



DIVERSITY OF NON-TIMBER FOREST PLANT PRODUCTS IN THE WEEKLY MARKETS OF MAIBONG SUB-DIVISION, DIMA-HASAO DISTRICT, ASSAM.

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ABSTRACT Weekly markets of Manderdisha, Hatikhali, Lungting, Maibong have been surveyed at different seasons for one year. The Non-Timber Forest Plant Products were documented through interview with vendors and buyers, personal observation and these are documented with scientific names/families, local (Dimasa) names, plant parts used, purpose of use and selling price. Forty (40) plant species belonging to nineteen (19) different families and thirty nine (39) genera were collected and documented. Among these fifteen (15) were recorded as medicines, twenty (20) as food and five (5) for other utility. 95% of the vendors are ladies suggesting their valuable contribution to family for sustenance and they are good informants also. Conservation practices are not scientific and suggestions have been included in this paper.

KEYWORDS : Weekly markets, Conservation practices, NTFPs.

INTRODUCTION:

Now-a-days there is an increasing interest as well as awareness about the importance of Non-Timber Forest Products (NTFPs). The Millennium Ecosystem Assessment makes a clear link between biodiversity ecosystem services and human well being (Millennium-Ecosystem-Assessment, 2005). The tropical and subtropical forests are the rich repository of highest level species bio-diversity and these species have great economic importance in the livelihood of the poor people living in the vicinity of the forests. Dependent upon the community, cultural practices and location, forest products may be a major source of livelihood, or form contribution to livelihoods, rather than comprising whole livelihoods (Wunder, 2001; Angelsen and Wunder, 2003). Forests provide a diverse range of products, which can be classified as "timber" and "non-timber" products. Human basic needs may be satisfied with these diversity of forest products; mainly as food, shelter, clothing, energy and medicine. Thus the non-timber forest products are of biological origin from natural or modified/managed forest lands. Excluding woody raw timber NTFPs include fruits and nuts, vegetables, fishes, medicinal plants, resins, aromatic plant products, a range of barks and fibres such as bamboos, rattans etc. In this study efforts are given to document plants providing medicine, food, and other utility, sold in the different weekly markets of Maibong sub-division, Dima-Hasao district, Assam. Economic as well as social status of the village people selling these products and how useful these products are in their daily life are also focused, along with the conservation practices adopted by them.

Study Area:

Maibong is one of the two sub-divisions of the Dima-Hasao District in Assam state. The name "Maibong" derived from two Dimasa words "Mai" and "Bang" (Mai, food grains; Bang, Plenty). The area is located between 25.30 degree N latitudes and 93.17 degree East longitudes. The climate is typically tropical to sub-tropical, the average annual rainfall ranges from 2200mm. to 2700mm. The average maximum temperature is 25-30°C and the average minimum temperature varies from 10-14°C. The relative humidity is between 73% to 84%. The forest of this area is evergreen, semi-evergreen and deciduous type. Maibong as well as the Dima-Hasao district is one of the world's 12 mega diversity hot spot region. This sub-division is a hilly area situated at the bank of Mahur river.

METHODOLOGY:

Four weekly markets were selected. In Maibong (Thursday), Lungting (Sunday), Hatikhali (Friday) and Manderdisha (Wednesday), for survey. Extensive survey was carried out for one year, starting from March 2015-February, 2016, covering both the dry and rainy season. Informations were recorded on the spot through personal observation and interviews with the vendors and buyers of the village. Careful documentation of the local knowledge was done with voucher collection, transcribing local names, photographs. Specimen were identified by the experts of the Department of Life-science and Bio-informatics, Assam University, Diphu Campus; consulting related

literatures, namely, Kanjilal et al. (1934-1920), Balakrishnan (1981 & 1983). The local Dimasa names, scientific names, plant parts used, mode of use and selling rate were recorded carefully. Informations were collected with proper prior consents of the informants.

RESULT:

In the present investigational work forty (40) NTFPs have been documented belonging to thirty six (36) genera and twenty five (25) families. Among these forty (40) documented plants fifteen (15) are used as medicines, twenty (20) as food and other five (5) are used for different purposes. The common genera are *Clerodendrum* (2), *Musa* (2), *Solanum* (3). The families reported are Caricaceae (1), *Amaranthaceae* (1), *Lamiaceae* (3), *Araceae* (2), *Apiaceae* (2), *Lauraceae* (1), *Begoniaceae* (1), *Bromeliaceae* (1), *Cucurbitaceae* (4), *Urticaceae* (1), *Araliaceae* (1), *Brassicaceae* (1), *Solanaceae* (3), *Musaceae* (2), *Fabaceae* (2), *Euphorbiaceae* (1), *Athyriaceae* (1), *Poaceae* (3), *Mimosaceae* (1), *Agaricaceae* (1), *Moraceae* (2), *Asteraceae* (1), *Acanthaceae* (1), *Lecythidaceae* (1), *Piperaceae* (1), *Discoraceae* (1). Plant parts used as fruit rants. The survey was associated with food, medicine, culture, worship and conservation. (11), Flower (4), Root (4), seed (3), Stem (5), Leaf (11), Rhizome (1), Bark (1). Data are represented by Pie Chart and Bar Diagramme. In table I, list of the medicinal plants, in table II, the list of food plants and in the table III, the list of plant products used for other different purpose with scientific names, local names, family, plant part used, purpose of use, selling rate are enlisted in tabular form.

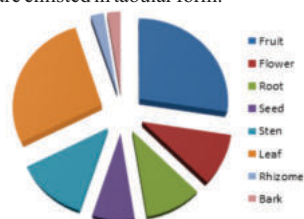


Fig : 1 Statistical representation of plant parts used

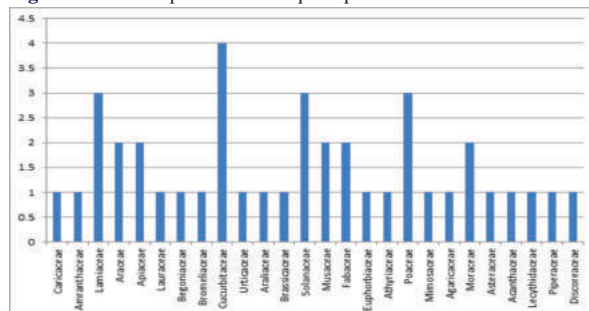


Fig : 2 Statistical representation of number of species according to family

Table 1 : NTFPs sold as Medicinal plants in the weekly markets

Local Dimasa Name	Scientific Name	Plant parts used	Medicinal uses	Selling price
1.Khao khluhaba	Benincasa hispida(Thumb Cogn./cucurbitaceae)	Fruit	Cures dysentery	Rs.10/fruit
2.Mishagi	Sacrichlamys pulcherrima Gaudich/urticaceae	Leaves	To reduce stored water in the body after child birth and cures stomach problem	Rs.10 /bundle
3.Kimt haodi	Trevesia pulmata (Roxb.ex.Lindl.)Vis/Araliaceae	Flower	Flowering buds are eaten raw to cure piles	Rs. 10./Bunch
4.Goyaphol	Carica papaya L.(1)/caricaceae	Fruits	Nearly ripe fruit cures worm infestation.Given to the mother after delivery for sufficient milk production	Rs.10/fruit
5..Khim sagajao	Celosia argentea L./Amaranthaceae	Leaf	Cures white spots on skin	Rs.10/bundle
6.Mishimao	Clerodendrum colebrookianum.walp./Lamiaceae	Leaf	Used to lower high blood pressure	Rs.10/bundle
7.Sgain gyopha	Clerodendrum infortunatum L./Lamiaceae	Leaf	To cure pain due to bee,,s bite	Rs.10/bundle
8.Pudina	Mentha arvensis L./Lamiaceae	Leaf	To get relief from gastric pain	Rs.5/bundle
9.Than gung gislim	Colocacia antiquorum Schott/Araceae	Leaf	Used to cure pain due to insect pain	Rs.10/bundle
10..Micuring	Centella asiatica (L) Urban/Apiaceae	Leaf	Leaf paste is used for oral consumption to cure food poisoning	Rs.5/bundle
11.Thai aizing	Litsea citrate Blume/\lauraceae	Fruit	Fruit juice is used to cure cough and cold	Rs.10/bundle of fruit bearing branch
12.Layamuri	Ananus comosus (L)Merr/Bromeliaceae	Fruit	Cures bronchial/ lung and worm problem	Rs.20/fruit
13.Alu mithri	Begonia roxburghii A.DC/ Begoniaceae	Rhizome	Cures any kind of skin problemson application	Rs..10/part
14.Gala	Momordica charantia L./Cucurbitaceae	Leaf/ Fruit	Both the boiled leaf and fruit is effective to cure high blood pressure	Rs.10 /parts of fruit
15.Yaul aishak	Sinapis arvensis L./Brassicaceae	Leaf	After delivery for sufficient milk production the boiled leaves are given to the new mother with rice	Rs.10/bundle

Table 2 : NTFPs sold as Food plants in the weekly markets

Dimasa name	Scientific name	Plant parts used	Mode of preparation	Selling price
1.Phantao	Solanum melongena L./Solanaceae	Fruit	Cooked as fry or khari/curry	Rs.10/ part
2.Melace	Lagenaria vulgaris Ser./Cucurbitaceae	Fruit	Cooked as vegetable in boiled form	Rs.10/ part
3.Ligon thai	Musa paradisiacal L.(1)/Musaceae	Flower	Cooked with dry prawn	Rs.20/ three fruits
4.Thailik	Musa acuminata Colla./Musaceae	Flower	Cooked in boiled form or with dry prawn	Rs.20/ three fruits

5.Thayung	Solanum sp./Solanaceae	Root	Boiled and then fried to get local delicacy	Rs.10/ Part
6.Sabai ah	Vigna radiate (L) r Wilczek/Fabaceae	Seeds	Seeds are boiled and cooked with dry fish and local made alkali/khari	Rs.30/ part
7.Thabanjublai	Manihot esculenta Crantz/Euphorbiaceae	Root	After rice it is consumed in boiled form and granted as staple food.	Rs.20/ bundle
8.Daomalai/Mugungre	Diplazium esculentum(Retz) SW/Athyriaceae	Stems bearing leaves	Stems with leaves are cut finely and fried or boiled	Rs.10/ bundle
9.Baknor	Eryngium foetidum./Apiaceae	Leaf	Leaves are used to add aroma in curry or other preparation	Rs.10/ three bundles
10.Bahlip	Colocasia esculenta (L)Schott./Araceae	Root	Roots are boiled and taken with rice	Rs.10/ bundle
11.Miyah	Melocana sp./Poaceae	culms	Boiled and then the cut pieces are cooked with meatand spices/Pickles are also prepared	Rs.10/ three piece
12.Man glai	Zea mays Linnaeus/Poaceae	seed	Either boiled or burnt and taken as rock salt	Rs.10/ piece
13.Baig repthai	Parkia trimoriana(DC) Merr./Mimosaceae	Fruit/Seed	Cut into pieces and fried	Rs.10/ bundle
14.Mukhum	Agaricus sp./Agaricaceae	Fruit	Cooked as vegetable	Rs.10/ unit
15.Sum umaikhri	Moras alba Linnaeus/Moraceae	Fruit	Raw sour fruits are preferred by children and taken with salt	Rs. 10/unit
16.Hagr anigala	Momordicacharantia var. unicata (Wildnow) H L Chakraborty/Cucurbitaceae	Fruits	Rs.10/bundle	Rs.10/ unit
17.Dermi	Ficus racemosa Linnaeus/Moraceae	Fruit	Raw fruits are preferred	Rs.10/ unit
18.Hagr ani kim khatai	Solanum nigrum Linnaeus/solanaceae	Stem	Young shoot are cut into pieces and prepared as vegetable	Rs.10/ bundle
19.Samberma	Spilanthes acumella C.B. Clarke/asteraceae	Shoot	Young shoot are cut into small pieces and prepared vegetable	Rs. 10/bundle
20.Alusho	Phlogocanthus curviflorus D Nees/Acanthaceae	Inflorescence	Dried or fresh inflorescences are cooked as vegetables	Rs.10/ two bundles

Table3 : Non Timber Forest Plant products (NTFPs) used for different purposes

Dimasa Name	Scientific Name	Plant parts used	Purpose of use	Selling price
1.Bonapthi	Careya arborea Roxburgh/Lecydidaceae	Leaf	Dried leaves are rolled and filled with grinded tobacco and used as biri	Rs.10/bundle of dried leaves
2.Michihasingri	Piper griffithii C. De Candolle /Piperaceae	Seed	Dried seeds are used as spices	Rs.10/Unit
3.Thaphunairo	Discoria villosa Linnaeus/Dicoreaceae	Tuber	Used as fodder	Rs.10/bundle
4.Themra	Acacia pennata (L.) Wild./Fabaceae	Bark	Used as a constituent to prepare Judima,, the local rice beer	Rs.15/bundle
5.Waah	Bambusa vulgaris Schrad ex. J.C.Wendl [2]/Poaceae	Stem	Used to construct house hold materials, houses and fences etc.	Rs.20/piece

DISCUSSION:

Most of the Dimasas are very poor and residing at remote places in the vicinity of the forests, thus, they are totally dependent on the bio

resources available in the forest areas. Most part of the hilly areas are inaccessible for cultivation. Though the dimasas prefer Jhum cultivation for growing crops like paddy, pulses, sesame etc. and some horticultural crops, but the Jhum lands cannot be used more than three consecutive years. Very poor people cannot afford required expenditures to grow crops in the Jhum lands. As a result, they have to be dependent on the forest products available in the nearby forest areas. The forest products are not only consumed by the collector family but also sold in the local weekly markets to get an extra income for sustenance and livelihood. However, some of the daily used and necessary products, they plant in their homestead gardens. Ladies and children take the responsibility to collect the forest products. 95% of the vendors in the markets are ladies. They tie the leafy vegetables /stems in bundles with approximate 100gms., 250gms, or 500gms. of weight. Seeds and small fruits are kept in equal divided parts. Large fruits are sold as one individual piece. Local lady vendors are well conversant with the knowledge of ethno-medicine. So to support them for their additional income, in different localities of the subdivision a number of community based wild edible plants garden can be an effective measure for conservation and sustainable management of wild edibles throughout the year and that can also ensure their food security (Medhi and Borthakur, 2012a). Again, the amount of the collected NTFPs mainly depends on the education, economic status, and the total land holdings of the collector. There is a growing consciousness about NTFP species playing a prominent role in increasing the income of farm households in the mountains (Dhyani and Khali, 1993). The use of weighing balance is rare. The plant products used as medicines and food are mainly sold at the market. Apart from these, some plant products used as construction material, fodder, fumigants, spices are also sold. Most of the medicinally important plants and plant products, sold in the market, are collected from the forest areas and riversides. A few food plants are originally forest products, but these are cultivated in the homestead gardens and in the jhum fields also for easy availability. The wild varieties of plants are tried to make domesticated for better conservation and some what different colour, taste, flavour/aroma, size etc. Generally the buyers are the local village people, but often the urban tribal people also visit the makeshift weekly markets to get their traditional food items.

Harvesting of NTFPs without proper scientific knowledge led to over exploitation of the products. Open access forests are prone to unsustainable harvest by collectors for commercial purposes (Tiwari et. al. 2008). The common and economically important NTFPs may be conserved by cultivating them in the agricultural fields and home stead gardens in a scientific way. Thus the pressure of over exploitation can be minimized and the earning level of the poor people will be uplifted. In this context, the local NGOs and the members of the Autonomous council of Dima-Hasao may take necessary steps by establishing the medicinal and other economically important plant gardens. Lastly it should be kept in mind that “the non-timber forest products claimed as important to rural livelihoods, poverty alleviation, and species and eco system conservation (Verina INGRAM, Ghislaine Bongess, 2009).

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