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Symbiotic Relationship between Forest and Tribe: A Case Study of Santal Tribe of Jaypur Forest, Bankura District, West Bengal, India.

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Abstract

For thousands of years, forest and indigenous populations have evolved in symbiosis. Forest plays an important role in enhancing livelihood requirements for rural community and in maintaining ecological balance. Over 53 million tribal people in India, about 60% of the rural communities directly rely on forest for their day-to-day requirement. The bio-cultural knowledge of these 'ecosystem people' has made them sustain their life through the ages. However, the ethnic minorities (STs) in rural India are characterized by geographic isolation as well as strong sense of socio-cultural exclusion. Their livelihood highly depends on utilizing timber as well as non-timber forest products (NTFPs) for various purposes, e.g. medicine, food, economic and other socio-religious purposes. However, it has gained importance in recent years in policy strategies of Government owing to its significance in life support substance to large number of forest dwelling communities.

The Bankura district, situated in the western part of West Bengal, is actually the fag-end of the Chhotonagpur plateau and enriched with the wealth of forest (Recorded forest area of 21.53%, State Forest Report, 2006-07, Govt. of West Bengal) covering Jaypur, Vishnupur, Ranibandh, Taldangra block etc. The present study opts to explain an intimate man-nature relationship between forest resources and Santali livelihood of Jaypur block of the said district. It also throws light on traditional knowledge and cultural practices of this social group for conservation and preservation of forest resources.

Key words: *Bio-resources, tribal livelihood, man-nature relationship, forestry, ecosystem people, sustainable forest resource management.*

Introduction

From the beginning of human civilization, primitive human beings used to live in forest nurtured by nature. The tribal communities in India have fascinated the forest regions living isolated from the mainstream of life but in harmony with nature. They are in a multiplex relationship among populations of organisms for sustaining their livelihood within their habitat.

Forest plays an important role in enhancing livelihood requirements for rural community and in maintaining ecological balance. Over 53 million tribal people in India, about 60% of the rural communities directly rely on forest for their day-to-day requirement. The bio-cultural knowledge of these 'ecosystem people' has made them sustain their life through the ages. However, the ethnic minorities (STs) in rural India are

characterized by geographic isolation as well as strong sense of socio-cultural exclusion. Their livelihood highly depends on utilizing timber as well as non-timber forest products (NTFPs) for various purposes. Economic activities, domestic livelihood system and herbal medicines- all are gathered from the forests. Empirical studies show that tribal people are highly dependent on forest for their subsistence even in this age of scientific and technological development.

The tribals are the most backward social groups with constitutional protection. The tribals in India are predominantly rural living mostly in forest and mountain ranges and are over-whelmingly illiterate. They are the poorest social groups having more than 50% of population living below the poverty line (Singh, 1993).

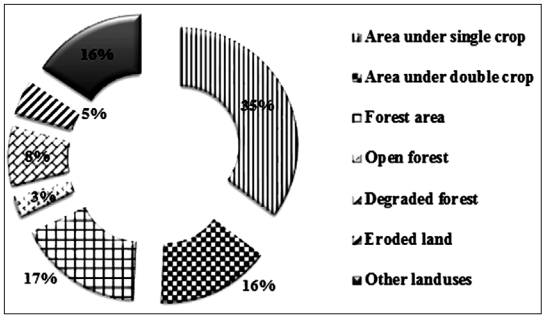


Fig. 1: Land use of Bankura district (Source: NRDMS, Bankura district).

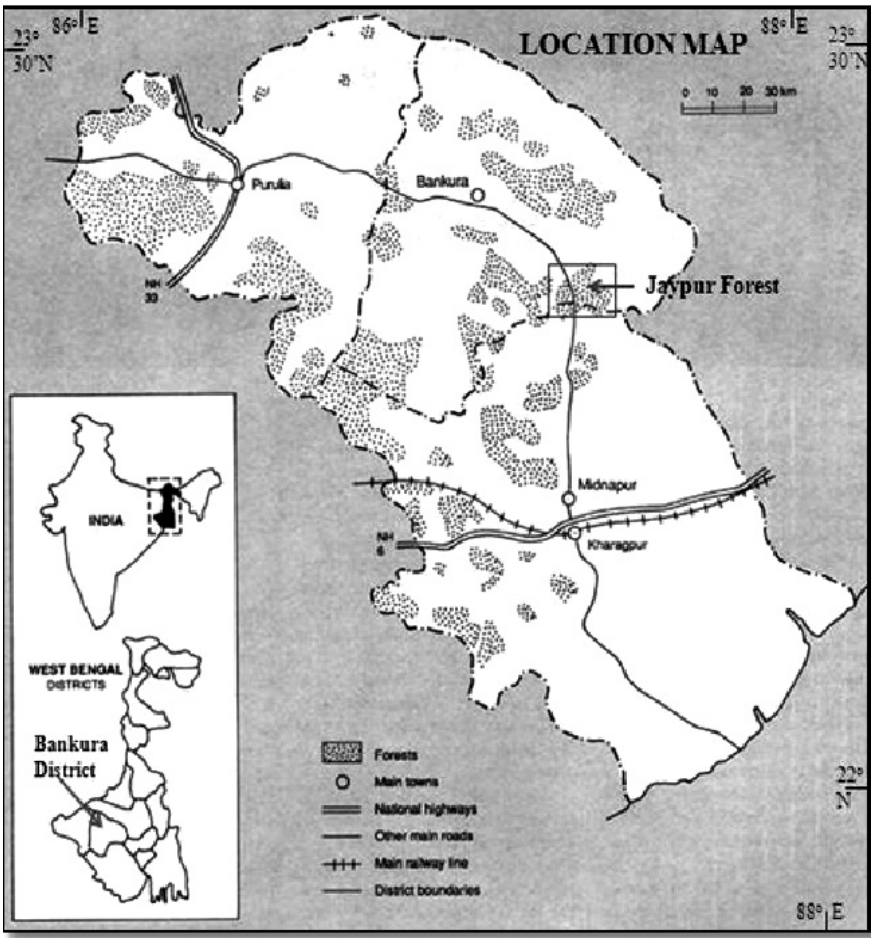
The state of West Bengal in India has a multi-cultural and multi-lingual population including about 40 tribes. Of them, Santal constitute one of the largest tribal communities of West Bengal, distributed in the districts of Birbhum, Bankura, Maldah, Midnapur, and 24 Parganas. They are mainly concentrated in the dry sub-tropical regions of Rarh Bengal.

The Bankura district is enriched with the wealth of forest (Fig. 1) (Recorded forest area of 21.53%, State Forest Report, 2006-07, Govt. of West Bengal) covering Jaypur, Vishnupur, Ranibandh, Taldangra block etc. We have selected Jaypur block of Bankura district to explain an intimate man-nature relationship between forest resources and Santali livelihood of Jaypur block of the district. It also throws light on traditional knowledge and cultural practices of this social group for conservation and preservation of forest resources.

Area Identity

Bankura, the fourth largest district of West Bengal is located in the western part of the state, popularly known as "Rarh" from time immemorial (Map 1). This district forms an intermediate tract lying between the rice producing alluvial plains of Bengal to the east and the Chhotonagpur plateau in the west. Along the middle of the district, the ground surface gradually rises in undulating plain. The district is surrounded by Paschim Medinipur and Hugli district in the east, Purulia district in the west, Barddhaman district in the north and east. Agro-ecologically and socio-economically it is one of the poorest regions of West Bengal.

The economy of Bankura district is predominantly agrarian using the traditional agricultural techniques. Unconductive topography, dry climate, very small size of landholdings, poor irrigation coverage, low water retention capacity of soil offer limited scope for agriculture. The literacy rate is much lower than national and state average. The district lies at a low rung of human development, its rank having been eleventh. Relative position of the district in



Map 1: Location Map

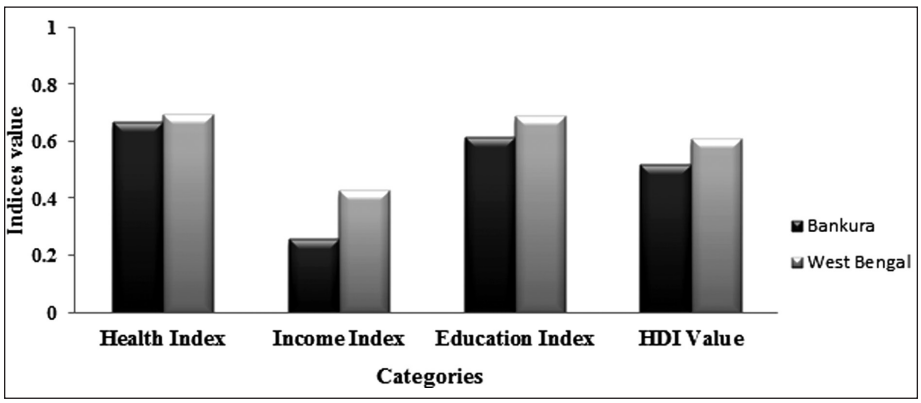


Fig. 2: Comparative analysis of HDIs of Bankura district and west Bengal (Source: Human Development Report, Bankura district, 2007).

terms of three human Development indices indicates that in relation to health and educational attainments, the district is closer to the state average, whereas in income, it lags far behind (Fig. 2).

When Human Development ladder for different blocks is considered, Jaypur block, one of the poorest blocks of the district mostly covered by forest, ranks comparatively in lower position. The block selected for micro-level study contributes high concentration of BPL families (34.37%) with respect to total number of families of the block. There is a specific geographical concentration of backwardness and poverty in 'core Jaypur forest range' of the district. Three villages having high concentration of tribal population were chosen for detailed study, viz. Adhakata (87.97%), Basudebpur (41.48%) and Natungram Radhamohanpur (80%) of Jaypur forest range of Bankura district (Fig. 3). A large segment of population being tribal in nature depends on forest. Forests have customarily played a critical role in the livelihood of these tribal people.

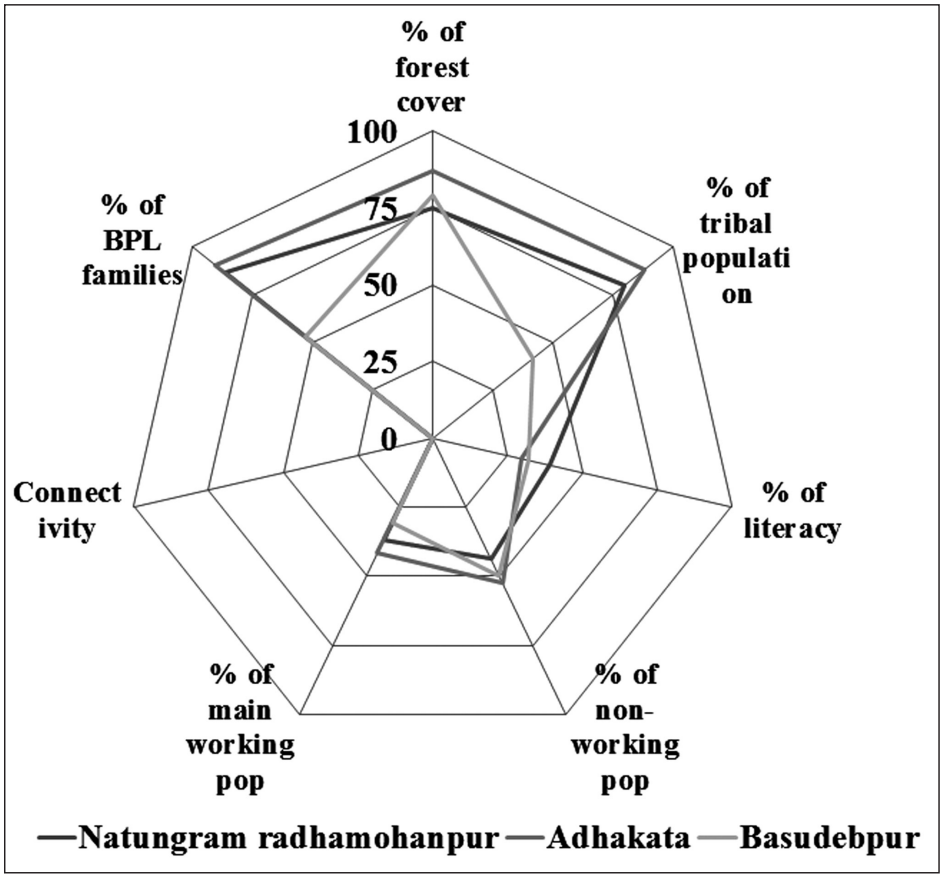


Fig. 3: Socio-economic status of the sample villages of Jaypur forest (Based on Secondary data sources).

OBJECTIVES

The main objectives of the present study are enunciated here under:

- To establish the linkages between forest resources and the livelihood of Santal forest villagers;
- To record ethnographical field data in order to analyse traditional uses of neglected plants for food, medicine and in domestic livelihood system as well as to identify and evaluate the socio-economic and anthropological context in which these plants have been gathered and processed;
- To examine the value of NTFPs in terms of households as well as commercial importance;
- To highlight the significance of forest resources in the economy, material culture, food habits, ethno medicine and other socio-religious requirements of the tribal people;
- Finally, on the basis of the above study, to develop location-specific appropriate livelihood strategy across NTFP sectors for these deprived tribal people.

Methodology

The methodology has been precisely Qualitative as well as Quantitative. For the collection of necessary data base and information, Primary and Secondary data sources have been used. To select three villages already mentioned above for enquiry, Census data (2001), Land-use maps, GIS maps prepared by Zilla Parishad Office of Bankura District, Topographical Maps (Ref no. 31J/1, 31J/5, 31J/2, 31J/9 and 31J/10) were referred to explore the features of forest-people relationships.

During fieldwork interviews, group discussions, direct open-ended questionnaire survey were arranged for tribal forest villagers, Forest Department Staffs (Beat officer, Ranger), local ICDS worker 'Surovi Hansda' and members of Forest Protection Committee. To select households random sampling technique was followed but the households having aged people more than 60 years old were given much more emphasis because these aged people have strong connection with traditional use of forest resources and indigenous methods of forest conservation. It is noteworthy that female members of selected households were questioned elaborately as mainly women are the collectors as well as carriers of the NTFPs of the study area.

While collecting ethno botanical information, structured and semi-structured interviews with knowledgeable people native in each site territory were arranged. Most of the plants were recognized by the well-known medicinal plant specialist 'Mathur Hansda' in-situ during field work and collected for scientific identification. For each plant recorded one questionnaire was filled.

Plant related information is entered into a database. The data acquired for each plant comprises the common ethnic local name, its use, the part of the plant used and its preparation processes. The way plants were collected, preserved, stored, prepared and used and the most relevant processes were photographed.

Among Secondary sources brief literature review, Governmental Annual reports were followed. Besides, to achieve the objectives mentioned above, various simple as well as sophisticated Quantitative

techniques like Random Sampling, statistical diagrams have been fruitful in the present study.

Justification For Selection of Study Area

a. High dependency ratio between forest and tribal livelihood and the impact of forest products in socio-economic and cultural life of the study area;
b. Remote villages surrounded by deep forest and forest is the only source of natural resource for native livelihood;
c. Rain-fed agriculture activities during monsoon season only and lack of any other means of livelihood;
d. Low level of literacy;
e. Poor accessibility and connectivity;
f. Isolated and scattered hamlets of tribes within the forest.

Findings

1. Economic Livelihood Of Santals Through Forest

Forest plays an important role in enhancing livelihood requirements for Santal community.Apart from being dependent upon rain-fed agriculture, the economy of Santal tribe is largely based on forest resources. Santals of Jaypur forest range are highly dependent on the collection of forest products for their commercial needs (Photograph 1a, 1b, 1c and 1d) (See page 234), among which sal leaf, sal seed, firewood, mushroom, mahwa flower, kend fruit and kend leaves are marketable and provide the opportunity to supplement household income. Development and Planning Department, Govt. of West Bengal (2007) has estimated that in the district of Bankura each year about 20-50% of household income comes from NTFPs harvesting.

The fact is that the Santal women are the main collectors and head-loaders of fuel-wood which contribute a substantial portion of monthly income of these poor tribal families. According to the Forest Range officer of Jaypur forest (semi-structured interview, 2012), "It has been estimated that only in Jaypur forest range 70-80% economic livelihood of Santals are largely based on forest products, particularly sal leaves and firewoods". On the basis of the availability of the product per year, their monetary value, commercial importance as well as multiple usability, the most important forest products have been ranked in the following table using the participatory appraisal technique.

Table 1: Important NTFPs as Economic Use by Santals in Jaypur Forest Range of Bankura District, West Bengal.

Sl No.	Name of the Products	Availability	Commercial Importance	Monetary Value (In Rs.)	Multiple Use Of The Product	Rank
1	Sal leaf	8 months	√	Rs. 15/ 1000 plates	√	3
2	Sal seed	3 months	√	Rs. 6/ tin	×	2
3	Firewood	Whole year	√	Rs. 70/ bundle	√	3

4	Mushroom	3 months	√	Rs. 150-200 /kg	√	2
5	Mahua (flower)	2 months	√	Rs. 5/kg	√	2
6	Kend leaf	2 months	√	Rs. 20/bundle	×	1
7	Kend fruit	1 month	√	Rs. 10/kg	×	1
Data Source: Based on Questionnaire Survey of forest villagers of Jaypur forest range, 2011. **Rank: 1-Less important, 2-Moderately important, 3-Highly important.*						

Domestic Resource Mobilization Through Forest

Jaypur forests have customarily played a critical role in the domestic livelihood of these Santal people. They rely almost fully on forest resources to meet their subsistence needs. They have an organic linkage with the forest as it provides sal wood for construction material, dry sal leaves for fuel, mahwa as food and local intoxicating liquor, mushroom, redi seed, kendu fruit as food, alkushi, bichhuti, babla for spiritual activity, mahwa fruit (Kachra) as household needs, mahwa and sal for socio-cultural activity as discussed in the table no. 2. However, at least one person, generally one woman from each family walk 6 kms (average) into the forest every day to collect sal leaves and firewood, and, at that time, they also gather flower, fruit, roots and leaves to sustain their livelihood, whereas they have to cover approximately 8 km distance for marketization of these products except sal leaves.

Table 2: Distance covered by Santals for Collection as well as Marketization of forest products.

Name of the forest products	**Distance covered for collection (km)**	**Distance covered for marketization (km)**
Green Sal leaf (Sia-pata)	**5**	**-**
Jhanti	**5.5**	**9**
Mushroom	**4.5**	**7.5**
Medicinal plants	**6.5**	**-**
Mahwa	**7.5**	**9**
Source: Primary Survey at Jaypur forest range.		

Sal leaf collection is a necessity for almost all the forest households. Women and children mainly stitch sal leaves by hand to produce sal plates, popularly known as *sia-pata*. The price of *sia-pata* in the core area of forest is quite low but it has been observed that after purchasing *sia-pata* by mobile middleman these home-made primary products become converted into value-added machine-made secondary products (Fig. 4) (See page 233).

The cultural life of the indigenous Santals is connected with the forest also. Their folklores, rites and rituals, revolve around the forest. They depend on forest on every aspect of their cultural life, during marriage, death, spiritual activity, etc (Table 3).

Table 3: Various Forest Products used by Santals in Domestic Livelihood System.

SL NO.	LOCAL NAME	PARTS USED	PURPOSE
1	Sal	Wood (Stem)	House construction (Pillar, structure), Death, Marriage
2	Sal	Dry leaf	Fuel
3	Sal	Flower	Festival
4	Mahua	Fruit (Kachra)	Liquor (for daily use and festival also)
5	Mahua	Flower	Food, Used in marriage, Local intoxicating liquor
6	Mushroom	Body	Food
7	Kuchikhati	Stem	Broom
8	Dangakolai	Fruit, Leaf	Food
9	Alkushi	Body	Spiritual activity
10	Bichhuti	Leaf	Spiritual activity
11	Babla	Body	Spiritual activity
12	Junn	Grass	Betel-leaf cultivation
13	Redi	Seed	Food, eye-salve
14	Kendu	Fruit	Food
15	Sal	Seed	Oil extraction

Data Source: Based on Questionnaire Survey of forest villagers of Jaypur forest range, 2011.

Ntfps With Special Reference to 'Medicinal Plants And Herbs'

The Santals in core forest areas of Jaypur rely greatly on indigenous knowledge for health care. Since ages, they use different parts of plants as medicine as they are readily available, safe and cost-effective (Fig. 5) (See page 233).

As the primary health centers are located far away (avg. 10 kms) from their habitation, most of the ethnic forest villagers are still compelled to rely on herbal drugs. The medicinal plants of the study area collected from the Jaypur forest (Photograph 2), their local names and scientific names, and the medicinal uses have been highlighted in the table no. 4.

Table 4: Ethno medicinal Use of Plants by Santal Forest Villagers of Jaypur Forest Range of Bankura District, West Bengal, 2011.

Sl No.	Scientific Name	Local Name	Parts Used	Medicinal Uses
1	***Achyranthes aspera***	Apang	Plant, seed, Root	Hydrophobia, Skin eruption, Piles, Dropsy, Snake bite
2	***Acorus Calamus***	Boch	Rhizome, Infusion	Louse infestation
3	***Alangium salvifolium***	Akarh	Whole plant, Leaf	Rheumarism, Snake bite, Urinal infection
4	***Andrographis paniculata***	Kalmegh	Leaf, whole plant	Dysentery, worm infection, work as liver tonic
5	***Argemone Mexicana***	Shialkanta	Seed, Plant Latex	Impotence
6	***Aspargus racemosus***	Shatamuli	Root	Refrigerant, Diuretic, Dysentery
7	***Barleria prionitis***	Felankuri	Root	Pain-relief (Headache mainly)
8	***Blumea lacera***	Fuksima	Leaf, Root	Cholera
9	***Caesalpinia crista***	Karanj	Seed, Leaf	Alopecia, Diabetes Mellitus
10	***Cassia fistula***	Bandar lathi	Leaf, Fruit, Seed	Fungal infection, Urinary problem
11	***Cassytha sp.***	Alakjari	Whole plant	Ricket
12	***Clerodendrum indicum***	Ghnetu	Root	Veterinary use
13	***Clitoria ternatea***	Swet Aparajita	Root	Infertility
14	***Croton bonplandianum***	Churchuri	Root, Leaf	Blood-coagulant, Antiseptic
15	***Cuscuta reflexa***	Swarnalata	Stem	Diarrhoea in cows
16	***Datura metel***	Datura	Leaf	Alopecia
17	***Desmodium gangeticum***	Shalaparni	Root	Cough, Asthma, Vomiting, Snake bite and Scorpion sting
18	***Dioscorea bulbifera***	Kham alu	Tuber	Dysentery, Piles, ulcers, Birth control
19	***Elephantopus scaber***	Lankasuti	Root	Vertigo
20	***Flacourita indica***	Bincha	Root	Jaundice and enlarged spleen
21	***Glycomis pentaphylla***	Ashshoura	Root, Wood	Snake bite, Fever
22	***Gymnema sylvestre***	Gurmar	Leaf	Diabetes
23	***Hemidesmus indicus***	Anantamul	Root	Fever, Dysentery, Skin disease, Blood purification
24	***Jatropha gossypifolia***	Bherenda	Fresh Latex	Dental disease, Carbuncles

25	***Madhuca indica***	Mahwa	Bark, flower	Cough and cold, Piles
26	***Mimosa pudica***	Swet Lajjabati	Root	Infertility
27	***Osimum canum***	Ban tulsi	Leaf	Skin disease
28	***Ricinus communis***	Redi	Seed, leaf	Headache, Purgative, Scorpion sting
29	***Ruellia Prostata***	Footkari	Stem	Jaundice, Gynaecological problems
30	***Shorea robusta***	Sal	Flower	Dysentery
31	***Sida cordifolia***	Berela	Root, Leaf	Blood Vomiting
32	***Smilax macrophylla***	Ramdatan	Root	Jaundice, Blood Dysentery, Diarrhoea, Night wetting
33	***Streblus asper***	Sheora	Bark, Leaf	Antiseptic, Bronchitis, Anti-inflammatory
34	***Vigna mungo hepper***	Mash-kalai	Cotyleden, Infusion	Kidney stone
35	***Vitex negundo***	Nishinda	Leaf	Antiseptic, Antihelmantic, Tranquillizer

Discussion

Ecosystems and indigenous populations have evolved in symbiosis for thousands of years. The Santals living inside the forest possess marginal amount of cultivated land within forest. They practice subsistence level of mono-cropping cultivation. They are highly dependent on forest as the other sources of income from agriculture and daily wage labours are limited. Forest sector is the largest land use of the study area. The tribal people, the most disadvantaged section of society, subsist from forest. Both wood and non-wood products are important for their livelihood (Fig. 6). Poor accessibility and connectivity (79% of villages not covered by any metalled road), remoteness of tribal villages from market, co-existence with forest resources, lack of industrial activities contribute to the high level of symbiosis on forest resources.

Sal is the most important species of Jaypur forest. Sal leaves grow in plenty in most parts of the year which are collected by every members of each family of the core-forest. Each household can earn Rs. 140/- per day through selling Sal plates. By selling firewood, each family can earn Rs. 700/- per month approx. Other forest products like Sal seed, mahwa fruit and mahwa flower have the potentiality to generate income for the tribal people but lack of appropriate knowledge of use, lack of advertisement, and lack of Forest Department's initiative, all the above products cannot become value-added products.

Some initiatives has been taken by Forest Department to give seasonal employment to the tribal people of the study area such as contour trenching for rain water harvesting, ground water recharging by cutting of small pond, afforestation, etc.

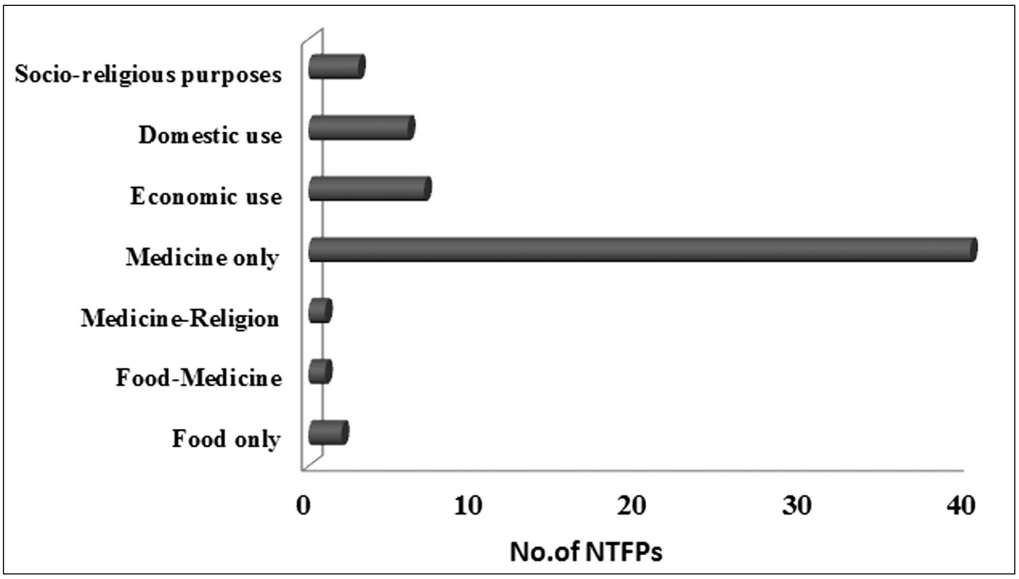


Fig. 6: Forest products used by Santals for various purposes (Based on Primary survey).

Another important activities related to the forest is governed by Forest Protection Committee in which one person of each tribal family belong to this committee and they are engaged into various forest regeneration activities like Rehabilitation of degraded Forest (RDF), Multipurpose Shoot Cutting (MS Cutting), and plantation of Akashmoni, Eucalyptus, etc. They are paid Rs. 130/- per day through NREGS though this is very much irregular (some days in a year). In spite of such initiatives, due to this uncertainty, finally they co-exist with forest to meet their basic needs.

Recommendations And Suggestions

From the discussions above, it can be concluded that the Santal tribe of the Jaypur forest area is closely associated with the physical environment thus maintaining inseparable relationship with the forest resources. But to improve their life through forest, some necessary actions may be taken by any Govt. and non-Govt. Organizations as discussed below:

- To identify and regeneration of forest products;
- Well-organized marketing system to promote the NTFPs based value-added products;
- Training for improving knowledge in use and marketing of value-added products;
- Improvement of technical knowledge so that they can use the forest in proper way;
- To improve their way of life, drinking water facilities, literacy campaign, health care centers is needed;
- To include women in forest conservation and management system.

Bibliography

Badaik, S. & Xalxo, R. (2009). Wild Leaves: Potential for Human Consumption and Nutritional Profile. *Kurukshetra: A Journal of Rural Development.* Vol. 58(2). December 2009. ISSN-0021-5660.

Bandyopadhyay, R.(2008). Sharing traditional knowledge and cultures of different tribes of West Bengal, India. World Library and Information Congress: 74th IFLA General Conference and Council. Available online at http://www.ifla.org/IV/ifla74/index.htm.

Bhattacharya, S (2005). *Chironjibi Bonoushodhi.* Vol. 1 to 3. Anondo Publishers. Calcutta. ISBN: 81-7066-606-6.

Caius, J.F.(1986). *The Medicinal and Poisonous Plants of India*. Scientific Publishers, Jodhpur, India.ISBN: 81-85046-30-1.

Chakravarty, S, Shukla, G. & Suresh, C.P. (2007). Tribal Welfare and Development in India: Past, Present and Strategies with Special Reference to Agriculture and Forestry. *Kurukshetra: A Journal of Rural Development.* Vol. 56(1). November 2007. ISSN-0021-5660.

Chopra, R.N., Nayar, S.L. & Chopra, I.C. (1956). *Glossary of Indian Medicinal Plants.* Council of Scientific and Industrial Research. New Delhi.

Della, A., Paraskeva-Hadjichambi, D. & Hadjichambis Ch, A. (2006). An Ethnobotanical Survey of wild edible plants of Paphos and Larnaca Countryside of Cyprus. *Journal of Ethnobiology and Ethnomedicine.* 2:34. Doi: 10.1186/1746-4269-2-34.

Ghosh, A. (2008). Ethnomedicinal plants used in West Rarrh region of West Bengal. *Natural Product Radiance.* Vol. 7(5), pp. 461-465. Received 10 August 2007.

Ghosal, S. (2011). Importance of non-timber forest products in native household economy. *Journal of Geography and Regional planning*. Vol. 4(3), pp. 159-168. Available online at http://www.academicjournals.org/JGRP.

Kandari, L.S. (2009). Enhancing livelihood through Non-timber Forest Products (NTFPs) Collection: A Case Study of Keonjhar District, Orissa, *India.Annals of Forestry.* 17(2): 251-257.

Mukherjee, M. &Mukherjee, D. (1971). *Indian Tribes.* Saraswat Library. (1st Ed.). Calcutta.

Nimachow, G., Taga, T., Tag, H. & Dai, O. (2008). Linkages between Bio-Resources and Human Livelihood: A Case Study of Adi Tribes of Mirem Village, Arunachal Pradesh (India). in ***The Initiation***, Annual publication of Student Forum for Forestry Research and Environment Conservation (SUFFREC), Kathmandu Forestry College, Kathmandu, Vol. – 1, pp. 183 – 198, 2008.

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