



Role of Plant Resources in Livelihood Security and Cultural Traditions of the Gond Tribe in Mohla-manpur-chowki District, Chhattisgarh

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ABSTRACT

The present study was conducted to document the traditional knowledge and utilization of plant resources by the Gond tribe inhabiting Chiharitola village of Mohla-Manpur-Chowki district, Chhattisgarh, India. The study aimed to assess the knowledge and use of local plant species in relation to livelihood, healthcare, food, rituals, handicrafts, and other socio-cultural practices. Field investigations were carried out from January to March 2024 using ethnobotanical survey methods, including structured questionnaires, interviews with knowledgeable elders, village leaders (Gayta), field observations, group discussions, and plant specimen documentation. Plant species were identified using standard floristic literature and verified with the assistance of local informants. The investigation documented a total of 50 plant species belonging to 20 families. Among these, 20 species were utilized for livelihood security and non-timber forest products, 8 species for ritual and cultural ceremonies, 8 species for traditional medicinal purposes, 5 species as cultivated crops, 4 species as wild edible resources, 3 species as host plants for lac production, 3 species for gum collection, and 2 species for residential construction. The families Fabaceae, Poaceae, Combretaceae, Sapotaceae, and Anacardiaceae were found to be the most dominant and economically important. Various plant parts, including fruits, seeds, leaves, flowers, stems, bark, and tubers, were used for food, medicine, handicrafts, construction, and income generation. The study revealed that non-timber forest products such as mahua (*Madhuca longifolia*), tamarind (*Tamarindus indica*), char (*Buchanania lanzan*), tendu (*Diospyros melanoxylon*), honey, lac, and gums play a significant role in supporting the livelihoods of tribal households. Several plant species were also found to be closely associated with traditional rituals, including birth ceremonies, marriages, Nawakhai celebrations, and funeral rites. Medicinal plants such as *Azadirachta indica*, *Tinospora cordifolia*, *Ocimum sanctum*, and *Andrographis paniculata* continue to serve as important healthcare resources within the community. The findings highlight the rich ethnobotanical knowledge of the Gond tribe and demonstrate the crucial role of plant resources in sustaining their socio-economic and cultural life. Documentation and conservation of this indigenous knowledge are essential for promoting biodiversity conservation, sustainable resource management, and the preservation of traditional cultural heritage for future generations.

Keywords: Ethnobotany; Gond tribe; Traditional knowledge; Medicinal plants; Indigenous knowledge; Biodiversity conservation

INTRODUCTION

Ethnobotany is an interdisciplinary field that examines the interactions between human societies and plant resources, encompassing traditional knowledge, cultural practices, medicinal applications, and livelihood systems. Indigenous and tribal communities have developed extensive knowledge regarding the utilization, conservation, and management of plant resources over generations. This traditional ecological knowledge plays a crucial role in healthcare, food security, cultural identity, and sustainable

resource management, particularly in regions where dependence on natural resources remains high (Cotton, 1996; Martin, 2004).

India is recognized as one of the world's megadiverse countries, possessing rich floristic diversity and a long tradition of plant-based healthcare systems. The country harbors more than 45,000 plant species, of which approximately 7,000 are used in various traditional medicinal systems, including Ayurveda, Siddha, and Unani (Kala *et al.*, 2004). Tribal communities, constituting about

8.6% of India's population, maintain a close relationship with forests and rely extensively on plant resources for food, medicine, shelter, and income generation (Government of India, 2011). The preservation and documentation of indigenous knowledge have become increasingly important in the face of rapid socio-economic changes, habitat degradation, and cultural transformation.

Chhattisgarh, located in central India, is characterized by extensive forest cover, rich biodiversity, and a substantial tribal population. The state is home to several indigenous communities, including the Gond tribe, one of the largest tribal groups in India. Forest ecosystems in Chhattisgarh provide a wide range of Non-Timber Forest Products (NTFPs), which serve as critical sources of subsistence and livelihood for rural and tribal populations (Tiwari & Singh, 2017). Collection, processing, and marketing of NTFPs contribute significantly to household income and livelihood security, especially in remote forested regions.

The district of Mohla-Manpur-Chowki, situated in the northwestern part of Chhattisgarh, possesses diverse forest resources and a predominance of tribal inhabitants. The Gond communities residing in this region have traditionally depended on local plant resources for medicinal purposes, food, fodder, agricultural practices, and cultural ceremonies. However, modernization, changing lifestyles, deforestation, and declining transmission of traditional knowledge threaten the continuity of these indigenous practices. Consequently, there is an urgent need to systematically document ethnobotanical knowledge and evaluate its contribution to livelihood security and sustainable development.

Ethnobotanical investigations not only help preserve valuable indigenous knowledge but also provide opportunities for biodiversity conservation, sustainable utilization of biological resources, and rural livelihood enhancement. Understanding the relationship between local communities and plant resources can contribute to the development of conservation strategies, value-addition initiatives, and community-based resource management programs. Furthermore, traditional knowledge associated with medicinal plants may serve as a foundation for future pharmacological research and the development of plant-based healthcare products.

Therefore, the present study was undertaken to document the ethnobotanical knowledge of the Gond tribes inhabiting Mohla-Manpur-Chowki district of Chhattisgarh and to assess the role of plant resources and non-timber forest products in supporting livelihood security. The study aims to contribute to the conservation of indigenous knowledge systems while highlighting their significance for sustainable rural development and biodiversity

management.

Novelty and Scientific Significance of the Present Study

While several ethnobotanical investigations have been conducted in Chhattisgarh, the present study holds distinct novelty as it represents the first systematic ethnobotanical documentation from the newly formed Mohla-Manpur-Chowki district (established in September 2022), a region previously administratively merged with Rajnandgaon and thus scientifically overlooked.

Unlike previous studies in Chhattisgarh that largely focused either on singular aspects like medicinal plants (Pandey, 2021; Qureshi *et al.*, 2017) or primarily on Bastar and Surguja regions (Sinha *et al.*, 2016; Yadav *et al.*, 2015), this research adopts a holistic, multi-dimensional approach. It uniquely documents the interplay of plant resources across livelihood security, seasonal NTFP marketing calendars, lac cultivation, gum collection, wild edible supplementation, and specific ritualistic functions (birth, marriage, Nawakhai, and funeral rites) within the Gond community.

Furthermore, this study provides empirical quantitative data on the economic dependence of tribal households on specific NTFPs, which is critical for the newly formed district's forest management policies. By documenting the knowledge gradient across different age groups and gender, this research highlights the ongoing cultural erosion, providing a baseline for future conservation and policy intervention in this unexplored tribal belt.

AIM & OBJECTIVES

To investigate the traditional ethnobotanical knowledge of the Gond tribe of Mohla-Manpur-Chowki district, Chhattisgarh, and to assess the role of local plant resources in their livelihood security, cultural practices, and ritual traditions.

Objectives

To document and analyze the traditional knowledge of the Gond tribe regarding the identification, utilization, and management of local plant species.

To assess the level of knowledge and extent of use of indigenous plant resources among different sections of the tribal community.

To identify plant species utilized for food, medicine, fodder, fuel, construction, and other livelihood-related purposes.

To examine the contribution of plant resources and non-timber forest products (NTFPs) to the livelihood security and income generation of the Gond tribe.

To document the use of plants in religious ceremonies, rituals, festivals, and other socio-cultural practices of the

Gond community.

To analyze the relationship between traditional ethnobotanical knowledge, livelihood patterns, and cultural heritage among the Gond tribe.

To evaluate the current status of traditional plant knowledge and identify factors influencing its preservation or decline.

To suggest measures for the conservation of ethnobotanical knowledge and the sustainable utilization of plant resources for improving tribal livelihoods.

MATERIALS AND METHODS

Study Area

The present investigation was undertaken in the Mohla-Manpur-Chowki district of Chhattisgarh, India, a region officially constituted on 2 September 2022 following its bifurcation from the erstwhile Rajnandgaon district. Geographically situated in the southwestern part of the state, the district has its administrative headquarters at Mohla, located approximately 150 km from the state capital, Raipur. The region is characterized by undulating terrain, dense deciduous forest cover, and a rich assemblage of floral and faunal diversity. According to the Census of India (2011), the district has a total population of 283,947, predominantly rural, with tribal communities constituting a substantial portion. The Gond tribe represents the dominant indigenous group, followed by the Kanwar and Halba communities. Given the extensive forest resources and the heavy reliance of local inhabitants on plant-based subsistence, the district was purposively selected as an ideal site for documenting ethnobotanical knowledge and its role in livelihood security.

Field Survey, Sampling Design, and Respondent Selection

A comprehensive ethnobotanical survey was carried out from January to March 2024, adhering to standard methodological protocols established by Jain (1987), Martin (2004), and Gadgil et al. (2000). Prior to the actual data collection, a preliminary reconnaissance survey was conducted across the district to assess village accessibility, forest dependence, and the presence of knowledgeable informants. Based on these criteria, two villages—**Suwarpal** and **Chiharitola**—were purposively selected as the primary study sites.

To capture the diversity of traditional knowledge, a **mixed sampling approach** combining purposive and snowball techniques was employed. The inclusion criteria for selecting respondents were: (i) age of 18 years or above, (ii) permanent residency in the study villages for a minimum of fifteen years, (iii) active engagement in the collection and utilization of forest resources, and (iv) willingness to participate in the study through prior informed consent.

Following these criteria, a total of **55 primary respondents** (30 males and 25 females) were formally interviewed. In addition to the general informants, **five key informants** were specifically identified and consulted throughout the study period, comprising three traditional healers locally known as *Gayta* and two village elders renowned for their extensive knowledge of local plant species. The demographic characteristics of the respondents, which are critical for contextualizing the knowledge base, are summarized in Table 1.

Table no. 3.2. Demographic profile of the informants (N=55)

Parameter	Category	Frequency (n)	Percentage (%)
Gender	Male	30	54.5
	Female	25	45.5
Age Group	Young (18–35 years)	10	18.2
	Middle-aged (36–59 years)	28	50.9
	Elderly (≥ 60 years)	17	30.9
Educational Status	Illiterate	32	58.2
	Primary School	15	27.3
	Secondary & Above	8	14.5
Primary Occupation	Agriculture + NTFP Collection	41	74.5
	Daily Wage Labour	10	18.2
	Service / Business	4	7.3

Data Collection Techniques and Ethnobotanical Documentation

Primary data were gathered through a multi-pronged

approach designed to ensure both breadth and depth of information:

.Semi-Structured Interviews and Questionnaire

Survey: A structured, open-ended questionnaire was developed and administered in the local Chhattisgarhi dialect to facilitate accurate communication. The interviews covered aspects such as plant identification, parts utilized, preparation methods, medicinal applications, ritual significance, seasonal collection patterns, and economic contributions of non-timber forest products (NTFPs).

.Field Walks and Transect Drives: Guided field excursions were conducted alongside local informants and the key traditional healers. These walks enabled the direct observation of plant habitats, growth patterns, and collection practices. Voucher specimens of all documented species were collected, and their phenological characteristics were meticulously noted in a field diary.

.Focused Group Discussions (FGDs): Three separate FGDs were organized at the village level, each comprising eight to ten community members, including women, youth, and elders. These discussions served a dual purpose: they validated the individual interview data through collective consensus and provided deeper insights into culturally sensitive practices, knowledge transmission pathways, and emerging challenges such as resource depletion.

.Photographic Documentation: A GPS-enabled digital camera (Canon EOS 1500D) was utilized to capture high-resolution images of plant specimens and their specific usage patterns. While satellite connectivity was occasionally limited in remote forest pockets, affecting precise coordinate logging, over 150 photographic records were successfully archived for subsequent analysis and identification.

Plant Specimen Processing and Taxonomic Authentication

The collected plant samples were processed following standard herbarium techniques. Fresh specimens were carefully pressed, dried, and mounted on standard herbarium sheets. For initial taxonomic identification, the specimens were critically examined using authoritative regional floristic works, including *The Flora of British India* (Hooker, 1872–1897), *Flora of the Presidency of Bombay* (Cooke, 1967), and *The Flora of Chhattisgarh* (Roy, 1989). For species verification, the authenticated herbarium specimens deposited at the Department of Botany, Govt. V.Y.T. PG Autonomous College, Durg, were consulted. Furthermore, final identifications were cross-validated through direct consultations with local taxonomists and the aforementioned key informants, ensuring that the vernacular names and local uses were accurately aligned with the scientific binomials.

Quantitative Ethnobotanical Indices

To strengthen the scientific analysis and enable meaningful comparisons with other studies, the documented ethnobotanical data were subjected to standard quantitative analyses. The following indices were employed to assess the relative importance, cultural significance, and homogeneity of knowledge regarding the plant species:

.Use Value (UV): This index was applied to determine the relative overall importance of a plant species based on the diversity of uses reported by the informants. It was calculated using the formula:

$$UV = \Sigma U / N$$

Where ΣU represents the total number of use-reports cited for a given species, and N is the total number of informants. Higher UV values indicate greater multi-purpose utility of the species.

.Relative Frequency of Citation

(RFC): This index was used to identify the most culturally embedded and widely known species within the community. It was determined by:

$$RFC = FC / N$$

Where FC is the number of informants who mentioned the species, and N is the total number of informants. This index highlights the popularity or prevalence of knowledge regarding a species.

.Informant Consensus Factor (ICF): This index was computed to measure the degree of agreement among informants regarding the use of plants within specific use categories (e.g., food, medicine, rituals). It was calculated as:

$$ICF = (Nur - Nt) / (Nur - 1)$$

Where Nur is the total number of use-reports for a particular category, and Nt is the total number of plant species used within that category. ICF values approaching 1 indicate strong cultural consensus, whereas values near 0 suggest randomness in knowledge.

.Fidelity Level (FL): Specifically applied to the medicinal plant data, this index quantifies the preference percentage of a plant species for treating a particular ailment. It was computed using:

$$FL (\%) = (Ip / Iu) \times 100$$

Where Ip is the number of informants who cited the species for a specific primary ailment, and Iu is the total number of informants who cited the species for any medicinal purpose. Higher FL values signify a strong therapeutic preference for that specific disease.

Data Compilation, Analysis, and Ethical Considerations

All gathered information was systematically organized, classified into distinct use-categories (livelihood, food, medicine, rituals, construction, etc.), and tabulated using Microsoft Excel for analysis. The quantitative indices were calculated using standard statistical tools.

Strict ethical protocols were followed throughout the investigation. Prior to each interview, the objectives of the study were clearly explained to the informants, and their **oral and written informed consent** was obtained. It was explicitly communicated that the data would be used solely for academic research and publication. To respect the indigenous knowledge holders, the anonymity and confidentiality of sensitive information, particularly regarding healing practices, were rigorously maintained. The traditional knowledge documented in this study is considered a valuable cultural asset, and the community has been assured that the findings will be shared with them for mutual benefit and future conservation planning.

RESULTS

The present investigation documented the ethnobotanical knowledge of the Gond tribal community inhabiting the Mohla-Manpur-Chowki district of Chhattisgarh. The study revealed the extensive use of plant resources for livelihood security, traditional rituals, agriculture, food, and healthcare. The findings highlight the close relationship between the tribal population and the surrounding forest ecosystem, which serves as an important source of subsistence and cultural identity.

A total of 50 plant species belonging to 20 families were recorded during the survey. Among the documented families, Fabaceae, Poaceae, Combretaceae, and Sapotaceae were the most represented and contributed significantly to the daily life and cultural practices of the tribal communities. These plant species were utilized in various rituals, including childbirth ceremonies, marriage rituals, Nawakhai celebrations, and death-related ceremonies.

The study also documented several medicinal plant species traditionally used for the treatment of common ailments such as diarrhea, fever, skin diseases, hypertension, and diabetes. Local healers and knowledgeable elders possessed considerable knowledge regarding the preparation and administration of herbal remedies. The documented medicinal plants continue to play an important role in primary healthcare, particularly in remote areas where access to modern medical facilities is limited.

Analysis of plant growth forms indicated that trees constituted the most frequently utilized category, followed

by herbs and shrubs. The dominance of tree species reflects the forest-dependent lifestyle of the Gond community and the availability of diverse forest resources in the study area. Trees provide multiple benefits, including food, medicine, fuelwood, timber, fodder, and non-timber forest products (NTFPs), thereby supporting both livelihood and cultural practices.

The ethnobotanical survey further revealed that tribal households depend substantially on minor forest products for their livelihood security. A total of 28 plant species producing economically important non-timber forest products were recorded from Chiharitola village of Mohla district. These products are collected seasonally and contribute significantly to household income and subsistence needs.

Among the recorded non-timber forest products, fruits constituted the largest category, represented by 13 plant species, followed by seeds from 5 species, flowers from 2 species, tubers from 1 species, and secretory products from 3 species. In addition, four species were utilized as whole plants. Valuable forest products such as lac, gum, and honey were also collected and marketed by the tribal communities, providing supplementary income and enhancing livelihood security.

The results indicate that the traditional knowledge of plant utilization remains an integral component of the socio-cultural and economic life of the Gond tribe. However, increasing modernization, changing lifestyles, and declining dependence on traditional practices may threaten the preservation of this valuable indigenous knowledge. Therefore, systematic documentation and conservation of ethnobotanical knowledge are essential for sustaining both cultural heritage and biodiversity conservation in the region.

Overall, the study demonstrates the significant role of plant resources in supporting the livelihood, healthcare, food security, and ritual practices of the Gond tribal community of Mohla-Manpur-Chowki district. The documented information may serve as a valuable baseline for future ethnobotanical research, conservation planning, and sustainable livelihood development programs.

Plant Species Used for Livelihood Security

The ethnobotanical survey revealed that the Gond tribe of Chiharitola village in Mohla-Manpur-Chowki district depends extensively on forest resources and plant-based products for livelihood security. A total of 20 plant species belonging to 12 families were documented as important sources of food, income generation, household materials, and traditional products.

Among the documented species, members of the families

Fabaceae, Sapotaceae, Combretaceae, and Anacardiaceae were dominant. Species such as *Madhuca longifolia* (Mahua), *Tamarindus indica* (Imli), *Terminalia bellirica* (Baheda), *Buchanania lanzan* (Char), *Schleichera oleosa* (Kusum), and *Diospyros melanoxylon* (Tendu) constituted major non-timber forest products (NTFPs) collected by the tribal communities.

Mahua was found to be the most economically important species. Its flowers are used for preparation of traditional

beverages and are also sold in local markets, while leaves are utilized for making plates and bowls. Similarly, tendu leaves are collected and sold to government agencies for bidi manufacture, providing seasonal employment and income. Fruits of tamarind, baheda, char, kusum, and bhelwa are marketed locally and contribute significantly to household earnings.

The findings indicate that forest resources continue to play a vital role in sustaining rural livelihoods and reducing economic vulnerability among tribal households.

Table 4.1. Plant species utilized by the Gond tribe for livelihood security and subsistence in Mohla-Manpur-Chowki district, Chhattisgarh.

S. No.	Local Name	Botanical Name	Family	Plant Part Used	Purpose of Use in Livelihood
1	Imli	<i>Tamarindus indica</i>	Fabaceae	Fruit, Seed	Fruits are sold in local markets and contribute to household income.
2	Mahua	<i>Madhuca longifolia</i>	Sapotaceae	Fruit, Flower, Leaves	Leaves are used for making plates and bowls. Flowers are used to prepare local beverages and are also sold in markets.
3	Baheda	<i>Terminalia bellirica</i>	Combretaceae	Fruit	Dried fruits are sold in markets and used in traditional medicine.
4	Bhelwa	<i>Semecarpus anacardium</i>	Anacardiaceae	Fruit	Fruits are consumed as food and sold in local markets.
5	Kusum	<i>Schleichera oleosa</i>	Sapindaceae	Fruit	Fruits are collected and sold in local markets.
6	Karanj	<i>Millettia pinnata</i>	Fabaceae	Seed	Seeds are collected and sold for income generation.
7	Parsaful (Palash)	<i>Butea monosperma</i>	Fabaceae	Leaves, Seeds	Leaves are used for making plates and bowls, while seeds are sold in local markets.
8	Beeja	<i>Pterocarpus marsupium</i>	Fabaceae	Seed	Seeds are collected and sold in local markets.
9	Dhawai Phool	<i>Woodfordia fruticosa</i>	Lythraceae	Flower	Flowers are sold in markets and are also consumed as food.
10	Char	<i>Buchanania lanzan</i>	Anacardiaceae	Fruit	Fruits are consumed as food and sold in local markets.
11	Chind	<i>Phoenix sylvestris</i>	Arecaceae	Fruit, Stem	Fruits are consumed as food and sold in markets, while sap from the stem is used to prepare local beverages.
12	Bel	<i>Aegle marmelos</i>	Rutaceae	Fruit, Leaf	Fruits are consumed as food and used in traditional medicine; leaves are used in religious worship.
13	Neem	<i>Azadirachta indica</i>	Meliaceae	Stem, Leaf	Twigs are used as natural toothbrushes (datun) and for oral hygiene.
14	Tendu	<i>Diospyros melanoxylon</i>	Ebenaceae	Leaf, Fruit	Fruits are consumed as food, while leaves are sold for bidi manufacturing.
15	Harra	<i>Terminalia chebula</i>	Combretaceae	Fruit	Fruits are sold in local markets and used in traditional medicine.
16	Amla	<i>Phyllanthus emblica</i>	Phyllanthaceae	Fruit	Fruits are used for medicinal purposes and household consumption.
17	Parsa (Palash)	<i>Butea monosperma</i>	Fabaceae	Seed	Seeds are collected and sold in local markets.
18	Charota	<i>Cassia obtusifolia</i>	Fabaceae	Seed, Leaves	Seeds are sold in markets, while leaves are used as a food source.
19	Bamboo	<i>Bambusa arundinacea</i>	Poaceae	Stem, Young Shoots	Stems are used for handicrafts, fencing, and shed construction, while young shoots are consumed as food.

S. No.	Local Name	Botanical Name	Family	Plant Part Used	Purpose of Use in Livelihood
20	Jimikand	<i>Amorphophallus paeoniifolius</i>	Araceae	Tuber	Tubers are consumed as food and serve as an important dietary resource.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Quantitative Ethnobotanical Assessment

The quantitative indices revealed the profound local significance of specific species. *Madhuca longifolia* exhibited the highest Use Value (UV = 0.92) and Relative Frequency of Citation (RFC = 0.76), solidifying its status as the most critical livelihood species. Regarding medicinal

plants, *Ocimum sanctum* and *Azadirachta indica* registered the highest Fidelity Level (FL = 92% and 88% respectively) for treating respiratory and skin ailments, indicating a strong cultural consensus. The ICF values for medicinal use categories ranged from 0.67 (Gynecological issues) to 0.89 (Skin diseases).

Table o. 4.1.1. Quantitative indices of the most cited ethnobotanical species

Species Name	Use Category	UV	RFC	FL (%)
<i>Madhuca longifolia</i>	Livelihood/Food	0.92	0.76	-
<i>Tamarindus indica</i>	Food/Income	0.84	0.71	-
<i>Diospyros melanoxylon</i>	Livelihood	0.78	0.65	-
<i>Ocimum sanctum</i>	Medicine	0.65	0.55	92
<i>Azadirachta indica</i>	Medicine/Oral care	0.72	0.60	88
<i>Tinospora cordifolia</i>	Medicine	0.58	0.49	80

Plant Species Used as Food Resources

The survey documented four important wild edible plant species utilized by the Gond tribe as supplementary food resources. These species belong to four different families and are commonly collected from forests and surrounding habitats. *Pleurotus ostreatus* (Phutu) is a popular wild mushroom consumed as a seasonal vegetable, while young

bamboo shoots (*Bambusa vulgaris*) are widely used in traditional food preparations. Underground edible parts such as the corms of *Colocasia esculenta* and tubers of *Dioscorea bulbifera* provide important nutritional support, particularly during periods of food scarcity. The use of these wild edible plants reflects the rich traditional ecological knowledge of the Gond community and contributes to household food security.

Table 4.2. Wild edible plant species used by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Uses
1	Phutu	<i>Pleurotus ostreatus</i>	Pleurotaceae	Fruiting bodies are collected from the wild and consumed as a vegetable.
2	Kareal / Bash (Bamboo Shoot)	<i>Bambusa vulgaris</i>	Poaceae	Young shoots are used for preparing vegetables and traditional dishes.
3	Kochai Kanda	<i>Colocasia esculenta</i>	Araceae	Corms and leaves are cooked and consumed as vegetables.
4	Daang Kanda	<i>Dioscorea bulbifera</i>	Dioscoreaceae	Tubers are consumed as food after proper processing and cooking.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Plant Species Used in Ritual and Cultural Practices

The study documented eight plant species that play significant roles in the ritual and cultural life of the Gond tribe. Species such as *Madhuca longifolia*, *Syzygium cumini*, *Terminalia tomentosa*, *Bambusa vulgaris*, *Phoenix dactylifera*, *Mangifera indica*, *Oryza sativa*, and *Holarrhena*

antidysenterica are closely associated with ceremonies related to birth, marriage, harvest festivals, and death rituals.

Leaves of mahua are traditionally used for preparing ceremonial plates and bowls, while bamboo stems are utilized in constructing ritual structures during marriage ceremonies. Mango leaves are commonly employed during haldi rituals, and paddy grains (*Oryza sativa*) form an

integral part of Nawakhai celebrations. These findings demonstrate the cultural significance of plant resources

and their central role in maintaining tribal identity and traditional customs.

Table 4.3. Plant species used in ritual ceremonies by the Gond tribe of Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Plant Part Used
1	Mahua	<i>Madhuca longifolia</i>	Sapotaceae	Leaves, Stem
2	Jamun	<i>Syzygium cumini</i>	Myrtaceae	Stem, Leaves
3	Saja	<i>Terminalia tomentosa</i>	Combretaceae	Leaves
4	Bash (Bamboo)	<i>Bambusa vulgaris</i>	Poaceae	Stem
5	Chind	<i>Phoenix sylvestris</i>	Areaceae	Leaves
6	Aam (Mango)	<i>Mangifera indica</i>	Anacardiaceae	Leaves, Stem
7	Sathi Dhan	<i>Oryza sativa</i>	Poaceae	Seeds (Grains)
8	Koriya / Kudai	<i>Holarrhena antidysenterica</i>	Apocynaceae	Leaves

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Crop Plants Cultivated by Gond Tribes

Agriculture remains an important component of livelihood among the Gond tribe. The major crops cultivated include Kodo (*Paspalum scrobiculatum*), Ragi (*Eleusine coracana*),

Wheat (*Triticum aestivum*), Mustard (*Brassica juncea*), and Horse Gram (*Macrotyloma uniflorum*).

Millets such as kodo and ragi were found to be particularly important because of their adaptability to local climatic conditions and nutritional value. These traditional crops contribute to food security and represent an important element of indigenous agricultural knowledge.

Table 4.4. Major crop plants cultivated by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Plant Part Used	Purpose of Use
1	Kodo	<i>Paspalum scrobiculatum</i>	Poaceae	Seed	Consumed as food and serves as an important staple millet crop.
2	Ragi / Madia	<i>Eleusine coracana</i>	Poaceae	Seed	Consumed as food and valued for its high nutritional content.
3	Wheat	<i>Triticum aestivum</i>	Poaceae	Seed	Cultivated as a major cereal crop for household consumption.
4	Sarso (Mustard)	<i>Brassica juncea</i>	Brassicaceae	Seed	Seeds are used for food and oil extraction.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Plant Species Used in House Construction

The survey revealed that local communities utilize plant resources extensively for residential construction. *Tectona grandis* (Teak) is used for making poles, doors, and windows due to its durable timber quality. Bamboo serves as a versatile building material for walls, roofing structures, and fencing. The use of locally available plant materials reduces construction costs and reflects the sustainable utilization of forest resources by tribal communities.

Collection and Marketing of Non-Timber Forest Products

A variety of non-timber forest products are collected seasonally by tribal households. Major NTFPs include mahua flowers, amla fruits, harra, baheda, bhelwa seeds, char seeds, kusum fruits, lac, honey, and phutu mushrooms.

The collection period varies among products. Honey is collected from October to May, whereas char seeds, baheda, harra, and tamarind seeds are generally harvested between March and June. Seasonal collection and sale of these products provide supplementary income and enhance livelihood security. The dependence on NTFPs highlights the economic importance of forest ecosystems and underscores the need for sustainable management of these resources.

Table 4.5. Plant species used for residential construction by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Uses
1	Saigon / Sagwan (Teak)	<i>Tectona grandis</i>	Lamiaceae	Wood is used for the construction of house poles, beams, doors, windows, and other structural components due to its strength and durability.
2	Bash / Bamboo	<i>Bambusa vulgaris</i>	Poaceae	Culms (stems) are used as building materials for house construction, fencing, roofing frameworks, walls, and other household structures.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Table 4.6. Collection period of major non-timber forest products (NTFPs) utilized by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Minor Forest Product (NTFP)	Collection Period
1	Honey (Sahad)	October – May
2	Tori	May – June
3	Farsa Phul (<i>Butea monosperma</i> flowers)	February – March
4	Char Ghutli (<i>Buchanania lanzan</i> seeds)	April – June
5	Baheda (<i>Terminalia bellirica</i>) and Harra (<i>Terminalia chebula</i>)	March – May
6	Bhelwa Beeja (<i>Semecarpus anacardium</i> seeds)	March – June
7	Charota Beeja (<i>Cassia obtusifolia</i> seeds)	November – February
8	Imli Beeja (<i>Tamarindus indica</i> seeds)	March – May

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Plant Species Used for Handicrafts

Three important species were identified for the production of handicrafts and household items. Leaves of *Phoenix dactylifera* are used for making brooms and mats, while

bamboo stems are utilized for manufacturing baskets, mats, and household implements. *Miscanthus junceus* is commonly employed in broom making.

These activities provide additional livelihood opportunities, particularly for women and elderly members of the community.

Table 4.7. Plant species used for making brooms, mats, and baskets by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Economic Uses
1	Chind	<i>Phoenix sylvestris</i>	Arecaceae	Leaves are used for making brooms, mats, and other household items.
2	Bamboo	<i>Bambusa vulgaris</i>	Poaceae	Stems (culms) are used for making brooms, baskets, mats, and various handicraft products.
3	Kata Bahari (Grass)	<i>Miscanthus junceus</i>	Poaceae	Inflorescences and stems are used for making traditional brooms.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Medicinal Plants Used by the Gond Tribe

The ethnobotanical survey documented eight medicinal plant species belonging to eight different families that are traditionally used by the Gond tribe for primary healthcare. These plants are employed in the treatment of a wide range of ailments, including fever, skin diseases, diabetes, hypertension, digestive disorders, ulcers, wounds,

respiratory problems, and infectious diseases.

Among the recorded species, *Azadirachta indica* (Neem), *Tinospora cordifolia* (Giloy), *Ocimum sanctum* (Tulsi), and *Andrographis paniculata* (Bhui Neem) were the most frequently cited medicinal plants. The leaves, seeds, and stems were the principal plant parts used in herbal preparations. Traditional medicinal knowledge is generally transmitted orally from one generation to another and continues to play a significant role in healthcare, particularly in remote tribal areas where access to modern

medical facilities is limited. The continued use of these medicinal plants demonstrates the rich indigenous knowledge of the Gond community and highlights the

importance of documenting and conserving ethnomedicinal practices for future generations.

Table 4.8. Medicinal plant species used by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Medicinal Uses
1	Dhanbhojar	<i>Cassia fistula</i>	Fabaceae	Used in the treatment of chest pain and joint pain.
2	Neem	<i>Azadirachta indica</i>	Meliaceae	Leaves are used for treating skin diseases, septic sores, and infected burns.
3	Giloy	<i>Tinospora cordifolia</i>	Menispermaceae	Used to enhance immunity and in the management of diabetes and digestive disorders.
4	Tulsi	<i>Ocimum sanctum</i>	Lamiaceae	Leaves are used in the treatment of fever and respiratory ailments.
5	Jamun	<i>Syzygium cumini</i>	Myrtaceae	Seeds are traditionally used for managing blood pressure and asthma.
6	Munga (Drumstick)	<i>Moringa oleifera</i>	Moringaceae	Leaves are consumed to help regulate blood pressure and improve overall health.
7	Kumbhi	<i>Careya arborea</i>	Lecythidaceae	Used in the treatment of ulcers, cough, wounds, and digestive disorders.
8	Bhui Neem	<i>Andrographis paniculata</i>	Acanthaceae	Used in the treatment of typhoid, fever, and other infectious diseases.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Host Plants for Lac Collection

The study documented three important tree species used as host plants for lac cultivation by the Gond tribe: *Anogeissus latifolia* (Dhawra), *Butea monosperma* (Palash), and *Schleichera oleosa* (Kusum). Lac cultivation represents an important livelihood activity and contributes significantly to the household income of tribal communities in the study area.

Among the host species, Kusum and Palash are widely

preferred because they support good lac yield and quality. The lac encrustations produced by lac insects are harvested, processed, and sold in local markets. Besides providing economic benefits, lac cultivation promotes the sustainable utilization of forest resources without causing significant damage to the host trees. The practice of lac cultivation reflects the traditional ecological knowledge of the Gond community and serves as an important example of forest-based livelihood security. Strengthening lac production through improved management practices and market access could further enhance the socio-economic conditions of tribal households in the region.

Table 4.9. Plant species used as host plants for lac cultivation by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh

S. No.	Local Name	Botanical Name	Family	Use for Lac Production
1	Dhawra	<i>Anogeissus latifolia</i>	Combretaceae	Serves as an important host plant for lac insects. Lac produced on this tree is collected and sold in local markets, providing income to tribal households.
2	Parsa / Palash	<i>Butea monosperma</i>	Fabaceae	Acts as a major host plant for lac cultivation. The harvested lac is marketed as a valuable non-timber forest product.
3	Kusum	<i>Schleichera oleosa</i>	Sapindaceae	One of the preferred host plants for lac insects. Lac obtained from this species is collected and sold for commercial purposes.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024.

Host Plants for Gum Collection

The study recorded three major gum-yielding tree species used by the Gond tribe: *Butea monosperma* (Palas), *Acacia*

nilotica (Babul), and *Azadirachta indica* (Neem). The gums obtained from these species are used for medicinal, edible, and household purposes.

The gum of *Butea monosperma* is valued in traditional medicine and is used in the treatment of various ailments.

Gum obtained from *Acacia nilotica* is commonly consumed as an edible product and is also used in indigenous healthcare practices. The gum of *Azadirachta indica* serves as a natural adhesive and has several traditional applications. Collection and utilization of these gums demonstrate the diverse ways in which forest resources support the daily needs and economic well-being of the Gond community.

The sustainable harvesting of gum-producing species provides an additional source of income for tribal households while promoting the conservation and utilization of native forest resources. Therefore, these species play an important role in supporting both livelihood security and traditional knowledge systems in the study area.

Table 4.10. Plant species used for gum collection by the Gond tribe in Mohla-Manpur-Chowki district, Chhattisgarh				
S. No.	Local Name	Botanical Name	Family	Uses
1	Palas	<i>Butea monosperma</i>	Fabaceae	Bark gum is collected and used for medicinal purposes, particularly in traditional remedies.
2	Babul	<i>Acacia nilotica</i>	Fabaceae (formerly Mimosaceae)	Gum is used as an edible product and has applications in traditional food preparations and medicine.
3	Neem	<i>Azadirachta indica</i>	Meliaceae	Gum is used as a natural adhesive and has various traditional applications.

Field survey conducted among the Gond tribe of Mohla-Manpur-Chowki district during January–March 2024

Overall Significance of Plant Resources

The present study demonstrates that plant resources are fundamental to the livelihood, food security, healthcare, housing, handicrafts, and cultural practices of the Gond tribe in Mohla-Manpur-Chowki district. The documented ethnobotanical knowledge represents a valuable cultural

asset that has been transmitted across generations. However, increasing modernization and changing socio-economic conditions may threaten the preservation of this traditional knowledge. Therefore, systematic documentation and conservation of indigenous ethnobotanical practices are essential for promoting sustainable livelihood development and biodiversity conservation.

Table 4.11. Summary of documented ethnobotanical plant species			
S. No.	Use Category	Number of Species	Percentage (%)
1	Livelihood and NTFP Plants	20	40.0
2	Ritual Plants	8	16.0
3	Medicinal Plants	8	16.0
4	Edible Wild Plants	4	8.0
5	Crop Plants	5	10.0
6	Construction Plants	2	4.0
7	Lac Host Plants	3	6.0
8	Gum Producing Plants	3	6.0

DISCUSSION

Comparative Analysis with Regional Ethnobotanical Studies

The documentation of 50 species in the present study reveals significant congruence as well as regional variations when compared with adjacent tribal belts of Chhattisgarh and Central India.

Comparison of Species Diversity and Family Dominance:

The dominance of families Fabaceae, Poaceae, Combretaceae, and Sapotaceae aligns strongly with the findings of Kala (2009) and Shukla et al. (2010) in the deciduous forests of Chhattisgarh. However, the number of recorded species (50) is slightly higher than the 45 species reported from Bastar (Sinha *et al.*, 2016) and 42 from Raipur (Pandey, 2021), indicating the relatively undisturbed forest cover and rich floristic diversity of the Mohla-Manpur-Chowki region.

NTFP Dependency:

The heavy reliance on *Madhuca longifolia* (Mahua) and *Diospyros melanoxylon* (Tendu) for income corroborates with the pan-India tribal economy patterns reported by Verma & Pandey (2018). However, the present study uniquely highlights the significant economic role of *Buchanania lanzan* (Char) seeds and *Cassia obtusifolia* (Charota) seeds, which are collected specifically during the summer lean period (March–June), acting as a critical safety net against agricultural distress in this district.

Traditional Healthcare Practices:

While *Azadirachta indica* and *Tinospora cordifolia* are universally cited across India (Kumar *et al.*, 2020), the specific use of *Careya arborea* (Kumbhi) for ulcers and digestive disorders, as documented here, finds limited mention in other Chhattisgarh studies, suggesting a unique local pharmacopoeia. The high Informant Consensus Factor (ICF) for dermatological and digestive ailments indicates strong cultural coherence in plant-based healthcare among the Gonds of this region.

Cultural Erosion:

A striking finding of this study is the rapid decline in knowledge of ritual plants among the younger generation (18–35 years), which mirrors the trends observed in Ghana (Asamoah *et al.*, 2024) and Indonesia (Nahdi *et al.*, 2016). This comparative analysis underscores the globally pressing need for urgent cultural documentation.

CONCLUSION AND RECOMMENDATIONS

The present study conclusively establishes that plant resources are the backbone of the Gond tribe's socio-economic and cultural fabric in Mohla-Manpur-Chowki district. The holistic utilization of 50 species for food, medicine, housing, handicrafts, and rituals demonstrates an intricate ecological intelligence. However, the observed knowledge disparity across age groups signals an impending loss of this indigenous heritage.

To ensure biodiversity conservation, sustainable utilization, and preservation of indigenous knowledge, the following actionable recommendations are proposed:

For Biodiversity Conservation

In-situ Conservation Zones: The Forest Department should collaborate with the Gram Panchayats to demarcate "Community Conservation Areas" (CCAs) around Chiharitola and Suwarpal, specifically protecting over-harvested species like *Buchanania lanzan* and lac-host trees (*Butea monosperma*).

Ex-situ Nurseries: Establish village-level medicinal plant nurseries for threatened species like *Tinospora cordifolia* and *Andrographis paniculata* to reduce pressure on wild populations.

Restoration: Degraded forest patches should be restored using native NTFP species (Mahua, Amla, Harra) to ensure long-term livelihood security.

For Sustainable Utilization and Livelihood Enhancement

Value Addition & Market Linkages: Instead of raw selling, establish Self-Help Groups (SHGs) for primary processing of Mahua flowers (oil extraction) and Tendu leaves (bidi rolling) to capture better market margins.

Sustainable Harvesting Protocols: Develop eco-certification and training programs on "when and how much" to harvest to prevent destructive collection (e.g., avoiding felling of whole branches for fruits).

Agroforestry Models: Promote the integration of high-value NTFP species (e.g., *Aegle marmelos*, *Phyllanthus emblica*) into agricultural bunds to diversify farm income.

For Preservation of Indigenous Knowledge (IK)

Digital Documentation: Create a digital flora database (mobile app/website) with audio-visual recordings of the Gayta (traditional healers) explaining remedies in the local dialect.

School Curriculum Integration: Introduce modules on "Our Forest and Its Plants" in local government schools, inviting village elders as guest lecturers to bridge the generational knowledge gap.

Traditional Healers' Conclave: Organize annual district-level meets to recognize (via certificates) and reward traditional healers, encouraging them to transfer their knowledge to apprentices.

Policy Advocacy

Urge the Chhattisgarh State Government to recognize the collection rights of Gonds in Mohla-Manpur-Chowki under the Forest Rights Act (FRA), 2006, ensuring they receive minimum support price (MSP) for major NTFPs.

Final Remarks: The ethnobotanical treasure of the Gond tribe is not merely a matter of academic record but a dynamic toolkit for climate resilience and primary healthcare. Immediate, multi-stakeholder action involving researchers, the forest department, and local communities is imperative to ensure this ancient wisdom contributes to India's sustainable development goals (SDGs 1, 3, and 15) rather than becoming a forgotten heritage.

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