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Role of Non Timber Forest Resources in the Livelihood of Forest Dwellers in Ayodhya Hills Areas of Purulia District, West Bengal

Soma Chanda

Department of Botany,
South Calcutta Girls College,
Kolkata.

Abstract:

Scientific harvesting, storage and commercial handling of NTFPs for economic benefit primarily of the forest dwellers, need to be introduced and nurtured at grass root level since these perspectives can play a potential role in imparting sustainability to the system in operation in the forest and foster its conservation. Interest in non-timber forest products (NTFPs), especially the phyto-resources, is increasing rapidly since resources are harvested from trees in such a way that the trees are not felled down. Considering the urgency in conserving the forests in Ayodhya Hills Forest Range of Purulia District simultaneously with economic development of forest dwellers. The present work was undertaken which after a tenure of three years could document the indigenous Traditional Knowledge regarding various uses of forest plants. As many as 125 plant species have been documented out of which 19 as source of edible fruit, 7 each for marketable flower, 11 as source of wood-pieces useful in minor carpentry; 19 each for miscellaneous purposes including making of basket, mat, hand-fan, broom etc. and for leaves; 7 each for marketable flowers; tannin and gum 6, 6 for extraction of oil, 2 as source of fibers, 2 for resins and 2 for floss. However both traditional knowledge and practices have been undergoing changes over time involving impoverishment. In view of this, the present author feels the need of an 'in time documentation' of traditional knowledge prevailing in this area which is certain to prove worthwhile in human welfare.

Keywords: *Scientific harvesting, NTFPs, Awareness, Ayodhya hills, Forest Range, Economic benevolence.*

5.1 Introduction:

Non-timber forest products (NTFPs) happen to contribute one such resource on which the forest dwelling communities are dependent to a great extent. Non-timber forest products (NTFPs) are an integral part of lives of tribal communities surviving in and around forests and depending on them. Since use of NTFPs always spares felling of trees or rather encourages growth of species of all types including trees, its role in sustenance of forest and conservation of biodiversity is invaluable. Moreover their economic potential can address issues of poverty of the forest dwellers (Dante and Koch, 2011).

The potential economic value of NTFPs either in terms of utilization or their market value is often unknown or improperly estimated. The scientists have also been giving importance to the documentation and protection of the age-long knowledge of the tribal communities regarding the use of NTFPs. This traditional knowledge has been proving useful in stock-taking of bio-resources, innovation of novel genetic resources from them and setting conservation strategies.

Non-Timber Forest Products (NTFPs) have an important role in the household economy of forest fringe dwellers in the dry-deciduous forests of India (Shackleton and Shackleton, 2004; Babalola, 2009). People who live within forested areas can collect NTFPs for their subsistence use and at the same time are also allowed to collect some NTFPs for commercial purpose without any permission from the Forest Department. Unprocessed NTFPs are sometimes given less commercial as well domestic importance compared to value-added products, as the price of the processed products is greater. It is estimated that of the 6.2 billion world population, about 25 percent are dependent on forest resources including plant and animal products (Iqbal, 1993; Walter, 2001). It is also estimated that about 60 million aboriginal people all over the world depend on the forest ecosystem for their livelihood (Anon., 2001).

The importance of Non-wood forest products to (NWFP) the forest dwellers is much greater since quite a good number of such products are primarily consumed at local level. As such stock-taking of non-wood forest products (NWFP) and their sustainable use for the economic benevolence of the indigenous people have been presently prioritized in optimizing and conserving forest ecosystems. In view of the foregoing, the present authors took up the work of documenting the age-long indigenous knowledge regarding use of plants of Paharia tribe composing the forests in different parts of Ayodhya hills (Chanda and Mukherjee, 2012), which is rich in both density and diversity of tribal populations work was undertaken in such an forested area of Purulia district. The present work, new of its kind for the area, adheres to the objective of assessment of the commercial prospect of NTFPs as documented from the indigenous knowledge of the forest dwelling Santhals, Mundas, Paharia, Bhumij and Birhors and personal experience gained about their uses during field work.

5.2 Materials and Methods:

Field survey was carried out in the areas under Ayodhya hills Forest Range and adjoining areas of Purulia District in West Bengal State to collect and document the traditional knowledge pertaining to plant-diversity and their ethnic uses for all purposes other than timber from primary sources, i.e. the ethnic communities by conducting structured questionnaire based interviews of such knowledgeable informants, especially aged and knowledgeable persons belonging to both the men and women categories, following the standard guidelines given by Rao (1987) for ethnobotanical studies. The documented information was further confirmed through cross checking and our own experience gained through careful observations. During field studies the species were provisionally identified and their identification was confirmed with the help of authentic specimens preserved in the Central National Herbarium (CAL) and in our departmental Herbarium (BURD) and taxonomic literature (Prain, 1903; Guha Bakshi, 1984; Bennet, 1987).

Data sheet for recording NTFP-based income generation

a. Name: Sex: Age:
b. Tribe
c. No. of family members
d. Village
e. Plant part(s) collected
f. Purpose

- Own consumption
- Sale in the local market
- Sent outside for sale

g. Processing:

- Raw
- Processed

h. Availability
i. Monthly income from NTFPs.

5.3 Study Site:

Purulia, lying between 22^{o} 60' and 23^{o} 50' north latitude and 85^{o} 75' and 86^{o} 65' east longitude, is one of the draught prone and economically backward districts of West Bengal state. The district occupies an area of 6259 sq km with forests covering nearly 87.60 thousand hectares and ranks second in West Bengal so far diversity and density of indigenous or tribal population are considered. The Ayodhya hills include Jhalda, Baghmundi, Balarampur and Arsha Blocks of Purulia district.

Table 5.1: An Item Wise Enumeration of Species Having Commercial Prospect

Item of NTFP	**No. of plant species with economic potential**	**Names of the suitable plant species**	**Percentage of useful plant species**
Fruits	19	*Ficus racemosa, Ficus hispida, Buchanania lanzan, Aegle marmelos, Semecarpus anacardium, Mangifera indica, Diospyros melanoxylon, Zizyphus mauritiara, Carissa spinarum, Limonia acidissima, Syzygium cumini, Dillenia pentagyan, Emblica officinalis, Cajanus cajan, Borassus*	*15.2*

Item of NTFP	**No. of plant species with economic potential**	**Names of the suitable plant species**	**Percentage of useful plant species**
		flabellifer, Phoenix sylvestris, Psidium guajava, Tamarindus indica and *Aannona squamosa.*	
Flowers	7	*Madhuca indic, Indigofera tinctoria, Woodfordia fruticosa, Cassia fistula, Nymphaea nouchali,* *Butea monosperma, Pongamia pinnata.*	*5.6*
Oil seeds	6	*Pongamia pinnata, Ricinus communis, Argemone mexicana, Madhuca indica,* *Schleichera oleosa, Azadirachta indica.*	*4.8*
Leaves	5	*Shorea robusta, Bauhinia vahlii, Diospyros melanoxylon, Borassus flabellifer, Phoenix sylvestris*	*4*
Tannin and Gum	6	*Terminalia chebula, Terminalia bellirica, Sterculia urens, Acacia nilotica, Annona squamosa, Boswellia serrata.*	*4.8*
Resins	2	*Tectona grandis, Boswellia serrata.*	*1.6*
Fibers	2	*Agave sisalana, Phoenix sylvestris.*	*1.6*
Floss	2	*Bombax ceiba and Holarrhena pubescens*	*1.6*
Lac culture	3	*Schleichera oleosa, Zizyphus mauritiana, Butea monosperma*	*2.4*

Item of NTFP	**No. of plant species with economic potential**	**Names of the suitable plant species**	**Percentage of useful plant species**
Minor carpentry	11	*Albizzia lebbek, Annona squamosa, Azadirachta indica, Dalbergia sissoo, Garcinia xanthochymus, Lagerstroemia parviflora, Pongamia pinnata, Shorea robusta, Terminalia alata, T. arjuna* and *T. bellirica*	*8.8*
Misllaneous purpose	19	*Combretum roxburghii ,Shorea robusta , Ficus hispida , Dendrocalamus strictus, Albizzia lebbek, Azadirachta indica, Careya arborea, Dalbergia sissoo, Gmelina arborea ,Holoptelea integrifolia, Lagerstroemia parviflora, Mangifera indica, Borassus flabellifer, Phoenix sylvestris, Justicia adhatoda, Holarrhena pubescens ,Ricinus communis, Madhuca indica, Schleichera oleosa,*	*15.2*

5.4 Strategies Proposed for the Optimization:

Interest in non-timber forest products (NTFPs) is increasing rapidly. At present there are numerous efforts to convert them (non-timber produce or raw materials) into usable products (NTFPs) and to increase awareness of these products, management of their production and exploration of commercial prospect and potential. Thus it is felt that in case of Ayodhya Hills strategies for the sustainable management, value addition and marketing of non-timber forest products need to be worked out for conveying economic benevolence to the local people and safeguarding the existence of tree and other associated species of the concerned forests. Some important observations and views in this regard are enumerated in the following:

a. Scientific harvesting, storage and handling of NTFPs need to be introduced and enhanced at grass root level since these perspectives can play a potential role in imparting sustainability to the system in operation.
b. Intensive researches and sincere efforts are necessary at the grass root level in order to address all aspects of value addition to the NTFPs, diversification of the products and enhancement of production aptly making use of the skill, vigor and efficiency of the forest dwellers.
c. Well organized NTFP marketing channels to be operated to create job opportunities for the forest dwellers, alleviate their poverty and improve the economy.

d. Restorative revegetation of the exploited forest patches with indigenous species especially with those used extensively by the local communities is immediately needed.
e. Proper guidance regarding economic improvement can also shift forest dwellers to other professions which can reduce the dependency on forest resources and augment the self-restorative ecological processes of the existing forests in the study area.
f. Perpetuation of the cultural performances and religious activities of the tribals making use of the indigenous phyto-resources totally in local environmental conditions must be encouraged and ensured protection since these activities have adequate certainty to promote conservation and optimization of the forest ecosystem.

5.5 Results and Discussion:

The NTFPs documented in this work are all those which are procured from the forest without felling of trees by local inhabitants, mainly the Santhals, Mundas, Birhor, Bhumij and Paharias and have certain qualities for gaining entry into the commercial sphere.

The medicinal plants have not been covered in the present work since documentation of their ethnic uses and commercial prospect deserve special attention and distinction. The different utilitarian perspectives recorded in the present work (Table 1) concern as many as 124 species of Angiosperms (Magnoliophytes), of which 106 species are dicotyledonous (Magnoliopsids)and 18 species monocotyledonous (Liliopsids). At specific, generic, family and class levels, dicots show higher percentages over monocots. The ratios of trees, shrubs, herbs and climbers associated with the forest abodes of tribals were found to be 51, 35, 25 and 14 respectively**.** The commercial prospect of this plant is very high. There are as many as 19 other species capable of handing over fruits for sale.

As many as 11 species were seen to bear woods which can be used commercially in minor carpentry works. But such a use is no way should affect the health of the concerned plant. A sustainable use of the products enlisted in the present work collaterally with forest protection is certain to ensure conservation of the forest along with perpetual economic welfare of the indigenous people.

5.6 Conclusion and Future Aspects:

There is a growing recognition by the international forest policy and forest communities of the importance and relevance of Traditional knowledge about forests, and the need to consider this knowledge in the development of policies and practices that support sustainable management of forest resources. In India Traditional knowledge on the forest ecosystems is as old as ancient scriptures, bio-geographical niche, cultural history, and natural resource utilization. Many tribal communities possess considerable knowledge of the natural resources they utilize. This knowledge, by providing a source of baseline data on non-timber forest resources or by filling information gaps in this regard, can guide scientific approaches to forest resource management, or provide novel management alternatives. The Traditional Knowledge (TK) base can be used for their time tested, cost effectiveness, purity, environment friendly nature and popular beliefs. There is need for registration of grass-root innovations, certification of products for the authentication, besides developing benefit sharing mechanism on sustainable basis.

The economy of the people in Ayodhya Hill region is mainly sylvan and fractionally Agrarian with uncertain livelihood security generating extremely low per capita income. Moreover geographical isolation, past history of shifting cultivation, overexploitation of forests mainly for timber, hydropower generation, developmental activities, water scarcity especially in the post- and pre-monsoon seasons, desertification, natural calamities, political restlessness etc. are the obstacles impairing socioeconomic growth in the region. The situation needs to be improved on war footing. Even though the region is still bestowed with adequate and good quality of forest resources it has been experiencing very poor management and lack of application of technologies for sustainable harvesting, processing and storage of non-timber produces. The only praiseworthy aspect noticed by the present author is the awareness of the ethnic communities about the existing state of their forests and their concern in sustainable use of the resources. However their 'below poverty level' economic status may change their virtues, ethics, values and it might so happen that their hunger makes them hostile to the forests. So any endeavour to protect the existing forests must first protect the lives of forest dwellers from hunger, poverty and livelihood insecurity. Therefore it is essential to launch an integrated resource conservation measure in such a way so that the tribal economy can grow collaterally with that of forest through optimum sustainable use of the resources abiding by the laws of nature. The integrated programme must ensure provisions for conservation of water and soil so that the forest flora and fauna can ensure uninterrupted production of resources maintaining variety, quality, and value of an inspiring standard. The integrated conservation programme must utilize the traditional knowledge of the indigenous communities, expertise of forest officers and scientists keeping a good alignment with the self-designing capacity of the nature. The land and the water resources of the region need to be used efficiently. Documentation of traditional knowledge about the use of the non-timber forest produce followed up by their scientific sustainable harvesting, processing, value addition, storage and marketing need to be augmented and compensated by watershed management, revegetation with indigenous species approved by the ethnic communities and soil conservation. This kind of integrated resource conservation measure is certain to achieve sustainability if it ensures improvement of the livelihood and economic security of the ethnic communities.

5.7 References:

1. Anonymous 2001. *A Revised Forest Strategy for the World Bank Group. (Draft),* World Bank Washington D.C.
2. Babalola, E.O. 2009. Prospects and challenges of production and marketing of Non-Timber Forest Products (NTFPs) by rural farmers in southwest Nigeria. *A cademic Journal of Plant Science* **2(4):**222-230
3. Bennet, S.S.R. 1987. Name changes in flowering plants of India and adjacent regions. Triseas Publishers, Dehra Dun.
4. Chanda, S. and Mukherjee, A. 2012. Non-timber forest products as documented from the Paharia tribe of Ayodhya hills of Purulia district of West Bengal(India), *Acta Botanica Hungarica .54(3-4).*
5. Dante, A. and Koch, S.F. 2011. Non-Timber Forest Products Dependence, Property Rights and Local Level Institutions: Empirical Evidence from Ethiopia. Department of Economics Working Paper Series 11. University of Pretoria.
6. Guha Bakshi, D. N. 1984. Flora of Murshidabad District West Bengal, India. Scientific Publishers, Jodhpur, India.

7. Iqbal, M. 1993. *International Trade in Non-Wood Forest Products: An Overview*. Food and Agriculture Organization, Rome, Italy.
8. Prain, D. 1903. Bengal Plants, Calcutta, West Bengal.
9. Rao, R. R. 1989. Methods and techniques in ethnobotanical study and research: some basic consideration. In: Methods and Approaches in Ethnobotany (Ed. S. K. Jain) Society of Ethnobotanists, Lucknow 13-23.
10. Shackleton, C. and Shackleton, S. 2004. The importance of non- timber forest product in rural livelihood security and as safety nets: Review of evidence from South Africa. *South African Journal of Science.* **100**: 658- 664.
11. WaIter, S. 2001. *Non-Wood Forest Products in Africa. A Regional and National Overview. Lesproduits forestiers non ligneux en Afrique. Unapercu regional et national.* Working Paper. Document deTravail FOPW/Oll1. Food and Agriculture Organization, Forestry Department, Rome, Italy.