



Utilization of Non-timber forest products from village Plantation forests managed by Aizawl Forest Development Agency, Mizoram, India

K. Lalhmingsangi and U.K. Sahoo*

Department of Forestry, Mizoram University, School of Earth Sciences & Natural Resource Management, Aizawl -796004, Mizoram, India
uksahoo_2003@rediffmail.com

Available online at: www.isca.in, www.isca.me

Received 20th June 2016, revised 29th July 2016, accepted 2nd August 2016

Abstract

Non Timber Forest Products (NTFPs) are very vital in improving the livelihood of the villagers particularly to the weaker section of the society. A survey was conducted in five Village Forest Development Committee (VFDC) plantation areas under Aizawl Forest Development Agency (FDA) - Lungleng 1, Muthi, Sihphir vengpui and Sumsuih VFDC plantation site. VFDC is an implementing agency at village level. The contribution made by NTFPs towards alleviation of poverty is immense. It was observed that among all the NTFPs Bamboo pole has the highest percentage of household involved in harvesting i.e,42% of household, followed by fuel wood 37%, broom grass 35%,vegetables 30%,fodder 19%, fruits 6%and least in medicinal plants 5%. The villagers mainly harvest for their own consumption as they are abide by VFDC rules which allow them to harvest only for their own consumption and in a sustainable way. This provides a greater lasting impact to the villagers and gives them a sense of ownership. Management of VFDC plantation sites which has rich NTFPs resources might not give them direct benefits in cash, but it sure does provide them food and shelter which is the other two basic necessities of live.

Keywords: Non Timber Forest Products (NTFP), Aizawl FDA, Village Forest Development Committee (VFDC), Utilization, Livelihood.

Introduction

In order to emphasize the need for people's participation in natural forest management, the Government of India in 1998 institutionalized Joint Forest Management (JFM) under participatory mode by involving a two-tier mechanism i.e. Forest Development Agency (FDA) at divisional level and Joint Forest Management Committee (JFMC) at village level for overall improvement of the vast degraded community jhum lands and other degraded forest lands in the country. JFM thus became a national program which emphasized the villagers to develop a sense of ownership and conserve the forests through potential use of non-timber forest products (NTFPs). The program was popular so quickly that by 2001, 25 of the 28 Indian states came out with their own programme of partnership and usufruct sharing mechanisms.

In the state Mizoram, it was started in the year 2001 along with other 25 state wherein major emphasis was given to the regeneration of non-timber forest products through JFMC¹. Several species of non-timber forest product species were introduced in the degraded and deforested areas because of the increasing awareness on their economic potential in the state. Over the years, there are significant strides made in promoting JFMs and introduction of various species into the barren lands, however, there is little information about how these species are used and to what extent they have been contributing to the livelihood of the people².

NTFPs include plants used for food, beverages, forage, fuel, medicine, fibres and biochemicals; animal, birds and fish for food, fur and feathers, as well as their products such as honey, lac, silk etc. thus covering all goods of biological origin other than wood derived from forests, other wooded lands and trees outside forests³⁻⁵. The role of NTFPs in other uses such as use as stall bedding, green manure; as construction material and household utensils; for basket and mat-making; and for ornamentation and religious purposes are very well reported⁵. NTFPs can be put both in subsistence and commercialized contexts; therefore people associate them with enormous value³⁻⁵. Throughout the world, the diversity of NTFPs is important to the livelihoods of forest-edge populations⁶ and therefore NTFPs are regarded as potential pillars of sustainable forestry⁷. The forests provide a wide array of tangible and non-tangible goods and services to the people and help the poor in overcoming poverty through sell on various products; but there is a lack understanding how socio-cultural status determine the utilization of NTFPs⁸. Under the FDA regime, the NTFPs from the plantation sites are not allowed to be accessed freely and the exploiters have to abide by various rules and regulations⁹.

Several Forest Development Corporations (FDCs) got established in pursuance with the recommendation of National Commission of Agriculture to enhance the production of forest produce from the JFM areas, to restore the productivity of degraded forest lands and to help in the trade of potential NTFPs¹⁰. According to one estimate, export earnings from

NTFPs account for 60-70% of the total export earnings from forest products in India and this proportion is rising^{11,12}. In view of the fact that sustainable harvest and management of NTFPs is a big challenge, application of traditional knowledge in the harvesting and maintenance of forest products could be effectively made through participatory forestry. Traditional system of management ensures collective collection of resources, sharing of whole range of products while protecting the village resources from people of other villages, enhancing a fair and equitable use of resources through conservation of natural resources in plantation areas. This paper describes the utilization of NTFPs from village plantation forests managed by Aizawl FDA in Mizoram.

Materials and Methods

Study site: The study on utilization of non-timber forest products was carried out in five Village Forest Development Committee (VFDC) plantation sites of Aizawl FDA viz. Lungleng 1 (23°39' 56.3"N 092°39'40.7"E), Muthi (23°46'23.4"N, 092°45'50.5"E), Ailawng (23°40'59.5"N, 092°37'49.9"E), Sihphir vengpui (23°29'52.0"N, 092°43'39.6"E) and Sumsuih village (23°29'04.5"N, 092°44'25.9"E) during the year 2014-2015. The VFDC plantation sites are located 2-5 kms. away from the villages. They are established in the community land and are financially taken care by Forest Department and the respective localities give the moral support which gives them a sense of ownership.

Methodology: Participatory Rural Appraisal (PRA) method was adopted for the field study. Both primary and secondary data was obtained through semi-structured questionnaire, field observation, personal interview and group discussion with the villagers. Both men and women are included in the interview to avoid gender biasness in the data. Detailed information on marketing channel of NTFP was also collected from the first hand NTFP exploiter and stakeholders were interviewed from roadside market and nearby junction selling points. The socio-economic profiles of the villages are also noted to know the real picture of the village. Information on NTFPs in different aspects like use, locally growing condition, and place of availability, state of collection, use category and marketing are also collected from VFDC area by participatory discussion method. Personal observations were also made in the fields to note the noticeable event, which helped to draw conclusions. Besides, we also interviewed officials such as the District Forest Officer, Range Officer, and other forest officials of different ranges.

Utilization and marketing chain of NTFPs: In each of the five villages, the detailed information on their utilization was collected and as many as 10% household questionnaires were also circulated to provide information on different utilization of NTFPs, parts used, mode of harvesting and marketing channel from each of the villages.. This generate information on to what extent they utilized NTFP from the VFDC plantation sites. Socio economic survey, land use pattern, value addition on NTFP and marketing strategy has also taken into consideration.

Household level data include socio economic information of the sample households such as family size, age and sex, structure of the family, literacy level of each member of the family, landholding size, major occupation and infrastructure .Purposive sampling design was used for different marketing participants: collectors, processors, suppliers and producers of NTFP handicrafts.

Results and Discussion

Socio economic profile of the studied village: Among all the studied villages Sihphir vengpui has the highest population and 247 household followed by Muthi village with 187 household, Lungleng 1 164 household, whereas Sumsuih village has 194 household and least population was found in Ailawng village with 154 household. In all the studied villages the occupation of majority of the villagers are agriculture and practice shifting cultivation in the community land and some of them have horticultural plantation in their own land. Besides working in their field, most of the villagers can work as daily labours if they got an opportunity. A cattle rearing was common among the villagers of Muthi which they got through New Land Used Policy (NLUP). Since the main source of income is agriculture which was on a small plot of land, they have to struggle for their living and as many as 20-50% of the villagers are registered in Below Poverty Line (BPL) in all the studied villages. This less income also makes them to harvest more NTFPs. The greater dependence on NTFPs of low-income communities (compared to high-income groups) is also apparent from the work of others¹³⁻¹⁵. Fifty to Cent percent households are VFDC beneficiaries in all the studied villages. Literacy rate was high in all the studied villages it was 97.5%.

Agricultural products are mostly to meet their immediate cash needs and daily consumption. If they produce surplus, then they sold it to their own village. To secure their livelihood, villagers adopt multiple livelihood strategies, including exploiting available NTFP from the VFDC plantation site. They harvest the NTFPs all through the year in their own seasons. 98% of the villagers are part time NTFP exploiter and harvest NTFP from VFDC plantation sites mainly during the unavailability of cash crops from their jhum field. And the other 2% full time NTFP exploiters who harvest NTFPs all through the year are mainly the landless farmers and widow.

Infrastructure: Anganwadi centres, Primary, Middle and High school were present in all the studied villages. Health Sub centers was also available in all the villages except Lungleng 1 village and the villagers; in case of health emergency they used to go to their nearby town. Bank facilities were absent in all the four villages except in Sihphir vengpui village. All the villages are having a proper connected road and public transport to the main town Aizawl.

Collection and Utilization of NTFPs: The utilization of different NTFPs differed from each other in all the surveyed villages. Villagers harvest NTFP from the VFDC plantation site as well as from the other community forest.

Table-1
Socio economic profile of the 5 surveyed villages under Aizawl FDA

Attributes	Surveyed VFDC Villages				
	Lungleng I	Muthi	Ailawng	Sihphir Vengpui	Sumsiuh
Population					
No. of Household	164	187	154	247	194
Male	420	480	354	650	443
Female	480	510	378	1100	427
Total Population	900	990	732	1750	870
No. of BPL & AAY Household	67&30	30&29	35&30	49&36	63&46
No. of VFDC beneficiaries (hh)	132	125	154	195	100
Educational Level					
Matriculation	49	119	25	400	120
Graduate	21	15	10	90	32
Literacy rate %	97	98	98	98	97

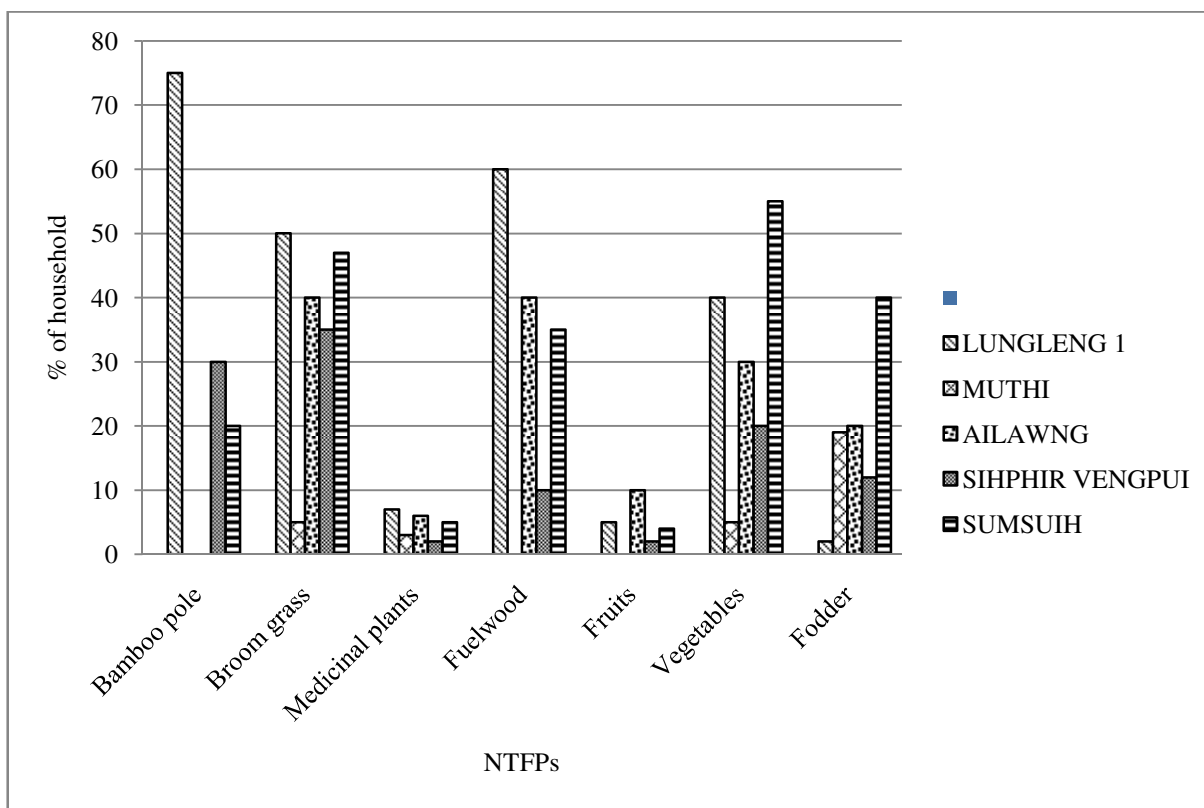


Figure-1
Household involvements in harvesting of NTFPs (%/hh/year)

Bamboo pole has the highest percentage (41%) of household involved in harvesting, followed by fuelwood (36.25%), broom grass (35.4%), vegetables (30%), fodder (18.6%), fruits (5.25%) and least in medicinal plants (4.6%) (Figure-1). The nine bamboo species collected are *Bambusa tulda*, *Melocanna baccifera*, *Dendrocalamus longispatus*, *Schizostachylum dullooa*, *Bambusa vulgaris*, *Dendrocalamus giganteus*, *Schizostachyum fuchsiatum*, *Dendrocalamus hookeri*, and *Dendrocalamus hamiltonii*. The villagers harvest all through the year but harvest more during winter season. They believed that harvesting of bamboo pole during dry season gives durability to the bamboo pole and are less affected by fungus.

The fuel wood species collected by the villagers are *Quercus pachyphylla*(Kurz) Rehder, *Anogeissus acumulata* (Roxb.exDC) Guill., *Mesua ferrea*Linn, *Schima wallichii* Choisy, *Bischofia javanica* Blume and *Callicarpa arborea* Roxb. They collected poles of *Melocanna baccifera* in time of scarcity of other fuel wood. They mainly collected for their own consumption. Even though every household are using fuel wood and broom grass, the percentage of household involved become lesser i.e., 36.25% and 35.4% because most of the villagers collect from other community forest since the location of VFDC plantation sites are farer as compared to the other community forest. Broom grass was considered to be the most important NTFP from utilization prospective¹⁶. The immature broom grasses are also harvested for fodder in Muthi village.

Table-2

Vegetable ranking based on local utilization from 5 surveyed villages

Vegetables	Local Name (Mizo)	Rank
Bamboo shoots	Mautuai	1
<i>Amomum dealbatum</i>	Aidu	2
<i>Amorphophallus nepalensis</i>	Telhawng	3
<i>Eurya acuminata</i>	Sihneh	4
<i>Solanum nigrum</i>	An hling	5
<i>Picria felterrae</i>	Khatual	6
<i>Acmella paniculata</i>	Ansa-te	7
<i>Oroxylum indicum</i>	Archangkawng	8
<i>Homalomena aromatic</i>	Anchiri	9

The following 10 species of vegetables are collected by 30% of household from the VFDC plantation sites. They are bamboo shoots (*Melocanna baccifera* and *Dendrocalamus longispatus*), young shoots of *Amomum dealbatum* Roxb, tuber of *Amorphophallus nepalensis* (Wall.) Bogner & Mayo, leaves

and shoots of *Homalomena aromatic* (Spreng.) Schott, young leaves of *Eurya acuminata* DC, *Acmella paniculata*, *Picria felterrae* leaves are also harvested and shade dried after which they added along the soup of meat. They believed that this plant will reduce the fatty part of the soup. *Oroxylum indicum* fruit are also harvested and consumed it after removing the peel, *Solanum nigrum* Linn leaves are also boiled as consumed it. Besides immature broom grass, *Imperata cylindrical*, leaves and young shoots of *Mikania micrantha*, *Blumea lanceolaria*, *Bidens pilosa*, stem of *Musa balbisiana* are harvested for fodder, 18.6% are involved in harvesting. Collection and availability of NTFPs for use as food are more during the summer season, which is also the period with least availability of job¹⁷. *Phyllanthus emblica* Linn., *Garcinia lanceifolia* Roxb, *Callaria brachiata* (Lour.) Merr., *Artocarpus lakoocha* Linn and *Artocarpus heterophyllus* Lam. are the fruits harvested from the plantation site. They do not harvest the wild fruits purposely; they usually harvest those fruits when they pass by that area for collecting fuelwood and other edible leaves. 5.25% households are involved in harvesting of fruits.

Least involvement in harvesting of NTFPs are found to be in medicinal plants 4.6%. Even though the VFDC plantation site has a rich diversity of medicinal plants. People do not harvest and utilized as it is supposed to be because the youths of today has lesser knowledge on herbal. The medicinal plants used by the villagers along with their parts used as listed in Table-3. Medicinal plants do not have specific seasons of harvesting. Villagers harvest it when they are in need and consumed it in fresh form.

Villagers tend to collect more shrubs and herbs than the trees and climbers (Figure-2). This is because of the easy accessibility of these shrubs and herbs. While it was highest in trees followed by herbs and shrubs which was the same findings with Sahoo 2012. And with respect to part wise distribution leaves has the highest percentage of consumption, followed by roots, fruits and whole plant and least in latex and bark. Easy harvesting and high productivity of leaves leads to the high consumption as compared to other parts of medicinal plants.

Amount of NTFPs harvested: The amount of harvesting of various NTFPs differs depending upon the availability, demand and choice of the species by the villagers (Figure-3). Fuelwood has the highest amount of harvested by the villagers' i.e., 55Kgs/hh/year out of which 46.25 Kgs are household consumption. An average of 40Kgs/hh/year in bamboo pole and the average amount is less because harvesting was nil in Muthi and Ailawng village. Household consumption was 25Kg/hh/year and the rest was sold after processed it in to locally made handicrafts. Followed by fodder 39Kgs and all are for home consumption (Figure-4). They do not get cash benefit directly but gets indirectly through their livestock. It was 19Kg/hh/year in vegetables out of which 16Kg are household consumption, 18Kgs/hh/year in broom grass out of which 4Kgs/hh/year are household consumption and least in medicinal

plants and fruits 4kg/hh/year all for home consumption. It became the least because people harvest medicinal plants only the exact required amount and fruits also only for home consumption. In Muthi village, harvesting of fruits was nil

because the plantation sites was conserved and protected as Social Park in which villagers are not allowed to extract the resources.

Table-3
List of medicinal plants grown in different villages under Aizawl FDA

Species	Local name (Mizo)	Family	Habit	Parts used	Purpose	Availability
<i>Adiantum philippense</i> L.	Lungpuisam	Adiantaceae	Herb	Whole plant	The whole plant is useful in in dysentery and ulcers.	High
<i>Aporosa roxburghii</i> (Wall.exLindl.) Baill.	Chhawntual	Euphorbiaceae	Tree	Bark	Bark is boiled and used as a remedy stomach ulcer and diarrhoea	Medium
<i>Artemisia vulgaris</i> L.	Sai	Asteraceae	Shrub	Leaves	Decoction of leaves used in treatment of stomach-ache	Medium
<i>Benincasa hispida</i> (Thunb.) Cogn	Mai-pawl	Cucurbitaceae	Climber	Fruit	Juice of the fruit is recommended for cholera, diarrhoea and vomiting.	High
<i>Blumea lanceolaria</i> (Roxb.) Druce	Buarze	Asteraceae	Herb	Leaves	Decoction of leaves is given to cancer patient to strengthen them.	Medium
<i>Costus speciosus</i> (J.Konig) Sm.	Sumbul	Zingiberaceae	Herb	Roots	Juice of crush roots given to kidney related problems	High
<i>Dendrocnide sinuate</i> (Blume) Chew	Thakpui	Urticaceae	Shrub	Roots	Decoction of roots used in disease of liver, jaundice and skin itching.	Low
<i>Elaeagnus pyriformis</i> Hook.f.	Sarzuk-te	Elaeagnaceae	Shrub	Roots	Decoction of the roots given to women after delivery.	Medium
<i>Euphorbia royleana</i> Boiss.	Chawng	Euphorbiaceae	Shrub	Latex	The milky juice is used to treat ringworm.	Low
<i>Hedyotis scandens</i> Roxb.	Kelhnamtur	Rubiaceae	Climber	Leaves	Decoction of leaves is used in urinary problems.	Low
<i>Imperata cylindrical</i> (L.) Rausch.	Di	Poaceae	Shrub	Roots	Decoction of roots used for expelling thread worms from the body.	Medium
<i>Mikania micrantha</i> Kunth	Japan hlo	Asteraceae	Climber	Leaves	Juice of the leaves used as antiseptic for cuts.	High
<i>Litsea monopetala</i> (Roxb.) Pers	Nauthak	Lauraceae	Tree	Leaves	Crushed leaves applied to cattle sores and also added along the food.	Medium
<i>Lindernia ruelliioides</i> (Colsm.) Pennell	Tha-suih	Scrophulariaceae	Herb	Whole plant	The whole plant is used as a poultice for cramps, rheumatism, sciatica and wounds	Medium
<i>Securinega virosa</i> (Roxb.ex wild.) Baill.	saisiak	Euphorbiaceae	Shrub	Leaves	Decoction of the leaves used for bath in case of measles and chickenpox	High
<i>Sapindus mukorossi</i> Gaertn	Hlingsi	Sapindaceae	Tree	Fruit	Infusion of the fruit pulp is applied to sore throat and also fruits eaten by tonsillitis.	Low
<i>Homalomena aromatic</i> (Spreng.) Schott	Anchiri	Araceae	Herb	Leaves	Decoction of the leaves is consumed by women to increase breast milk.	Low

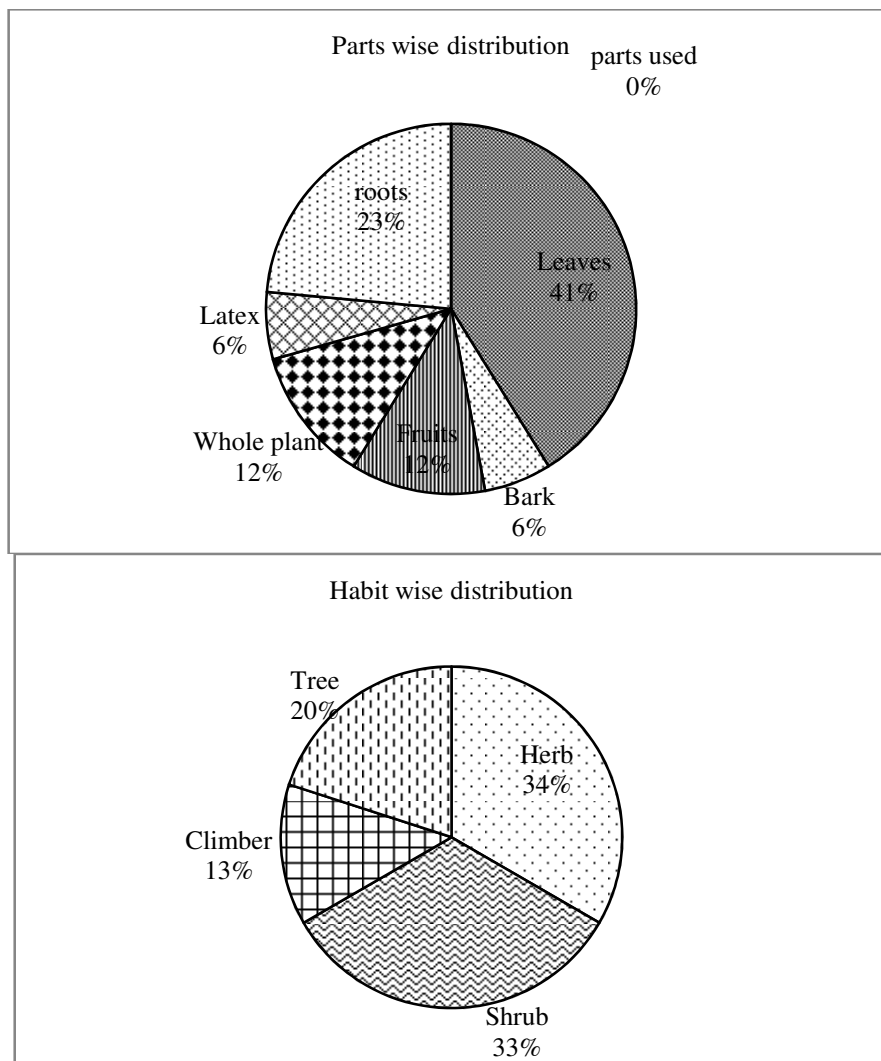


Figure-2
 Habit wise and Parts wise distribution of medicinal plants

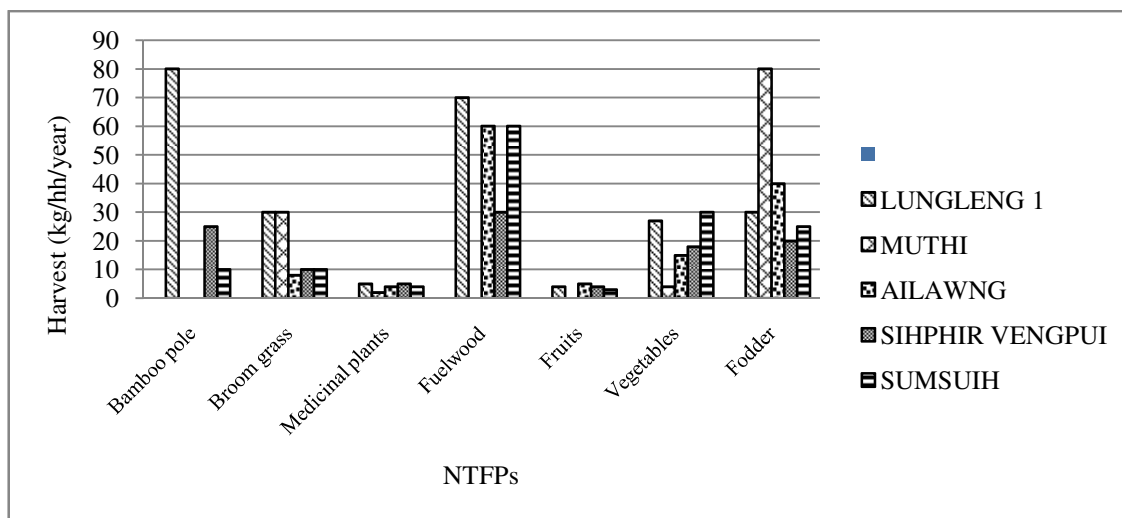


Figure-3
 Quantity of NTFPs harvested (kg/hh/year) in different villages at Aizawl FDA

Contribution of NTFPs to household income: Bamboo pole gives the highest amount of income in Lungleng village from all the NTFPs (Rs 700/hh/year) followed by vegetables, fuelwood and broomgrass (Figure-5). It was nil in medicinal plants, fruits and fodder. Income from bamboo pole is mainly from weaving the local carrier *Paitem* and *Paikawg* along with rattans. The local rate of the carrier are 500 (Paitem) and 600 (Pai kawng). The numbers of weaving local carrier depends on the order they get. Old aged person are mainly involved in weaving different locally used handicrafts. Since they could not do the major hard work this gives them a great contribution the family. They also used it for weaving poultry basket and also used for fencing. Though the return for labour involved in NTFP extraction and marketing is comparatively higher to the existing wage rate of the primary sector, the labour supply was skewed towards the latter¹⁸. The life of Mizo villagers are closely related with

bamboo pole, they utilized in all possible way, from the simplest material to a useful construction materials. Sahoo¹⁹ included bamboo poles among the first priority species of NTFPs in the state. Most of the villagers are part time NTFP exploiter and mainly harvest for their own consumption. At present, commercial exploitation of NTFPs is done on a small scale and for a few products only. Primary collectors still receive very low returns from NTFPs²⁰ if they had surplus they sell it to their neighbours. Of all the vegetables bamboo shoots has the highest consumption rate in all the surveyed villages. In case of vegetables, the first hand exploiter or any family members usually sell directly it in the local market. Most of the harvested products were found consumed at household level²¹. The villagers are well benefitted from NTFPs in different ways, but in terms of cash it does not give a huge amount but it gives them a lot of benefits which are in count.

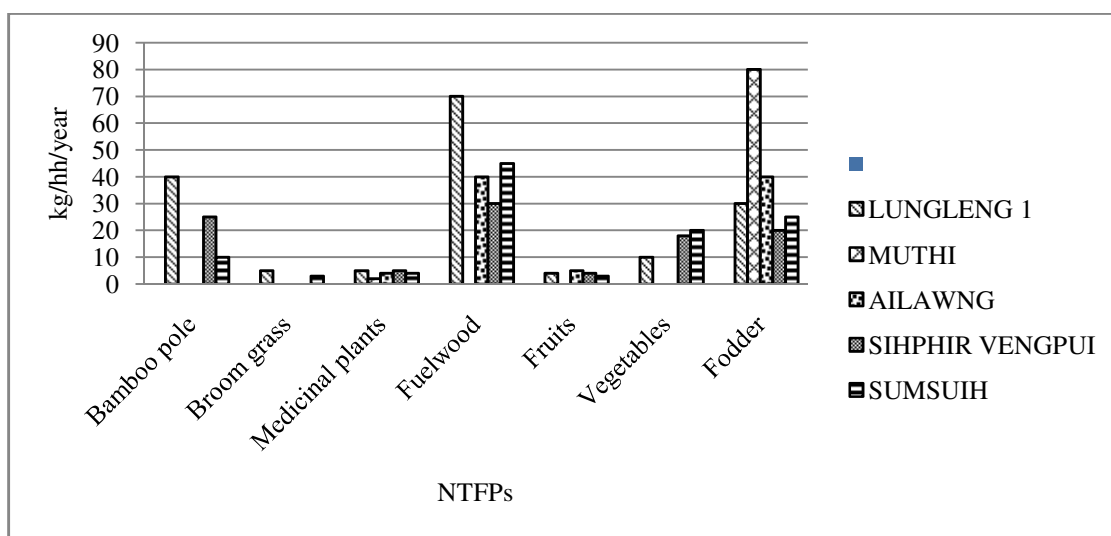


Figure-4

Quantity of NTFPs harvested for household consumption (kg/hh/year) in different villages at Aizawl FDA

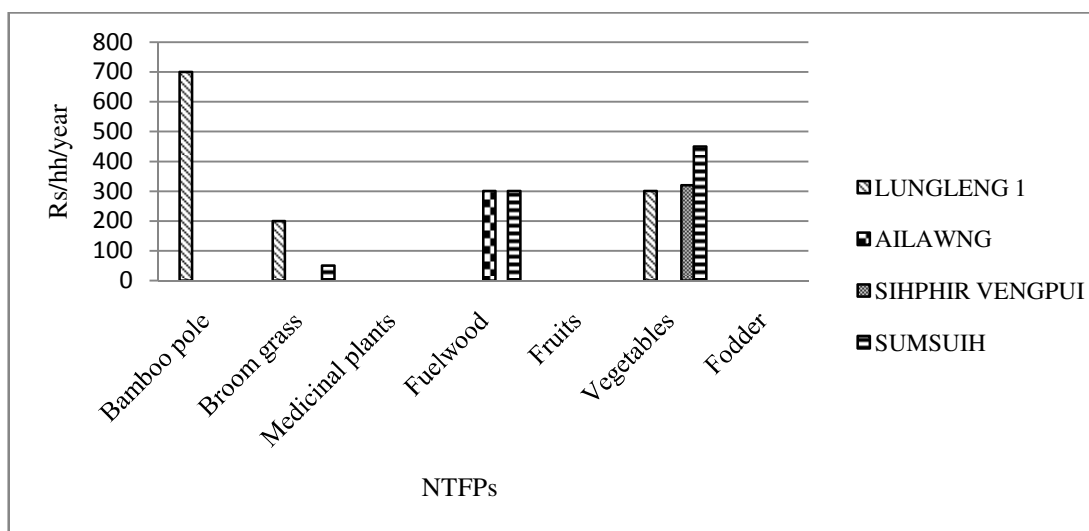


Figure-5

Income generated from various NTFPs (Rs/hh/year) in different villages of Aizawl FDA

Stachyphrynium placentarium leaves are also harvested for wrapping the leaves which they have harvested. It gives the leaves to maintain its freshness and greenish look for longer time. Leaves of *Millettia pachycarpa* Benth. and *Maesa montana* A.DC are also harvested for poisoning the fish. They soak the leaves in the river water.

Conclusion

Timber yielding plants are mostly planted within VFDC plantation areas, which are Artificial Regeneration (AR) and Aided Natural Regeneration (ANR). There will be an official harvesting and benefits are to be shared among the Department and villagers, till then the Forest Department do not allowed harvesting it. Most of the NTFPs are natural and the villagers are allowed to harvest and utilized it except for Bamboo pole in some VFDC plantation site. NTFP collection and processing is often a secondary occupation for farmers and other rural people, who are involved in these activities mainly during slack periods of the agricultural cycle and derive a small part of their household income from NTFP-related activities. They are allowed to harvest the NTFPs in a sustainable and non-destructive way. Because of this the percentage of household involved in harvesting of different NTFPs are lesser as compared to other community forest. But some of the villagers are still taking risk and harvesting NTFPs because their poor livelihood condition, which was the same condition with the findings of Mukul²² in which local communities of Bangladesh gather a substantial amount of NTFPs from reserved area despite the official restrictions. In one of the VFDC under Champhai FDA they applied systematic and sustainable harvesting of bamboo shoots which gives a good positive response from the beneficiaries. The villagers will get more benefit by the time of harvesting the planted timber yielding plants. The plantation sites are mainly degraded grassland before the initiation of this VFDC, now they become regenerated which is a huge benefit not only for the Department and villagers but also to the environment. The villagers might get more and faster benefit if NTFPs are planted in the plantation area instead of timber yielding plants.

The villagers are benefited from Entry Point Activities (EPA). Different works of community development was done with maximum benefitted to the village people. This led to draw the attention and attitude of village inhabitants towards the importance of conservation and propagation of the forest. Minor infrastructure of community assets- construction of community information centre, community hall, public urinal, bazaar set, vegetable godown, public water tank, approach road, step and funds for playground, torch light (for old aged), pressure cooker and LPG gas connection was also distributed to the villagers. Muthi VFDC plantation area was used as Public Park in which the villagers can relax and enjoy it. Employment generation also increases through this EPA and thus in turn increases the income. No work has been done on this field specifically to VFDC plantation of Mizoram and the work is expected to bring

in more benefit for the villagers well-being. Social, cultural and religious values of NTFPs cannot be evaluated and remain inadequately studied. The villagers are benefitted personally, socially and environmentally through this VFDC plantation sites.

Acknowledgements

We are grateful to the villagers who participated in the PRA exercise and provided us the needed data used in the paper. The first author (KL) wishes to thank the University Grants Commission, New Delhi for providing grants in the form of a research fellowship to carry out this work.

References

1. MoEF. (1988). National forest policy 1988. Ministry of Environment and Forests, Government of India.
2. Murali K. S., Murthy I. K. and Ravindranath N.H. (2002). Joint Forest Management in India and its ecological impacts. *Environmental Management and Health*, 13(5), 512-528.
3. Tiwari B.K. (2001). Non-timber forest produce of north east India. *Journal of Human Ecology*, 11, 445-455.
4. Rao A. Ratna and Singh B. P. (1996). Non-wood Forest products contribution in tribal economy (A case study in south bihar and south west bengal). *Indian Forester*, 122 (4), 337-342.
5. Johnson T.S, Agarwal R.K. and Agarwal A. (2013). 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), 140-143.
6. Dattagupta. S., Gupta. A. and Ghose. M. (2013). Diversity of non-timber forest products in Cachar District, Assam, India. *Journal of Forestry Research*, 25(2), 463-470.
7. Fisher M. (2004). Household welfare and forest dependence in Southern Malawi. *Environment and Development Economics*, 9,135-154.
8. Shahabuddin G. and Pasad S. (2004). Assessing ecological sustainability of non-timber forest produce extraction: The Indian scenario. *Conservation & Society*, 2, 235-250.
9. Kumar S. (2002). Does ‘‘participation’’ in common pool resource management help the poor? A social cost-benefit analysis of joint forest management in Jharkhand, India. *World Development*, 30(7), 63-782.
10. Tewari D. D. (1998). Income and Employment Generation Opportunities and Potential of Non-Timber Forest Products (NTFPs) A Case Study of Gujarat, India. *Journal of Sustainable Forestry*, 8(2), 55-76.
11. Tewari D.D. and Campbell J.Y. (1995). Developing and sustaining non-timber forest products: some policy issues

- and concerns with special reference to India. *Journal of Sustainable Forestry*, 3(1), 53-79.
12. Getachew M., Sjaastad E. and Vedeld P. (2007). Economic dependence of forest resources". A case from Dendi District, Ethiopia. *Forest Policy and Economics*, 9, 916-927.
 13. Cavendish M.W.P. (2000). Empirical Regularities in the Poverty-Environment Relationship of Rural Households: Evidence from Zimbabwe. *World Development*, 28, 1979-2003.
 14. Angelsen A. and Wunder S. (2003). Exploring the Forest_Poverty Link: Key Concepts, Issues and Research Implications. Center for International Forestry Research (CIFOR), CIFOR Occasional Paper 40.
 15. Malleon R., Asaha. S., Egot. M., Kshatriya. M., Marshall. E., Obeng-okrah, K. and Sunderland T. (2014). Non-timber forest products income from forest landscapes of Cameroon, Ghana and Nigeria – an incidental or integral contribution to sustaining rural livelihoods?. *International Forestry Review*, 16(3), 261-276.
 16. Lalremruata J., Sahoo U.K. and Lalramnghinglova H. (2007). Inventory on Non Timber Forest Products of Mizoram in North-East India. *Journal of Non-Timber Forest Products*, 14, 173-180.
 17. Marvellous B. Lynser and Tiwari B.K. (2016). Diversity and Utilization of Floral Non Timber Forest Products by the Communities in Rural Meghalaya, North-East India. *Journal of Forest and Environmental Science*, 32(1), 39-51.
 18. Sadashivappa P., Prakash S and Krishna V.V. (2006). Participation Behaviour of Indigenous People in Non-timber Forest Products Extraction and Marketing in the Dry Deciduous Forests of South India. Conference on International Agricultural Research for Development.
 19. Sahoo U.K., Jeecelee L., Lalremruata J.H. and Lalramnghinglova H. (2012). Diversity of Non-Timber Forest Products of plant origin, use and local dependence in Mizoram, North- East India. *Journal of Non-Timber Forest Products*, 19(4), 261-268.
 20. Rasul. R., Karki. M. and Sah R P. (2008). The role of non-timber forest products in poverty reduction in India: prospects and problems. *Development in Practice*, 18(6), 779-788.
 21. Sahoo U.K., Lalremruata J., Lalramnghinglova H., Lalremruati J.H. and Lalliankhuma C. (2010). Livelihood generation through non timber forest products by rural poor in and around Dampa tiger reserve in Mizoram. *Journal of Non- Timber Forest Products*, 17(2), 147-161.
 22. Mukul S. A., Rashid. M., Uddin M.B. and Khan N.A. (2016). Role of non-timber forest products in sustaining forest-based livelihoods and rural households' resilience capacity in and around protected area: a Bangladesh study. *Journal of Environmental Planning and Management*, 59(4), 628-642.