Willow-leaved justicia	Acanthaceae	Shrub	MP	Not assessed	Accepted	Sawmliana, (2013) The Book of Mizoram Plants.
102	<i>Lagerstroemia parviflora</i> Roxb.	Sidai/ Chidai	Small flowered crape myrtle	Lythraceae	Large tree	FW, MP	Not assessed	Accepted	74565
103	<i>Lagerstroemia speciosa</i> (L.) Pers.	Ajakari	Pride of India	Lythraceae	Medium sized tree	FW	Not assessed	Accepted	75123
104	<i>Lasia spinosa</i> (L.) Thwaites	Chonggi	Spiny lasia	Araceae	Herb	V	Least concern	Accepted	44308
105	<i>Leucas aspera</i> (Willd.) Link	Du'kumu	Thumbai	Lamiaceae	Herb	V, MP	Not assessed	Accepted	83079
106	<i>Lithocarpus elegans</i> (Blume) Hatus.ex Soepadmo.	Chaku kokrak	Spike oak	Fagaceae	Medium sized tree	FW	Not assessed	Accepted	70315
107	<i>Litsea cubeba</i> (Lour.) Pers.	Jengjil	Mountain pepper	Lauraceae	Small tree	Fd, FW	Least concern	Accepted	91532
108	<i>Litsea monopetala</i> (Roxb.) Pers.	Bolbit	Many-Flowered Litsea	Lauraceae	Small tree	Fd, FW	Least concern	Accepted	52104

109	<i>Lygodium flexuosum</i> (L.) Sw.	Ruattip	Maidenhair creeper	Lygodiaceae	Herb	MP	Not assessed	Accepted	36480
110	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha'gro/ Bolajak	Blistery macaranga	Euphorbiaceae	Small tree	Fd, FW, Wp, MP	Least concern	Accepted	90992
111	<i>Macaranga indica</i> Wight	Renikgitil	-	Euphorbiaceae	Large tree	FW	Least concern	Accepted	Changkija and Gurung, (2017). Flora of Nagaland Volume I.
112	<i>Magnolia champaca</i> (L.) Baill.ex Pierre	Titachap	Champak	Magnoliaceae	Large tree	FW	Least concern	Accepted	81693
113	<i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H. Keng	Chaku gangdap	Hodgson magnolia	Magnoliaceae	Small tree	FW	Least concern	Accepted	70162
114	<i>Mallotus nudiflorus</i> (L.) Kulju & Welzen.	Bolbok	False white teak	Euphorbiaceae	Medium sized tree	FW	Least concern	Accepted	34371
115	<i>Mallotus philippensis</i> (Lam.) Müll. Arg.	Sindur bol	Red kamala	Euphorbiaceae	Medium sized tree	FW	Least concern	Accepted	72006
116	<i>Mallotus tetracoccus</i> (Roxb.) Kurz	A'tipra	Rusty kamala	Euphorbiaceae	Small tree	FW, Wp	Not assessed	Accepted	90993
117	<i>Melastoma malabathricum</i> L.	Kakku	Indian Rhododendron	Melastomataceae	Shrub	V, F, FW	Not assessed	Accepted	55837
118	<i>Melia azedarach</i> L.	Bagongat	Chinaberry	Meliaceae	Small tree	V, FW	Least concern	Accepted	10645
119	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa-tre/ Wa-mande	Muli bamboo	Poaceae	Bamboo	V, Fd, FW, HBM, MP, Hd, O	Not assessed	Accepted	31925
120	<i>Melodinus cochinchinensis</i> (Lour.) Merr.	Bakwe bijak chongipa	-	Apocynaceae	Woody climber	F	Not assessed	Accepted	68405
121	<i>Merremia umbellata</i> (L.)	Sitri	Hogvine	Convolvulaceae	Climber	HBM,	Not	Accepted	19843

	Hallier f.					MP, O	assessed		
122	<i>Meyna spinosa</i> Roxb.ex Link	Te'chikeng	-	Rubiaceae	Shrub	V, F, FW	Not assessed	Accepted	Page <i>et al.</i> (2022) Trees of Arunachal Pradesh.
123	<i>Micromelum integerrimum</i> (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem.	Mangrit- chok	Entire-Lime Leaf Berry	Rutaceae	Small tree	FW, MP	Least concern	Accepted	75743
124	<i>Mikania micrantha</i> Kunth	Meghalaya budu/ Samtip	Bitter vine	Compositae	Climber	V, MP	Not assessed	Accepted	68670
125	<i>Mimosa pudica</i> L.	Sammik- chip	Touch-me- not plant	Fabaceae	Herb	MP	Least concern	Accepted	54465
126	<i>Morinda angustifolia</i> Roxb.	Chelnong	Narrow-Leaf Morinda	Rubiaceae	Shrub	V	Not assessed	Accepted	37458
127	<i>Mussaenda roxburghii</i> Hook. f.	Gradek	East Himalayan Mussaenda	Rubiaceae	Shrub	V, MP	Not assessed	Accepted	65831
128	<i>Myrica rubra</i> (Lour.) Siebold & Zucc.	Bolmeseng	Chinese bayberry	Myricaceae	Shrub	F	Not assessed	Accepted	-
129	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Indian Trumpet Flower	Bignoniaceae	Medium sized tree	V, FW, MP	Not assessed	Accepted	76089
130	<i>Paederia foetida</i> L.	Pasim	Skunk vine	Rubiaceae	Climber	V, MP, O	Not assessed	Accepted	46388
131	<i>Pandanus odorifer</i> (Forssk.) Kuntze.	Burungni anaros	Fragrant srew-pine	Pandanaceae	Shrub	F	Least concern	Accepted	Sawmliana, (2013) The Book of Mizoram Plants.
132	<i>Parkia timoriana</i> (DC.) Merr.	Amelgap	Tree bean	Fabaceae	Medium sized tree	F	Least concern	Accepted	9028
133	<i>Persicaria chinensis</i> (L.) H.	Me'kri	Chinese	Polygonaceae	Herb	V	Not	Accepted	66879

	Gross	donok	knotweed				assessed		
134	<i>Phlogacanthus guttatus</i> Nees	Alot rimit	-	Acanthaceae	Shrub	V	Not assessed	Unresolved/Ambiguous	59072
135	<i>Phlogacanthus thyrsoiflorus</i> Nees	Alot gitchak	-	Acanthaceae	Shrub	V	Not assessed	Unresolved/Ambiguous	16581
136	<i>Phrynium pubinerve</i> Blume	Reru	Packing leaf	Marantaceae	Herb	Wp, MP	Not assessed	Accepted	68416
137	<i>Phyllanthus emblica</i> L.	Ambare segun	Indian gooseberry	Phyllanthaceae	Small tree	F, FW	Least concern	Accepted	84126
138	<i>Premna mollissima</i> Roth	Do:kime	Dusky Fire-Brand Teak	Lamiaceae	Small tree	V, FW	Not assessed	Accepted	-
139	<i>Protium serratum</i> (Wall.ex Colebr.) Engl.	Te:kring	Indian Red Pear	Burseraceae	Medium sized tree	F, FW	Not assessed	Accepted	4450
140	<i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz	Do:grikme	Indian snakeroot	Apocynaceae	Herb	MP	Not assessed	Accepted	90935
141	<i>Rhus chinensis</i> Mill.	Kitma	Nutgall tree	Anacardiaceae	Small tree	F, FW	Least concern	Accepted	21605
142	<i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me:bitchi	Elliptic Rhynchoetechum	Gesneriaceae	Shrub	V, MP	Not assessed	Accepted	91178
143	<i>Rotheca serrata</i> (L.) Steane & Mabb.	Agunjulai/Matchok nachil	The blue fountain bush	Lamiaceae	Shrub	V	Not assessed	Accepted	16835
144	<i>Rubus buergeri</i> Miq.	Te:kisambak	-	Rosaceae	Shrub	F	Not assessed	Accepted	68360
145	<i>Rubus ellipticus</i> Sm.	Biribisi	Yellow Himalayan raspberry	Rosaceae	Shrub	F	Least concern	Accepted	68507
146	<i>Sarcochlamys pulcherrima</i>	An'tam-	Dogal tree	Urticaceae	Small	V	Not	Accepted	83430

	Gaudich.	huri			tree		assessed		
147	<i>Saurauia napaulensis</i> DC.	Adambok	Gogan	Actinidiaceae	Medium sized tree	F, FW	Least concern	Accepted	72474
148	<i>Saurauia roxburghii</i> Wall.	Ginsning	Eastern Gogan	Actinidiaceae	Small tree	F, FW	Least concern	Unresolved/Am biguous	68224
149	<i>Schima wallichii</i> Choisy	Boldak	Needlewood tree	Theaceae	Large tree	FW	Least concern	Accepted	71194
150	<i>Schizostachyum dullooa</i> (Gamble) R. B. Majumdar	Wa-dro	Dolu bamboo	Poaceae	Bamboo	HBM, Hd	Not assessed	Accepted	94024
151	<i>Scoparia dulcis</i> L.	Samgoldak	Licorice weed	Plantaginaceae	Herb	V	Not assessed	Accepted	61168
152	<i>Shorea robusta</i> Gaertn.	Bolsal	Sal tree	Dipterocarpaceae	Large tree	FW	Least concern	Accepted	76123
153	<i>Sida acuta</i> Burm.f.	Santareng/Angkegol	Common wireweed	Malvaceae	Herb	Br	Not assessed	Accepted	71057
154	<i>Solanum anguivi</i> Lam.	Kimka	Forest bitterberry	Solanaceae	Shrub	V, F, MP	Least concern	Accepted	68363
155	<i>Solanum violaceum</i> Ortega	Kimkarong	Indian Nightshade	Solanaceae	Shrub	V, F	Not assessed	Accepted	68350
156	<i>Spondias pinnata</i> (L.f.) Kurz	Ambale-tong	Indian hog plum	Anacardiaceae	Medium sized tree	F, FW	Not assessed	Accepted	83332
157	<i>Sterculia villosa</i> Roxb.	Olmak	Elephant rope tree	Malvaceae	Large tree	F, FW, O	Not assessed	Accepted	65842
158	<i>Stereospermum chelonoides</i> (L.f.) DC	Bolsil	Fragrant Padri Tree	Bignoniaceae	Large tree	Fd, FW, MP	Not assessed	Accepted	Kanjilal, (2005) Flora of Assam.
159	<i>Streblus asper</i> Lour.	Bolsrem	Siamese rough bush	Moraceae	Medium sized tree	FW	Least concern	Accepted	18601
160	<i>Styrax serrulatus</i> Roxb.	Kampil	-	Styracaceae	Small tree	FW	Not assessed	Accepted	85998
161	<i>Swertia chirata</i> Buch.-Ham. Ex Wall.	Chirota	Bitter stick	Gentianaceae	Herb	MP	Not assessed	Unresolved/Am biguous	59918

162	<i>Syzygium cumini</i> (L.) Skeels	Chambu	Java Plum	Myrtaceae	Medium sized tree	F, FW	Least concern	Accepted	44593
163	<i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult.	Miktoksi/ Kimdotchi	Pinwheel flower	Apocynaceae	Shrub	V	Least concern	Accepted	52062
164	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Chirori	Beleric myrobalan	Combretaceae	Large tree	F, FW	Least concern	Accepted	81249
165	<i>Terminalia chebula</i> Retz.	Aritak	Chebulic myrobalan	Combretaceae	Large tree	F, FW, MP	Least concern	Accepted	83876
166	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/ Smu	Tiger grass	Poaceae	Herb	Fd, Br, MP	Not assessed	Accepted	68245
167	<i>Toona ciliata</i> M.Roem.	Bolbret	Toon tree	Meliaceae	Large tree	V, FW	Least concern	Accepted	81625
168	<i>Trema orientalis</i> (L.) Blume	Pakkram	Indian Charcoal tree	Cannabaceae	Small tree	V, Fd, FW	Least concern	Accepted	90893
169	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Snowflake Aralia	Araliaceae	Small tree	V, F, FW	Least concern	Accepted	73232
170	<i>Uvaria hamiltonii</i> Hook.f.& Thomson.	Te'rik galwang	Eastern Uvaria	Annonaceae	Woody climber	F	Indeterminate*	Accepted	81696
171	<i>Vitex peduncularis</i> Wall.ex Schauer	Rangri	-	Lamiaceae	Medium sized tree	FW	Least concern	Accepted	22314
172	<i>Vitex quinata</i> (Lour.) F. N. Williams	Matchu gingsep	-	Lamiaceae	Small tree	FW	Least concern	Accepted	39291
173	<i>Willughbeia edulis</i> Roxb.	Bakwe bijak dal'gipa	Gedraphol	Apocynaceae	Woody climber	F	Not assessed	Accepted	36777
174	<i>Wrightia antidysenterica</i> (L.) R. Br.	Golmatra bite chongipa	Arctic snow	Apocynaceae	Small tree	FW, MP	Not assessed	Accepted	18757

175	<i>Wrightia arborea</i> (Dennst.) Mabb.	Golmatra bite dal gipa	Wolly Dyeing Rosebay	Apocynaceae	Small tree	FW, MP	Least concern	Accepted	51771
176	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me'cheng	-	Rutaceae	Small tree	V, FW, MP	Not assessed	Accepted	Changkija and Gurung, (2017) Flora of Nagaland Volume I.
177	<i>Zanthoxylum rhetsa</i> DC.	Sumit- cheng	Indian Prickly ash	Rutaceae	Medium sized tree	FW, MP	Least concern	Unresolved/Am biguous	3973

V-Vegetable, Fd-Fodder, F-Fruit, FW-Fuelwood, Br-Broom, HBM-House building materials, Wp-Wrapping material, MP-Medicinal Plants, Hd-Handicrafts, O- Others and *IUCN Red listed according to Rao *et al.*, (2003) Red List of Threatened Vascular Plant Species in India.

Table 4.3. shows the family ranking of NTFPs of plant origin where Fabaceae and Lamiaceae dominated with 11 species each which was followed by Moraceae with 10 species, Apocynaceae, Euphorbiaceae, Malvaceae, and Poaceae with 8 species each, Rutaceae with 7 species, Phyllanthaceae and Rubiaceae with 6 species each, Acanthaceae and Clusiaceae with 4 species each, Amaranthaceae, Araceae, Arecaceae, Compositae, Convolvulaceae, Fagaceae, Lauraceae, Lythraceae, and Meliaceae with 3 species each, Actinidiaceae, Anacardiaceae, Apiaceae, Bignoniaceae, Boraginaceae, Burseraceae, Combretaceae, Cucurbitaceae, Dilleniaceae, Ebenaceae, Magnoliaceae, Rosaceae, and Solanaceae with 2 species each. Out of the total 67 families, 33 families have the least species with 1 species each.

Table 4.3. Family ranking of Non-Timber Forest Products of plant origin.

Sl.no.	Family	No. of species
1	Fabaceae	11
2	Lamiaceae	11
3	Moraceae	10
4	Apocynaceae	8
5	Euphorbiaceae	8
6	Malvaceae	8
7	Poaceae	8
8	Rutaceae	7
9	Phyllanthaceae	6
10	Rubiaceae	6
11	Acanthaceae	4
12	Clusiaceae	4
13	Amaranthaceae	3
14	Araceae	3
15	Arecaceae	3
16	Compositae	3
17	Convolvulaceae	3
18	Fagaceae	3
19	Lauraceae	3
20	Lythraceae	3
21	Meliaceae	3
22	Actinidiaceae	2
23	Anacardiaceae	2
24	Apiaceae	2
25	Bignoniaceae	2
26	Boraginaceae	2
27	Burseraceae	2
28	Combretaceae	2

29	Cucurbitaceae	2
30	Dilleniaceae	2
31	Ebenaceae	2
32	Magnoliaceae	2
33	Rosaceae	2
34	Solanaceae	2
35	Annonaceae	1
36	Aquifoliaceae	1
37	Araliaceae	1
38	Athyriaceae	1
39	Cannabaceae	1
40	Cornaceae	1
41	Dipterocarpaceae	1
42	Elaeagnaceae	1
43	Elaeocarpaceae	1
44	Gentianaceae	1
45	Gesneriaceae	1
46	Gleicheniaceae	1
47	Lecythidaceae	1
48	Lygodiaceae	1
49	Marantaceae	1
50	Melastomataceae	1
51	Menispermaceae	1
52	Myricaceae	1
53	Myrtaceae	1
54	Pandanaceae	1
55	Pentaphylacaceae	1
56	Plantaginaceae	1
57	Polygonaceae	1
58	Polypodiaceae	1
59	Pontederiaceae	1
60	Salicaceae	1
61	Sapotaceae	1
62	Saururaceae	1
63	Styracaceae	1
64	Theaceae	1
65	Urticaceae	1
66	Vitaceae	1
67	Zingiberaceae	1

Among 177 plant species, 138 genera were recorded with the genus *Ficus* having the highest number of plant species of 7 numbers which were followed by *Garcinia* with 4 species. *Albizia*, *Bambusa*, *Clerodendrum*, and *Mallotus* have 3 species each and the genera having 2 species each were *Amaranthus*, *Artocarpus*, *Bauhinia*, *Calamus*,

Castanopsis, *Citrus*, *Dillenia*, *Diospyros*, *Grewia*, *Justicia*, *Lagerstroemia*, *Litsea*, *Macaranga*, *Magnolia*, *Phlogacanthus*, *Rubus*, *Saurauia*, *Solanum*, *Terminalia*, *Vitex*, *Wrightia*, and *Zanthoxylum*. Besides, 110 numbers of genera were recorded with 1 species each (**Table 4.4.**).

Table 4.4.: Genera wise ranking of Non-Timber Forest Products of plant origin.

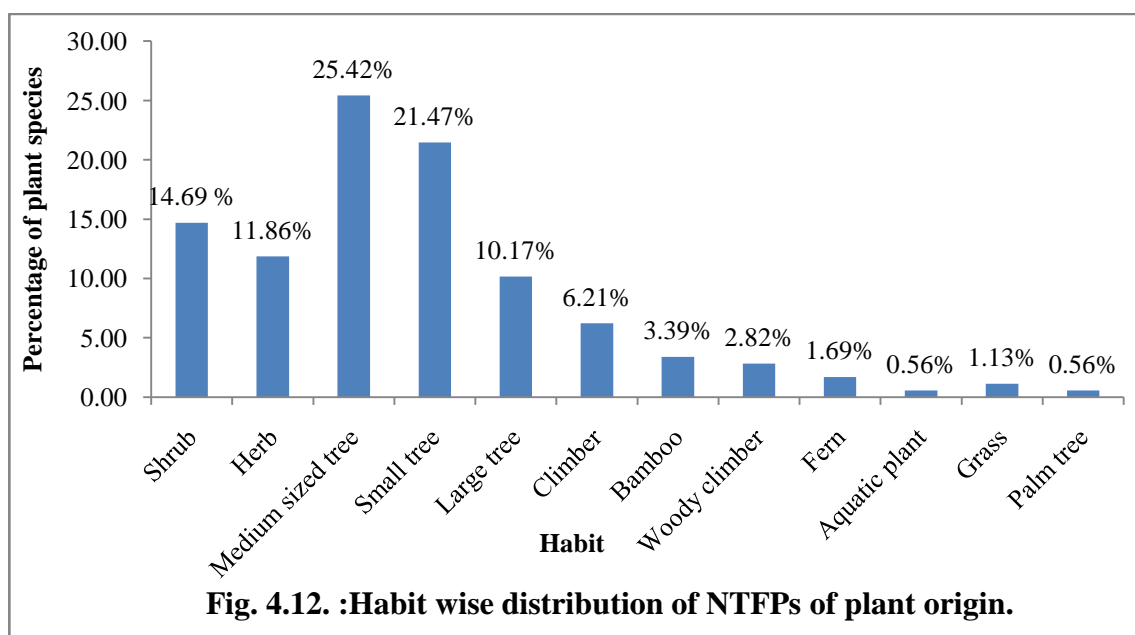
Sl.no.	Genera	No. of species
1	Ficus	7
2	Garcinia	4
3	Albizia	3
4	Bambusa	3
5	Clerodendrum	3
6	Mallotus	3
7	Amaranthus	2
8	Artocarpus	2
9	Bauhinia	2
10	Calamus	2
11	Castanopsis	2
12	Citrus	2
13	Dillenia	2
14	Diospyros	2
15	Grewia	2
16	Justicia	2
17	Lagerstroemia	2
18	Litsea	2
19	Macaranga	2
20	Magnolia	2
21	Phlogacanthus	2
22	Rubus	2
23	Saurauia	2
24	Solanum	2
25	Terminalia	2
26	Vitex	2
27	Wrightia	2
28	Zanthoxylum	2
29	Acacia	1
30	Achyranthus	1
31	Acmella	1
32	Actinodaphne	1
33	Aegle	1
34	Aglaia	1
35	Alangium	1
36	Alstonia	1
37	Amorphophallus	1

38	Antidesma	1
39	Aporosa	1
40	Argyreia	1
41	Baccaurea	1
42	Balakata	1
43	Bischofia	1
44	Bombax	1
45	Callicarpa	1
46	Careya	1
47	Caryota	1
48	Cassia	1
49	Centella	1
50	Chromolaena	1
51	Chrysophyllum	1
52	Cissus	1
53	Clausena	1
54	Colocasia	1
55	Corchorus	1
56	Cordia	1
57	Croton	1
58	Curcuma	1
59	Cuscuta	1
60	Dalbergia	1
61	Dendrocalamus	1
62	Dicranopteris	1
63	Diplazium	1
64	Dischidia	1
65	Drynaria	1
66	Duabanga	1
67	Ehretia	1
68	Eichhornia	1
69	Elaeagnus	1
70	Elaeocarpus	1
71	Eryngium	1
72	Erythrina	1
73	Eurya	1
74	Firmiana	1
75	Flacourtia	1
76	Garuga	1
77	Glochidion	1
78	Gmelina	1
79	Gymnopetalum	1
80	Haematocarpus	1
81	Haldina	1
82	Hibiscus	1
83	Hodgsonia	1
84	Holmskioldia	1

85	Houttuynia	1
86	Illex	1
87	Imperata	1
88	Ixora	1
89	Jatropha	1
90	Lasia	1
91	Leucas	1
92	Lithocarpus	1
93	Lygodium	1
94	Melastoma	1
95	Melia	1
96	Melocanna	1
97	Melodinus	1
98	Merremia	1
99	Meyna	1
100	Micromelum	1
101	Mikania	1
102	Mimosa	1
103	Morinda	1
104	Mussaenda	1
105	Myrica	1
106	Oroxylum	1
107	Paederia	1
108	Pandanus	1
109	Parkia	1
110	Persicaria	1
111	Phrynium	1
112	Phyllanthus	1
113	Premna	1
114	Protium	1
115	Rauvolfia	1
116	Rhus	1
117	Rhynchoetum	1
118	Rothea	1
119	Sarcochlamys	1
120	Schima	1
121	Schizostachyum	1
122	Scoparia	1
123	Shorea	1
124	Sida	1
125	Spondias	1
126	Sterculia	1
127	Stereospermum	1
128	Streblus	1
129	Styrax	1
130	Swertia	1
131	Syzygium	1

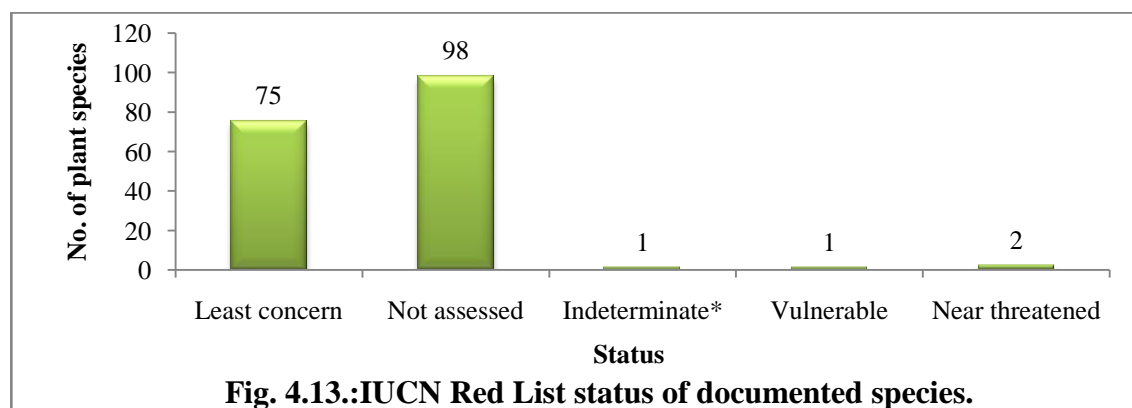
132	Tabernaemontana	1
133	Thysanolaena	1
134	Toona	1
135	Trema	1
136	Trevesia	1
137	Uvaria	1
138	Willughbeia	1

In the present study, the NTFPs recorded were mostly trees of a total of 101 species, out of which 25.42% of species were medium-sized trees, 21.47% of species were small trees and 10.17% of species were large trees. Shrubs account for 14.69%, herbs (11.86%), a climber (6.21%), Bamboo (3.39%), a woody climber (2.82%), fern (1.69%), grass (1.13%), an aquatic plant (0.56%), and palm tree with 0.56% (**Fig. 4.12.**).



The present research work recorded 98 plant species which are still not assessed, 75 plant species of least concern, 2 plant species which is near threatened, 1 species which is vulnerable and 1 species under indeterminate in the IUCN Red List (**Fig. 4.13.**). According to IUCN Red List, “Least Concern (LC)” refers to those species which are evaluated against the Red List criteria and do not qualify for critically endangered, endangered, vulnerable or near threatened. “Near Threatened (NT)” species are those species which are evaluated against the Red List criteria but do not qualify for critically

endangered, endangered or vulnerable. “Vulnerable (VU)” species are those species which are considered to be facing a high risk of extinction in the wild. “Not assessed” species are those species which are not yet evaluated for Red List. According to the Rao *et al.*, (2003) Red List of Threatened Vascular Plant Species in India, “Indeterminate (I)” refers to those species known to be endangered, vulnerable or rare but there is not enough information to say which of the 3 categories is appropriate for the species. In **Table 4.2.** IUCN Red List status of all the documented species is included. Some of the species which are still not assessed in the IUCN Red List are *Acacia concinna* (Willd.) DC. (Surengki/Suchengkil), *Achyranthus aspera* L. (Me·mang katchi), *Alangium chinense* (Lour.) Harms (Bolchiring), *Albizia chinensis* (Osbeck) Merr. (Bolpu), and *Albizia odoratissima* (L.f.) Benth. (Siso). Species like *Acmella paniculata* (Wall.ex DC.) R. K. Jansen. (Wagam sam), *Actinodaphne gullavara* (Buch.-Ham.ex Nees) M.R. Almeida (Namiaga dal·gipa), *Albizia procera* (Roxb.) Benth. (Kelwi), *Alstonia scholaris* (L.) R. Br. (Sokchon), *Antidesma acidum* Retz. (Adurak), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja) etc. are the least concern under IUCN Red List. *Aegle marmelos* (L.) Corrêa (Selpri), and *Aglaia edulis* (Roxb.) Wall. (Sampal) are the two species which are considered as near threatened, *Garcinia indica* (Thouars) Choisy (Soksimareng) as vulnerable, and *Uvaria hamiltonii* Hook.f.& Thomson. (Te·rik galwang) as indeterminate.



*Rao *et al.*, (2003) IUCN Red listed according to the Red List of Threatened Vascular Plant Species in India.

Table 4.5. shows 9 endemic plant species used as NTFPs by the studied communities. These species are observed as endemic plant species in the forests of West Garo Hills according to the publication made by Mir *et al.*, 2019. The endemic plant species are *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Artocarpus chama* Buch.-Ham (Chram), *Calamus erectus* Roxb. (Sokmil), *Croton joufra* Roxb (Matmi), *Haematocarpus validus* (Miers.) Bakh.f.ex Forman (Te'patang), *Mussaenda roxburghii* Hook. f. (Gradek), *Phlogacanthus thyrsiflorus* Nees (Alot gitchak), *Uvaria hamiltonii* Hook.f.& Thomson. (Te'rik galwang), and *Zanthoxylum oxyphyllum* Edgew.(Me'cheng).

Table 4.5.: List of Endemic Plant species collected from the forests of West Garo Hills.

Sl. no.	Scientific name	Local name
1	<i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery	Chamolja
2	<i>Artocarpus chama</i> Buch.-Ham	Chram
3	<i>Calamus erectus</i> Roxb.	Sokmil
4	<i>Croton joufra</i> Roxb	Matmi
5	<i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman	Te'patang
6	<i>Mussaenda roxburghii</i> Hook. f.	Gradek
7	<i>Phlogacanthus thyrsiflorus</i> Nees	Alot gitchak
8	<i>Uvaria hamiltonii</i> Hook.f.& Thomson.	Te'rik galwang
9	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me'cheng

Source: Mir *et al.*, (2019).

4.3. Availability of Non-Timber Forest Products of animal origin.

Beside plants, animals are still consumed by the studied ethnic communities. The following **Table 4.6.** reported a total of 24 NTFPs of animal origin. Among the 24 animal species, freshwater crab, freshwater fish, freshwater prawn, freshwater snail, and honey were commonly collected by the communities.

Table 4.6.: NTFPs of animal origin collected from the forests for consumption by the ethnic communities of West Garo Hills.

Sl. no.	Common and Scientific name	Local name	Family
1	Asian elephant (<i>Elephas maximus</i>)	Mongma	Elephantidae
2	Barking deer (<i>Muntiacus muntjak</i>)	Marakka/Balgitchak	Cervidae
3	Black naped hare (<i>Lepus nigricollis</i> F. Cuvier)	Burungni sapau	Leporidae
4	Chinese pangolin (<i>Manis pentadactyla</i>)	Kawatte	Manidae
5	Common Indian monitor lizard (<i>Varanus bengalensis</i>)	Matpu	Varanidae
6	Electric eel (<i>Electrophorus electricus</i>)	Na'nil	Gymnotidae
7	Freshwater Crab (<i>Maydelliathelphusa lugubris</i> Wood-Mason, 1871)	Ang'ke	Gecarcinucidae
8	Freshwater fish	Na'tok	-
9	Freshwater prawn (<i>Macrobrachium cavernicola</i> Kemp, 1924)	Na'tik	Palaemonidae
10	Freshwater snail (<i>Bellamya bengalensis</i> Lamark, 1822)	Etchaluk	Viviparidae
11	Giant honey bee (<i>Apis dorsata</i>)-Honey	Bija (Bija bitchi)	Apidae
12	Indian crested porcupine (<i>Hystrix indica</i>)	Okgipu	Hystriidae
13	Indian grey mongoose (<i>Urva edwardsii</i>)	Chuna	Herpestidae
14	Jungle fowl (<i>Gallus gallus</i>)	Do'mesal	Phasianidae
15	Jungle myna (<i>Acridotheres fuscus</i> Wagler)	Moina	Sturnidae
16	Malayan giant squirrel (<i>Ratufa bicolor</i>)	Mat	Sciuridae
17	Masked palm civet (<i>Paguma larvata</i>)	Matchuri	Veverridae
18	Red whiskered bulbul (<i>Pycnonotus jocosus</i>)	Do'bret	Pycnonotidae
19	Rhesus macaque (<i>Macaca mulatta</i>)	Makkre	Cercopithecidae
20	Sambar deer (<i>Rusa unicolor</i>)	Matchok	Cervidae
21	Spotted dove (<i>Spilopelia chinensis</i>)	Do'kru	Columbidae
22	Stingless bee (<i>Trigona iridipennis</i> Smith, 1854)	Mengkari bitchi	Apidae
23	Thick-billed green pigeon (<i>Treron curvirostra</i>)	Paroa	Columbidae
24	Wild boar (<i>Sus scrofa cristatus</i>)	Wak burung	Suidae

4.4. Utilization and consumption pattern of Non-Timber Forest Products across different socio-economic strata.

Table 4.7. shows the NTFPs of plant origin present in the studied villages. Some species were found in almost all the studied villages such as *Phyllanthus emblica* L.(Ambare segun), *Colocasia esculenta* (L.) Schott (Chigi), *Macaranga denticulata* (Blume) Müle. Arg. (Cha·gro/Bolajak), *Amorphophallus bulbifer* (Roxb.) Blume (Songru), *Protium serratum* (Wall.ex Colebr.) Engl. (Te·kring), *Melocanna baccifera* (Roxb.) Kurz (Wa·tre/Wa·mande) etc., whereas some species like *Saurauia napaulensis* DC. (Adambok), and *Pandanus odorifer* (Forssk.) Kuntze. (Burungni anaros) were found only in Sakalgre village, *Justicia adhatoda* L. (Alot gipok) from Apalgre village, *Castanopsis tribuloides* (Sm.) A. DC. (Chaku metchri) from Waribok village, and so on. The highest number of NTFPs was recorded from Waribok village with a total of 73 species followed by Sakalgre village with 66 species, Karonggre village with 62 species, and Asanang and Wakringtonggre villages with 61 species each. Kathalbari village was recorded with the least number of NTFPs of only 2 species and Nawalgre village with 20 species.

Table 4.7.: Non-Timber Forest Products of plant origin recorded from the studied villages.

Sl. no.	Name of the village	Total no. of NTFPs present	Name of the NTFP species
1	Baljek Agal	54	<p><i>Antidesma acidum</i> Retz.(Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb.(Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L.(Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Curcuma amada</i> Roxb. (Dikge te'gatchu), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jengjil), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchosyris ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Mikania micrantha</i> Kunth (Meghalaya budu/Samtip), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Phrynium pubinerve</i> Blume (Reru), <i>Lygodium flexuosum</i> (L.) Sw. (Ruattip), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Chromolaena odorata</i> (L.) R. M. King & H. Rob. (Sambangguri), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Balakata baccata</i> (Roxb.) Esser (Sangsim), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Elaeagnus latifolia</i> L. (Sokkua), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Meyna spinosa</i> Roxb.ex Link (Te'chikeng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Acmella paniculata</i> (Wall.ex DC.) R. K. Jansen. (Wagam sam).</p>
2	Dorenggre	36	<p><i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Terminalia chebula</i> Retz. (Aritak), <i>Duabanga grandiflora</i> Walp. (Bolchim), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium</i></p>

			<p><i>cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Achyranthus aspera</i> L. (Me'mang katchi), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Mimosa pudica</i> L. (Sammikchip), <i>Garcinia indica</i> (Thouars) Choisy (Soksimoreng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang).</p>
3	Bolbokgre	35	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Ixora nigricans</i> R. Br.ex Wight & Arn. (Bolmanggal), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Saurauia roxburghii</i> Wall. (Ginsning), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Litsea cubeba</i> (Lour.) Pers. (Jenggijl), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Mecheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Balakata baccata</i> (Roxb.) Esser (Sangsim), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring).</p>
4	Masumatagre	44	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Mallotus nudiflorus</i> (L.) Kulju & Welzen. (Bolbok), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Duabanga grandiflora</i> Walp. (Bolchim), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i></p>

			(L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Justicia gendarussa</i> Burm.f. (Do'jagipe), <i>Premna mollissima</i> Roth (Do'kime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Elaeocarpus floribundus</i> Blume. (Jorpai), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang).
5	Waribok	73	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Dillenia indica</i> L. (Agatchi badura), <i>Rotheca serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitcak), <i>Phlogacanthus guttatus</i> Nees (Alot rimit), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Bombax ceiba</i> L. (Bolchu), <i>Schima wallichii</i> Choisy (Boldak), <i>Erythrina stricta</i> Roxb. (Bolmandal gitcak), <i>Ehretia acuminata</i> R. Br. (Bolmigam), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Lithocarpus elegans</i> (Blume) Hatus.ex Soepadmo. (Chaku kokrak), <i>Castanopsis tribuloides</i> (Sm.) A. DC. (Chaku metchri), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Amaranthus spinosus</i> L. (Chandile bu'su donggipa), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Premna mollissima</i> Roth (Do'kime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br.(Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jengjil), <i>Melastoma malabathricum</i> L. (Kakku), <i>Styrax serrulatus</i> Roxb. (Kampil), <i>Solanum violaceum</i> Ortega (Kimkarong), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Micromelum integerrimum</i> (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem. (Mangritchok), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Vitex quinata</i> (Lour.) F. N. Williams (matchu gingsep), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Sterculia villosa</i> Roxb. (Olmak), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Vitex peduncularis</i> Wall.ex Schauer (Rangri), <i>Dicranopteris linearis</i> (Burm.f.) Underw. (Rikwareng), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.)

			Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Merremia umbellata</i> (L.) Hallier f. (Sitri), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Rubus buergeri</i> Miq. (Te'kisambak), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Ficus variegata</i> Blume. (Tewek), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa-nok/Wa-ma), <i>Clausena excavata</i> Burm.f. . (Badambol), <i>Actinodaphne gullavara</i> (Buch.-Ham.ex Nees) M.R. Almeida (Namiaga dal'gipa), <i>Ficus curtipes</i> Corner. (Prap tapsi).
6	Asanang	61	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitcak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Erythrina stricta</i> Roxb. (Bolmandal gitcak), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Justicia gendarussa</i> Burm.f. (Do'jagipe), <i>Premna mollissima</i> Roth (Do'kime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jenggil), <i>Elaeocarpus floribundus</i> Blume. (Jorpai), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Citrus indica</i> Yu. Tanaka (Me'mang narang), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Elaeagnus latifolia</i> L. (Sokkua), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Chrysophyllum roxburghii</i> G. Don (Te'wan), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa-tre/Wa-mande), <i>Glochidion sphaerogynum</i> (Müll. Arg.) Kurz. (Bolchidek), <i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H. Keng . (Chaku gangdap), <i>Schizostachyum dullooa</i> (Gamble) R. B. Majumdar. (Wa'dro).
7	Tebronggre	36	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitcak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu),

			<p><i>Clerodendrum laevifolium</i> Blume (Balmatchi), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Justicia gendarussa</i> Burm.f. (Do'jagipe), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru).</p>
8	Rombagre	32	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Garcinia xanthochymus</i> Hook f.ex T. Anderson (Aruak), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Duabanga grandiflora</i> Walp. (Bolchim), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Myrica rubra</i> (Lour.) Siebold & Zucc. (Bolmeseng), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa-nok/Wa-ma), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Holmskioldia sanguinea</i> Retz. (Mese nachil).</p>
9	Chibragre	34	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Clerodendrum laevifolium</i> Blume (Balmatchi), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia</i></p>

			<p><i>antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jenggil), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me·bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me·cheng), <i>Bauhinia variegata</i> L. (Me·gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me·kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal·wa/Smu), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te·kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te·rik galwanga).</p>
10	Wakringtonggre	61	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Parkia timoriana</i> (DC.) Merr. (Amelgap), <i>Ficus semicordata</i> Buch.-Ham.ex Sm. (Aminsep), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha·gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha·misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Amaranthus spinosus</i> L. (Chandile bu·su donggipa), <i>Morinda angustifolia</i> Roxb. (Chelnong), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Curcuma amada</i> Roxb. (Dikge te·gatchu), <i>Premna mollissima</i> Roth (Do·kime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Saurauia roxburghii</i> Wall. (Ginsning), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jenggil), <i>Melastoma malabathricum</i> L. (Kakku), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me·bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me·cheng), <i>Bauhinia variegata</i> L. (Me·gong), <i>Persicaria chinensis</i> (L.) H. Gross (me·kri donok), <i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult. (Miktoksi/Kimdotchi), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Paederia foetida</i> L. (Pasim), <i>Macaranga indica</i> Wight (Renikgitil), <i>Ficus hispida</i> L.f. (Sa·kap/Kan·tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Salwa/Smu), <i>Eryngium foetidum</i> L. (Samskal), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Garcinia indica</i> (Thouars) Choisy (Soksimaeng), <i>Meyna spinosa</i> Roxb.ex Link (Te·chikeng), <i>Rubus buergeri</i> Miq. (Te·kisambak), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te·kring), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te·sru), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa·nok/Wa·ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa·tre/Wa·mande).</p>
11	Chandigre	46	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Garcinia xanthochymus</i> Hook.f.ex T. Anderson</p>

			<p>(Aruak), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Schima wallichii</i> Choisy (Boldak), <i>Myrica rubra</i> (Lour.) Siebold & Zucc. (Bolmeseng), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Saurauia roxburghii</i> Wall. (Ginsning), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Litsea cubeba</i> (Lour.) Pers. (Jengjil), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Croton joufra</i> Roxb. (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Citrus indica</i> Yu. Tanaka (Me'mang narang), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Eryngium foetidum</i> L. (Samskal), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Elaeagnus latifolia</i> L. (Sokkua), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa-nok/Wa-ma), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa-tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa-tre/Wa-mande).</p>
12	Sakalgre	66	<p><i>Saurauia napaulensis</i> DC. (Adambok), <i>Antidesma acidum</i> Retz. (Adurak), <i>Parkia timoriana</i> (DC.) Merr. (Amelgap), <i>Ficus semicordata</i> Buch.-Ham.ex Sm. (Aminsep), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Garcinia xanthochymus</i> Hook f.ex T. Anderson (Aruak), <i>Melodinus cochinchinensis</i> (Lour.) Merr. (Bakwe bijak chongipa), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Clerodendrum laevifolium</i> Blume (Balmatchi), <i>Rubus ellipticus</i> Sm. (Biribisi), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Diospyros racemosa</i> (Bolgisim), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Myrica rubra</i> (Lour.) Siebold & Zucc. (Bolmeseng), <i>Caryota urens</i> L. (Bolnamgija), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Saurauia roxburghii</i> Wall. (Ginsning), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jengjil), <i>Melastoma malabathricum</i> L. (Kakku), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Cissus repens</i> Lam. (Mekemkem), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Achyranthus aspera</i> L. (Me'mang katchi), <i>Citrus indica</i> Yu. Tanaka (Me'mang narang), <i>Trema orientalis</i> (L.) Blume</p>

			(Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Macaranga indica</i> Wight (Renikgitil), <i>Phrynium pubinerve</i> Blume (Reru), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Eryngium foetidum</i> L. (Samskal), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Garcinia indica</i> (Thouars) Choisy (Soksimoreng), <i>Elaeagnus latifolia</i> L. (Sokkua), <i>Zanthoxylum rhetsa</i> DC. (Sumitcheng), <i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson (Te'be), <i>Ficus auriculata</i> Lour. (Te'bil), <i>Meyna spinosa</i> Roxb.ex Link (Te'chikeng), <i>Rubus buergeri</i> Miq. (Te'kisambak), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Citrus medica</i> L. (Te'matchi), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Chrysophyllum roxburghii</i> G. Don (Te'wan), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa·nok/Wa·ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa·tre/Wa·mande), <i>Pandanus odorifer</i> (Forssk.) Kuntze. (Burungni anaros).
13	Balamagre	43	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Terminalia chebula</i> Retz. (Aritak), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Bombax ceiba</i> L. (Bolchu), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Jatropha curcas</i> L. (Chimandal), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cuscuta reflexa</i> Roxb. (Nawang bibik), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Aegle marmelos</i> (L.) Corrêa (Selpri), <i>Cassia fistula</i> L. (Sinaru), <i>Garcinia indica</i> (Thouars) Choisy (Soksimoreng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa·nok/Wa·ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa·tre/Wa·mande).
14	Darrengre (Upper/Lower)	44	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Terminalia chebula</i> Retz. (Aritak), <i>Duabanga grandiflora</i> Walp. (Bolchim), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Justicia gendarussa</i> Burm.f. (Do'jagipe), <i>Premna mollissima</i> Roth

			(Do'kime), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Corchorus capsularis</i> L. (Kosta/Meka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Citrus indica</i> Yu. Tanaka (Me'mang narang), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang).
15	Nengja Bolchugre	30	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa-mande).
16	Chekwatgre	43	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Ixora nigricans</i> R. Br.ex Wight & Arn. (Bolmanggal), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Morinda angustifolia</i> Roxb. (Chelnong), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Curcuma amada</i> Roxb. (Dikge te'gatchu), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Oroxylum indicum</i> (L.) Kurz

			(Kering), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa-ma), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa-mande).
17	Aminda Rangsagre	58	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Ficus semicordata</i> Buch.-Ham.ex Sm. (Aminsep), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Mallotus nudiflorus</i> (L.) Kulju & Welzen. (Bolbok), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Argyrea nervosa</i> (Burm. f.) Bojer (Do'stip), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Rhus chinensis</i> Mill. (Kitma), <i>Corchorus capsularis</i> L. (Kosta/Meka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb. (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Mebitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Balakata baccata</i> (Roxb.) Esser (Sangsim), <i>Cassia fistula</i> L. (Sinaru), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Alstonia scholaris</i> (L.) R. Br. (Sokchon), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Ficus auriculata</i> Lour. (Te'bil), <i>Meyna spinosa</i> Roxb.ex Link (Te'chikeng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Ficus variegata</i> Blume. (Te'wek), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa-mande).
18	Dagugre/ Rongjugre	25	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja),

			<p><i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Ficus variegata</i> Blume. (Te'wek), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
19	Deblongagre/ Dibilonggagre	28	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Lygodium flexuosum</i> (L.) Sw. (Ruattip), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
20	Chigitchakgre	34	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Rauwolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Melastoma malabathricum</i> L. (Kakku), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Calamus acanthospathus</i> Griff. (Re), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
21	Somonpara/	41	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun),</p>

	Meguagre		<p><i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Curcuma amada</i> Roxb. (Dikge te'gatchu), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do'grikme), <i>Drynaria quercifolia</i> (L.) J. Sm. (Do'reng gangpak), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cuscuta reflexa</i> Roxb. (Nawang bibik), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Meyna spinosa</i> Roxb.ex Link (Te'chikeng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
22	Babagre	42	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Bombax ceiba</i> L. (Bolchu), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Croton joufra</i> Roxb. (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Vitex peduncularis</i> Wall.ex Schauer (Rangri), <i>Calamus acanthospathus</i> Griff. (Re), <i>Aegle marmelos</i> (L.) Corrêa (Selpri), <i>Garcinia indica</i> (Thouars) Choisy (Soksimoreng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
23	Rongbretgre	35	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus</i></p>

			<p><i>thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Bombax ceiba</i> L. (Bolchu), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Artocarpus chama</i> Buch.-Ham (Chram), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
24	Gimbilgre	34	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC.(Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
25	Dilsigre	48	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Melia azedarach</i> L. (Bagongat), <i>Melodinus cochinchinensis</i> (Lour.) Merr. (Bakwe bijak chongipa), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga</i></p>

			<p><i>denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Premna mollissima</i> Roth (Dokime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Mekemkem), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Garcinia indica</i> (Thouars) Choisy (Soksimoreng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
26	Damal asim	26	<p><i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Amabre segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Premna mollissima</i> Roth (Dokime), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
27	Ajrigre	53	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Clerodendrum laevifolium</i> Blume (Balmatchi), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Justicia gendarussa</i> Burm.f. (Do'jagipe), <i>Premna mollissima</i> Roth (Do'kime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb.</p>

			(Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb. (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Mekemkem), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Chromolaena odorata</i> (L.) R. M. King & H. Rob. (Sambangguri), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Ficus auriculata</i> Lour. (Te'bil), <i>Meyna spinosa</i> Roxb.ex Link (Te'chikeng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Magnolia champaca</i> (L.) Baill.ex Pierre (Titachap), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
28	Rongchugre	40	<i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Terminalia chebula</i> Retz. (Aritak), <i>Garcinia xanthochymus</i> Hook f.ex T. Anderson (Aruak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Solanum anguivi</i> Lam. (Kimka), <i>Corchorus capsularis</i> L. (Kosta/Meka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Vitex peduncularis</i> Wall.ex Schauer (Rangri), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
29	Kalsingre	26	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rotheca serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don)

			Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Lygodium flexuosum</i> (L.) Sw. (Ruattip), <i>Sida acuta</i> Burm.f. (santareng/Angkegol), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
30	Upper Baljek Aduma	30	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Premna mollissima</i> Roth (Dokime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Croton joufra</i> Roxb (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
31	Asimgre	28	<i>Phyllanthus emblica</i> L. (Ambare segun), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Premna mollissima</i> Roth (Dokime), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
32	Romgre	42	<i>Antidesma acidum</i> Retz. (Adurak), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Garcinia xanthochymus</i> Hook f.ex T. Anderson (Aruak), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret),

			<p><i>Schima wallichii</i> Choisy (Boldak), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Litsea cubeba</i> (Lour.) Pers. (Jenggil), <i>Melastoma malabathricum</i> L. (Kakku), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb. (Matmi), <i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Bauhinia malabarica</i> Roxb. (Me'gong tak), <i>Paederia foetida</i> L. (Pasim), <i>Aglaia edulis</i> (Roxb.) Wall. (Sampal), <i>Garcinia indica</i> (Thouars) Choisy (Soksimareng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson (Te'be), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
33	Rongkongre	45	<p><i>Bischofia javanica</i> Blume (Achri), <i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rotheca serrata</i> (L.) Steane & Mabb. (Agunjulai), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Duabanga grandiflora</i> Walp. (Bolchim), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Diospyros racemosa</i> Roxb. (Bolgisim), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Lithocarpus elegans</i> (Blume) Hatus.ex Soepadmo. (Chaku kokrak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Careya arborea</i> Roxb. (Gimbal), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Croton joufra</i> Roxb. (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cuscuta reflexa</i> Roxb. (Nawang bibik), <i>Paederia foetida</i> L. (Pasim), <i>Calamus acanthospathus</i> Griff. (Re), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
34	Amingokgre	39	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rotheca serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus</i></p>

			<p><i>thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Clerodendrum laevifolium</i> Blume (Balmatchi), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Melastoma malabathricum</i> L. (Kakku), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Holmskioldia sanguinea</i> Retz. (Mese nachil).</p>
35	Sategre	46	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Solanum anguivi</i> Lam. (Kimka), <i>Rhus chinensis</i> Mill. (Kitma), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Magnolia champaca</i> (L.) Baill.ex Pierre (Titachap), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex</p>

			Munro(Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
36	Dallanggre	35	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Garcinia xanthochymus</i> Hook f.ex T. Anderson (Aruak), <i>Clerodendrum laevifolium</i> Blume (Balmatchi), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro(Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
37	Selsella Singimari	49	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Terminalia chebula</i> Retz. (Aritak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Drynaria quercifolia</i> (L.) J. Sm. (Doreng gangpak), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Achyranthus aspera</i> L. (Me'mang katchi), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Mimosa pudica</i> L. (Sammikchip), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i>

			(L.) Voss (Wa:kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa:nok/Wa:ma), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa:tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa:tre/Wa:mande), <i>Acmella paniculata</i> (Wall.ex DC.) R. K. Jansen. (Wagam sam).
38	Damjonggre	22	<i>Antidesma acidum</i> Retz. (Adurak), <i>Phyllanthus emblica</i> L. (Amabre segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me:gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te:kring), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa:tre/Wa:mande).
39	Boldokagre	29	<i>Antidesma acidum</i> Retz. (Adurak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A:tipra), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha:gro/Bolajak), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Grewia serrulata</i> DC. (Bolmenggo), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (me:gong), <i>Cissus repens</i> Lam. (me:kemkem), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Paederia foetida</i> L. (Pasim), <i>Balakata baccata</i> (Roxb.) Esser (Sangsim), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te:kring), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa:tre/Wa:mande).
40	Bolsalgre	41	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Mallotus nudiflorus</i> (L.) Kulju & Welzen. (Bolbok), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Curcuma amada</i> Roxb. (Dikge te:gatchu), <i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (Do:grikme), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC (Me:bitchi), <i>Bauhinia variegata</i> L. (Me:gong), <i>Cissus repens</i> Lam. (Me:kemkem), <i>Sterculia</i>

			<i>villosa</i> Roxb. (Olmak), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Mimosa pudica</i> L. (Sammikchip), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Alstonia scholaris</i> (L.) R. Br. (Sokchon), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Citrus medica</i> L. (Te'matchi), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
41	Nawalgre	20	<i>Antidesma acidum</i> Retz. (Adurak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta).
42	Nokatgre	41	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Terminalia chebula</i> Retz. (Aritak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Bombax ceiba</i> L. (Bolchu), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Premna mollissima</i> Roth (Do'kime), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Croton joufra</i> Roxb (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Eryngium foetidum</i> L. (Samskal), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odorattissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Ficus auriculata</i> Lour. (Te'bil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
43	Apalgre	42	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Justicia adhatoda</i> L. (Alot gipok), <i>Phyllanthus emblica</i> L. (Amabare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Terminalia chebula</i> Retz. (Aritak), <i>Mallotus nudiflorus</i> (L.) Kulju & Welzen. (Bolbok), <i>Toona ciliata</i> M.Roem.

			<p>(Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Croton joufra</i> Roxb (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Clerodendrum infortunatum</i> L. (Samaki), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Alstonia scholaris</i> (L.) R. Br. (Sokchon), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Zanthoxylum rhetsa</i> DC. (Sumitcheng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).</p>
44	Mandagre	55	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Terminalia chebula</i> Retz. (Aritak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Justicia gendarussa</i> Burm.f. (Do'jagipe), <i>Drynaria quercifolia</i> (L.) J. Sm. (Do'reng gangpak), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Dischidia bengalensis</i> Colebr. (Gominda bitchil), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Litsea cubeba</i> (Lour.) Pers. (Jengjil), <i>Melastoma malabathricum</i> L. (Kakku), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Mikania micrantha</i> Kunth (Meghalaya budu/Samtip), <i>Bauhinia variegata</i> L. (Me'gong), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Sida acuta</i> Burm.f. (Santareng/Angkegol), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Meyna spinosa</i> Roxb.ex Link (Te'chikeng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Citrus medica</i> L. (Te'matchi), <i>Ficus variegata</i> Blume. (Te'wek), <i>Bambusa tulda</i> Roxb.</p>

			(Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
45	Simbukolgre (Milsigre)	31	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Ixora nigricans</i> R. Br.ex Wight & Arn. (Bolmanggal), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Micromelum integerrimum</i> (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem. (Mangritchok), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Cassia fistula</i> L. (Sinaru), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Zanthoxylum rhetsa</i> DC. (Sumitcheng), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
46	Damalgre	39	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Premna mollissima</i> Roth (Do'kime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Croton joufra</i> Roxb (matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Dalbergia stipulacea</i> Roxb. (Palwang), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Garcinia indica</i> (Thouars) Choisy (Soksimoreng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
47	Wajadagre	23	<i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Eichhornia crassipes</i>

			(Mart.) Solms (Gachili), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Cordia dichotoma</i> G. Forst. . (Attabol).
48	Indrapara	42	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Terminalia chebula</i> Retz. (Aritak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Argyrea nervosa</i> (Burm. f.) Bojer (Do'stip), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Merremia umbellata</i> (L.) Hallier f. (Sitri), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok).
49	Bogadol	45	<i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane &Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Myrica rubra</i> (Lour.) Siebold & Zucc. (Bolmeseng), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Leucas aspera</i> (Willd.) Link (Dukumu), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa),

			<i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Mikania micrantha</i> Kunth (Meghalaya budu), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Chromolaena odorata</i> (L.) R. M. King & H. Rob. (Sambanguri), <i>Eryngium foetidum</i> L. (Samskal), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Merremia umbellata</i> (L.) Hallier f. (Sitri), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (wa'nok/wa'ma), <i>Streblus asper</i> Lour. (Bolsrem).
50	Tikrikilla A'chik gittim	23	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Melia azedarach</i> L. (Bagongat), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring).
51	Borodoldonga	22	<i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Amaranthus viridis</i> L. (Chandile busu dongijagipa), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Bauhinia variegata</i> L. (Me'gong), <i>Clerodendrum infortunatum</i> L. (Samaki), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson (Te'be), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Paederia foetida</i> L. (Pasim), <i>Dillenia indica</i> L. (Agatchi badura).
52	Lower Khamari (Garo)	37	<i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Melia azedarach</i> L. (Bagongat), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Schima wallichii</i> Choisy (Boldak), <i>Diospyros racemosa</i> Roxb. (Bolgisim), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Morinda angustifolia</i> Roxb. (Chelnong), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Curcuma amada</i> Roxb. (Dikge te'gatchu), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbi), <i>Wrightia antidysenterica</i> (L.) R. Br.

			(Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Sterculia villosa</i> Roxb. (Olmak), <i>Ficus benghalensis</i> L. (Prap dal'gipa), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Clerodendrum infortunatum</i> L. (Samaki), <i>Eryngium foetidum</i> L. (Samskal), <i>Cassia fistula</i> L. (Sinaru), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
53	Raksamgre	27	<i>Antidesma acidum</i> Retz. (Adurak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Hibiscus macrophyllus</i> Roxb.ex Hornem. (Mao), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchotechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Magnolia champaca</i> (L.) Baill.ex Pierre (Titachap), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring).
54	Kathalbari	2	<i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Garuga pinnata</i> Roxb. (Jiga).
55	Kanchonkona	21	<i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Melia azedarach</i> L. (Bagongat), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Sterculia villosa</i> Roxb. (Olmak), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Firmiana colorata</i> (Roxb.) R.Br. (Sengsu), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).
56	Lower Damachiga	30	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga</i>

			<i>pinnata</i> Roxb. (Jiga), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Eryngium foetidum</i> L. (Samskal), <i>Aegle marmelos</i> (L.) Corrêa (Selpri), <i>Firmiana colorata</i> (Roxb.) R.Br. (Sengsu), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Magnolia champaca</i> (L.) Baill.ex Pierre (Titachap), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).
57	Rongmali	29	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Lagerstroemia speciosa</i> (L.) Pers. (Ajakari), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Artocarpus chama</i> Buch.-Ham (Chram), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Mallotus philippensis</i> (Lam.) Müll. Arg. (Sindur bol).
58	Dakop	29	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Melia azedarach</i> L. (Bagongat), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Schima wallichii</i> Choisy (Boldak), <i>Diospyros racemosa</i> Roxb. (Bolgisim), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Merremia umbellata</i> (L.) Hallier f. (Sitri), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Acacia concinna</i> (Willd.) DC. (Surengki/Suchengkil), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).
59	Chokdenggre	31	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Melia azedarach</i> L. (Bagongat), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites

			(Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Solanum anguivi</i> Lam. (Kimka), <i>Croton joufra</i> Roxb (Matmi), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Firmiana colorata</i> (Roxb.) R.Br. (Sengsu), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Streblus asper</i> Lour. (Bolsrem) .
60	Jengrip	33	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Melia azedarach</i> L. (Bagongat), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Eryngium foetidum</i> L. (Samskal), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Bambusa tulda</i> Roxb. (Wa'ge).
61	Kherapara songma	50	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Terminalia chebula</i> Retz. (Aritak), <i>Garcinia xanthochymus</i> Hook f.ex T. Anderson (Aruak), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Argyreia nervosa</i> (Burm. f.) Bojer (Do'stip), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Melastoma malabathricum</i> L. (Kakku), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong),

			<p><i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Calamus acanthospathus</i> Griff. (Re), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Scoparia dulcis</i> L. (Samgoldak), <i>Alstonia scholaris</i> (L.) R. Br. (Sokchon), <i>Calamus erectus</i> Roxb. (Sokmil), <i>Garcinia indica</i> (Thouars) Choisy (Soksimareng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Zanthoxylum rhetsa</i> DC. (Sumitcheng), <i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).</p>
62	Rangdapara	43	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Morinda angustifolia</i> Roxb. (Chelnon), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Careya arborea</i> Roxb. (Gimbi), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchosyris ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Croton joufra</i> Roxb (Matmi), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Vitex peduncularis</i> Wall.ex Schauer (Rangri), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Alstonia scholaris</i> (L.) R. Br. (Sokchon), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Ficus auriculata</i> Lour. (Te'bil), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Uvaria hamiltonii</i> Hook.f.& Thomson. (Te'rik galwang), <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb. (Te'sru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).</p>
63	Josipara (Christian, Songsarek and Songma)	37	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Bombax ceiba</i> L. (Bolchu), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Dischidia bengalensis</i> Colebr. (Gominda bitchil), <i>Garuga pinnata</i></p>

			Roxb. (Jiga), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Sterculia villosa</i> Roxb. (Olmak), <i>Paederia foetida</i> L. (Pasim), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Garcinia indica</i> (Thouars) Choisy (Soksimareng), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).
64	Magupara (Nokma gittim)	51	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitchak), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Ficus semicordata</i> Buch.-Ham.ex Sm. (Aminsep), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Mallotus tetracoccus</i> (Roxb.) Kurz (A'tipra), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Bombax ceiba</i> L. (Bolchu), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Erythrina stricta</i> Roxb. (Bolmandal gitchak), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC. (Chaku jongsu), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Swertia chirata</i> Buch.-Ham. Ex Wall. (Chirota), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Artocarpus chama</i> Buch.-Ham (Chram), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Litsea cubeba</i> (Lour.) Pers. (Jengjil), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Solanum anguivi</i> Lam. (Kimka), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Bauhinia malabarica</i> Roxb. (Me'gong tak), <i>Vitex peduncularis</i> Wall.ex Schauer (Rangri), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap) , <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Eryngium foetidum</i> L. (Samskal), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Haematacarpus validus</i> (Miers.) Bakh.f.ex Forman (Te'patang), <i>Ficus variegata</i> Blume. (Te'wek), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).
65	Kujikura	26	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsoflorus</i> Nees (Alot gitchak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Careya arborea</i> Roxb. (Gimbil), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Melastoma malabathricum</i> L. (Kakku), <i>Albizia</i>

			<i>procera</i> (Roxb.) Benth. (Kelwi), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Sterculia villosa</i> Roxb. (Olmak), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
66	Songmagre	37	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Imperata cylindrica</i> (L.) Raeusch (Am'pang), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Bombax ceiba</i> L. (Bolchu), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Ixora nigricans</i> R. Br.ex Wight & Arn. (Bolmanggal), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Careya arborea</i> Roxb. (Gimbil), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Solanum anguivi</i> Lam. (Kimka), <i>Oroxylum indicum</i> (L.) Kurz (Kering),), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Paederia foetida</i> L. (Pasim), <i>Vitex peduncularis</i> Wall.ex Schauer (Rangri), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Aegle marmelos</i> (L.) Corrêa (Selpri), <i>Alstonia scholaris</i> (L.) R. Br. (Sokchon), <i>Albizia odoratissima</i> (L.f.) Benth. (Siso), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok),
67	Rengsipara	28	<i>Antidesma acidum</i> Retz. (Adurak), <i>Willughbeia edulis</i> Roxb. (Bakwe bijak dal'gipa), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Ixora nigricans</i> R. Br.ex Wight & Arn. (Bolmanggal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Artocarpus chama</i> Buch.-Ham (Chram), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Wrightia arborea</i> (Dennst.) Mabb. (Golmatra bite dal'gipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Mussaenda roxburghii</i> Hook. f. (Gradek), <i>Bauhinia variegata</i> L. (Me'gong), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Paederia foetida</i> L. (Pasim), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda (Sal'wa/Smu), <i>Balakata baccata</i> (Roxb.) Esser (Sangsim), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande).
68	Baburambil	30	<i>Antidesma acidum</i> Retz. (Adurak), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitcak), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i>

			(L.) Thwaites (Chonggi), <i>Flacourtia jangomas</i> (Lour.) Raeusch. (Darichik), <i>Argyreia nervosa</i> (Burm. f.) Bojer (Do'stip), <i>Eichhornia crassipes</i> (Mart.) Solms (Gachili), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Careya arborea</i> Roxb. (Gimbil), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Solanum anguivi</i> Lam. (Kimka), <i>Melastoma malabathricum</i> L. (Kakku), <i>Bauhinia variegata</i> L. (Me'gong), <i>Croton joufra</i> Roxb (Matmi), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Paederia foetida</i> L. (Pasim), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Bambusa tulda</i> Roxb. (Wa'ge), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok).
69	Dapgre	27	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Dillenia indica</i> L. (Agatchi badura), <i>Gymnopetalum chinense</i> (Lour.) Merr. (Apolka), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Morinda angustifolia</i> Roxb. (Chelnong), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Careya arborea</i> Roxb. (Gimbil), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma), <i>Streblus asper</i> Lour. (Bolsrem) .
70	Kongtokpara	32	<i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi), <i>Phlogacanthus thyrsiflorus</i> Nees (Alot gitchak), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Mallotus nudiflorus</i> (L.) Kulju & Welzen. (Bolbok), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Argyreia nervosa</i> (Burm. f.) Bojer (Do'stip), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Baccaurea ramiflora</i> Lour. (Gasampe), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Careya arborea</i> Roxb. (Gimbil), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Melastoma malabathricum</i> L. (Kakku), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia malabarica</i> Roxb. (Me'gongtak), <i>Bauhinia variegata</i> L. (Me'gong), <i>Paederia foetida</i> L. (Pasim), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Scoparia dulcis</i> L. (Samgoldak), <i>Firmiana colorata</i> (Roxb.) R.Br. (Sengsu), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok).
71	Dalugaon	21	<i>Alangium chinense</i> (Lour.) Harms (Bolchiring), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Schima wallichii</i> Choisy (Boldak), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia</i>

			<p><i>esculenta</i> (L.) Schott (Chigi), <i>Terminalia bellirica</i> (Gaertn.) Roxb. (Chirori), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Careya arborea</i> Roxb. (Gimbil), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Melastoma malabathricum</i> L. (Kakku), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Croton joufra</i> Roxb (Matmi), <i>Bauhinia variegata</i> L. (Me'gong), <i>Bauhinia malabarica</i> Roxb. (Me'gongtak), <i>Ficus hispida</i> L.f. (Sa'kap/Kan'tap), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande), <i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro (Wa'nok/Wa'ma).</p>
72	Karonggre	62	<p><i>Antidesma acidum</i> Retz. (Adurak), <i>Dillenia pentagyna</i> Roxb. (Agatchi),), <i>Phlogacanthus thyrsoiflorus</i> Nees (Alot gitchak), <i>Rothea serrata</i> (L.) Steane & Mabb. (Agunjulai/Matchok nachil), <i>Spondias pinnata</i> (L.f.) Kurz (Ambaletong), <i>Phyllanthus emblica</i> L. (Ambare segun), <i>Sarcochlamys pulcherrima</i> Gaudich. (An'tamburi), <i>Artocarpus lacucha</i> Buch.-Ham. (Arimu), <i>Terminalia chebula</i> Retz. (Aritak), <i>Litsea monopetala</i> (Roxb.) Pers. (Bolbit), <i>Toona ciliata</i> M.Roem. (Bolbret), <i>Grewia nervosa</i> (Lour.) Panigrahi (Bolchupret), <i>Haldina cordifolia</i> (Roxb.) Ridsdale (Boldoreng), <i>Schima wallichii</i> Choisy (Boldak), <i>Albizia chinensis</i> (Osbeck) Merr. (Bolpu), <i>Shorea robusta</i> Gaertn. (Bolsal), <i>Illex excelsa</i> (Wall.) Voigt (Boltajong), <i>Stereospermum chelonoides</i> (L.f.) DC (Bolsil), <i>Macaranga denticulata</i> (Blume) Müle. Arg. (Cha'gro/Bolajak), <i>Syzygium cumini</i> (L.) Skeels (Chambu), <i>Eurya acuminata</i> DC. (Cha'misi), <i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery (Chamolja), <i>Colocasia esculenta</i> (L.) Schott (Chigi), <i>Morinda angustifolia</i> Roxb. (Chelnong), <i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Chinatong), <i>Lasia spinosa</i> (L.) Thwaites (Chonggi), <i>Garcinia cowa</i> Roxb.ex Choisy (Dengadote), <i>Premna mollissima</i> Roth (Dokime), <i>Clerodendrum glandulosum</i> Lindl. (Donggam), <i>Gmelina arborea</i> Roxb. (Gambare), <i>Diospyros malabarica</i> (Desr.) Kostel. Gap), <i>Wrightia antidysenterica</i> (L.) R. Br. (Golmatra bite chongipa), <i>Mussaenda roxburghii</i> Hook. f. (Gradek),), <i>Diplazium esculentum</i> (Retz.) Sw. (Gongginjak), <i>Garuga pinnata</i> Roxb. (Jiga), <i>Melastoma malabathricum</i> L. (Kakku), <i>Albizia procera</i> (Roxb.) Benth. (Kelwi), <i>Oroxylum indicum</i> (L.) Kurz (Kering), <i>Centella asiatica</i> (L.) Urb. (Manamuni), <i>Callicarpa arborea</i> Roxb. (Makanchi/Kimbal), <i>Houttuynia cordata</i> Thunb. (Matchaduri), <i>Croton joufra</i> Roxb (Matmi), <i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC. (Me'bitchi), <i>Zanthoxylum oxyphyllum</i> Edgew. (Me'cheng), <i>Cissus repens</i> Lam. (Me'kemkem), <i>Bauhinia variegata</i> L. (Me'gong), <i>Persicaria chinensis</i> (L.) H. Gross (Me'kri donok), <i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult. (Miktoksi/Kimdotchi), <i>Sterculia villosa</i> Roxb. (Olmak), <i>Trema orientalis</i> (L.) Blume (Pakkram), <i>Paederia foetida</i> L. (Pasim), <i>Ficus benjamina</i> L. (Prap rapseng), <i>Vitex peduncularis</i> Wall.ex Schauer (Sa'kap/Kan'tap), <i>Ficus hispida</i> L.f. (Sakap/Kantap), <i>Lagerstroemia parviflora</i> Roxb. (Sidai/Chidai), <i>Cassia fistula</i> L. (Sinaru), <i>Amorphophallus bulbifer</i> (Roxb.) Blume (Songru), <i>Zanthoxylum rhetsa</i> DC. (Sumitcheng), <i>Protium serratum</i> (Wall.ex Colebr.) Engl. (Te'kring), <i>Bambusa jaintiana</i> R.B.Majumdar (Wa'tebok), <i>Bambusa bambos</i> (L.) Voss (Wa'kanta), <i>Melocanna baccifera</i> (Roxb.) Kurz (Wa'tre/Wa'mande),</p>

4.4.1. Utilization pattern of wild edible plants.

A wild edible plant includes fruits, vegetables, fodders and some flowers consumed as juice and eaten raw. A total of 106 wild edible plants were reported from the present study belonging to 49 families and 84 genera (**Table 4.8., Table 4.9., Table 4.10.**). The family has the maximum number of species belonging to the Lamiaceae family with 7 species (**Table 4.9.**) and the genera having the highest number of species belong to Ficus and Garcinia with 4 species each (**Table 4.10.**).

Table 4.8. : Wild Edible plants and its uses.

Sl. No.	Scientific name	Local name	Family	Uses
1	<i>Acacia concinna</i> (Willd.) DC.	Surengki/Suchengkil	Fabaceae	V
2	<i>Aegle marmelos</i> (L.) Corrêa	Selpri	Rutaceae	F
3	<i>Aglaia edulis</i> (Roxb.) Wall.	Sampal	Meliaceae	F
4	<i>Albizia odorattissima</i> (L.f.) Benth.	Siso	Fabaceae	Fd
5	<i>Amaranthus spinosus</i> L.	Chandile bu'su donggipa	Amaranthaceae	V
6	<i>Amaranthus viridis</i> L.	Chandile bu'su donggijagipa	Amaranthaceae	V
7	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Araceae	Fd, V
8	<i>Antidesma acidum</i> Retz.	Adurak/Arubak	Phyllanthaceae	V
9	<i>Argyreia nervosa</i> (Burm. f.) Bojer	Do·stip	Convolvulaceae	V
10	<i>Artocarpus chama</i> Buch.-Ham	Chram	Moraceae	F
11	<i>Artocarpus lacucha</i> Buch.-Ham.	Arimu	Moraceae	Fd, F
12	<i>Baccaurea ramiflora</i> Lour.	Gasampe	Phyllanthaceae	F
13	<i>Bambusa bambos</i> (L.) Voss	Wa·kanta	Poaceae	V
14	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	Poaceae	V
15	<i>Bambusa tulda</i> Roxb.	Wa·ge	Poaceae	V
16	<i>Bauhinia malabarica</i> Roxb.	Me·gong tak	Fabaceae	Fd, V
17	<i>Bauhinia variegata</i> L.	Me·gong	Fabaceae	Fd, V
18	<i>Calamus acanthospathus</i> Griff.	Re	Arecaceae	F
19	<i>Calamus erectus</i> Roxb.	Sokmil	Arecaceae	F, V
20	<i>Caryota urens</i> L.	Bolnamgija	Arecaceae	V
21	<i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC.	Chaku jongsu	Fagaceae	F
22	<i>Centella asiatica</i> (L.) Urb.	Manamuni	Apiaceae	V
23	<i>Chrysophyllum roxburghii</i> G. Don	Te·wan	Sapotaceae	F
24	<i>Cissus repens</i> Lam.	Me·kemkem	Vitaceae	V
25	<i>Citrus indica</i> Yu. Tanaka	Me·mang narang	Rutaceae	F
26	<i>Citrus medica</i> L.	Te·matchi	Rutaceae	F
27	<i>Clerodendrum glandulosum</i> Lindl.	Donggam	Lamiaceae	V

28	<i>Clerodendrum laevifolium</i> Blume	Balmatchi	Lamiaceae	V
29	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Araceae	Fd, V
30	<i>Corchorus capsularis</i> L.	Kosta/Meka	Malvaceae	Fd
31	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa·nok/Wa·ma	Poaceae	V
32	<i>Dillenia indica</i> L.	Agatchi badura	Dilleniaceae	F
33	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Dilleniaceae	F, V
34	<i>Diplazium esculentum</i> (Retz.) Sw.	Gongginjak	Athyriaceae	V
35	<i>Eichhornia crassipes</i> (Mart.) Solms	Gachili	Pontederiaceae	V
36	<i>Elaeagnus latifolia</i> L.	Sokkua	Elaeagnaceae	F
37	<i>Elaeocarpus floribundus</i> Blume.	Jorpai	Elaeocarpaceae	F
38	<i>Eryngium foetidum</i> L.	Samskal	Apiaceae	V
39	<i>Ficus auriculata</i> Lour.	Te·bil	Moraceae	Fd, F
40	<i>Ficus hispida</i> L.f.	Sa·kap/Kan·tap	Moraceae	Fd, F, V
41	<i>Ficus semicordata</i> Buch.-Ham.ex Sm.	Aminsep	Moraceae	F
42	<i>Ficus variegata</i> Blume.	Te·wek	Moraceae	F
43	<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Darichik	Salicaceae	F
44	<i>Garcinia cowa</i> Roxb.ex Choisy	Dengadote	Clusiaceae	F
45	<i>Garcinia indica</i> (Thouars) Choisy	Soksimareng	Clusiaceae	F
46	<i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb.	Te·sru	Clusiaceae	F
47	<i>Garcinia xanthochymus</i> Hook f.ex T. Anderson	Aruak	Clusiaceae	F
48	<i>Gmelina arborea</i> Roxb.	Gambare	Lamiaceae	Fd, V
49	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	Malvaceae	F
50	<i>Grewia serrulata</i> DC.	Bolmenggo	Malvaceae	Fd
51	<i>Gymnopetalum chinense</i> (Lour.) Merr.	Apolka	Cucurbitaceae	F, V
52	<i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman)	Te·patang	Menispermaceae	F
53	<i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson	Te·be	Cucurbitaceae	F
54	<i>Holmskioldia sanguinea</i> Retz.	Mese nachil	Lamiaceae	Flower juice is consumed
55	<i>Houttuynia cordata</i> Thunb.	Matchaduri	Saururaceae	V
56	<i>Justicia adhatoda</i> L.	Alot gipok	Acanthaceae	V
57	<i>Lasia spinosa</i> (L.) Thwaites	Chonggi	Araceae	V
58	<i>Leucas aspera</i> (Willd.) Link	Du·kumu	Lamiaceae	V
59	<i>Litsea cubeba</i> (Lour.) Pers.	Jengjil	Lauraceae	Fd
60	<i>Litsea monopetala</i> (Roxb.) Pers.	Bolbit	Lauraceae	Fd
61	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha·gro/Bolajak	Euphorbiaceae	Fd
62	<i>Melastoma malabathricum</i> L.	Kakku	Melastomataceae	F, V
63	<i>Melia azedarach</i> L.	Bagongat	Meliaceae	V

64	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa-tre/Wa-mande	Poaceae	Fd, V
65	<i>Melodinus cochinchinensis</i> (Lour.) Merr.	Bakwe bijak chongipa	Apocynaceae	F
66	<i>Merremia umbellata</i> (L.) Hallier f.	Sitri	Convolvulaceae	Flowers are eaten raw.
67	<i>Meyna spinosa</i> Roxb.ex Link	Te'chikeng	Rubiaceae	F, V
68	<i>Mikania micrantha</i> Kunth	Meghalaya budu/Samtip	Compositae	V
69	<i>Morinda angustifolia</i> Roxb.	Chelnong	Rubiaceae	V
70	<i>Mussaenda roxburghii</i> Hook. f.	Gradek	Rubiaceae	V
71	<i>Myrica rubra</i> (Lour.) Siebold & Zucc.	Bolmeseng	Myricaceae	F
72	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Bignoniaceae	V
73	<i>Paederia foetida</i> L.	Pasim	Rubiaceae	V
74	<i>Pandanus odorifer</i> (Forssk.) Kuntze.	Burungni anaros	Pandanaceae	F
75	<i>Parkia timoriana</i> (DC.) Merr.	Amelgap	Fabaceae	F
76	<i>Persicaria chinensis</i> (L.) H. Gross	Me'kri donok	Polygonaceae	V
77	<i>Phlogacanthus guttatus</i> Nees	Alot rimit	Acanthaceae	V
78	<i>Phlogacanthus thyrsoiflorus</i> Nees	Alot gitchak	Acanthaceae	V
79	<i>Phyllanthus emblica</i> L.	Ambare segun	Phyllanthaceae	F
80	<i>Premna mollissima</i> Roth	Do'kime	Lamiaceae	V
81	<i>Protium serratum</i> (Wall.ex Colebr.) Engl.	Te'kring	Burseraceae	F
82	<i>Rhus chinensis</i> Mill.	Kitma	Anacardiaceae	F
83	<i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me'bitchi	Gesneriaceae	V
84	<i>Rothea serrata</i> (L.) Steane & Mabb.	Agunjulai/Matchok nachil	Lamiaceae	V
85	<i>Rubus buergeri</i> Miq.	Te'kisambak	Rosaceae	F
86	<i>Rubus ellipticus</i> Sm.	Biribisi	Rosaceae	F
87	<i>Sarcochlamys pulcherrima</i> Gaudich.	An'tamburi	Urticaceae	V
88	<i>Saurauia napaulensis</i> DC.	Adambok	Actinidiaceae	F
89	<i>Saurauia roxburghii</i> Wall.	Ginsning	Actinidiaceae	F
90	<i>Scoparia dulcis</i> L.	Samgoldak	Plantaginaceae	V
91	<i>Solanum anguivi</i> Lam.	Kimka	Solanaceae	F, V
92	<i>Solanum violaceum</i> Ortega	Kimkarong	Solanaceae	F, V
93	<i>Spondias pinnata</i> (L.f.) Kurz	Ambaletong	Anacardiaceae	F
94	<i>Sterculia villosa</i> Roxb.	Olmak	Malvaceae	F
95	<i>Stereospermum chelonoides</i> (L.f.) DC	Bolsil	Bignoniaceae	Fd
96	<i>Syzygium cumini</i> (L.) Skeels	Chambu	Myrtaceae	F
97	<i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult.	Miktoksi/Kimdotchi	Apocynaceae	V

98	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Chirori	Combretaceae	F
99	<i>Terminalia chebula</i> Retz.	Aritak	Combretaceae	F
100	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/Smu	Poaceae	Fd
101	<i>Toona ciliata</i> M.Roem.	Bolbret	Meliaceae	V
102	<i>Trema orientalis</i> (L.) Blume	Pakkram	Cannabaceae	Fd, V
103	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Araliaceae	F, V
104	<i>Uvaria hamiltonii</i> Hook.f.& Thomson.	Te'rik galwang	Annonaceae	F
105	<i>Willughbeia edulis</i> Roxb.	Bakwe bijak dal'gipa	Apocynaceae	F
106	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me'cheng	Rutaceae	V

V-Vegetable, Fd-Fodder, and F-Fruits.

Table 4.9.: Family wise ranking of wild edible plants.

Sl.no.	Family	No. of species
1	Lamiaceae	7
2	Moraceae	6
3	Poaceae	6
4	Fabaceae	5
5	Malvaceae	4
6	Clusiaceae	4
7	Rubiaceae	4
8	Rutaceae	3
9	Meliaceae	3
10	Araceae	3
11	Phyllanthaceae	3
12	Arecaceae	3
13	Acanthaceae	3
14	Meliaceae	3
15	Apocynaceae	3
16	Amaranthaceae	2
17	Convolvulaceae	2
18	Apiaceae	2
19	Dilleniaceae	2
20	Cucurbitaceae	2
21	Lauraceae	2
22	Bignoniaceae	2
23	Anacardiaceae	2
24	Rosaceae	2
25	Actinidiaceae	2
26	Solanaceae	2
27	Combretaceae	2
28	Fagaceae	1
29	Sapotaceae	1
30	Vitaceae	1
31	Athyriaceae	1
32	Pontederiaceae	1

33	Elaeagnaceae	1
34	Elaeocarpaceae	1
35	Salicaceae	1
36	Menispermaceae	1
37	Saururaceae	1
38	Euphorbiaceae	1
39	Melastomataceae	1
40	Pandanaceae	1
41	Polygonaceae	1
42	Burseraceae	1
43	Gesneriaceae	1
44	Urticaceae	1
45	Plantaginaceae	1
46	Myrtaceae	1
47	Cannabaceae	1
48	Araliaceae	1
49	Annonaceae	1

Table 4.10. Genera wise ranking of wild edible plants.

Sl.no.	Genera	No. of species
1	Ficus	4
2	Garcinia	4
3	Bambusa	3
4	Amaranthus	2
5	Artocarpus	2
6	Bauhinia	2
7	Calamus	2
8	Citrus	2
9	Clerodendrum	2
10	Dillenia	2
11	Grewia	2
12	Litsea	2
13	Phlogacanthus	2
14	Rubus	2
15	Saurauia	2
16	Solanum	2
17	Terminalia	2
18	Acacia	1
19	Aegle	1
20	Aglaia	1
21	Albizia	1
22	Amorphophallus	1
23	Antidesma	1
24	Argyreia	1
25	Baccaurea	1
26	Caryota	1
27	Castanopsis	1
28	Centella	1
29	Chrysophyllum	1
30	Cissus	1
31	Colocasia	1

32	Corchorus	1
33	Dendrocalamus	1
34	Diplazium	1
35	Eichhornia	1
36	Elaeagnus	1
37	Elaeocarpus	1
38	Eryngium	1
39	Flacourtia	1
40	Gmelina	1
41	Gymnopetalum	1
42	Haematocarpus	1
43	Hodgsonia	1
44	Holmskioldia	1
45	Houttuynia	1
46	Justicia	1
47	Lasia	1
48	Leucas	1
49	Macaranga	1
50	Melastoma	1
51	Melia	1
52	Melocanna	1
53	Melodinus	1
54	Merremia	1
55	Meyna	1
56	Mikania	1
57	Morinda	1
58	Mussaenda	1
59	Myrica	1
60	Oroxylum	1
61	Paederia	1
62	Pandanus	1
63	Parkia	1
64	Persicaria	1
65	Phyllanthus	1
66	Premna	1
67	Protium	1
68	Rhus	1
69	Rhynchoetechum	1
70	Rothea	1
71	Sarcochlamys	1
72	Scoparia	1
73	Spondias	1
74	Sterculia	1
75	Stereospermum	1
76	Syzygium	1
77	Tabernaemontana	1
78	Thysanolaena	1
79	Toona	1
80	Trema	1
81	Trevesia	1
82	Uvaria	1
83	Willughbeia	1
84	Zanthoxylum	1

4.4.1.1. Fruits.

51 wild fruits were collected from the forests which belong to 37 genera and 30 families (**Table 4.11**, **Fig. 4.14.**, **Fig. 4.15.**). **Table 4.11.** recorded scientific names, local names, families, habits, local distribution, availability period, and mode of consumption of fruits by the villagers. The local distribution of fruits was categorised as very common, common, and uncommon where common (23) species were more in number compared to uncommon (21) species and very common (5) species. Fruits mainly were consumed raw or sometimes in juice form as well as in pickled form. Some fruits were also cooked as vegetables and eaten along with rice. The fruits of *Ficus auriculata* Lour. (Te·bil) were used for fishing and the fruits of *Sterculia villosa* Roxb. (Olmak) were eaten raw as well as by roasting. Plant species of genera *Ficus* and *Garcinia* were more with 4 species each (**Fig.4.14.**) and plant species belonging to the Moraceae family were higher than the other families with 6 species (**Fig. 4.15.**).

Fig. 4.16. shows the habit-wise distribution of fruit species where 31.37% of medium-sized trees were maximum followed by 21.57% of small trees, 19.61% of shrubs, 11.76% of large trees, and both climber and woody climbers with 7.84% each.

The availability of fruits in West Garo Hills differs from season to season. **Table 4.11.** shows the availability period of 51 fruit species recorded in the present study. In order to know the seasonal availability, the seasons were categorized into Winter (Nov-Feb), Spring (Mid Feb to March), Summer (April-June), Monsoon/Rainy season (June-Sept), Autumn (Oct-early Nov), Almost throughout the year, Whole year, and More than one season. The fruits available during more than one season showed the highest percentage of 54.90. It was followed by fruits available during winter (Nov-Feb) with 15.69%, almost throughout the year with 7.84%, Monsoon/Rainy season (June-Sept) and Summer (April-June) with 5.88% each, fruits available the whole year as well as Autumn (Oct-early Nov) season having the same percentage of 3.92, and fruits available during spring (Mid Feb-March) season having the least percentage of 1.96 (**Fig. 4.17.**).

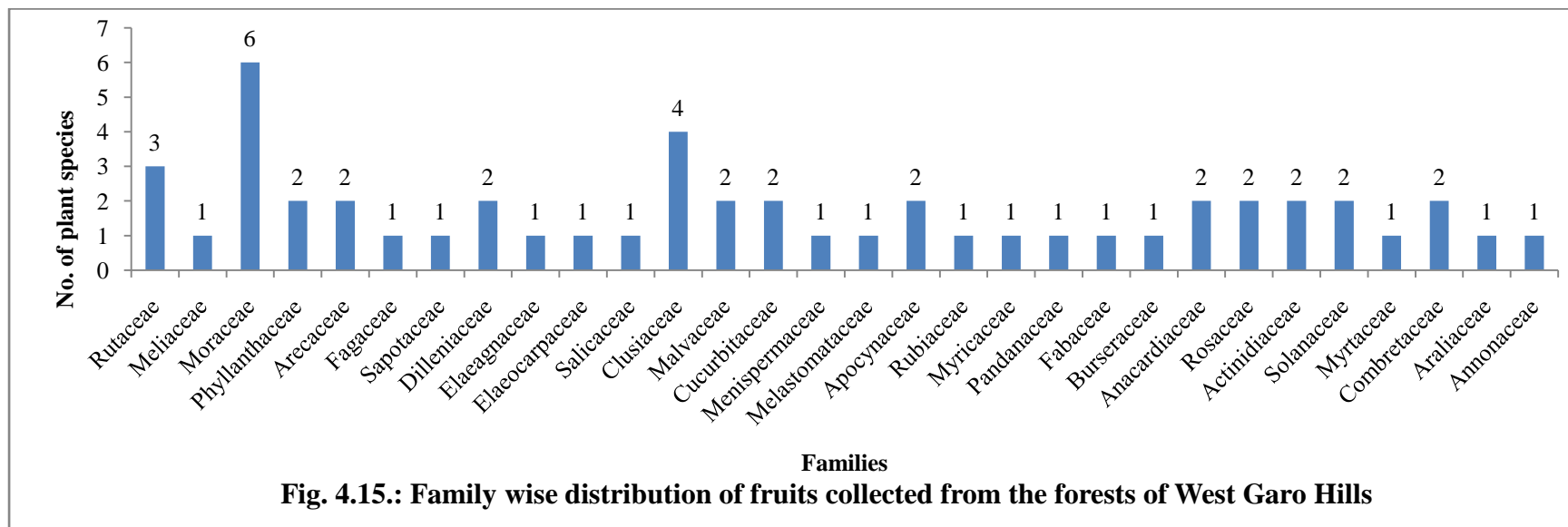
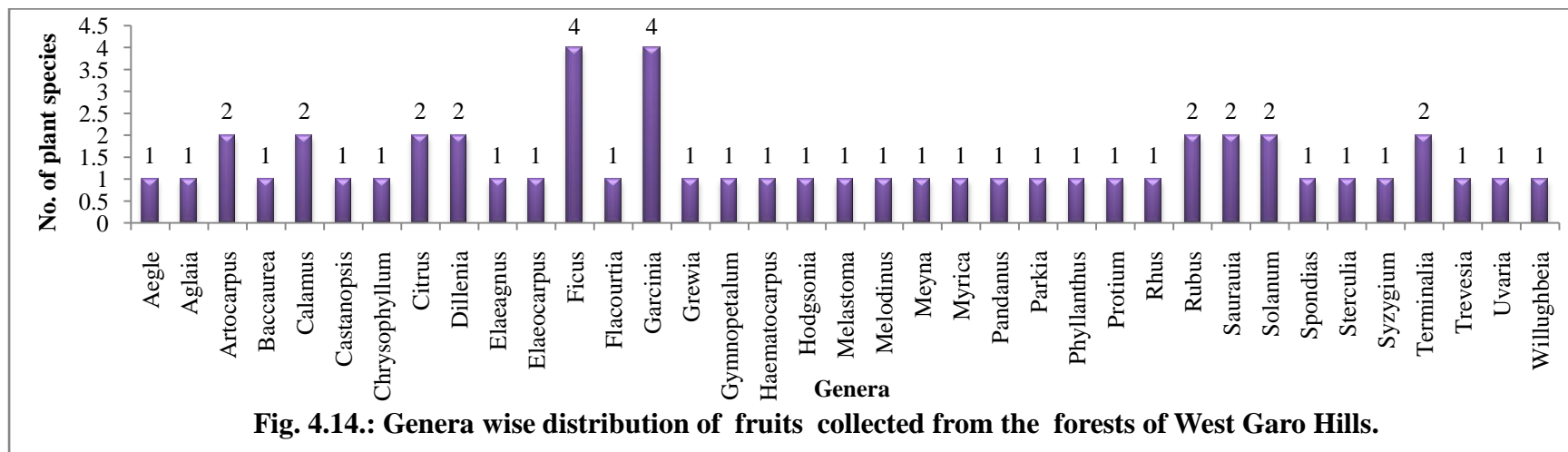
Table 4.11. : Utilization and consumption of fruit species from the forests of West Garo Hills.

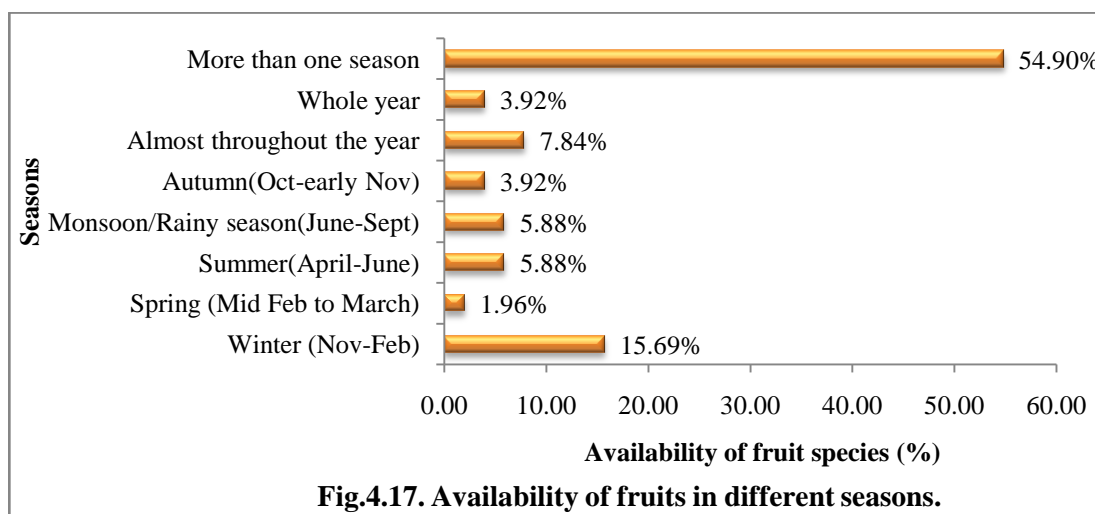
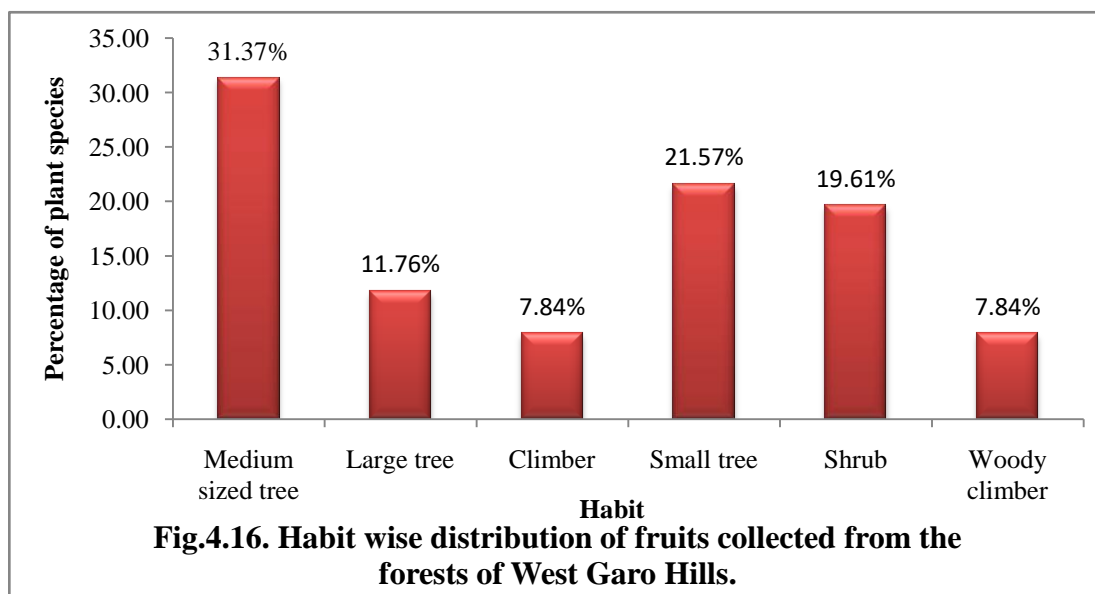
Sl. no.	Scientific name	Local name	Family	Habit	Local distribution	Availability period	Mode of consumption
1	<i>Aegle marmelos</i> (L.) Corrêa	Selpri	Rutaceae	Medium sized tree	Uncommon	February-June	Ripe fruits are eaten raw.
2	<i>Aglaia edulis</i> (Roxb.) Wall.	Sampal	Meliaceae	Medium sized tree	Uncommon	November-February	Ripe fruits are eaten raw.
3	<i>Artocarpus chama</i> Buch.-Ham	Chram	Moraceae	Medium sized tree	Common	March-July	Ripe fruits are eaten raw.
4	<i>Artocarpus lacucha</i> Buch.-Ham.	Arimu	Moraceae	Large tree	Common	March-July	Ripe fruits are eaten raw.
5	<i>Baccaurea ramiflora</i> Lour.	Gasampe	Phyllanthaceae	Medium sized tree	Common	May-July	Ripe fruits are eaten raw.
6	<i>Calamus acanthospathus</i> Griff.	Re	Arecaceae	Climber	Uncommon	December-January	Mature fruits are eaten raw.
7	<i>Calamus erectus</i> Roxb.	Sokmil	Arecaceae	Climber	Common	Almost throughout the year	Mature fruits are eaten raw and can be cooked and eaten.
8	<i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC.	Chaku jongsu	Fagaceae	Medium sized tree	Common	October-December	Mature fruits are eaten raw.
9	<i>Chrysophyllum roxburghii</i> G. Don	Te'wan	Sapotaceae	Large tree	Uncommon	November-February	Unripe and ripe fruits are eaten raw.
10	<i>Citrus indica</i> Yu. Tanaka	Me'mang narang	Rutaceae	Small tree	Uncommon	December-February	Ripe fruits are eaten raw.
11	<i>Citrus medica</i> L.	Te'matchi	Rutaceae	Shrub	Uncommon	October-November	Unripe and ripe fruits are eaten raw.
12	<i>Dillenia indica</i> L.	Agatchi badura	Dilleniaceae	Large tree	Uncommon	August-March	Mature fruits are eaten raw and in pickled form.
13	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Dilleniaceae	Medium sized tree	Very common	March-August	Fruits are cooked and eaten and in pickled form.
14	<i>Elaeagnus latifolia</i> L.	Sokkua	Elaeagnaceae	Shrub	Common	February-March	Ripe fruits are eaten raw.

15	<i>Elaeocarpus floribundus</i> Blume.	Jorpai	Elaeocarpaceae	Medium sized tree	Uncommon	October-December	Mature fruits are eaten raw and in pickled form.
16	<i>Ficus auriculata</i> Lour.	Te·bil	Moraceae	Small tree	Common	Almost throughout the year	Ripe fruits are eaten raw and fruits are used for fishing.
17	<i>Ficus hispida</i> L.f.	Sa·kap/ Kan·tap	Moraceae	Small tree	Very common	February-June	Ripe fruits are eaten raw.
18	<i>Ficus semicordata</i> Buch.-Ham.ex Sm.	Aminsep	Moraceae	Small tree	Common	Whole year	Ripe fruits are eaten raw.
19	<i>Ficus variegata</i> Blume.	Te·wek	Moraceae	Medium sized tree	Common	Almost throughout the year	Ripe fruits are eaten raw.
20	<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Darichik	Salicaceae	Small tree	Common	June-July	Ripe fruits are eaten raw.
21	<i>Garcinia cowa</i> Roxb.ex Choisy	Dengadote	Clusiaceae	Small tree	Common	June-August	Ripe fruits are eaten raw.
22	<i>Garcinia indica</i> (Thouars) Choisy	Soksimareng	Clusiaceae	Medium sized tree	Uncommon	March-May	Ripe fruits are eaten raw.
23	<i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb.	Te·sru	Clusiaceae	Medium sized tree	Uncommon	December	Ripe fruits are eaten raw.
24	<i>Garcinia xanthochymus</i> Hook f.ex T. Anderson	Aruak	Clusiaceae	Medium sized tree	Uncommon	May-November	Ripe fruits are eaten raw and mature fruits are eaten in pickled form.
25	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	Malvaceae	Small tree	Very common	August-November	Ripe fruits are eaten raw.
26	<i>Gymnopetalum chinense</i> (Lour.) Merr.	Apolka	Cucurbitaceae	Climber	Common	September-December	Fruits are cooked and eaten.
27	<i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman	Te·patang	Menispermaceae	Woody climber	Common	March-August	Ripe fruits are eaten raw and can be consume in juice form.
28	<i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson	Te·be	Cucurbitaceae	Climber	Uncommon	September-October	Mature fruits are eaten raw.
29	<i>Melastoma malabathricum</i> L.	Kakku	Melastomataceae	Shrub	Common	June-December	Ripe fruits are eaten raw.

30	<i>Melodinus cochinchinensis</i> (Lour.) Merr.	Bakwe bijak chongipa	Apocynaceae	Woody climber	Uncommon	May-June	Ripe fruits are eaten raw.
31	<i>Meyna spinosa</i> Roxb.ex Link	Te'chikeng	Rubiaceae	Shrub	Uncommon	December-January	Ripe fruits are eaten raw.
32	<i>Myrica rubra</i> (Lour.) Siebold & Zucc.	Bolmeseng	Myricaceae	Shrub	Uncommon	April-June	Unripe and ripe fruits are eaten raw with salt and chillies.
33	<i>Pandanus odorifer</i> (Forssk.) Kuntze.	Burungni anaros	Pandanaceae	Shrub	Uncommon	November-December	Ripe fruits are eaten raw.
34	<i>Parkia timoriana</i> (DC.) Merr.	Amelgap	Fabaceae	Medium sized tree	Uncommon	November-May	Mature fruits are eaten raw.
35	<i>Phyllanthus emblica</i> L.	Ambare segun	Phyllanthaceae	Small tree	Common	July-April	Mature fruits are eaten raw and in pickled form.
36	<i>Protium serratum</i> (Wall.ex Colebr.) Engl.	Te'kring	Burseraceae	Medium sized tree	Common	March-July	Unripe and ripe fruits are eaten raw with salt and chillies.
37	<i>Rhus chinensis</i> Mill.	Kitma	Anacardiaceae	Small tree	Common	October-December	Fruits are eaten raw alone or with salt and chillies.
38	<i>Rubus buergeri</i> Miq.	Te'kisambak	Rosaceae	Shrub	Uncommon	June-October	Ripe fruits are eaten raw.
39	<i>Rubus ellipticus</i> Sm.	Biribisi	Rosaceae	Shrub	Uncommon	March-April	Ripe fruits are eaten raw.
40	<i>Saurauia napaulensis</i> DC.	Adambok	Actinidiaceae	Medium sized tree	Uncommon	March-August	Ripe fruits are eaten raw.
41	<i>Saurauia roxburghii</i> Wall.	Ginsning	Actinidiaceae	Small tree	Common	September-February	Ripe fruits are eaten raw.
42	<i>Solanum anguivi</i> Lam.	Kimka	Solanaceae	Shrub	Common	Whole year	Fruits are cooked and eaten.
43	<i>Solanum violaceum</i> Ortega	Kimkarong	Solanaceae	Shrub	Common	Almost throughout the year	Fruits are cooked and eaten.
44	<i>Spondias pinnata</i> (L.f.) Kurz	Ambaletong	Anacardiaceae	Medium sized tree	Common	February - November	Ripe fruits are eaten raw.
45	<i>Sterculia villosa</i> Roxb.	Olmak	Malvaceae	Large tree	Common	April-May	Fruits (seeds) are eaten raw or by roasting.

46	<i>Syzygium cumini</i> (L.) Skeels	Chambu	Myrtaceae	Medium sized tree	Very common	May-July	Ripe fruits are eaten raw.
47	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Chirori	Combretaceae	Large tree	Very common	November-February	Mature fruits are eaten raw.
48	<i>Terminalia chebula</i> Retz.	Aritak	Combretaceae	Large tree	Uncommon	October-March	Mature fruits are eaten raw.
49	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Araliaceae	Small tree	Common	February-May	Fruits are cooked and eaten.
50	<i>Uvaria hamiltonii</i> Hook.f.& Thomson.	Te'rik galwang	Annonaceae	Woody climber	Common	May-September	Ripe fruits are eaten raw.
51	<i>Willughbeia edulis</i> Roxb.	Bakwe bijak dal'gipa	Apocynaceae	Woody climber	Uncommon	May-July	Ripe fruits are eaten raw.





The most commonly collected fruits were *Phyllanthus emblica* L. (Ambare segun), *Protium serratum* (Wall.ex Colebr.) Engl. (Te'kring), *Garcinia cowa* Roxb.ex Choisy (Dengadote), *Uvaria hamiltonii* Hook.f.& Thomson. (Te'rik galwang), *Syzygium cumini* (L.) Skeels (Chambu), and *Baccaurea ramiflora* Lour. (Gasampe). Some lesser-known, as well as important and interesting wild fruits recorded in this study, were *Chrysophyllum roxburghii* G. Don (Te'wan), *Citrus indica* Yu. Tanaka (Me'mang narang), *Garcinia indica* (Thouars) Choisy (Soksimareng), *Garcinia xanthochymus* Hook f.ex T. Anderson (Aruak), *Haematocarpus validus* (Miers.) Bakh.f.ex Forman (Te'patang), *Melastoma malabathricum* L. (Kakku), *Melodinus cochinchinensis*

(Lour.) Merr. (Bakwe bijak chongipa), *Meyna spinosa* Roxb.ex Link (Te'chikeng), *Uvaria hamiltonii* Hook.f.& Thomson. (Te'rik galwang), and *Willughbeia edulis* Roxb (Bakwe bijak dal'gipa).

4.4.1.2. Vegetables.

The present investigation comprises 54 wild vegetables with 47 genera and 31 families (**Table 4.12, Fig. 4.18., Fig. 4.19.**). **Table 4.12.** includes scientific names, local names, families, habits, availability periods, local distribution, and parts used by vegetables. The local distribution of vegetables was also categorised as very common, common, and uncommon where common species recorded highest with 32 species and uncommon and very common with 11 species each. Plant species of genera *Bambusa* were more with 3 species (**Fig.4.18.**) and plant species belonging to the Lamiaceae family were higher than the other families with 6 species (**Fig. 4.19.**).

The habit of vegetables was classified into herb, small tree, climber, bamboo, medium-sized tree, shrub, palm tree, fern, aquatic plant, and large tree. **Fig. 4.20.** shows the habit-wise distribution of vegetable species where 27.78% of shrubs were maximum followed by herbs (20.37%), small trees (14.81%), climbers (11.11%), bamboo and medium-sized trees with 9.26% each, and the least percentage for palm trees, ferns, aquatic plants, and a large tree with only 1.85%.

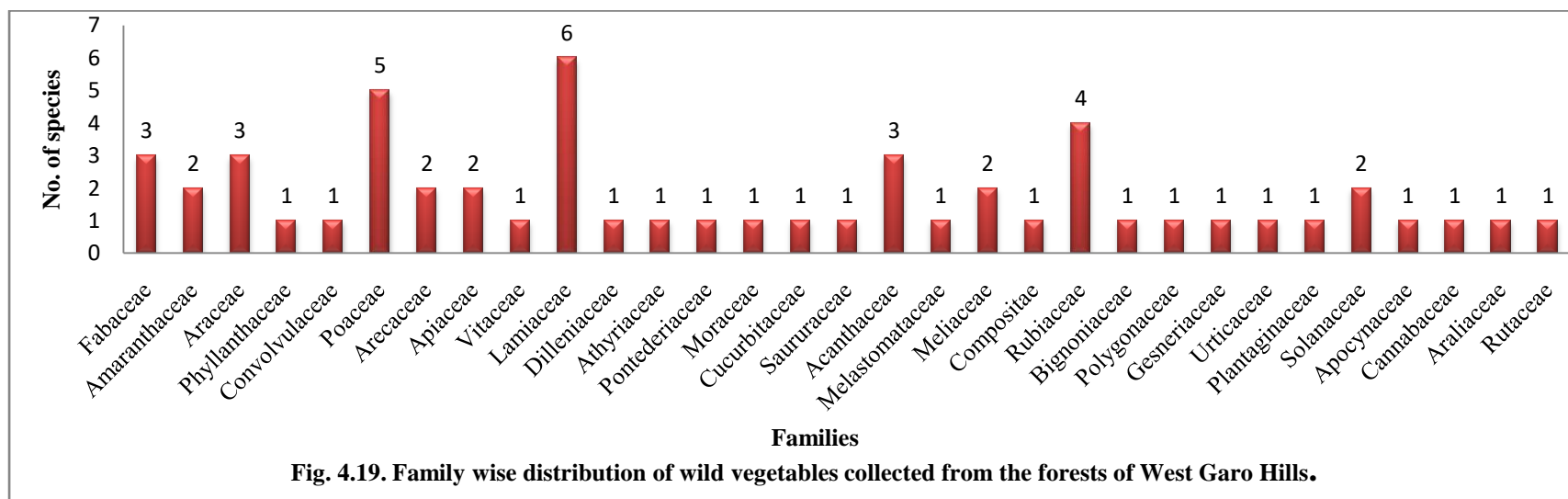
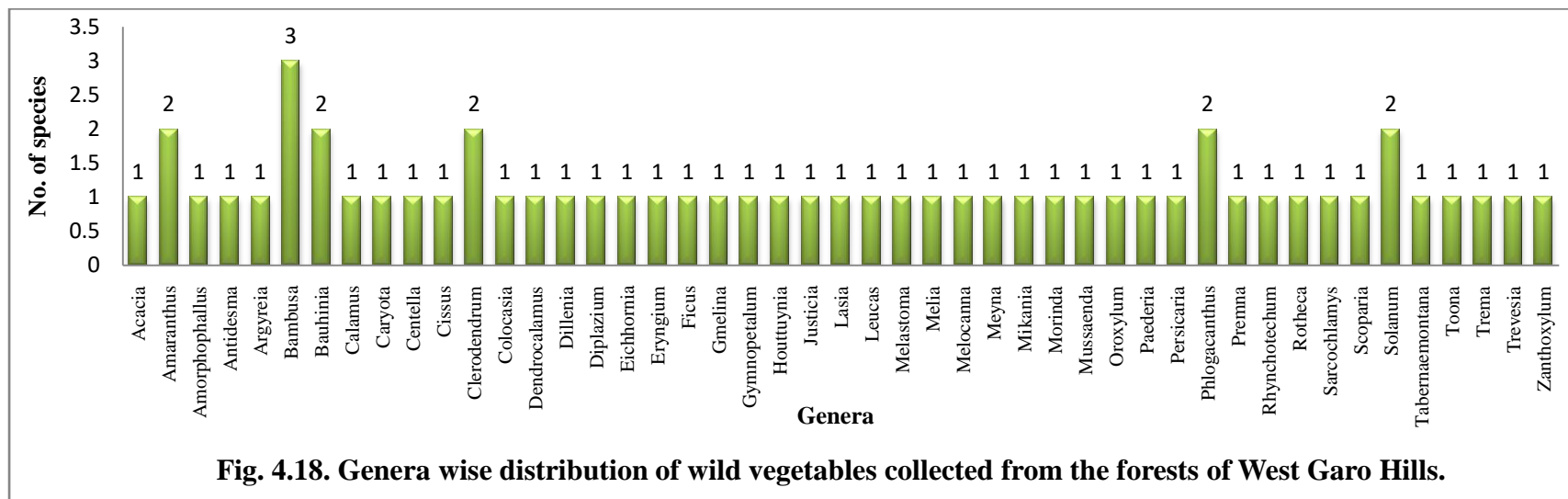
The vegetables available during more than one season showed the highest percentage of 37.04 which was followed by vegetables available the whole year with 35.19%, almost throughout the year and summer (April-June) with 9.26% each, Monsoon/Rainy season (June-Sept) and Winter (Nov-Feb) with 3.70% each, Spring (Mid-Feb-March) with 1.85% and there were no vegetables available only in autumn (Oct-early Nov). It was either along with other seasons or which include whole year only and does not have a particular autumn season vegetables available in the present study (**Fig. 4.21.**).

Table 4.12. : Utilization and consumption of vegetable species from the forests of West Garo Hills.

Sl. no.	Scientific name	Local name	Family	Habit	Availability period	Local distribution	Parts used
1	<i>Acacia concinna</i> (Willd.) DC.	Surengki/ Suchengkil	Fabaceae	Shrub	March-May	Uncommon	Tender leaves
2	<i>Amaranthus spinosus</i> L.	Chandile bu'su donggipa	Amaranthaceae	Herb	Whole year	Common	Leaves
3	<i>Amaranthus viridis</i> L.	Chandile bu'su donggijagipa	Amaranthaceae	Herb	Whole year	Common	Leaves
4	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Araceae	Herb	March-September	Very common	Flower, tender leaves and stalk
5	<i>Antidesma acidum</i> Retz.	Adurak	Phyllanthaceae	Small tree	March-September	Very common	Tender leaves
6	<i>Argyreia nervosa</i> (Burm. f.) Bojer	Do·stip	Convolvulaceae	Climber	December- September	Common	Leaves
7	<i>Bambusa bambos</i> (L.) Voss	Wa·kanta	Poaceae	Bamboo	May-September	Common	Shoots
8	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	Poaceae	Bamboo	May-September	Uncommon	Shoots
9	<i>Bambusa tulda</i> Roxb.	Wa·ge	Poaceae	Bamboo	May-September	Common	Shoots
10	<i>Bauhinia variegata</i> L.	Me·gong	Fabaceae	Medium sized tree	March-May	Very common	Tender leaves
11	<i>Bauhinia malabarica</i> Roxb.	Me·gong tak	Fabaceae	Medium sized tree	March-May	Uncommon	Tender leaves
12	<i>Calamus erectus</i> Roxb.	Sokmil	Arecaceae	Climber	Almost throughout the year	Common	Fruits and shoots
13	<i>Caryota urens</i> L.	Bolnamgija	Arecaceae	Palm tree	Whole year	Uncommon	Shoots
14	<i>Centella asiatica</i> (L.) Urb.	Manamuni	Apiaceae	Herb	Whole year	Common	Leaves
15	<i>Cissus repens</i> Lam.	Me·kemkem	Vitaceae	Climber	November	Uncommon	Leaves
16	<i>Clerodendrum glandulosum</i> Lindl.	Donggam	Lamiaceae	Shrub	Whole year	Common	Leaves
17	<i>Clerodendrum laevifolium</i> Blume	Balmatchi	Lamiaceae	Shrub	May	Uncommon	Flowers

18	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Araceae	Herb	December-January	Very common	Stalk, and tender leaves
19	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa·nok/Wa·ma	Poaceae	Bamboo	May-September	Common	Shoots
20	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Dilleniaceae	Medium sized tree	February-June	Very common	Fruits and flowers
21	<i>Diplazium esculentum</i> (Retz.) Sw.	Gongginjak	Athyriaceae	Fern	January-June	Very common	Stalk and tender leaves
22	<i>Eichhornia crassipes</i> (Mart.) Solms	Gachili	Pontederiaceae	Aquatic plant	March-December	Common	Stalk and tender leaves
23	<i>Eryngium foetidum</i> L.	Samskal	Apiaceae	Herb	Almost throughout the year	Common	Leaves
24	<i>Ficus hispida</i> L.f.	Sa·kap/Kan·tap	Moraceae	Small tree	Whole year	Very common	Leaves
25	<i>Gmelina arborea</i> Roxb.	Gambare	Lamiaceae	Medium sized tree	February-April	Very common	Flowers
26	<i>Gymnopetalum chinense</i> (Lour.) Merr.	Apolka	Cucurbitaceae	Climber	September-December	Common	Fruits
27	<i>Houttuynia cordata</i> Thunb.	Matchaduri	Saururaceae	Herb	Whole year	Common	Leaves
28	<i>Justicia adhatoda</i> L.	Alot gipok	Acanthaceae	Shrub	January-April	Uncommon	Flowers
29	<i>Lasia spinosa</i> (L.) Thwaites	Chonggi	Araceae	Herb	Whole year	Very common	Shoots and tender leaves
30	<i>Leucas aspera</i> (Willd.) Link	Du·kumu	Lamiaceae	Herb	Whole year	Common	Leaves
31	<i>Melastoma malabathricum</i> L.	Kakku	Melastomataceae	Shrub	Whole year	Common	Fruits and leaves
32	<i>Melia azedarach</i> L.	Bagongat	Meliaceae	Small tree	March-May	Common	Flowers
33	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa·tre/ Wa·mande	Poaceae	Bamboo	May-September	Common	Shoots
34	<i>Meyna spinosa</i> Roxb.ex Link	Te·chikeng	Rubiaceae	Shrub	Almost throughout the year	Uncommon	Leaves
35	<i>Mikania micrantha</i> Kunth	Meghalaya budu/Santip	Compositae	Climber	Whole year	Common	Tender leaves
36	<i>Morinda angustifolia</i> Roxb.	Chelnong	Rubiaceae	Shrub	January-August	Uncommon	Flowers and tender

							leaves
37	<i>Mussaenda roxburghii</i> Hook. f.	Gradek	Rubiaceae	Shrub	Whole year	Common	Leaves
38	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Bignoniaceae	Medium sized tree	June-August	Common	Flowers and tender leaves
39	<i>Paederia foetida</i> L.	Pasim	Rubiaceae	Climber	Whole year	Common	Leaves
40	<i>Persicaria chinensis</i> (L.) H. Gross	Me·kri donok	Polygonaceae	Herb	Whole year	Common	Leaves
41	<i>Phlogacanthus guttatus</i> Nees	Alot rimit	Acanthaceae	Shrub	January-April	Uncommon	Flowers
42	<i>Phlogacanthus thyrsoiflorus</i> Nees	Alot gitchak	Acanthaceae	Shrub	January-April	Common	Flowers
43	<i>Premna mollissima</i> Roth	Do·kime	Lamiaceae	Small tree		Common	Leaves
44	<i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me·bitchi	Gesneriaceae	Shrub	June-July	Common	Flowers and tender leaves
45	<i>Rotheca serrata</i> (L.) Steane & Mabb.	Agunjulai/ Matchok nachil	Lamiaceae	Shrub	Almost throughout the year	Common	Leaves and flowers
46	<i>Sarcochlamys pulcherrima</i> Gaudich.	An·tamburi	Urticaceae	Small tree	Whole year	Common	Leaves
47	<i>Scoparia dulcis</i> L.	Samgoldak	Plantaginaceae	Herb	Whole year	Common	Leaves
48	<i>Solanum anguivi</i> Lam.	Kimka	Solanaceae	Shrub	Whole year	Common	Fruits
49	<i>Solanum violaceum</i> Ortega	Kimkarong	Solanaceae	Shrub	August-December	Common	Fruits
50	<i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult.	Miktoksi/ Kimdotchi	Apocynaceae	Shrub	Whole year	Uncommon	Leaves
51	<i>Toona ciliata</i> M.Roem.	Bolbret	Meliaceae	Large tree		Very common	Tender leaves
52	<i>Trema orientalis</i> (L.) Blume	Pakkram	Cannabaceae	Small tree	Whole year	Very common	Leaves
53	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Araliaceae	Small tree	February-May	Common	Fruits
54	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me·cheng	Rutaceae	Small tree	February-April	Common	Leaves



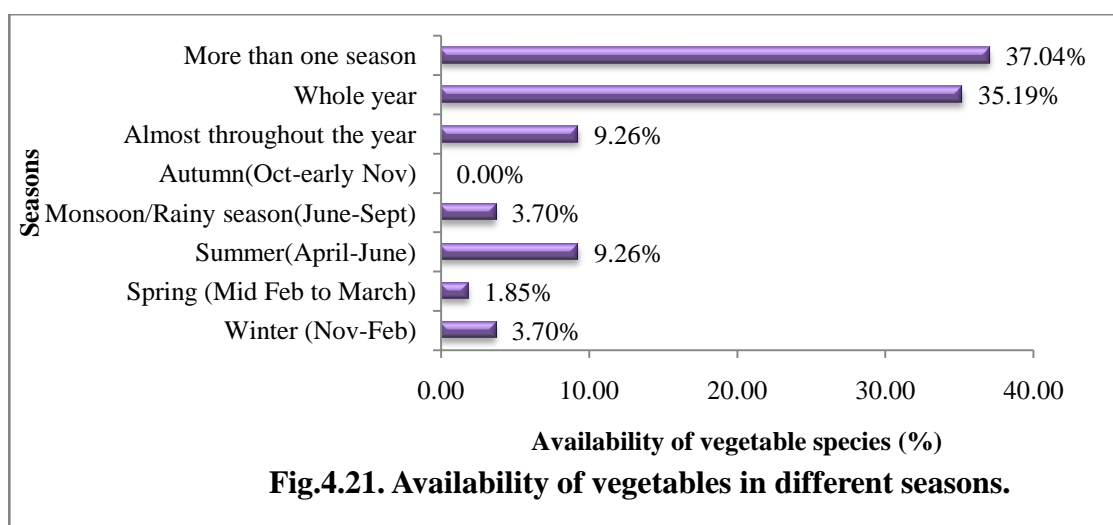
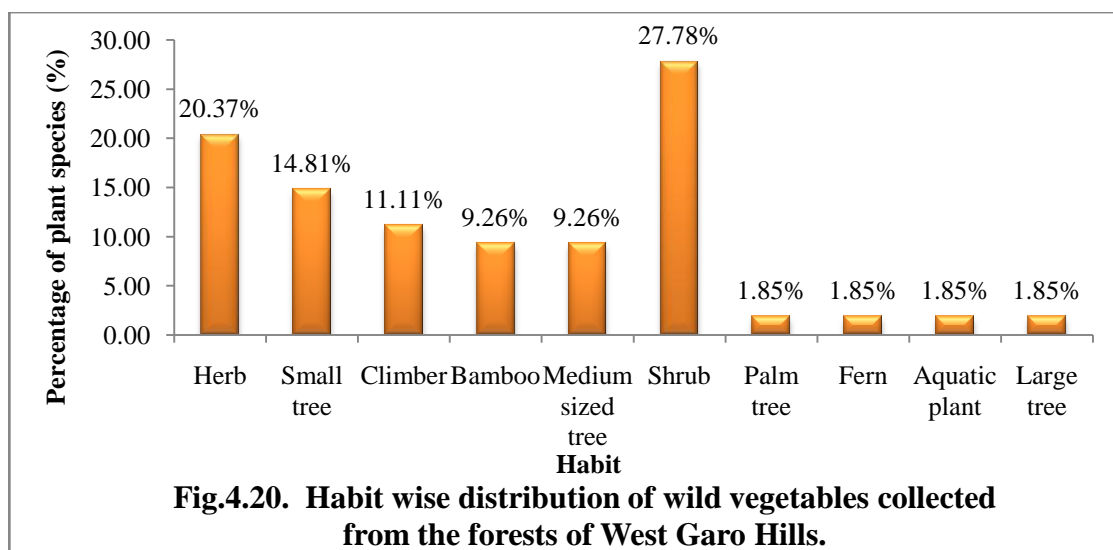
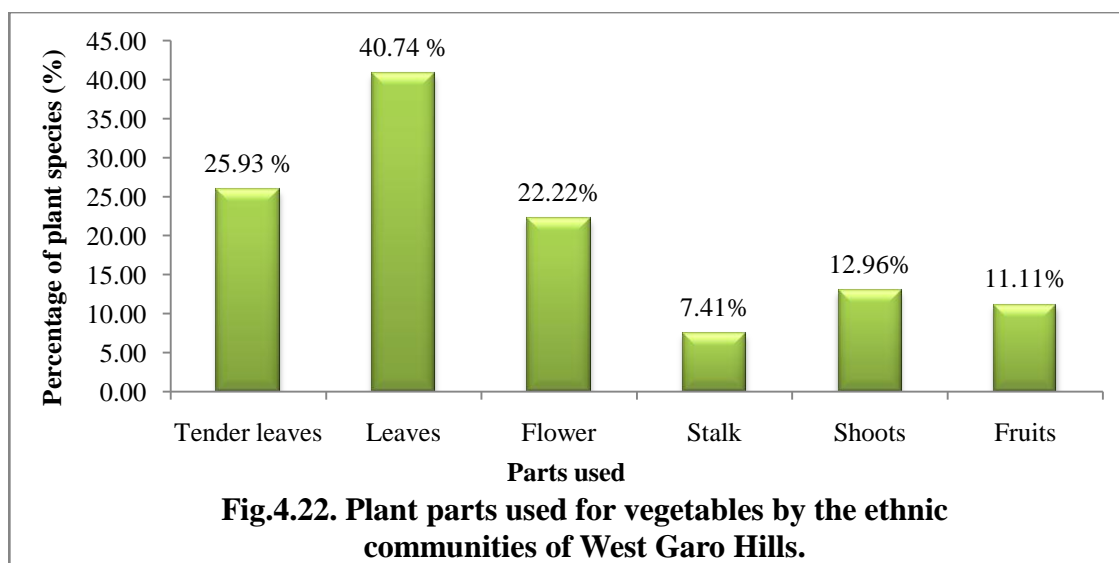


Fig. 4.22. shows the plant parts used as a vegetable. It shows that the villagers collected more leaves to cook as vegetables which are 40.74% followed by tender leaves at 25.93%. Flowers (22.22%), shoots (12.96%), fruits (11.11%), and stalks (7.41%) were also used as vegetables by the ethnic communities. *Amorphophallus bulbifer* (Roxb.) Blume (Songru), *Clerodendrum laevifolium* Blume (Balmatchi), *Houttuynia cordata* Thunb. (Matchaduri), *Justicia adhatoda* L. (Alot gipok), *Sarcochlamys pulcherrima* Gaudich. (An'tamburi), *Persicaria chinensis* (L.) H. Gross (Me·kri donok), and *Paederia foetida* L. (Pasim) were some of the wild vegetables collected from the forests for their sustenance.



There are different ways to prepare dishes using different plant species. **Table 4.13.** shows the method of preparation for 54 plant species. The following is the description of the method of preparation of traditional dishes for their consumption:

Soda: Sodium bicarbonate.

Kalchi: Traditionally prepared alkali used as soda which enhances the dish's taste. Kalchi has many health benefits as compared to soda.

Pura: Rice is ground into flour (powdered rice) for making traditional dishes. Pura dish is cooked by adding soda, ginger, garlic, chillies, onions, salt and water. Pork, beef, chicken, fresh fish or dried fish can be added to pura dish. When sour leaves are added to the dish, soda is not included.

We-tepa: To bake or steam in folded/wrapped leaves.

Brenga: To cook or boil in a bamboo tube.

Me-a meseng: Fermented/Preserved bamboo shoot.

Kapa: Garo dish made by adding ginger, garlic, onions, salt, water and soda. It is garnished with some green leaves. Lots of green chillies are usually preferred for this dish.

Chutney: Spicy condiment of Indian origin made of different vegetables and spices.

Table 4.13. : Method of preparation of vegetables collected from the forests of West Garo Hills by the ethnic communities.

Sl. no.	Scientific name	Local name	Method of preparation
1	<i>Acacia concinna</i> (Willd.) DC.	Surengki/ Suchengkil	Tender sour leaves are cooked with dried fish (nakam) or freshwater prawns or small fish. Salt, onions, water and chillies are added as required.
2	<i>Amaranthus spinosus</i> L.	Chandile bu'su donggipa	Leaves are fried with fish. Salt, turmeric and chillies are added as required.
3	<i>Amaranthus viridis</i> L.	Chandile bu'su donggijagipa	Leaves are fried with fish. Salt, turmeric and chillies added as required.
4	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Flowers, tender leaves and tender part of the stalk are fried in oil with onion, ginger, garlic, chillies, turmeric powder and salt as required. It is fried until it is dry so that it will not have an itchy sensation while eating. Tender leaves and stalks can also be cooked as we'tepa (baked/steamed in folded leaves) with onions, chillies and salt.
5	<i>Antidesma acidum</i> Retz.	Adurak/ Arubak	Tender leaves are fried with fish. The required amount of chillies, garlic and salt are added. A sufficient amount of water is also added while cooking.
6	<i>Argyreia nervosa</i> (Burm. f.) Bojer	Do-stip	Leaves are cooked with powdered rice (pura) along with meat, chillies, salt and soda (Sodium bicarbonate). Add water as required.
7	<i>Bambusa bambos</i> (L.) Voss	Wa-kanta	Shoots are boiled with dal. Meat like pork and beef is added with chillies. A pinch of salt and soda are also added to the dish. Sometimes dried fish are added instead of beef or pork. Kalchi (traditionally prepared alkali used as soda) can be added instead of soda. Pickles can also be made by boiling the shoots first and frying them in

			the oil along with garlic, turmeric powder, salt, chilli powder and other spices. Vinegar is added at the end in order to store it for a longer period. Fermented/preserved shoots called me·ameseng are used for cooking curries. Besides, boiled shoots are cooked with rice powder along with meat, salt, soda and chillies. Fried shoots are delicious as well.
8	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	Shoots are boiled with dal. Meat like pork and beef is added with chillies. A pinch of salt and soda are also added to the dish. Sometimes dried fish are added instead of beef or pork. Kalchi can be added instead of soda. Pickles can also be made by boiling the shoots first and frying them in the oil along with garlic, turmeric powder, salt, chilli powder and other spices. Vinegar is added at the end in order to store it for a longer period. Fermented/preserved shoots called me·ameseng are used for cooking curries. Besides, boiled shoots are cooked with rice powder along with meat, salt, soda and chillies. Fried shoots are delicious as well.
9	<i>Bambusa tulda</i> Roxb.	Wa·ge	Shoots are boiled with dal. Meat like pork and beef is added with chillies. A pinch of salt and soda are also added to the dish. Sometimes dried fish are added instead of beef or pork. Kalchi can be added instead of soda. Pickles can also be made by boiling the shoots first and frying them in the oil along with garlic, turmeric powder, salt, chilli powder and other spices. Vinegar is added at the end in order to store it for a longer period. Fermented/preserved shoots called me·ameseng are used for cooking curries. Besides, boiled shoots are cooked with rice powder along with meat, salt, soda and chillies. Fried shoots are delicious as well.
10	<i>Bauhinia variegata</i> L.	Me·gong	Tender leaves are cooked as kapa (Garo dish made by adding ginger, garlic, onions, salt, green chillies and soda) with dried fish. It can also be cooked as we·tepa with fish, onions, salt and chillies. Ginger can be optional.
11	<i>Bauhinia malabarica</i> Roxb.	Me·gong tak	Tender leaves are cooked as kapa with

			dried fish. Green chillies, salt, soda are also included in making the dish. It can also be cooked as we-tepa with fish, onions, salt and chillies. Ginger can be optional.
12	<i>Calamus erectus</i> Roxb.	Sokmil	Fruits and shoots are cooked with chicken and rice powder. Chillies, turmeric, salt and water are added as required.
13	<i>Caryota urens</i> L.	Bolnamgija	Shoots are cooked with rice powder, meat, chillies, salt and water as needed.
14	<i>Centella asiatica</i> (L.) Urb.	Manamuni	Leaves are used in making salad along with onions, chillies and salt.
15	<i>Cissus repens</i> Lam.	Me-kemkem	Leaves are cooked with dried fish and soda. Chillies and salt are added as required. It is also cooked as we-tepa.
16	<i>Clerodendrum glandulosum</i> Lindl.	Donggam	Leaves are added to meat kapa dishes. Soda, salt, chillies, ginger and garlic are used as required. It is also used in pura dishes.
17	<i>Clerodendrum laevifolium</i> Blume	Balmatchi	Flowers are cooked with fish or dried fish along with onions, salt and chillies wrapped in leaves as we-tepa.
18	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Stalk and tender leaves are cooked with dried fish. Sometimes tamarind is also added. Chillies, soda and salt are added as needed. If tamarind is added, soda is not required. There are times when it is cooked with powdered rice too.
19	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa-nok/ Wa-ma	Shoots are boiled with dal. Meat like pork and beef is added with chillies. A pinch of salt and soda are also added to the dish. Sometimes dried fish are added instead of beef or pork. Kalchi can also be added instead of soda. Pickles can also be made by boiling the shoots first and frying them in the oil along with garlic, turmeric powder, salt, chilli powder and other spices. Vinegar is added at the end in order to store it for a longer period. Fermented/preserved shoots called me-ameseng are used for cooking curries. Besides, boiled shoots are cooked with rice powder along with meat, salt, soda and chillies. Fried shoots are delicious as well.
20	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Fruits and flowers are cooked with fresh fish or dried fish. Chillies, salt, and soda are added as required. It is also used in pura dishes with fish.

21	<i>Diplazium esculentum</i> (Retz.) Sw.	Gongginjak	Stalks and tender leaves are eaten as fried dishes with salt, turmeric, onions and chillies.
22	<i>Eichhornia crassipes</i> (Mart.) Solms	Gachili	Stalks and leaves are eaten with dried fish, soda, salt and chillies.
23	<i>Eryngium foetidum</i> L.	Samskal	Leaves are used in making chutneys as well as in kapas. Dried fish chutneys can be made by crushing chillies, onions and salt. If roasted chillies are added, it smells really good. Leaves can also be cooked in bamboo tube which is locally called brenga along with meat, chilli, ginger, salt, and soda.
24	<i>Ficus hispida</i> L.f.	Sa'kap/ Kan'tap	Leaves are used in making pura curries with ingredients like soda, salt, meat, and chillies.
25	<i>Gmelina arborea</i> Roxb.	Gambare	Flowers are cooked and eaten.
26	<i>Gymnopetalum chinense</i> (Lour.) Merr.	Apolka	Fruits are used as kapa with pork or dried fish. Soda or kalchi along with chillies, and salt are added as required. A sufficient amount of water is added later in the dish. It can also be cooked in bamboo tube (brenga) with onion, chillies, salt, fish, pork or any other meat.
27	<i>Houttuynia cordata</i> Thunb.	Matchaduri	Leaves are used for making chutney along with boiled chicken liver, roasted chillies, roasted garlic, onion, mustard oil, and salt. It can also be made by boiling fermented dried fish, chillies, and soda (optional). Raw leaves are crushed and mixed with raw onions as well as with boiled fermented dried fish and chillies.
28	<i>Justicia adhatoda</i> L.	Alot gipok	Fresh flowers are baked/ steamed in folded leaves with dried fish, salt, soda, and green chillies. Flowers can also be dried in sun and can be stored to be used when it is not flowering season. The filaments of the flower are usually removed in order to make bitterness lesser. The flowers are also boiled and squeezed out of the water to make them less bitter. Fresh and dried flowers are made as kapa preferably with pork by adding soda, salt, and chillies. Flowers are also used in making dishes with pork, chillies, ginger, salt, soda using bamboo tube (brenga).
29	<i>Lasia spinosa</i> (L.) Thwaites	Chonggi	Tender leaves and shoots are used for making pakora/pakoda mixed with besan

			(gram flour), salt, turmeric, spices (any), chilli powder, oil, and water. It is also used for making kapa with dried fish, soda, chillies, and salt. It is simply boiled with salt and eaten too.
30	<i>Leucas aspera</i> (Willd.) Link	Du'kumu	Leaves are cooked with dried fish as kapa or we'tepa.
31	<i>Melastoma malabathricum</i> L.	Kakku	Leaves are used to make pura dish with soda, chillies, salt, along with meat.
32	<i>Melia azedarach</i> L.	Bagongat	Flowers are cooked as kapa with dried fish or fresh fish, soda, chillies, and salt.
33	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa-tre/ Wa-mande	Shoots are boiled with dal. Meat like pork and beef is added with chillies. A pinch of salt and soda are also added to the dish. Sometimes dried fish are added instead of beef or pork. Kalchi can also be added instead of soda. Pickles can also be made by boiling the shoots first and frying them in the oil along with garlic, turmeric powder, salt, chilli powder and other spices. Vinegar is added at the end in order to store it for a longer period. Fermented/preserved shoots called me'ameseng are used for cooking curries. Besides, boiled shoots are cooked with rice powder along with meat, salt, soda and chillies. Fried shoots are delicious as well.
34	<i>Meyna spinosa</i> Roxb.ex Link	Te'chikeng	Leaves are used in making pura dishes with meat, soda, chillies, onions, salt and water.
35	<i>Mikania micrantha</i> Kunth	Meghalaya budu/ Samtip	Tender leaves are used to make kapa dishes with meat, soda, chillies, salt, and water. Dried fish can also be added instead of meat.
36	<i>Morinda angustifolia</i> Roxb.	Chelnong	Flowers and tender leaves are used for making kapa dishes where soda, salt, and chillies are added. Water was added as required. Flowers are bitter in taste.
37	<i>Mussaenda roxburghii</i> Hook. f.	Gradek	Leaves are added in pura dishes along with chillies, salt, and soda.
38	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Flowers and tender leaves are eaten with dried fish. Flowers are bitter in taste. Stamens of flowers are removed for cooking. Chillies, soda and salt are added to the dish. It can also be cooked with pork or fresh fish instead of dried fish. Also eaten as we'tepa. Tender leaves are cooked as well as with crab as we'tepa along with

			salt, onions, and chillies.
39	<i>Paederia foetida</i> L.	Pasim	Leaves are used in pura dishes along with chicken, soda, onions, chillies, salt, ginger and garlic. Water was added as required.
40	<i>Persicaria chinensis</i> (L.) H. Gross	Me·kri donok	Sour leaves are boiled with beef, chillies, onions, and salt. Add water as required. Fresh fish and dried fish can also be used for making the dish.
41	<i>Phlogacanthus guttatus</i> Nees	Alot rimit	Fresh flowers are baked/ steamed in folded leaves with dried fish, salt, soda, and green chillies. Flowers can also be dried in sun and can be stored to be used when it is not flowering season. The filaments of the flower are usually removed in order to make bitterness lesser. The flowers are also boiled and squeezed out of the water to make them less bitter. Fresh and dried flowers are made as kapa preferably with pork by adding soda, salt, and chillies. Flowers are also used in making dishes with pork, chillies, ginger, salt, soda using bamboo tube (brenga).
42	<i>Phlogacanthus thyrsiflorus</i> Nees	Alot gitchak	Fresh flowers are baked/steamed in folded leaves with dried fish, salt, soda, and green chillies. Flowers can also be dried in sun and can be stored to be used when it is not flowering season. The filaments of the flower are usually removed in order to make bitterness lesser. The flowers are also boiled and squeezed out of the water to make them less bitter. Fresh and dried flowers are made as kapa preferably with pork by adding soda, salt, and chillies. Flowers are also used in making dishes with pork, chillies, ginger, salt, soda using bamboo tube (brenga).
43	<i>Premna mollissima</i> Roth	Do·kime	Leaves are cooked as we·tapa with dried fish as well as with fresh fish. Chillies, soda, and onions are mixed and salt is added for seasoning.
44	<i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me·bitchi	Flowers and tender leaves are cooked with dried fish, soda, salt, and chillies. It is also boiled and eaten.
45	<i>Rotheca serrata</i> (L.) Steane &Mabb.	Agunjulai/ Matchok nachil	Leaves are cooked as kapa with soda, chillies, salt, ginger, garlic, and meat. It is also cooked as well as with pura. Flowers are usually cooked as we·tapa along with fresh fish or dried fish or pork etc. Salt,

			onions, and chillies are added as required.
46	<i>Sarcochlamys pulcherrima</i> Gaudich.	An'tamburi	Leaves are cooked as kapa with dried fish, brinjal, soda, salt and chillies.
47	<i>Scoparia dulcis</i> L.	Samgoldak	Leaves are cooked with beef.
48	<i>Solanum anguivi</i> Lam.	Kimka	Fruits are dryly fried and mixed with salt. Chutneys (spicy condiments) can also be made with fruits. It is bitter in taste. For chutneys, fruits and green chillies are boiled. Roasted dried fish and raw onions are mixed well with boiled fruits and chillies. Add salt for seasoning. Chutneys can also be made by boiling the fruits first and fry together with chillies, garlic, salt, dried fish and onions. Leaves of <i>Eryngium foetidum</i> can also be added along with the chutney. Fruits can also be cooked as we'tepa with dried fish, salt, soda, chillies and onions.
49	<i>Solanum violaceum</i> Ortega	Kimkarong	Fruits are cooked with fermented dried fish, chillies, soda, salt and water as required.
50	<i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult.	Miktoksi/ Kimdotchi	Leaves are used in pura dishes with dried fish or chicken. Soda, salt, chillies, onions, ginger, garlic, and water are added as needed.
51	<i>Toona ciliata</i> M.Roem.	Bolbret	Tender leaves are used for making pura dishes with meat or dried fish. Soda, salt, chillies, onions, ginger, garlic, and water are added as needed.
52	<i>Trema orientalis</i> (L.) Blume	Pakkram	Leaves are cooked with powdered rice as well as kapa style.
53	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Fruits are cooked with dried fish, soda, chillies, and salt. It can also be fried and eaten.
54	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me'cheng	Leaves are cooked with brinjal, smoked pork, chillies, soda, salt and little water. Sometimes it can be cooked with beef intestines. It can also be cooked in bamboo tube (brenga) along with any meat, chillies, onions, ginger, soda and salt as needed.

4.4.1.3. Fodders.

Leaves, stems, and stalks of different plant species were used as fodder by the villagers of the present study. A total of 18 plant species were used as fodder which belongs to 15 genera and 10 families. Genera like *Bauhinia*, *Ficus*, and *Litsea* showed more number of species with 2 species each and Fabaceae and Moraceae families were recorded with a higher number of plant species of 3 species each (Fig. 4.23., Fig. 4.24. Table 4.14.). Table 4.14. also showed that fodders were mostly collected from the forests for consumption by animals like cows, goats, and pigs. More plant species were used in feeding cows as compared to goats and pigs.

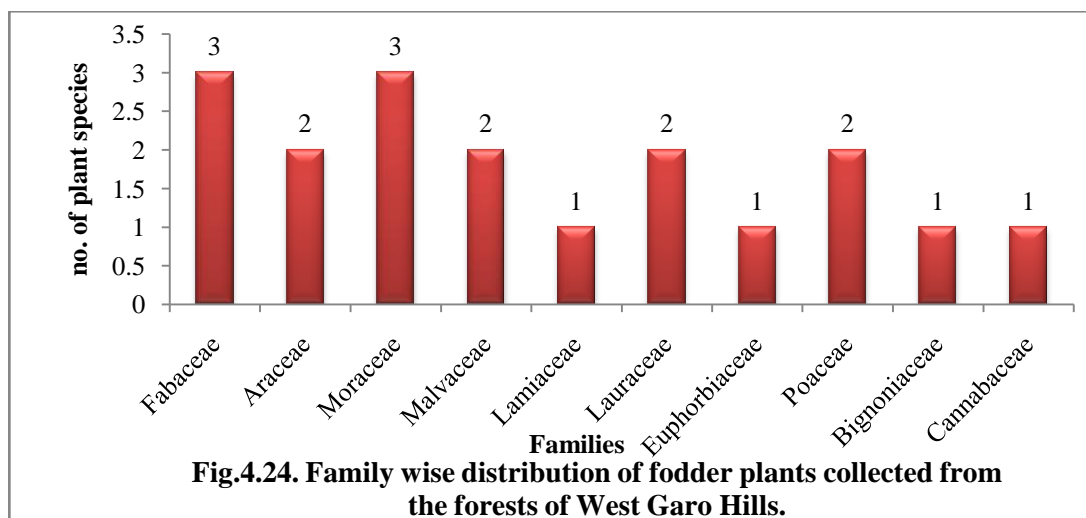
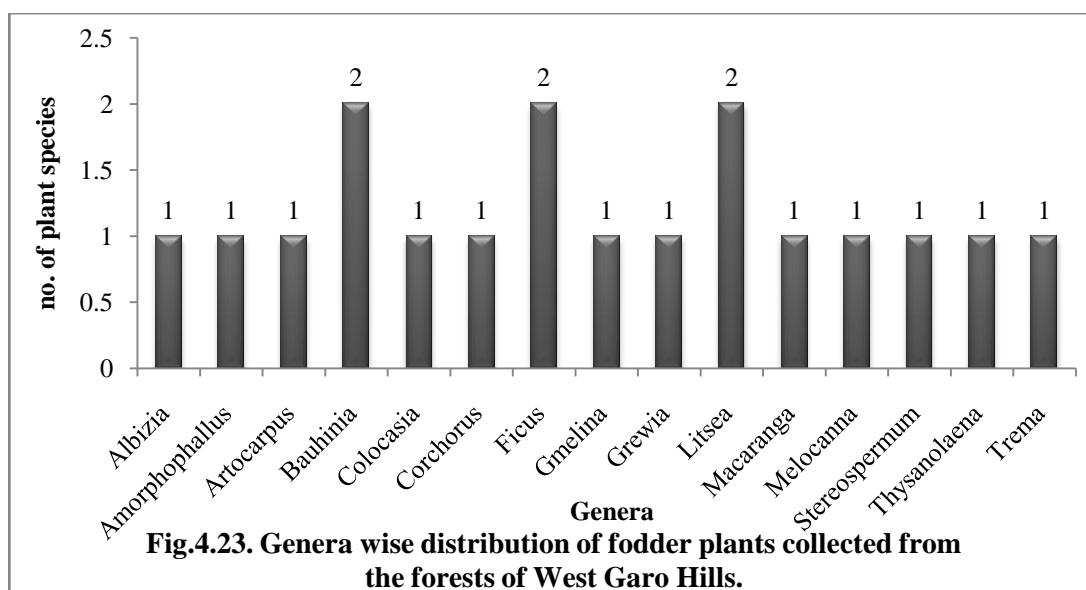
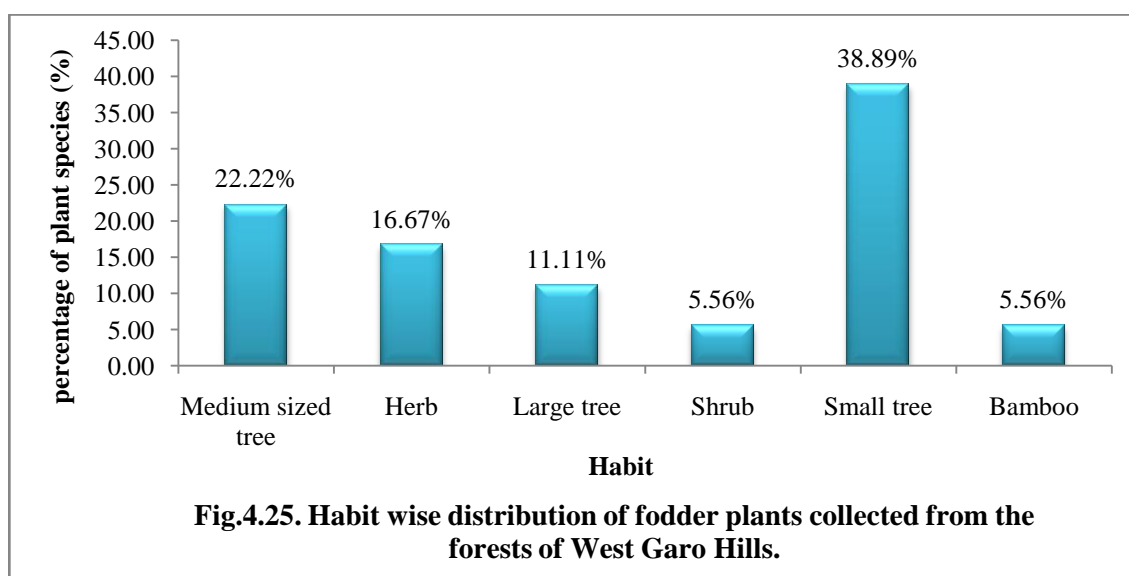


Table 4.14. : Utilization pattern of fodders from the forests of West Garo Hills.

Sl. No.	Scientific name	Local name	Family	Habit	Local distribution	Consume by	Parts used
1	<i>Albizia odoratissima</i> (L.f.) Benth.	Siso	Fabaceae	Medium sized tree	Common	Cow	Leaves
2	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Araceae	Herb	Very common	Pig	Stem, Leaves
3	<i>Artocarpus lacucha</i> Buch.-Ham.	Arimu	Moraceae	Large tree	Common	Cow	Leaves
4	<i>Bauhinia malabarica</i> Roxb.	Me'gong tak	Fabaceae	Medium sized tree	Uncommon	Cow	Leaves
5	<i>Bauhinia variegata</i> L.	Me'gong	Fabaceae	Medium sized tree	Very common	Cow, Goat	Leaves
6	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Araceae	Herb	Very common	Pig	Stem, Leaves
7	<i>Corchorus capsularis</i> L.	Kosta/Meka	Malvaceae	Shrub	Uncommon	Cow	Leaves
8	<i>Ficus auriculata</i> Lour.	Te'bil	Moraceae	Small tree	Common	Cow	Leaves
9	<i>Ficus hispida</i> L.f.	Sa'kap/Kan'tap	Moraceae	Small tree	Very common	Goat, Cow	Leaves
10	<i>Gmelina arborea</i> Roxb.	Gambare	Lamiaceae	Medium sized tree	Very common	Cow, Goat	Leaves
11	<i>Grewia serrulata</i> DC.	Bolmenggo	Malvaceae	Small tree	Common	Cow	Leaves
12	<i>Litsea cubeba</i> (Lour.) Pers.	Jengjil	Lauraceae	Small tree	Common	Cow	Leaves
13	<i>Litsea monopetala</i> (Roxb.) Pers.	Bolbit	Lauraceae	Small tree	Common	Cow, Goat	Leaves
14	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha'gro/Bolajak	Euphorbiaceae	Small tree	Very common	Cow	Leaves
15	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa'tre/Wa'mande	Poaceae	Bamboo	Common	Cow	Leaves
16	<i>Stereospermum chelonoides</i> (L.f.) DC	Bolsil	Bignoniaceae	Large tree	Common	Cow, Goat	Leaves
17	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/Smu	Poaceae	Herb	Common	Cow, Goat	Stalk, Leaves
18	<i>Trema orientalis</i> (L.) Blume	Pakkram	Cannabaceae	Small tree	Very common	Cow, Goat	Leaves

It is observed in **Fig.4.25.** that small trees provide more fodder which accounts for 38.89% as compared to medium-sized trees (22.22%), herbs (16.67%), large trees (11.11%), and both shrub and bamboo (5.56%). *Bauhinia variegata* L. (Me·gong), *Ficus hispida* L.f. (Sa·kap/Kan·tap), *Gmelina arborea* Roxb. (Gambare), *Litsea monopetala* (Roxb.) Pers. (Bolbit), *Stereospermum chelonoides* (L.f.) DC (Bolsil), and *Trema orientalis* (L.) Blume (Pakkram) were some of the fodder species collected to feed cows and goats. Plant species like *Amorphophallus bulbifer* (Roxb.) Blume (Songru), and *Colocasia esculenta* (L.) Schott (Chigi) were collected and cooked to be used as fodder for pigs.



4.4.2. Utilization pattern of Medicinal Plants.

A total of 52 plant species were collected by the villagers of the West Garo Hills district. The scientific names, local names, families, habits, local distribution, parts used, diseases, and mode of utilization of medicinal plants based on the indigenous traditional knowledge by the ethnic communities are documented in **Table 4.15.** Some of the medicinal plants such as *Acmella paniculata* (Wall.ex DC.) R. K. Jansen. (Wagam sam), *Aegle marmelos* (L.) Corrêa (Selpri), *Careya arborea* Roxb. (Gimbil), etc. were reported to heal one disease each whereas some plants like *Achyranthus aspera* L.

Table 4.15. : Indigenous traditional knowledge of medicinal plants by the ethnic communities of West Garo Hills, Meghalaya.

Sl. no.	Scientific name	Local name	Family	Habit	Local distribution	Parts used	Diseases	Mode of utilization
1	<i>Achyranthus aspera</i> L.	Me mang katchi	Amaranthaceae	Herb	Common	Roots	Irregular period and toothache/Tooth decay	Roots are ground and boiled which is consumed as a remedy for irregular periods. Roots are also crushed and applied to the affected part for curing toothache/tooth decay.
2	<i>Acmella paniculata</i> (Wall.ex DC.) R. K. Jansen.	Wagam sam	Compositae	Herb	Common	Flower	Toothache/tooth decay	Flowers are crushed and applied to the decayed part.
3	<i>Aegle marmelos</i> (L.) Corrêa	Selpri	Rutaceae	Medium sized tree	Uncommon	Leaves	Pnuemonia	Leaves are ground and applied on the body and can also be tied on the forehead.
4	<i>Albizia chinensis</i> (Osbeck) Merr.	Bolpu	Fabaceae	Large tree	Common	Bark	An'dime (a female disease after delivery)	The bark of the plant is boiled and drank.
5	<i>Antidesma acidum</i> Retz.	Adurak	Phyllanthaceae	Small tree	Very common	Roots	Urinary tract infections (UTI)	Roots are boiled and taken orally.
6	<i>Bambusa tulda</i> Roxb.	Wa·ge	Poaceae	Bamboo	Common	Tender leaves	Generalised weakness (tired body, no appetite for eating and fever)	Tender leaves are ground and tied on the body and the decoction of tender leaves is taken orally.
7	<i>Calamus acanthospathus</i> Griff.	Re	Arecaceae	Climber	Uncommon	Leaves	Generalised weakness (tired body, no appetite for eating and fever)	Leaves are crushed and applied/tied on the body.

8	<i>Calamus erectus</i> Roxb.	Sokmil	Arecaceae	Climber	Common	Fruits	Gallstone	The juice extracted from the fruit is boiled and consumed.
9	<i>Callicarpa arborea</i> Roxb.	Makanchi/ Kimbal	Lamiaceae	Small tree	Very common	Tender leaves	Cramps and Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally)	Shoots are ground and drank for reducing cramps. The tender leaves are used to cure Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally) by grinding 7 numbers of tender leaves and applying them on the whole body. It is also tied and worn on the body.
10	<i>Careya arborea</i> Roxb.	Gimbil	Lecythidaceae	Medium sized tree	Very common	Bark	Dysentery	Decoction of bark is consumed.
11	<i>Cassia fistula</i> L.	Sinaru	Fabaceae	Medium sized tree	Common	Tender leaves	Jaundice	Tender leaves are crushed and applied on the body and can be drunk as well.
12	<i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC.	Chaku jongsu	Fagaceae	Medium sized tree	Common	Bark	Generalised weakness (tired body, no appetite for eating and fever)	The bark of the tree is crushed and applied/tied on the body.
13	<i>Centella asiatica</i> (L.) Urb.	Manamuni	Apiaceae	Herb	Common	Leaves	Itchy eyes	Leaves are mixed with water and washed off the affected part.
14	<i>Chromolaena odorata</i> (L.) R. M. King & H. Rob.	Sambangguri	Compositae	Herb	Common	Leaves	Cuts /Wounds/ Bleeding	Leaves are crushed and applied on the cut or wounded part.
15	<i>Citrus indica</i> Yu. Tanaka	Me'mang narang	Rutaceae	Small tree	Uncommon	Roots	Monsa (missing the person one loves or emotionally attaches to, so	Roots are used to cure Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally) by grinding the roots and applying

							much that one is unable to act normally)	them on the whole body. It is also tied and worn on the body.
16	<i>Citrus medica</i> L.	Te·matchi	Rutaceae	Shrub	Uncommon	Roots and leaves	Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally), swelling, stomach and throat cancer.	Roots are used to cure Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally) by grinding the roots and applying them on the whole body. It is also tied and worn on the body. Roots are also boiled and taken orally for treating stomach and throat cancer. Leaves are used to massage the swelling part of the body.
17	<i>Clerodendrum glandulosum</i> Lindl.	Donggam	Lamiaceae	Shrub	Common	Leaves	High pressure	Leaves are boiled and taken orally.
18	<i>Clerodendrum infortunatum</i> L.	Samaki	Lamiaceae	Shrub	Common	Leaves and roots.	Skin diseases and abdominal fullness.	Leaves are applied on the affected part of the body to cure skin diseases whereas roots are used for healing abdominal fullness.
19	<i>Curcuma amada</i> Roxb.	Dikge te·gatchu	Zingiberaceae	Herb	Common	Rhizome	Abdominal fullness	The rhizome is eaten.
20	<i>Cuscuta reflexa</i> Roxb.	Nawang bibik	Convolvulaceae	Climber	Very common	Whole plant	Jaundice	The whole plant is crushed and applied to the body and can be drunk as well.
21	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa·nok/ Wa·ma	Poaceae	Bamboo	Common	Leaves	Generalised weakness (tired body, no appetite for eating and fever)	Leaves are crushed and applied/tied on the body and can be drunk as well.
22	<i>Dischidia</i>	Gominda	Apocynaceae	Climber	Uncommon	Whole	Fever	The whole plant is ground and

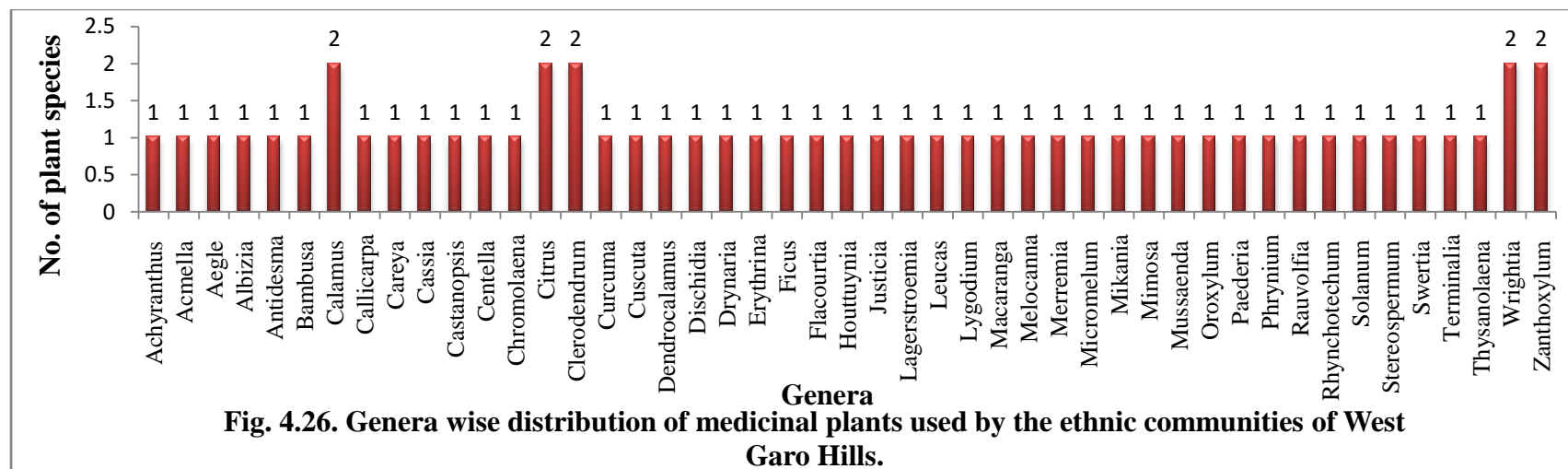
	<i>bengalensis</i> Colebr.	bitchil				plant		tied on the forehead.
23	<i>Drynaria quercifolia</i> (L.) J. Sm.	Do'reng gangpak	Polypodiaceae	Fern	Common	Rhizome	Generalised weakness (tired body, no appetite for eating and fever)	Decoction of the rhizome is consumed.
24	<i>Erythrina stricta</i> Roxb.	Bolmandal gitichak	Fabaceae	Small tree	Common	Leaves	Cancer	Leaves are applied and can be drunk with warm water.
25	<i>Ficus hispida</i> L.f.	Sakap/ Kantap	Moraceae	Small tree	Very common	Roots	Stomach and throat cancer	Roots are boiled and taken orally.
26	<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Darichik	Salicaceae	Small tree	Common	Roots, leaves and bark.	An'dime (a female disease after delivery), Delivery/Child birth and Irregular period.	The roots are boiled and taken orally for the treatment of An'dime (a female disease after delivery). The leaves are ground and mixed with warm water for drinking and are used for delivery/Childbirth. Ground bark is boiled and drank as a remedy for irregular periods.
27	<i>Houttuynia cordata</i> Thunb.	Matchaduri	Saururaceae	Herb	Common	Leaves	Headache	Leaves are crushed and tied on the forehead.
28	<i>Justicia gendarussa</i> Burm.f.	Do'jagipe	Acanthaceae	Shrub	Common	Leaves	Broken bones and swelling.	Leaves are pounded and applied/tied on the broken bone parts and the leaves are also used for massaging the swelling part of the body.
29	<i>Lagerstroemia parviflora</i> Roxb.	Sidai/Chidai	Lythraceae	Large tree	Common	Bark	Delivery/Child birth	The bark is ground and mixed with warm water for drinking.
30	<i>Leucas aspera</i> (Willd.) Link	Du'kumu	Lamiaceae	Herb	Common	Leaves	Epistaxis	Decoction of leaves is dropped inside the nostril.
31	<i>Lygodium</i>	Ruattip	Lygodiaceae	Herb	Common	Leaves	Cuts/Wounds/	Leaves are crushed and applied on

	<i>flexuosum</i> (L.) Sw.						Bleeding	the cut or wounded part.
32	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha'gro/ Bolajak	Euphorbiaceae	Small tree	Very common	Leaves	Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally)	The body was washed by ground leaves.
33	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa·tre/Wa·ma nde	Poaceae	Bamboo	Common	Tender leaves	Generalised weakness (tired body, no appetite for eating and fever) and Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally)	Tender leaves are crushed and applied and can also be taken orally for eliminating generalised weakness. Tender leaves are used to cure Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally) by grinding 7 numbers of lateral buds and applying them on the whole body. It is also tied and worn on the body.
34	<i>Merremia umbellata</i> (L.) Hallier f.	Sitri	Convolvulaceae	Climber	Common	Vine	Urinary tract infections (UTI)	The vine is worn on the body.
35	<i>Micromelum integerrimum</i> (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem.	Mangritchok	Rutaceae	Small tree	Uncommon	Fruits	Headache	Fruits are pounded and tied on the forehead.
36	<i>Mikania micrantha</i> Kunth	Meghalaya budu/Samtip	Compositae	Climber	Common	Leaves	Cuts/ Wounds/ Bleeding	Leaves are crushed and applied on the cut or wounded part.

37	<i>Mimosa pudica</i> L.	Sammikchip	Fabaceae	Herb	Common	Roots	Toothache/tooth decay	Roots are crushed and applied to the affected parts.
38	<i>Mussaenda roxburghii</i> Hook. f.	Gradek	Rubiaceae	Shrub	Common	Leaves	Broken bones	Leaves are pounded and applied/tied on the broken bone parts.
39	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Bignoniaceae	Medium sized tree	Common	Tender leaves and bark	Jaundice and Urinary tract infection (UTI)	Tender leaves are ground and applied on the body and bark can be warm and drunk for curing jaundice. The bark can also be boiled and drunk for curing UTIs.
40	<i>Paederia foetida</i> L.	Pasim	Rubiaceae	Climber	Common	Tender leaves	Cuts/Wounds/ Bleeding and swelling.	Tender leaves are crushed and applied on the cut parts and the swelling part can be massaged.
41	<i>Phrynium pubinerve</i> Blume	Reru	Marantaceae	Herb	Common	Roots	Stomach and throat cancer	Roots are boiled and taken orally.
42	<i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz	Do'grikme	Apocynaceae	Herb	Common	Roots and leaves	Generalised weakness (tired body, no appetite for eating and fever), Urinary tract infection (UTI) and Malaria.	The decoction of the roots is taken orally as a remedy for generalised weakness. Boiled roots can be consumed for the treatment of UTI and leaves are used to cure malaria.
43	<i>Rhynchosyche ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me'bitchi	Gesneriaceae	Shrub	Common	Leaves	Broken bones.	Leaves are pounded and applied/tied on the broken bone parts.
44	<i>Solanum anguivi</i> Lam.	Kimka	Solanaceae	Shrub	Common	Roots	Generalised weakness (tired body, no appetite for eating and fever)	Decoction of roots is drunk.

45	<i>Stereospermum chelonoides</i> (L.f.) DC	Bolsil	Bignoniaceae	Large tree	Common	Tender leaves and bark	Pneumonia and Migraine	Tender leaves are ground and applied on the body and can also be tied on the forehead for curing pneumonia. For migraine, crushed tender leaves and bark can be tied on the forehead.
46	<i>Swertia chirata</i> Buch.-Ham. Ex Wall.	Chirota	Gentianaceae	Herb	Very common	Leaves	Malaria and fever.	Leaves are crushed and taken orally.
47	<i>Terminalia chebula</i> Retz.	Aritak	Combretaceae	Large tree	Uncommon	Fruits	Stomachache	Fruits are eaten raw.
48	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/Smu	Poaceae	Herb	Common	Tender leaves	Generalised weakness (tired body, no appetite for eating and fever), Pneumonia, Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally) and cramps.	The shoots are ground and applied on the body and can be soaked in cold water and drunk to reduce tiredness of the body, increase appetite and relieve fever. Usually, 7 numbers of shoots are used. The shoots are crushed and applied to the body and can be tied on the forehead for curing pneumonia. The shoots are used to cure Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally) by grinding 7 numbers of shoots and applying them on the whole body. It is also tied and worn on the body. Shoots are also ground and mixed with warm water and drink for curing cramps.
49	<i>Wrightia</i>	Golmatra bite	Apocynaceae	Small	Very	Leaves	Generalised	Decoction of leaves are drank for

	<i>antidysenterica</i> (L.) R. Br.	chongipa		tree	common	and roots.	weakness (tired body, no appetite for eating and fever) and Urinary tract infection (UTI)	curing generalised weakness and the roots are boiled and drank as a remedy for UTI.
50	<i>Wrightia arborea</i> (Dennst.) Mabb.	Golmatra bite dal'gipa	Apocynaceae	Small tree	Common	Leaves	Generalised weakness (tired body, no appetite for eating and fever)	The decoction of leaves is drunk.
51	<i>Zanthoxylum</i> <i>oxyphyllum</i> Edgew.	Me'cheng	Rutaceae	Small tree	Common	Roots	Urinary tract infections (UTI)	Roots are boiled and taken orally.
52	<i>Zanthoxylum rhetsa</i> DC.	Sumitcheng	Rutaceae	Medium sized tree	Common	Roots	Urinary tract infections (UTI)	Roots are boiled and taken orally.



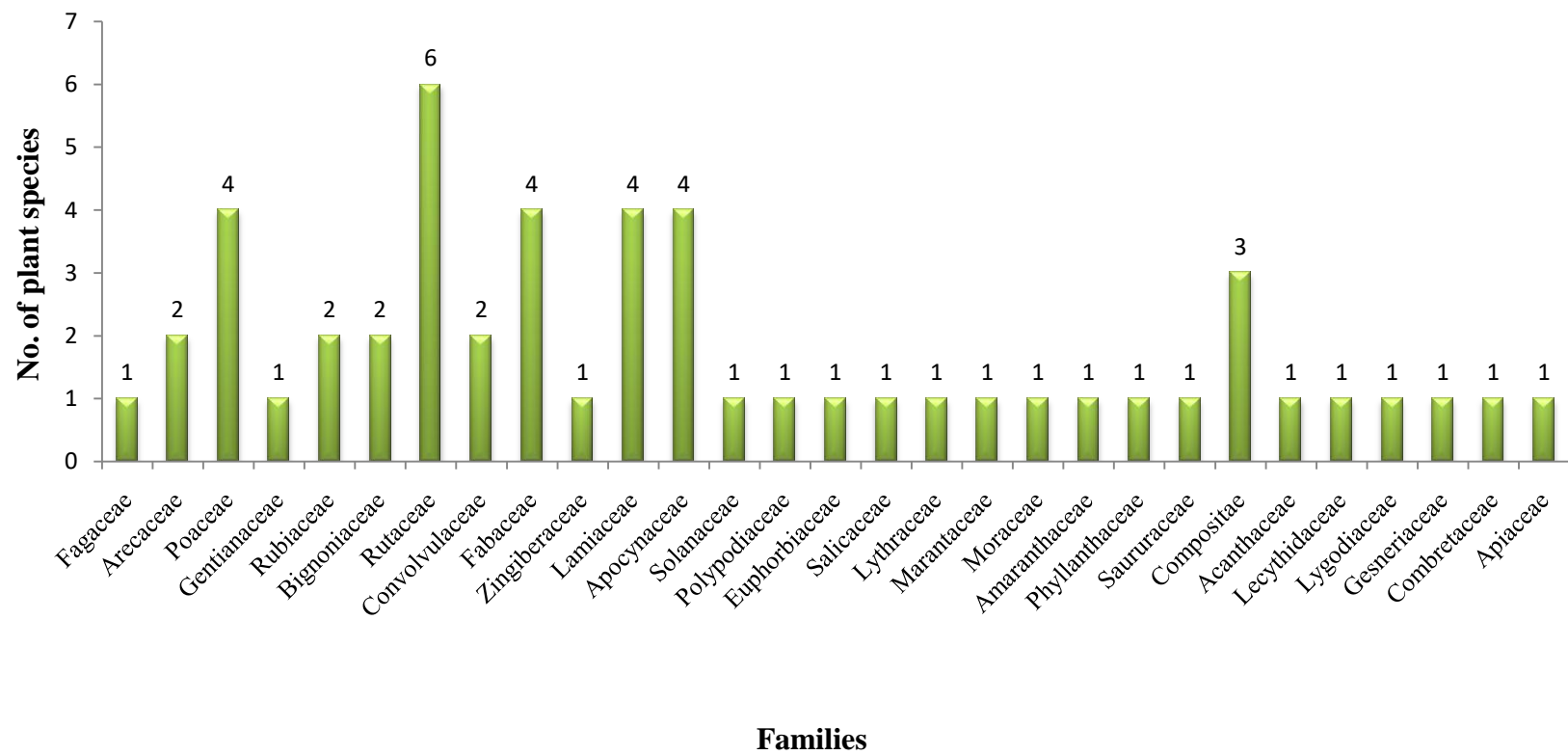
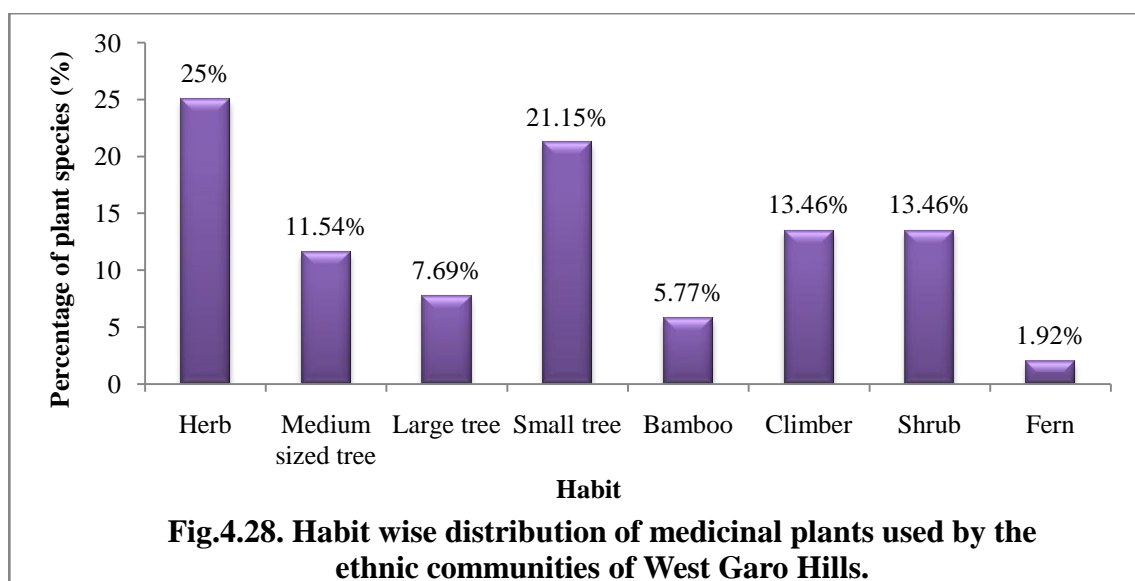


Fig. 4.27. Family wise distribution of medicinal plants used by the ethnic communities of West Garo Hills.

(Me·mang katchi), *Callicarpa arborea* Roxb. (Makanchi/Kimbal), *Citrus medica* L. (Te·matchi) were used for the treatment of more than one disease. The plant species recorded during the survey belong to 47 genera and 29 families. It has more number of *Calamus*, *Citrus*, *Clerodendrum*, *Wrightia*, and *Zanthoxylum* genera (**Fig.4.26.**) with more number of Rutaceae family (**Fig.4.27.**).

According to **Fig.4.28.** medicinal plants belonging to herb has the highest percentage of 25%. The other categories of habit such as small trees have 21.15%, climbers and shrubs with the same percentage at 13.46%, medium-sized trees at 11.54%, large trees at 7.69%, bamboo at 5.77%, and ferns at 1.92% only.



There are different parts of the plants which can be used as medicines. In the present study, leaves showed a higher percentage of 42.31% in having healing properties which were followed by roots (26.92%), tender leaves (15.38%), bark (13.46%), fruits (5.77%), rhizome and whole plant with 3.85% each, flower and vine with 1.92% each (**Fig.4.29.**). A few plant species which used leaves for healing were *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal·gipa), *Swertia chirata* Buch.-Ham. Ex Wall. (Chirota), and *Rhynchoetechum ellipticum* (Wall.ex D. Dietr.) A. DC. (Me·bitchi). Plants like *Zanthoxylum rhetsa* DC. (Sumitcheng), *Zanthoxylum oxyphyllum* Edgew. (Me·cheng), *Mimosa pudica* L (Sammikchip) etc. used roots, *Thysanolaena latifolia* (Roxb.ex Hornem.) Honda (Sal·wa/Smu), *Paederia foetida* L (Pasim), and *Melocanna*

baccifera (Roxb.) Kurz (Wa'tre/Wa'mande) were some of the plants which used tender leaves and plants like *Lagerstroemia parviflora* Roxb. (Sidai/Chidai), *Castanopsis indica* (Roxb.ex Lindl.) A. DC. (Chaku jongsu) and so on used bark. Those plants which used fruits were *Terminalia chebula* Retz. (Aritak), *Micromelum integerrimum* (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem. (Mangritchok), and *Calamus erectus* Roxb. (Sokmil). Plants like *Drynaria quercifolia* (L.) J. Sm. (Do'reng gangpak), and *Curcuma amada* Roxb. (Dikge te'gatchu) used rhizome whereas *Dischidia bengalensis* Colebr. (Gominda bitchil), and *Cuscuta reflexa* Roxb. (Nawang bibik) used the whole plant as medicine. The only plant which used flowers as medicine was *Acmella paniculata* (Wall.ex DC.) R. K. Jansen. (Wagam sam) and the only plant which used vine was *Merremia umbellata* (L.) Hallier f. (Sitri) (**Table 4.15., Fig. 4.29.**).

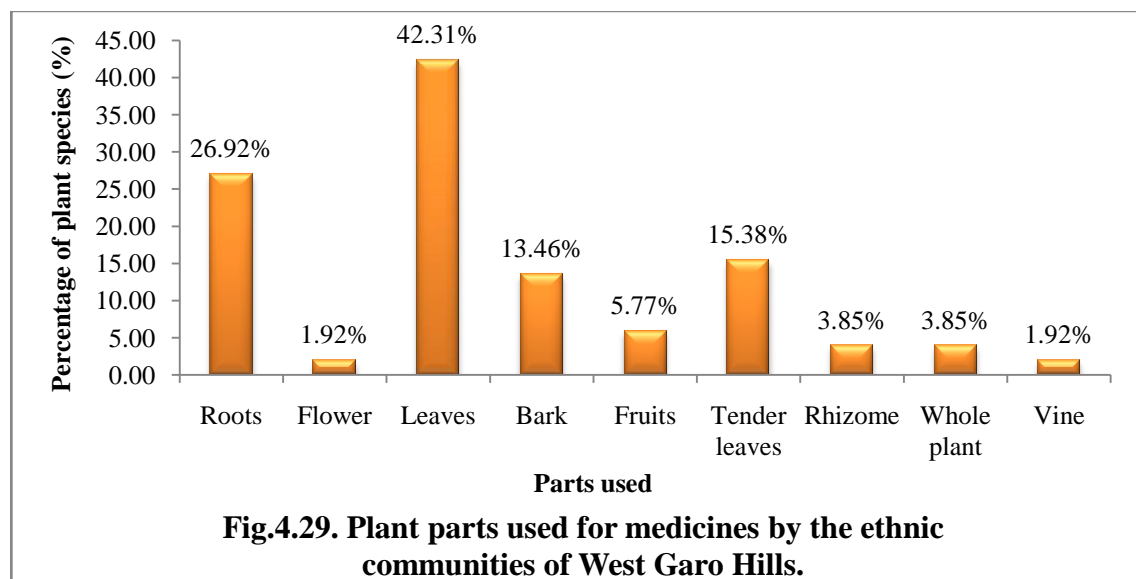
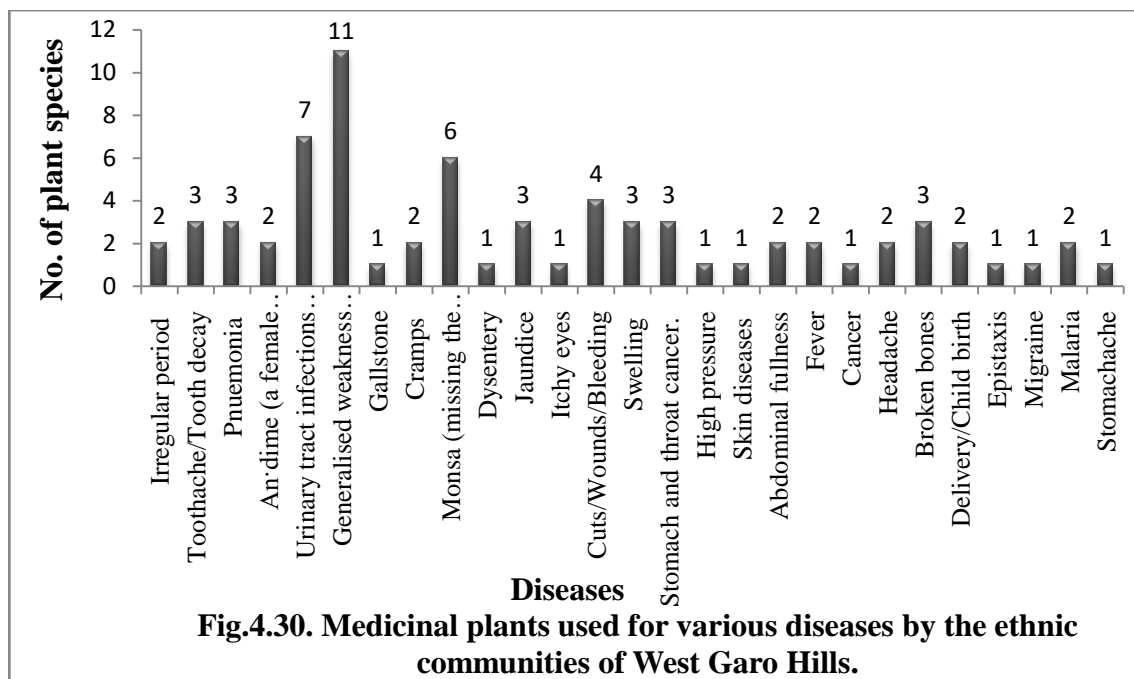


Fig.4.30. shows the medicinal plants used for curing various diseases. A total of 27 diseases were reported to be treated using 52 medicinal plants recorded in the present study. The highest number of plants recorded was with 11 plants which were used for generalized weakness (tired body, no appetite for eating and fever), 7 species for Urinary Tract Infections (UTI), 6 species for Monsa (missing the person one loves or emotionally attaches to, so much that one is unable to act normally), 4 species to restore cuts/wounds/bleeding, 3 species each for toothache, pneumonia, jaundice, swelling, stomach and throat cancer, and broken bones, 2 species each for the treatment of irregular periods, An'dime (a female disease after delivery), cramps, abdominal

fullness, fever, headache, delivery/childbirth, and malaria. The diseases which were recorded to heal with only 1 species each were gallstone, dysentery, itchy eyes, high pressure, skin diseases, cancer, epistaxis, migraine, and stomachache.

The medicinal plants used by the ethnic communities were *Achyranthus aspera* L. (Me·mang katchi), *Acmella paniculata* (Wall.ex DC.) R. K. Jansen. (Wagam sam), *Aegle marmelos* (L.) Corrêa (Selpri), *Albizia chinensis* (Osbeck) Merr. (Bolpu), *Antidesma acidum* Retz. (Adurak/Aburak), *Bambusa tulda* Roxb. (Wa·ge), *Calamus acanthospathus* Griff. (Re), *Calamus erectus* Roxb. (Sokmil), *Callicarpa arborea* Roxb. (Makanchi/Kimbal), *Careya arborea* Roxb. (Gimbil), *Cassia fistula* L. (Sinaru), *Castanopsis indica* (Roxb.ex Lindl.) A. DC. (Chaku jongsu), *Centella asiatica* (L.) Urb. (Manamuni), *Chromolaena odorata* (L.) R. M. King & H. Rob. (Sambangguri), *Citrus indica* Yu. Tanaka (Me·mang narang), *Citrus medica* L. (Te·matchi), *Clerodendrum glandulosum* Lindl. (Donggam), *Clerodendrum infortunatum* L. (Samaki), *Curcuma amada* Roxb. (Dikge te·gatchu), *Cuscuta reflexa* Roxb. (Nawang bibik), *Dendrocalamus hamiltonii* Nees & Arn.ex Munro (Wa·nok/Wa·ma), *Dischidia bengalensis* Colebr. (Gominda bitchil), *Drynaria quercifolia* (L.) J. Sm. (Do·reng gangpak), *Erythrina stricta* Roxb. (Bolmandal gitchak), *Ficus hispida* L.f. (Sakap/Kantap), *Flacourtia jangomas* (Lour.) Raeusch. (Darichik), *Houttuynia cordata* Thunb. (matchaduri), *Justicia gendarussa* Burm.f. (Do·jagipe), *Lagerstroemia parviflora* Roxb. (Sidai/Chidai), *Leucas aspera* (Willd.) Link (Dukumu), *Lygodium flexuosum* (L.) Sw. (Ruattip), *Macaranga denticulata* (Blume) Müle. Arg. (Cha·gro/Bolajak), *Melocanna baccifera* (Roxb.) Kurz (Wa·tre/Wa·mande), *Merremia umbellata* (L.) Hallier f. (Sitri), *Micromelum integerrimum* (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem. (mangritchok), *Mikania micrantha* Kunth (Meghalaya budu/Samtip), *Mimosa pudica* L. (Sammikchip), *Mussaenda roxburghii* Hook. f. (Gradek), *Oroxylum indicum* (L.) Kurz (Kering), *Paederia foetida* L. (Pasim), *Phrynium pubinerve* Blume (Reru), *Rauvolfia serpentina* (L.) Benth.ex Kurz (Do·grikme), *Rhynchosyris ellipticum* (Wall.ex D. Dietr.) A. DC. (Me·bitchi), *Solanum anguivi* Lam. (Kimka), *Stereospermum chelonoides* (L.f.) DC (Bolsil), *Swertia chirata* Buch.-Ham. Ex Wall. (Chirota), *Terminalia chebula* Retz. (Aritak), *Thysanolaena latifolia* (Roxb.ex Hornem.) Honda (Sal·wa/Smu), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite

chongipa), *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa), *Zanthoxylum oxyphyllum* Edgew. (Me'cheng), and *Zanthoxylum rhetsa* DC. (Sumitcheng).



4.4.3. Utilization pattern of non-edible wild plant products.

Some important non-edible wild plant products like wrapping materials, house building materials, handicrafts, broom, and fuelwood were found to be collected from the forests and utilized by the ethnic communities of the studied villages.

4.4.3.1. Wrapping materials.

A total of 6 wrapping materials belonging to 6 genera and 5 families were documented in **Table. 4.16..** The species which were used as wrapping materials include *Dillenia pentagyna* Roxb. (Agatchi), *Ficus auriculata* Lour. (Te'bil), *Hibiscus macrophyllus* Roxb.ex Hornem. (Mao), *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Mallotus tetracoccus* (Roxb.) Kurz (A'tipra), and *Phrynium pubinerve* Blume (Reru). The leaves of these plants were used for wrapping rice or curries, especially during weddings, funerals, prayer gatherings or in any other gatherings. Sometimes leaves were also used in wrapping vegetables or animal products like freshwater snails, fish, prawns, etc. for selling in the market.

Table 4.16.: Non-Timber Forests Products used as wrapping materials.

Sl. No.	Scientific name	Local name	Family	Habit	Local distribution
1	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Dilleniaceae	Medium sized tree	Very common
2	<i>Ficus auriculata</i> Lour.	Te·bil	Moraceae	Small tree	Common
3	<i>Hibiscus macrophyllus</i> Roxb.ex Hornem.	Mao	Malvaceae	Medium sized tree	Common
4	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha·gro/ Bolajak	Euphorbiaceae	Small tree	Very common
5	<i>Mallotus tetracoccus</i> (Roxb.) Kurz	A·tipra	Euphorbiaceae	Small tree	Common
6	<i>Phrynium pubinerve</i> Blume	Reru	Marantaceae	Herb	Common

4.4.3.2. House building material.

Table 4.17. reveals 8 plants which can be used as house-building material which belong to 6 genera and 2 families. Most of the plants were bamboo with one climber and one herb/grass. The local distribution of the species recorded was mainly common species with 2 species uncommon and 1 species which is very common. *Bambusa bambos* (L.) Voss (Wa·kanta), *Melocanna baccifera* (Roxb.) Kurz (Wa·tre/Wa·mande), and *Merremia umbellata* (L.) Hallier f. (Sitri) was some of the common species used for building houses. The NTFPs recorded for house building materials were largely used for poles which are locally (Garo) called “krong”, split bamboo (wa·se) for walls or floor, and strip/rope (wa·ding), thatching, and for rafter (wa·kop).

Table 4.17.: Non-Timber Forest Products used as house building materials.

Sl. No.	Scientific name	Local name	Family	Habit	Local distribution	Uses
1	<i>Bambusa bambos</i> (L.) Voss	Wa·kanta	Poaceae	Bamboo	Common	Pole (krong)
2	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	Poaceae	Bamboo	Uncommon	Pole (krong), split bamboo (wa·se) for walls or floor, and strip/rope (wa·ding)
3	<i>Bambusa tulda</i> Roxb.	Wa·ge	Poaceae	Bamboo	Common	Pole (krong), split bamboo (wa·se) for wall or floor
4	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa·nok/ Wa·ma	Poaceae	Bamboo	Common	Pole (krong)
5	<i>Imperata cylindrica</i> (L.) Raeusch	Am·pang	Poaceae	Herb/ Grass	Very common	Thatching
6	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa·tre/ Wa·mande	Poaceae	Bamboo	Common	Thatching, split bamboo (wa·se) for walls or floor, rafter (wa·kop), Strip/Rope (wa·ding)
7	<i>Merremia umbellata</i> (L.) Hallier f.	Sitri	Convol- vulaceae	Climber	Common	Strip/rope
8	<i>Schizostachyum dullooa</i> (Gamble) R. B. Majumdar	Wa·dro	Poaceae	Bamboo	Uncommon	Thatching

4.4.3.3. Handicrafts.

8 plants from the forests of West Garo Hills were collected to be used for handicrafts. The species used for handicrafts were *Bambusa jaintiana* R.B.Majumdar (Wa'tebok), *Bambusa tulda* Roxb. (Wa'ge), *Bombax ceiba* L. (Bolchu), *Calamus acanthospathus* Griff. (Re), *Calamus erectus* Roxb. (Sokmil), *Corchorus capsularis* L. (Kosta/Meka), *Melocanna baccifera* (Roxb.) Kurz (Wa'tre/Wa'mande), and *Schizostachyum dullooa* (Gamble) R. B. Majumdar (wa'dro). These species belong to 6 genera and 3 families. It has more number of bamboos (4 species) which is followed by climbers (2 species), large trees, and shrubs with 1 species each. The local distribution of the species recorded was with 4 species each of common and uncommon plants. Some of the handicrafts made by the villagers were traditional basket which is called 'kok' in Garo, fishing material/basket, a stool which is called 'mora', toys, winnowing fan or basket called 'ruan', tables, cow dung cleaning material, and a bamboo tube called 'wa'sing' for preserving dried fish and making brenga dishes. Simple baskets for selling crabs, fruits, chicken etc. were also made (**Table 4.18.**).

Table 4.18.: Non-Timber Forest Products used for handicrafts.

Sl. No.	Scientific name	Local name	Family	Habit	Local distribution	Uses
1	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	Poaceae	Bamboo	Uncommon	For making fishing material/basket.
2	<i>Bambusa tulda</i> Roxb.	Wa·ge	Poaceae	Bamboo	Common	For making traditional baskets/kok, fishing material/basket and stool/mora.
3	<i>Bombax ceiba</i> L.	Bolchu	Malvaceae	Large tree	Common	For making toy.
4	<i>Calamus acanthospathus</i> Griff.	Re	Arecaceae	Climber	Uncommon	For making winnowing fan or basket locally known as ruan.
5	<i>Calamus erectus</i> Roxb.	Sokmil	Arecaceae	Climber	Common	For making winnowing fan or basket locally known as ruan and stool/mora.
6	<i>Corchorus capsularis</i> L.	Kosta/ Meka	Malvaceae	Shrub	Uncommon	For making table.
7	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa·tre/ Wa·mande	Poaceae	Bamboo	Common	For making traditional baskets/kok, simple baskets for selling crabs, fruits, chicken etc. and for making cow dung cleaning material.
8	<i>Schizostachyum dullooa</i> (Gamble) R. B. Majumdar	Wa·dro	Poaceae	Bamboo	Uncommon	For making bamboo tube/wa·sing for preserving dried fish and making brenga dishes.

4.4.3.4. Broom.

2 plant species belonging to different genera and families were recorded to be used as a broom in the present study area. *Sida acuta* Burm.f. (Santareng/Angkegol), and *Thysanolaena latifolia* (Roxb.ex Hornem.) Honda (Sal'wa/Smu) was mostly preferred as broom species by the ethnic communities. Both species were common herbs available in the forests of West Garo Hills (**Table 4.19.**).

Table 4.19.: Broom species collected from the forests of West Garo Hills.

Sl. No.	Scientific name	Local name	Family	Habit	Local distribution
1	<i>Sida acuta</i> Burm.f.	Santareng/ Angkegol	Malvaceae	Herb	Common
2	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/ Smu	Poaceae	Herb	Common

4.4.3.5. Fuelwood.

In the present study, fuelwood was found to be the important source of energy required for the livelihood of the people living in the West Garo Hills district. West Garo Hills' forests provide a great number of fuelwood species. **Table 4.20.** shows 101 fuelwood species available and collected from the forests of West Garo Hills. The scientific name, local name, family, habit, and local distribution, is recorded in the same table. The fuelwood species belong to 72 genera (**Fig. 4.31.**) and 36 families (**Fig. 4. 32.**).

The highest number of fuelwood species recorded as used by the households from the present study is *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) followed by *Callicarpa arborea* Roxb. (Kimbal/Makanchi), and *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak). **Fig. 4.31.** shows that the highest genera belong to *Ficus* with 7 species followed by *Albizia*, *Bambusa*, *Garcinia* and *Mallotus* with 3 species each. The rest of the genera show 2 and 1 species each. **Fig.4.32.** shows the family-wise distribution of fuelwood species with the Moraceae family showing the largest number of 10 which is followed by Fabaceae (8), Euphorbiaceae (7), Malvaceae

(7), Poaceae (5), Lamiaceae (5), Phyllanthaceae (4), Rutaceae (4), Lauraceae (3), Meliaceae (3), Apocynaceae (3), Fagaceae (3), Lythraceae (3), Clusiaceae (3), Rubiaceae (3), Boraginaceae (2), Dilleniaceae (2), Ebenaceae (2), Burseraceae (2), Magnoliaceae (2), Bignoniaceae (2), Anacardiaceae (2), Actinidiaceae (2), Combretaceae (2), Cornaceae (1), Lecythidaceae (1), Pentaphyllacaceae (1), Salicaceae (1), Aquifoliaceae (1), Melastomataceae (1), Theaceae (1), Dipterocarpaceae (1), Styracaceae (1), Myrtaceae (1), Cannabaceae (1), and Araliaceae(1).

Fig.4.33. shows the habit-wise distribution of fuelwood species where medium-sized trees were recorded with the highest number of 41 species which was followed by small trees, large trees, bamboo, shrub and woody climber with 34, 17, 5, 3, 1 numbers of species respectively.

For the present study, fuelwood species are categorized into very common, common and uncommon. Common fuelwood species were more with 53 species compared to uncommon fuelwood species with 29 species. Very common fuelwood species were fewer with only 19 species (**Fig. 4.34.**). Some examples of common fuelwood species were *Albizia odorattissima* (L.f.) Benth. (Siso), *Dalbergia stipulacea* Roxb.(Palwang), *Litsea cubeba* (Lour.) Pers. (Jengjil), *Mallotus tetracoccus* (Roxb.) Kurz (A-tipra), and *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa). Fuelwood species like *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn.(Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Schima wallichii* Choisy (Boldak), and *Gmelina arborea* Roxb. (Gambare) were some of the very common species. Some uncommon species such as *Actinodaphne gullavara* (Buch.-Ham.ex Nees) M.R. Almeida (Namiaga dal'gipa), *Aglaia edulis* (Roxb.)Wall.(Sampal), *Bambusa jaintiana* R.B.Majumdar (Wa-tebok), and *Bauhinia malabarica* Roxb. (Me'gong tak) were found to be collected from the forests as fuelwood (**Table 4.20.**).

Table 4.20: List of fuelwood species collected from the forests of West Garo Hills.

Sl. no.	Scientific name	Local name	Family	Habit	Local distribution
1	<i>Actinodaphne gullavara</i> (Buch.-Ham.ex Nees) M.R. Almeida	Namiaga dal'gipa	Lauraceae	Medium sized tree	Uncommon
2	<i>Aglaia edulis</i> (Roxb.) Wall.	Sampal	Meliaceae	Medium sized tree	Uncommon
3	<i>Alangium chinense</i> (Lour.) Harms	Bolchiring	Cornaceae	Small tree	Common
4	<i>Albizia chinensis</i> (Osbeck) Merr.	Bolpu	Fabaceae	Large tree	Common
5	<i>Albizia odoratissima</i> (L.f.) Benth.	Siso	Fabaceae	Medium sized tree	Common
6	<i>Albizia procera</i> (Roxb.) Benth.	Kelwi	Fabaceae	Medium sized tree	Very common
7	<i>Alstonia scholaris</i> (L.) R. Br.	Sokchon	Apocynaceae	Medium sized tree	Common
8	<i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery	Chamolja	Phyllanthaceae	Small tree	Very common
9	<i>Artocarpus chama</i> Buch.-Ham	Chram	Moraceae	Medium sized tree	Common
10	<i>Artocarpus lacucha</i> Buch.-Ham.	Arimu	Moraceae	Large tree	Common
11	<i>Balakata baccata</i> (Roxb.) Esser	Sangsim	Euphorbiaceae	Medium sized tree	Common
12	<i>Bambusa bambos</i> (L.) Voss	Wa·kanta	Poaceae	Bamboo	Common
13	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa·tebok	Poaceae	Bamboo	Uncommon
14	<i>Bambusa tulda</i> Roxb.	Wa·ge	Poaceae	Bamboo	Common
15	<i>Bauhinia malabarica</i> Roxb.	Me·gong tak	Fabaceae	Medium sized tree	Uncommon
16	<i>Bauhinia variegata</i> L.	Me·gong	Fabaceae	Medium sized tree	Very common
17	<i>Bischofia javanica</i> Blume	Achri	Phyllanthaceae	Large tree	Uncommon
18	<i>Bombax ceiba</i> L.	Bolchu	Malvaceae	Large tree	Common
19	<i>Callicarpa arborea</i> Roxb.	Makanchi/ Kimbal	Lamiaceae	Small tree	Very common
20	<i>Careya arborea</i> Roxb.	Gimbil	Lecythidaceae	Medium sized tree	Very common
21	<i>Cassia fistula</i> L.	Sinaru	Fabaceae	Medium sized tree	Common
22	<i>Castanopsis indica</i> (Roxb.ex Lindl.) A. DC.	Chaku jongsu	Fagaceae	Medium sized tree	Common
23	<i>Castanopsis tribuloides</i> (Sm.) A. DC.	Chaku metchri	Fagaceae	Medium sized tree	Uncommon
24	<i>Clausena excavata</i> Burm.f.	Badambol	Rutaceae	Small tree	Uncommon
25	<i>Corchorus capsularis</i> L.	Kosta/Meka	Malvaceae	Shrub	Uncommon
26	<i>Cordia dichotoma</i> G. Forst.	Attabol	Boraginaceae	Medium sized tree	Uncommon
27	<i>Croton joufra</i> Roxb	Matmi	Euphorbiaceae	Small tree	Very common
28	<i>Dalbergia stipulacea</i> Roxb.	Palwang	Fabaceae	Woody climber	Common
29	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa·nok/ Wa·ma	Poaceae	Bamboo	Common

30	<i>Dillenia indica</i> L.	Agatchi badura	Dilleniaceae	Large tree	Uncommon
31	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Dilleniaceae	Medium sized tree	Very common
32	<i>Diospyros malabarica</i> (Desr.) Kostel.	Gap	Ebenaceae	Medium sized tree	Uncommon
33	<i>Diospyros racemosa</i> Roxb.	Bolgisim	Ebenaceae	Medium sized tree	Uncommon
34	<i>Duabanga grandiflora</i> Walp.	Bolchim	Lythraceae	Large tree	Common
35	<i>Ehretia acuminata</i> R. Br.	Bolmigam	Boraginaceae	Medium sized tree	Uncommon
36	<i>Erythrina stricta</i> Roxb.	Bolmandal gitchak	Fabaceae	Small tree	Common
37	<i>Eurya acuminata</i> DC.	Cha'misi	Pentaphylacaceae	Small tree	Very common
38	<i>Ficus auriculata</i> Lour.	Te'bil	Moraceae	Small tree	Common
39	<i>Ficus benghalensis</i> L.	Prap dal'gipa	Moraceae	Large tree	Common
40	<i>Ficus benjamina</i> L.	Prap rapseng	Moraceae	Medium sized tree	Common
41	<i>Ficus curtipes</i> Corner.	Prap tapsi	Moraceae	Medium sized tree	Common
42	<i>Ficus hispida</i> L.f.	Sa'kap/Kan'tap	Moraceae	Small tree	Very common
43	<i>Ficus semicordata</i> Buch.-Ham.ex Sm.	Aminsep	Moraceae	Small tree	Common
44	<i>Ficus variegata</i> Blume.	Te'wek	Moraceae	Medium sized tree	Common
45	<i>Firmiana colorata</i> (Roxb.) R.Br.	Sengsu	Malvaceae	Medium sized tree	Common
46	<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Darichik	Salicaceae	Small tree	Common
47	<i>Garcinia cowa</i> Roxb.ex Choisy	Dengadote	Clusiaceae	Small tree	Common
48	<i>Garcinia indica</i> (Thouars) Choisy	Soksimareng	Clusiaceae	Medium sized tree	Uncommon
49	<i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb.	Te'sru	Clusiaceae	Medium sized tree	Uncommon
50	<i>Garuga pinnata</i> Roxb.	Jiga	Burseraceae	Small tree	Common
51	<i>Glochidion sphaerogynum</i> (Müll. Arg.) Kurz	Bolchidek	Phyllanthaceae	Small tree	Uncommon
52	<i>Gmelina arborea</i> Roxb.	Gambare	Lamiaceae	Medium sized tree	Very common
53	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	Malvaceae	Small tree	Very common
54	<i>Grewia serrulata</i> DC.	Bolmenggo	Malvaceae	Small tree	Common
55	<i>Haldina cordifolia</i> (Roxb.) Ridsdale	Boldoreng	Rubiaceae	Medium sized tree	Common
56	<i>Hibiscus macrophyllus</i> Roxb.ex Hornem.	Mao	Malvaceae	Medium sized tree	Common
57	<i>Illex excelsa</i> (Wall.) Voigt	Boltajong	Aquifoliaceae	Medium sized tree	Common
58	<i>Ixora nigricans</i> R. Br.ex Wight & Arn.	Bolmanggal	Rubiaceae	Small tree	Uncommon
59	<i>Lagerstroemia parviflora</i> Roxb.	Sidai/Chidai	Lythraceae	Large tree	Common
60	<i>Lagerstroemia speciosa</i> (L.) Pers.	Ajakari	Lythraceae	Medium sized tree	Common
61	<i>Lithocarpus elegans</i> (Blume) Hatus.ex Soepadmo.	Chaku kokrak	Fagaceae	Medium sized tree	Uncommon
62	<i>Litsea cubeba</i> (Lour.) Pers.	Jengjil	Lauraceae	Small tree	Common
63	<i>Litsea monopetala</i> (Roxb.) Pers.	Bolbit	Lauraceae	Small tree	Common

64	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha'gro/Bolajak	Euphorbiaceae	Small tree	Very common
65	<i>Macaranga indica</i> Wight	Renikgitil	Euphorbiaceae	Large tree	Uncommon
66	<i>Magnolia champaca</i> (L.) Baill.ex Pierre	Titachap	Magnoliaceae	Large tree	Uncommon
67	<i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H. Keng	Chaku gangdap	Magnoliaceae	Small tree	Uncommon
68	<i>Mallotus nudiflorus</i> (L.) Kulju & Welzen.	Bolbok	Euphorbiaceae	Medium sized tree	Common
69	<i>Mallotus philippensis</i> (Lam.) Müll. Arg.	Sindur bol	Euphorbiaceae	Medium sized tree	Uncommon
70	<i>Mallotus tetracoccus</i> (Roxb.) Kurz	A-tipra	Euphorbiaceae	Small tree	Common
71	<i>Melastoma malabathricum</i> L.	Kakku	Melastomataceae	Shrub	Common
72	<i>Melia azedarach</i> L.	Bagonkat	Meliaceae	Medium sized tree	Common
73	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa-tre	Poaceae	Bamboo	Common
74	<i>Meyna spinosa</i> Roxb.ex Link	Te-chikeng	Rubiaceae	Shrub	Uncommon
75	<i>Micromelum integerrimum</i> (Buch.-Ham.ex DC.) Wight & Arn.ex. Roem.	Mangritchok	Rutaceae	Small tree	Uncommon
76	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Bignoniaceae	Medium sized tree	Common
77	<i>Phyllanthus emblica</i> L.	Ambare segun	Phyllanthaceae	Small tree	Common
78	<i>Premna mollissima</i> Roth	Do-kime	Lamiaceae	Small tree	Common
79	<i>Protium serratum</i> (Wall.ex Colebr.) Engl.	Te-kring	Burseraceae	Medium sized tree	Common
80	<i>Rhus chinensis</i> Mill.	Kitma	Anacardiaceae	Small tree	Common
81	<i>Saurauia napaulensis</i> DC.	Adambok	Actinidiaceae	Medium sized tree	Uncommon
82	<i>Saurauia roxburghii</i> Wall.	Ginsning	Actinidiaceae	Small tree	Common
83	<i>Schima wallichii</i> Choisy	Boldak	Theaceae	Large tree	Very common
84	<i>Shorea robusta</i> Gaertn.	Bolsal	Dipterocarpaceae	Large tree	Very common
85	<i>Spondias pinnata</i> (L.f.) Kurz	Ambaletong	Anacardiaceae	Medium sized tree	Common
86	<i>Sterculia villosa</i> Roxb.	Olmak	Malvaceae	Large tree	Common
87	<i>Stereospermum chelonoides</i> (L.f.) DC	Bolsil	Bignoniaceae	Large tree	Common
88	<i>Streblus asper</i> Lour.	Bolsrem	Moraceae	Medium sized tree	Uncommon
89	<i>Styrax serrulatus</i> Roxb.	Kampil	Styracaceae	Small tree	Uncommon
90	<i>Syzygium cumini</i> (L.) Skeels	Chambu	Myrtaceae	Medium sized tree	Very common
91	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Chirori	Combretaceae	Large tree	Very common
92	<i>Terminalia chebula</i> Retz.	Aritak	Combretaceae	Large tree	Uncommon
93	<i>Toona ciliata</i> M.Roem.	Bolbret	Meliaceae	Large tree	Very common
94	<i>Trema orientalis</i> (L.) Blume	Pakkram	Cannabaceae	Small tree	Very common
95	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Araliaceae	Small tree	Common
96	<i>Vitex peduncularis</i> Wall.ex Schauer	Rangri	Lamiaceae	Medium sized tree	Common
97	<i>Vitex quinata</i> (Lour.) F. N. Williams	Matchu gingsep	Lamiaceae	Small tree	Uncommon

98	<i>Wrightia antidysenterica</i> (L.) R. Br.	Golmatra bite chongipa	Apocynaceae	Small tree	Very common
99	<i>Wrightia arborea</i> (Dennst.) Mabb.	Golmatra bite dal'gipa	Apocynaceae	Small tree	Common
100	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me'cheng	Rutaceae	Small tree	Common
101	<i>Zanthoxylum rhetsa</i> DC.	Sumitcheng	Rutaceae	Medium sized tree	Common

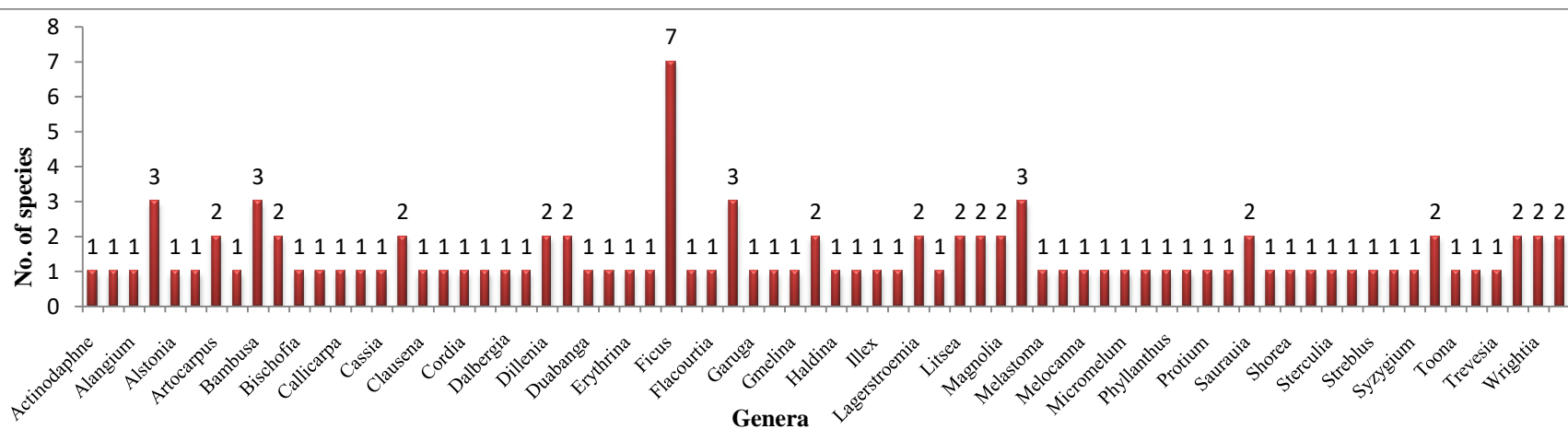


Fig. 4.31. Genera wise distribution of fuelwood collected from the forests of West Garo Hills.

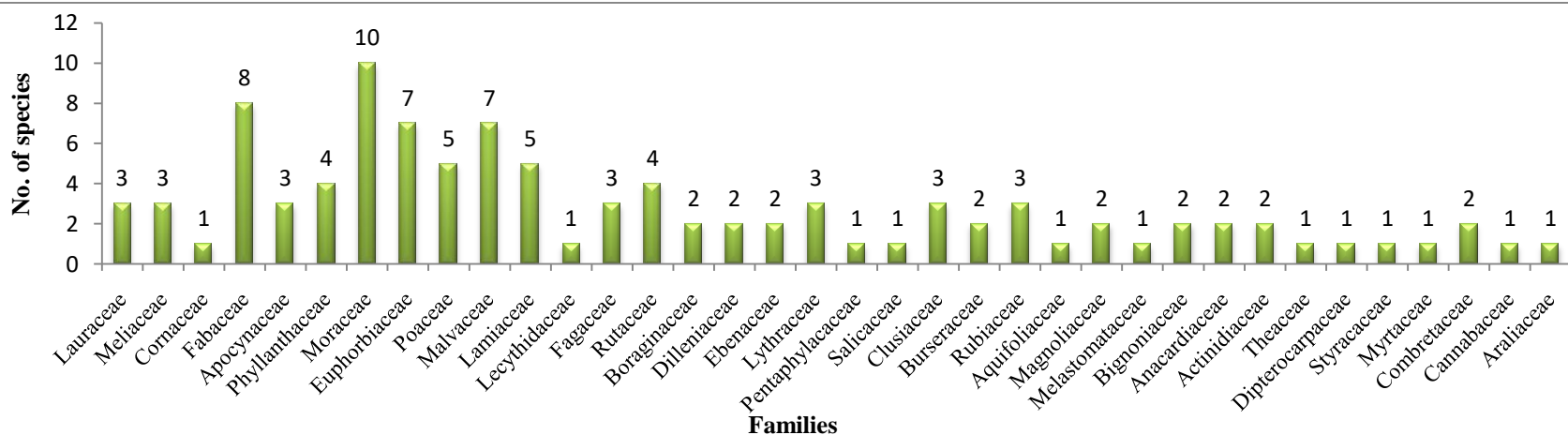


Fig. 4.32. Family wise distribution of fuelwood collected from the forests of West Garo Hills.

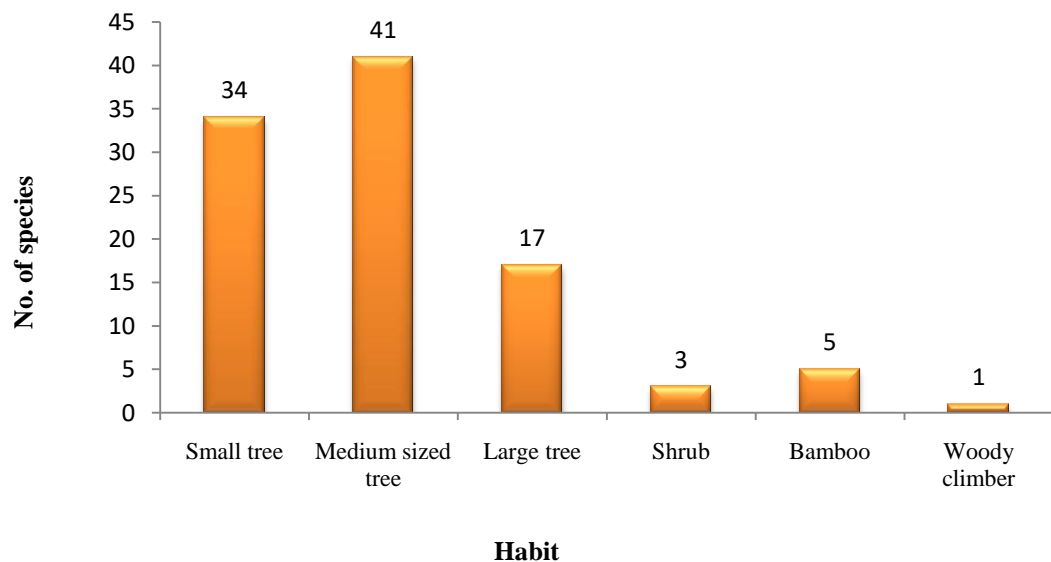


Fig. 4.33. Habit wise distribution of fuelwood collected from the forests of West Garo Hills.

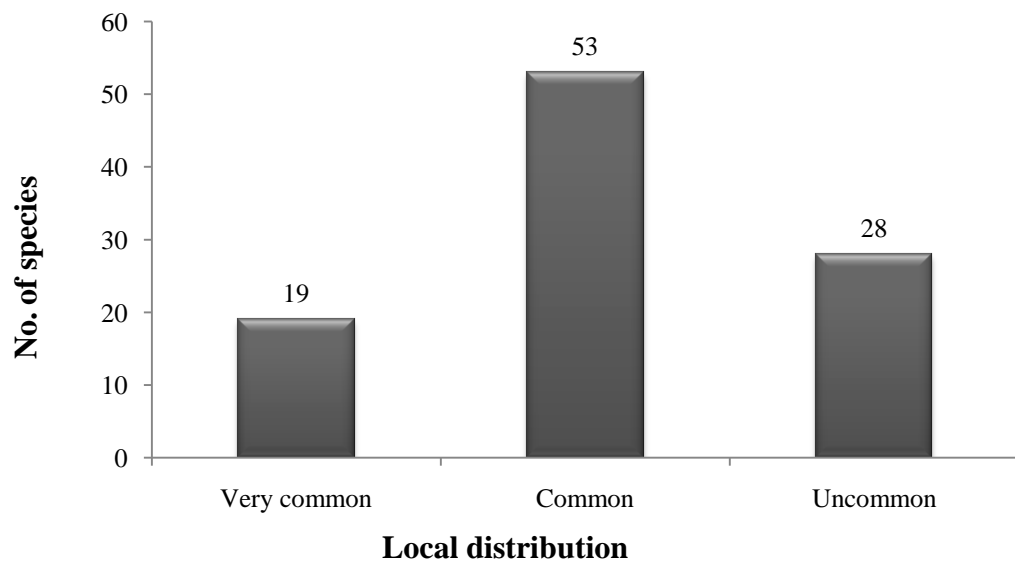


Fig. 4.34. Local distribution of fuelwood collected from the forests of West Garo Hills.

4.4.4. Utilization pattern of Non-Timber Forest Products for other purposes.

Table 4.21. display 11 NTFPs used for other purposes. It includes those which were used for making gum, wine, fencing, traditional necklace, handle for traditional baskets, etc. The fruits of *Ficus auriculata* Lour. (Te·bil) were used for fishing, the juice from the flower of *Holmskioldia sanguinea* Retz. (Mese nachil) is squeezed and consumed, *Paederia foetida* L. (Pasim), and *Sterculia villosa* Roxb. (Olmak) are used as rope and *Termitomyces eurhizus* R. Heim. (Dambong) as vegetable. *Merremia umbellata* (L.) Hallier f. (Sitri) was also used as rope as well as the flowers were eaten raw.

Table 4.21. Non-Timber Forest Products used for other purposes.

Sl. no.	Scientific name	Local name	Family	Habit	Local distribution	Uses
1	<i>Clerodendrum infortunatum</i> L.	Samaki	Lamiaceae	Shrub	Common	For making wine.
2	<i>Cordia dichotoma</i> G. Forst.	Attabol	Boraginaceae	Medium sized tree	Uncommon	Fruits are used as gum.
3	<i>Dicranopteris linearis</i> (Burm.f.) Underw.	Rikwareng	Gleicheniaceae	Fern	Common	For making traditional necklace.
4	<i>Ficus auriculata</i> Lour.	Te·bil	Moraceae	Small tree	Common	Fruits are used for fishing.
5	<i>Holmskioldia sanguinea</i> Retz.	Mese nachil	Lamiaceae	Shrub	Common	The juice from the flower is squeezed and consumed.
6	<i>Jatropha curcas</i> L.	Chimandal	Euphorbiaceae	Shrub	Common	Fencing.
7	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa·tre/ Wa·mande	Poaceae	Bamboo	Common	Fencing.
8	<i>Merremia umbellata</i> (L.) Hallier f.	Sitri	Convolvulaceae	Climber	Common	Used as rope as well as flowers are eaten raw.
9	<i>Paederia foetida</i> L.	Pasim	Rubiaceae	Climber	Common	Rope
10	<i>Sterculia villosa</i> Roxb.	Olmak	Malvaceae	Large tree	Common	Rope and handle for making traditional basket.
11	<i>Termitomyces eurhizus</i> R. Heim.	Dambong	Lyophyllaceae	Fungus	Common	Used as vegetable.

4.4.5. Consumption pattern of Non-Timber Forest Products.

In the present study, the consumption of NTFPs was done in different ways for different NTFPs. It was done separately for fuelwood, other NTFPs including mainly fruits, vegetables and fodders, and for edible animal products.

4.4.5.1. Consumption of fuelwood using weight survey method (kg).

In order to study the fuelwood consumption in the present study area, 72 villages in the West Garo Hills district were taken into account. Each study village consists of 10 households for fuelwood consumption study purposes. Fuelwood which is collected from the forests, owned farm, open land and others were taken into account for these methods. Patterns of fuelwood consumption per capita per day, daily consumption as well as per capita per year were given in **Table. 4.22**. The study showed that Waribok village had the maximum daily consumption of fuelwood with 2070 kg, followed by Rengsipara village with 1930 kg, Chekwatgre with 1920 kg, Darrengre (Upper/Lower) with 1894 kg, Baburambil with 1850 kg, Sakalgre with 1845 kg, Damal asim with 1750 kg, Rangdapara with 1725 kg, Dagugre/ Rongjugre with 1615 kg, Chibragre with 1540 kg, Dilsigre with 1530 kg, Lower Khamari (Garo) with 1530 kg, Mandagre with 1505 kg, Dallanggre with 1465 kg, Dorenggre with 1460 kg, Masumatagre with 1460 kg, Selsella Singimari with 1415 kg, Bolbokgre with 1410 kg, Damalgre with 1390 kg, Asanang with 1380 kg, Rombagre with 1375 kg, Deblongagre/ Dibilongagre with 1345 kg, Baljek Agal with 1300 kg, Lower Damachiga with 1300 kg, Chandigre with 1295 kg, Sategre with 1280 kg, Josipara (Christian, Songsarek and Songma) with 1270 kg, Magupara (Nokma gittim) with 1265 kg, Nokatgre with 1260 kg, Dalugaon with 1250 kg, Chigitchakgre with 1220 kg, Tebronggre with 1175 kg, Damjonggre with 1150 kg, Dakop with 1150 kg, Babagre with 1145 kg, Somonpara/ Meguagre with 1135 kg, Wajadagre with 1135 kg, Kathalbari with 1130 kg, Kanchonkona with 1125 kg, Chokdenggre with 1115 kg, Rongbretgre with 1100 kg, Ajrigre with 1083 kg, Aminda Rangsagre with 1065 kg, Dapgre with 1050 kg, Indrapara with 1020 kg, Borodoldonga with 1010 kg, Upper Baljek Aduma with 1000 kg, Raksamgre with

1000 kg, Tikrikilla A'chik gittim with 990 kg, Rongkhongre with 985 kg, Rongchugre with 960 kg, Kherapara songma with 955 kg, Karonggre with 950 kg, Jengrip with 930 kg, Bogadol with 890 kg, Amingokgre with 885 kg, Simbukolgre (Milsigre) with 870 kg, Wakringtonggre with 860 kg, Nengja Bolchugre with 850 kg, Kongtokpara with 850 kg, Kujikura with 845 kg, Apalgre with 830 kg, Romgre with 825 kg, Balamagre with 820 kg, Nawalgre with 810 kg, Songmagre with 810 kg, Gimbilgre with 785 kg, Rongmali with 765 kg, Kalsingre with 660 kg, Boldokagre with 630 kg, Bolsalgre with 615 kg, and least fuelwood daily consumption by Asimgre with 520 kg. A total of 85322 kg of fuelwood was consumed by the 72 villages daily.

The fuelwood per capita consumption per year was highest in Chekwatgre village with 346.07 tonnes/cap/year, followed by Dallanggre (289.20 tonnes/cap/year), Dagugre/Rongjugre (278.58 tonnes/cap/year), Baburambil (223.22 tonnes/cap/year), Chibragre (216.11 tonnes/cap/year), Rangdapara (187.17 tonnes/cap/year), Sategre (186.88 tonnes/cap/year), Rengsipara (183.26 tonnes/cap/year), Sakalgre (180.98 tonnes/cap/year), Waribok (178.83 tonnes/cap/year), Rongkhongre (177.54 tonnes/cap/year), Indrapara (175.95 tonnes/cap/year), Simbukolgre (Milsigre)- 164.02 tonnes/cap/year, Darrengre (Upper/Lower)- 163.62 tonnes/cap/year, Bolbokgre (158.40 tonnes/cap/year), Nokatgre (157.72 tonnes/cap/year), Asanang (155.03 tonnes/cap/year), Wajadagre (153.21 tonnes/cap/year), Kathalbari (152.53 tonnes/cap/year), Upper Baljek Aduma (152.02 tonnes/cap/year), Kalsingre (150.56 tonnes/cap/year), Rongbretgre (148.48 tonnes/cap/year), Borodoldonga (147.46 tonnes/cap/year), Raksamgre (146.00 tonnes/cap/year), Magupara (Nokma gittim)- 137.25 tonnes/cap/year, Dalugaon (135.63 tonnes/cap/year), Lower Damachiga (131.81 tonnes/cap/year), Masumatagre (130.10 tonnes/cap/year), Babagre (128.63 tonnes/cap/year), Rongmali (126.40 tonnes/cap/year), Dorenggre (126.13 tonnes/cap/year), Damalgre (123.86 tonnes/cap/year), Chigitchakgre (123.69 tonnes/cap/year), Deblongagre/ Dibilonggagre (123.69 tonnes/cap/year), Selsella Singimari (122.24 tonnes/cap/year), Amingokgre (119.46 tonnes/cap/year), Somonpara/ Meguagre (119.01 tonnes/cap/year), Damjonggre (116.60 tonnes/cap/year), Wakringtonggre (116.09 tonnes/cap/year), Karonggre (110.57 tonnes/cap/year), Dakop (109.20 tonnes/cap/year), Balamagre (106.55

tonnes/cap/year), Baljek Agal (105.70 tonnes/cap/year), Damal asim (104.99 tonnes/cap/year), Tebronggre (104.71 tonnes/cap/year), Kanchonkona (103.46 tonnes/cap/year), Dapgre (103.00 tonnes/cap/year), Chandigre (102.22 tonnes/cap/year), Dilsigre (101.98 tonnes/cap/year), Songmagre (101.39 tonnes/cap/year), Tikrikilla A·chik gittim (100.38 tonnes/cap/year), Ajrigre (99.60 tonnes/cap/year), Romgre (99.55 tonnes/cap/year), Lower Khamari (Garo)- 99.28 tonnes/cap/year), Aminda Rangsgre (94.90 tonnes/cap/year), Josipara (Christian, Songsarek and Songma)- 94.60 tonnes/cap/year), Chokdenggre (93.43 tonnes/cap/year), Rombagre (91.65 tonnes/cap/year), Jengrip (91.23 tonnes/cap/year), Nawalgre (91.00 tonnes/cap/year), Gimbilgre (88.19 tonnes/cap/year), Kherapara songma (85.10 tonnes/cap/year), Rongchugre (82.93 tonnes/cap/year), Bogadol (79.31 tonnes/cap/year), Apalgre (78.81 tonnes/cap/year), Nengja Bolchugre (73.43 tonnes/cap/year), Mandagre (72.58 tonnes/cap/year), Kongtokpara (67.10 tonnes/cap/year), Boldokagre (66.06 tonnes/cap/year), Asimgre (47.82 tonnes/cap/year), Kujikura (47.01 tonnes/cap/year), and the least by Bolsalgre with only 39.91 tonnes/cap/year. The total per capita per year consumption of fuelwood in 72 villages was 9291.06 tonnes/cap/year.

Table 4.22. Fuelwood consumption per capita per day, daily and per capita per year.

Sl. No.	Name of the village	Block	Fixed weight of fuelwood (kg)	Weight of remaining fuelwood after using for 1 day (kg)	Fuelwood consumption in a day (kg) per village or Average daily consumption of fuelwood (kg/village / day)	Total no. of surveyed population for fuelwood consumption (Tpop)	Total no. of household surveyed for fuelwood consumption (hh)	Per capita per day fuelwood consumption (kg/person/ day)	Weight of one bundle of fuelwood-Wt.b (kg)	Average no. of days one person goes with one bundle (Db)	Daily consumption per village (kg)	Per capita use (tonnes / cap/ year)
1	Baljek Agal	Rongram	300	170	130	67	10	1.94	5	2.58	1300	105.70
2	Dorenggre	Rongram	300	154	146	65	10	2.25	5	2.23	1460	126.13
3	Bolbokgre	Rongram	300	159	141	57	10	2.47	5	2.02	1410	158.40
4	Masumatagre	Rongram	300	154	146	64	10	2.28	5	2.19	1460	130.10
5	Waribok	Rongram	300	93	207	65	10	3.18	5	1.57	2070	178.83
6	Asanang	Rongram	300	162	138	57	10	2.42	5	2.07	1380	155.03
7	Tebronggre	Rongram	300	182.5	117.5	64	10	1.84	5	2.72	1175	104.71
8	Rombagre	Rongram	300	162.5	137.5	74	10	1.86	5	2.69	1375	91.65
9	Chibragre	Rongram	300	146	154	51	10	3.02	5	1.66	1540	216.11
10	Wakringtonggre	Rongram	300	214	86	52	10	1.65	5	3.02	860	116.09
11	Chandigre	Rongram	300	170.5	129.5	68	10	1.90	5	2.63	1295	102.22
12	Sakalgre	Rongram	300	115.5	184.5	61	10	3.02	5	1.65	1845	180.98
13	Balamagre	Gambegre	300	218	82	53	10	1.55	5	3.23	820	106.55
14	Darrengre (Upper/Lower)	Gambegre	300	110.6	189.4	65	10	2.91	5	1.72	1894	163.62
15	Nengja Bolchugre	Gambegre	300	215	85	65	10	1.31	5	3.82	850	73.43

16	Chekwatgre	Gambegre	300	108	192	45	10	4.27	5	1.17	1920	346.07
17	Aminda Rangsagre	Gambegre	300	193.5	106.5	64	10	1.66	5	3.00	1065	94.90
18	Dagugre/ Rongjugre	Gambegre	300	138.5	161.5	46	10	3.51	5	1.42	1615	278.58
19	Deblongagre/ Dibilonggre	Gambegre	300	165.5	134.5	63	10	2.13	5	2.34	1345	123.69
20	Chigitchakgre	Gambegre	300	178	122	60	10	2.03	5	2.46	1220	123.69
21	Somonpara/ Meguagre	Gambegre	300	186.5	113.5	59	10	1.92	5	2.60	1135	119.01
22	Babagre	Gambegre	300	185.5	114.5	57	10	2.01	5	2.49	1145	128.63
23	Rongbretgre	Gambegre	300	190	110	52	10	2.12	5	2.36	1100	148.48
24	Gimbilgre	Gambegre	300	221.5	78.5	57	10	1.38	5	3.63	785	88.19
25	Dilsigre	Dadenggre	300	147	153	74	10	2.07	5	2.42	1530	101.98
26	Damal asim	Dadenggre	300	125	175	78	10	2.24	5	2.23	1750	104.99
27	Ajrigre	Dadenggre	300	191.7	108.3	63	10	1.72	5	2.91	1083	99.60
28	Rongchugre	Dadenggre	300	204	96	65	10	1.48	5	3.39	960	82.93
29	Kalsingre	Dadenggre	300	234	66	40	10	1.65	5	3.03	660	150.56
30	Upper Baljek Aduma	Dadenggre	300	200	100	49	10	2.04	5	2.45	1000	152.02
31	Asingre	Dadenggre	300	248	52	63	10	0.83	5	6.06	520	47.82
32	Romgre	Dadenggre	300	217.5	82.5	55	10	1.50	5	3.33	825	99.55
33	Rongkhongre	Dadenggre	300	201.5	98.5	45	10	2.19	5	2.28	985	177.54
34	Amingokgre	Dadenggre	300	211.5	88.5	52	10	1.70	5	2.94	885	119.46
35	Sategre	Dadenggre	300	172	128	50	10	2.56	5	1.95	1280	186.88
36	Dallanggre	Dadenggre	300	153.5	146.5	43	10	3.41	5	1.47	1465	289.20
37	Selsella Singimari	Selsella	300	158.5	141.5	65	10	2.18	5	2.30	1415	122.24
38	Damjonggre	Selsella	300	185	115	60	10	1.92	5	2.61	1150	116.60
39	Boldokagre	Selsella	300	237	63	59	10	1.07	5	4.68	630	66.06
40	Bolsalgre	Selsella	300	238.5	61.5	75	10	0.82	5	6.10	615	39.91
41	Nawalgre	Selsella	300	219	81	57	10	1.42	5	3.52	810	91.00
42	Nokatgre	Selsella	300	174	126	54	10	2.33	5	2.14	1260	157.72
43	Apalgre	Selsella	300	217	83	62	10	1.34	5	3.73	830	78.81
44	Mandagre	Selsella	300	149.5	150.5	87	10	1.73	5	2.89	1505	72.58

45	Simbukolgre (Milsigre)	Sellsella	300	213	87	44	10	1.98	5	2.53	870	164.02
46	Damalgre	Sellsella	300	161	139	64	10	2.17	5	2.30	1390	123.86
47	Wajadagre	Sellsella	300	186.5	113.5	52	10	2.18	5	2.29	1135	153.21
48	Indrapara	Sellsella	300	198	102	46	10	2.22	5	2.25	1020	175.95
49	Bogadol	Tikrikilla	300	211	89	64	10	1.39	5	3.60	890	79.31
50	Tikrikilla A'chik gittim	Tikrikilla	300	201	99	60	10	1.65	5	3.03	990	100.38
51	Borodoldonga	Tikrikilla	300	199	101	50	10	2.02	5	2.48	1010	147.46
52	Lower Khamari (Garo)	Tikrikilla	300	147	153	75	10	2.04	5	2.45	1530	99.28
53	Raksamgre	Tikrikilla	300	200	100	50	10	2.00	5	2.50	1000	146.00
54	Kathalbari	Tikrikilla	300	187	113	52	10	2.17	5	2.30	1130	152.53
55	Kanchonkona	Tikrikilla	300	187.5	112.5	63	10	1.79	5	2.80	1125	103.46
56	Lower Damachiga	Tikrikilla	300	170	130	60	10	2.17	5	2.31	1300	131.81
57	Rongmali	Tikrikilla	300	223.5	76.5	47	10	1.63	5	3.07	765	126.40
58	Dakop	Tikrikilla	300	185	115	62	10	1.85	5	2.70	1150	109.20
59	Chokdenggre	Tikrikilla	300	188.5	111.5	66	10	1.69	5	2.96	1115	93.43
60	Jengrip	Tikrikilla	300	207	93	61	10	1.52	5	3.28	930	91.23
61	Kherapara songma	Dalu	300	204.5	95.5	64	10	1.49	5	3.35	955	85.10
62	Rangdapara	Dalu	300	127.5	172.5	58	10	2.97	5	1.68	1725	187.17
63	Josipara (Christian, Songsarek and Songma)	Dalu	300	173	127	70	10	1.81	5	2.76	1270	94.60
64	Magupara (Nokma gittim)	Dalu	300	173.5	126.5	58	10	2.18	5	2.29	1265	137.25
65	Kujikura	Dalu	300	215.5	84.5	81	10	1.04	5	4.79	845	47.01
66	Songmagre	Dalu	300	219	81	54	10	1.50	5	3.33	810	101.39
67	Rengsipara	Dalu	300	107	193	62	10	3.11	5	1.61	1930	183.26
68	Baburambil	Dalu	300	115	185	55	10	3.36	5	1.49	1850	223.22
69	Dapgre	Dalu	300	195	105	61	10	1.72	5	2.90	1050	103.00

70	Kongtokpara	Dalu	300	215	85	68	10	1.25	5	4.00	850	67.10
71	Dalugaon	Dalu	300	175	125	58	10	2.16	5	2.32	1250	135.63
72	Karonggre	Dalu	300	205	95	56	10	1.70	5	2.95	950	110.57
Total/Average			21600	13067.8	8532.2	4288	720	145.61	5	2.72	85322	9291.06

4.4.5.2. Consumption of some important NTFPs collected from the forests.

The average consumption or average quantity collection of some NTFPs including fruits, vegetables, fodders, thatching, as well as for broom and winemaking, based on the one-time collection during the availability period is shown in **Table 4.23**. This includes only those encountered and recorded during the field survey. It was observed for 37 NTFPs. Parts collected and measured/recorded were also mentioned for each species.

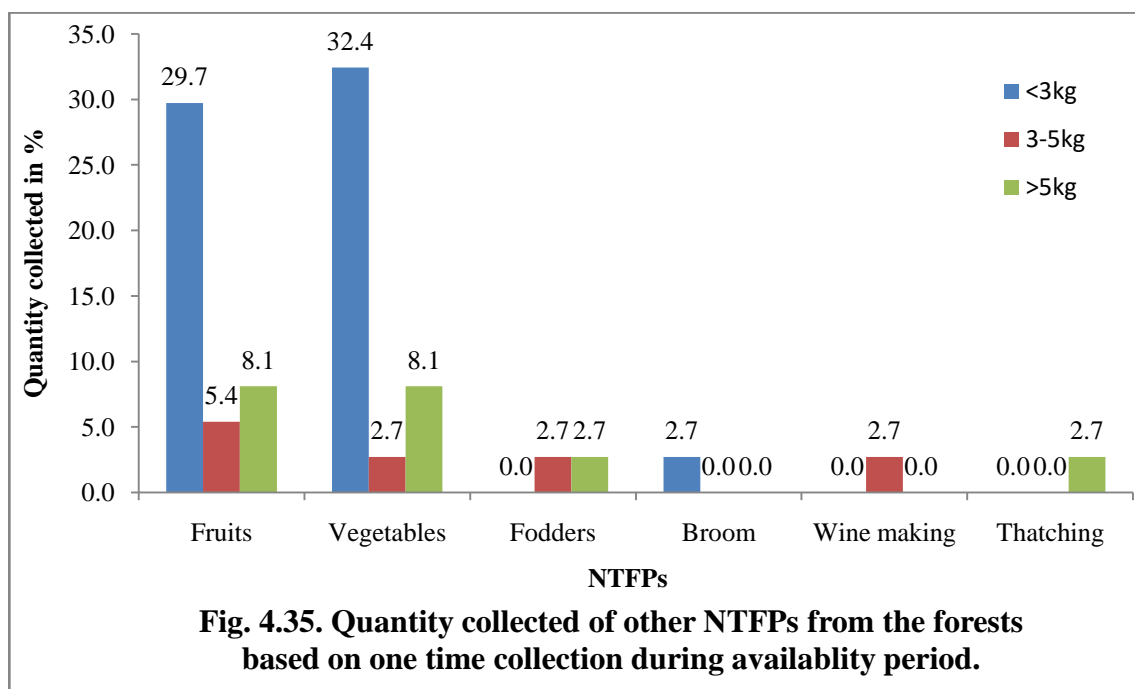
Table 4.23. Average consumption of some important Non-Timber Forest Products.

Sl.no.	Scientific name	Local name	Parts collected	Average quantity collected (based on one time collection during availability period)
1	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Flower, tender leaves and stalk	2.5 kg
2	<i>Antidesma acidum</i> Retz.	Adurak/ Arubak	Tender leaves	1-2 kg or 4-5 kg for business
3	<i>Baccaurea ramiflora</i> Lour.	Gasampe	Fruits	0.5-1 kg
4	<i>Bauhinia variegata</i> L.	Me'gong	Tender leaves	0.5-1 kg
5	<i>Calamus acanthospathus</i> Griff.	Re	Fruits	0.5-1 kg (1 bunch)
6	<i>Calamus erectus</i> Roxb.	Sokmil	Fruits	1-5 kg (1 bunch or sometimes 1 basket)
7	<i>Chrysophyllum roxburghii</i> G. Don	Te'wan	Fruits	0.5-1 kg
8	<i>Clerodendrum infortunatum</i> L.	Samaki	Flowers	3 kg
9	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Stalk and tender leaves	0.5-1 kg
10	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa-nok/ Wa-ma	Shoots	2-8 kg
11	<i>Diplazium esculentum</i> (Retz.) Sw.	Gongginjak	Stalk and tender leaves	0.5-1 kg
12	<i>Elaeagnus latifolia</i> L.	Sokkua	Fruits	4-5 kg
13	<i>Ficus hispida</i> L.f.	Sakap/ Kantap	Leaves	2-5 kg
14	<i>Garcinia cowa</i> Roxb.ex Choisy	Dengadote	Fruits	1-2 kg or more
15	<i>Garcinia indica</i> (Thouars) Choisy	Soksimareng	Fruits	1 kg

16	<i>Garcinia xanthochymus</i> Hook f.ex T. Anderson	Aruak	Fruits	250 grams
17	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	Fruits	1-2 kg
18	<i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman	Te'patang	Fruits	1 kg
19	<i>Imperata cylindrica</i> (L.) Raeusch	Am'pang	Leaves	25 kg (1 bundle) or more
20	<i>Lasia spinosa</i> (L.) Thwaites	Chonggi	Tender leaves	0.5-1 kg
21	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa-tre/ Wa-mande	Shoots	7-10 kg
22	<i>Paederia foetida</i> L.	Pasim	Leaves	0.5-1 kg
23	<i>Persicaria chinensis</i> (L.) H. Gross	Me'kri donok	Leaves	0.5 kg
24	<i>Phlogacanthus thyrsiflorus</i> Nees	Alot gitchak	Flowers	250 grams
25	<i>Phyllanthus emblica</i> L.	Ambare segun	Fruits	0.5-3 kg or 5-6 kg for business
26	<i>Protium serratum</i> (Wall.ex Colebr.) Engl.	Te'kring	Fruits	0.5-1 kg or 5-6 kg
27	<i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me'bitchi	Flowers and tender leaves	2-3 kg
28	<i>Rothea serrata</i> (L.) Steane &Mabb.	Agunjulai/ Matchok nachil	Leaves and flowers	0.5-1 kg
29	<i>Sarcochlamys pulcherrima</i> Gaudich.	An'tamburi	Leaves	0.5-1 kg
30	<i>Syzygium cumini</i> (L.) Skeels	Chambu	Fruits	1-2 kg
31	<i>Terminalia chebula</i> Retz.	Aritak	Fruits	0.5-1 kg
32	<i>Termitomyces eurhizus</i> R. Heim.	Dambong		3-10 kg
33	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/ Smu	Stem and flowers	1-2 kg
34	<i>Trema orientalis</i> (L.) Blume	Pakkram	Leaves	5 kg
35	<i>Uvaria hamiltonii</i> Hook.f.& Thomson.	Te'rik galwang	Fruits	0.5-2 kg (2-3 bunch)
36	<i>Willughbeia edulis</i> Roxb.	Bakwe bijak dalgipa	Fruits	5-6 kg
37	<i>Zanthoxylum oxyphyllum</i> Edgew.	Mecheng	Leaves	0.5-1 kg

Fig.4.35. shows the quantity collected of some NTFPs based on the one-time collection during the availability period from the forests of West Garo Hills. The quantity collected which is lesser than 3kg was highest for vegetables with 32.4% followed by

fruits with 29.7% and broom with 2.7%, those between 3-5 kg was more for fruits (5.4%) comparing to vegetables, fodders and winemaking with 2.7% each, and those >5kg was higher for fruits and vegetables with 8.1% each as compared to fodders and thatching with 2.7% each.



4.4.5.3. Consumption of some common wild edible animal products from the forests.

In most parts of the study areas, animals are not allowed to be collected or consumed by the Forest department as well as by the community in order to conserve the wild animals but in very few pockets of the study areas, the villagers still collect and consume their protein. But some of the animal products like freshwater fish, honey, freshwater snails, freshwater crabs, etc. do not have much restrictions.

Table 4.24. shows the quantity collection of some of the common edible animal products in a one-time collection. Household involvement in the collection of animal products was highest for freshwater fish (598) followed by a collection of honey from giant honey bees (297). The collection of freshwater snails and crabs involved 16 households each and 17 households for freshwater prawns. Electric eel, honey from

stingless bees etc. were also collected but in lesser quantities. The quantity collection of some animals could not be mentioned here in a proper way.

Table 4.24. Quantity collected of some common wild edible animal products.

Sl.no.	NTFPs	Total no. of household involved in collection.	Quantity collected		
			<3kg	3-5kg	>5kg
1	Freshwater fish	598	579	9	10
			96.82%	1.51%	1.67%
2	Honey	297	<1 litre	1-3 litres	>3 litres
			126	118	53
			42.42%	39.73%	17.85%
3	Freshwater snails	16	<3kg	3-5kg	>5kg
			13	1	2
			81.25%	6.25%	12.5%
4	Freshwater crabs	16	<3kg	3-5kg	>5kg
			13	2	1
			81.25%	12.5%	6.25%
5	Freshwater prawns	17	<1 kg	1-3 kg	>3 kg
			14	3	0
			82.35%	17.65%	0%

4.5. Fuelwood ranking.

In the present investigation, fuelwood ranking was done on the basis of local preference using 20 quality criteria (**Table 4.25.**) as well as on the basis of the Fuelwood Value Index (FVI) (**Table 4.26.**). 22 tree species from the forest were selected for fuelwood ranking purposes. The selected species are: *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb. (Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn. (Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Careya arborea* Roxb. (Gimbil), *Syzygium cumini* (L.) Skeels (Chambu), *Toona ciliata* M.Roem. (Bolbret), *Trema orientalis* (L.) Blume (Pakkram), *Eurya acuminata* DC. (Cha'misi), *Croton joufra* Roxb. (Matmi), *Schima wallichii* Choisy (Boldak), *Dillenia pentagyna* Roxb. (Agatchi), *Gmelina arborea* Roxb. (Gambare),

Ficus hispida L.f. (Sa'kap/ Kan'tap), *Mallotus tetracoccus* (Roxb.) Kurz (A'tipra), *Albizia odoratissima* (Lf) Benth. (Siso), *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa), *Dalbergia stipulacea* Roxb. (Palwang), and *Rhus chinensis* Mill. (Kitma).

According to local preference, *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak) rank first but on the basis of FVI, this species rank sixth. Considering the FVI, *Shorea robusta* Gaertn. (Bolsal) rank first whereas, on the basis of local preference, it ranks sixth.

Some of the species which can be considered good fuelwood based on local preference were *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb. (Makanchi/Kimbal), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn. (Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Careya arborea* Roxb. (Gimbil), *Syzygium cumini* (L.) Skeels (Chambu), and *Toona ciliata* M.Roem. (Bolbret).

Shorea robusta Gaertn. (Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Schima wallichii* Choisy (Boldak), *Dillenia pentagyna* Roxb. (Agatchi), *Syzygium cumini* (L.) Skeels (Chambu), *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Albizia odoratissima* (Lf) Benth. (Siso), *Mallotus tetracoccus* (Roxb.) Kurz (A'tipra), *Eurya acuminata* DC. (Cha'misi), and *Trema orientalis* (L.) Blume (Pakkram) were some of the species which can be considered suitable fuelwood according to FVI.

Table 4.25. Ranking of selected fuelwood species on the basis of local preference using 20 quality criteria.

Sl. No.	Scientific name	Local names	Reasons/Quality criteria (no. of times recorded from the respondents as local preference)																				Total score	Rank
			Easily available/Plenty	Easy to burn/Fast burning	Easy to split/cut	Fragrance	Fast drying	Good embers	Flame not smoky	Non-sparking	Light weight when dry	Long burning	Good charcoal	Good Ash	Good in burning/hot flame/Bright flame	Long storage/Good for storage	Not easily attack by insects	Strong wood	Using since long time	Good to burn when still fresh	Less ash	Other		
1	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha'gro/ Bolajak	4	60	65	2	1	87	2	0	24	20	1	0	127	7	4	9	0	5	0	86	504	1
2	<i>Wrightia antidysenterica</i> (L.) R. Br.	Golmatra bite chongipa	4	50	39	0	6	83	0	6	12	16	0	3	125	10	20	12	3	3	1	80	473	2
3	<i>Callicarpa arborea</i> Roxb.	Kimbal/ Makanchi	4	34	29	2	6	79	3	3	17	18	0	1	91	8	13	14	2	2	0	65	391	3
4	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	4	15	20	0	1	57	0	2	5	15	0	1	53	3	10	13	2	0	0	30	231	4
5	<i>Bauhinia variegata</i> L.	Me'gong	2	15	16	2	2	30	1	0	2	14	0	1	32	2	0	4	0	1	0	20	144	5
6	<i>Shorea robusta</i> Gaertn.	Bolsal	1	8	1	0	3	43	0	0	1	16	1	0	26	2	2	5	0	1	0	21	131	6
7	<i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery	Chamolja	1	4	6	0	1	22	0	1	1	7	1	1	13	0	0	1	0	0	0	22	81	7
8	<i>Careya arborea</i> Roxb.	Gimbil	0	5	0	0	0	32	0	0	0	3	0	2	3	0	1	0	0	0	0	12	58	8
9	<i>Syzygium cumini</i> (L.)	Chambu	0	1	0	0	0	22	0	0	0	6	0	0	13	0	2	2	1	0	0	11	58	8

	Skeels																							
10	<i>Toona ciliata</i> M.Roem.	Bolbret	0	6	1	0	3	10	0	0	3	0	0	0	9	0	4	2	0	1	0	18	57	9
11	<i>Trema orientalis</i> (L.) Blume	Pakkram	0	5	3	0	2	3	0	1	3	1	0	1	19	0	0	0	0	1	0	16	55	10
12	<i>Eurya acuminata</i> DC.	Cha'misi	1	5	2	0	0	8	0	0	3	4	0	0	11	1	2	3	0	0	0	12	52	11
13	<i>Croton joufra</i> Roxb.	Matmi	1	3	10	1	0	8	0	1	1	2	0	0	9	2	0	1	1	0	0	7	47	12
14	<i>Schima wallichii</i> Choisy	Boldak	2	2	0	0	1	9	0	0	1	2	2	0	6	0	5	1	0	0	0	9	40	13
15	<i>Dillenia pentagyna</i> Roxb.	Agatchi	0	2	3	0	0	10	0	1	0	4	0	0	7	0	4	0	0	0	0	7	38	14
16	<i>Gmelina arborea</i> Roxb.	Gambare	1	4	1	0	3	3	0	0	0	4	0	0	9	0	1	1	0	0	0	10	37	15
17	<i>Ficus hispida</i> L.f.	Sa'kap/ Kan'tap	0	4	2	0	3	4	0	0	0	5	0	0	2	0	0	0	0	0	0	15	35	16
18	<i>Mallotus tetracoccus</i> (Roxb.) Kurz	A'tipra	0	2	0	0	0	2	0	0	1	0	1	0	6	0	0	0	0	0	0	1	13	17
19	<i>Albizia odoratissima</i> (Lf) Benth.	Siso	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	5	18
20	<i>Wrightia arborea</i> (Dennst.) Mabb.	Golmatra bite dal'gipa	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	4	19
21	<i>Dalbergia stipulacea</i> Roxb.	Palwang	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	20
22	<i>Rhus chinensis</i> Mill.	Kitma	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	21

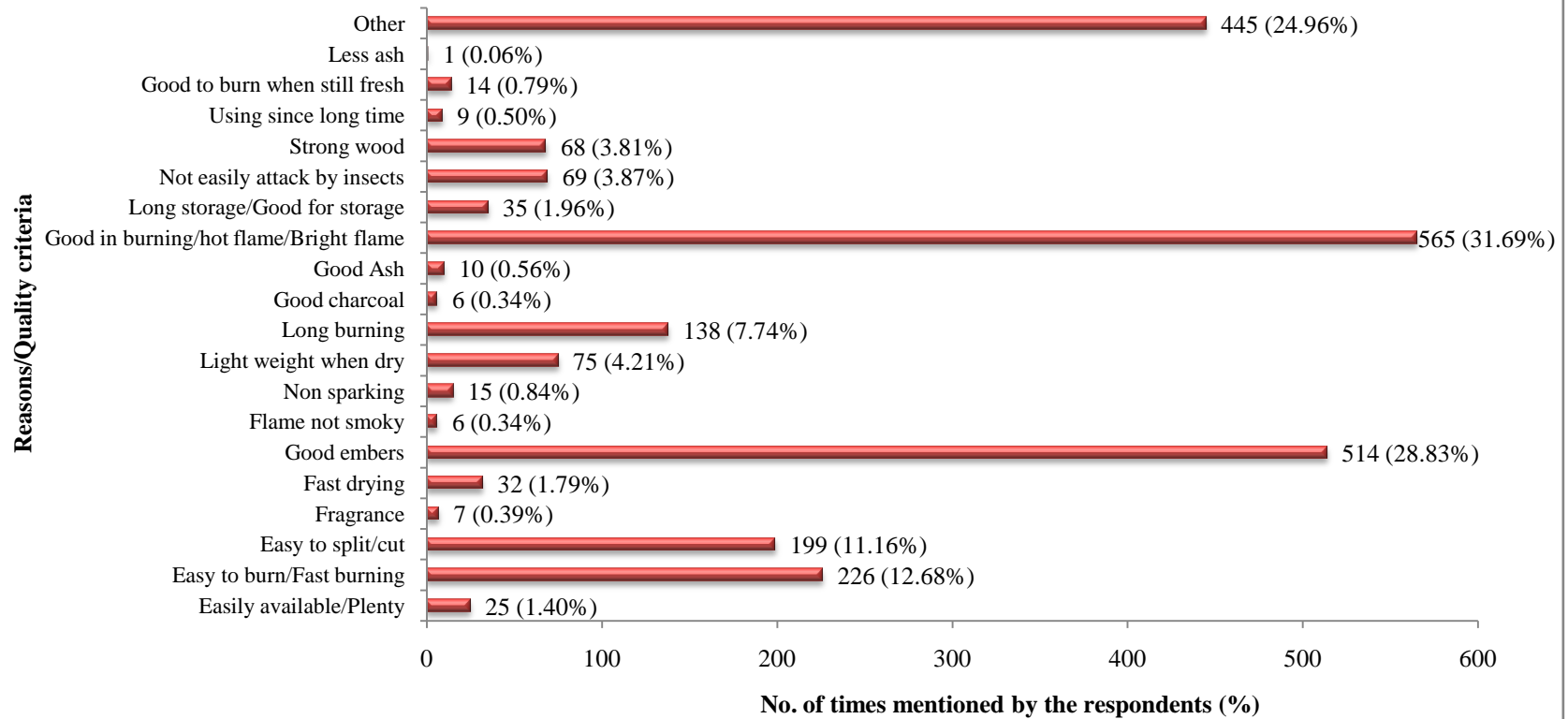


Fig. 4.36. Reasons/Quality criteria for the preference of fuelwood by the respondents

4.5.1. Ranking of selected fuelwood species on the basis of local preference using 20 quality criteria.

20 reasons/quality criteria for fuelwood preference were used in the present research work. **Fig.4.36.** shows that the most important criteria for fuelwood ranking were “Good in burning/hot flame/bright flame” with 565 times (31.69%) mentioned by the respondents followed by “Good embers” 514 times (28.83%). “Easy to burn/Fast burning”, “Easy to split/cut” and “Long burning” were also some of the important quality criteria for fuelwood preference with 226 (12.68%), 199 (11.16%) and 138 times (7.74%) recorded by the respondents respectively. Quality criteria such as “Lightweight when dry” (75) 4.21%, “Not easily attacked by insects” (69) 3.87%, and “Strong wood” (68) 3.81% were considered with average importance. “Easily available/plenty”(25) 1.40%, “Fragrance”(7) 0.39%, “Fast drying”(32) 1.79%, “Flame not smoky”(6) 0.34%, “Non-sparking”(15) 0.84%, “Good charcoal”(6) 0.34%, “Good ash”(10) 0.56%, “Long storage/Good for storage”(35) 1.96%, “Using since a long time”(9) 0.50%, “Good to burn when still fresh”(14) 0.79%, and “Less ash”(1) 0.06% were considered less important with “Less ash” as the lowest quality criteria. Other fuelwood quality criteria were reported 445 times (24.96%) in the present study (**Table 4.25.**).

4.5.1.1. Easily available/Plenty.

“Easily available” fuelwood species or tree species available in “Plenty” in the study area was considered less important for fuelwood quality criteria which was recorded 25 (1.40%) times by the respondents (**Fig. 4.36.**). Tree species like *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb.(Kimbai/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn.(Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Eurya acuminata* DC.(Cha'misi), *Croton joufra* Roxb.(Matmi), *Schima wallichii* Choisy (Boldak), and *Gmelina arborea* Roxb. (Gambare) are preferred as fuelwood because of easy availability in the study area. *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra

bite chongipa), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), and *Grewia nervosa* (Lour.) Panigrahi (Bolchupret) has the highest records for “Easily available/Plenty” quality criteria (**Table. 4.25.**).

4.5.1.2. Easy to burn/Fast burning.

“Easy to burn” or “Fast burning” fuelwood species were considered important fuelwood quality criteria by the respondents. It was mentioned 226 (12.68%) times as the preferred fuelwood criterion from the study area (**Fig.4.36.**). Almost all the species are recorded in **Table 4.25.** are used for easy burning except for *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa), *Dalbergia stipulacea* Roxb.(Palwang), and *Rhus chinensis* Mill.(Kitma). *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), and *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) was mostly preferred fuelwood species for easy burning.

4.5.1.3. Easy to split/cut.

“Easy to split/cut” was an important criterion of fuelwood for the respondents. It was mentioned 199 times (11.16%) as the preferred fuelwood species quality criteria (**Fig.4.36.**). Fuelwood species rich in this criterion were *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), and *Callicarpa arborea* Roxb.(Kimbal/Makanchi). Species like *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn.(Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Toona ciliata* M.Roem.(Bolbret), *Trema orientalis* (L.) Blume (Pakkram), *Eurya acuminata* DC.(Cha'misi), *Croton joufra* Roxb.(Matmi), *Dillenia pentagyna* Roxb.(Agatchi), *Gmelina arborea* Roxb.(Gambare), *Ficus hispida* L.f. (Sa'kap/Kan'tap), and *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa) are also considered easy to split (**Table 4.25.**).

4.5.1.4. Fragrance.

“Fragrance” was considered as a less important quality criterion with only 7 times (0.39%) mentioned by the villagers of the study area (**Fig. 4.36.**). *Macaranga*

denticulata (Blume) Müle. Arg. (Cha'gro/Bolajak), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), *Bauhinia variegata* L. (Me'gong), and *Croton joufra* Roxb. (Matmi) are the only species recorded for there fragrance (**Table 4.25.**).

4.5.1.5. Fast drying.

“Fast drying” was the criterion used less which was reported 32 times (1.79%) by the respondents as preferring fuelwood species (**Fig. 4.36.**). After collecting fuelwood from the forests, villagers usually keep the fuelwood for sun drying. According to **Table 4.25.**, the tree species having the highest number of times for fast drying rates was *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) and *Callicarpa arborea* Roxb.(Kimbal/Makanchi). Species which were also recorded for fast drying were *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn.(Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Toona ciliata* M.Roem.(Bolbret), *Trema orientalis* (L.) Blume (Pakkram), *Schima wallichii* Choisy (Boldak), *Gmelina arborea* Roxb.(Gambare), and *Ficus hispida* L.f. (Sa'kap/Kan'tap).

4.5.1.6. Good embers.

“Good embers” was the second most frequently used quality criteria for fuelwood preference by the respondents. It was mentioned 514 times (28.83%) during the field survey (**Fig. 4.36.**). Production of good embers is required for slow cooking and the most suitable species for this criterion were *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb.(Kimbal/Makanchi) and *Grewia nervosa* (Lour.) Panigrahi (Bolchupret). All the other species from **Table 4.25.**, were also recorded for good embers except for *Wrightia arborea* (Dennst.) Mabb.(Golmatra bite dal'gipa) and *Rhus chinensis* Mill.(Kitma).

4.5.1.7. Flame not smoky.

“Flame not smoky” was a less significant quality criterion of fuelwood preference according to the villagers with only 6 times (0.34%) mentioned during the field survey (**Fig.4.36.**). **Table 4.25.** shows that *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Callicarpa arborea* Roxb. (Kimbal/Makanchi), and *Bauhinia variegata* L. (Me'gong) were found to produce less smoke on burning.

4.5.1.8. Non-sparking.

People prefer fuelwood which is non-sparking since the sparking fuelwood can cause harm to the surrounding area and this quality criteria does not matter much for the villagers in the present study and was mentioned only 15 times (0.84%) during the field survey (**Fig. 4.36.**). *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Callicarpa arborea* Roxb. (Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Trema orientalis* (L.) Blume (Pakkram), *Croton joufra* Roxb.(Matmi), and *Dillenia pentagyna* Roxb. (Agatchi) were reported to be non-sparking species (**Table 4.25.**).

4.5.1.9. Lightweight when dry.

“Lightweight when dry” was considered an average important fuelwood quality criterion which was mentioned 75 times (4.21%) by the respondents during the field survey (**Fig. 4.36.**). Species such as *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Callicarpa arborea* Roxb. (Kimbal/Makanchi), and *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) showed considerable quality criteria of lightweight when dry. Tree species like *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn.(Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Toona ciliata* M.Roem. (Bolbret), *Trema orientalis* (L.) Blume (Pakkram), *Eurya acuminata* DC. (Cha'misi), *Croton joufra* Roxb.(Matmi), *Schima wallichii* Choisy (Boldak), *Mallotus tetraococcus* (Roxb.) Kurz (A'tipra), and *Rhus chinensis* Mill. (Kitma) were also included as lightweight fuelwood species (**Table 4.25.**).

4.5.1.10. Long burning.

Fuelwood which burns for a long is another important criterion which was mentioned 138 times (7.74%) by the respondents (**Fig. 4.36.**). *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Shorea robusta* Gaertn. (Bolsal), and *Grewia nervosa* (Lour.) Panigrahi (Bolchupret) was among the best fuelwood species for long burning. Some tree species like *Bauhinia variegata* L. (Me'gong), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Careya arborea* Roxb.(Gimbil), *Syzygium cumini* (L.) Skeels (Chambu), *Trema orientalis* (L.) Blume (Pakkram), *Eurya acuminata* DC.(Cha'misi), *Croton joufra* Roxb.(Matmi), *Schima wallichii* Choisy (Boldak), *Dillenia pentagyna* Roxb.(Agatchi), *Gmelina arborea* Roxb.(Gambare), *Ficus hispida* L.f.(Sa'kap/Kan'tap), and *Albizia odoratissima* (Lf) Benth. (Siso) were also considered as long-burning fuelwood species (**Table 4.25.**).

4.5.1.11. Good charcoal.

In the present study area, people used charcoal but not in high quantity so this criterion was considered less significant by the villagers. It was recorded only 6 times (0.34%) from the respondents (**Fig. 4.36.**). *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Shorea robusta* Gaertn. (Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Schima wallichii* Choisy (Boldak), and *Mallotus tetraococcus* (Roxb.) Kurz (A'tipra) was the only tree species which were mentioned for its good charcoal (**Table 4.25.**).

4.5.1.12. Good Ash.

“Good ash” belong to less important quality criteria for fuelwood since it was reported only 10 times (0.56%) during the field survey (**Fig. 4.36.**). **Table 4.25.** shows that fuelwood species namely, *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Careya arborea* Roxb.(Gimbil), and *Trema orientalis* (L.) Blume (Pakkram) produced good quality ash.

4.5.1.13. Good in burning/hot flame/Bright flame.

In the present study, “Good in Burning”, “Hot flame” and “Bright flame” were considered in the same quality criteria category. According to **Fig. 4.36.** this criterion showed the highest importance which was mentioned 565 times (31.69%) by the respondents. Tree species rich in this criterion were *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), and *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa). Among 22 fuelwood species, only 2 species namely; *Albizia odoratissima* (Lf) Benth.(Siso), and *Rhus chinensis* Mill. (Kitma) were not recorded for this criterion (**Table 4.25.**).

4.5.1.14. Long storage/Good for storage.

Storage of fuelwood does not show much importance by the respondents. During the field survey, this criterion was mentioned only 35 times (1.96%) by the villagers (**Fig. 4.36.**). There were some villagers who just collect the fuelwood from the forest and directly used it for cooking without storing it in the fuelwood storehouse. In the above **Table 4.25.** some species like *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb. (Kimbal/Makanchi), *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn.(Bolsal), *Eurya acuminata* DC.(Cha'misi), and *Croton joufra* Roxb. (Matmi) were reported for good storage for a longer period of time. *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) was the best fuelwood species for storage.

4.5.1.15. Not easily attacked by insects.

“Not easily attacked by insects” contributed to the average importance quality criteria. It was reported 69 times (3.87%) by the respondents (**Fig. 4.36.**). *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) was recorded as the best fuelwood species which can fight against insect attacks. Other tree species like *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Shorea robusta* Gaertn. (Bolsal), *Careya arborea* Roxb. (Gimbil), *Syzygium cumini* (L.) Skeels

(Chambu), *Toona ciliata* M.Roem. (Bolbret), *Eurya acuminata* DC.(Cha'misi), *Schima wallichii* Choisy (Boldak), *Dillenia pentagyna* Roxb. (Agatchi), *Gmelina arborea* Roxb.(Gambare), and *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa) were also reported for this criterion (**Table 4.25.**).

4.5.1.16. Strong wood.

“Strong wood” is another criterion with average importance as it was mentioned 68 times (3.81%) by the respondents during the field survey (**Fig. 4.36.**). The best tree species for this criterion were *Callicarpa arborea* Roxb. (Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), and *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa). Some species like *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak), *Bauhinia variegata* L. (Me'gong), *Shorea robusta* Gaertn. (Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Syzygium cumini* (L.) Skeels (Chambu), *Toona ciliata* M.Roem. (Bolbret), *Eurya acuminata* DC. (Cha'misi), *Croton joufra* Roxb.(Matmi), *Schima wallichii* Choisy (Boldak), and *Gmelina arborea* Roxb. (Gambare) were also reported as strong wood (**Table 4.25.**).

4.5.1.17. Using since a long time.

Some villagers from the present study used fuelwood which has been using since a long time by the forefathers. However, this quality criterion was of less importance for the villagers and was reported only 9 times (0.50%) during the survey (**Fig. 4.36.**). According to **Table 4.25.**, the tree species which have been using since long time was *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb. (Kimbal/Makanchi), *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), *Syzygium cumini* (L.) Skeels (Chambu), and *Croton joufra* Roxb. (Matmi).

4.5.1.18. Good to burn when still fresh.

“Good to burn when still fresh” was considered to be a less significant quality criterion and was mentioned 14 times (0.79%) by the villagers (**Fig. 4.36.**). This criterion may be less significant in the present study because the villagers usually dry the fuelwood before burning it. Only in some villages where the fuelwood from the forests was less,

fresh fuelwood used for burning. According to the respondents, *Macaranga denticulata* (Blume) Müle. Arg. (Cha·gro/Bolajak) was the best fuelwood species for burning when it was still fresh. *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa), *Callicarpa arborea* Roxb.(Kimbal/Makanchi), *Bauhinia variegata* L. (Me·gong), *Shorea robusta* Gaertn.(Bolsal), *Toona ciliata* M.Roem.(Bolbret) and *Trema orientalis* (L.) Blume (Pakkram) was also considered as a good species for this criterion (**Table 4.25.**).

4.5.1.19. Less ash.

This quality criterion was mentioned only 1 time (0.06%) and was reported to have the lowest importance (**Fig. 4.36.**). *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) was the only species mentioned for less ash (**Table 4.25.**).

4.5.1.20. Other fuelwood quality criteria.

Other fuelwood quality criteria include those species which were just recorded without the reason as well as those which were recorded as easy to use, easy for a fire to go off, good for cooking rice and boiling milk, tea and curries taste better, good for smoking meat, good for selling, good for warming up, good to burn along with other fuelwood species, fast growing etc. It was recorded 445 times (24.96%) (**Fig. 4.36.**). *Macaranga denticulata* (Blume) Müle. Arg. (Cha·gro/Bolajak), and *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) was reported highest in this category. All the other species are mentioned in **Table 4.25.** were present in this category except for *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal·gipa), and *Dalbergia stipulacea* Roxb. (Palwang).

The ranking of fuelwood species was done by asking the respondents from all the households interviewed where they were asked to mention their preferred fuelwood species along with the reasons for preference. Most of the respondents gave their answers but few could not decide which they prefer. The result in **Table 4.25.** shows that *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak) rank first which attained the highest score in the 10 quality criteria. These quality criteria include “Easily available/plenty”, “Easy to burn/Fast burning”, “Easy to split/cut”, “Fragrance”, “Good embers”, “Light weight when dry”, “Long burning”, “Good in burning/Hot flame/Bright flame”, “Good to burn when still fresh” as well as “Other fuelwood quality criteria”. Even though these species rank first, it does not score any points for “Non-sparking”, “Good ash”, “Using since a long time” and “Less ash” criteria. *Wrightia antidysenterica* (L.) R. Br. (Golmatra bite chongipa) ranked second which achieved the highest score in 8 criterions such as “Easily available/Plenty”, “Fast drying”, “Non-sparking”, “Good ash”, “Long storage/Good for storage”, “Not easily attack by insects”, “Using since long time” and “Less ash” but it does not score any point for “Fragrance”, “Flame not smoky” and “Good charcoal”. The third rank was secured by *Callicarpa arborea* Roxb. (Kimbal/Makanchi) with the highest score in 5 quality criteria. These 5 criteria were “Easily available/Plenty”, “Fragrance”, “Fast drying”, “Flame not smoky”, and “Strong wood”. Criteria like “Good charcoal”, and “Less ash” does not score any point in this species. Fuelwood species like *Grewia nervosa* (Lour.) Panigrahi (Bolchupret), scored highest only in the “Easily available/Plenty” criterion and secured fourth rank, followed by *Bauhinia variegata* L. (Me'gong) in fifth rank having highest points for “Fragrance”. *Grewia nervosa* (Lour.) Panigrahi (Bolchupret) does not get any points for criteria like “Fragrance”, “Flame not smoky”, “Good charcoal”, “Good to burn when still fresh”, and “Less ash”. On the other hand, *Bauhinia variegata* L. (Me'gong) did not score at all for “Non-sparking”, “Good charcoal”, “Not easily attack by insects”, “Using since long time”, and “less ash”. *Careya arborea* Roxb. (Gimbil) showed the highest points for “Good ash” and *Schima wallichii* Choisy (Boldak) for “Good charcoal” even though they were in eight and thirteen ranks respectively.

The other remaining fuelwood species were seen in **Table 4.25**. showed some good quality criteria even though they did not show any highest points. However, they also have low points which affect their ranks. *Rhus chinensis* Mill. (Kitma) was the species with the lowest score with only 1 point each for “Lightweight when dry”, and “Less ash”. Thus, showing the last rank for fuelwood preference among selected species.

4.5.2. Ranking of selected fuelwood species on the basis of the Fuelwood Value Index (FVI).

The data on the ranking of selected fuelwood species of the West Garo Hills district on the basis of the Fuelwood Value Index (FVI) is shown in **Table 4.26**. For the present study, the fuelwood species selected for ranking using FVI were based on local preference. Normally, good quality fuelwood should have low moisture content, high density, low ash content, high biomass ash ratio, and high calorific value.

4.5.2.1. Moisture content (%).

High moisture content usually does not produce satisfactory fuelwood since the calorific value is decreased. Maximum moisture content was observed in *Ficus hispida* L.f. (Sa'kap/Kan'tap) of 77.12% whereas the minimum moisture percentage was evaluated in *Dalbergia stipulacea* Roxb. (Palwang) at 44.21%.

4.5.2.2. Density (g/cc).

High density basically generates acceptable fuelwood. The highest wood density was found to be 0.56 g/cc in *Dalbergia stipulacea* Roxb. (Palwang) and the lowest value of 0.23 g/cc in *Ficus hispida* L.f. (Sa'kap/Kan'tap).

4.5.2.3. Ash content (%).

High ash content normally does not give superior fuelwood. Maximum ash content was reported in *Croton joufra* Roxb. (Matmi) of 18.0% with minimum ash content in *Shorea robusta* Gaertn. (Bolsal) of 0.5%.

Table 4.26. Ranking of selected fuelwood species on the basis of Fuelwood Value Index (FVI).

Sl. no.	Scientific name	Local names	Fresh weight (g)	Dry weight (g)	Moisture content (%)	Density (g/cc)	Ash content (%)	Biomass/ash ratio	Calorific value (KJ/g)	FVI	Rank
1	<i>Shorea robusta</i> Gaertn.	Bolsal	67.04	22.67	65.50	0.37	0.5	45.35	17.52	1966.38	1
2	<i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery	Chamolja	50.70	22.59	53.52	0.49	1.0	22.59	16.52	1516.03	2
3	<i>Schima wallichii</i> Choisy	Boldak	68.24	30.08	55.30	0.46	1.0	30.08	17.44	1459.62	3
4	<i>Dillenia pentagyna</i> Roxb.	Agatchi	56.05	25.33	54.26	0.47	1.0	25.33	16.58	1451.37	4
5	<i>Syzygium cumini</i> (L.) Skeels	Chambu	56.30	24.05	55.99	0.47	1.0	24.05	15.70	1304.80	5
6	<i>Macaranga denticulata</i> (Blume) Müle. Arg.	Cha'gro/ Bolajak	47.99	22.39	51.85	0.37	1.0	22.39	17.78	1279.41	6
7	<i>Albizia odoratissima</i> (Lf) Benth.	Siso	53.75	24.58	53.67	0.54	1.5	16.39	15.47	1034.09	7
8	<i>Mallotus tetraococcus</i> (Roxb.) Kurz	A'tipra	45.96	22.00	52.47	0.47	1.5	14.66	16.45	984.90	8
9	<i>Eurya acuminata</i> DC.	Cha'misi	69.23	30.17	55.20	0.50	1.5	20.11	16.14	969.33	9
10	<i>Dalbergia stipulacea</i> Roxb.	Palwang	58.27	31.64	44.21	0.56	2.0	15.82	13.53	854.48	10
11	<i>Trema orientalis</i> (L.) Blume	Pakkram	38.96	18.47	49.61	0.36	1.5	12.31	17.15	823.53	11
12	<i>Callicarpa arborea</i> Roxb.	Kimbal/ Makanchi	41.82	18.91	54.00	0.41	1.5	12.61	15.57	778.81	12
13	<i>Grewia nervosa</i> (Lour.) Panigrahi	Bolchupret	33.64	16.61	48.27	0.47	2.0	8.30	15.50	761.95	13
14	<i>Rhus chinensis</i> Mill.	Kitma	47.46	21.03	54.63	0.36	1.5	14.02	17.06	750.57	14
15	<i>Wrightia arborea</i> (Dennst.) Mabb.	Golmatra bite dal'gipa	43.37	17.86	58.52	0.41	2.0	8.93	18.51	651.95	15
16	<i>Toona ciliata</i> M.Roem.	Bolbret	45.01	22.52	46.70	0.51	2.5	9.01	14.70	639.62	16
17	<i>Bauhinia variegata</i> L.	Me'gong	43.29	19.50	53.43	0.45	2.5	7.80	15.99	538.85	17
18	<i>Wrightia antidysenterica</i> (L.) R. Br.	Golmatra bite	44.97	18.96	56.20	0.38	2.5	7.58	16.10	434.45	18

		chongipa									
19	<i>Gmelina arborea</i> Roxb.	Gambare	47.89	14.16	69.86	0.28	2.0	7.08	17.76	360.06	19
20	<i>Careya arborea</i> Roxb.	Gimbil	62.20	20.03	67.28	0.34	3.0	6.68	15.74	267.70	20
21	<i>Ficus hispida</i> L.f.	Sakap/ Kantap	43.30	9.69	77.12	0.23	6.0	1.61	16.18	81.28	21
22	<i>Croton joufra</i> Roxb.	Matmi	38.62	17.49	53.17	0.42	18.0	0.97	15.85	69.49	22

4.5.2.4. Biomass ash content.

In general, a high biomass ash ratio initiates fine-quality fuelwood. *Shorea robusta* Gaertn. (Bolsal) showed the highest biomass ash content of 45.35 and *Croton joufra* Roxb. (Matmi) with the lowest biomass ash ratio of 0.97.

4.5.2.5. Calorific value (KJ/g).

High calorific value usually produces great quality fuelwood. *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal'gipa) exhibited the highest calorific value (18.51 KJ/g) and *Dalbergia stipulacea* Roxb. (Palwang) exhibited the lowest calorific value of 13.53 KJ/g.

4.5.2.6. Fuelwood Value Index (FVI).

According to Bhatt and Todaria, 1992, moisture content can vary in branches and seasons so it cannot be considered a part of the essential value of fuelwood. In order to determine the suitability of fuelwood, factors like density, ash content, biomass ash content, and calorific value are most relevant. Among the 22 species analyzed *Shorea robusta* Gaertn. (Bolsal) has the highest FVI of 1966.38, followed by *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja) of 1516.03 and *Schima wallichii* Choisy (Boldak) of 1459.62. The species having the lowest FVI was *Croton joufra* Roxb. (Matmi) of 69.49.

In the present research work, species like *Shorea robusta* Gaertn. (Bolsal), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja), *Schima wallichii* Choisy (Boldak), *Dillenia pentagyna* Roxb. (Agatchi), *Syzygium cumini* (L.) Skeels (Chambu), and *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak) can be considered good quality fuelwood on account of their low ash content whereas species such as *Ficus hispida* L.f. (Sa'kap/Kan'tap) and *Careya arborea* Roxb. (Gimbil) are not suitable for fuelwood because of their high ash content. Species such as *Dalbergia stipulacea* Roxb. (Palwang), *Albizia odoratissima* (Lf) Benth. (Siso), *Toona ciliata* M.Roem. (Bolbret), and *Eurya acuminata* DC. (Cha'misi) can be recommended for fuelwood on the basis of high density, but *Ficus hispida* L.f. (Sa'kap/Kan'tap) and

Gmelina arborea Roxb. (Gambare) cannot be suggested for fuelwood since the species have low density. Based on the biomass ash ratio, *Shorea robusta* Gaertn. (Bolsal) is the most suitable fuelwood whereas *Croton joufra* Roxb. (Matmi) cannot be recommended for fuelwood because it exhibits the lowest biomass ash ratio. On account of high calorific value, species namely; *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal·gipa), *Shorea robusta* Gaertn. (Bolsal), *Schima wallichii* Choisy (Boldak), *Macaranga denticulata* (Blume) Müle. Arg. (Cha·gro/Bolajak), *Trema orientalis* (L.) Blume (Pakkram), *Rhus chinensis* Mill. (Kitma), and *Gmelina arborea* Roxb. (Gambare) can be assessed as superior fuelwood whereas species like *Dalbergia stipulacea* Roxb. (Palwang), and *Toona ciliata* M.Roem. (Bolbret) are less important fuelwood species. *Shorea robusta* Gaertn. (Bolsal) seems to be the best fuelwood species on account of its high calorific value, high density, highest biomass ash ratio and lowest ash percentage. *Wrightia arborea* (Dennst.) Mabb. (Golmatra bite dal·gipa) can also be considered good fuelwood depending on the highest calorific value even though it has average density, ash content and biomass ash ratio. *Dalbergia stipulacea* Roxb. (Palwang) has the highest density and lowest moisture content with average ash percentage and biomass ash ratio but has the lowest calorific value among all the selected species so it is less suitable for fuelwood. *Ficus hispida* L.f. (Sa·kap/Kan·tap) can be considered as less important species for fuelwood as it has the highest moisture content, lowest density, high ash content, and low biomass ash ratio with not much calorific value. *Croton joufra* Roxb. (Matmi) is not suitable for fuelwood as it has the highest ash percentage and lowest biomass ash ratio.

4.6. Market survey of Non-Timber Forest Products from the markets of West Garo Hills.

Market surveys on NTFPs were done from 4 local markets of West Garo Hills namely; Tura bazaar, Rongram bazaar, Najing bazaar and Tikrikilla bazaar. NTFPs like fruits, vegetables, handicrafts etc. were found to be sold in the local markets. A total of 35 NTFP species were recorded from the local markets, where 19 species were sold for vegetables, 8 species for fruits, 4 species for handicrafts, 2 species each for animals and brooms as well as 1 species of edible mushroom.

Species like *Colocasia esculenta* (L.) Schott (Chigi) and *Zanthoxylum oxyphyllum* Edgew.(Me'cheng) were present in all the markets which shows the high market demand in West Garo Hills. Some species like *Dendrocalamus hamiltonii* Nees & Arn.ex Munro (Wa'nok/Wa'ma), *Dillenia pentagyna* Roxb.(Agatchi), *Melocanna baccifera* (Roxb.) Kurz (Wa'tre/Wa'mande), *Syzygium cumini* (L.) Skeels (Chambu) and *Eryngium foetidum* L. (Samskal) were found only in Tura bazaar. This may be because Tura bazaar is in the main town where wild species are lesser and people tend to buy more. Moreover, Tura bazaar is the only market where it is open every day whereas Najing bazaar even though it is in Tura, is a weekly market. Rongram bazaar and Tikrikilla bazaar are weekly markets as well. *Justicia adhatoda* L. (Alot gipok), *Elaeagnus latifolia* L. (Sokkua), *Sida acuta* Burm.f. (Santareng/Angkegol) and *Rhynchoetichum ellipticum* (Wall.ex D. Dietr.) A. DC. (Me'bitchi) were confined only to Rongram bazaar since the market is nearby to the villagers residing near the forests. Fruit species such as *Aegle marmelos* (L.) Corrêa (Selpri), and *Garcinia cowa* Roxb.ex (Dengadote), bamboo species like *Schizostachyum dullooa* (Gamble) R. B. Majumdar (Wa'dro) products, and *Termitomyces eurhizus* R. Heim. (Dambong) were recorded only from Najing bazaar. The species found only in Tikrikilla bazaar was *Calamus acanthospathus* Griff. (Re) product. Tura bazaar was found to sell the highest number of NTFPs with 22 species followed by Najing bazaar, Rongram bazaar, and Tikrikilla bazaar with 18, 16 and 9 NTFPs respectively (**Table 4.27.**). **Table 4.28.** shows the village wise involvement in the NTFP business and the amount sold in Rupees. Out of 72 surveyed villages, 42 villages were found to sell NTFPs. Among all the villages, Sakalgre village was recorded to sell more NTFP items such as fuelwood, vegetables, honey, fruits and brooms and which is followed by villages namely; Masumatagre, Chekwatgre, Dakop, Rangdapara, Magupara (Nokma gittim) and Rengsipara with three NTFP items each. In **Fig. 4.37.**, it was observed that 29.17% of villages did not show any involvement in NTFP business whereas 58.33% of villages sell fuelwood, followed by bamboo poles (25%), vegetables (11.11%), honey (9.72%), fish and fruits (4.17% each), and 1.39% each for mushroom, broom, bamboo products, and thatching material.

Table 4.27. Availability of various NTFPs in the local markets of West Garo Hills.

Sl.no.	Scientific name	Local name	Product sold	Prices (Rs) in local markets				Market demand
				Tura bazar	Rongram bazar	Najing bazar	Tikrikilla bazar	
1	<i>Aegle marmelos</i> (L.) Corrêa	Selpri	Fruits	-	-	20/- per piece	-	Average
2	<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Songru	Vegetable	20/- per bundle	-	20/- per bundle	-	Average
3	<i>Baccaurea ramiflora</i> Lour.	Gasampe	Fruits	20/- per bunch	-	20/- per bunch	-	High
4	<i>Bambusa tulda</i> Roxb.	Wa'ge	Stool (Mora)	-	-	450/- per piece	-	Average
5	<i>Bauhinia variegata</i> L.	Me'gong	Vegetable	30/- per bundle	-	20/- per bundle	-	Average
6	<i>Bellamyia bengalensis</i> Lamark, 1822	Etchaluk	Animal	30/- per pack	20/- per pack	20/- per pack	-	Average
7	<i>Calamus acanthospathus</i> Griff.	Re	Winnowing fan (Ruan)	-	-	-	350/- per piece	Average
8	<i>Calamus erectus</i> Roxb.	Sokmil	Fruits and Winnowing fan (Ruan)	-	350-380/- per piece (Ruan)	20/- per bunch (Fruit)	-	High
9	<i>Colocasia esculenta</i> (L.) Schott	Chigi	Vegetable	20/- per bundle	10/- per bundle	20/- per bundle	20/- per bundle	High
10	<i>Dendrocalamus hamiltonii</i> Nees & Arn.ex Munro	Wa'nok	Vegetable	100/- per bundle	-	-	-	High
11	<i>Dillenia pentagyna</i> Roxb.	Agatchi	Vegetable	50/- per bundle	-	-	-	Low
12	<i>Diplazium esculentum</i> (Retz.) Sw.	Gongginjak	Vegetable	20/- per bundle	10/- per bundle	-	-	High
13	<i>Eichhornia crassipes</i> (Mart.) Solms	Gachili	Vegetable	-	10/- per bundle	10/- per bundle	-	Average
14	<i>Elaeagnus latifolia</i> L.	Sokkua	Fruits	-	20/- per bunch	-	-	Average
15	<i>Eryngium foetidum</i> L.	Samskal	Vegetable	20/- per bundle	-	-	-	Low
16	<i>Garcinia cowa</i> Roxb.ex	Dengadote	Fruits	-	-	20/- per bunch	-	High

	Choisy							
17	<i>Haematocarpus validus</i> (Miers.) Bakh.f.ex Forman	Te'patang	Fruits	50-100/- per bunch	50-100/-per bunch	-	-	High
18	<i>Houttuynia cordata</i> Thunb.	Matchaduri	Vegetable	20/- per bundle	10/- per bundle	-	-	Average
19	<i>Justicia adhatoda</i> L.	Alot gipok	Vegetable	-	10/- per bundle	-	-	Low
20	<i>Lasia spinosa</i> (L.) Thwaites	Chonggi	Vegetable	20/- per bundle	20/- per bundle	-	30/- per bundle	High
21	<i>Maydelliathelphusa lugubris</i> Wood-Mason, 1871	Angke	Animal	50/- per basket	-	30-50/- per basket	-	Average
22	<i>Melocanna baccifera</i> (Roxb.) Kurz	Wa-tre/ Wa'mande	Vegetable	100/- per bundle	-	-	-	High
23	<i>Oroxylum indicum</i> (L.) Kurz	Kering	Vegetable	10/- per bundle	-	20/- per bundle	-	Average
24	<i>Phlogacanthus thyrsoiflorus</i> Nees	Alot gitchak	Vegetable	20/- per bundle	10/- per bundle	-	20/- per bundle	High
25	<i>Phyllanthus emblica</i> L.	Ambare segun	Fruits	20/- per pack	-	-	20/- per pack	Average
26	<i>Rhynchoetechum ellipticum</i> (Wall.ex D. Dietr.) A. DC.	Me'bitchi	Vegetable	-	10/- per bundle	-	-	Low
27	<i>Rothea serrata</i> (L.) Steane &Mabb.	Agunjulai/ Matchok nachil	Vegetable	20/- per bundle	-	-	20/- per bundle	Low
28	<i>Schizostachyum dullooa</i> (Gamble) R. B. Majumdar	Wa'dro	Winnowing net (Ginchera) and mat (am)	-	-	140/- per piece (Ginchera) and 300/- per piece (Am)	-	Average
29	<i>Sida acuta</i> Burm.f.	Santareng/ Angkegol	Broom	-	10/- per piece	-	-	Low
30	<i>Solanum anguivi</i> Lam.	Kimka	Vegetable	20/- per bundle	-	20/- per bundle	10/- per bundle	High
31	<i>Syzygium cumini</i> (L.) Skeels	Chambu	Fruits	20/- per bunch	-	-	-	Average
32	<i>Termitomyces eurhizus</i> R. Heim.	Dambong	Mushroom	-	-	60-100/- per pack	-	High

33	<i>Thysanolaena latifolia</i> (Roxb.ex Hornem.) Honda	Sal'wa/Smu	Broom	-	10/- per piece	20-50/- per piece	20/- per piece	High
34	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chinatong	Vegetable	20/- per bundle	10/- per bundle	15/- per bundle	-	High
35	<i>Zanthoxylum oxyphyllum</i> Edgew.	Me'cheng	Vegetable	20/- per bundle	10/- per bundle	10-20/- per bundle	10/- per bundle	High

Table 4.28. Village wise NTFP business amount in Rupees.

Village name	Amount sold (Rs) for NTFPs									
	Fuelwood	Bamboo pole	Vegetable	Honey	Fruits	Mushroom	Broom	Bamboo products	Tatching material	Fish
Baljek Agal	-	-	-	-	-	-	-	-	-	-
Dorenggre	-	-	-	-	-	-	-	-	-	-
Bolbokgre	Rs. 6000 per pik-up	-	-	-	-	-	-	-	-	-
Masumata-gre	-	-	Rs. 10-20 per bundle (<i>Bauhinia variegata</i> L.- Me'gong), Rs.10 (<i>Diplazium esculentum</i> (Retz.) Sw.-Gongginjak and <i>Rothea serrata</i> (L.) Steane &Mabb.- Agunjulai/Matchok nachil)	-	Rs. 150 per basket/ kok (<i>Protium serratum</i> (Wall.ex Colebr.) Engl.- Te'kring)	Rs. 150-200 per bundle, Rs. 1000 per basket/ kok	-	-	-	-
Waribok	Rs. 10-25 per bundle/boja, Rs. 1000 per stack/jabak, Rs. 7000 per pik up (split), Rs. 800 per pik up (log)	-	Rs. 20 per bundle (Bamboo shoot)	-	-	-	-	-	-	-
Asanang	Rs. 100 per basket/kok, Rs. 1500 per stack/jabak	-	-	-	-	-	-	-	-	-

Tebronggre	-	-	Rs. 5 per bundle (<i>Zanthoxylum oxyphyllum</i> Edgew.-Me'cheng, Diplazium esculentum (Retz.) Sw.-Gongginjak), Rs. 10 per bundle (<i>Lasia</i> <i>spinosa</i> (L.) Thwaites- Chonggi)	-	-	-	-	-	-	-
Rombagre	Rs. 10 per bundle/boja	-	-	-	-	-	-	-	-	-
Chibragre	Rs. 6000 per pik-up	-	-	-	-	-	-	-	-	Rs. 400 per kg
Wakringtong- gre	-	-	-	-	-	-	-	-	-	-
Chandigre	-	-	-	Rs. 150 per bottle	-	-	-	-	-	-
Sakalgre	Rs. 2500 per pik up (own driver), Rs. 3000 per pik up (hired driver)	-	Rs. 20 per piece (<i>Calamus</i> <i>erectus</i> Roxb.-Sokmil), Rs. 50-100 per bundle (<i>Dendrocalamus</i> <i>hamiltonii</i> Nees & Arn.ex Munro- Wa'nok/Wa'ma)	Rs. 200 per bottle	Rs. 300 per basket/ko k (<i>Elaeagnus</i> <i>latifolia</i> L.- Sokkua), Rs. 300- 400 per basket/ko k (<i>Calamus</i> <i>erectus</i> Roxb.- Sokmil)	-	Rs. 10- 15 per piece, Rs. 10 per kg, Rs. 500 (50 pieces)	-	-	-

Balamagre	Rs. 600 per auto, Rs. 15 per bundle/boja.	-	-	-	-	-	-	-	-	-
Darengre (Upper/Lower)	-	-	-	-	-	-	-	-	-	-
Nengja Bolchugre	-	-	-	-	-	-	-	-	-	-
Chekwatgre	Rs. 10-15 per bundle/boja, Rs. 6000 per pik up	-	Rs. 20 per bundle (<i>Bauhinia variegata</i> L.-Me'gong), Rs. 150 per basket/kok (<i>Antidesma acidum</i> Retz.- Adurak),	-	Rs. 150 per basket/kok (<i>Phyllanthus emblica</i> L.- Ambare segun)	-	-	-	-	-
Aminda Rangsagre	-	Rs. 20 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar-Wa'tebok)	Rs. 20 per bundle (<i>Bauhinia variegata</i> L.-Me'gong, <i>Antidesma acidum</i> Retz.- Adurak, <i>Rothea serrata</i> (L.) Steane &Mabb.- Agunjulai/Matchok nachil).	-	-	-	-	-	-	-
Dagugre/ Rongjugre	Rs. 1500-2500 per pik up	-	-	Rs. 50 (small bottle), Rs, 100 (big bottle)	-	-	-	-	-	-
Deblongagre/ Dibilonggagre	Rs. 10-15 per bundle/boja, Rs. 3000 per pik up	-	-	-	-	-	-	-	-	-
Chigitchakgre	Rs. 10-20 per bundle/boja	-	-	Rs. 100-	-	-	-	-	-	-

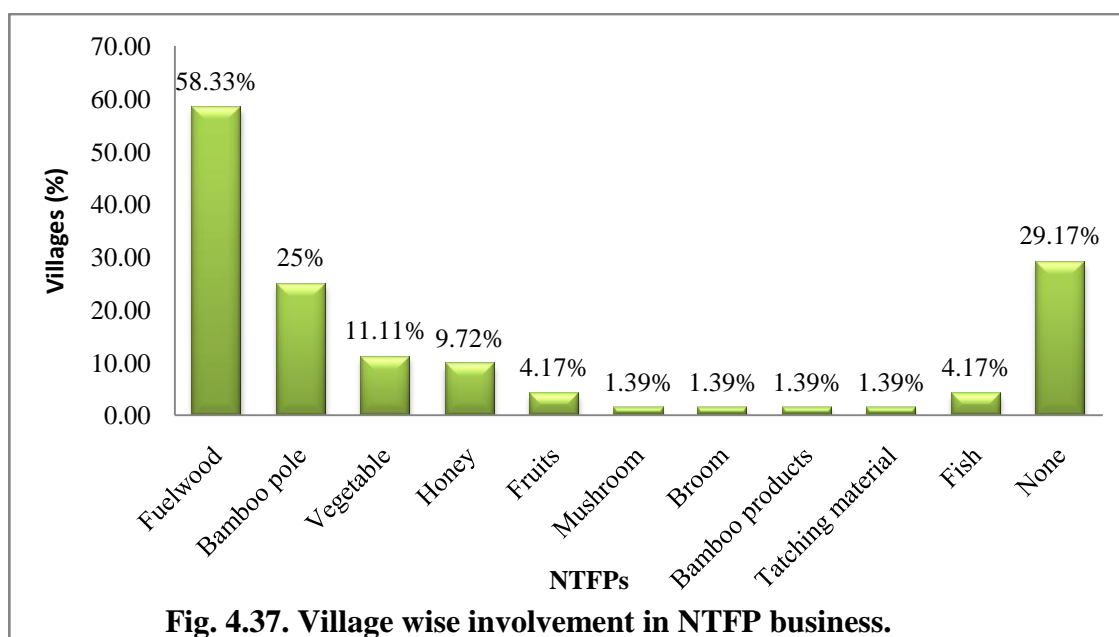
				130 per bottle						
Somonpara/ Meguagre	-	Rs. 20 per bundle (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	Rs. 5-10 (<i>Colocasia esculenta</i> (L.) Schott- Chigi, <i>Amorphophallus bulbifer</i> (Roxb.) Blume- Songru)	-	-	-	-	-	-	-
Babagre	-	-	-	Rs. 100 per bottle	-	-	-	-	-	-
Rongbretgre	Rs. 10-30 per bundle/boja, Rs. 1500 per pik up	Rs. 20 per pole/dot and Rs. 600-700 per bundle (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande), <i>Bambusa jaintiana</i> R.B.Majumdar- Wa'tebok)	-	-	-	-	-	-	-	-
Gimbilgre	Rs. 300 per auto, Rs. 1500 per pik up.	-	-	-	-	-	-	-	-	-
Dilsigre	-	-	-	-	-	-	-	-	-	-
Damal asim	-	-	-	-	-	-	-	-	-	-
Ajrigre	-	-	-	-	-	-	-	-	-	-
Rongchugre	Rs. 10 per bundle/boja	-	-	-	-	-	-	-	-	-
Kalsingre	-	-	-	-	-	-	-	-	-	-
Upper Baljek Aduma	-	-	-	-	-	-	-	-	-	-
Asimgre	Rs. 15-20 per bundle/boja	-	-	-	-	-	-	-	-	-
Romgre	-	-	-	-	-	-	-	-	-	-
Rongkongre	-	-	-	-	-	-	-	-	-	-
Amingokgre	-	-	-	-	-	-	-	-	-	-
Sategre	-	-	-	-	-	-	-	-	-	-
Dallanggre	-	-	-	-	-	-	-	-	-	-
Sellsella	-	-	-	-	-	-	-	-	-	-

Singimari										
Damjonggre	Rs. 800-1000 per pik up	-	-	-	-	-	-	-	-	-
Boldokagre	Rs. 20 per bundle/boja, Rs. 1000 per pik up	-	-	-	-	-	-	-	-	-
Bolsalgre	Rs. 20 per bundle/boja	-	-	-	-	-	-	-	-	-
Nawalgre	Rs. 10 per bundle/boja	Rs. 100-300 per bundle (<i>Bambusa tulda</i> Roxb. -Wa'ge)	-	-	-	-	-	-	-	-
Nokatgre	Rs. 100 per basket/kok	Rs. 15-20 per pole/pole (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande, <i>Bambusa jaintiana</i> R.B.Majumdar-Wa'tebok), Rs. 100 per pole/dot (<i>Bambusa tulda</i> Roxb. -Wa'ge),	-	-	-	-	-	-	-	-
Apalgre	Rs. 20 per bundle/boja	-	-	-	-	-	-	-	-	-
Mandagre	Rs. 60-70 per basket/kok	Rs. 30-100 per pole/dot (<i>Bambusa tulda</i> Roxb. -Wa'ge), Rs. 20 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	-	-	-	-	-	-	-
Simbukolgre (Milsigre)	-	Rs. 10 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	-	-	-	-	-	-	-
Damalgre	Rs. 60-70 per basket/kok, Rs. 2000-2500 per stack/jabak	-	-	-	-	-	-	-	-	-
Wajadagre	-	-	-	-	-	-	-	-	-	-

								Rs. 1000- 2000 (Fishing basket/ koksi)- <i>Bambusa tulda</i> Roxb. - Wa'ge, <i>Bambusa jaintiana</i> R.B.Maj umdar- Wa'tebo k, Rs. 250 (
Indrapara	Rs. 70 per basket/kok	-	-	-	-	-	-	-	-	-
Bogadol	Rs. 70 per bundle/boja	Rs. 1000-1700 per bundle (12 pole/dot) or per cart/tela	-	-	-	-	-	-	-	-
Tikrikilla A'chik gittim	-	-	-	-	-	-	-	-	-	-
Borodoldonga	-	-	-	-	-	-	-	-	-	-
Lower Khamari (Garó)	Rs. 50-100 per bundle/boja	-	-	-	-	-	-	-	-	Rs. 20-50 per kg
Raksamgre	-	-	-	-	-	-	-	-	-	-
Kathalbari	-	-	-	-	-	-	-	-	-	-
Kanchonkona	Rs. 10-50 per bundle/boja	Rs. 100-180 per pole/dot (<i>Bambusa tulda</i> Roxb. -Wa'ge)	-	-	-	-	-	-	-	-
Lower Damachiga	Rs. 15 per bundle/boja	-	-	-	-	-	-	-	-	-
Rongmali	Rs. 10 per bundle/boja	-	-	-	-	-	-	-	-	-

Dakop	Rs. 5-20 per bundle/boja, Rs. 250-300 per cycle, Rs. 500 per cart/tela	Rs. 10 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande, <i>Bambusa jaintiana</i> R.B.Majumdar-Wa'tebok)	-	-	-	-	-	-	Rs. 12 per bundle (<i>Imperata cylindrica</i> (L.) Raeusch-Am'pang)	-
Chokdenggre	Rs. 500 per van	-	-	-	-	-	-	-	-	-
Jengrip	Rs. 200-300 per cycle	-	-	-	-	-	-	-	-	-
Kherapara songma	Rs. 10 per bundle/boja	-	-	-	-	-	-	-	-	-
Rangdapara	Rs. 10 per bundle/boja	Rs. 3 per pole/dot, Rs. 100 per bundle (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	Rs. 200-300 per bottle	-	-	-	-	-	-
Josipara (Christian, Songsarek and Songma)	-	Rs. 10 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	-	-	-	-	-	-	-
Magupara (Nokma gittim)	Rs. 10-20 per bundle/boja, Rs. 3 per stick/tengsa, Rs. 20-50 per cart/tela	Rs. 5 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	Rs. 10-20 per bundle (<i>Bauhinia variegata</i> L.- Me'gong, <i>Diplazium esculentum</i> (Retz.) Sw.- Gongginjak and <i>Lasia spinosa</i> (L.) Thwaites-Chonggi)	-	-	-	-	-	-	-
Kujikura	Rs. 10-20 per bundle/boja, Rs. 1500-2000 per stack/jabak	-	-	Rs. 150 per bottle	-	-	-	-	-	-
Songmagre	Rs. 10 per bundle/boja	Rs. 4-5 per pole/dot, Rs. 100 per bundle (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	-	-	-	-	-	-	-

Rengsipara	Rs. 10 per bundle/boja	Rs. 25 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	-	-	-	-	-	-	Rs. 200 per kg
Baburambil	Rs. 10 per bundle/boja	Rs. 30-40 per pole/dot (<i>Bambusa jaintiana</i> R.B.Majumdar- Wa'tebok)	-	-	-	-	-	-	-	-
Dapgre	Rs. 10 per bundle/boja	-	-	-	-	-	-	-	-	-
Kongtokpara	Rs. 10 per bundle/boja	Rs. 100 per pole/dot (<i>Bambusa tulda</i> Roxb. -Wa'ge)	-	-	-	-	-	-	-	-
Dalugaon	Rs. 2500 per 2 stacks/jabak 2	-	-	-	-	-	-	-	-	-
Karonggre	-	Rs. 10-20 per pole/dot (<i>Melocanna baccifera</i> (Roxb.) Kurz -Wa'tre/ Wa'mande)	-	-	-	-	-	-	-	-

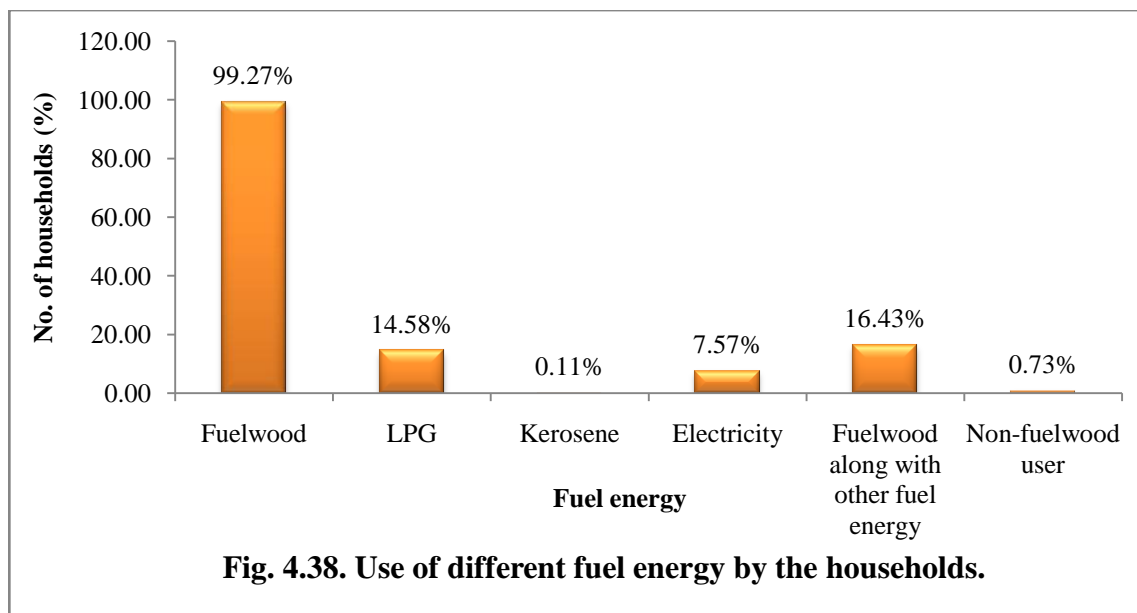


4.7. Fuelwood-based information.

Fuelwood is one of the important NTFPs for the livelihood of ethnic communities. Different information about fuelwood was taken from the households such as the use of different fuel energy, source of fuelwood collection, fuelwood collector, frequency of fuelwood collection, fuelwood collection season, kind of fuelwood usually required, supply of fuelwood, amount of money spent if the fuelwood is bought, and consumption of fuelwood for different purposes.

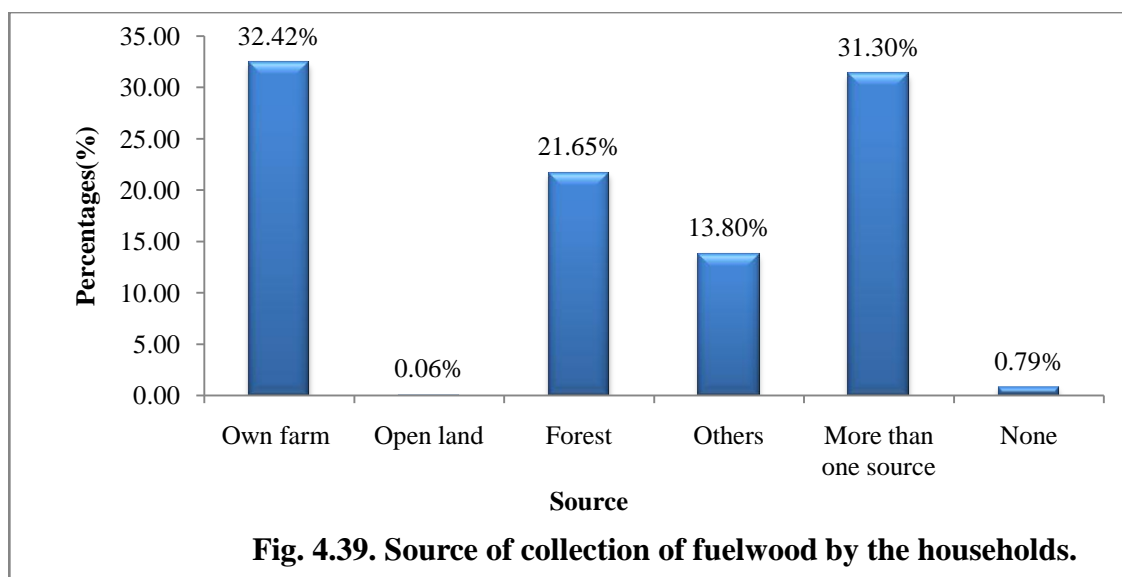
4.7.1. Use of fuel energy.

The use of fuelwood is still a significant part of the household requirements where 99.27% of households in the present study still use fuelwood in their daily life even though some few households used fuelwood along with other fuel energy which comes to around only 16.43%. 14.58% used LPG, 7.57% used electrical products like rice cookers, heaters, etc., and 0.11% used kerosene as their fuel energy. Out of 1783 households, only 13 (0.73%) households did not use fuelwood (**Fig.4. 38.**).



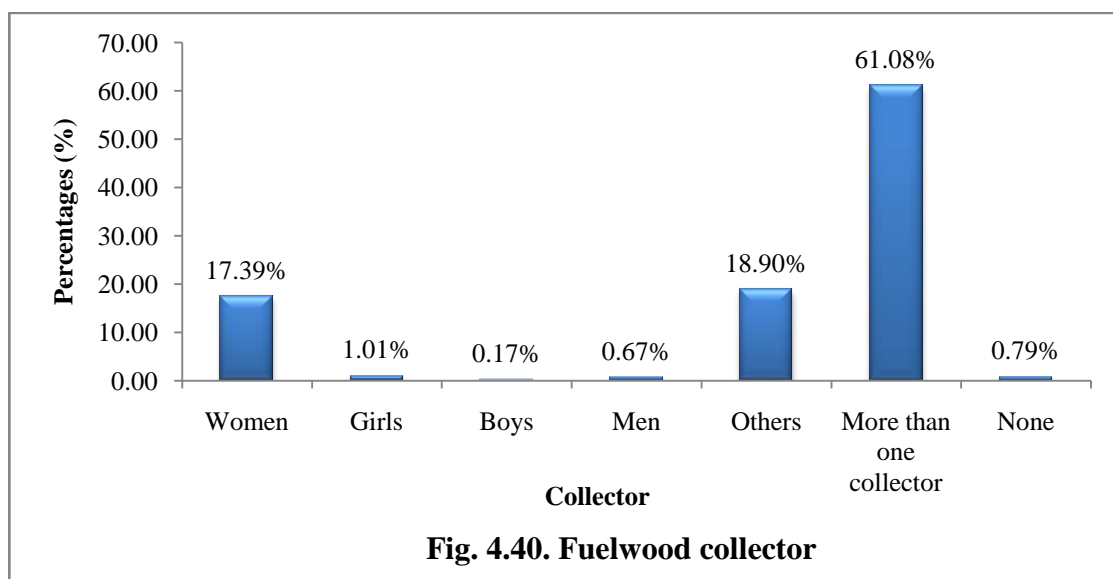
4.7.2. Source of fuelwood collection.

The villagers of the present study area collected fuelwood from different sources. Some villagers collected fuelwood from only one source whereas some collected from more than one source. The highest percentage of fuelwood collected comes from own farm with 32.42%, followed by more than one source (31.30%), forest (21.65%), others (13.80%), open land (0.06%), and those who did not collect fuelwood from any source was with 0.79% (**Fig.4.39.**).



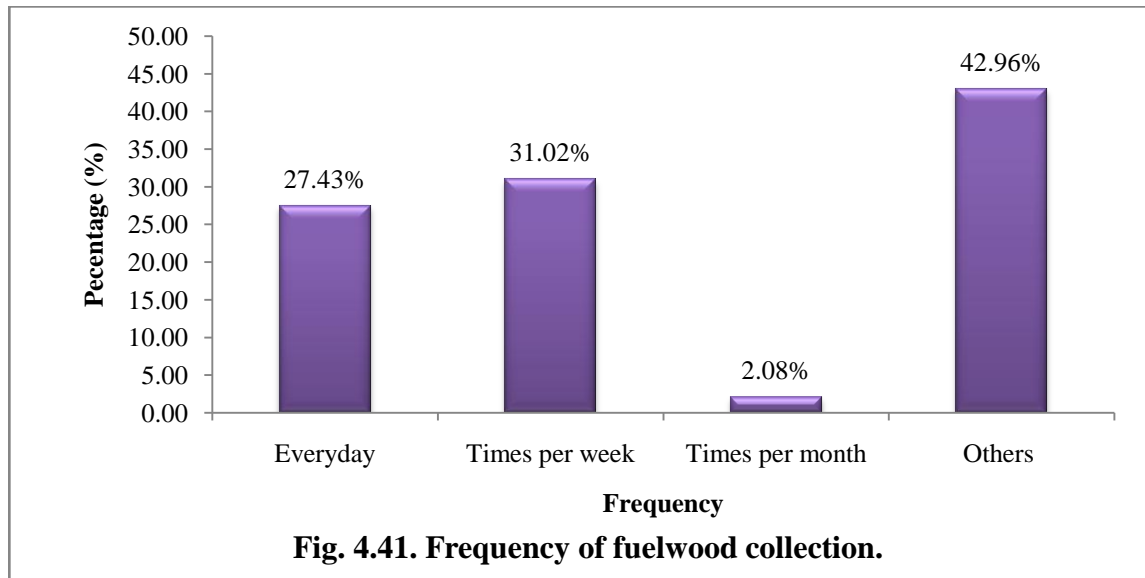
4.7.3. Fuelwood collector.

Usually, when it comes to individual fuelwood collectors, women were more with 17.39% and very few percentages of girls 1.01%, men (0.67%), and boys with only 0.17%. These days, some villagers consider the collection of fuelwood as equal work with women so the percentage of more than one collector was highest at 61.08%. Others which included hired collection as well as those which were bought constituted 18.90% (**Fig. 4.40.**).



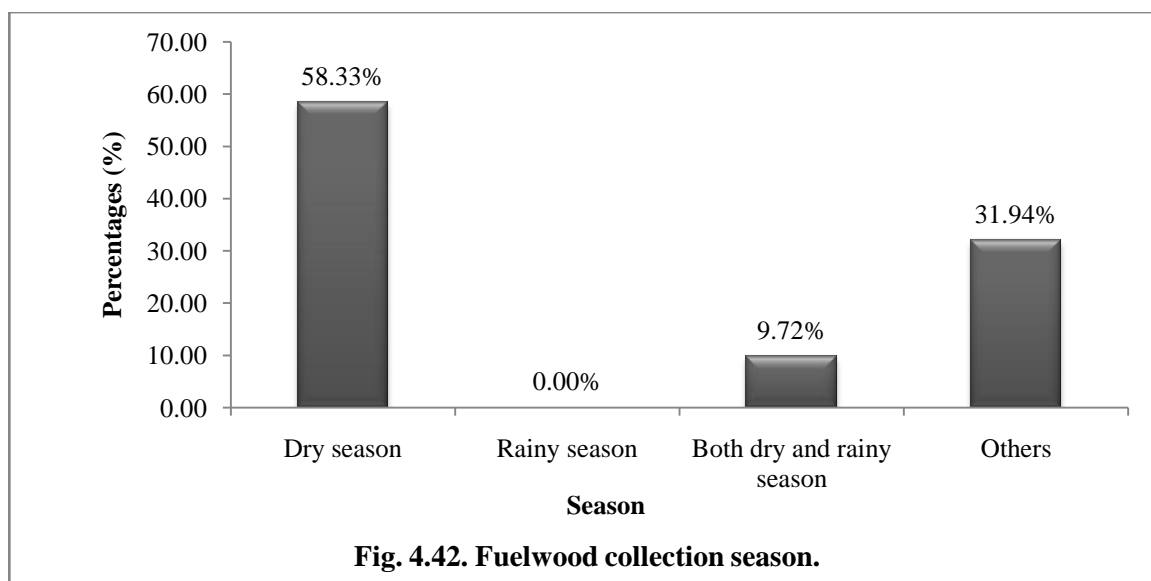
4.7.4. Frequency of fuelwood collection.

Fig.4.41. shows the percentage of those who collected fuelwood times per week with 31.02%, 27.43% of those who collected every day, and times per month with 2.08%. Those who were not mentioned properly or as sometimes by the respondents were grouped into others which showed 42.96%.



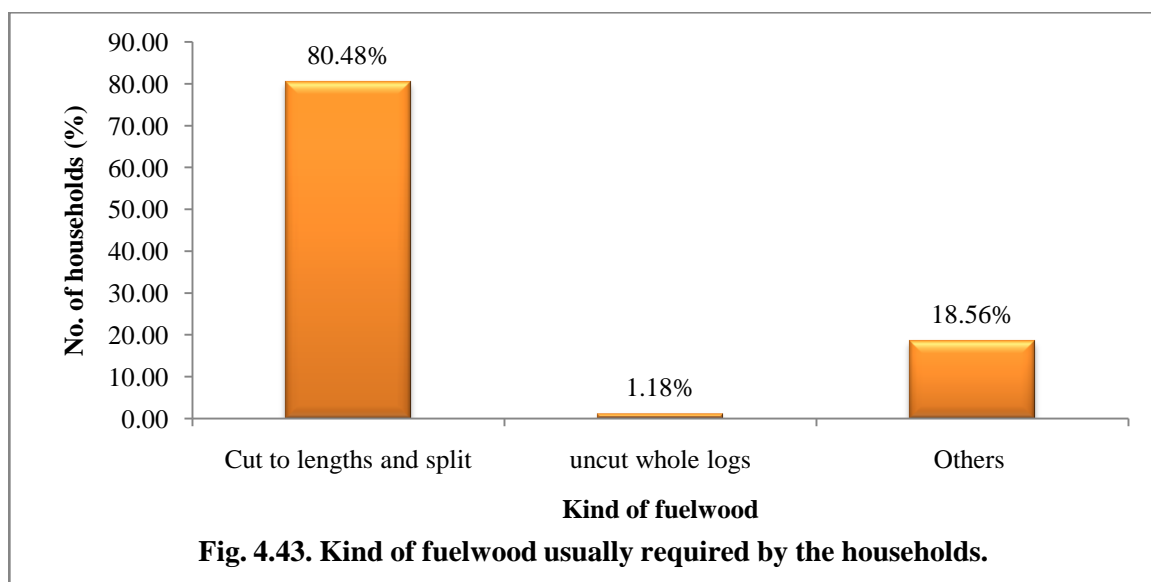
4.7.5. Fuelwood collection season.

Fuelwood was mostly collected during the dry season (58.33%) and they usually store for the rest of the seasons. Some collected fuelwood both during the dry season as well as during the rainy season which comes to around 9.72% and none collected fuelwood only during the rainy season. 31.94% collected fuelwood during other seasons (**Fig.4.42.**).



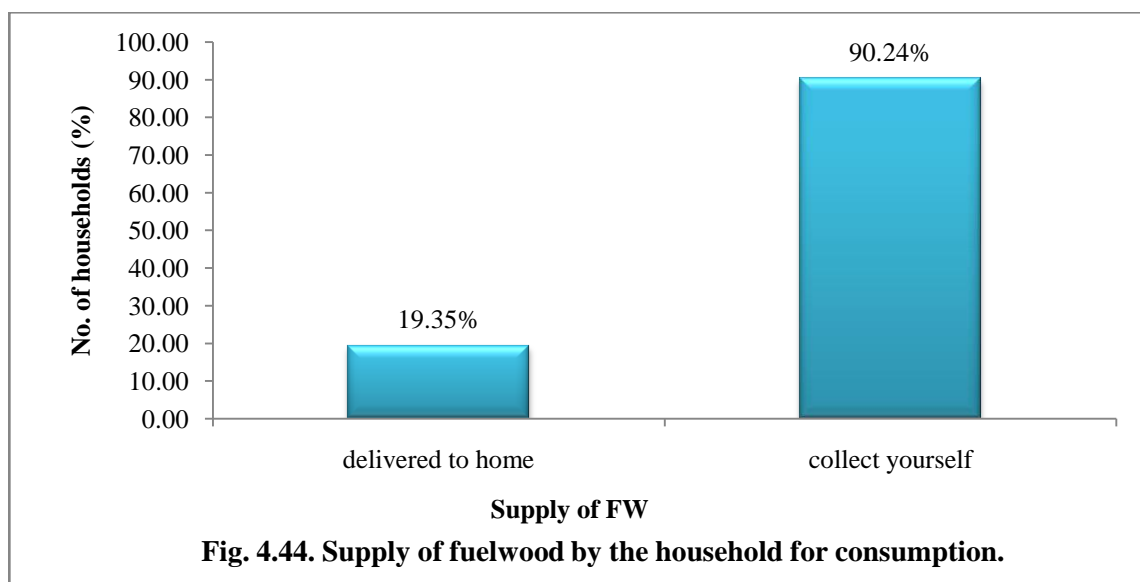
4.7.6. Kind of fuelwood usually required.

The villagers usually considered fuelwood which was cut to lengths and split (80.48%) mostly to use in the kitchen for cooking, and uncut whole logs with 1.18% for warming up during winter. Others were recorded with 18.56% (**Fig.4.43.**).



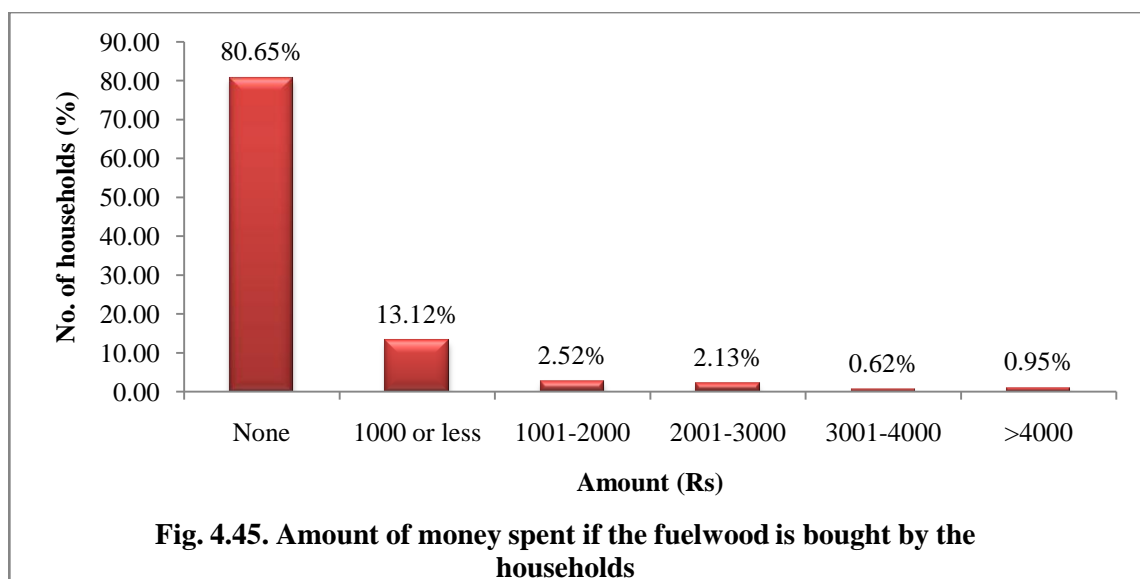
4.7.7. Supply of fuelwood.

For consumption of fuelwood by the households, it was supplied either by collecting by themselves or delivered to the home by others. 90.24% of households collected by themselves and 19.35% of households get delivered to their homes by others (Fig.4.44.).



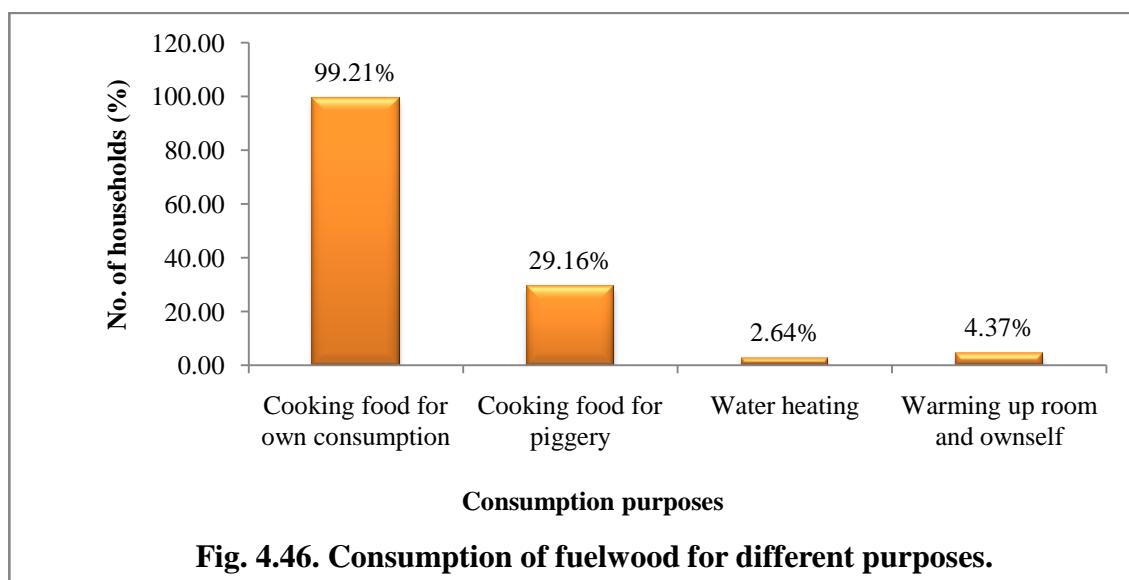
4.7.8. Amount of money spent if the fuelwood is bought (₹).

Some of the villagers from the study area did not collect fuelwood by themselves; instead, they bought it to be utilized at home. 80.65% of households did not buy fuelwood for their consumption. The highest percentage of households with 13.12% spent ₹1000 or less for buying fuelwood which was followed by those who paid ₹1001-2000 with 2.52%, ₹2001-3000 (2.13%), ₹3001-4000 (0.62%), and >₹4000 (0.95%) (Fig.4.45.).



4.7.9. Consumption of fuelwood for different purposes.

Fuelwood was consumed for different purposes by the ethnic communities such as for cooking food for their own consumption, cooking food for piggery, water heating and warming up the room and themselves, especially during the winter season. The highest percentage of 99.21% was used for cooking food for own consumption, followed by 29.16% for cooking piggery food, 4.37% for warming up room and ownself, and 2.64% for water heating (**Fig.4.46.**).



4.7.10. Plant species which are not suitable for fuelwood.

Out of 101 fuelwood species documented, 22 species were reported as not suitable for fuelwood. In the present day, most of the villagers used whatever species was available and did not bother much about whether it was good or bad. But in some villages, they still collect the species which were considered good for fuelwood. Some species like *Alstonia scholaris* (L.) R. Br. (Sokchon), *Bombax ceiba* L. (Bolchu), *Erythrina stricta* Roxb. (Bolmandal gitchak), *Macaranga indica* Wight (Renikgitil), and *Stereospermum chelonoides* (L.f.) DC (Bolsil) have traditional beliefs, so the villagers did not consider to collecting/cutting the above mentioned species for fuelwood. But this was not the case for everyone as the villagers did not believe in those traditional beliefs anymore and prefers collecting any species. Some species did not have traditional beliefs but were considered not suitable for fuelwood because of other reasons such as *Albizia chinensis* (Osbeck) Merr. (Bolpu), *Albizia procera* (Roxb.) Benth. (Kelwi), *Aporosa octandra* (Buch.-Ham.ex D. Don) Vickery (Chamolja) etc. (Table 4.29.).

Table 4.29. Plant species not suitable for fuelwood.

Sl.no.	Scientific name	Local name	Reasons
1	<i>Albizia chinensis</i> (Osbeck) Merr.	Bolpu	Flame not strong.
2	<i>Albizia procera</i> (Roxb.) Benth.	Kelwi	Not good in burning.
3	<i>Alstonia scholaris</i> (L.) R. Br.	Sokchon	Traditionally believed that when this species was cut, the person cutting will produce less breast milk.
4	<i>Aporosa octandra</i> (Buch.-Ham.ex D. Don) Vickery	Chamolja	It produced dim or faded flame and it does not burn during rainy season.
5	<i>Bambusa jaintiana</i> R.B.Majumdar	Wa'tebok	-
6	<i>Bombax ceiba</i> L.	Bolchu	Traditionally believed that it was not good for throat or neck.
7	<i>Erythrina stricta</i> Roxb.	Bolmandal gitchak	It produced spark and traditionally believed that it was not good for throat or neck.
8	<i>Ficus benghalensis</i> L.	Prap dal'gipa	It can't be stored during rainy season because of insect attack.
9	<i>Firmiana colorata</i> (Roxb.) R.Br.	Sengsu	It does not burn properly.
10	<i>Garuga pinnata</i> Roxb.	Jiga	It dries slowly because of thick bark.
11	<i>Grewia serrulata</i> DC.	Bolmenggo	-
12	<i>Ixora nigricans</i> R. Br.ex Wight & Arn.	Bolmanggal	-
13	<i>Macaranga indica</i> Wight	Renikgitil	Traditionally believed that it attack the brain of the person who cut the wood.
14	<i>Mallotus nudiflorus</i> (L.) Kulju &	Bolbok	-

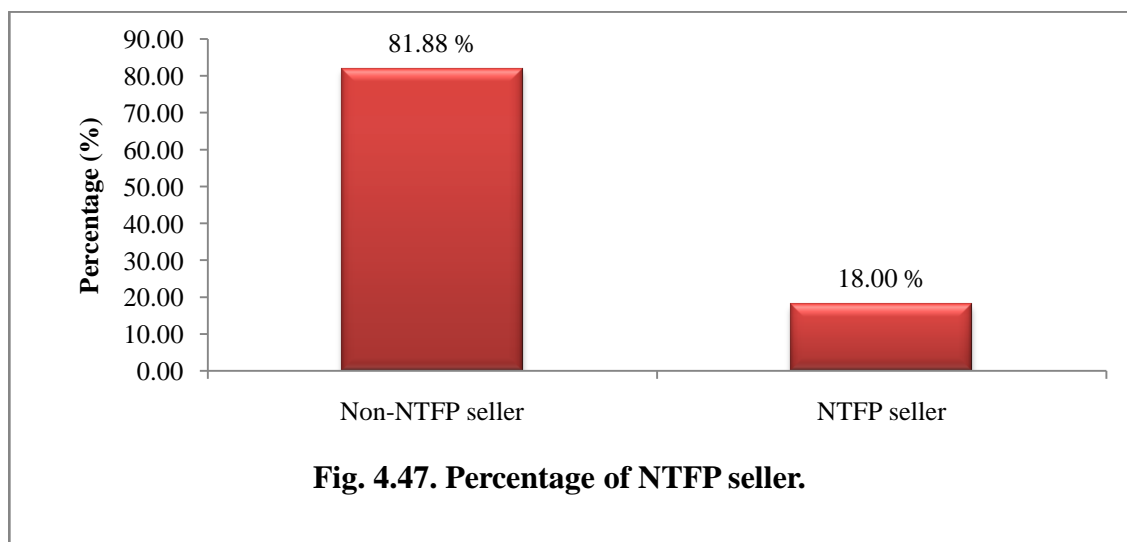
	Welzen.		
15	<i>Rhus chinensis</i> Mill.	Kitma	It produced spark.
16	<i>Schima wallichii</i> Choisy	Boldak	-
17	<i>Sterculia villosa</i> Roxb.	Olmak	-
18	<i>Stereospermum chelonoides</i> (L.f.) DC	Bolsil	Traditionally believed that when this species was cut, the person cutting will have headache, dizziness or may attack human brain.
19	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Chirori	-
20	<i>Toona ciliata</i> M.Roem.	Bolbret	It produced spark.
21	<i>Trema orientalis</i> (L.) Blume	Pakkram	It attracts lots of insects.
22	<i>Vitex peduncularis</i> Wall.ex Schauer	Rangri	Hard to split/cut.

4.8. Contribution of NTFPs to the annual income and business.

NTFPs contributed some of the households' annual income for those who were in NTFP business. In the present study, only few households were involved in the NTFP business and most of the households collect NTFPs for their own consumption.

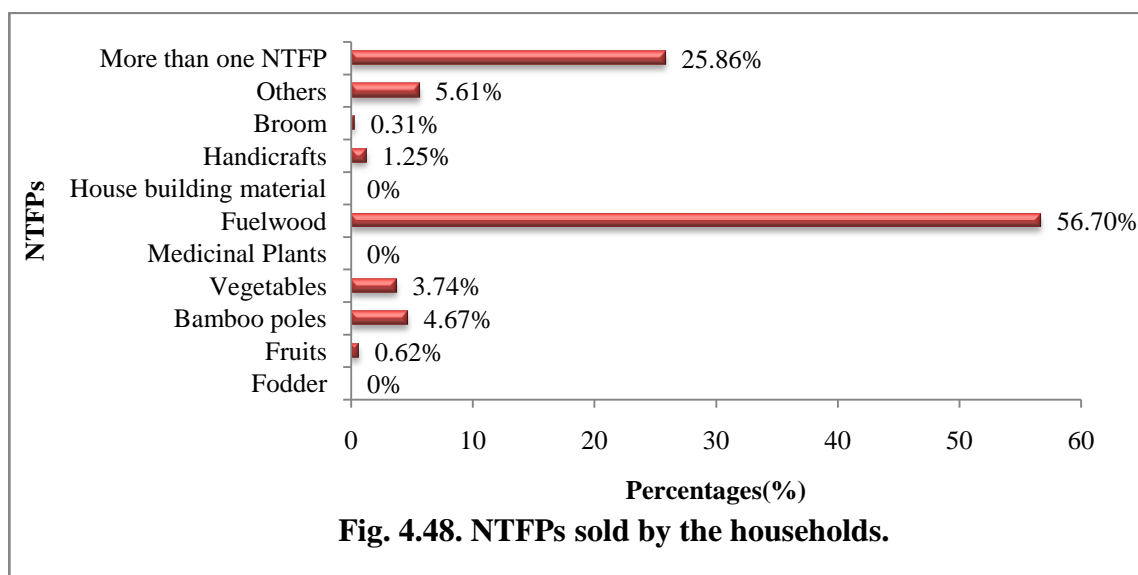
4.8.1. NTFP seller.

Fig. 4.47. shows the percentage of NTFP sellers or those involved in NTFP business with majority of the households who were non-NTFP sellers at 81.88% (1460 households) and NTFP sellers with at only 18.00% (321 households).



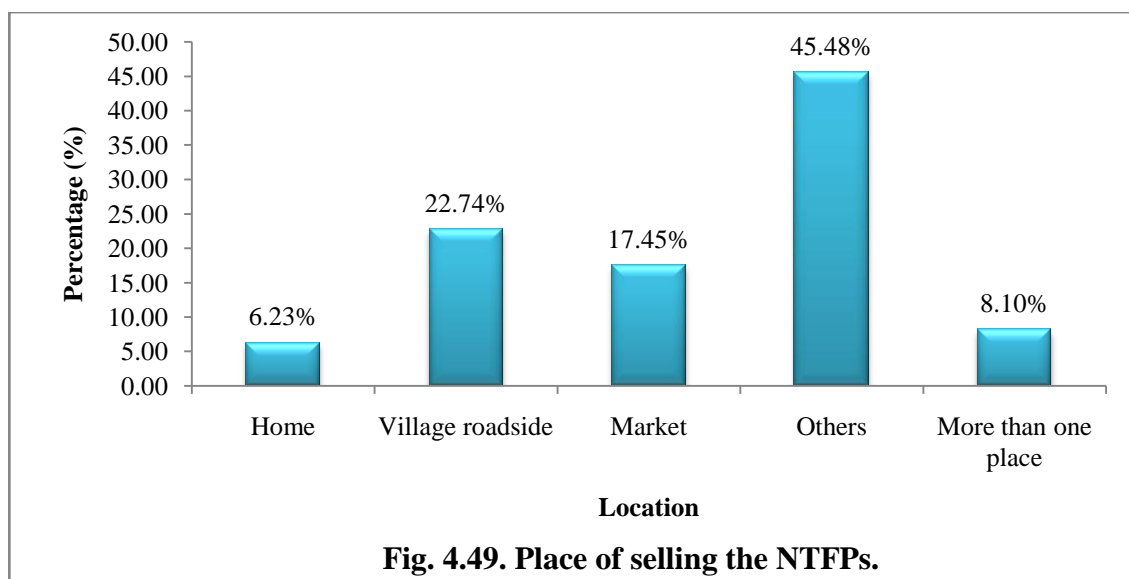
4.8.2. Category of NTFP sold.

NTFPs sold by the households were highest for fuelwood with 56.70% followed by those grouped into more than one NTFP category with 25.86%, other NTFPs like mushroom, honey etc. with 5.61%, bamboo poles with 4.67%, vegetables with 3.74%, handicrafts with 1.25%, fruits with 0.62%, and broom with 0.31%. Fodders, medicinal plants, and house building materials did not contribute to the business in any way (Fig.4.48.).



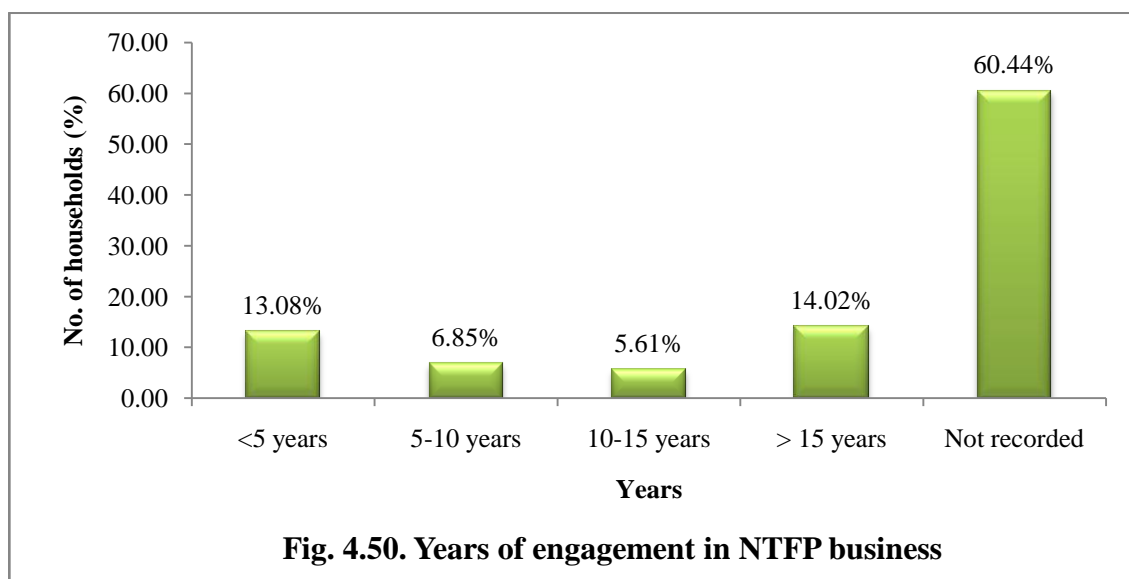
4.8.3. Place of selling the NTFPs.

Place of selling the NTFPs were highest in the other places category which includes shops, house to house, etc. with 45.48%, followed by village roadside with 22.74%, market with 17.45%, more than one place with 8.10%, and at home with 6.23% (Fig.4.49.).



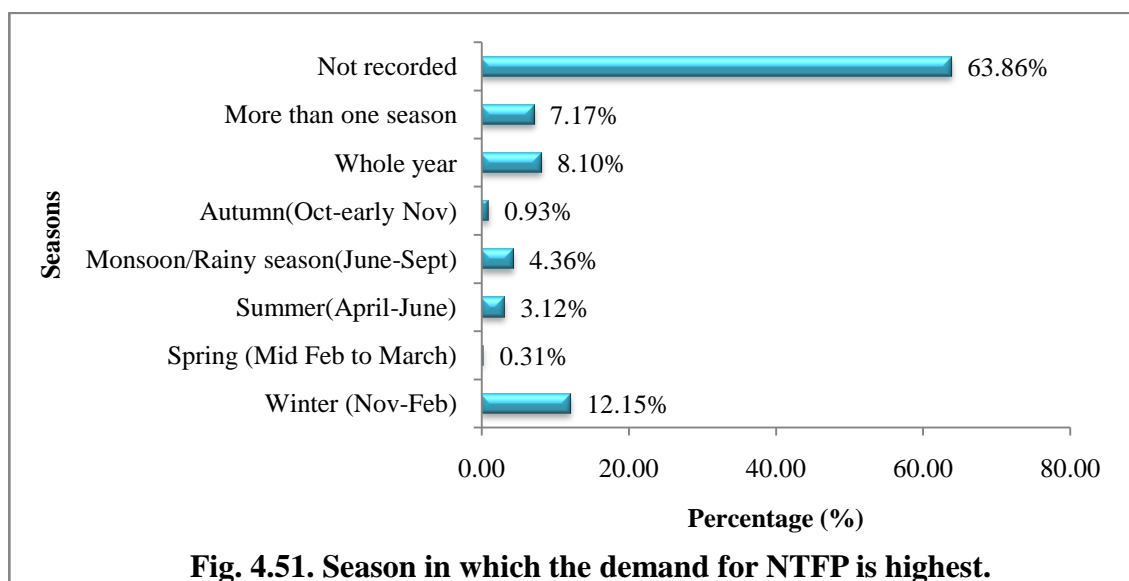
4.8.4. Years of engagement in NTFP business.

Fig. 4.50. shows the years of engagement in NTFP business by the households who were involved in the business. Among those who were in NTFP business, some of the respondents could not mention properly how long they were in business so in the present study, they were grouped as “not recorded” which was 60.44%. Those households engaged for more than 15 years come around 14.02%, less than 5 years with 13.08%, 5-10 years with 6.85%, and 10-15 years with 5.61%.



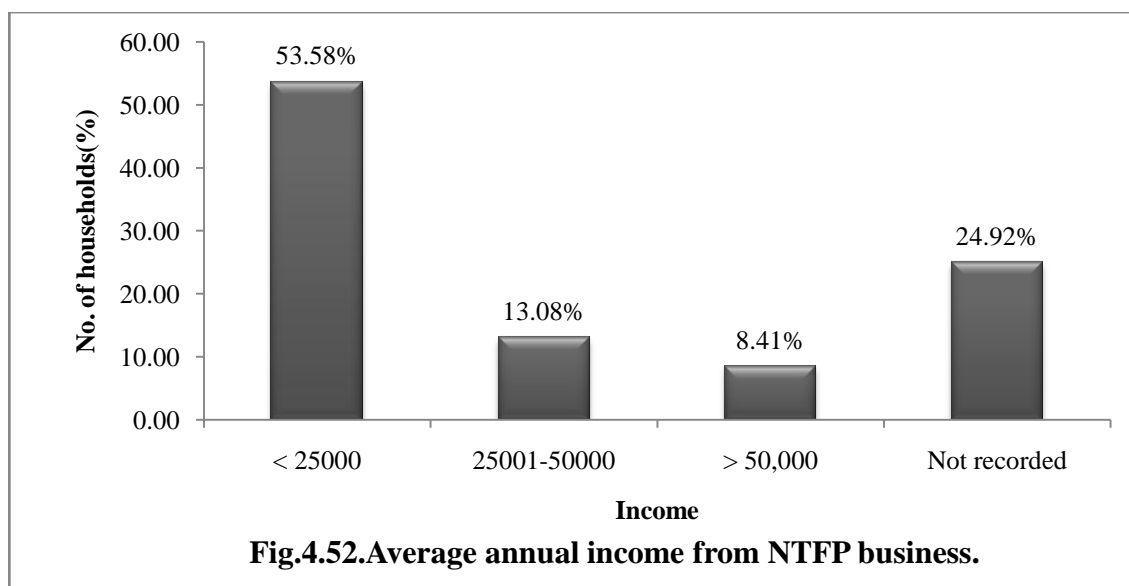
4.8.5. Season in which the demand for NTFP is highest.

Among 321 households involved in NTFP business, 63.86% households could not mention when the demand for NTFP was highest. 12.15% of households reported that the demand for NTFP was highest during the winter (Nov-Feb) season which was followed by 8.10% for the whole year, 7.17% for more than one season, 4.36% during monsoon/rainy season (June-Sept), 3.12% during summer (April-June), 0.93% during autumn (Oct-early Nov), and 0.31% during spring (Mid Feb-March) (**Fig. 4.51**).



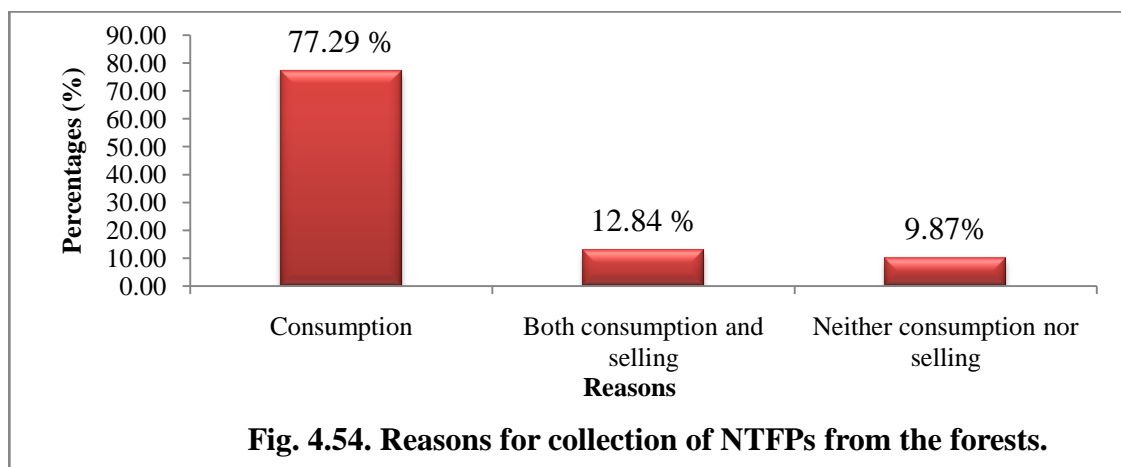
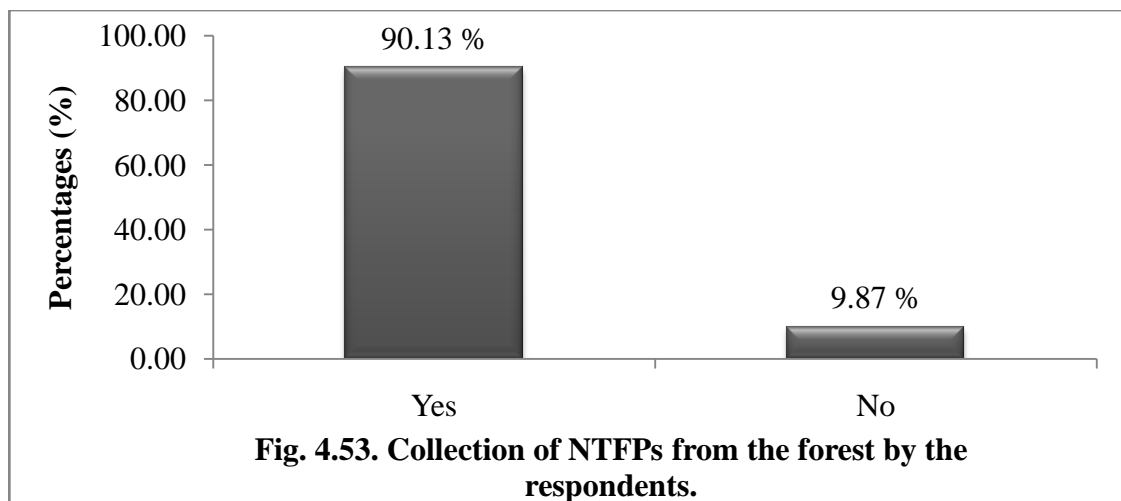
4.8.6. Average annual income from NTFP business (₹).

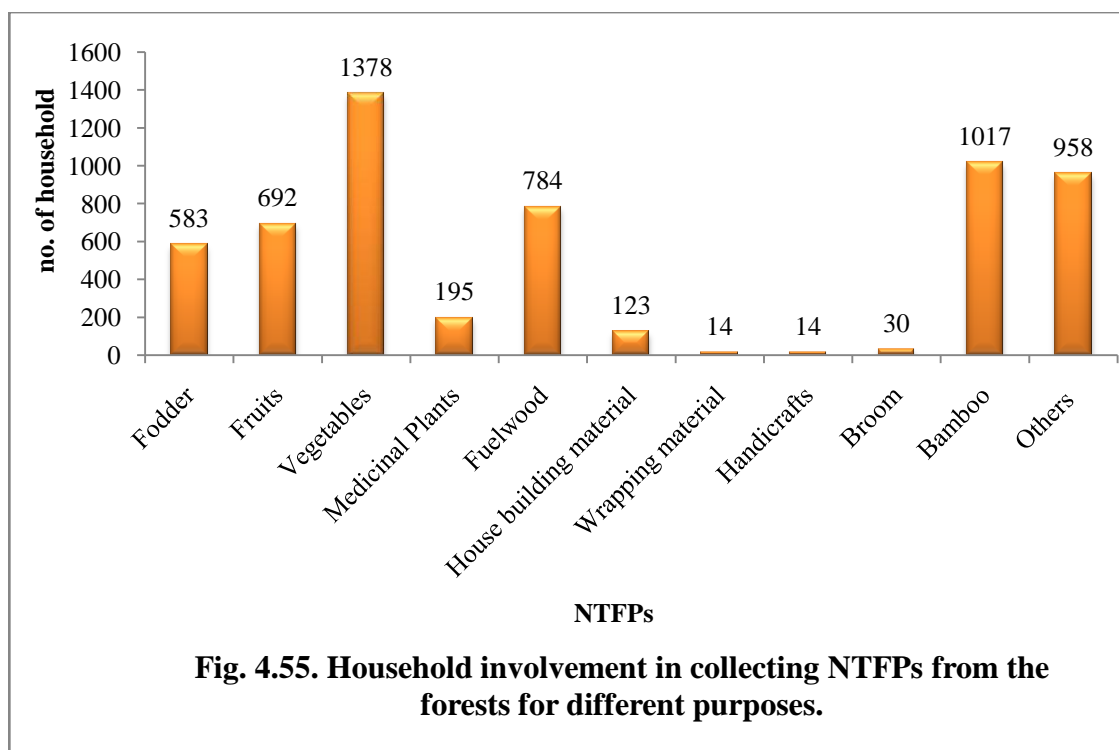
Fig.4.52. shows the average annual income from NTFP business from the households who were involved in business for their income where 53.58% earned < ₹25000, followed by not recorded (those who earned from NTFP business but the amount was not recorded) with 24.92%, those who earned between ₹25001-50,000 with 13.08%, and those households who earned the maximum amount i.e. >₹50000 with 8.41%.



4.9. Collection of Non-Timber Forest Products by the households from the forests.

90.13 % of households were recorded to collect NTFPs which shows a great impact on the livelihood of the communities (**Fig. 4.53.**). **Fig. 4.54.** shows the reasons for collecting NTFPs from the forests where 77.29% of households harvest NTFPs only for their consumption, and 12.84% of households for their own consumption as well as for selling for their income. NTFPs such as wild vegetables were found to be harvested by a high number of households which was reported by 1378 households, followed by bamboo by 1017 households and fuelwood by 784 households. The households were also found to be involved in collecting NTFPs for fodder, fruits, medicinal plants, house building material, wrapping material, handicrafts, brooms and others. Although a huge amount of fuelwood is consumed by the ethnic communities, only 784 households were found to collect and utilize from the forest itself. Other households collect fuelwood from their own farm and other sources (**Fig. 4.55, Fig. 4.38**).





4.10. Bamboo species.

Six bamboo species were recorded from the forest of West Garo Hills for utilization and consumption by the ethnic communities. These bamboo species include *Bambusa bambos* (L.) Voss (Wa'kanta), *Bambusa jaintiana* R.B.Majumdar (Wa'tebok), *Bambusa tulda* Roxb. (Wa'ge), *Dendrocalamus hamiltonii* Nees & Arn.ex Munro (Wa'nok/ Wa'ma), *Melocanna baccifera* (Roxb.) Kurz (Wa'tre/ Wa'mande), and *Schizostachyum dullooa* (Gamble) R. B. Majumdar (Wa'dro). Bamboo can be used for different purposes such as vegetables, fuelwood, medicines, construction of houses, handicrafts and business. *Melocanna baccifera* (Roxb.) Kurz (Wa'tre/ Wa'mande) was recorded highest for multiple purposes as shown in **Fig. 4.56**.

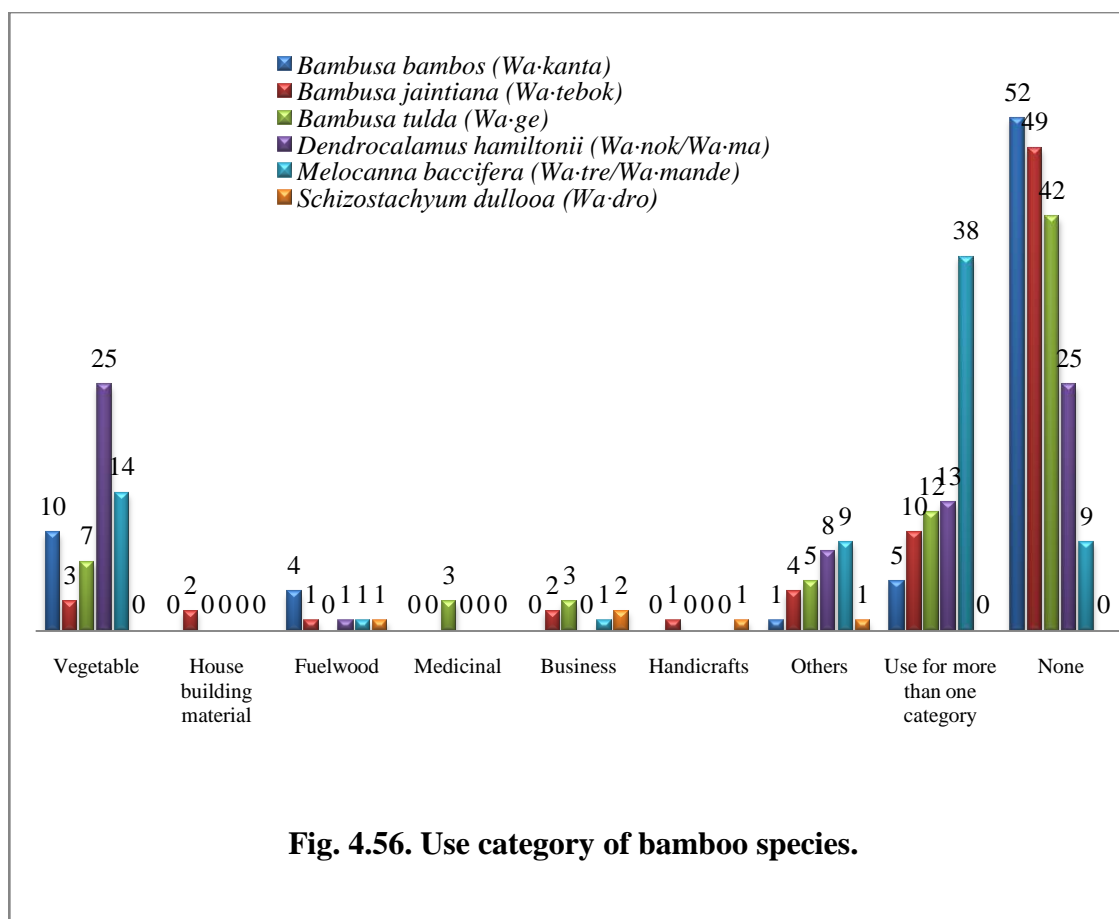


Fig. 4.56. Use category of bamboo species.

4.11. Non-Timber Forest Products which are no longer available in the forests.

Forests of West Garo Hills are abundant in Non-Timber Forest Products but some of the species are getting less of which *Dendrocalamus hamiltonii* Nees & Arn.ex Munro (Wa-nok/Wa-ma) was reported as no longer available in Simbukolgre (Milsigre) and Magupara (Nokma gittim) villages and *Lasia spinosa* (L.) Thwaites (Chonggi) in Damalgre village.

4.12. Cultivated tree species used as fuelwood.

Most of the fuelwood species are collected and utilized from the forests but now a days since some plantation trees are available in their own land in plenty and in some villages forest trees are getting less, some few cultivated tree species are also considered good and utilized for fuelwood by the villagers/communities. These tree species include *Ziziphus mauritiana* Lam. (Angkil), *Tamarindus indica* L. (Che'eng), *Areca catechu* L. (Gue), *Anacardium occidentale* L. (Kaju/Cashewnut), *Havea*

brasiliensis (Willd. ex A.Juss) Müll. Arg. (Rubber), *Tectona grandis* L. f. (Segun), *Artocarpus heterophyllus* Lam. (Te·brong), and *Mangifera indica* L. (Te·gatchu).

4.13. Pearson correlation coefficients analysis and One-Way ANOVA.

Table 4.30. shows the correlation between household/socio-economic condition parameters and NTFPs in West Garo Hills.

A significant positive relationship was observed between the ethnic group and all the parameters under NTFPs while a negative relation was seen in the alternative heat energy usage. On the contrary, the occupation of the respondents had a negative correlation with the type of NTFP sold, place of selling and average annual income from NTFP, and a positive relation with the amount of money spent in procuring fuelwood. The family annual income also showed a positive relation with almost all the parameters of NTFPs except for negative relation with the alternative heat energy usage. Furthermore, the house type of the respondents depicted a positive relation with the alternative heat energy usage and a negative relation with the type of NTFP sold, place of selling, average annual income from NTFP, source and usage of fuelwood and amount of money spent in procuring fuelwood.

Table 4.31. represents the One-Way ANOVA between the household/socio-economic condition parameters and NTFPs in West Garo Hills.

The One-Way ANOVA showed a significant effect ($P \leq 0.05$) of household/socio-economic condition parameters particularly occupation, literacy of household head and family annual income to all the NTFP parameters. The ethnic group encountered during the study also had a significant effect on almost all NTFP parameters except the type of NTFP sold and average annual income from NTFP business. In addition, the house type of the respondents showed a significant effect on all NTFP parameters except their reasons for the collection of NTFPs.

Table 4.30. Pearson correlation coefficients analysis between household/socio-economic condition parameters and NTFPs in West Garo Hills.

	Collection of NTFPs from the forests	Reason for collection of NTFPs	NTFP seller	Type of NTFP sold	Place of selling the NTFPs	Average annual income from NTFP business	Fuelwood user	Alternative heat energy if used	Source of fuelwood collection	Amount of money spent if the fuelwood is bought
Ethnic group	.151**	.082**	.083**	.068**	.077**	.072**	.150**	-.137**	.088**	.153**
Occupation	0.03	0.041	-0.043	-.049*	-.068**	-.068**	-0.027	-0.031	-0.012	.079**
Literacy of head of household	.086**	.068**	0.008	0.01	0.037	0.023	0.018	0.013	-0.022	-.048*
Family annual income from their occupation	.084**	0.002	.123**	.112**	.098**	.105**	-0.008	-.112**	.106**	.204**
Land holding size	0.038	0.027	0.036	.064**	0.037	.066**	0.007	-0.022	0.01	-0.002
House type	-0.039	0.029	-.155**	-.146**	-.124**	-.160**	-.069**	.141**	-.050*	-.127**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.31. One-way ANOVA between household/socio-economic condition parameters and NTFPs in West Garo Hills.

		Collection of NTFPs from the forests		Reason for collection of NTFPs		NTFP seller		Type of NTFP sold		Place of selling the NTFPs		Average annual income from NTFP business		Fuelwood user		Alternative heat energy if used		Source of fuelwood collection		Amount of money spent if the fuelwood is bought	
	df	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Ethnic group	4	16.698	0.000	6.875	0.000	3.252	0.011	2.134	0.074	2.785	0.025	2.358	0.052	65.757	0.000	12.169	0.000	4.108	0.003	12.907	0.000
Occupation	7	3.746	0.000	3.115	0.003	12.346	0.000	11.182	0.000	11.547	0.000	13.735	0.000	4.745	0.000	16.886	0.000	2.875	0.005	26.963	0.000
Literacy of head of household	9	2.085	0.028	3.524	0.000	5.897	0.000	3.249	0.001	4.817	0.000	3.960	0.000	3.389	0.000	9.146	0.000	2.493	0.008	12.635	0.000
Family annual income from their occupation	7	2.129	0.038	2.545	0.013	8.941	0.000	6.275	0.000	7.060	0.000	7.408	0.000	2.026	0.049	22.349	0.000	11.570	0.000	50.119	0.000
Land holding size	3	14.897	0.000	11.598	0.000	2.125	0.095	3.091	0.026	2.588	0.051	3.872	0.009	2.466	0.061	0.436	0.727	0.199	0.897	0.386	0.763
House type	3	6.640	0.000	1.806	0.144	21.171	0.000	15.768	0.000	14.443	0.000	20.310	0.000	5.189	0.001	30.716	0.000	3.441	0.016	45.700	0.000

4.14. Impact of NTFPs to the local people.

The present research study reveals that Non-Timber Forest Products contributed to or impacted the livelihood of the ethnic communities of West Garo Hills in many ways directly or indirectly. According to the study, the villagers collected NTFPs mainly for their own consumption and only some were harvested for their business. Since most of the households from the study area get supported by other main occupations, NTFP business can be considered only as a side occupation. The income earned from the NTFP business was also quite low even though the NTFPs were collected from the forests in so many ways. These huge collections of NTFPs were utilized at home. In terms of business, NTFPs which impacted the livelihood of ethnic communities in higher level was fuelwood, bamboo poles, and vegetables.

5.1. Socio-economic condition.

The socio-economic life of the ethnic communities in the West Garo Hills district along with Non-Timber Forest Products play an interesting role in the present study. Their way of living showed typical tribal living as well as a modern way of life. The number of households surveyed varies from village to village to some extent. The majority of the villages included 25 households for the present study but few villages were with more households. There were also around 6 villages recorded to have households lesser than 25 numbers since the communities in those villages are still growing and some are in the interior parts of the district. The gender of respondents showed more females than males as in most of the villages' females or wives stayed at home for household work and males go out for their job or for their income from their occupation (**Table 4.1.**). Similarly, it was reported in the Kilombero district of Tanzania with more female respondents compared to male respondents and the interviewed females were not necessarily heads of the households (Balama *et al.*, 2016). The population of the surveyed villages also showed that females are higher in number when compared to males (**Table 4.1.**). This can be because of better healthcare and longer life expectancy. The average family size of the present study is 6 (**Table 4.1.**) which is more than the district's average family size of 5.22 (Census, 2011). Education is an important part of life in most of the studied villages and the highest literacy percentage was recorded at 93.08% (**Table 4.1.**) which is higher than the district literacy rate of 72% (Census, 2011). There were also some villages with low literacy of only 41.35% (**Table 4.1.**), which may be due to their low income or may be due to their less interest in studies as there was a saying about tribal people of Garo Hills as being lazy since time immemorial. The people living around Loktak lake in Manipur have low literacy percentages due to their lower income and they could not afford to pay for their education (Laishram, 2015).

West Garo Hills consists of different communities but the major communities belong to the Garo tribe which consists of 95.85% in the present study. Some of the few minor communities belong to Boros, Hajongs, Koch, Rabhas and Assamese. All the communities of West Garo Hills are rich in their distinct unique cultures (**Fig. 4.3.**).

Similarly, the ethnic communities of North-East India as a whole are great in their own culture (Jain, 2016). The tribes of West Garo Hills also have their own dialects which made them different from each other as well as unique. Most of the communities are forest dwellers but Garo communities are more confined to forests and hilly areas as compared to other tribes included in the present research work. This is in agreement with the majority of the tribes of North-East India as the inhabitants of the forests (Choudhury *et al.*, 2017).

Landholding size is usually measured in bighas in West Garo Hills (**Fig. 4.4.**). Landholding pattern was also measured in bighas in the case study of the Hira community of Kamrup district of Assam (Bhattacharyya, 2014). Most of the households of the studied villages have their own land except for 8.30% of households were without their land. Some of the villagers were still living on the land which is under the Nokma or Village headman and some were still on their parent's land which is not properly owned by them yet. The study revealed that the people of West Garo Hills depended highly on bamboo which is also a part of NTFP for constructing houses. The bamboo was collected directly from the forests for their use or in some cases it was purchased from the markets. 49.19% of households lived in bamboo-based houses whereas 22.04% of families lived in mixed-type houses which also included bamboo. 16.43% of households owned pucca houses and 12.34% of families lived in other types of houses such as wooden, mud and tin (**Fig. 4.5.**).

Assets are also part of the socio-economic condition of the households. 85.98% of mobile phones were owned by the studied households which is the highest percentage among all the assets recorded since the modern generation is on call for the internet as well as for faster communication (**Fig. 4.6.**). In a similar way, 93.3% were reported to own mobile phones by the villagers living near the Loktak lake (Laishram, 2015). Other than mobile phones, assets like televisions, motor vehicles, cycles, fridges, computers/laptops, tractors, rice mill machines, radios, and tela (carts) were recorded to be used and owned by the people of West Garo Hills.

In the current study, domesticated animals played a principal role in their living especially chickens, cows, pigs and goats as they can sell for their living as well as for consumption for themselves. Dogs and cats were usually owned by them as pets and not for selling nor for consumption (**Fig. 4.7.**).

As more percentages of households were without the assistance from Government or NGOs, there is a need to look into it more deeply as there are still so many households which live in poor conditions and need help to improve their livelihood. In some cases, assistance from Government/NGOs like Old age pensions, BPL-Below Poverty Line, Job cards, AAY- Antyodaya Anna Yojana, IAY- Indira Awaas Yojana, Agriculture department, Sericulture department, Horticulture department, ICDS-Integrated Child Development Services, MLA schemes, MGNREGA-Mahatma Gandhi National Rural Employment Guarantee Act, Child education allowance, and some subsidies was involved in the betterment of the households' living conditions (**Fig. 4.8.**).

Among the villagers, the highest being the farmers they mostly depend on Plantation crops like Arecanut, Cashewnut, and Rubber for their income. Rice, tea, chayote squash, ginger, elaichi/cardamom, coffee, orange, cocoa, betel leaf, gulmoris/pepper, litchi, jackfruit, bamboo and maize were also found in some of the farm areas (**Fig. 4.9.**). The occupation of the studied villages in Village Forest Development Committee plantation sites of Aizawl was mostly agriculture, shifting cultivation and horticulture plantation (Lalhmingsangi and Sahoo, 2016). It was also reported from the Kilombero district in Tanzania, that the majority of the villagers were farmers (Balama *et al.*, 2016). Other than farming, working in private or governmental jobs and daily labour also help the villagers to earn their living. Along with the occupation, the villagers also used to collect NTFPs for their own consumption and income.

The annual income earned by the head of households' occupation is highest in the range of ₹100000 or less which is the lowest range. Since most of the households earned less for their livelihood, they were also involved in the collection of NTFPs from the forests mostly for their consumption and some for their cash income (**Fig. 4.10.**).

According to the research conducted, it was observed that the socio-economic condition of most of the villages surveyed belongs to the economically backward section. Similarly, it was observed that the villages in the buffer zone of Nokrek Biosphere Reserve belong to the economically backward section (Sangma, 2020). Some of the villages in the present study also belong to the economically privileged

section. The road conditions connecting the main town of Tura to the villages surveyed are mostly not good. The highway roads connecting parts of Rongram block and some parts of Gambegre block are black coated and can be considered as a proper road but the village roads connecting from the highway roads are kucha or unmetalled or seasonal roads. Some roads are small and with potholes. The worst roads encountered during the survey were roads connecting Sakalgre and Dorenggre of Rongram block, and the villages in Tikrikilla block. In Tikrikilla, the main roads are in bad condition but somehow the smaller interior road connections to the villages are fine. Electricity connection is available for the majority of the villages but a few households from a few villages are still without electricity. Water connection was mostly from PHE, wells, rivers and streams. A huge amount of fresh hill water was available in villages closely connected to Nokrek Biosphere Reserve like Sakalgre, Chandigre and Rombagre villages and those villages close to Tura peak like Darenggre village.

5.2. Collection and utilization of Non-Timber Forest Products.

A total of 177 plant species used as vegetables, fodders, fruits, fuelwoods, brooms, house building materials, wrapping materials, medicinal plants, handicrafts, and other purposes were recorded from West Garo Hills (**Table 4.2.**). Similarly, 189 plant species were identified from the local communities of the Burdwan district (Tripti Bouri, 2013). 24 NTFPs of animal origin used for consumption were reported from the present study area (**Table 4.6.**) where a similar report was found in Indonesia with 18 kinds of wild edible animals (Adi *et al.*, 2020). One species of edible mushroom was also reported from the present study area (**Table 4.21**).

Fruits were mostly consumed raw or sometimes in juice form as well as in pickled form. Wild fruits like *Dillenia pentagyna* Roxb. (Agatchi), *Gymnopetalum chinense* (Lour.) Merr. (Apolka), *Solanum anguivi* Lam. (Kimka), *Solanum violaceum* Ortega (Kimkarong), and *Calamus erectus* Roxb. (Sokmil) were also cooked as vegetables and eaten along with rice (**Table 4.11.**). Similarly, the fruits of some species like *Artocarpus sp.*, and *Dillenia indica* were eaten as vegetables by the tribals of Dimapur district, Nagaland (Mozhui, *et al.*, 2011). Some lesser-known wild fruits recorded in this study were *Chrysophyllum roxburghii* G. Don (Te'wan), *Garcinia xanthochymus* Hook f.ex T. Anderson (Aruak), *Melastoma malabathricum* L.

(Kakku), *Melodinus cochinchinensis* (Lour.) Merr. (Bakwe bijak chongipa), *Uvaria hamiltonii* Hook.f.& Thomson. (Te'rik galwang), and *Willughbeia edulis* Roxb (Bakwe bijak dal'gipa) etc. and among these one of the interesting fruits is *Chrysophyllum roxburghii* G. Don (Te'wan). There was a saying for a long time that the fruits usually fall down according to the number of people visiting the plant or the area where the fruit tree is present before the people reach the place since the tree is very tall. As it was said, four of us went to collect the fruits from the forest and yes we saw fresh fruits along with leaves fell down before we reach the area.

The ethnic communities collected more leaves to cook as vegetables which are of 40.74% followed by tender leaves (25.93%), flowers (22.22%), shoots (12.96%), fruits (11.11%), and stalks (7.41%) (**Fig. 4.22**). A similar result was observed with leaves being the most commonly used as vegetables (Lalmuanpuui *et al.*, 2017).

Out of the 18 fodder species recorded, important species like *Amorphophallus bulbifer* (Roxb.) Blume (Songru), and *Colocasia esculenta* (L.) Schott (Chigi) were collected and cooked to be used as fodder for pigs (**Table 4.14.**). The investigation made around Dampa Tiger Reserve in Mizoram also recorded 8 fodder plant species used as food for pigs (Sahoo *et al.*, 2010).

In the northern part of Garo Hills, a number of plants were used for different diseases but mostly for curing stomach problems (Sharma *et al.*, 2014). The present study revealed that the highest numbers of plant species are used to cure generalized weakness (tired body, no appetite for eating and fever) (**Fig. 4.30**). Other than medicinal practitioners, some of the common villagers too collected plants and used to treat some common diseases by themselves.

Macaranga denticulata (Blume) Müle. Arg. (Cha'gro/Bolajak) is an important wrapping material for rice or curries recorded in the present study (**Table 4.16.**). This is in agreement with the study made from Sabah in Southeast Asia where the leaves of *Macaranga* were used as packaging for rice dishes (Keat-Chuan Ng, 2015).

Leaves of *Zalacca secunda* and *Livistona jenkinsiana* were used as thatching material by the people living in the Forest Fringes of Changlang district (Sarmah and Arunachalam, 2011) whereas the tribal people of West Garo Hills, used *Imperata cylindrica* (L.) Raeusch (Am'pang), *Schizostachyum dullooa* (Gamble) R. B.

Majumdar (Wa·dro), and *Melocanna baccifera* (Roxb.) Kurz (Wa·tre/Wa·mande) as thatching material (**Table 4.17.**).

Some of the handicrafts made by the villagers were traditional basket (Kok) which is used for carrying fuelwood, vegetables etc, fishing material/basket, stool (mora), and others (**Table 4.18.**). Similar handicrafts were made by the tribals of Tripura such as Jamatia firewood baskets, fish baskets (dulla), and stool (mudha) (Sil *et al.*, 2020).

Sida acuta Burm.f. (Santareng/Angkegol), and *Thysanolaena latifolia* (Roxb.ex Hornem.) Honda (Sal·wa/Smu) are important species used as a broom in the present study (**Table 4.19.**). *Thysanolaena latifolia* was also recorded from Darjeeling Hills to be used as a broom (Rai and Chhetri, 2017).

99.27% of households collected and used fuelwood. Some households also used gas stoves, rice cookers and other fuel energy but they still used fuelwood along with that as fuelwood remains the age-old tradition of the ethnic communities of West Garo Hills (**Fig. 4.38.**). Similarly, in the Sudano-Sahelian region of Central Africa, 59% of the people depend completely on fuelwood and 28% use fuelwood along with other heat energy (NJITI and KEMCHA, 2002). The highest percentage of 99.21% was used for cooking food for own consumption (**Fig.4.46.**) which is in agreement with the study done by Bhatt and Sachan, 2004, that among all the fuelwood activities cooking needs the highest energy.

The villagers mostly prefer *Macaranga denticulata* (Blume) Müle. Arg. (Cha·gro/Bolajak) mainly because of the quality criteria such as good in burning/hot flame/bright flame, good embers, easy to split/cut, and easy to burn/fast burning (**Table 4.25.**) whereas the villagers of Northern Mizoram preferred *Quercus pachyphylla* Kurz. (Fah) mainly for its hot flame, bright flame, non-sparking, and long burning (Lalremruata, 2012). Based on the Fuelwood Value Index, the best fuelwood with the highest FVI was observed to be *Shorea robusta* Gaertn. (Bolsal) because of its high calorific value, high density, highest biomass ash ratio and lowest ash percentage which is also preferred by the villagers for fuelwood (**Table 4.26.**). *Premna barbata* can be considered a good quality fuelwood because of its highest FVI with high calorific value, density, biomass ash ratio and low ash and water content (Bhatt and Todaria, 1990).

5.3. Marketing, business and income from Non-Timber Forest Products.

Species like *Colocasia esculenta* (L.) Schott (Chigi) and *Zanthoxylum oxyphyllum* Edgew.(Me·cheng) were present in all the markets which shows the high market demand in West Garo Hills (**Table 4.27.**). This is in agreement with the study done from the three markets of Garo Hills as a whole by Kar *et al.*, 2012 where wild edible plants like *Colocasia esculenta* and *Zanthoxylum oxyphyllum* have much demand in the local markets.

Fuelwood business (56.70%) was most common among the villagers which help them with their livelihood. They also earned from other NTFP businesses like honey, bamboo poles, vegetables, handicrafts, fruits, and brooms (**Fig. 4.48.**). The study from Arunachal Pradesh revealed that the highest percentage of respondents i.e. 56.67% earned around Rs. 36000-72000 annually (Kumar *et al.*, 2015) whereas in the present study, the highest 53.58% of respondents earned < ₹25000 annually, followed by not recorded (those which earned from NTFP business but the amount was not recorded) with 24.92%, and respondents of 13.08%, and 8.41% earning ₹25001-50,000, and >₹50000 annually respectively.

5.4. Statistical analysis.

The Pearson correlation coefficients of household/socio-economic condition and NTFPs for the selected variables showed significant correlation coefficients. All the two variables are linearly correlated at the 0.01 level (2-tailed). Similarly, the study made by Lalremruata, 2012 about Northern Mizoram, revealed the significant variables of Pearson correlation coefficients.

The One-Way ANOVA also showed a significant effect between household/socio-economic conditions to almost all the parameters of NTFPs.

Most of the Garo communities preferred to stay in hilly areas near the forests compared to other tribes who preferred staying in lower or plain areas. So, the ethnic communities living closest to the forest and hilly areas tend to explore the forests more and collect more NTFPs from the forests and thus have a correlation between them. This same reason can be applied to all the parameters of NTFPs. The ethnic communities even tend to spend money on fuelwood depending on their living

conditions. As the main occupation of the ethnic communities increases the amount of money spent for fuelwood also increases instead of collecting by them. Lower literacy of heads of households tends to collect more NTFPs from the forests both for consumption as well as for selling for side income. Higher family annual income from their main occupation tends to decrease the collection of NTFPs from the forests, as well as lesser NTFP sellers, lesser types of NTFP sold, and lesser places for selling the NTFPs. As the family's annual income from their main occupation increases, the average annual income from the NTFP business decreases since most of them will not be involved in the NTFP business and even if they still get involved in a business it will not be regular. Depending on the annual income from their main occupation, the source of fuelwood collection also changes as they usually hired some people to collect fuelwood mainly from their own farm or sometimes from the community forest or they bought it for household use. As the family's annual income from their main occupation increases, the amount of money spent on fuelwood also increases. The smaller the land holding size, the type of NTFP sold and the average annual income from NTFP business increase. Better the house type, the fuelwood user is lesser as the use of alternative heat energy like LPG, electricity etc. increases.

Overall, the present research work revealed a great number of Non-Timber Forest Products which greatly impacted the livelihood of the ethnic communities of the West Garo Hills district of Meghalaya especially for their own consumption as well as through NTFP business.

CONCLUSION AND RECOMMENDATIONS

The study's findings highlight the relative importance of utilization, consumption, marketing, and income from different categories of Non-Timber Forest Products. The living condition of the ethnic communities of West Garo Hills shows that the people depend on NTFPs in many ways. Many different NTFPs are available in the forests of West Garo Hills, such as fuelwood, vegetables, fruits, fodders, brooms, wrapping materials, house building materials, medicinal plants, and many others. The plant species documented in the present study show a higher number of Fabaceae and Lamiaceae families and more *Ficus* genera. It is observed that most of the NTFPs collected are trees. Besides plants, some NTFPs of animal origin also provide necessities for the villager's livelihood.

In the present work, villages studied, such as Waribok and Sakalgre are still living with the beautiful nature from where they can enjoy the NTFPs.

Fuelwood consumption is high in West Garo Hills and the total daily consumption by all the studied villages comes to 85322 kg. In some villages, a surplus amount of fuelwood is still available but in some villages, fuelwood is getting less. Other than fuelwood, the quantity collection of NTFP such as vegetables, fish, honey, and fruits are also quite high.

A good quality fuelwood which ranks number one based on local preference was found to be *Macaranga denticulata* (Blume) Müle. Arg. (Cha'gro/Bolajak) and based on Fuelwood Value Index, it was observed for *Shorea robusta* Gaertn. (Bolsal). These two species can be recommended for future fuelwood users or businesses but with proper extraction from the forest. The study also shows that the best quality criteria based on local preference are for its hot flame/bright flame. On the basis of FVI, good quality fuelwood has high density, low ash content, high biomass ash ratio, and high calorific value.

The ethnic communities not only collected NTFPs for their own consumption but also for selling in the market for their income. Species like *Colocasia esculenta* (L.) Schott (Chigi) and *Zanthoxylum oxyphyllum* Edgew. (Me'cheng) are high in market

demand. Some NTFPs like fuelwood are not sold in the market but mainly on village roadside or in the village itself.

According to the statistical analysis, most of the relationship between the household/socio-economic condition and the NTFPs shows a significant relation and a significant effect.

The following are a few recommendations:

Studies on the socio-economic conditions relating to NTFPs can contribute to a more significant level of a better livelihood for the direct and indirect users of NTFPs by conserving and maintaining the NTFPs in forests and on the villagers' land.

The communities still use a vast amount of fuelwood for their consumption. Plantation of good and preferred fuelwood species by the people of the area is required in order to continue to fill the demand and supply gap.

Cultivation of various wild fruits like *Chrysophyllum roxburghii* G. Don (Te'wan), *Garcinia indica* (Thouars) Choisy (Soksimareng), *Uvaria hamiltonii* Hook.f.& Thomson. (Te'rik galwang), *Willughbeia edulis* Roxb. (Bakwe bijak dal'gipa) and *Melodinus cochinchinensis* (Lour.) Merr. (Bakwe bijak chongipa) are required as these fruits are getting less in the wild. Cultivation of wild fruits can also help in small-scale industries as these industries are still fewer.

Prices of marketing wild vegetables can be increased as it is too less for those harvesters coming and selling from the interior parts for their transportation and as the modern age is at hand prices of other necessary items are increasing, for which the harvesters also need more income.

According to the Garo Hills Regulation, 1882, some of the rules and regulations enforced by the Government of Meghalaya include-

(a). Prohibit all or any person, not being natives to the Garo Hills district, from doing any of the following acts within the limits of the said district without a license, that is to say,- cutting wood, hunting animals, collecting wax, ivory, India-rubber, or other jungle products.

In view of the above, in some parts of the West Garo Hills district, the rules incorporated were followed strictly but it may not be true for some bordering areas so proper and more regular checking is required from the government side.

(b). It shall not be lawful for any British subject, or other person not being a native of the Garo Hills district, to acquire any interest in land or the product of land within the limits of the said district without the sanction of the Chief Commissioner or of such officer as the Chief Commissioner may appoint in this behalf.

As observed from the present study, the rules above are followed by the villagers in most parts of West Garo Hills but some parts bordering Assam should be strictly checked and maintained as many of the non-natives of Garo Hills were found there and might invade without the proper permission or license and occupy the land.

(c). All house-tax-paying natives of the Garo Hills district resident or jhuming in that district may, without any permit, remove and utilize free of royalty such timber and other forest produce as they may require for their own use within the district, but not for sale, trade, mortgage or gift.

The trading of bamboo and fuelwood to other places should be properly checked by the government as the demand for these is very high in the present day. However, selling of NTFPs within the district should be permitted up to some extent as it generates income for the local people to maintain their livelihood but with limitations as overexploitation of those NTFPs might degrade the forest.

177 plant species, 24 edible animals, and 1 fungus species have been documented and there are still many species yet to be documented from the present study area. Awareness to the villagers as well as to future readers and researchers is suggested to learn and conserve the NTFPs for eco-friendly surroundings and for the better livelihood of the villagers.

PHOTOPLATES
SOCIO-ECONOMIC CONDITION OF ETHNIC COMMUNITIES.



Dorrenngre village



Nengja Bolchugre village



Garo traditional kitchen in Waribok
village



Fuelwood storing house at
Masumatagre village.



Garo tribe



Bodo tribe

FIELD SURVEY AND PREPARATION OF HERBARIUM.



Interviewing the villagers.



Measuring the weight of fuelwood.



Collecting *Willughbeia edulis* Roxb. (Bakwe bijak dal'gipa).



Collecting *Glochidion sphaerogynum* (Müll. Arg.) Kurz (Bolchidek).



Collection of wood samples.



Preparation of herbarium.

LABORATORY WORK



Weighing the wood samples.



Oven drying the wood samples.



Water displacement for *Dillenia pentagyna* Roxb. (Agatchi).



Grinded and sieved wood samples for analyzing calorific value.



Wood samples inside the muffle furnace.



Ash content of *Mallotus tetracoccus* (Roxb.) Kurz (A'tipra) and *Gmelina arborea* Roxb. (Gambare) in a crucibles.

WILD EDIBLE FRUITS



Aegle marmelos (L.) Corrêa
(Selpri)



Artocarpus chama Buch.-
Ham (Chram)



Artocarpus lacucha Buch.-
Ham. (Arimu).



Baccaurea ramiflora Lour.
(Gasampe)



Calamus erectus Roxb.
(Sokmil)



Chrysophyllum roxburghii
G. Don (Te'wan).



Citrus indica Yu. Tanaka
(Me'mang narang).



Dillenia indica L. (Agatchi
badura)



Elaeagnus latifolia L.
(Sokkua)



Elaeocarpus floribundus
Blume. (Jorpai)



Ficus auriculata Lour.
(Te'bil)



Ficus hispida L.f.
(Sa'kap/Kan'tap)

WILD EDIBLE FRUITS



Flacourtia jangomas (Lour.)
Raeusch. (Darichik)



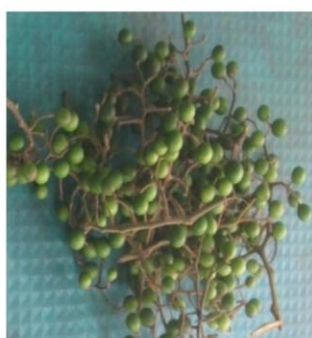
Garcinia cowa Roxb.ex
Choisy (Dengadote).



Garcinia sopsopia (Buch.-
Ham.) Mabb. (Te'sru)



Garcinia xanthochymus Hook
f.ex T. Anderson (Aruak)



Grewia nervosa (Lour.)
Panigrahi (Bolchupret)



Haematocarpus validus
(Miers.) Bakh.f.ex Forman
(Te'patang)



Melastoma malabathricum L.
(Kakku).



Meyna spinosa Roxb.ex
Link (Te'chikeng)



Myrica rubra (Lour.)
Siebold & Zucc.
(Bolmeseng)



Protium serratum (Wall.ex
Colebr.) Engl. (Te'kring)



Rhus chinensis Mill. (Kitma)



Rubus buergeri Miq.
(Te'kisambak).

WILD EDIBLE FRUITS



Solanum anguivi Lam. (Kimka)



Spondias pinnata (L.f.) Kurz (Ambaletong)



Sterculia villosa Roxb. (Olmak)



Syzygium cumini (L.) Skeels (Chambu)



Terminalia bellirica (Gaertn.) Roxb.
(Chirori)



Terminalia chebula Retz. (Aritak)



Uvaria hamiltonii Hook.f. & Thomson.
(Te'rik galwang)



Willughbeia edulis Roxb. (bakwe bijak
dal'gipa)

WILD VEGETABLES



Acacia concinna (Willd.)
DC. (Surengki/Suchengkil)



Amaranthus spinosus L.
(Chandile bu'su donggipa)



Amaranthus viridis L.
(Chandile bu'su
donggijagipa)



Amorphophallus bulbifer
(Roxb.) Blume (Songru)



Antidesma acidum Retz.
(Adurak)



Argyreia nervosa (Burm. f.)
Bojer (Do'stip)



Bambusa bambos (L.) Voss
(Wa'kanta)



Bauhinia variegata L.
(Me'gong)



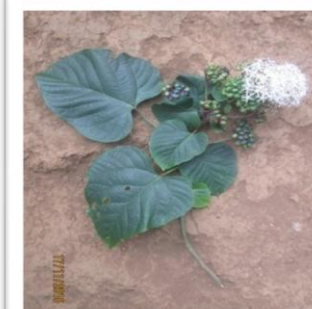
Bauhinia malabarica
Roxb. (Me'gong tak)



Caryota urens L.
(Bolnamgija)



Centella asiatica (L.) Urb.
(Manamuni)



Clerodendrum glandulosum
Lindl. (Donggam).

WILD VEGETABLES



Clerodendrum laevifolium
Blume (Balmatchi)



Colocasia esculenta (L.)
Schott (Chigi)



Dendrocalamus hamiltonii
Nees & Arn. ex Munro
(Wa'nok/Wa'ma)



Dillenia pentagyna Roxb.
(Agatchi).



Diplazium esculentum
(Retz.) Sw. (Gongginjak)



Eichhornia crassipes
(Mart.) Solms (Gachili)



Eryngium foetidum L.
(Samskal)



Gmelina arborea Roxb.
(Gambare)



Houttuynia cordata Thunb.
(Matchaduri).



Justicia adhatoda L. (Alot
gipok)



Lasia spinosa (L.)
Thwaites (Chonggi)



Leucas aspera (Willd.)
Link (Du'kumu)

WILD VEGETABLES



Melia azedarach L.
(Bagongat)



Melocanna baccifera (Roxb.)
Kurz (Wa'tre/Wa'mande)



Morinda angustifolia
Roxb. (Chelnong)



Mussaenda roxburghii
Hook. f. (Gradek)



Oroxylum indicum (L.) Kurz
(Kering)



Paederia foetida L. (Pasim)



Persicaria chinensis (L.) H.
Gross (Me'kri donok)



Phlogacanthus guttatus
Nees (Alot rimit)



Phlogacanthus thyrsiflorus
Nees (Alot gitchak)



Rhynchosyris ellipticum
(Wall.ex D. Dietr.) A. DC.
(Me'bitchi).



Rothea serrata (L.) Steane
& Mabb. (Agunjulai/Matchok
nachil).



Sarcochlamys pulcherrima
Gaudich. (An'tamburi).

WILD VEGETABLES



Scoparia dulcis L. (Samgoldak)



Solanum violaceum Ortega (Kimkarong)



Tabernaemontana divaricata (L.) R.Br.ex
Roem. & Schult. (Miktoksi/Kimdotchi)



Toona ciliata M.Roem. (Bolbret)



Trema orientalis (L.) Blume
(Pakkram)



Trevesia palmata (Roxb.
ex Lindl.) Vis. (Chinatong)



Zanthoxylum oxyphyllum
Edgew. (Me'cheng)

WILD FODDERS



Albizia odorattissima
(L.f.) Benth. (Siso)



Bauhinia variegata L.
(Me'gong).



Ficus hispida L.f.
(Sakap/Kantap)



Litsea cubeba (Lour.) Pers.
(Jengil)



Litsea monopetala (Roxb.)
Pers. (Bolbit)



Melocanna baccifera
(Roxb.) Kurz
(Wa'tre/Wa'mande).

WILD MEDICINAL PLANTS



Achyranthus aspera L.
(Me'mang katchi)



Careya arborea Roxb.
(Gimbil)



Cassia fistula L. (Sinaru)

WILD MEDICINAL PLANTS



Chromolaena odorata (L.)
R. M. King & H. Rob.
(Sambangguri)



Citrus medica L.
(Te'matchi).



Clerodendrum infortunatum L. (Samaki)



Curcuma amada Roxb.
(Dikge te'gatchu)



Cuscuta reflexa Roxb.
(Nawang bibik).



Dischidia bengalensis
Colebr. (Gominda bitchil)



Drynaria quercifolia (L.) J.
Sm. (Do'reng gangpak).



Erythrina stricta Roxb.
(Bolmandal gitchak)



Justicia gendarussa Burm.f.
(Do'jagipe)



Lygodium flexuosum (L.)
Sw. (Ruattip)



Micromelum integerrimum
(Buch.-Ham.ex DC.) Wight &
Arn.ex. Roem. (Mangritchok)



Mikania micrantha Kunth
(Meghalaya budu/Samtip)

WILD MEDICINAL PLANTS



Mimosa pudica L.
(Sammikchip)



Rauwolfia serpentina (L.)
Benth.ex Kurz (Do'grikme)



Wrightia arborea (Dennst.)
Mabb. (Golmatra bite
dal'gipa)

HOUSE BUILDING MATERIALS



Bambusa jaintiana
R.B.Majumdar
(Wa'tebok).



Imperata cylindrica (L.)
Raeusch (Am'pang).



Merremia umbellata (L.)
Hallier f. (Sitri).

WRAPPING MATERIALS



Ficus auriculata Lour. (Te'bil).



Phrynium pubinerve Blume (Reru).

HANDICRAFTS



Fishing basket made of *Bambusa tulda* Roxb. (Wa'ge) and *Bambusa jaintiana* R.B.Majumdar (Wa'tebok).



Winnowing fan (ruan) made of *Calamus acanthospathus* Griff. (Re).

BROOM



Sida acuta Burm.f. (Santareng/Angkegol).



Thysanolaena latifolia (Roxb.ex Hornem.) Honda (Sal'wa/Smu).

FUELWOOD



Actinodaphne gullavara (Buch.-Ham.ex Nees)
M.R.Almeida (Namiaga dal'gipa)



Alangium chinense (Lour.) Harms
(Bolchiring)



Aporosa octandra (Buch.-Ham.ex D. Don) Vickery
(Chamolja)

FUELWOOD



Bischofia javanica Blume
(Achri)



Bombax ceiba L. (Bolchu)



Callicarpa arborea Roxb.
(Makanchi/Kimbal).



Castanopsis indica (Roxb.ex
Lindl.) A. DC. (Chaku
jongsu)



Castanopsis tribuloides
(Sm.) A. DC. (Chaku
metchri)



Croton joufra Roxb
(Matmi)



Dalbergia stipulacea Roxb.
(Palwang)



Diospyros malabarica
(Desr.) Kostel. (Gap)



Diospyros racemosa Roxb.
(Bolgisim)



Duabanga grandiflora
Walp. (Bolchim)



Ehretia acuminata R. Br.
(Bolmigam)



Eurya acuminata DC.
(Chamisi)

FUELWOOD



Ficus benjamina L. (Prap rapseng)



Ficus variegata Blume.
(Te'wek)



Garuga pinnata Roxb.
(Jiga)



Glochidion sphaerogynum
(Müll. Arg.) Kurz
(Bolchidek)



Grewia nervosa (Lour.)
Panigrahi (Bolchupret).



Haldina cordifolia (Roxb.)
Ridsdale (Boldoreng)



Hibiscus macrophyllus
Roxb.ex Hornem. (Mao)



Illex excelsa (Wall.) Voigt
(Boltajong).



Ixora nigricans R. Br.ex
Wight & Arn.
(Bolmanggal)



Lagerstroemia parviflora
Roxb. (Sidai/Chidai)



Lagerstroemia speciosa
(L.) Pers. (Ajakari)



Lithocarpus elegans (Blume)
Hatus.ex Soepadmo. (Chaku kokrak)

FUELWOOD



Macaranga denticulata
(Blume) Müle. Arg.
(Cha'gro/Bolajak).



Magnolia hodgsonii (Hook.f.
& Thomson) H. Keng
(Chaku gangdap)



Mallotus nudiflorus (L.)
Kulju & Welzen. (Bolbok)



Mallotus tetracoccus (Roxb.)
Kurz (A'tipra)



Saurauia napaulensis DC.
(Adambok)



Saurauia roxburghii
Wall. (Ginsning)



Schima wallichii Choisy
(Boldak)



Shorea robusta Gaertn.
(Bolsal)



Streblus asper Lour.
(Bolsrem)



Styrax serrulatus Roxb.
(Kampil)



Vitex quinata (Lour.) F. N.
Williams (Matchu gingsep)



Wrightia antidysenterica (L.)
R. Br. (Golmatra bite
chongipa)

OTHER NTFPs



Holmskioldia sanguinea Retz. (Mese nachil).



Sterculia villosa Roxb. (Olmak).



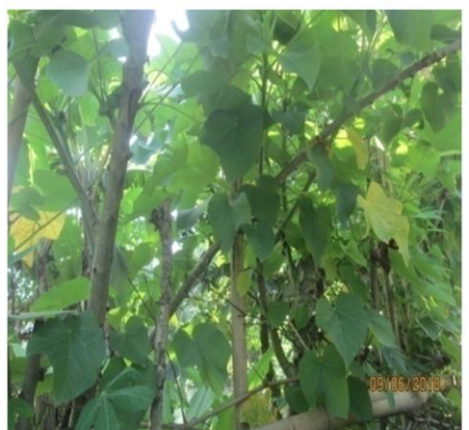
Termitomyces eurhizus R. Heim. (Dambong).



Honey from Giant honey bee (*Apis dorsata*)-Bija bitchi.



Freshwater snail (*Bellamya bengalensis* Lamark, 1822)- Etchaluk.



Jatropha curcas L. (Chimandal).

MARKET SURVEY



Phlogacanthus thyrsiflorus (Alot gitchak)
at Tura bazaar.



Selling of wild vegetables at Rongram
bazaar.



Bamboo products at Najing bazaar.



Thysanolaena latifolia (Sal'wa/Smu) at
Tikrikilla bazaar.



Calamus erectus Roxb. (Sokmil) at
Najing bazaar.



Justicia adhatoda L. (Alot gipok) at
Rongram bazaar.

MARKET SURVEY



Elaeagnus latifolia L.
(Sokkua)



Houttuynia cordata Thunb.
(Matchaduri)



Dendrocalamus hamiltonii
Nees & Arn.ex Munro
(Wa'nok/Wa'ma)



Zanthoxylum oxyphyllum
Edgew. (Me'cheng)



Baccaurea ramiflora Lour.
(Gasampe)



Haematocarpus validus
(Miers.) Bakh.f.ex Forman
(Te'patang)



Phyllanthus emblica L.
(Ambare segun)



Lasia spinosa (L.) Thwaites
(Chonggi)



Amorphophallus bulbifer
(Roxb.) Blume (Songru)



Diplazium esculentum
(Retz.) Sw. (Gongginjak)



Melocanna baccifera
(Roxb.) Kurz
(Wa'tre/Wa'mande)



Solanum anguivi Lam.
(Kimka)



Selling of fuelwood at Rombagre and Boldokagre village roadside.

APPENDICES

Questionnaire for Utilization Patterns of Non-Timber Forest Products and their impacts on socio-economic status of ethnic communities in West Garo Hills, Meghalaya.

Serial no.- Date- Supervisor's name- Interviewer's name-

GENERAL

Name of the village-

District-

Block-

Distance from Tura-

Population-

Male-

Female-

Literacy rate-

Total no. of household in the village-

Name of community forest/ Reserved Forest/ Sanctuary/ Biosphere Reserve with area (if present)-

Distance of forest from the village-

Do the villagers have forest protection committee to look after the conservation of nearby?-

Facility available.i) Electricity- ii) Water connection- iii) Road-

FAMILY/ DEMOGRAPHIC INFORMATION

1. Name of the family head-

2. Gender of the respondent (1= male, 2= female)-

3. What ethnic group do you belong to? [1= Garo, 2= Hajong, 3= Koch, 4= Rabha, 5= other (specify)]-

4. Number of the family members- Male- Female- Children-
5. Occupation of the head of household [1= Farming, 2= Salaried/Employed, 3= businessman/self employed, 4= Part time employed, 5= others (specify)]-
6. Highest level of education of the head of household [1= none, 2= Can read and write, 3= Primary, 4= Secondary, 5= Higher secondary, 6= College, 7= University, 8= others (specify)]-
7. Education of children-
8. Family income-
9. Land holding size-
10. Domestic animals in possession (with their numbers)-
11. House types [1= Pucca, 2= RCC, 3= Bamboo based, 4= Others (specify)]-
12. Movable and non-movable items [1= motor, 2= cycle, 3= TV, 4= Fridge, 4= Mobile phone, 5= others (specify)]-
13. Do the villagers get assistance from Government/NGOs or any other sources and if any then what types of assistance amount and their nature towards village/rural development?

GENERAL INFORMATION ON NTFP STATUS AND UTILIZATION.

14. Do you collect NTFPs from the forest?
15. Are there sufficient NTFPs in the forest?
16. Have you noticed any changes in the availability of these varieties? [1= constant, 2= less, 3= not available (mention the name of the NTFP which is no longer available)]

17. Why do you collect NTFPs? [1= consumption, 2= for selling in the market, 3= others (specify)].

18. Name of NTFPs collected/harvested and their season of availability.

Fodder species collected from forest.

<u>Sl. no.</u>	<u>Species name</u>	<u>Quantity collected</u>	<u>Availability period</u>
----------------	---------------------	---------------------------	----------------------------

i)

ii)

iii)

Fruit yielding species collected from forest.

<u>Sl. no.</u>	<u>Species name</u>	<u>Quantity collected</u>	<u>Availability period</u>
----------------	---------------------	---------------------------	----------------------------

i)

ii)

iii)

iv)

v)

vi)

vii)

viii)

ix)

x)

Bamboo species collected from the forest.

<u>Sl. no.</u>	<u>Species name</u>	<u>Quantity collected</u>	<u>Availability period</u>
----------------	---------------------	---------------------------	----------------------------

i)

ii)

iii)

Vegetables collected from the forest.

<u>Sl. no.</u>	<u>Species name</u>	<u>Quantity collected</u>	<u>Availability period</u>
----------------	---------------------	---------------------------	----------------------------

i)

ii)

iii)

iv)

v)

vi)

vii)

viii)

ix)

x)

Medicinal plants collected from the forest with parts used and uses.

<u>Sl. no.</u>	<u>Species name</u>	<u>Parts used</u>	<u>Uses</u>	<u>Quantity collected</u>	<u>Availability period</u>
----------------	---------------------	-------------------	-------------	---------------------------	----------------------------

i)

ii)

iii)

iv)

v)

vi)

vii)

viii)

Wild animals collected from the forest-

Other NTFPs collected from the forest.

Sl. no. Species name Quantity collected Availability period

i) Fish

ii) Honey

iii)

iv)

19. Do you have NTFPs on your land? If yes, what products?

FUELWOOD INFORMATION.

20. Do you use fuelwood? Besides fuelwood if used?

21. From where does the fuelwood collected? [1= Own farm, 2= Open land, 3= Forest, 4= others (specify)].

22. Who collects the fuelwood? 1=women, 2=girls, 3=boys, 4=men, 5=other (specify)=

23. How often do you collect fuelwood? 1= everyday. 2= times per week. 3= times per month. 4= other (specify)-

24. What kind of wood do you usually require? [1= Cut to lengths and split, 2= uncut whole logs, 3= other (specify)].

25. How do you have the wood supplied? (1= delivered to home, 2= collect yourself).

26. If the fuelwood is bought how much money do you spend?

27. Own observation on cooking practices: if the women is found cooking, does she use, 1= dry fuelwood, 2= few sticks, 3= split fuelwood, 4= other (specify).

28. Consumption of fuelwood for different purposes.

Purposes	Quantity in year/season
i) For cooking food	
ii) For cooking food for piggery	
iii) Water heating	
iv) Warming up room	
v) Any other	

29. Fuelwood yielding tree species.

i)

ii)

iii)

iv)

v)

vi)

vii)

viii)

ix)

x)

30. What are the NTFP species of your choice? (Name of the species of local preference in priority order).

Species of local preference	Reason
(i)	
(ii)	
(iii)	
(iv)	
(v)	
(vi)	
(vii)	
(viii)	
(ix)	
(x)	

31. Fuelwood consumption in a day (calculated per household)-

NTFP INCOME/BUSINESS (If the family is in business of NTFP).

32. Do you sell NTFPs? If yes, what are the NTFPs sold?

<u>Sl. no.</u>	<u>Species name</u>	<u>Amount sold in the market</u>
----------------	---------------------	----------------------------------

(i)

(ii)

(iii)

(iv)

(v)

33. Where do you sell the NTFPs?

34. Do you sell NTFPs every day?

35. What are the important NTFPs in terms of income for selling in the market?

36. What are the marketing constraints for the major NTFPs?

37. Do you supply NTFP for other people?

38. Do you transport the NTFP? If yes, what mode do you use to transport NTFP?

39. Do you both buy and sell NTFP?

40. How many years have you been engaged in the NTFP business?

41. How many people from your own household were employed or worked on your NTFP business?

42. Roughly how much of your average monthly household income is from NTFP business?

43. During which months is the demand for NTFP highest (pick)?

44. During which months is the demand for NTFP lowest (off-pick)?

45. Do you need to pay for selling in the market?

IMPACTS OF NTFPs.

62. What are the impacts of NTFPs commercialization and trade?

NTFPs	Impacts	
	Positive	Negative
Bamboo		

Bamboo shoots		
Mushroom		
Fruits		
Vegetables		
Honey		
Medicinal plants		
Fuelwood		
Others		

MARKET SURVEY:

Sl. No. Date: Location: District:

Market name:

Name of the vendor:

Vendor hails from:

Source of NTFPs collection:

Own collection or purchase from middlemen for sale:

Name of NTFPs Parts used as edible (if edible) Market price

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BIO-DATA

Personal information

Full name: Antica Jarangchi T. Sangma.

Date of birth: 29th January, 1990.

Sex: Female.

Marital status: Unmarried.

Father's name: Lt. Samsul Ch. Sangma.

Mother's name: Edwina A. T. Sangma.

Permanent address: Dakkopgre, Tura, West Garo Hills, Meghalaya. 794101.

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Ph.D. Registration and date: MZU/Ph.D./778 of 19.05.2015

Topic of research: UTILISATION PATTERN OF NON-TIMBER FOREST PRODUCTS AND THEIR IMPACTS ON SOCIO-ECONOMIC STATUS OF ETHNIC COMMUNITIES IN WEST GARO HILLS, MEGHALAYA.

Department: Forestry, Mizoram University.

Supervisor: Professor Lalnundanga.

Research interest: Plant taxonomy, Forest products and Social Forestry.

Academic qualification:

Name of Examination	Year of passing	Subject	Board/ University	Percentage/ Grade
SSLC	2006	English, Garo, History Civics and Geography, Mathematics, Science, Economic Applications.	Indian Certificate of Secondary Education.	60.4%
HSSLC	2008	English, Garo (MIL), Physics, Chemistry, Biology.	Meghalaya Board Of School Education.	54.2%



B.Sc Botany honours	2011	Botany, Environmental studies, Chemistry, Zoology.	North Eastern Hill University	53.4%
M.Sc. Forestry	2013	Specilization in Agroforestry.	Mizoram University	70.11%
Ph.D. Course work.	2015	Recent Advances in Forestry, Research Methodology, Forest Utilization and Management.	Mizoram University	A

List of paper publications:

1. Sangma, A.J.T. and Sahoo, U.K. (2017). Utilization Pattern of Medicinal Plants by Different Tribes of Garo Hills of Meghalaya, North-East India. *American Journal of Ethnomedicine*. 4(1):1-8.
2. Sangma, A.J.T. and Lalnundanga. (2019). Non-timber forest products (NTFPs) used by Garo tribe of Rongram block in West Garo Hills, Meghalaya. *Indian Journal of Traditional Knowledge*. 18(1):151-161.

List of paper presentations:

1. Presented paper on “Studies on Forest Dependence by Different Tribes in Garo Hills of Meghalaya, India” in the seminar organised during the National Level Interaction Programme for Ph.D. Scholars held from 5th to 25th November, 2014, Mizoram University.
2. Presented paper on “Non-Timber Forest Products (NTFPs) Used By Garo Tribe of Rongram Block in West Garo Hills, Meghalaya” during the International Conference on Natural Resources Management for Sustainable Development and Rural Livelihoods held on 26th-28th October, 2017, Mizoram University.
3. Presented poster on “Wild Medicinal Plants used by the Garo Tribe of Meghalaya, North East India” in the National Seminar on “Conservation and Sustainable Use of Medicinal and Aromatic Plants” held on 13th and 14th September, 2018 in the Department of Forestry, Mizoram University.

4. Presented paper entitled “Patterns of Fuelwood Consumption by Ethnic garo Community in West Garo Hills, Meghalaya” in the National Conference on “Natural Resources Management & Sustainable Agriculture with reference to North-East India” during 28 & 29 January, 2020, organised by Faculty of Agriculture Sciences, Arunachal University of Studies, Namsai, Arunachal Pradesh.

List of conference/seminar/workshop attended:

1. Participated in the One Week Course on Applied Statistics held from 7th -12th September, 2015, organised by UGC Human Resource Development Centre, Mizoram University.
2. Participated in North East Regional Research Scholars’ Meet on 17-18 March, 2017, organised under UGC-SAP (DRS-II) Activity, Department of Life Science & Bioinformatics, Assam University, Silchar.
3. Participated in the 12th Annual Convention of Association of Biotechnology and Pharmacy (ABAP) & International Conference on Biodiversity, Environment and Human Health: Innovations and Emerging Trends (BEHIET 2018) organized at the School of Life Sciences, Mizoram University, during November 12 to 14, 2018.

PARTICULARS OF THE CANDIDATE:

NAME OF THE CANDIDATE: ANTICA JARANGCHI T. SANGMA

DEGREE: Ph.D.

DEPARTMENT: DEPARTMENT OF FORESTRY

TITLE OF THESIS: UTILISATION PATTERN OF NON-TIMBER FOREST PRODUCTS AND THEIR IMPACTS ON SOCIO-ECONOMIC STATUS OF ETHNIC COMMUNITIES IN WEST GARO HILLS, MEGHALAYA.

DATE OF ADMISSION: 27/7/2014

APPROVAL OF RESEARCH PROPOSAL: 8/5/2015

1. DRC: 28/4/2015
2. BOS: 8/5/2015
3. SCHOOL BOARD: 19/5/2015

MZU REGISTRATION NUMBER: 66 of 2012

Ph.D. REGISTRATION NUMBER & DATE: MZU/Ph.D./778 of 19.05.2015

EXTENSION (IF ANY): 18/5/2022

Head

Department of Forestry