Non-timber forest products (NTFPs) as a source of livelihood option for forest dwellers in Paralakhemundi Forest Division of Odisha

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ABSTRACT

The present study was carried out in Paralakhemundi forest division on randomly selected 80 respondents. The data were collected through a structured survey questionnaire, analyzed with appropriate statistical methods. It was observed that in the study area, the respondents met their food and income needs from various livelihood activities like collection of NTFPs, wage earning, agriculture, livestock rearing, services and allied activities. Maximum number of the respondents practiced agricultural work in their own land and leased land (84.00%). Most of the respondents (72%) were involved in NTFPs collection. Maximum employment (31.7%) was generated from agriculture followed by NTFPs collection (25.0%). Agriculture generated the highest income per household per year (35.82%) as majority of the population had own land, followed by NTFPs (22.38%). NTFPs like Siali leaf, Harida, Bahada, amla, Mahula and tamarind were collected at the forest site. Out of all the NTFPs collected by the respondents, all NTFPs were collected seasonally. Almost every household of the surveyed area was involved in collection of tamarind, Mahula, Harida, Bahada etc. Highest net return was obtained from Mahula (Rs 3,120) followed by Siali leaf (Rs 1,800), amla (Rs 1,350), tamarind (Rs 860), Harida (Rs 270) and Bahada (Rs 100). The total income from the NTFPs was about Rs 7,500 per household.

Keywords: Forest dwellers; employment; livelihood; NTFPs; collection; income generation

INTRODUCTION

Non-timber forest products (NTFPs) have been used by human beings since the time immemorial (Sonowal 2007) for variety of purposes like food, fodder, fiber, traditional medicine, agricultural amenities, domestic and construction materials and many of them are associated with cultures (Chopra 1993, Mallik 2000). Wild edible foods are rich in vitamin, protein, fat, sugar and minerals and depending upon their availability can be used in different seasons throughout the year (Sundriyal and Sundriyal 2001).

In addition to the villagers living in the forest fringe areas, other rural communities also harvest the NTFPs for earning cash by selling in the market for their livelihood (Sarmah et al 2008). This is common in many developing countries of the tropical regions of the world. Traditional forest dwellers are completely dependent on NTFPs for their basic amenities like food, shelter, medicine etc.

NTFPs are vital for subsistence and meeting the sources of daily nutrition (Vedeld et al 2007). These are most common in the region where basic infrastructure and market access are not available. People harvest fruits, leaves, fiber, gum, dye, honey, wax etc to meet their daily requirements. Iqbal (1993) estimated that roughly more than 6,000 NTFPs are harvested throughout the world from the wildlands. In India, about 50 million people are dependent on NTFPs for their livelihood (Adepoju and Salau 2007). Additionally, another 200 million people, who are not forest dwellers, are also estimated to be indirectly dependent on NTFPs (Shiva 1995). According to estimate 2010-11 of the Ministry of Environment and Forests (MoEFCC), Government of India, revenue generated from NTFPs was about 20 billion (Mishra

et al 2009). This remained roughly the same or slightly higher in subsequent years as well. Northeast region of India is endowed with plenty of NTFPs and the region is biologically imperative as it falls in Indo-Myanmar and eastern Himalayan biodiversity hotspot (Myers et al 2000).

NTFPs provide safety against adverse effects of climate change (Sumukwo et al 2013). Climate-related hazards after interacting with non-climatic stress (like loss of resource extraction, market shifts etc) often result in insecurity and thus accelerate the vulnerability in the agricultural system. Although poor people are mostly affected by such stresses, others cannot escape the vagaries of extreme climatic events like floods, drought etc (Olsson et al 2014). When such situation arises, NTFPs can provide supplemental food to the rural people (Nkem et al 2013). Besides climatic stress, NTFPs also contribute to the soil and landscape conservation and provide habitats for many wild fauna. Maintaining microclimate, the important habitat for microorganisms by NTFPs, has often been witnessed to maintain ecosystem stable (Sarmah 2012). Due to their enormous role in forest ecosystem, they are also called as minor forests.

NTFPs, if properly channelized through government sectors, may provide direct economic benefit through trade (Ingram and Bongers 2009). They play significant role in improving the livelihood of the rural people of the world (Belcher and Schreckenberg 2007). They also reduce the problems of unemployment and life sustenance (Negi et al 2011). After the movement in the Amazonian NTFPs, the importance of NTFPs has gained much importance throughout the world and they are considered as potential alternatives to deforestation and land conversion from non-forest purposes (Plotkin and Famolare 1992). Sunderland et al (2011) and Saha and Sundriyal (2012) reported that sustainable harvest of these products can override the short-term gain accrued from timber and agricultural benefits.

Many researchers (Belcher and Schreckenberg 2007, Paumgarten and Shackleton 2009, Shanley et al 2015) highlighted the role of NTFPs in poverty alleviation in different regions of the world. Marshall et al (2006) tried to find out the factors leading to successful commercialization of NTFPs in Mexico and Bolivia. Ticktin (2004) and Marshall et al (2006) also found that commercial harvesting of NTFPs is not always sustainable due to overexploitation. Furthermore, commercialization of NTFPs for trade leads to unequal benefit sharing among local people (Marshall et al 2006). Only wealthier and powerful people can accrue benefit while marginal people get sidelined (Ros-Tonen and Wiersum 2005). Still, development and promotion of NTFPs are important to reduce the destruction of the biodiversity (Kiss 2004).

Despite a lot of work on NTFPs in Odisha region of the country, the economic valuation of the NTFPs has not been carried out. Ecological and economic assessment of NTFPs is of basic importance for sustainable harvesting which also helps forest managers to gather knowledge on the life cycle, population status, distribution and the economic importance of particular species to manage them appropriately. Keeping this in mind, current study was designed to understand the important NTFPs in the socio-economic profile as well as livelihood dependency of the forest dwellers on Paralakhemundi Forest Division, Odisha.

METHODOLOGY

The study was carried out in the fringe areas of Baliganda village of Paralakhemundi Forest Division, Gajapti district of Odisha spreading over an area of 4,893.70 sq km. Forest is spread over an area of 2,887.28 sq km which accounts for 59 per cent of the total geographical area which is situated in southern part of eastern Ghat. Most of the area forms parts of Vamsadhara and Rushikulya catchment.

Respondents living adjacent to the forest were selected for the study. Data collection was formulated keeping in mind the low literacy level of the people in the study area. The primary data were collected mainly through questionnaire and interviewing households nearby forests who were dependent on forest and small traders involved in forest produce. Household heads were preferred for interviewing. A village with 165 households and 822 population was selected. In the village, 20 per cent people dependent on forest for their livelihood were selected and 10 per cent households on the basis of their dependency on the forest. All the households were randomly selected from the village.

Sample size selection in number of households was based on number of households present near the forest and their dependence on forest produce. Accordingly, a total of 17 families out of 165 families of the Baliganda village belonging to Chandiput section

of Chandragiri forest range of Paralakhemundi Forest Division were selected. Information on extracted NTFPs were collected from the local people. Important NTFPs were identified by visiting the local markets and their market values were ascertained from the neighbouring market. Female respondents among the forest dwellers were given more attention as they used to harvest different plants from the forest and had knowledge of their traditional uses. Field visits were made to identify the existence of NTFPs and their status. The frequency of use of all important NTFPs was calculated and influential NTFPs in people's lives were identified so as to give special importance to their conservation. Different NTFPs and their market value was noted from the local market and average market value of the products was calculated. Both qualitative and quantitative methods were used for analysis and interpretation.

RESULTS and DISCUSSION

In the study area, the respondents met their food and income needs from various livelihood activities like collection of NTFPs, wage earning, agriculture, livestock rearing, services and allied activities. Table 1 indicates that maximum number of the respondents practiced agricultural work in their own land and leased land (84.00%). Most of the respondents (72%) were involved in NTFPs collection. In addition, the respondents were also involved in labour work (54%) followed by livestock rearing (41%), family occupation (36%) and other activities (15%). It was inferred that collection of NTFPs and agriculture were the important activities in terms of livelihood support and income generation contribution. Dependency on agricultural labour (66.67%) for income generation was also observed by Singh et al (2010). The present finding is similar to the observation of Mahapatra (1992) who reported that NTFPs collection was one of the dominant activities of the forest dwellers.

It can be observed from Table 2 that maximum employment (31.7%) was generated from agriculture followed by NTFPs collection (25.0%), labour work (21.6%), family occupation (9.1%), livestock rearing (5.2%) and others activities (7.2%). Thus it can be inferred that agriculture, NTFPs collection and labour work were the major livelihood and income generating activities in the study area. Kumar (2015) reported that there was an average employment of 115.56 man days per household per year from wage sector and 77.81 man days per household per year from NTFPs. Shrey et al (2017) reported that NTFPs contributed 50.58 per cent (137.82 man days/household/year) employemnt.

Data given in Table 3 depict that agriculture generated the highest income per household per year (35.82%) as majority of the population had own land, followed by NTFPs (22.38%), labour work (20.89%), family occupation (7.46%), livestock rearing (6.86%) and other activities (6.56%).

The income generated from NTFPs in the was much lower than the annual income of Rs 75,032 reported by Singh et al (2010) from Mangrove forest areas of Sundarban. However, Sadashivappa et al (2006) reported that 18.19 per cent of the total income was from NTFPs. Both males and females of the area also worked as daily labourers. Livestock rearing led to a higher consumption of livestock products, especially milk and milk products, meat and eggs at the household level. The farmers also used their cattle for carrying out agricultural operations. However, sale of goats and poultry on occasions contributed to the household income of some the villagers.

Table 1. Distribution of respondents according to their occupational activity

Activity	Respondents	
	Number	Percentage
NTFPs collection	12	72.00
Agriculture	14	84.00
Labour work	9	54.00
Family occupation	6	36.00
Livestock rearing	7	41.00
Others	3	15.00

Table 2. Employment generated by the respondent households from different sectors

Activity	Employment generated /household/year	
	Days	Percentage
NTFP collection	52	25.0
Agriculture	66	31.7
Labour work	45	21.6
Family occupation	19	9.1
Livestock rearing	11	5.2
Others	15	7.2
Total	208	100.0

Table 3. Average annual household income derived from different sectors

Activity	Income generated/household/year	
	Amount (Rs)	Percentage
NTFP collection	7,500	22.38
Agriculture	12,000	35.82
Labour work	7,000	20.89
Family occupation	2,500	7.46
Livestock rearing	2,300	6.86
Others	2,200	6.56
Total	33,500	100.00

Data in Table 4 show the various forest products collected, the period of availability of the products, the economic parts, methods of collection and utilization of NTFPs. NTFPs like Siali leaf, Harida, Bahada, amla, Mahula and tamarind were collected at the forest site. Out of all the NTFPs collected by the respondents, all were collected seasonally. Almost every household of the surveyed area was involved in collection of tamarind, Mahula, Harida, Bahada etc. Paralakhemundi Forest Division is rich in diversity of many major NTFPs. Behera and Nath (2012) reported that Sal (*Shorea robusta),* Kendu (*Diospyrousme lonoxylon),* Siali (*Bauhinia vahlii),* inflorescence of Phula Jhadu (*Thysanoelana maxima),* flowers of mahula (*Madhuca latifolia),* seeds of *Madhuca latifolia* (Tola), Chara (*Buchanania lanzan)* and wild mushroom contributed a large share to the annual income from forests in Boudh district, Odisha.

Table 5 reflects the net return generated from the NTFPs collected by the respondents. Highest net return was obtained from Mahula (Rs 3,120) followed by Siali leaf (Rs 1,800), amla (Rs 1,350), tamarind (Rs 860), Harida (Rs 270) and Bahada (Rs 100). The total income from the NTFPs was about Rs 7,500 per household. Islam and Quli (2017) reported contribution of different NTFPs towards fuelwood (Rs 546.34), tooth brush (Rs 409.75), fodder (Rs 390.24), mahua (*Madhuca latifolia*) flower (Rs 346.09), oilseeds (Rs 322.70), vegetables (Rs 206.61) and ethno-medicines (Rs 42.07) in Ranchi district of Jharkhand, India.

CONCLUSION

It was found that varieties of NTFPs were available in the study area. NTFPs were an important source of employment and income for the Baliganda villagers of Chandragiri range of Paralakhemundi Forest Division. Due to lack of marketing facilities, it was seen that the dependency on forest was decreasing fast leading to migration, malnutrition, poverty etc and people were not taking much interest in the safeguard of the forest, which was impacting the environment and climate significantly. Economic valuation, conservation and sustainable harvesting of NTFPs can be useful for future.

Table 4. Details of NTFPs obtained from different tree species in the study area

Local name	Scientific name	Family	Period of availability	Part used	Use
Siali leaf	*Bauhinia vahlii*	Caesalpiniaceae	October-May	leaf	Medicinal/plate making
Harida	*Terminalia chebula*	Combretaceae	November-January	Fruit	Edible/medicinal
Bahada	*T bellerica*	Combretaceae	January-April	Fruit	Edible/medicinal
Amla	*Phyllanthus emblica*	Phyllanthaceae	February-March	Fruit/seed	Medicinal use/oil
Tamarind	*Tamarindus indica*	Fabaceae	March-April	Pulp/seed	Edible
Mahula	*Madhuca longifolia*	sapotaceae	May-July	flower	Edible

Table 5. Income earned from the sale of different NTFPs found in the study area

NTFP	Quantity sold	Sale price (Rs)	Net return (Rs)
Siali leaf	9 (bundles)	200	1,800
Mahula	120 (kg)	26	3,120
Tamarind	95.5 (kg)	9	860
Harida	10 (kg)	27	270
Bahada	10 (kg)	10	100
Amla	30 (kg)	45	1,350
Total	-	-	7,500

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