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Diversity and Socioeconomic Significance of Non-Timber Forest Products (NTFPs) in Mahuadanr, Jharkhand

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Abstract: ***NTFPs are vital for the livelihoods of communities that rely on forests, while also helping to preserve biodiversity and maintain ecological balance. In Jharkhand, especially within the Mahuadanr area of Latehar District, NTFPs serve as a crucial source of nutrition, healthcare resources, livelihood opportunities, and income for tribal households. The forests of Mahuadanr, located near the Palamu Tiger Reserve and Mahuadanr Wolf Sanctuary, support a rich diversity of economically valuable species. These resources contribute substantially to food security, traditional healthcare and seasonal income generation. However, unsustainable harvesting practices, forest degradation, inadequate market infrastructure and limited value-addition opportunities create challenges to their sustainable utilization. This review summarizes the diversity of major NTFPs in the Mahuadanr landscape, their utilization patterns, socioeconomic significance and associated challenges. The review highlights the diversity, utilization patterns, socioeconomic significance and major challenges associated with NTFPs in the Mahuadanr landscape.***

Keywords: NTFPs, Mahuadanr, Jharkhand, Tribal Livelihoods, Forest Biodiversity, Sustainable Development, Minor Forest Produce

1. Introduction

Forests deliver numerous ecosystem services and biological resources that are fundamental to human well-being, livelihood sustenance, and the preservation of ecological stability. NTFPs form an important component of forest resources, encompassing products gathered from forests other than wood and timber. NTFPs include fruits, flowers, leaves, seeds, bark, roots, gums, resins, medicinal plants, honey, bamboo and various other biological materials that support both subsistence and commercial needs [1,2].

NTFPs have long been recognized as indispensable components of rural livelihood systems, particularly in developing countries where forest-dependent communities rely heavily on natural resources for food, healthcare, shelter, and income generation [3,4]. Besides their direct economic value, NTFPs contribute significantly to food security, nutritional well-being, traditional healthcare, cultural practices and employment opportunities. Studies have shown that environmental income derived from NTFPs forms a substantial component of household livelihoods in many forested regions of the world [5,6].

India possesses rich forest biodiversity and supports more than 3,000 plant species that yield economically important NTFPs. These resources are vital for supporting the livelihoods of rural and tribal communities, as they provide essential products such as food, fodder, fuel, medicinal materials, construction resources, and additional sources of household income [6]. NTFPs contribute significantly to the national economy, accounting for nearly 50% of forest revenue and approximately 70% of forest-based export earnings, highlighting their importance beyond subsistence use [2]. Furthermore, more than 50 million people in India depend directly or indirectly on NTFPs for their livelihood and survival [2].

Jharkhand is among the most forested states in India, where tribal communities rely extensively on forest resources for their livelihoods, daily sustenance, and the preservation of their cultural traditions [7,8,9]. Important NTFPs such as Mahua, Sal, Kendu, Chironji, Amla, honey, lac, and bamboo contribute significantly to household income, food security and traditional healthcare systems. Mahuadanr Block of Latehar district, situated within the forested and hilly landscape of north-western Jharkhand, is inhabited predominantly by tribal communities whose livelihoods are closely linked to forest ecosystems and the collection of NTFPs, which provide food, medicine, household materials, and supplementary income [8,10,11]. Given the ecological and socioeconomic significance of these resources, a comprehensive review of NTFP diversity, utilization patterns, livelihood contributions, challenges, and management strategies is essential for promoting sustainable forest-based development in the Mahuadanr landscape. This review aims to document the diversity of major NTFPs found in the Mahuadanr region, analyze their patterns of use, and assess their socioeconomic significance in enhancing livelihood security, food availability, income generation, and traditional healthcare among forest-dependent communities [6].

2. Study Area

Mahuadanr is situated in the southwestern part of Latehar District, Jharkhand, near the border of Chhattisgarh. Geographically, it lies between approximately 23°30′–23°45′ N latitude and 84°00′–84°20′ E longitude [11,12]. The region forms part of the Chotanagpur Plateau and is characterized by undulating terrain, tropical dry deciduous forests, moderate rainfall, and diverse flora and fauna. Mahuadanr is ecologically significant as it encompasses the Mahuadanr Wolf Sanctuary and forms part of the broader Palamu forest landscape, one of the important biodiversity-rich regions of Jharkhand. The vegetation of the area is

dominated by Sal forests, accompanied by several economically important NTFP-yielding species [13]. These resources help preserve biodiversity and supply important ecosystem services to the surrounding communities.

Mahuadanr, a forested tribal-dominated block of Latehar district, is inhabited mainly by Oraon, Korwa, Birjia and Chero communities. These communities have traditionally relied on forest resources for their subsistence needs, the collection of NTFPs, healthcare practices based on traditional knowledge, and additional income generation, demonstrating a close ecological connection with the surrounding forest ecosystem [6,10,12]. Forest resources provide food, medicine, fuel, fodder, construction materials and supplementary income throughout the year. The collection and use of NTFPs form a vital part of the livelihood strategies adopted by these communities, especially during periods of low agricultural activity when alternative sources of income and subsistence are limited [5, 10].

Jharkhand is recognized as one of the major NTFP-producing states of India, with products such as Sal leaves, Mahua flowers, Kendu leaves, Sal seeds, Chironji, honey, lac and medicinal plants contributing significantly to rural livelihoods and household economies. Similar patterns of forest dependence have been reported from other tribal-dominated regions of eastern India, where NTFPs serve as important sources of subsistence, income generation and traditional healthcare [2,14].

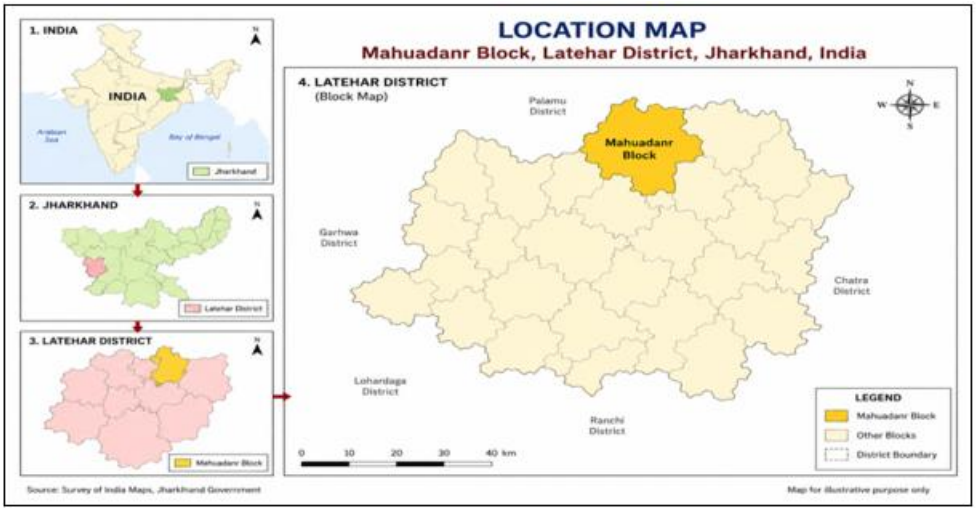

Figure 1. Location map showing Mahuadanr Block in Latehar District, Jharkhand, India.
Source: Survey of India Maps and Government of Jharkhand Administrative Boundary Data.

3. Research Methodology

The present study is a review-based investigation of the diversity and socioeconomic significance of Non-Timber Forest Products (NTFPs) in Mahuadanr, Jharkhand. The study relies entirely on secondary data collected from published literature and official sources. Information was gathered from research articles, books, government reports, forest department publications, dissertations, and scientific journals [12,13]. Additional data were obtained from reports of the Forest Survey of India, Ministry of Tribal Affairs, and Government of Jharkhand [14,15,16]. Relevant literature on NTFP diversity, utilization patterns, livelihood contributions, food security, traditional healthcare and sustainable management was reviewed [9,10,17]. The collected information was analyzed and synthesized to provide a comprehensive understanding of the role of NTFPs in supporting livelihoods and conserving forest resources in the Mahuadanr region.

4. Diversity and Utilization of NTFPs

The forests of Mahuadanr harbor a wide variety of Non-Timber Forest Products (NTFPs) that are used by local communities for food, medicinal applications, construction needs, handicraft production, and income-generating activities [6]. Similar patterns of NTFP utilization have been reported from other forested regions of Jharkhand [15,16]. Based on their primary uses, the major NTFPs of the region can be broadly categorized into food and nutritional products, medicinal resources, commercially important products and household and cultural products in Table 1. NTFP diversity in the forests of Mahuadanr plays a vital role in ensuring food security, healthcare access, livelihood support, and income generation [3]. Major NTFPs recorded from the region and their primary uses are presented in Table 2.

Table 1: Showing major NTFPs found in the region with their primary uses.

Food & Nutritional Products	Medicinal Products	Commercial Products	Household & Cultural Products
Mahua, Amla, Chironji, Honey	Harra, Bahera, Amla, Kalmegh	Sal Leaves, Kendu, Leaves, Lac, Bamboo	Fuelwood, Bamboo Crafts, Traditional Medicines, Household Utilities

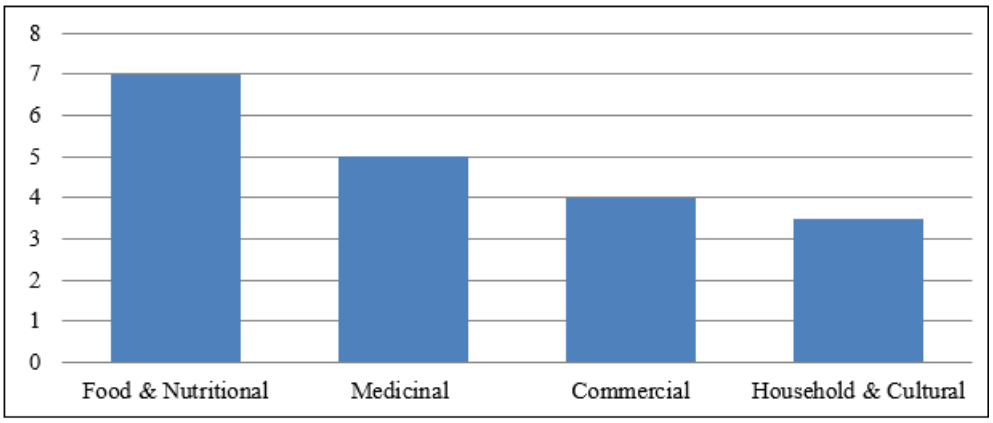

Figure 2: Distribution of major NTFPs in Mahuadanr according to their primary utilization categories.

Table 2: Major Non-Timber Forest Products (NTFPs) of Mahuadanr and Their Utilization.

Sl. No.	Scientific Name	Local Name	Product Harvested	Major Uses
1.	*Madhuca longifolia* (J. Konig) J.F.Macbr.	Mahua	Flowers, Seeds	Food, traditional beverages, edible oil
2.	*Shorea robusta* C.F. Gaertn.	Sal	Leaves, Seeds	Leaf plates and bowls, edible fat, traditional uses
3.	*Diospyros melanoxylon* **Roxb.**	Kendu	Leaves	Bidi manufacturing
4.	*Phyllanthus emblica* L.	Amla	Fruits	Food, nutraceuticals, traditional medicine
5.	*Terminalia chebula* Retz.	Harra	Fruits	Traditional medicine, Ayurvedic formulations
6.	*Terminalia bellirica* (Gaertn.) Roxb.	Bahera	Fruits	Ayurvedic preparations and healthcare products
7.	*Buchanania lanzan* **Spreng.**	Chironji	Seeds	Edible kernels and commercial trade
8.	*Dendrocalamus strictus* **(Roxb.) Nees**.	Bamboo	Culms	Construction, handicrafts, household utilities
9.	Honey	—	Honey	Food, medicine and income generation
10.	Lac (*Kerria lacca*) Kerr	Lac	Resin	Commercial products, varnishes and handicrafts
11.	*Syzygium cumini* (L.) Skeels.	Jamun	Fruits	Food, traditional medicine, beverages
12.	*Tamarindus indica* L.	Imli	Fruits	Food, medicine, flavoring agent
13.	*Asparagus racemosus* Willd.	Shatavari	Roots	Traditional medicine, health tonic
14.	*Andrographis paniculata* (Burm. f.) Wall. ex Nees	Kalmegh	Leaves	Traditional medicine, treatment of fever and liver ailments
15.	*Dioscorea* spp. L.	Wild Yam	Tubers	Food, nutritional supplement
16.	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Arjun	Barks	Traditional medicine, cardiovascular health

Source: Compiled from Singh & Quli (2011), Paul (2026), Hazari et al. (2023) and available literature. [3,15,17]

4.1 Food and Nutritional NTFPs

Mahua, Amla, Chironji and honey constitute important food and nutritional resources for local communities. Among these, Mahua is one of the most economically valuable species because its flowers and seeds are used for food, beverages, and oil extraction [15,16]. Besides its traditional use as food and beverage, Mahua flowers are utilized in the preparation of livestock feed, fermented products, and several value-added food items, making it an important livelihood resource in forest-dependent communities [18].

4.2 Medicinal NTFPs

Medicinal plant resources are important components of NTFP diversity. Fruits of Amla, Harra and Bahera are widely used in traditional healthcare systems and Ayurvedic preparations [19,20]. Indigenous communities continue to rely on these species for the treatment of various ailments and for maintaining traditional healthcare practices [21].

4.3 Commercially Important NTFPs

Sal leaves, Kendu leaves, bamboo, honey, and lac constitute major commercially important NTFPs of the region. Sal leaves are widely utilized for manufacturing biodegradable plates and bowls, while Kendu leaves support the bidi industry and provide seasonal employment opportunities [17]. In many forest-based households, sal leaf collection and plate-making generate employment opportunities for women and contribute substantially to household income [18]. Bamboo and lac are also important commercial resources that support livelihood diversification and local enterprise development [22].

4.4 Household and Cultural Uses

Several NTFPs are used for household purposes, including fuelwood, bamboo crafts, traditional medicines, and materials used in cultural and religious practices. These products continue to be vital for the livelihoods and well-being of tribal communities in Mahuadanr [9].

5. Socioeconomic Importance of NTFPs

5.1 Livelihood and Income Generation

Non-Timber Forest Products (NTFPs) form a vital part of the livelihood framework of tribal and forest-dependent communities in Mahuadanr. Their collection, processing, and sale generate seasonal employment opportunities and additional household income, especially during periods of

low agricultural activity when other sources of livelihood are scarce [3,5,6,17]. Studies have shown that NTFPs contribute substantially to rural household economies by supporting income generation, livelihood diversification and economic resilience [15,16]. In India, NTFPs contribute approximately 10–70% of total household income and 25–50% of food requirements among forest-dependent populations. More than 50 million people depend on these resources for subsistence and cash income, highlighting their significant role in rural livelihoods [3]. Products such as Mahua flowers, Kendu leaves, Chironji seeds, honey, bamboo and lac are particularly important in Jharkhand and contribute considerably to household earnings and livelihood security.

5.2 Food and Nutritional Security

NTFPs are essential for maintaining food and nutritional security in many forest-dependent households. Forest-derived products such as Mahua flowers, Amla fruits, Chironji seeds, wild mushrooms, and honey serve as important dietary supplements and emergency food resources during periods of food scarcity [18,23]. These resources provide essential nutrients and strengthen the resilience of rural households against food insecurity.

5.3 Traditional Healthcare

Traditional healthcare systems in the region rely heavily on medicinal plants obtained from forests. Species such as Amla, Harra and Bahera are widely used in indigenous healthcare practices and Ayurvedic preparations. The indigenous knowledge related to the use of medicinal plants has been passed down across generations and remains an important component of primary healthcare practices among tribal communities [19,20].

5.4 Women's Participation in NTFP-Based Livelihoods

Women play a significant role in NTFP-based activities, including collection, processing, storage, and marketing. Their participation contributes substantially to household income, food security, and the preservation of traditional ecological knowledge. Activities such as sal leaf plate making, medicinal plant collection, and processing of forest products provide important livelihood opportunities and enhance the socioeconomic status of rural women [18,24]. NTFPs function as an important livelihood safety net by providing income, employment, food, and healthcare resources, thereby contributing significantly to the socioeconomic well-being and sustainable development of tribal communities in Mahuadanr.

6. Challenges in Sustainable Utilization of NTFPs

Despite their considerable socioeconomic importance, the sustainable utilization of NTFPs in Mahuadanr faces several ecological, economic, and institutional challenges. Unsustainable harvesting practices, forest degradation, habitat loss and climate variability have adversely affected the availability and regeneration of many economically important NTFP species [25, 26].

Marketing-related constraints further limit the economic benefits derived from NTFPs. Poor transportation facilities, inadequate storage infrastructure, weak market linkages and limited access to market information often reduce the profitability of NTFP-based enterprises. The dominance of intermediaries in the marketing chain frequently results in lower returns to primary collectors, thereby limiting livelihood benefits for tribal households [14, 15, 16].

Additional constraints include low literacy levels, inadequate technical knowledge, insufficient value-addition facilities and limited access to institutional credit and financial services. These factors restrict the development of sustainable NTFP-based enterprises and reduce the income-generating potential of forest resources.

Addressing these challenges requires improved infrastructure, better market access, value-addition initiatives, capacity-building programs, institutional support and the adoption of sustainable harvesting practices. Such measures are essential for enhancing livelihood benefits while ensuring the long-term conservation and sustainable utilization of NTFP resources in the Mahuadanr landscape.

7. Conclusion

The forest ecosystems of Mahuadanr in Jharkhand harbor a wide variety of Non-Timber Forest Products (NTFPs) that are essential to the livelihoods of tribal and forest-dependent populations. Important NTFPs, including Mahua, Sal, Kendu, Amla, Chironji, bamboo, honey, and lac, make substantial contributions to household earnings, food and nutritional well-being, traditional healthcare systems, and the diversification of livelihood opportunities. These resources reflect the strong dependence of local communities on forest ecosystems and their socioeconomic well-being.

Despite their importance, the sustainable utilization of NTFPs is challenged by resource degradation, unsustainable harvesting practices, inadequate market infrastructure, and limited value-addition opportunities. Sustainable harvesting, improved market access, and active community participation can help secure livelihoods while conserving forest resources in Mahuadanr over the long term.

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