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Mahua: Commercially Important Deciduous Tree of Jharkhand

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Abstract

Mahua, scientifically known as Madhuca longifolia, is a commercially significant deciduous tree that plays a vital role in the economy of Jharkhand's tribal communities. The tree yields various valuable products, including edible flowers, fruits, oil-rich seeds, and timber. Mahua flowers are a source of income, sold in local markets, and the extracted oil has commercial applications. The present study was conducted in five villages/blocks: Barkagaon, Bundubatka, Lurunga, Patra, and Barsopani of Hazaribagh district and six villages/blocks: Burmu, Chama, Kedal, Baltharwa, Ramdaga, and Lapra of Ranchi District. The local village markets, Bisrampur, Harli, Badam, Balia, Gamaria, Morpiri, Burmu Chowk, Susai, Sanicher Bazar, Hutar, Bijupara, Brambe, mandar, sons madrassa and Mandis like Bhurkunda, Patratu, Ramgarh, Hazaribagh and Ranchi Pandra mandis were visited by the author to see the collection and price of the Mahua produce.

The selected villages/blocks are located adjacent to the forest, and the residents' livelihoods are partially reliant on the collection of non-timber forest products (NTFP) and the sale of Mahua in the marketplace. The simple random sampling method was employed. Data collection is through household interviews, field surveys, and market surveys.

Keywords: Mahua, Tribal, Deciduous, Non Timber Forest Products (NTFPs), Paikar.

Introduction

For the livelihoods of its tribal groups Jharkhand’s forest area is crucial. Trees supply important goods including logging materials and energy resources. Almost 29% of the people in Jharkhand count on forest inhabitation for essentials and financial support. The economic wellbeing of these communities largely depends on minor forest products like Mahua (Madhuca longifolia).

Scientifically Madhuca longifolia is the revitalising flower that delivers dependable earnings to tribal groups and creates social connections in addition to cultural engagements. Growing to 20 meters in height with typical wide leaves, this tree belongs to the deciduous category. The trunk is brief and sturdy with about an 80 cm diameter and displays a rounded crown made up of various branches. Cranes exfoliate in thin scales as the tree's bark displays vertical cracks and wrinkles.

Mahua blooms in March and April. Fuzzy clusters hold the unique green or pink flowers. The lifespan of these blooms is limited to a single night, and they quickly hit the ground. Developed from pollinated flowers is the fleshy and green fruit that encloses 1 to 4 shiny brown seeds. These flowers have a very short lifespan, lasting only one night before falling to the ground. The fruit, which develops from pollinated flowers, is fleshy, greenish, and oval, containing 1-4 shiny, oily brown seeds. Interestingly, Mahua flowers are never plucked. It is always picked. At the start of May, the flowers bloom at night time,

and by morning, they start falling to the ground with a thud of noise. These moments are eagerly awaited by everyone for picking and collecting the most valued minor forest produce.

We can argue that Mahua holds great importance for indigenous communities in Jharkhand. One can easily describe Mahua tree as the essential source of life for tribal India despite their marginalised conditions.

The Jharkhand Government designated Mahua as an essential forest output. The Tribal community of Jharkhand receives gifts from nature. Long ago, people settled by the mahua tree since it offered significant economic worth. In the olden days, tribal ancestors used to live in and around the mahua tree, which gave them immense economic value. Over time, they independently took ownership of the Mahua trees. In some instances, the Mahua seeds blossomed independently into trees, and at other times, the forebears cultivated Mahua trees around their houses. Today, multiple mahua trees are found near most village houses. According to local beliefs, having numerous mahua trees increases one's monetary value. In March-April, the Mahua flower appears. Starting in May and continuing through June, the fruit begins to show. It creates a cool area for the residents to relax. To prevent the flowers from being contaminated by soil or dust, the space under the mahua tree is cleared and prepared with cowdung. Following the collection of flowers, they are dried and sold to local vendors for about Rs 40 to 45 per kg. Occasionally, the locals store it for future selling when demand increases and they achieve about Rs 60 to 65 per kg. During the season, a small tree can offer roughly 50 kilograms, while an old tree may deliver 1.5 to 2 quintals. The flower of Mahua starts in the month of March – April. In May – June, the fruit starts appearing. It is very shady and thus provides a sitting place for the villagers. Locals accumulate and reserve the mahua. Storing the mahua is a technique unto itself. Customarily dried under extreme heat and sealed hot during the second hour of the afternoon's New Moon. In the New Moon period, this activity happens as weevils or wood worms do not strike at that moment and it remains conserved for many days. The villagers layer Neem leaves at the bottom and intersperse Mahua with Neem until no bacterial fungus forms. To avoid moisture buildup and the growth of fungus, the produce needs to be enclosed in a plastic sack without gaps.

Drink made from older mahua is richer in taste and delightful to drink. In almost every home within the village people dry and ferment mahua to create a liquor enjoyed during festivals like karam , sarhul, and Jitya along with family and social events celebrating life's milestones. They collect Mahua fruit and pulverize it with a stone to remove the Kernel. After crushing the kernel, Dori oil is obtained, and it is used in cooking while being beneficial for piles and Pneumonia. For sore muscles, gentle application offers considerable ease. When there is a burn gentle application brings substantial relief. This oil is antibacterial and, during cold months solidifies like fat. For longevity and rich sound production during festivities musicians anoint the Nagada with Dori oil.

The commercialisation of Mahua Flower

The main income of Indigenous people comes from the gathering of mahua flowers. After they gather the flowers they should increase their value. The dried mahua flower Finds its way to brewing centres through small traders (paikar) who use agents and dealers. The central government is launching a mahua-based beverage called Mahua Nutri-beverage. Six fruit-flavoured variants of the beverage will sell for Rs 700 in a 750 ml container. For the first time ever, the Ministry of tribal affairs has entered the field of producing and distributing alcoholic drinks. The drink offers great nutritional benefits, and its alcohol content is just 5%. The Indian Institute of Technology, in collaboration with the Tribal Cooperative Marketing Development Federation of India, introduced the healthy beverage. (Pinakin et al. 2008.) Weak storage

after harvest and insufficient advanced machinery for enhancing mahua flowers create issues. Many economic difficulties affect poor tribal individuals and small local businesses. The inadequate post-harvest storage and absence of contemporary technology for the value addition of mahua flowers are issues of concern. Impoverished tribal communities and tiny local firms encounter numerous economic difficulties. Through the sale of Mahua, the local inhabitants earn money but on account of lack of volume, they end up purchasing necessary items for a living. Mahua earnings fail to sustain them and they persist through economic hurdles that are rarely regulated by the revenue from its trading.

Modern Utilisation of Mahua Flower and Fruit

Flowers and fruits from mahua are suitable for eating. In Jharkhand's dishes they serve as sweeteners and oil sources. Mahua flowers contain a lot of sugar and enhance the taste of various local and traditional dishes such as halva and Laddu. Young people in tribes create Mahua Cake and Mahua laddu recipes that are endorsed by the Jharkhand Government. The sugar content of mahua flowers enhances several local and traditional foods such as halva, laddu, and kheer. In the production of alcohol and alcoholic drinks flowers act as raw materials. Residents of Jharkhand harvested and dried the mahua flowers to craft a spirit called Mahua Daru that has 20 to 40 percent alcohol. Mahua flowers and Sal seeds combine and undergo heating to provide a non-grain alternative. Oil is taken from Mahua seeds. This is a major producer of oil. For Mahua to be more than just a source of alcohol its value must be improved through technical knowledge and science.

The study shows that Mahua Flowers can be utilised to produce numerous ready-to-consume beverages such as toast and sweet treats. In Bhubaneshwar's Orissa University of Agriculture and Technology recent productions include cake and squash made from dry mahua flowers. A combination of ginger and fennel extracts created the Mahua RTS drink with encouraging storage tests (Mishra et al., 2012). By blending mahua flower juice with amla juice a flavourful beverage high in antioxidants and lacking sugar was developed (Patel et al., 2016). Dried mahua produces candied flowers and glazed flowers along with mahua bars as premium products. The extraction of sugar syrup from desiccated mahua flowers has been recorded, as the sweetness of the blossoms is crucial for fermentation. The syrup extracted from Mahua flowers plays a role in chocolate production and as a sweetener (Patel et al., 2008). Jam, jelly, marmalade, and pickle: According to Reuther and his team's findings mature fruits without full ripeness are converted into jam through citric acid. The pulp can be converted into syrup or marmalade that are both safe to consume. Using fresh flowers generates the mahua jam and jelly. To determine overall appeal the made products received evaluation based on colour flavour and texture. Based on the outcome of the hedonic test all Mahua items received high ratings.

Medicinal Use

Organic properties of mahua (Madhuca longifolia) include anticancer effects along with benefits for cancer prevention and liver health. While many studies highlight the medicinal benefits of mahua's flower fruit and seed more experimental work is necessary to use it as a food or food ingredient. Misconduct by tribal people is damaging the flower's quality over time. Advanced technologies are necessary to create numerous nutritious food items that are consistently available and to promote this flower commercially for the growth of small-scale enterprises among tribal communities. This nutritious and valuable species is viewed as underutilized owing to limited information and inadequate processing practices. It is necessary to redirect mahua blossoms for market applications in different foods and fruits while seeds will

be utilized for producing medicines. Valuable additions to products can happen through small and large enterprises based in forests. These activities ought to create more earnings and job openings for both rural and indigenous populations. This study investigates the cultivation and harvesting techniques of Mahua as a vital non-timber forest product in the Ranchi district of Jharkhand.

Methodology

The current research was carried out in five villages or blocks.: Barkagaon, Bundubatka, Lurunga, Patra, and Barsopani of Hazaribagh district and six villages/blocks: Burmu, Chama, Kedal, Baltharwa, Ramdaga, and Lapra of Ranchi District. The local village markets, Bisrampur, Harli, Badam, Balia, Gamaria, Morpiri, Burmu Chowk, Susai, Sanicher Bazar, Hutar Bijupara, Brambe mandar sons madrassa and Mandis like Bhurkunda, Patratu, Ramgarh, Hazaribagh and Ranchi Pandra mandis were visited by the author to see the collection and price of the Mahua produce.

The selected villages/blocks are located adjacent to the forest, and the residents' livelihoods are partially reliant on the collection of non-timber forest products (NTFP) and the sale of Mahua in the market. The simple random sampling method was employed. Data gathering is conducted through household interviews, field surveys, and market surveys. The production capacity of dependent forests was examined using field surveys. Data was acquired through the administration of both formal and informal surveys. The informal and key informant interviews yielded qualitative data, while a household survey employing a structured questionnaire was executed to gather quantitative data. The surveyed households were requested to provide estimates of produce harvested, the seasonal availability of Mahua, the condition of these goods in the communities and adjacent forests, and details regarding the selling of the commodities. The surveyed homes were requested to provide estimates of the produce harvested and the quantity sold at the market.

Findings and Analysis

Below is the data concerning the production and collection features of the Mahua tree in the designated areas.

Harvest season for Mahua production

The collecting season differs based on the kind of Mahua product (flower or seed), and variations in the collection time were seen across different localities. The collection of Mahua flowers often commences in mid-March and persists until mid-May. The intensive collection cycle lasts 55 to 60 days during the full season. The seed collection commences in June and persists until July, peaking between June 15th and June 30th.

Table 1: Collection of Mahua Flower and Seed/ Fruit

Village/block	District	Market	Collection Period of Mahua Flower	Collection Period of Mahua seed/fruit
Barkagaon	Hazaribagh	Bisrampur, Harli, Badam, Balia, Ango	15th March – 15th May	1st June – 15th July
Bundubatka				
Lurunga				

Patra				
Barsopani				
Lapra	Ranchi	Gamaria, Morpiri, Burmu Chowk, Susai, Sanichar Bazar, Hutar Bijupara, Brambe, Mandar, Sons Madrasa		
Chama				
Burmu				
Kedal				
Baltherwa				
Ramdaga				

Collection and Storage Method

The picking and storing of Mahua products is a highly time-intensive endeavour. A villager invests considerable time and effort and encounters numerous challenges while gathering Mahua vegetables. The duration devoted to gathering flowers exceeds that allocated for collecting seeds, as Mahua flowers are harvested manually from the ground. Collectors commence their activities early in the morning, at 4:30 a.m. for flowers and 5:00 a.m. for seeds, picking flowers until approximately 11:00 a.m. to 12:00 noon, while seed collection occurs until 6:00 a.m. to 7:00 a.m. At least two family members participate in the collection, drying, and storage processes. A greater number of females participate in the collection and drying process compared to males, with children also engaged in the collection activities. Following collection, the flowers were sun-dried on the ground for 3 to 4 days, after which the dried flowers were preserved in jute bags. The people collected an average of 2 local baskets, approximately 40 kg, of fresh flowers daily during the season. Upon sun-drying, these flowers produce approximately 300 grammes of dried flower for every kilogramme of fresh bloom.

Amounts of Flowers and Seeds/Fruits gathered in a season

The cumulative quantity of flowers and seeds gathered during a season in the study villages is displayed in the table.

Table 2: The total quantity of flowers and seeds collections during the season in the study village

Village/block	Flower	Seed
	Total Quantity (in Tons) approx..	Total Quantity (in Tons) approx.
Barkagaon	5000	500
Bundubatka	250	100
Lurunga	250	100
Barsapani	250	100
Patra	250	100
Lapra	375	175
Chama	25	4
Burmu	250	100
Kedal	25	5
Ramdaga	25	4
Baltharwa	250	100

Table 3: Revenue generation by sale of Mahua Flower and seed/fruit

Village	Flower	Seed
	Total sale (Rs. 60/kg) approx..	Total Quantity (Rs 35/kg) approx.
Barkagaon	30,00,00,000	1,75,00,000
Bundubatka	1,50,00,000	35,00,000
Lurunga	1,50,00,000	35,00,000
Barsapani	1,50,00,000	35,00,000
Patra	1,50,00,000	35,00,000
Lapra	2,25,00,000	61,35,000
Chama	15,00,000	1,40,000
Burmu	1,50,00,000	35,00,000
Kedal	15,00,000	1,45,000
Ramdaga	15,00,000	1,35,000
Baltharwa	1,50,00,000	35,00,000

The revenue derived from flowers and seeds fluctuated between villages and markets. The highest revenue was generated from the sale of flowers instead of seeds. The market price of Mahua flowers varies between Rs. 58 and Rs. 60, while Mahua seeds range from Rs. 30 to Rs. 35, contingent upon the production.

Challenges and the Path Forward

Although there is potential in Mahua products in Jharkhand the economy struggles with issues. Changes in market costs and the existence of illegal alcohol production affect the incomes of Mahua reliant communities. Achieving the complete market potential of the Mahua tree depends heavily on government backing. It consists of advancing sustainable harvesting techniques while helping to establish improved connections for selling Mahua products.

Conclusion

The Mahua tree, deeply rooted in Jharkhand's cultural and economic landscape, holds immense promise for the state's economic growth. In any event, by portraying its challenges and seeking to respond to the deficit of strategic interventions, the Mahua tree has the potential to prominently participate in the tribal improvement of livelihood and social economic transformation in Jharkhand region. Because of its multipurpose, the fundamental requisite of tribal life i.e., 3F denoted as Feed, Fodder and Fuel is satisfied owing to the availability of the essential element in the given area. Regarding the quality aspect of the flower, it is declining due to some black sheep of the tribal groups who long back changed the method to preserve the flower. Given these concerns, there is a significant need for the efficient utilisation of this flower and contemporary technologies for the production of various advantageous food products, ensuring their year-round availability to bolster the economy of the tribal population and facilitate their advancement—the flower that may contribute to increasing employment and income within these communities.

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