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Economically and Traditionally Important Non Timber Forest Products of Sarguja Division

A.S. Chandel, D.K. Yadav* and M.K. Jhariya
Department of Farm Forestry, Sarguja University, Ambikapur-497001 (C.G.), INDIA
***Author for correspondence:** dheer_forest@rediff.com

ABSTRACT
The present investigation was carried out in Sarguja forest division of Chhattisgarh. The tribal land of Sarguja bestowed with vast and diverse floral and faunal variety with large tract of natural forest resources. The present paper gives baseline database of economically and traditionally important NTFPs utlilized by tribal people of this region. Ten villages were selected for investigation and total of 100 households from these villages were randomly selected and interviewed using a well structured questionnaire. The district Surguja inhabited by different tribal communities whose main occupation is agriculture and collection of forest products. Besides this they also generate income from other enterprises like livestock rearing, going as wage labour to neighbors fields, small business, fishing etc. Total NTFPs collected by the respondents during the study period (2015-16) was found to be 5930 kg/year. Highest for Latori (2210 kg/year) and lowest for Rukhpur village (300 kg/year). Mostly the collection was done manually and most common NTFPs collected were mahua, sal seeds and tendu leaves. The total income generated from NTFPs was Rs. 14,300, Rs. 15,300, Rs. 5,900, Rs. 10,900, Rs. 7,560, Rs. 8,500, Rs. 10,400, Rs. 31,500, Rs. 9,560 and Rs. 9,000 from Sakalo, Sargawan, Ghanghari, Rukhpur, Chikhladih, Khaliba, Bhagwanpur, Kalyanpur, Latori and Manjeera. While contribution of average income from agriculture per household of villagers were Rs. 24,222, Rs. 23,875, Rs. 34,444, Rs. 27,400, Rs. 21,875, Rs. 22,875, Rs. 34,500, Rs. 43,333, Rs. 34,142 and Rs. 28,777 from Sakalo, Sargawan, Ghanghari, Rukhpur, Chikhladih, Khaliba, Bhagwanpur, Kalyanpur, Latori and Manjeera respectively. Agriculture is the prior business in study area because it is a major source of income to their socio-economic development. Hence, the sustainable harvesting, conservation and elite management practices of forests is vital for sustaining ecological balance and is the most important factor to protect the environment as well as the forest communities living in and around the forest.
Keywords: *NTFPs, agriculture, economic, income, livlihood*

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INTRODUCTION

Forest ecosystem is an important component of natural resources and playing very diverse role in ecosystem, environment and human life. Forests have been playing a vital role in the socio-economic and cultural life of the forest dweller and tribal people of India. It facilitate substantial social and economic benefits at all level, especially in developing countries. Economics of people residing in and around the forested region has traditionally been dominated by subsistence agriculture. However, NTFPs play vital role among the tribal people and provide a source of income and substance living [1]. NTFPs like fuel-wood, medicinal plants, wild edible vegetables, house building materials etc. are an integral part of day-to-day livelihood activities, especially for tribal people [2].

Nowadays these forests are subjected to various kind of pressures caused by both natural and anthropogenic means which alters the structure, function and its dynamics. As a result this resources are under threats and shrinking due to unscientifically and non judiciously harvesting and utilization for forests resources [3-6]. Sustainable collection, utilization and commercialization are the main thrust area in the promotion of forest resources for community development, poverty alleviation and securing livelihood and welfare of human [7-9]. Therefore, the present study was carried out to explore the traditional and economically important NTFPs and dependency of tribals in Sarguja region.

MATERIAL AND METHODS

The present study was carried out in Sarguja district of Chhattisgarh state. The state Chhattisgarh is richly

endowed with natural resources such as minerals, forests and water bodies. The climate of the state is generally sub-humid with an annual rainfall ranging from 1200-1500 mm. Sarguja district is located in the northern part of Chhattisgarh state of India [10]. The study area is located between $22^0$58' to $23^0$49' North latitude and $81^0$33' to $82^0$45' East longitudes. The climate of district is characterized by a hot summer and well distributed rainfall during the monsoon season.The climate of the study area is dry tropical. The mean monthly temperature ranges between 15.34^0C (January) and 31.54^0C (May) and the mean annual temperature averages 23.31^0C. The average annual rainfall is 1161.42 mm [11,12].

The present work was done in ten villages (Sakalo, Sargawan, Ghanghari, Rukhpur, Chikhladih, Khaliba, Bhagwanpur, Kalyanpur, Latori and Manjeera) of Surguja division during 2015-2016. These villages were selected on the basis of their unique ethnic structure, socio-cultural set up, agricultural tradition, agro-ecological situations and constraints. Baseline survey was conducted in all ten villages. The baseline data were collected through well defined pre-tested questionnaires. The study was carried out by interviewing the respondents (100 household in 10 villages) to explore the economically important NTFPs, their utilization pattern and livelihood generation through different activities in the concerned study sites. Household heads or eldest members were considered as the respondents. The data collected on various aspects were compiled and analyzed with suitable and standard methods [13-20].

RESULTS AND DISCUSSION

Socio-Economic Profile

Surguja district of Chhattisgarh is mainly inhabited by different tribal communities whose main occupation is agriculture and collection of forest products. A total of 100 households were interviewed out of which 67 were male and 33 were female. The survey actually targeted to interview the head of the household as they were thought to be more informative and reliable source for data on crop damage incidences. However, it was not possible to get hold of them in most cases; therefore in their absence the other members of the households were interviewed. But it is to be noted that they were also equally informative and confident in their responses. In respect to age of respondents, data compiled shows that majority (35%) of respondents belongs to young age group (up to 35 years) and middle age group (36 to 55 years), whereas 30% respondents belongs to old age group (more than 55 years). The data regarding family size indicated that 75% of respondents were having small size of family (up to 5 members), followed by 25% respondents had large family size (Above 5 members). The education level of respondents depicts that about 19% of respondents have primary to middle school education, followed by 14% of respondents having high school education, 5% of respondents gained higher secondary and above education while 43% of respondents were found to be illiterate.

Source of Income

Farming was the main source of income (100%) besides farming they also generate income from other enterprises like livestock rearing (30%), NTFPs collection (42%), small business, fishing etc (Table 1). Agriculture and livestock rearing is not practiced commercially in a large scale but only for their own household consumption.

Table 1 Percentages showing sources of income in study sites (n= 100)

Source of income	Contribution (in %)
Employed	25
Businessmen	10
Agriculture	87
Fishing	10
NTFP Collection	42
Livestock	30
Trading	05

Major Crops Grown

Paddy and Maize are the major crop grown in the study site (87%). The other crops grown are given in Table 2.

Table 2 Crops grown in the Study sites (n=100)

Major Crop Grown	(%)
Paddy	87
Sugar cane	10
Black gram	02
Maize	80
Wheat	50
Sesame	10

Land Holding and Land Use Pattern

About 07% respondents have more than 10 acre area landholding and 39% respondents have net cultivated area of 5 to 10 acre and 21% respondents have uncultivated area of 0 to 5 acre. About 37% respondents have 0 to 5 acre irrigated area and other land holding and land use pattern is shown in table 3.

Table 3 Percentages showing land holding and land use pattern of respondents (n=100)

About land - Total Area (Acre)	(%)
0 -5	52.00
5-10	26.00
<10	07.00
Net cultivated (Acre)	
0 -5	45.00
5-10	32.50
<10	22.50
Uncultivated (Acre)	
0 -5	21.00
5-10	00
<10	00
Fallow Land (Acre)	
0 -5	17.00
5-10	00
<10	00
Irrigated Area (Acre)	
0 -5	37.00
5-10	04.00
<10	00

About 30% respondents have no available irrigation and 19% respondents use well for irrigation and tube well 21 % and other sources includes upto 30%.

Farm Assets of Respondents

About 82.50% respondents have their own land and 95% respondents have katcha house and 5.0% pakka house and other farm assets is showing in (table 4).

Table 4 Percentages showing farm assets of respondents (n=100)

Farm assets	(%)
Land	82.50
Farm shed	07.50
Katcha House	95.00
Pakka House	05.00
Cattel shed	60.00
Well	47.50
Tube well	27.50
Electronic motor	27.50
Plough	45.00
Pata	00.00
Duffan/Trifan	00.00
Tractor	03.00
Dora	00.00
Animals	41.50
Cows	35.00
Buffaloes	22.50

Ecological Analysis of study site

95% respondents were found to be residing over 20 years in study area (table 5) because the respondents were native of the area and permanent homestead (97.50%).

Table 5: Percentages showing ecological analysis in study sites (n=100)

Year of residence	(%)
Less than 10 years	05.00
10- 20 years	0.00
Over 20years	95.00
Reasons for migrations	
Native of the area	97.50
Farming	1.50
Livestock grazing	0.00

Fishing	0.00
Nature of homestead	
Permanent	97.50
Temporary	05.00
Pressing issues in farming	
Lack of fertilizer	27.00
Poor soil	0.00
Lack of land	52.50
Lack of markets	21.50
Low rain fall	56.00
Pest	33.00
Lack of equipment	10.00
Flooding	0.00
Wild life	05.00
Area Problems	
Lack of land	0.00
Lack of health facilities	27.00
Flood	0.00
Lack of school	5.00
No grazing area for livestock	36.00
Fishing	
Yes	30.00
No	70.00
Reasons of fishing	
Commercial reasons	0.00
Subsistence reasons	25.00
Common fishing methods	
Nets	0.50
Poisoning	0.00
Baskets	0.00
Fishing traps	27.50
Reasons for cutting trees	
Timber or poles for building	67.50
Charcoal	20.00
Clear land for agriculture	27.50
Fire wood	30.00
Hand craft	12.50
Trend of tree cutting	
Increasing	52.50
Decreasing	17.50
Don't know	30.00
Wildlife hunting	
Yes	15.00
No	85.00
Hunting methods	
Guns	0.00
Snaring	12.50
Spear	0.00
Pit falls	7.50
Reason of hunting	
Trophy and hides	0.00
Meat for sale	10.00
Meat for domestic consumption	0.00
Do you hunt birds?	
Yes	27.50
No	0.00
Name the birds do you hunt	
Ducks	0.00
Geese	10.00
Other (specify)	30.00
Do you think wildlife is declining in your area?	
Yes	57.50
No	0.00
Not sure	20.00
Reasons of decline	
Too much hunting	65.00

Too many people	0.00
Shortage of land	5.00
No protection	40.00
Don't know	40.00
Poor policy	0.00
Weak legislation	0.00
Recommendation	
Hunting birds should be stopped	20.00
Hunting animals should be stopped	55.00
Don't care	0.00

NTFPs collection in study area

Total NTFPs collected by the respondents during the study period (2015-16) was found to be 5930 Kg/year. Highest for Latori (2210 kg/year) and lowest for Rukhpur village (300 kg/year) (table 6). Mostly the collection was done manually and most common NTFPs collected were Mahua, sal seeds and tendu leaves.

Table 6 Total NTFPs collection in study area

Village Name	NTFPs collection Quantity/year (Kg)	Type of NTFPs	Methods of Harvesting
Sakalo	425	Mahua, Sal Seed, Tendu leaves, Dori	Manual
Sargawan	610	Mahua, Sal Seed, Tendu leaves	Manual
Ghanghari	385	Mahua, Sal Seed, Tendu leaves, Dori	Manual
Rukhpur	300	Mahua, Sal Seed, Tendu leaves	Manual
Chikhladih	330	Mahua, Sal Seed, Tendu leaves	Manual
Khaliba	325	Mahua, Sal Seed, Tendu leaves, Dori	Manual
Bhagwanpur	435	Mahua, Sal Seed, Tendu leaves, Dori	Manual
Kalyanpur	441	Mahua, Sal Seed, Tendu leaves	Manual
Latori	2210	Mahua, Sal Seed, Tendu leaves	Manual
Manjeera	469	Mahua, Sal Seed, Tendu leaves	Manual
Total	**5930**		

Income obtained from NTFPs in study area

NTFPs is the next major alternative source of income after agriculture in study area because of availability of large scale forest area. The income generated from non-timber forest product was Rs. 14,300, Rs. 15,300, Rs. 5,900, Rs. 10,900, Rs. 7,560, Rs. 8,500, Rs. 10,400, Rs. 31,500, Rs. 9,560 and Rs. 9,000 as well as the contribution of Rs. 2,383, Rs. 3,060, Rs. 1,966, Rs. 2,180, Rs. 2,520, Rs. 2,125, Rs. 2,600, Rs. 6,300, Rs. 2,390 and 3,000 average income per households from Sakalo, Sargawan, Ghanghari, Rukhpur, Chikhladih, Khaliba, Bhagwanpur, Kalyanpur, Latori and Manjeera (table 7).

Table 7 Income obtained from NTFPs in study area

Name of Village	No of Household	Income from NTFPs	Average (Rs/Household)
Sakalo	6	14,300	2,383
Sargawan	5	15,300	3,060
Ghanghari	3	5,900	1,966
Rukhpur	5	10,900	2,180
Chikhladih	3	7,560	2,520
Khaliba	4	8,500	2,125
Bhagwanpur	4	10,400	2,600
Kalyanpur	5	31,500	6,300
Latori	4	9,560	2,390
Manjeera	3	9,000	3,000
Total	**42**	**1,22,920**	**28,520**

Income obtained from Agriculture in study area

The income obtained from agriculture in study sites is Rs. 2,18,00, Rs. 1,91,000, Rs. 3,10,000, Rs. 2,74,000, Rs. 1,75,000, Rs. 1,83,000, Rs. 3,45,000, Rs. 3,90,000, Rs. 2,39,000, and Rs. 2,59,000 as well as the contribution of average income per household of villagers in Rs. 24,222, Rs. 23,875, Rs. 34,444, Rs. 27,400, Rs. 21,875, Rs. 22,875, Rs. 34,500, Rs. 43,333, Rs. 34,142 and Rs. 28,777 from Sakalo, Sargawan, Ghanghari, Rukhpur, Chikhladih, Khaliba, Bhagwanpur, Kalyanpur, Latori and Manjeera respectively

(table 8). Agriculture is the key business in study area and major source of income to their socio-economic development.

Table 8 Income obtained from Agriculture in study area

Name of Village	No of Household	Income	Average (Rs/Household)
Sakalo	9	2,18,000	24,222
Sargawan	8	1,91,000	23,875
Ghanghari	9	3,10,000	34,444
Rukhpur	10	2,74,000	27,400
Chikhladih	8	1,75,000	21,875
Khaliba	8	1,83,000	22,875
Bhagwanpur	10	3,45,000	34,500
Kalyanpur	9	3,90,000	43,333
Latori	7	2,39,000	34,142
Manjeera	9	2,59,000	28,777
Total	**87**	**25,84,000**	**29,701**

The study sites are surrounded with good forest cover and therefore most of their livelihoods depend on available forest produces after agriculture. Forests support rural livelihoods and food security in many developing countries by providing critical sources of food, medicine, shelter, building materials, fuels and cash income. Similar to present findings Thakur et al. [16] reported that majority of respondents (47.50%) belonged to young age group and. 60.0% of respondents have small family size. It was also reported that 41.0% of respondents had primary to middle school education. They also reported that the main source of income was farming in the study sites. Besides farming people also generate income from other enterprises like livestock rearing (63.0%), NTFPs collection (42.50%), employed (2.50%), business (22.50%) as well as wage labors to neighbors fields which support the present findings. Paddy and sugarcane are the major crops grown in study site while the other crops grown are maize, wheat, sesame, black gram etc. It was found that 37.50% respondents have more than 10 acre of land. While 32.50% respondents have 5-10 acre net cultivated area and 35.0% have less than 5 acre uncultivated land. Majority of the people depends upon rain (57.50%) as a source of irrigation, and most of the people have their own land (82.50%) as a farm assets [16]. Similar to present findings Pal [21] reported that due to fragmentation of land generation after generation revealed marginal to small size of land holding by the respondents. Geetha and Devi [22] reports also in the line of agreement with the present findings that the main occupation of the most of respondents is farming followed by NTPFs gathering [23]. Low land holding and insufficient source of irrigation was found to be limiting factors to farmer's low income in the concerned sites [24]. Due to low income scenario of respondents low housing status seems to be very common in the study sites [16, 25]. It was revealed that 90% respondents reside in the concerned sites for long period of time and majority of them are native to the area and majority of them have own house [15] which supports the present findings of the study.

NTFPs may offer sources of income and opportunities for poverty alleviation in rural areas. Most of the rural households residing near forests extract a range of forest products for both direct consumption and trade, and forest products are among the top sources of household incomes. Households engage in collection, cunsumption as well as in trade of NTFPs. NTFPs help bridge seasonal gaps in income for many farmers, and they provide a safety net for many rural households during years with low crop yields or lean-period. From various research reports it was found that NTFP's play an important and supportive role towards communities needs, poverty reduction and improvement in livelihoods [26]. They play a crucial role in the livelihoods of rural people, especially for forest dwellers or tribals. Sustainable collection, use and commercialization are the main drivers in the promotion of NTFP's for community development, poverty reduction and livelihood socio-economic improvement [7, 8]. But in present study the local people were found less aware about the market value of many produce and therefore not able to generate significant income form NTFP's though they offer huge opportunities. Therefore NTFPs is the next major alternative business to improve tribal's economy in study area. Many of NTFPs are being used by locals for the improvement of their livelihood and socioeconomic status. Present study showed that the forest offers a wide range of goods contribution to people's basic needs to be very high. Several minor forest produces are being used for their day to-day needs and many of them are their income generative source.

CONCLUSION

The respondents age, sex, education and socio-economic status are deciding factors of household participation in NTFPs gathering and household income. The collection and trade of NTFPs by rural

households may have negligible ecological impacts. The opportunity to gather natural resources such as NTFPs and convert them into marketable products provides a source of income and safety from risk associated with crop failure due to various reasons in Sarguja, as indicated by the results, where NTFPs contribute 42% to total household's income among different sources. A large number of people continue to generate income, food and medicine from the collection and sale of NTFPs. The district harbours an incredible diversity of NTFPs and the population possesses a sound knowledge on plant resources. NTFPs of the study area are broadly species of medicinal importance, edible, industrial use, mushrooms and honey. It showed that NTFPs collection and selling for extra income has its greater impact on the rural or tribal economy. Programs that build capacity for alternative livelihoods or offer incentives for the conservation of forest resources could be effective at reducing pressure on ecological systems. The socio-economic baseline information of the present findings may useful for the government and NGOs for betterment of the tribal in Sarguja and very helpful for formulation of subsequent action plan.

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