

## **CHAPTER 6: EVALUATION AND ASSESSMENT OF NON TIMBER FOREST PRODUCTS (NTFPs) WITH SPECIAL REFERENCE TO MISHING COMMUNITY**

---

### **6.1 Introduction**

Non-timber Forest Products (NTFPs) are objects of biological origin, both plants and animals, derived from the forests and allied land, uses for subsistence and cash income by forest dwellers. Tropical forests are considered to be important repositories of forest resources; especially NTFPs. Non-timber Forest Products have played a significant role in progressive growth in benefiting people and industries of a nation. Over thousands of year's human are collecting NTFPs for subsistence value and trade over. In recent decades, NTFPs obtained from plant resources, including seeds, flowers, fruits, leaves, roots, bark, latex, resins and other non-wood plant parts, have gained much attention in conservation circles [1]. Day- by-day the commercial trade of natural products, particularly plant medicines and crafts, is increasing in a huge manner and thus it is a major concern about overexploitation and threats to the valuable natural resources [2-10]. It was stated that around 4000 to 6000 non-timber plant species are of commercial importance world-wide [11, 12]. It has been estimated that Indian herbal industry collected more than 95% with about 400 plant species from wild populations that are used in the production of medicine, and is a huge concern for plant conservators [13]. Approx. 25 percent of 6.2 billion world population are dependent on forest resources including plant and animal products for their livelihood [14]. In a report it has been estimated that women

forest dwellers alone collect products worth about 700 million US dollars annually [15]. Indeed, NTFPs plays a very momentous role in rural economy in terms of providing employment, income potential and life sustenance [16]. The study on NTFPs has able to draw considerable attention throughout the country. But, the study of NTFPs in Assam shows negligible in comparison to other part of the India and North Eastern region in particular. Dattagupta *et al.* [17, 18] reported a study of NTFPs from Cachar district of Assam while, Sarma and Saikia [19] reported NTFPs from Majuli island and Khakhlari and Sarma [20] worked on NTFPs diversity from Garampani Wild Life Sanctuary, Karbi Anlong, Assam. To date, no systematic study has been carried out on potential utilization of NTFPs in Sonitpur district of Assam. And, no studies have been carried out related to ethnobotanical importance associated with Mishing community from this region. Therefore, an attempt has been made to carry out the exploration of NTFPs used by Mishing community in Sonitpur district of Assam.

## **6.2 Study area**

The study was conducted in entire erstwhile Sonitpur district where Mishing community is inhabiting, touching its major market and villages. Numbers of weekly markets were visited and studied particularly in Mishing dominated areas mainly viz. Khonamukh, Dharikati, Hatigate, Charduwar, Bhalukpong, Miri gaon, Boka gaon, No. 1 Miri Pothar, Kekokoli Miri Gaon and Sonai Miri gaon.

## **6.3 Result and Discussion**

During this study a total of 68 dicot plant species belonging to 57 genera under 42 families (Table 6.1) were recorded which are primarily used distinctly as NTFPs for different purposes by the community. Among the recorded species 28 species (42%) were trees, 22 species were shrubs (31%), 11 species were herbs (16%) and 7 species were climbers (11%). During the investigation, 132 peoples (82 males and 50 females) were interviewed in the market areas as well as in the house holds. Considering the age-groups, 48 respondents were of 32 – 45 years; 27 respondents of 46 – 55 years; 36 respondents of 56 – 65 years; 14 respondents of 66 – 75 years and only 7 respondents were 76 – 85 years old. Through the survey it has been estimated that majority of the NTFPs are collected and marketed by females.

It has been observed that Mishing community used NTFPs for medicine, edible fruits and vegetables, spice, fibre, gum/resins, insect repellent, rituals and traditional house makings. Sarma [21] mentioned that different forms of NTFPs are the integral parts of the day-to-day livelihood activity of tribal community particularly the Mishing community. The different plant parts collected as NTFPs are used for different purpose are also recorded during the study. Among them majority of the collected parts are used as medicine and vegetable (60%) followed by some parts are utilized as only vegetable (22%). Edible fruits composites about 8%, while mosquito repellent contributes about 3% and fibre and spice contain 2% and 1% respectively (Figure 6.1). it has also been estimated that leaves (48%) were most extensively collected, followed by fruit (30%), root (6%), resin/gum (5%), whole plant

and seeds (3% each), tuber and flower contributes 2% and bark is the lowest collected product with about 1% of the total species (Figure 6.2). The Mishing community collects these NTFPs mainly for medical purpose and vegetables. The NTFPs collected from the forest are also marketed in different local markets by the community and is another important source of livelihood. Alexander [22] reported that 500 million peoples living in and around the forest depends on them for meeting the socio-economic livelihood needs. In this investigation the market prices of each marketed items is also recorded with the seasons of availability.

**Table 6.1:** List of plant species collected by the Mishing community as NTFPs. Abbreviation used: CL- Climber; H-Herb; SH-Shrub; T-Tree

Sl. No.	Botanical name	Family	Vernacular name	Habit	Part used	Importance /Values	Approx. Local market value (Rs.) (if marketed)	Seasons /Availability
1.	<i>Acacia nilotica</i> (L.) Delile	Mimosaceae	Babul	T	Leaf, bark	Medicinal	Not sold	Whole year
2.	<i>Adhatoda vasica</i> Nees	Acanthaceae	Bahek phul	SH	Leaf	Medicine	10/1 bundle	Whole year
3.	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Bel	T	Fruit	Medicine/ Juice	5/ pc	Mar-June
4.	<i>Alternanthera philoxeroides</i> Griseb.	Amaranthaceae	---	H	Leaf	Vegetable	10/1 bundle	Whole year
5.	<i>Alternanthera sessilis</i> (L.) R. Brown ex DC.	Amaranthaceae	Morisha	SH	Leaf	Vegetable	10/1 bundle	Whole year
6.	<i>Amaranthus spinosus</i>	Amaranthaceae	Geyag	SH	Leaf	Vegetable	10/1 bundle	Whole year

---

	L.				with stem			
7.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Datha	SH	Leaf with stem	Vegetable	10/1 bundle	Whole year
8.	<i>Ananas comosus</i> (L.) Merr.	Annonaceae	Matikothal	SH	Leaf	Medicinal/ Vegetable	20/1 pair	
9.	<i>Andrographis paniculata</i> (Burm. f.) Nees	Acanthaceae	Kalmegh	SH	Leaf	Medicinal/ Vegetable	Not sold	Whole year
10.	<i>Anisomeles malabarica</i> (L.)R. Br.	Lamiaceae	----	SH	Leaf	Vegetable	15/1 bundle	Whole year
11.	<i>Antidesma acidum</i> Retz.	Euphorbiaceae	-----	SH	Leaf	Vegetable	12-15/1 bundle	Whole year
12.	<i>Artocarpus lacucha</i> Buch.-Ham.	Moraceae	-----	T	Fruit	Edible fruit	25/kg	Jun-August

---

---

13.	<i>Asparagus racemosus</i> Willd.	Asperagaceae	Satmul	CL	Root	Medicinal/ Vegetable	Not sold	Whole year
14.	<i>Averrhoa carambola</i> L.	Averrhoaceae	Kordoi	T	Fruit	Medicinal/ Vegetable	20/ kg	
15.	<i>Baccaurea sapida</i> (Roxb.) Muell.-Arg.	Euphorbiac	Buri aaye	T	Fruit	Edible fruit	5-7/ dozen	May- Oct
16.	<i>Bacopa monnieri</i> (L.) Wettst.	Scrophulariaceae	Brahmi	H	Whole plant	Medicinal/ Vegetable	10/bundle	Round the year
17.	<i>Bombax ceiba</i> L.	Bombacaceae	Simal	T	Capsule	Non Edible Used white fibre	100-120/kg	March-May
18.	<i>Boswellia serrata</i> Roxburgh ex Colebrook	Burseraceae	Dhuna	T	Resin	Mosquito repellent	56-60/ kg	Whole year
19.	<i>Bryophyllum pinnatum</i>	Crassulaceae	Duportenga	H	Leaf	Medicinal/	Not sold	Whole year

---

	(Lam.) Oken					Vegetable		
20.	<i>Butea monosperma</i> (Lam.) Taub	Papilionaceae	Palas	T	Gum/ resin	Medicinal	Not sold	Whole year
21.	<i>Centella asiatica</i> (L.)Urban.	Apiaceae	Manimuni	H	Whole plant	Medicinal/ Vegetable	Not sold	Whole year
22.	<i>Chenopodium album</i> L.	Chenopodiaceae	Jilmli	H	Leaf	Vegetable	5/bundle	Whole year
23.	<i>Citrus maxima</i> (J. Burman) Merr.	Rutaceae	Sinkin	T	Fruit	Edible fruit	5/fruit	May-Aug.
24.	<i>Clerodendron</i> <i>colebrokianum</i> L.	Verbenaceae	Pakkom	SH	Leaf	Medicinal/ Vegetable	Not sold	Whole year
25.	<i>Clerodendrum</i> <i>infortunatum</i> L.	Verbenaceae	Pakkom	SH	Leaf	Medicinal/ Vegetable	Not sold	Whole year
26.	<i>Cuscuta reflexa</i> Roxb.	Casutaceae	Rabonlota	CL	Root	Medicinal	Not sold	Whole year
27.	<i>Datura stramonium</i> L.	Solanaceae	Dhatura	SH	Root	Medicinal	Not sold	Whole year



28.	<i>Dendrocnide sinuata</i> (Bl.) Chew	Urticaceae	Sorat	SH	Flower	Vegetable	30-50/ 500gm	Oct-Jan
29.	<i>Dillenia indica</i> L.	Dilleniaceae	Sampa	T	Fruit	Vegetable	5-7/pair	Whole year
30.	<i>Dioscorea alata</i> L.	Dioscoreaceae	Nimti	CL	Tuberou s root	Vegetable	20-25/ kg	Whole year
31.	<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Caryophyllaceae	Laijabori	H	Leaf	Medicinal	Not sold	Whole year
32.	<i>Elaeocarpus</i> <i>floribundus</i> Blume	Elaeocarpaceae	Omora	T	Fruit	Medicine / Vegetable	20/kg	Apr- July
33.	<i>Eupatorium odoratum</i> L.	Asteraceae	Ayapan	SH	Leaf/ root	Medicinal	Not sold	Whole year
34.	<i>Ficus glomerata</i> Roxb.	Moraceae	Tejing /taksek	T	Leaf	Medicinal/ Vegetable	20/kg	Whole year
35.	<i>Ficus hirta</i> Vahl	Moraceae	Taksek	T	Fruit	Medicinal/ Vegetable	20/kg	Whole year

36.	<i>Flemingia strobilifera</i> (L.) W.T.Aiton	Papilionaceae	Makhioti	SH	Leaf	Mosquito Repellent /Rituals	10/ bunch	April
37.	<i>Garcinia cowa</i> Roxb. ex DC.	Clusiaceae	Thekera	T	Fruit	Vegetable	10/ fruit	Jul- Oct
38.	<i>Garcinia paniculata</i> Roxb.	Clusiaceae	Tepor tenga	T	Fruit	Vegetable	10/ fruit	Jul- Oct
39.	<i>Hedyotis diffusa</i> Willd.	Rubiaceae	Sarpajiva	H	Leaf	Medicinal/ Vegetable	Not sold	Whole year
40.	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Leunaapu m	T	Leaf	Medicinal/ Vegetable	Not sold	Whole year
41.	<i>Jatropha curcas</i> L.	Euphorbiaceae	Votera	T	Resin	Medicinal/ Vegetable	Not sold	Whole year
42.	<i>Justicia adhatoda</i> L.	Acanthaceae	Bahaka	SH	Leaf	Medicinal/ Vegetable	Not sold	Whole year
43.	<i>Leucas aspera</i> (Willd.)	Lamiaceae	Durum	H	Leaf	Medicinal/ Vegetable	5/bundle	Whole year

---

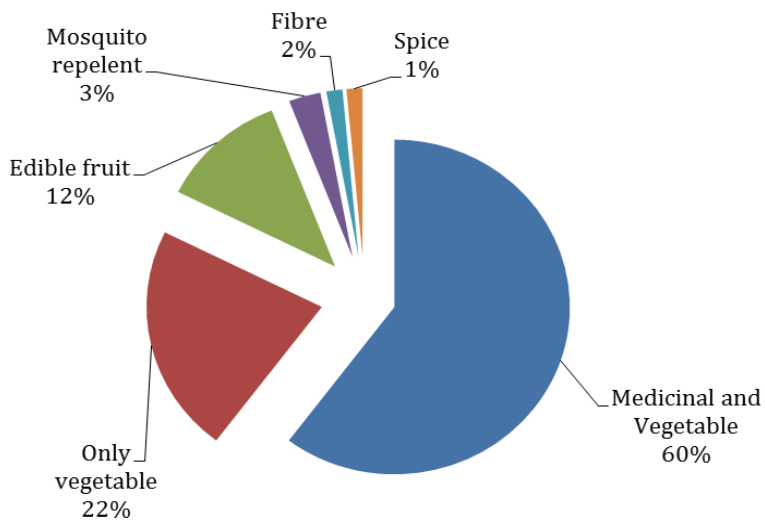
Link								
44.	<i>Lippia javanica</i> (Burm.f.) Spreng.	Verbenaceae	Pixas bon	H	Leaf/ flower/ stem	Medicinal	Not sold	Whole year
45.	<i>Mangifera indica</i> L.	Anacardiaceae	Aam	T	Fruit	Eaten Directly	30-40/ kg	May- Sep
46.	<i>Moringa oleifera</i> Lam.	Moringaceae	Munga	T	Fruit/flo wer/leaf	Medicinal/ Vegetable	60/kg	Feb-Apr
47.	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Narasingha	SH	Leaf	Vegetable	5/ bundle	Whole year
48.	<i>Nyctenthis arbor- tristis</i> L.	Oleaceae	Sewali	T	Flower	Medicinal/ Vegetable	30/500gm	Oct-Nov
49.	<i>Ocimum basilicum</i> L.	Lamiaceae	Tulsi	SH	Leaf	Medicinal/ Vegetable	Not sold	Whole year
50.	<i>Paederia foetida</i> L.	Rubiaceae	Bunka fore	CL	Leaf	Vegetable/ Medicine	10/ bundle	Whole year

---

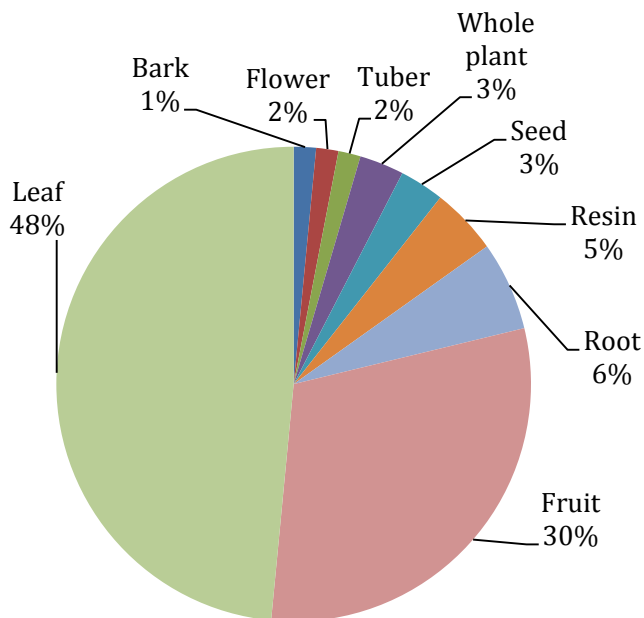
51.	<i>Phyllanthus acidus</i> (L.) Skeels	Phyllanthaceae	Pomlokhi /Pora - aamlokhi	T	Fruit	Eaten Directly	15-20/ kg	Sep – Nov
52.	<i>Piper longum</i> L.	Piperaceae	Pipli	CL	Fruit	Medicine / Spice	20-30/ 100gm	Whole year
53.	<i>Polygonum hydropiper</i> L.	Polygonaceae	Leubo	H	Leaf/ stem	Medicinal/ Vegetable	5/bundle	-----
54.	<i>Polygonum microcephalum</i> D. Don	Polygonaceae	Nekungkune	H	Leaf	Medicinal	Not sold	Whole year
55.	<i>Psidium guajava</i> L.	Myrtaceae	Madhuri	T	Leaf	Medicinal/ Vegetable	30/kg	Whole year
56.	<i>Punica granatum</i> L.	Punicaceae	Anar	SH	Leaf/ flower/ fruit	Medicinal/ Vegetable	40/ pair	Jan- Aug
57.	<i>Scoparia dulcis</i> L.	Plantaginaceae	Tisilkosa	SH	Leaf	Medicinal/	Not sold	Whole year

						Vegetable		
58.	<i>Solanum indicum</i> L.	Solanaceae	Banko	SH	Leaf	Medicinal/ Vegetable	15/500gm	Whole year
59.	<i>Solanum nigrum</i> L.	Solanaceae	Bangko	SH	Fruit	Vegetable	10/250 gm	Whole year
60.	<i>Solanum torvum</i> Sw	Solanaceae	Sitabanko	SH	Fruit	Medicinal/ Vegetable	20/250gm	Almost whole year
61.	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamun	T	Fruit	Eaten Directly	30-35/ kg	June-Sep
62.	<i>Syzygium jambos</i> (L.) Alston	Myrtaceae	Jamun	T	Fruit	Eaten Directly	30-35/ kg	June-Sep
63.	<i>Terminalia chebula</i> Retz.	Combretaceae	Silika	T	Fruit	Medicinal/ Vegetable	30-40/ kg	Feb-Mar
64.	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight. & Arn.	Combretaceae	Arjun	T	Bark	Medicine	20/kg	Whole year

65.	<i>Terminalia bellirica</i> (Gaert.) Rox.	Combretaceae	Bhomora	T	Fruit	Medicine	20/kg	Jul-Dec
66.	<i>Tinospora cordifolia</i> (Willd.) Miers	Menispermaceae	Amrita	CL	Leaf	Medicinal	Not sold	Whole year
67.	<i>Tylophora indica</i> (Burm, f.)Merr.	Asclepiadaceae	Anantamul	CL	Root	Medicinal/ Vegetable	Not sold	-----
68.	<i>Ziziphus jujuba</i> P.Miller	Rhamnaceae	Bon bogori	T	Fruit	Fruit /Pickle	15/ kg	Jan-April



**Figure 6.1:** Percentage of utilization of different NTFPs collected



**Figure 6.2:** Percentage composition of different plant parts of collected as NTFPs by Mishing community.

## 6.4 Different plant parts used by the community as NTFPs

### 6.4.1 Edible leaves

Leaves are the major plant parts (48%) that are collected by the community for different purposes as NTFP. The edible leaves are collected from - *Adhatoda vasica* Nees, *Alternanthera Philoxeroides* Griseb., *Alternanthera sessilis* (L.) R. Brown ex DC., *Amaranthus spinosus* L., *Amaranthus viridis* L., *Ananas comosus* (L.) Merr., *Andrographis paniculata* (Burm. f.) Nees, *Anisomeles malabarica* (L.)R. Br., *Antidesma acidum* Retz., *Bryophyllum pinnatum* (Lam.) Oken, *Chenopodium album* L., *Clerodendron colebrokianum* L., *Clerodendrum infortunatum* L., *Drymaria cordata* (L.) Willd. ex Schult., *Ficus glomerata* Roxb., *Hedyotis diffusa* Willd., *Hibiscus rosa-sinensis* L., *Justicia adhatoda* L., *Leucas aspera* (Willd.) Link, *Murraya koenigii* (L.) Spreng., *Ocimum basilicum* L., *Paederia foetida* L., *Polygonum microcephalum* D. Don, *Psidium guajava* L., *Scoparia dulcis* L., *Solanum indicum* L., *Tinospora cordifolia* (Willd.) Miers, *Amaranthus spinosus* L., *Amaranthus viridis* L., *Acacia nilotica* (L.) Delile, *Punica granatum* L. and *Lippia javanica* (Burm. f.) Spreng.

### 6.4.2 Edible fruits

From the recorded data it has been observed that the Mishing community collects numbers of fruits from different plant species for edible purposes which contribute about 30% of total recorded taxa under NTFPs. A total number of 21 species viz. *Aegle marmelos* (L.) Correa, *Artocarpus lacucha* Buch.-Ham., *Averrhoa*



*carambola* L., *Baccaurea sapida* (Roxb.) Muell.-Arg., *Citrus maxima* (J. Burman) Merr., *Dillenia indica* L., *Elaeocarpus floribundus* Blume, *Ficus hirta* Vahl, *Garcinia cowa* Roxb. ex DC., *Garcinia paniculata* Roxb., *Mangifera indica* L. *Moringa oleifera* Lam., *Phyllanthus acidus* (L.) Skeels, *Piper longum* L., *Solanum nigrum* L., *Solanum torvum* Sw, *Syzygium cumini* (L.) Skeels, *Syzygium jambos* (L.) Alston, *Terminali chebula* Retz., *Terminalia bellirica* (Gaert.) Roxb. and *Ziziphus jujuba* P.Miller are recorded.

#### 6.4.3 Other edible parts

**Flower:** *Dendrocnide sinuata* (Bl.) Chew and *Nyctenthis arbor-tristis* L.; **Roots:** *Cuscuta reflexa* Roxb., *Datura stramonium* L., *Asparagus racemosus* Willd., *Tylophora indica* (Burm,f.)Merr.; **Whole plant:** *Bacopa monnieri* (L.) Wettst. and *Centella asiatica* (L.)Urban.; **Tuberous Root:** *Dioscorea alata* L.; **Resin:** *Butea monosperma* (Lam.) Taub; **Bark:** *Terminalia arjuna* (Roxb. ex DC.) Wight. & Arn.

#### 6.4.4 Non-edible plant parts collected for different purposes

There are some non-edible plants parts collected from the forests for different purposes, which are viz. **Resin:** *Boswellia serrata* Roxb. ex Colebr.; **Capsule:** *Bombax ceiba* L.; **Leaf:** *Flemingia strobilifera* (L.) W.T. Aiton

### 6.5 Conclusion

Several studies reported that NTFPs plays significant role in the livelihood pattern of tribal community living in the adjacent areas of different forests [23-25]. From the current study it is very clear

that the Mishing community inhabited in forest areas are dependent upon NTFPs for their sustenance. During the present it has been found that study 68 species are used as NTFPs for different purposes by the Mishing community and considerable amount of NTFPs are collected for their cash income and marketed. It has been observed that the majority of the NTFPs were collected throughout the year and supporting their major socio-economic conditions. Through conversation with individuals of different age groups it has also been noticed that the traditional knowledge on the use of different NTFPs among the youth is been decreasing. Numbers of vendors also expressed that the forest resources are depleting day by day which induced exploitation of valuable forest resources beyond their sustainable limit and is also ascribed to the loss of forest habitat due to several anthropogenic activities. Overall, the forest resources ensure the need of socio-economic and ecological safety of peoples living in forests and nearby areas. It has been established that the livelihood and socio-economic conditions of Mishing community largely rely upon NTFPs to fulfil their food and other domestic needs and even for their cash income. However, there is a need of future study to quantify the amount of extracted forest products and degree of dependency on NTFPs as a source of income. Availability and harvesting of NTFPs for sustainable livelihood of the community and ecological balance for near future also need to examine.

## **6.6 Bibliography**

- [1] Ticktin, T. The ecological consequences of harvesting non-timber forest Products, *Journal of Appl. Ecol.* 41(4): 11 – 21, 2004.

- [2] Kuipers, S. E. *Trade in medicinal plants. Medicinal Plants for Forest Conservation and Health Care* (Eds. G. Bodeker, K.K.S. Bhat, J. Burley and P. Vantomme), Food and Agriculture Organization, Rome, Italy, 1997.
- [3] Lange, D. *Europe's Medicinal and Aromatic Plants. Their Use, Trade and Conservation*. TRAFFIC International, Cambridge, UK, 1998.
- [4] Lange, D. and Schippmann, U. (1997) Trade Survey of Medicinal Plants in Germany. Bundesamt für Naturschutz, Bonn, Germany
- [5] Rebelo, A.G. and Holmes, P.M. Commercial exploitation of *Brunia albiflora* (Bruniaceae), *South African Journal of Botany* 45: 195–207, 1998.
- [6] Vásquez, R. and Gentry, A.H. Use and misuse of forest harvested fruits in the Iquitos area, *Conservation Biology* 3: 350–361, 1989.
- [7] Tiwari, B.K. Non-timber forest produce of north east India, *Journal of Human Ecology* 11: 445–455, 2000.
- [8] Rawat, G.S. Conservation status of forest and wildlife in the Eastern Ghats, India *Environmental Conservation* 24: 307–315, 1997.
- [9] Cunningham, A. B. *Applied Ethnobotany: People, Wild Plant Use and Conservation*. Earthscan Publications Ltd, London and Sterling, VA, 2001.
- [10] Clay, J.W. *The impact of palm heart harvesting in the Amazon estuary. Harvesting Wild Species: Implications for Biodiversity Conservation* (ed. C.H. Freese), John Hopkins University Press, Baltimore, MD, 1997.
- [11] Iqbal, M. *International Trade in Non-Wood Forest Products*.

- An Overview*. Food and Agriculture Organization, Rome, Italy, 1993.
- [12] SCBD, *Sustainable Management of Non-Timber Forest Resources*. CBD Technical Series 6. Secretariat of the Convention on Biological Diversity, Montreal, Canada, 2001.
- [13] Uniyal, R.C., Uniyal, M.R. and Jain, P. *Cultivation of Medicinal Plants in India. A Reference Book*. TRAFFIC India and WWF India, New Delhi, India, 2000.
- [14] Debbie, S. Risks or remedies? Safety aspects of herbal remedies in the UK. *Jour. Royl. Soc. Med.* 91: 294 – 296, 1998.
- [15] Hegde, R., Suryaprakash, S., Achoth, L., and Bawa, K.S. Extraction of non-timber forest products in the forests of Biligiri Rangan Hills, India, 1: contribution to rural income. *Econ. Bot.* 50(3): 243 – 250, 1996.
- [16] Negi, V.S., Maikhuri, R. K., and Rawat, L. S. Non-timber forest products (NTFPs): a viable option for biodiversity conservation and livelihood enhancement in central Himalaya, *Biodivers. Conserv.* 20:545 - 559, 2011.
- [17] Dattagupta, S., Gupta, A. and Ghose, M. Non-Timber Forest Products of the Inner Line Reserve Forest, Cachar, Assam, and India: dependency and usage pattern of forest-dwellers. *Assam Univ. Jour. Sci. Tech.: Biol. Environ. Sci.* 6 (1): 21 – 27, 2010.
- [18] Dattagupta, S., Gupta, A., and Ghose, M. Diversity of non-timber forest products in Cachar District, Assam, India, *Jour. For. Res.* 25(2): 463 – 470, 2014.
- [19] Sarmah, R., and Saikia, A. Non-Timber Forest Products:

- Diversity and Used Pattern at Majuli the Brahmaputra River Island of Assam, India, Research and Reviews, *Journal of Botanical Sciences* 3(3):41-47, 2014.
- [20] Khakhlary, B., and Sarma, S. Non-Timber Forest Product: Case Study Of Diversity In Garampani Wildlife Sanctuary, Karbi Anglong District, Assam, India, *International Journal of Innovative Research and Advanced Studies* 4 (5):53-55, 2017.
- [21] Sarma, R. *Non Timber Forest Products and their utilization pattern in Changlang district of Arunachal Pradesh*. Ph.D thesis, Rajiv Gandhi University, Itanagar, India, 2006.
- [22] Alexander, S.J., McLain, R.J., and Blanter, K.A. Socio-Economic Research on Non-Timber Forest Products in the Pacific Northwest. *Journal of Sustainable Forestry* 13(3):95-103, 2001.
- [23] Johnson, T.S., Agarwal, R.K. and Agarwal, A. Non-timber forest products as a source of livelihood option for forest dwellers: role of society, herbal industries and government agencies. *Current Science* 104(4): 440-443, 2013.
- [24] Pandey, R.K. and Saini, S.K. Edible plants of tropical forests among tribal communities of Madhya Pradesh. *Indian Jour. Trad. Knowl.* 6 (1): 185 – 190, 2007.
- Walter, S. *Non-Wood Forest Products in Africa. A Regional and National verview*. Les produits forestiers non ligneux en Afrique. Un aperçu regional et national. Working Paper Document de Travail FOPW/Oll1. Food and Agriculture Organization, Forestry Department, Rome, Italy, 2001.
- [25] Shanker, U., Ganeshaiah, R., Krishnan, K.N., Ramya, S.,

Meera, R., Aravind, C., Kumar, N.A., Rao, A., Vanaraj, D., Ramachandra, G., Gauthier, J., Ghazoul, R., Poole, J., and Reddy, B.V. Livelihood gain and ecological cost of non-timber forest product dependence: assessing the roles of dependence, ecological knowledge and market structure in three contrasting human and ecological settings in South India. *Environ. Conserv.* 31(3): 242 – 253, 2004.