Indian Journal of Ecology (2024) 51(6): 1172-1175
DOI: https://doi.org/10.55362/IJE/2024/4373

Manuscript Number: 4373
NAAS Rating: 5.38

Role of Traditional Knowledge in Modern Era for Sustainable Utilization of Forest Produce in Central India

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***Abstract*:** Food security and sustainability are major global concerns, particularly in Central India where tribal women are vulnerable to hunger and malnutrition. This study explores the crucial role that traditional knowledge plays in promoting sustainable utilization of non-timber forest products in Central India. The study is conducted by interviewing 40 tribal women of age group 20-60 years from three villages in Katghora Forest Division. The Study emphasizes the significance of forest products in the nutritional well-being of tribal families. Forest produce, such as wild fruits, tubers, and medicinal plants, are not only rich in nutrients but also hold the key to sustainable food security for future generations. This paper highlights the symbiotic relationship between traditional practices and modern healthcare, underscoring how these ancient practices align with Sustainable Development Goal 2 (SDG 2) to end hunger, achieve food security, and promote sustainable agriculture. It is observed that more than 42% of tribal women are dependent directly on traditional knowledge from the nearby forest, while other tribal women rely indirectly. They also practice some traditional and some modern methods for better consumption of the foods. These practices guarantee that the resources are harvested in a way that keeps them available for future generations and supports sustainable livelihoods without depleting the forests resources.

***Keywords*:** Traditional knowledge, Sustainability, Food, NTFPs, Tribal women

Traditional knowledge systems have been acknowledged as valuable in many parts of the world for their role in resource conservation and sustainable agriculture (Turner and Clifton, 2009). In India, specifically in tribal-dominated regions like central India, NTFPs play a critical role in the daily lives of the indigenous population (Xess et al 2024). These forest products not only provide nutrition but also form the backbone of rural economies.Central India, known for its rich biodiversity, hosts a large population of forest-dependent communities that rely heavily on traditional knowledge and forest resources for sustenance (Tiwari 2015).

Central India is home to vast stretches of forest that serve as the primary source of livelihood for its tribal population. These tribal communities possess a wealth of traditional knowledge related to the use of non-timber forest products, which plays an essential role in ensuring food security and health in an era where hunger and malnutrition are still prevalent (Sabar et al 2024). Studies have demonstrated the nutritional superiority of wild forest foods in many indigenous communities (Bharucha et al 2010). These foods, such as tubers, wild fruits, and leafy vegetables, are rich in vitamins and minerals, often surpassing domesticated crops in nutritional value (Mohd Salim et al 2023). Moreover, traditional harvesting techniques, which emphasize sustainable practices, ensure the continued availability of these resources for future generations.

The importance of traditional knowledge in addressing SDG 2-ending hunger, achieving food security, and promoting sustainable agriculture-cannot be overstated. The information needed for the sustainable use of plants is frequently qualitative, confined to a certain geographic area, and dependent on observation. These traditional knowledge were gathered by tribal people and passed down through culture practices from their predecessors (Patra 2022, Xess et al 2023). This study investigates the intersection of traditional knowledge and modern food security, focusing on the sustainable use of forest products in Chhattisgarh.

MATERIAL AND METHODS

To study the role of traditional knowledge in modern food security, a semi-structured interview-based on traditional knowledge and practices was conducted in three villages-Puta (latitude: 22.822054 longitude: 82.706585), Pachra (latitude: 22.697017 longitude: 82.447919), and Buka (latitude: 22.721192 longitude: 82.532473)-located in the Katghora Forest Division, Korba, Chhattisgarh. A total of 40 tribal women of age group 20-60 years were interviewed, focusing on their traditional practices, utilization of forest products, and their contributions to household nutrition and healthcare. Data were gathered through direct interaction with the participants, supplemented by field observations.

RESULTS AND DISCUSSION

Importance of NTFPs in food security: NTFPs are an

integral part of tribal diets in Central India. The commonly harvested forest products include wild fruits, leafy greens, tubers, and medicinal plants. These foods, often rich in micronutrients, are vital in combating malnutrition, especially among children and elderly individuals in the tribal communities. The survey has identified the gender relationship and the critical role that tribal women play in the collection, processing, management, and conservation of forests and forest products, over 42% tribals women of the surrounding forest area depends directly on NTFPs in the sites mentioned, while other tribal women depend on NTFPs indirectly, primarily bringing forest resources that meet their specific needs, such as edible leaves, tubers, and therapeutic plants like fuel wood, seeds, mushrooms, greenery, and other forest produce items.

Table 1. Average forest visit and forest produce utilization

Village	Average no. of forest visit per month (%)	Average no. of NTFP and forest produce utilization per day (%)
Puta	62	72
Pachra	51	63
Buka	37	56

The 62% tribal women of Puta village are more often visiting the forest for the collection of forest produce. The amount of NTFP collected and used is primarily driven by

Table 2. Important NTFPs collection (Xess et al 2023)

Common name	Scientific name	Family	Flowering season	Fruiting season	Harvesting month	Collection rate (per kg)
Tendu	*Diospyros melanoxylon*	Ebenaceae	April- May	May- June	June	
Sal	*Shorea robusta*	Dipterocarpaceae	April- May	May	May- June	20.00
Kusum	*Schleichera oleosa*	Sapindaceae	January- February	March- April	July- August	23
Bahera	*Terminalia bellirica*	Combretaceae	April-May	May	November-February	17.00
Imli	*Tamarindus indica*	Fabaceae	April-June	February-March	March-April	36.00
Chironjii	*Buchanania lanzan*	Anacardiaceae	January-February	March-April	April-May	126.00
Mahua	*Madhuca indica*	Sapotaceae	March-April	April	May-June-July	29.00
Kalmegh	*Andrographis paniculata*	Acanthaceae	March- April	March- April	September	35.00
Charota	*Cassia obtusifolia*	Fabaceae	March- September	May- September	November	16.00
Harra	*Terminalia chebula*	Combretaceae	April- May	May- June	November- February	15.00
Van tulsi	*Ocimum gratissimum*	Lamiaceae	--------	--------	----------	16.00
Honey	----------	----------	----------	----------	October/ November and February- June	225.00
Shatavari (roots)	*Asparagus racemosus*	Asparagaceae	July	September	November- December	107.00
Shikakai	*Acacia concinna*	Mimosaceae	October- November	December- January	April- May	50.00
Nagarmotha	*Cyperus rotundus*	Cyperaceae	March- July	July-september	October- November	30.00
Kusumi (Lac)	*Kerria lacca*	Kerridae	----------	----------	----------	300.00
Rangini (Lac)	*Acacia catechu*	Fabaceae	March- September	March- September	March- September	220.00
Giloy	*Tinospora cordifolia*	Menispermaceae	May- June	September- October	November	40.00
Bhelwa	*Semecarpus anacardium*	Anacardiaceae	December- January	February- May	May- June	09.00
Dhawai (Flower)	*Woodfordia fruticosa*	Lythraceae	February- April	April- May	May	37.00
Kullu gond	*Sterculia urens*	Sterculiaceae	December- March	April- May	April- June	125.00
baelguda	*Aegle marmelos*	Rutaceae	March-April	April- June	April-May	30.00
Karanj	*Millettia pinnata*	Fabaceae	April-June	May- June	November- December	22.00
Neem	*Azadirachta indica*	Meliaceae	April	June- July	July- August	27.00
Jamun	*Syzygium cumini*	Myrtaceae	March- May	May- June	July- August	42.00

women of Puta village i.e. 72%, who also benefit from it in terms of their wellbeingand household uses. They sell some of the forest produces like tendu, mahua, ber, char, mango etc. for their income generation which also enhances their income profile. In Tendu and Mahua forest produce are highly utilized by the tribals and mushroom, bamboo crafts and tamarind are less utilized by the tribal women of Katghora forest division. The utilization of NTFPs by tribal women indicate more dependent on forest resources for their livelihood and income generations

Role of tribal women in household food security and health care: The traditional food is found more beneficial in Puta village for sustaining and defending health of tribal women as well as providing indigenous nutrients in the best possible ways. Foods including 59,22and 18% vegetables, tubers and wild fruits, which are nutritious andalos abundantly found in these areas. Tribal women also gather roots, tubers, leaves, flowers, and fruits from the forest to supplement their diets which provides the 63% of traditional, distinctive natural flavours and health advantages to tribal

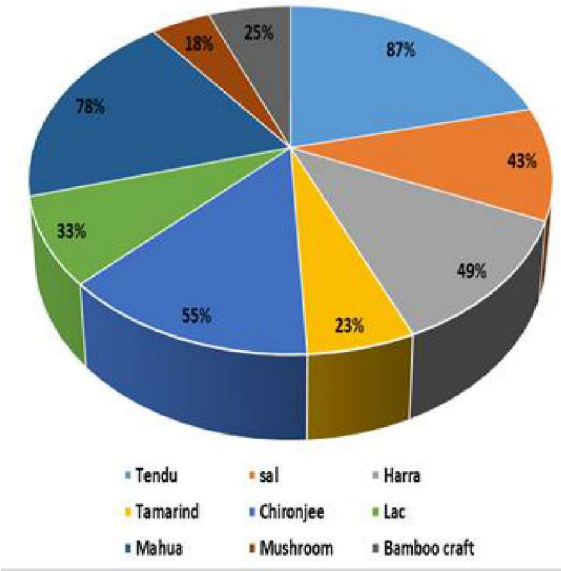

Fig. 1. Percentage of NTFP utilization

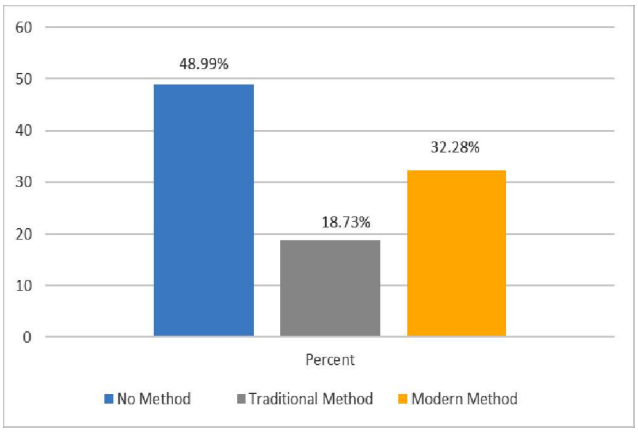

Fig. 2. Percentage of utilization of traditional and modern method

Table 2. Harvestable plant parts through non-destructive harvesting techniques

Common name	Scientific name	Family	Harvestable part
Mahua	*Madhuca indica*	Sapotaceae	Riped fallen flower
Tendu	*Diospyros melanoxylon*	Ebenaceae	Tender leave
Kachnar	*Bauhinia variegata*	Caesalpinioideae	Tender leave
Moringa	*Moringa oleifera*	Moringaceae	Tender leave, fruit
Bohar	*Cordia dichotoma*	Boraginaceae	Tender fruit
Mushroom	*Agaricus silvicola*	Agaricaceae	Tender fruit
Kusum	*Schleichera oleosa*	Sapindaceae	Ripped fruit
Birhool			Flower
Char	*Buchanania lanzan Spreng.*	Anacardiaceae	Ripped fruit
Ber	*Ziziphus mauritiana*	Rhamnaceae	Ripped fruit
Shatavari	*Asparagus racemosus*	Asparagaceae	Roots
Adusa	*Adhatoda vasica*	Acanthaceae	Young shoots and tender leaves
Poin			Tender leaves
Amaltash	*Cassia fistula*	Fabaceae	Flower
Jhirhul	*Indigofera cassioides*	Fabaceae	Leaves
chakora	*Cassia obtusifolia*	Fabaceae	Tender leaves

women. They also practice some traditional and some modern methods for better consumption of the foods. In terms of some traditional methods 18.73% of the tribal women cook the raw food. But in terms of some modern methods, 32.28% of tribal women are always very keen to learn various new cooking skills and various new cooking procedures for collected raw food items.

Sustainable harvesting practices: The tribal women emphasize the techniques that involve minimal damage to the forest ecosystem. Non-destructive harvesting method is used by tribals. Like fruits are harvested selectively, allowing the plants to regenerate. Tubers are gathered in a way that leaves the root system intact, ensuring that the plant can continue to grow. As compared to all the three villages 40% tribal women of puta are harvesting sustainably through non-destructive harvesting techniques where as 28% and 21% tribal women of Pachra and Buka are harvesting sustainably through non-destructive harvesting techniques respectively. The maximum harvested parts of the plants approx. 66% are fruits and leaves rest other are around 24-34% roots, tubers and flowers.

CONCLUSION

The sustainable utilization of forest products is rooted in the traditional knowledge of Central India which offers a viable pathway to achieve food security and improve nutrition. By leveraging traditional non-destructive harvesting practices, tribal women are able to protect their natural resources while ensuring a steady supply of nutritious forest foods like wild fruits, leafy green edible parts, tubers, and medicinal plants. Moreover,in today's generation tribal women are practicing traditional knowledge more on day-to-day life as compared to urban women. More often the tribal women are frequently visiting to the forest for the collection and utilization of the forest produces and they are very keen to learn the traditional methods in a modern way. The findings of the study underscore the need for greater recognition of the role that traditional knowledge can play in the modern era by integrating traditional knowledge into modern food security and healthcare strategies like conservation of forest resources in sustainable manner so that future scarcity of food can be reduce and by adapting traditional knowledge in modern culture will help to maintain the hygienic, less disease and healthy lifestyle, especially in remote regions where access to modern medical facilities is limited. The tribal women, as custodians of this knowledge, play a crucial role in ensuring the sustainability of these resources. So proper documentation of the traditional knowledge can actually enhance the better living standards and provide the opportunities to the tribal women which can help to prevent the loss of traditional knowledge and can be a valuable source for future upcoming generations

Received 12 September, 2024; Accepted 03 November, 2024

ACKNOWLEDGEMENT

Authors are grateful to National Fellowship for Higher Education of Scheduled Tribe (ST) Students (NFST) funded by Ministry of Tribal Affairs for providing a junior research fellowship during the study period.

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