

Livelihood promotion through value addition to household traditional *Sal* (*Shorea robusta* Gaertn.) leaf plate making in Jharkhand, India

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The study sought to investigate the status of traditional *Sal* leaf plate making, its present livelihood contributions and future prospects through value addition by mechanized moulding among ethnic households engaged in the profession in Bundu block of Ranchi district in Jharkhand, India. The sample villages were selected using random sampling technique and all the households owning cottage industries of *Sal* leaf plate making were selected as representative respondents for household survey employing purposive sampling technique. The data on production, seasonality, employment generation, income earning and marketing were collected through personal structured interviews and direct observations. Value addition by mechanized pressing of raw *Sal* leaf plates may increase income by ₹ 24100/ household/ yr (96.40 %) and employment by 50 mandays/ household/ yr (12.50 %). Hence, it may be a crucial intervention to accelerate forest resources based livelihood diversifications, promotion and development.

Keywords: Jharkhand, Livelihood promotion, *Sal* leaf plate making, *Shorea robusta* Gaertn., Value addition

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Introduction

The forests in India play an important roles in the socio-economy, culture and livelihoods of millions of forest dependent rural people by providing subsistence income, employment, energy, nutritious foods, fodder, housing materials, medicines and a wide range of goods and ecosystem services^{1,2}. The collection of Non-Timber Forest Products (NTFPs) like fuel wood, fodder, timber, lac, fibers, floss, medicines, vegetables, tubers, roots, leaves, fruits, bush meat, housing materials, etc. derived from forests are an integral part of day-to-day livelihood activities for tribal people^{3,4}. India has a huge population living in the villages close to the forests with their livelihoods critically linked to the forest ecosystem⁵. NTFPs collection, processing and sale is a major livelihood intervention for the people living in these forest fringe villages^{6,7} and income for households living in and around forests constitutes 40 to 60 % of their total income⁸⁻¹⁰. The NTFPs provide local job opportunities to two million people living in and around the forest area every year

and contribute significantly to rural economy^{11,12}. Production and consumption of NTFPs have never appeared as resources of great economics and ecological importance at macro level, but contribute a minor share to the national economy in comparison to commercial timber¹³. However, at micro level, tribal people living in and around forests for centuries have recognized NTFPs as important forests resources for livelihood security¹⁴. Despite living in resource rich areas the tribal people are in underprivileged condition having extremely unsecured livelihoods¹ and are extremely vulnerable to ill health, economic dislocation and natural disasters. They are trapped in low-wage low-skilled work with little job security, inadequate food and shelter, deprivations of basic education and health, lack of clean water and sanitation¹⁵. Hence, livelihood security at the household level in forest dwelling communities through value addition of NTFPs has received increasing attention among social scientists and policy makers^{16,17}.

The Jharkhand state is bestowed with abundant forest resources, biodiversity and tribal population¹⁸. The NTFPs are the 2nd important contributor to the total livelihood income among tribal households in

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Jharkhand⁹. Among all the NTFPs, *Sal* (*Shorea robusta* Gaertn.) leaf is one of the most important NTFP collected and processed among ethnic communities of Jharkhand^{18,19}. *Sal* is worshiped by ethnic people of Jharkhand for providing multiple products. They celebrate *Sarhul* festival when new flowers appear in the *Sal* trees and the deities are worshiped with *Sal* flowers²⁰. Skillfully stitched and pressed *Sal* leaf plates which are cheap, disposable, bio-degradable ecological substitute for thermocol and plastic plates are used locally in the shops, petty hotels, temples, marriage, festivals, *etc.* They are also preferred by increasingly eco-conscious people and thus there is a great domestic as well as global demand²¹. *Sal* leaf plate making among ethnic communities (*Munda*, *Oraon* and *Lohara*) of Bundu block in Ranchi district, Jharkhand is traditional, less remunerative and incommensurate to labour¹⁸. Value addition through mechanized pressing will promote considerable employment and income opportunities. The confluence of traditional knowledge and modern technology will not only improve livelihoods but also help in checking migration to urban areas and socio-economic development of the ethnic people. In the present investigation, current livelihood implications and future livelihood prospects through value addition in traditional *Sal* leaf plate making among forest fringe communities of Bundu block in Ranchi district, Jharkhand is reported.

Materials and Methods

Study Area

The study was carried out in Bundu block of Ranchi district in Jharkhand, India (Plate 1) during 2010-11. The block lies on the undulated surface of Chhotanagpur plateau between 23°11'- 23° 18' North latitude and 85° 35'- 85° 58' East longitude at an altitude of 337 m above MSL spreading over 25,097 ha. The existing land use pattern in the block is as un-irrigated cultivable land (69.25 %), forest (17.44 %), irrigated cultivable land (8.41 %), culturable wasteland (3.59 %), unculturable wasteland (1.29 %) and non-agricultural use (0.02 %). The block is a backward area with 4377.50 ha under Northern Tropical Dry Deciduous Forest (5B/C2)²² inhabited by 32,528 (60.74 %) ethnic people (*Munda*, *Oraon* and *Lohara*) accounting 44.02 % literacy percentage of the total population. The area under study has typical tropical climate²³ with 3 distinct seasons, viz. rainy (June-October), winter (November-February) and summer (March-June), average rainfall of 1413.60 mm and temperature ranging from 24 to 37.2 °C.

Sampling Technique

Multi-stage sampling technique²⁴ was employed to select the sample villages and the representative respondents for the study. In first stage, 9 out of 88 villages, viz. Korda, Jojoda, Husirhatu, Banaburu, Nehalgar, Ghagrabera, Hesapiri, Roredih and Kuchidih having around 10 % sampling intensity were selected using random sampling technique. In second stage, all the 65 households owning *Sal* leaf plate making cottage industry were selected for survey based on purposive sampling technique with household heads as respondents.

Data Collection and Analysis

The primary data on production, seasonality, employment generation (mandays/yr), income earning (₹/yr) and marketing of *Sal* leaf plates were collected through personal interview using structured interview schedule and direct observations. The monetary value was calculated by multiplying the quantity of plates with local market rates ascertained by periodic market surveys. The descriptive statistical tools²⁵ include percentage, frequency and mean.

Results and Discussion

Traditional *Sal* leaf plate making

Collection of leaves

Sal is a large nearly semi-evergreen timber tree found in Northern Tropical Moist Deciduous Forests (3C) and Northern Tropical Dry Deciduous Forests (5B) in India²². New leaves appear from February to May and turn yellow and fall during January to March. The mature leaves having size 10-12 by 6-12 cm are ovate-oblong, dark green, shining and coriaceous²⁶.

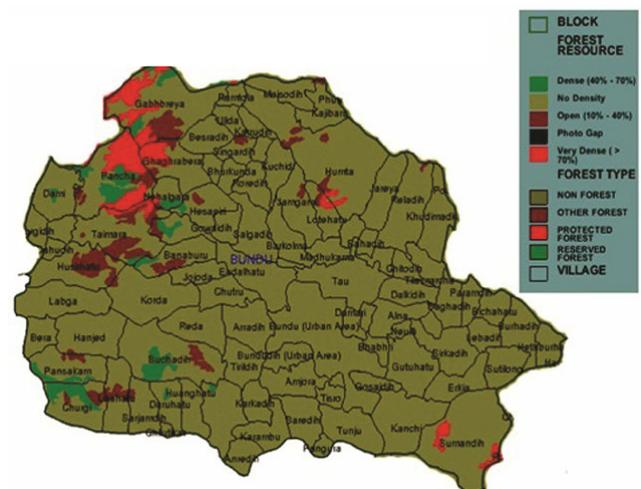


Plate 1 — Location of the study area

The leaves are collected mostly by women and children by using 20-25 feet long pluckers or by picking up the leaves fallen on the forest ground. Generally twigs with 4 to 5 leaves are plucked and the leaves are removed from the twigs (Plate 2a). They spend 2 to 3 h to collect 2000 leaves from the trees and to make them into a bundle to carry home. They go to forest early in the morning and return by 10 or 11 AM and this practice is in vogue for about 8 months excluding March & April and July & August.

Stitching of leaves

The green leaves are stitched together using bamboo [*Bambusa bambos* (L.) Voss. syn. *B. arundinacea* Willd or *Dendrocalamus strictus* (Roxb.) Nees] or *Neem* (*Azadirachta indica* A. Juss.) nails into *Pattal* (raw plates) (Plate 2b). About 7-8 leaves and 11 splints are required for one plate. Normally, it takes 8 h for a primary collector to stitch 500 plates. Plates of 27.5-30 cm diam. are most popular in the market.

Drying of plates

The stitched plates are dried for 3-4 h in an open space under sun with utmost care to avoid fungal attack (Plate 2c). Time to dry should not exceed this as it could reduce flexibility and quality of the product. These dried leaves are kept in open throughout the night to gain some moisture which helps in avoiding breakage while stitching. The drying place is usually located in the homestead and is made up of mud and cow dung. The plates are kept pressed throughout the night under some heavy load to obtain a flat shape. During rainy season, the plates are sold without drying at very low prices.

Packaging of plates

The dried plates are packed loosely using *Sabai* [*Eulaliopsis binata* (Retz.) C.E.Hubb.], *Sutli* (*Corchorus capsularis* L.) ropes or rag (Plate 2d). About 100 pieces are bundled and 10 such bundles are kept under pressure for about 3 h under heavy stone. Generally, the traders are in regular contact with the village level agents who procure and sometimes store plates in the warehouses made for the purpose in the villages.

Transportation of plates

The dried plates are generally transported by bicycle to a nearby market in Bundu (Plate 2e). The carrying capacity of a bicycle is around 35000 plates. Greater amount of plates are transported by an auto

rickshaw or a van. Complaint received after transportation includes falling of sticks and leaves.

Seasonality

Seasonality of collection, processing and sale of the *Sal* leaf plates exist for around 8 months except March-April and July-August (Fig. 1). During March-April dried leaves fall down and new leaves grow whereas July-August is the peak period for agricultural activities, thus collection varies with the seasonal occupation of people. The availability of plates is least during rainy season, whereas summer, spring and autumn seasons witness huge influx. The scarcity during wet season is because villagers are engaged in cultivation and also because leaf collection, processing and storage becomes difficult.

Marketing

Primary collectors take plates to either local *haat* (weekly market) (Plate 2f-h) or to petty trader from

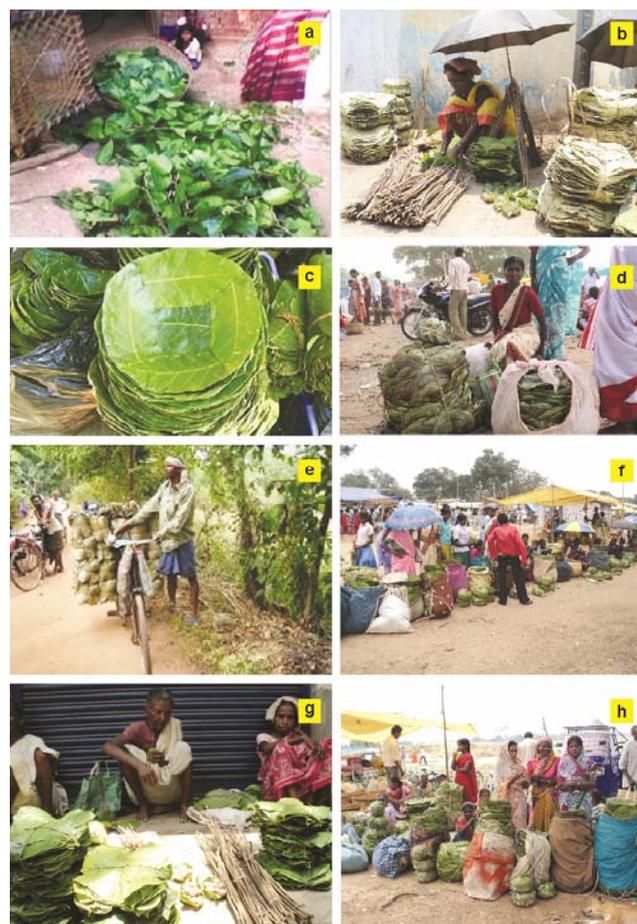


Plate 2—Traditional *Sal* leaf plate making and marketing (a) Leaf collection, (b) Plate making, (c) Drying of plates, (d) Packaging of plates, (e) Transportation and (f-h) Selling at local haat and make-shift shop

there it reaches to different levels of traders. From traders it reaches consumers through retailers. Surplus plates are marketed through the channel depicted by the ethnic people in the area. Individuals selling small quantity restrict access to remunerative markets which requires bulk quantity. Further, poor marketing infrastructure, lack of availability/access to storage facilities compels them to sell to the first market contact, generally local *haat* or petty trader. Introduction of collective marketing and value addition measures can help producers get enhanced prices.

Livelihood generation through traditional method

Table 1 reveals that through traditional plate making, on average each family earns up to ₹ 25,000/yr and gets employment of 400 mandays/yr whereas 65 families altogether earn upto ₹ 16.25 lakh/yr with employment opportunity of 26000 mandays/yr.

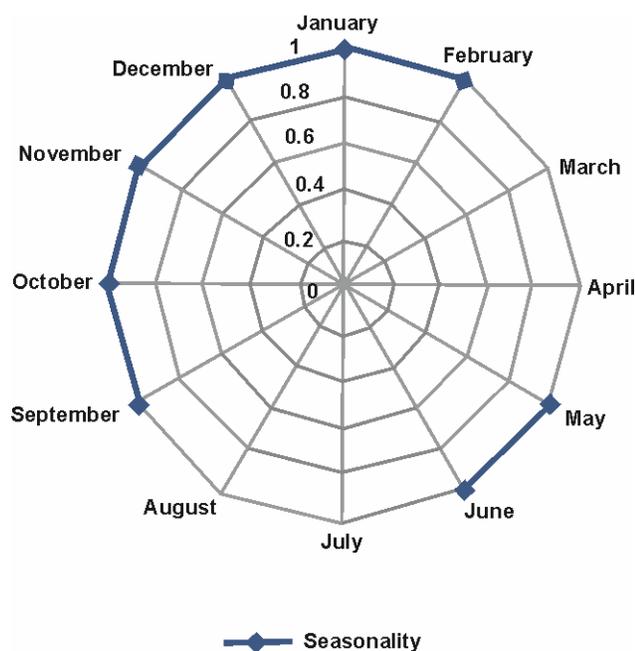


Fig. 1 — Seasonality of collection, processing and sale of the *Sal* leaf plates

Table 1 — Livelihood generation through traditional *Sal* leaf plate making

Production of raw <i>Sal</i> leaf plates	Annual income (₹/household/yr)	Employment (Mandays/household/yr)
1000/day x 25 days/month x 8 months/yr = 200000	25000.00 ^a	400 ^b

^a2 lakhs raw *Sal* leaf plates/yr @ ₹ 0.125/*Sal* leaf plate.
^b2 lakhs raw *Sal* leaf plates/yr @ 500 *Sal* plates/manday²⁷.

Sal leaves plate making is a prevailing and widespread household activity for livelihood sustenance among the ethnic people and most of them working in informal way to increase their household income. Value addition by mechanized pressing may be a vital intervention helpful to reduce drudgery, improve productivity and income opportunities for the ethnic people.

Value addition by mechanized method

The fixed cost for installation of a small sized household processing unit is ₹ 15,000 which includes leaf plate pressing machine, bulk of raw materials, storage facilities and other service equipments. The processing units use electric pressing machines to convert the stitched leaves into moulded plates. In absence of electricity, Indian Institute of Technology, Kharagpur made biomass fuelled machine that can be used in moulding *Sal* leaf plates²⁷. Two sets of ordinary raw *Sal* leaf plates are machine pressed together using a thin polythene sheet (12.5 cm x 12.5 cm) in between the two plates to make one moulded plate. The mechanized pressing gives sufficient tensile strength and proper shape to the plates. The economics indicated that a pressing unit owner gets a net profit of ₹ 241 for 1000 pressed plates (Table 2). The return shows that mechanized moulding is a profitable venture and the margin of profit may vary with market demand and distance to the export point. It is estimated that mechanized moulding may yield income

Table 2 — Economics of making 1000 mechanized *Sal* leaf plates

Item	Amount (₹)
Cost of 2000 raw plates	250.00
Polythene for pasting	20.00 ^a
Polythene for packing	8.00 ^b
Electricity and water charges	20.00 ^c
Labour charges	30.00 ^d
Transportation and marketing in local <i>haats</i> and markets	10.00 ^e
Miscellaneous expenses	6.00
Depreciation of fixed costs and machinery	15.00 ^f
Total expense	359.00
Selling price	600.00 ^g
Net profit	241.00

^a @ ₹ 80/ kg and 1 kg of plastic can paste 8000 stitched raw plates into 4000 machine pressed plates.

^b @ ₹ 40/ kg and 1 kg of plastic can pack 5000 plates.

^c @ ₹ 1.0/50 plates.

^d @ ₹ 150/5000 plates.

^e @ ₹ 50/5000 plates.

^f @ ₹ 1500/yr i.e. 10 % of ₹ 15000.

^g @ ₹ 60/100 plates

of ₹ 49,100/yr with employment of 450 mandays/yr for each household (Table 3) and upto ₹ 31.92 lakhs/yr with employment of 29250 mandays/yr for 65 families.

The machine adds rigidity and gives good shape with raised edges to the plates (Plate 3a-b). The intervention will enhance income of forest dwelling families having abundant *Sal* leaves around them. Single unit functional for 20 days a month can produce upto 50000 plates/month²⁸. Some households have grown *Sal* tree as hedge in their homesteads to get leaves for plate making and stem for tooth brush. Ethnic people living in forest fringes have the rights and concessions to collect *Sal* leaves from the forests for self-consumption, occupation and sale under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Ministry of Tribal Affairs, Government of India²⁹.

The machine will enhance household income by ₹ 24,100/yr (96.40 %) with additional employment of 50 mandays/yr (12.50 %) among the sample household, thereby generating total income of ₹ 15.67 lakhs/yr with additional employment of 3250 mandays/yr for 65 families.

The plates made by mechanized pressing have local, national as well as global markets due to high quality and are able to command higher price. It is a

Table 3 — Livelihood generation through mechanized *Sal* leaf plate making

Mechanized <i>Sal</i> leaf plates	Gross income (₹/household/yr)	Net income (₹/household/yr)	Employment (Mandays/household/yr)
100000	60000.00 ^a	49100.00 ^b	400 ^c + 50 ^d = 450

^a@ ₹ 60/100 plates

^bCost of production @ ₹ 109/1000 plates which excluded the cost of household produced raw *Sal* leaf plates.

^c2 lakhs raw *Sal* leaf plates/yr @ 500 *Sal* plates/manday²⁷.

^d1 lakhs mechanized *Sal* leaf plates @ 2000/manday³⁰.

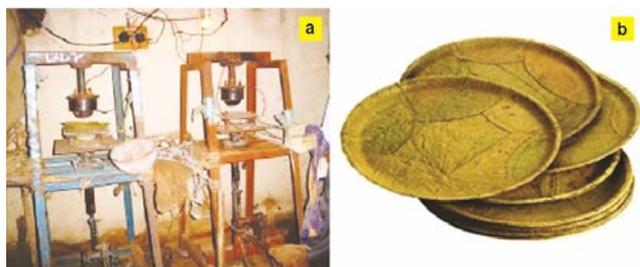


Plate 3 — (a) *Sal* leaf plate making machine and (b) Machine pressed plates

challenging proposition for well established traders because of the dynamics of a new product and risks and challenges associated with the enterprise²⁹.

Conclusion

Ethnic communities in Jharkhand are vulnerable sections of the population and livelihood stress is the root cause for migration to urban areas and poor socio-economic condition which can be improved through efficient utilization of resources, indigenous knowledge and skills. The NTFPs play a vital role in the rural economy and livelihoods of indigenous societies in Jharkhand and hence secondary employment through NTFPs based value added cottage industries and their organized marketing system should be promoted. The present study indicates substantial income and employment potential by introducing mechanized moulding in the traditional *Sal* leaf plate making which may be promoted by various stakeholders for development of the local ethnic people inhabiting Bundu block of district Ranchi in Jharkhand, India.

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