Socio-Economic Drivers for the Collection of Tendu Leaves, A Case Study from Katghora Forest Division, Chhattisgarh, India

Wagmare Balraju, Dinesha S, Gunjan Patil, Devbratha Pradhan, Arshad A, S.K Tripathi

ABSTRACT

The government of India has been undertaking various programs for the socio-economic upliftment of tribals for the improvements in various indicators related to food, health, literacy, livelihood. However, there is a large gap in the human development indices between the general and tribal populations. NTFPs are getting global recognition by providing research and policy support for their sustainable collection and consumption.Tendu leaves are an important NTFP that provides livelihood opportunities to the dependent forest fringe communities. This study focuses on the effect of Tendu leaves collection on the socio-economic status of the tribals in the five villages of Katghora forest division. A purposive sampling technique was used to select 125 respondents for primary data collection. The results of the presenty study showed that a family closer to the forest and having more number of female workers are more likely to collect Tendu leaves from the forest.On the other hand, households with higher income were less likely to send their family members for the collection of Tendu leaves from the forest. The R^2 values of the regression study clearly indicated that gender, income, and distance from forest were key factors significantly affecting Tendu leave collections (in all the three years i.e., 2018 to 2020), and they may be regarded as a good fit for the model. The study found that the annual income is meager for survival for the entire family. Hence, overall socio-economic conditions in all the selected villages fall under vulnerable conditions, which highlight the urgency to initiate effective policies to enhance the well-being of the tribal communities.

Keywords Tendu leaves, Tribal communities, Forest products, Socio-economical status, Livelihood.

Wagmare Balraju[1]
PhD Research Scholar, (Project Associate– I) GB Pant National Institute of Himalayan Environment, Regional Center, Sikkim, India

Dinesha S.[2]
Guest Faculty, Department of Forestry, Dr Rajendra Prasad Central Agricultural University, Pusa, Bihar, India

Gunjan Patil[3]
Assistant Professor, Guru Ghasidas Viswa Vidyalaya, Koni, Bilaspur, Chhattisgarh, India

Devbratha Pradhan[4], Arshad A.[5]
PhD Scholar, Department of Forestry, Uttar Banga Krishi Viswavidyalaya, Pundibari, West Bengal, India

S.K. Tripathi[*6]
Professor, Department of Forestry, School of Forestry & Earth Science, Mizoram University, Aizawl 796004, Mizoram, India

Email: sktripathi@rediffmail.com
*Corresponding author

INTRODUCTION

Non-timber forest products (NTFPs) are non-wood, minor or secondary products that come from the for-

est, excluding timber (Sahoo and Lalramnghinglova 2010, Elisha 2014). Nowadays, NTFPs are getting global recognition through research and policy supports for their sustainable production, marketing, and consumption. NTFPs provide numerous benefits, such as food, income, medicine, employment, and many other opportunities to the rural populations (Shrestha *et al*. 2020). In many developing countries, nearly three-quarters of the population is dependent on the NTFPs for their food and primary health care (Talukdar *et al*. 2020). Some of the important NTFPs are dyes, fibers, edible plants, Tendu leaves, gums, resins, medicinal plants, oils, spices, tannins, and many more (Soren and Naik 2020). Tendu leaves are one of the sources of income and also provide livelihood opportunities to the dependent communities living in forest fringe areas (Mahapatra and Shackleton 2012, Guleria *et al.* 2021). Forest-dependent communities are collecting NTFPs for both domestic and commercial purposes. The collection and sale of NTFPs contribute to the improvement of tribal communities' standard of living and *socio-economic* status (Reta 2020, Pandey *et al*. 2016, Bhattacharya and Hayat 2004).

India is bestowed with rich floral diversity with 45,000 species of plants, of whichnearly 3,000 species provide NTFPs (Dubey 2007, Chauhan *et al*. 2008). Almost two thirds of the NTFP shave been collected in India's tribal belts. In Chhattisgarh, nearly 200 NTFPs are collected and sold by the tribal people, namely Tendu leaves (*Diospyros melanoxylon*), sal seed (*Shorea robusta*), Harra (*Terminalia chebula*), Khair (*Acacia catechu*) gum, Babool gum (*Acacia nilotica*), Tamarind (*Tamarindus indica*), Chironji (*Buchananial anzan*), Mahua seed (*Madhuca indica*) (Churpal *et al*. 2021).The Gonds are the largest tribal population distributed in various states, and in Chhattisgarh 'a tribal state' they constitute nearly 31% of the total population (Census of India 2011, Sanyal and Singh 2022). Nearly 94 % of the tribal population is involved inTendu leaf collection, which acts as a financial lifeline for forest dwellers and also provides seasonal revenue to the state forest department by selling these leaves with the help of government societies. Chhattisgarh produces the best quality Tendu leaves which accounts roughly one fifth of the total Tendu leaf production of the country,

i.e., 16.72 lakh standard bags annually with a value of USD$2,000 million (Gupta *et al*. 2015).

The Tendu leaves are used for making of beedi, i.e., a poor man's cigarette.These leaves are obtained from *Diospyros melanoxylon* of the Ebenaceae family and are commercially called beedi leaves. The local villagers are collecting leaves from the wild trees. This product is traded and managed by the state forest department through the Chhattisgarh state minor forest produces co-operative federation limited. The state government gives a high priorityto the collection of Tendu leaves because it is a nationalized forest product and generates employment opportunities for the forest dwellers in off-peak agriculture seasons (Sabar *et al*. 2016). The availablity, collection, and marketing of Tendu leaves largely influences the socio economic status of the dependent tribal communities. The government of India has been undertaking various programs for the socio-economic upliftment of tribals. These efforts resulted in some improvements in terms of various indicators related to food security, health, literacy, livelihood (Census of India 2011). However, there are large gaps in the human development indices between the general and tribal populations. Hence, the goal of the study is to identify key socio-economic drivers regarding the effect of Tendu leave collection, and their marketing on the upliftment of the socio-economic status of the tribals in the Katghora forest division.

MATERIALS AND METHODS

Study area, data collection and data analysis

The study area is purposefully selected to collect information regarding Tendu leaves collection and the socio-economic status of tribals in five villages of Katghora forest division, Chhattisgarh, lying between 17°46-24°80 N latitude and 80°15-84°24 E longitude. The state has two major forest types, i.e., tropical moist deciduous forest (47.89%) and tropical dry deciduous forest (51.65%). According to the Champion and Seth, it has a tropically hot and humid climate with an average rainfall of 1,100 mm to 1,700 mm and a temperature range of 11°C to 47°C. A purposive sampling technique was used

for sample size determination. Finally, 125 respondents (25 respondents per village) were selected for primary data collection from the five villages, namely Bariumrao, Hirwadoli, Keramunda, Leempani, and Tilaikundi (Fig. 1). The main reasons for choosing these villages for the present study were the easy accessibility of the tribals in these areas, which were well communicated by the researchers and isolated from this type of study.

The data and information were collected for three years, i.e., 2018 to 2020, through questionnaires, direct observation, personal interviews, and participation in their socio-cultural events during the study period. Various types of particulars were taken under consideration, such as name and family profile of the respondent, cooking fuel, drinking water sources, education, income level, occupation and types of houses (Sabar *et al*. 2016, Sarker *et al*. 2020). IBM SPSS version 2020 was used to perform the statistical analysis for the recorded data. A multiple regression model was adopted to find out the relationship between the various independent and dependent variables (Giribabu 2019). The model assumes that the dependent variable Y is a linear function of a series of independent variables and an error term. The multiple regression model is specified as:

$$= \sum_{i=0}^{k} \beta 1 Xt + \mu t$$

Where Yt is the dependent variable, X are the independent variables and *μt is* the error term. *β1* is the constant term or intercept of the equation.

RESULTS AND DISCUSSION

The distribution of gender and caste analysis of respondents showed that around 60% of the respondents were male,while female swere 40% (Table 1). Among the village-wise distribution,Tilaikundis was dominant among male respondents (68%), while female respondents were dominant in Hirwadoli (48%). Similarly, in the caste-wise distribution, about 92.8% of respondents belonged to Schedule Tribes (ST) and
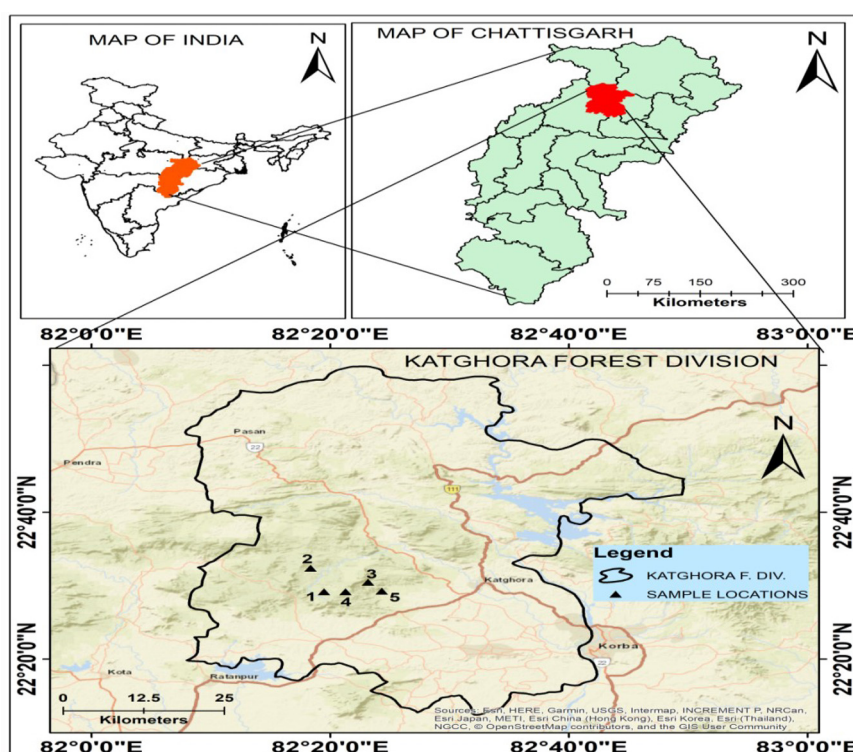

Fig. 1. Village map of study area under the Katghora forest division.

Table 1. Demographic features and socio-economic status of respondents in five villages of Katghora forest division.

Village name		Barium rao	Hirwadoli	Keramunda	Leempani	Tilaikundi	Total
Total respondents		25	25	25	25	25	125
Gender of the	Female	10	12	9	11	8	50 (40 %)
respondents	Male	15	13	16	14	17	75 (60 %)
Tribes (ST)	Baiga	9	7	7	8	9	40(32.0%)
	Korba	9	9	10	6	4	38(30.5%)
	Muria	7	9	5	8	9	38(30.5%)
Total tribes		25	25	22	22	22	116 (93 %)
Yadav (Non-ST)		0	0	3	3	3	9 (7 %)
Marital status	Married	20	21	20	17	22	100 (80%)
	Divorce	2	2	3	4	1	12 (9.6 %)
	Widow	3	2	2	4	2	13(10.4%)
Education	Illiterate	8	13	18	20	12	71(56.8%)
	1-5 class	17	12	7	5	13	54(43.2%)
Occupation	Casual labors	18	20	17	17	20	92(73.6%)
	Farmers	5	5	8	8	5	31(24.8%)
	Self employed	2	0	0	0	0	2 (1.6 %)
Income levels	0.70-0.80	6	0	3	12	0	21(16.8%)
(in lakh)	0.81-0.90	19	5	16	11	13	64(51.2%)
	0.91-1.00	0	20	6	2	12	40(32.0%)
Types of	Hut	0	0	1	2	0	3 (2.4 %)
houses	Semi Pucaa	14	11	9	9	6	49(39.2%)
	Pucca	11	14	15	14	19	73(58.4%)
Dirking water	Hand pump	11	11	8	12	8	50 (40 %)
sources	Common tap	14	14	17	13	17	75 (60 %)
Cooking fuel	LPG	9	10	10	4	5	38(30.4%)
	Firewood	16	15	15	21	20	87(69.6%)

only 7.2% were others, i.e., Non-ST (Table 1). The study revealed that about 80% of respondents were married, followed by widows (10.4%) and divorcees (9.6 %). Most of the respondents (56.8%) reported that they were illiterate. The maximum (68 %) literates, i.e., those who studied up to class five, were reported in Bariumrao village, whereas the minimum (20 %) in Leempani village. The perception of respondents on their socio-economic considerations such as occupation, income levels, types of houses, drinking water sources, and cooking fuel types were shown (Table 1). The distribution of occupations among the respondents indicated that about 73.6 % of them were-casual laborers, followed by farmers (24.8 %), while the least (1.6 %) were self-employed. Around 98 % of farmers belong to marginal and small land holding categories. Among the respondents, a maximum (51.2 %) of them fell into the income group of 0.81-0.90 lakh, followed by 40 (32.0 %) respondents were under 0.91-1.00 lakh, while 21 (16.8 %)were under 0.70 to 0.80 lakh (Table 1). Though the respondents were engaged in the collection of Tendu leaves, some of their family members were earning better income

through alternative employment sources in nearby urban areas as well as self-employment activities. The majority of respondents (58.4%) were living

Table 2. Factors which are influencing the Tendu leaves collection: Regression analysis.

Variables	2018	2019	2020
Number of respondents (N)	125	125	125
Tendu leaves collection (Constant)	(10.385) ***	(10.315) ***	(8.770) ***
Age	(0.689) NS	(0.921) NS	(-0.866) NS
Distance from forest	(1.542)*	(2.114) **	(3.068) ***
Duration of collection	(0.350) NS	(-0.070) NS	(1.677) *
Education	(-1.634) *	(-0.668) NS	(-0.880) NS
Gender	(1.961) **	(1.570) *	(1.807) *
Household income	(-4.266) ***	(-4.002) ***	(-2.616)***
Working population	(1.042) NS	(0.853) NS	(4.299) ***
R^2	0.279	0.229	0.315
F Change	6.453	4.964	7.691
Sig. F Change	0.000***	0.000***	0.000***

Note: Figures in parenthesis indicates t values.

*, **, *** indicates 1%, 5% and 10% level of significance

in pucca houses provided by the government, while 39.2 % were living in semi-pucca houses (Table 1). In contrast, only one household in Keramudi and two households in Leemapani were huts (kuccha houses) as they had not yet sanctioned the colony house. Similarly, regarding the source of drinking water, about 60% of the respondents had been using a common tap, while 40 % were getting it from a hand pump in all the selected villages (Table 1). Among the distribution of cooking fuel sources, the majority (69.6 %) of the households were using firewood, followed by LPG/Gas connection (30.4 %). This might be due to the easy accessibility and year-round availability of firewood as they collect Tendu leaves seasonally. Among the three years of data (2018 to 2020), the maximum income was obtained in the year 2020 (Fig. 2). Among the five villages, the maximum annual income (₹ 20,160) was reported in Keramunda, followed by Tilaikundi (₹ 19,438), while the minimum (₹ 17,669) was in Barium rao.

The year-wise regression analysis to determine various factors (i.e., age, distance from the forest, duration of collection, education, gender, income, and working population) influence the number of bundles of Tendu leaves collected (i.e., dependent variable) has been shown in Table 2. In the year 2018, the coefficient of distance from the forest, education, gender, and household income were positively associated with the dependent variable. Among these four variables, household income was highly significant ($p<0.01$) followed by gender ($p<0.05$) whereas distance from the forest and education were significant at 10 % level ($p<0.10$). Furthermore, in the year 2019, household income was highly significant ($p<0.01$) followed by distance from forest ($p<0.05$), while the gender variable was significant at 10 % level of significance ($p<0.10$). Subsequently, in the year 2020, out of 7 variables, 5 coefficients were associated positively of which distance from the forest, gender, household income and working population were highly significant ($p<0.01$). On the other hand, duration of collection and gender were shown at 5 % levels of significance (Table 2).The R^2 values of 0.279, 0.229, and 0.315 clearly indicated that gender, household income, and distance from the village to the forest area had significant effects for all the selected three years of data and it could be regarded as a good fit for the
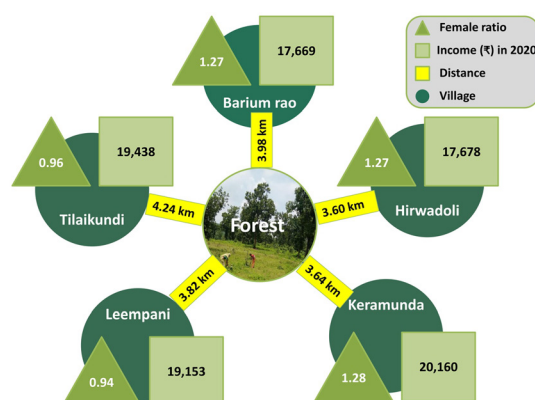

Fig. 2. Gender, income and distance from the forest are key drivers for Tendu leaves collection.

model since it implies that about 27.9 %, 22.9%,and 31.5 % of the variation in the dependent variable was explained by the explanatory variables.

The results indicated that families with a male head and with a more female working population had a greater likelihood of Tendu leaves collection. Similar findings have been reported in Odisha, where women make up roughly 85 % of total population in the Tendu leaves collection (Human Development Society 2004). Tendu leaves collection has been reported to increase the additional income and livelihood of families in the short term (Patel *et al.* 2012, Sabar *et al*. 2016). Likewise, the distance from the village to the forest area also gives more opportunity for Tendu leaves collection. On the other hand, households with better income had fewer tendencies to send their family members for Tendu leaves collection. This study was in agreement with the earlier study by Sabar *et al.* (2016) using the regression analysis.

CONCLUSION

In conclusion, NTFP plays a significant role in the socio-economic upliftment of tribal communities residing in forest fringe areas. The study reveals that collection of Tendu leaves helps to earn additional income and employment opportunities, though it is seasonal work. Daily wage work is the main occupation, followed by farming under rain-fed conditions. The majority of the cultivators are marginal farmers, followed by small farmers,residing in pucca houses

constructed under the government scheme and using common tap water for drinking purposes. The study found that the family's annual income is meagre for survival of the entire family. Hence, overall socio-economic conditions in all the selected villages fall under unsustainable and vulnerable conditions which highlights the urgency to initiate and implement effective policies for poverty eradication and employment generation in the region to enhance well-being of the tribal communities.Outcome of this study suggests that following factors need to be undertaken towards the sustainable development of the tribal population of the region: 1. Encouragement of diversified and year-round income-generating activities, 2. Availability of pure drinking water, electricity, housing, communication, and transportation facilities, 3. Aids and subsidies from the Government Institutions, 4. Creation of employment opportunities,5. Developingalternatives for shifting households from beedi rolling to plate making and Tendu fruits value addition, and 6. Establishing good relationshipsand providing social security for the overall upliftment of the tribal community of this region.

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