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A Status of Different Non Wood Forest Products in Chhattisgarh, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Review Article

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ABSTRACT

Non-wood forest products (NWFPs) are vital to the economy and livelihoods of forest-dependent communities in Chhattisgarh, India. This aim of this article to examines the current status of various NWFPs in the region, with a focus on key products such as tendu leaves (Diospyros melanoxylon), mahua flowers (Madhucalongifolia), sal seeds (Shorearobusta), bamboo (Bambusoideae spp.), chironji (Buchananialanzan), gums, resins, and medicinal plants. Using a mix of qualitative and quantitative methods, the study assesses the socio-economic significance, harvesting practices, market dynamics, and conservation issues related to each NWFP. The data was gathered through field surveys, interviews with stakeholders, and analysis of secondary sources from government reports and academic literature. NWFPs are shown to make a substantial contribution to local economies by generating income and employment opportunities for rural communities. However, the article also highlights critical challenges such as unsustainable harvesting, lack of value addition, poor market access, and regulatory problems.The theoretical and practical implications of

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this study are emphasizes the need for sustainable forest management practices to ensure the long-term viability of NWFPs and suggests policy interventions to improve market connections, enhance value addition through processing and marketing, and strengthen regulations to protect forest resources. Overall, the contribution of this study is to enhances understanding of NWFPs in Chhattisgarh, shedding light on their socio-economic importance, challenges, and the potential for sustainable management and conservation amid evolving environmental and socio-economic conditions.

Keywords: Non-wood Forect Products (NTFP); socioeconomic; marketing; sustainable management.

ABBREVIATIONS

NWFPs	*: Non-wood Forest Products*
MFP	*: Minor Forest Produce*
MSP	*: Minimum Support Price*
SGSY	*: Swarn-Jayanti Gram Swarojgar Yojana*
MoTA	*: Ministry of Tourism and Antiquities*
TRIFED	*: Tribal Cooperative Marketing Development Federation of India*
SPA	*: State Procurement Agency*
MARKFED	*: Marketing Cooperative Federation*
MOEF	*: Ministry of Environment and Forest*
JFM	*: Joint Forest Management*
SERP	*: Society for Elimination of Rural Poverty*
TCDC	*: Tribal Cooperative Development Corporation*
RMD	*: Retail Marketing Division*
PFPCS	*: Primary Forest Produce Cooperative Society*
IGP	*: Income Generation Programe*
CMFPF	*: Chattisgarh Minor Forest Produce (Trading & Development) Cooperative Federation*
FAO	*: Food and Agriculture Organization*
ITDA	*: Integrated Tribal Development Agenc*

1. INTRODUCTION

The area of Chhattisgarh is one of India's leading forest-rich states, with ### km/sf (44.21%) of its total land area covered by forests (Economic Survey, 2017). It is recognized for its dense forests and significant biodiversity, earning it the designation of a *"green state"* (Kumar and Ramchandra, 2018). According to the FAO, non-timber forest products (NTFPs) include *"all items for commercial, industrial, or subsistence use obtained from forests and their biomass."* This category encompasses a diverse array of goods such as fruits, nuts, vegetables, fish, gums, medicinal plants, resins, essences, barks, and fibers like bamboo and rattan (Limanpure and Kumar, 2018). NTFPs are crucial for many of the world's impoverished and less affluent populations, providing essential resources for food, shelter, medicine, cultural practices, and energy.

The aim/objectives of study is

Non-wood forest products (NTFPs) have gained attention for their potential to generate rural income and enhance markets, their role in preserving traditional knowledge, their contribution to sustainable forest management and conservation, and their impact on improving dietary diversity and providing nourishment, particularly for communities living near forests (Kumar and Ramchandra, 2019). For many rural households, NTFPs are a vital source of income and meet fundamental subsistence needs. These products also hold cultural importance, being used in rituals, as totems, incense, and other ceremonial items. Additionally, some NTFPs have notable medicinal properties, benefiting the health and well-being of the communities that use them (Darro *et al.,* 2022). In summary, NTFPs represent a wide range of forest-derived products beyond timber, fulfilling various roles including economic support, cultural expression, ecological conservation, and health improvement (Ahenkan & Boon, 2011).

The main collectors of NTFPs are indigenous or tribal populations living near forests (Chandra *et al.,* 2021a; 2021b). In Chhattisgarh, these tribal communities are the largest demographic group, totaling 78.22 lakhs individuals, which makes up 30.62% of the state's population (Gupta *et al.,*2015; Kumar *et al.,* 2022a; 2022b). For these communities, collecting minor forest products is a significant source of income. Chhattisgarh manages 34 forest divisions through 901 Primary Minor Forest Products Co-operative Societies focused on NTFP collection (Kumar *et al.,* 2023). The Department of Commerce and Industries, Government of Chhattisgarh, has also implemented the Food Processing Policy 2012-2019, which includes a special scheme for

projects exceeding Rs. 500 crore2. Status and area ofNonWood Forest Products In Chhattisgarh.

1.1 Sal Seed Production

Sal seeds are harvested from the *Shorearobusta* species and contain 13-14% oil. This oil serves as a substitute for cocoa butter and is used in confectionery and other food products. The residual oil cake, which has a protein content of 10-12%, is used as a high-protein feed for chickens and as organic fertilizer in agriculture. The yield of Sal seeds can fluctuate from year to year. Collection typically occurs from June to July each year. Key Sal seed producing districts in Chhattisgarh include Jagdalpur, Keshkal, South Kondagaon, East Bhanupratappur, Gariyaband, Dhamtari, Dharamjaigarh, Korba, Jashpur, Balrampur, Surguja, and Korea.Sal.

Seed Collection and Trade Practices: The Government of India has introduced the Mechanism for Marketing of Minor Forest Produce (MFP) through Minimum Support Price (MSP) and Development of Value Chains for MFPs to ensure that collectors receive better prices for their products. In Chhattisgarh, Sal seeds are included in this scheme, with a collection rate set at Rs. 2000 per quintal for the year 2020(Fig. 1) highest Collected Quantity in the year 2009 and lowest is 2018 and Collection wages is highest 2009 and lowest 2013. Sal seeds are classified as non-specified MFPs, meaning they can be bought from gatherers in the open market by anyone. However, Primary Co-operative Societies also purchase Sal seeds from collectors at the minimum support price (Fig. 2). Highest Sale Value in the year 2009 and lowest in the year 2018 and highestAverage Sale Rate in the year2017 and lowest in the year 2003.

- The funds for collection of the sal seed are made available to the District Unions by the state level M.F.P. Federation. The District Unions provide funds for procurement to the Primary Societies.
- The Sal seed collected by collectors are purchased and bagged 50 Kgs bag by the Phad Munshi of Primary Society at every collection centre.
- Each family is given a collectors card. The daily collection of the collector is entered. The payment of collection charges of seeds is made and the entry of the payment is made in the card like Tendu leaves.
- Regular anti-insect Treatment/Fumigation is required in godowned Sal seed, which is carried out regularly by Experts.
- The collected and godowned quantity of Sal seed is dispossed off by e-Tenders/e-Auctions by M.F.P. Federation, Raipur.

Table 1. Collection and sale of sal seed in different years in Chhattisgarh State

Year	Collected Quantity (Lac Qtls.)	Collection wages (Rs. Crores)	SaleValue (Rs. Crores)	Average SaleRate (Rs. per Qntl.)
2001	4.77	15.28	19.60	411
2002	1.38	4.84	7.95	574
2003	8.55	42.74	21.80	255
2004	1.25	6.24	5.35	429
2005	9.24	46.22	30.56	331
2006	0.488	2.44	3.59	736
2007	6.06	30.32	59.09	974
2008	0.899	8.99	12.64	1407
2009	8.864	88.64	51.07	582
2010	1.34	6.72	6.76	502
2011	0.392	2.94	3.74	955
2012	7.13	35.72	44.89	629
2013	0.013	0.10	0.11	843
2014	1.257	12.57	16.57	1328
2015	1.120	11.20	5.85	523
2016	0.028	0.28	0.30	1177
2017	1.232	12.32	18.63	1513
2018	0.012	0.16	0.09	711
2019	0.616	12.32	0.09	711
2020	3.492	69.84	0.09	711

Source: https://www.cgmfpfed.org/new/

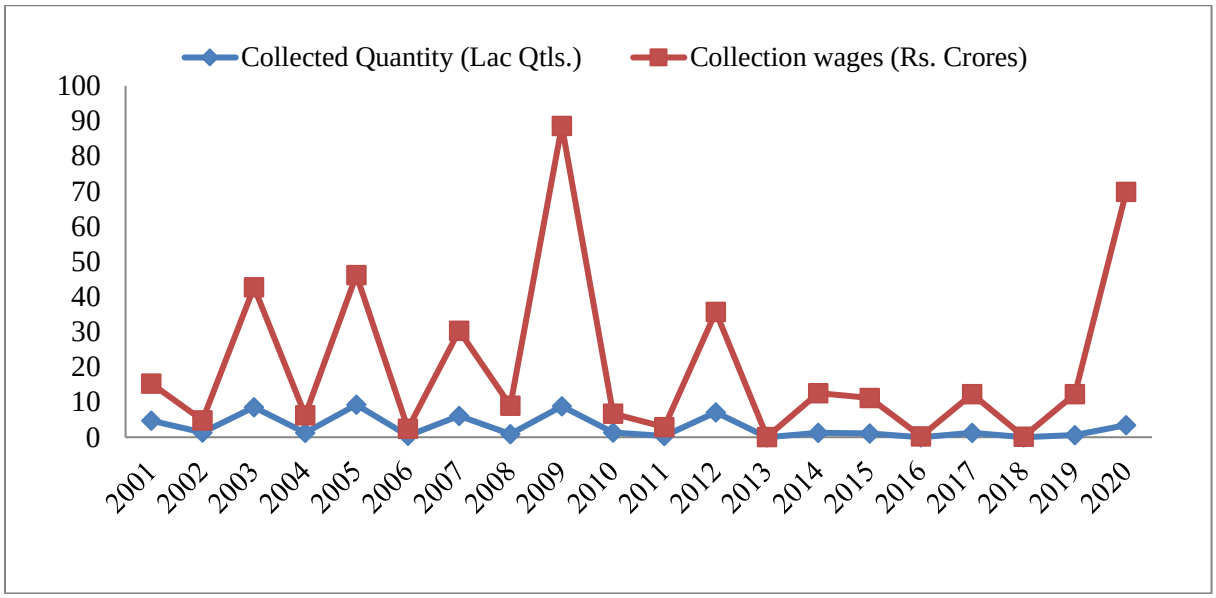

Fig. 1. Collection quantity and wages of sal seeds in Chhattisgarh State
Source: https://www.cgmfpfed.org/new/

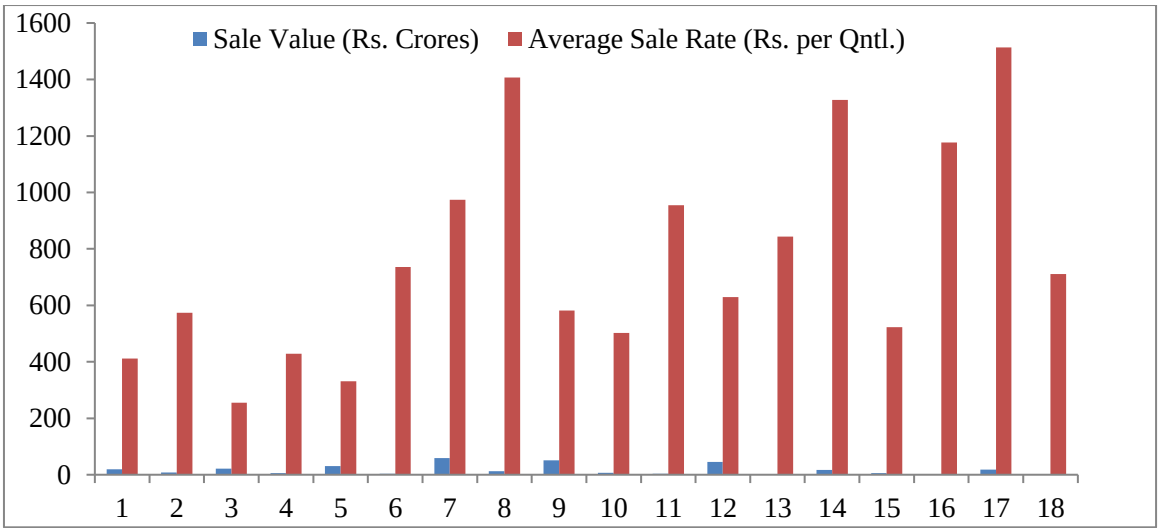

Fig. 2. SaleValue and Average Sale Rate of Sal Seed in Different Years in Chhattisgarh State
Source: https://www.cgmfpfed.org/new/

1.2 Harra Production

Harra, commonly known as myrobolan, is a fruit harvested from the Terminalia chebula species. It is utilized in the tannin and pharmaceutical industries and is a key component of Triphala powder used in Ayurvedic medicine. The estimated annual production of Harra in the state is around 50,000 quintals, although this figure fluctuates from year to year. The main districts producing Harra are Kanker, Keshkal, South Kondagaon, East Bhanupratappur, Jagdalpur, Rajnandgaon, Dharamjaigarh, Raigarh, and Jashpur (Fig. 3). highest CollectionQuantity in the year 2002-3 and lowest is 2017-18.

Harra Collection and Trade Practices: Harra is being acquired through the Government of India's Mechanism for Marketing of Minor Forest Produce (MFP) via the Minimum Support Price (MSP) and Development of Value Chain for MFP scheme (Fig. 4). For the year 2019-20, the collection rate for Harra is set at Rs. 1500 per quintal. The collection process for Harra seeds

follows the same procedures as for Sal seeds. The stored Harra is sold through e-Tenders or e-Auctions managed by the M.F.P. Federation in Raipur (Fig. 5).

Lac: In Chhattisgarh, the abundance of Kusum, Palash, and Ber trees makes Lac cultivation a significant income source for rural communities. Currently, the Lac Development scheme supports 83 Lac cultivation projects across District Unions, involving 22,238 beneficiaries who are managing 66,934 Kusum trees, 473,768 Palash trees, and 5,442 Ber trees. A Lac Training & Extension Centre has been set up in Kanker, where 231 master trainers and Lac cultivators have received training. As one of the leading lac-producing states in India, Chhattisgarh produces approximately 4000 MT of lac annually. The primary lac-producing districts in the state include Jagdalpur, Kanker, Mahasamund, Gariaband, Korea, Sarguja, and Kabeerdham.

Table 2. Collection and Sale of Harra Seed in Different Years of Chhattisgarh State

Year	Collected Quantity (Qtls.)	Collection Wages(Rs. Lakhs)	SaleValue (Rs. Lakhs)	Average SaleRate(Rs. per Qntl.)
2001-02	60634.45	181.90	150.74	249
2002-03	85264.86	213.16	216.32	254
2003-04	63085.63	157.71	167.50	266
2004-05	60606.48	151.52	153.68	254
2005-06	44116.75	110.29	118.64	269
2006-07	59904.615	149.76	166.45	278
2007-08	42535.30	116.97	144.59	340
2008-09	49651.86	186.19	215.06	433
2009-10	33159.55	124.35	137.44	415
2010-11	16343.76	73.55	98.04	600
2011-12	71480.28	714.80	662.19	926
2012-13	29734.23	237.87	258.44	869
2013-14	15803.06	102.72	129.95	823
2014-15	34644.720	381.09	155.97	456
2015-16	57126.900	628.40	332.78	583
2016-17	3087.760	24.70	21.04	682
2017-18	178.820	1.97	1.40	1100
2018-19	1670.330	18.37	18.69	1119
2019-20	3346.360	50.20	46.44	1836

Source: https://www.cgmfpfed.org/new/

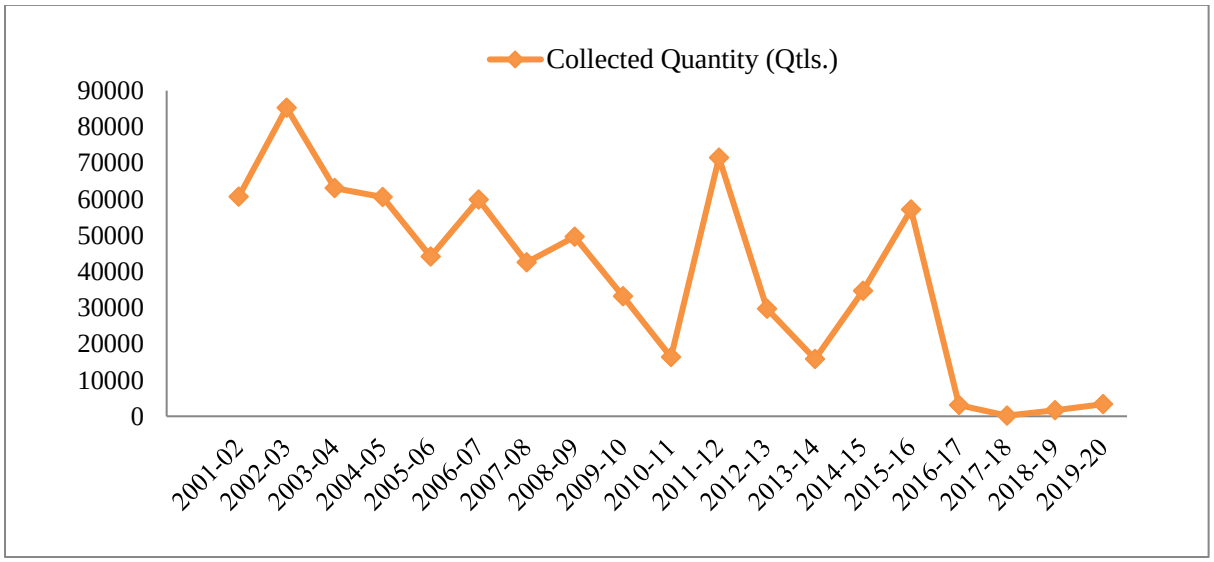

Fig. 3. Collection Quantity of Harra Seeds in Different years of Chhattisgarh State.
Source: https://www.cgmfpfed.org/new/

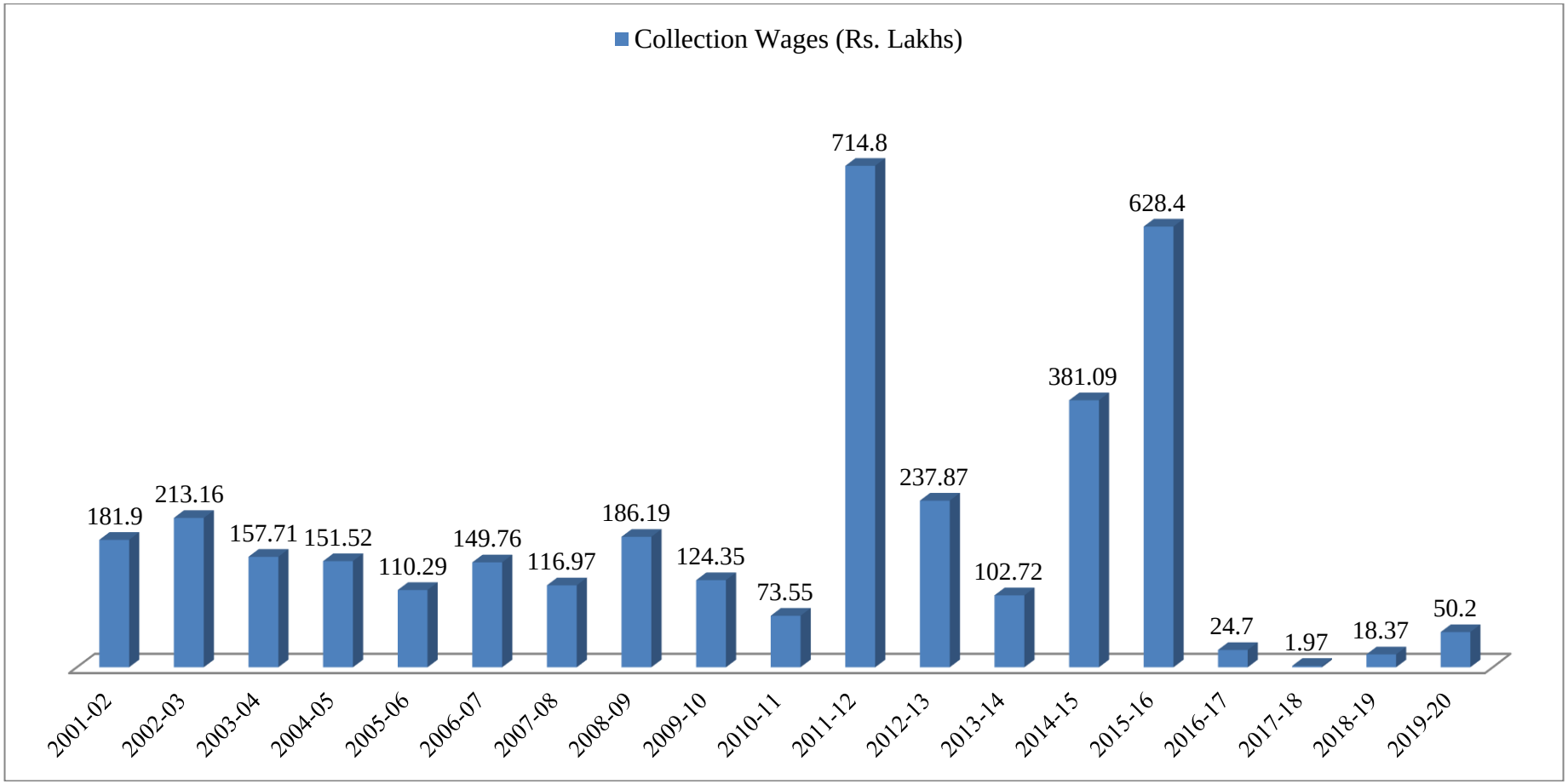

Fig. 4. Collection wages of harra seeds in different years of Chhattisgarh State
Source: https://www.cgmfpfed.org/new/

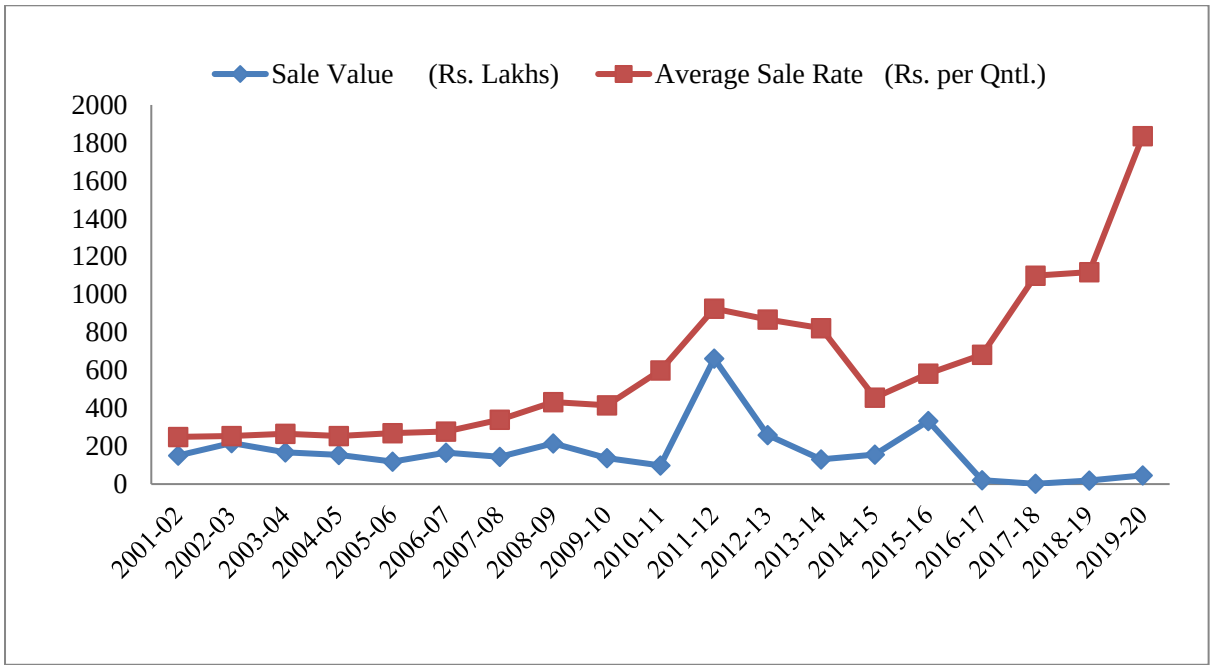

Fig. 5. Sale values and average sale rate of harra seeds in Different Years of Chhattisgarh State
Source: https://www.cgmfpfed.org/new/

Table 3. Cultivation calendar of Lac Tree

Types of Lac Crop	Host Tree	Pruning	Brood lac Inoculation	Crop Harvesting (After 6 months of Brood lac Inoculation)
Kusumi Lac	Kusum	Jan-Feb. June-July	After 18 months of pruning Approx. 5 to 7 kg per tree	June -July Jan-Feb
Rangini Lac	Palash & Ber	April-May Oct-Nov.	After 6 months of pruning Approx. 0.50 to 1 kg per tree	Oct-Nov. April-May

Table 4. Average Annual Income per Host Tree from Lac Cultivation

Host Tree	Annual Income (Rs)
Palash	900 - 1000
Ber	1200 - 1500
Kusum	8000 - 10000

Source: https://www.cgmfpfed.org/new/

1.3 Scheme under Lac Cultivation

In the area central and state government combine work for the following schemes are:

1.3.1 Swarn-Jayanti Gram Swarojgar Yojana (SGSY)

Under the SGSY scheme, which targets beneficiaries living below the poverty line, 26 Lac cultivation and processing microenterprises have been set up across various district unions and divisions. These projects receive financial support from the Central and State Governments in a 75:25 ratio. Lac cultivation is carried out by treating 45,000 Kusum trees and 200,000 Palash trees, benefiting 13,214 individuals. By December 2014, the projects had produced 3,810.26 quintals of Brood Lac and 4,597.93 quintals of Scrap Lac, with a combined market value of approximately Rs 27.13 Crore.

To further support lac cultivation, Lac Facilitation Centres have been established at forest circle headquarters in Jagdalpur, Kanker, Raipur, Durg, Bilaspur, and Sarguja. During the 2020 season,

Kusumi Lac and Rangini Lac are being purchased at rates of Rs. 300 per kg and Rs. 220 per kg, respectively, at various collection centers in the district unions and divisions under the Government of India's Minimum Support Price Scheme.

1.4 TenduLeaves

Chhattisgarh is a leading state in India for producing high-quality Tendu (Diospyros melanoxylon) leaves, which are used as wrappers for Beedi (a rural cigarette). The state produces around 16.72 lakh standard bags of Tendu leaves annually, accounting for nearly 20% of the country's total production. Each standard bag in Chhattisgarh contains 1,000 bundles, with each bundle consisting of 50 leaves. The collection season for Tendu leaves in Chhattisgarh runs from the third week of April to the second week of June, beginning earlier in the southern regions of the state compared to the northern regions.

In 2004, the Chhattisgarh Government made a significant policy shift, deciding to sell green Tendu leaves in advance to buyers rather than selling stored leaves. Under this new system, the collection of leaves and payment of wages to the harvesters are handled by the Primary Co-operative Society. The green leaves are delivered to a designated purchaser at the collection center before harvesting begins. The purchaser is responsible for treating the leaves at the collection center, transporting, and storing them either in their own warehouses or in those of the Forest Department or Federation, which are secured with double locks within the state. The purchaser pays the purchase price in four equal installments, and the leaves are released accordingly. This policy change has led to a substantial portion of the leaves being sold in advance, with higher average sale rates being achieved. Overall, the new Tendu leaf trade policy has yielded positive results.

Tendu Leaves Collection and Trade Practices: The state is organized into 31 District Unions, which are further divided into 916 Primary Co-operative Societies, each of which is subdivided into collection centers(Fig. 6)highest CollectionQuantity of Tendu Leaves in the year 2002 and lowest is 2020 The Primary Co-operative Society serves as the fundamental unit in the MFP trade. The Managing Director of the District Union oversees the operations of all primary units within their jurisdiction(Fig. 7) Collection WagesofTendu Leaves highest in th year 2024 and lowest is 2006 These primary units are sold in advance through e-tenders and e-auctions conducted by the MFP Federation in Raipur(Fig. 8)Highest Sale Value of tendu leaves in the year 2017 and lowest 2023 Highest Average Sale Rate ofTendu Leaves in the year 2017 and lowest is 2004.

- The funds for various operations are made available to the District Unions by the state level M.F.P. Federation. The District Unions provide funds for procurement to the Primary Co-operative Societies.
- The leaves collected by gatherers are purchased by the Phad Munshi (Manager of collection centre) of Primary Co-operative Society at every collection centre (called phad). One employee of Forest or other Govt. Department works as PhadAbhirakshak (in-charge of collection centre) at each collection centre.
- Each family is given a collectors card. The daily collection of the gatherer is entered in the card by Phad Munshi and accordingly the payment of collection charges of leaves is made preferably by transfering the amount in gatherer's bank account or by cheque and the entry of the payment is made in the card.
- The payment of the collection wages to the pluckers is done by the Primary Co-operative Society only.
- Green leaves are handed over at the collection centres to the purchaser appointed in advance of collection.
- The purchaser treats the leaves at collection centres. Transports and stores in his owned godowns or the godowns of Forest Department/Federation in double lock.
- The purchaser makes the payment of the purchase price in four equal installments and accordingly leaves are released from double locked godown.
- The security deposit is 25% of the contract amount, minimum 10% in the form of E.M.D. and balance in the form of Discharged Fixed Deposit Receipt / Bank Guarantee for Advance Sale.
- The security deposit is 10% of the contract amount in the form of E.M.D. for Sale of Departmentally collected Quantity.
- The processing, transport and storage of leaves in the unsold units are done by

Primary Co-operative Societies and the District Union.

- The District administration is also involved in the management during the collection.
- The collection rate for Tendupatta isRs. 5500/-per Standard Bagfor the year 2024. One standard bag consists of 1000 bundles, each bundles contains 50 leaves.

Table 5. Year wise detail of collection and sale of Tendu Leaves in the Chhattisgarh State

Year	Collected Quantity (Lakh Standard Bags)	Collection Wages (Rs. Crores)	Sale Value (Rs. Crores)	Average Sale Rate (Rs. per Std. Bag)
2001	16.67	75.53	165.22	1000
2002	19.58	88.92	198.71	1015
2003	18.12	82.18	173.25	956
2004	18.86	84.92	148.50	787
2005	14.92	67.17	135.06	906
2006	14.72	66.31	140.02	951
2007	17.18	85.96	325.59	1895
2008	13.79	82.77	197.61	1434
2009	14.67	95.33	256.41	1748
2010	15.45	108.15	335.30	2170
2011	13.57	108.52	355.31	2619
2012	17.15	188.66	646.90	3772
2013	14.71	176.70	362.13	2461
2014	14.28	171.40	334.75	2345
2015	13.01	156.13	345.50	2656
2016	13.61	204.21	638.89	4693
2017	17.10	307.80	1358.65	7945
2018	14.85	371.15	744.97	5033
2019	15.05	602.14	783.34	5218
2020	9.73	389.15	470.23	4848
2021	13.06	522.20	776.35	5959
2022	15.83	633.26	1113.05	7040
2023	12.94	517.64	793.39*	6180
2024	15.56	855.68	942.08	6056

Source: https://www.cgmfpfed.org/new/

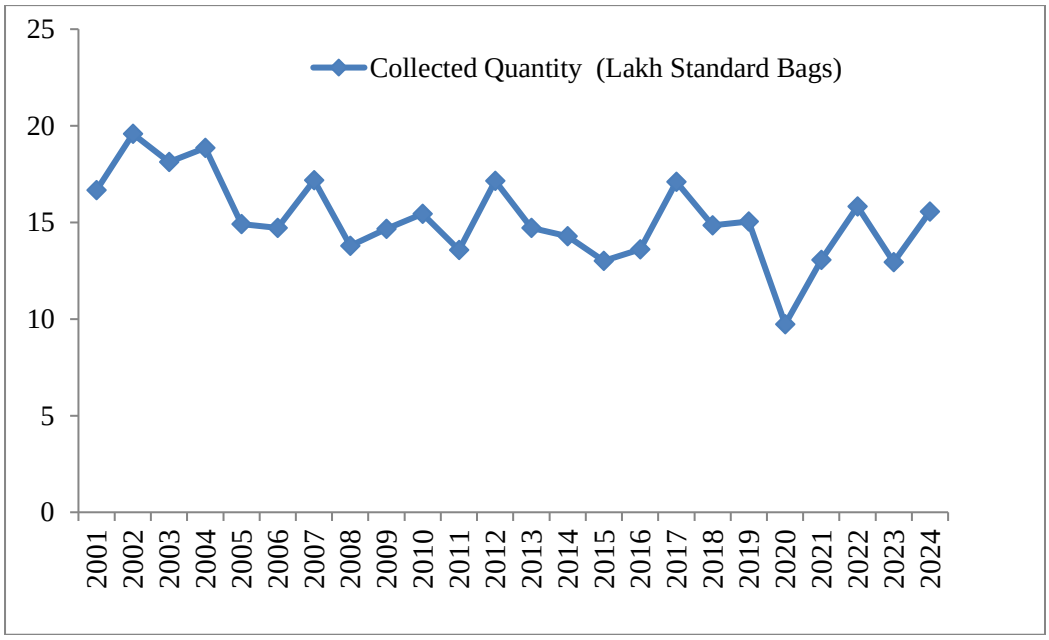

Fig. 6. CollectionQuantity of Tendu Leavesin Different Years of Chhattisgarh State.
Source: https://www.cgmfpfed.org/new/

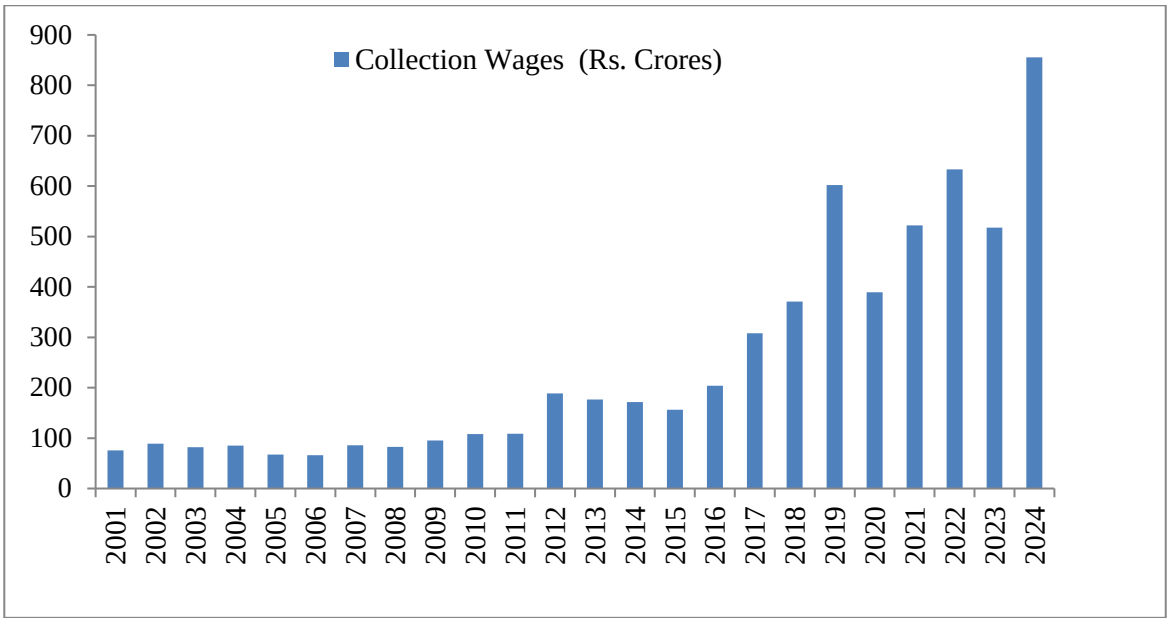

Fig. 7. Collection WagesofTendu Leavesin Different Years of Chhattisgarh State.
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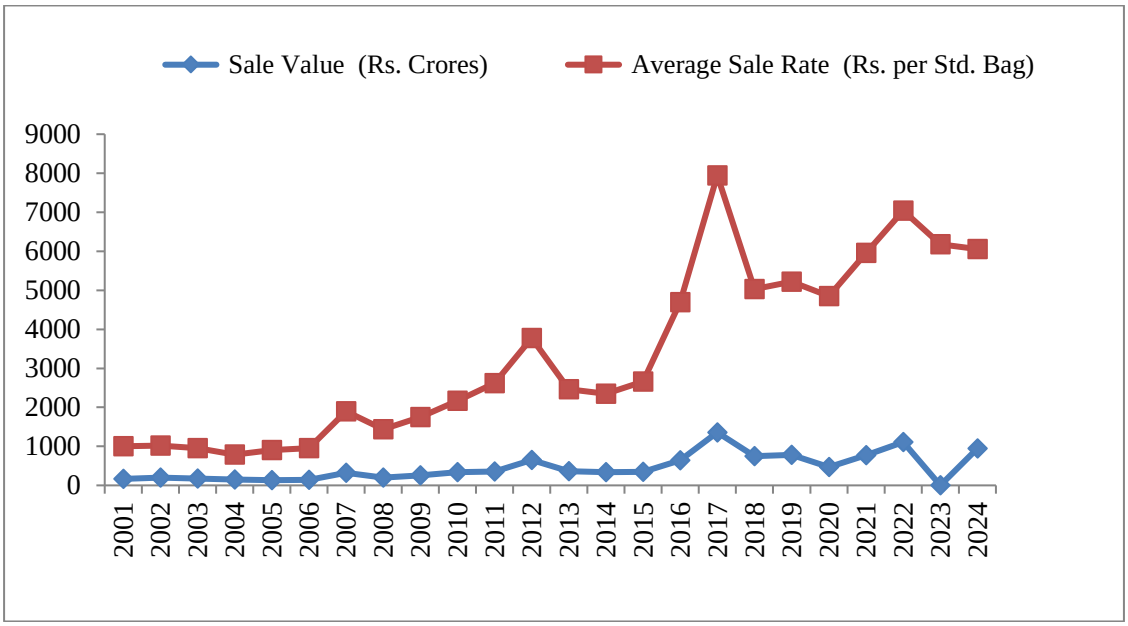

Fig. 8. Sale Value and Average Sale Rate ofTendu Leavesin Different Years of Chhattisgarh State.
Source: https://www.cgmfpfed.org/new/

GUMS (Category-I and Category-II): Kullu (Sterculiaurens) Category-I Gums are classified into Grade-I, Grade-II, and Grade-III based on color, quality, and market value(Fig. 9). Quantity Collected of the kullu gums are highest in the year 2009-10 and lowest is 2013-14Collection Wages of Kullu Gums is highest in the year 2009-10 and lowest is 2013-14 Gums from Dhawda (Anogeisuslatifolia), Babool (Acacia indica), and Khair (Acacia catechu) fall into Category-II. (Fig. 10)highestSale Valuesof Kullu Gums in the year 2009-10 and lowest is 2013-14 The annual production of these gums fluctuates significantly from year to year(Fig. 11)Highest Average Sale Rate of Kullu Gums in the year 2011-12 and lowest is 2002-3.

For the year 2016-17, the collection rates are as follows: Rs. 22,000 per quintal for Grade-I Kullu Gum, Rs. 15,000 per quintal for Grade-II, and Rs. 10,800 per quintal for Grade-III. Dhawda Gum is collected at(Fig. 12) highest Collection Wages of dhawda gum in the year 2001-2 and lowest is 2013-14Rs. 2,900 per quintal, while Khair and Babool Gums are priced at Rs. 1,740 per quintal(Figs. 13,14)Highest sale values of dhawda gum is in the year 2009-10 and lowest is 2013-14 Average sale Rateof Dhawda Gums highest in the year 2010-11 and lowest in the year 2001-2

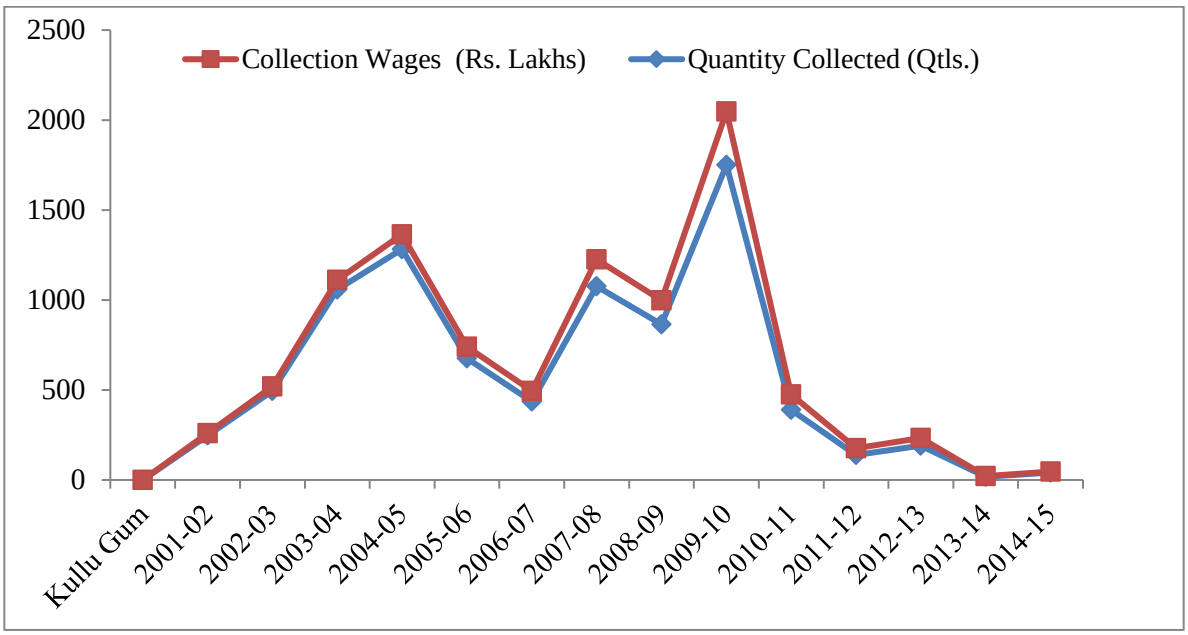

Fig. 9. Year Wise Detail of Collection Wages and Quantity Collected ofKullu Gums in Chhattisgarh State.

Source: https://www.cgmfpfed.org/new/

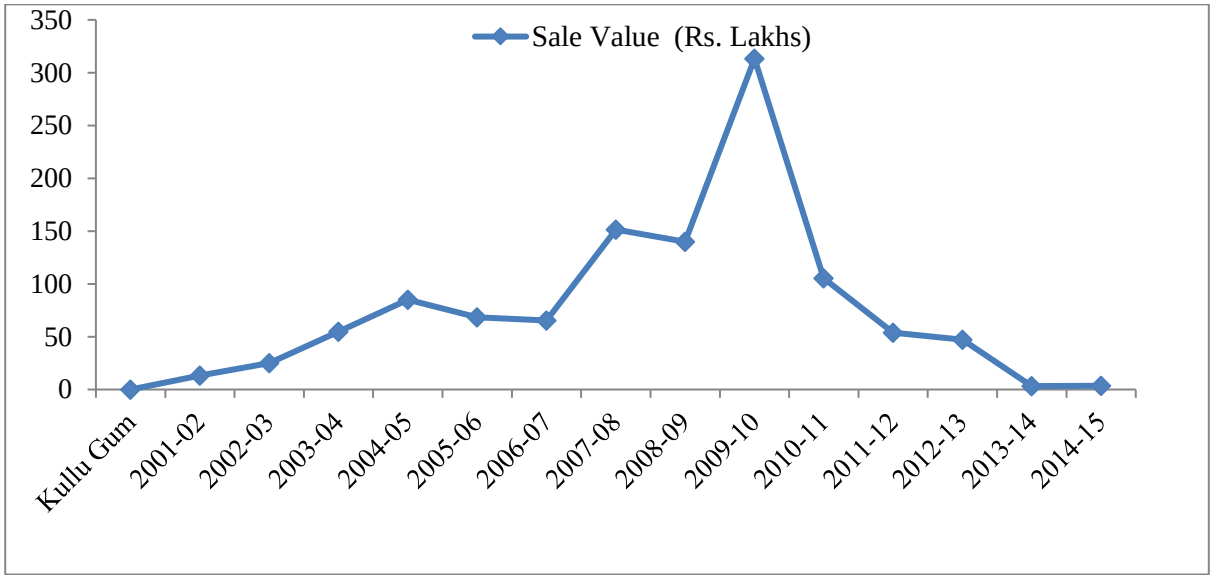

Fig. 10. Year Wise Detail of Sale ValuesofKullu Gums in Chhattisgarh State

Source: https://www.cgmfpfed.org/new/

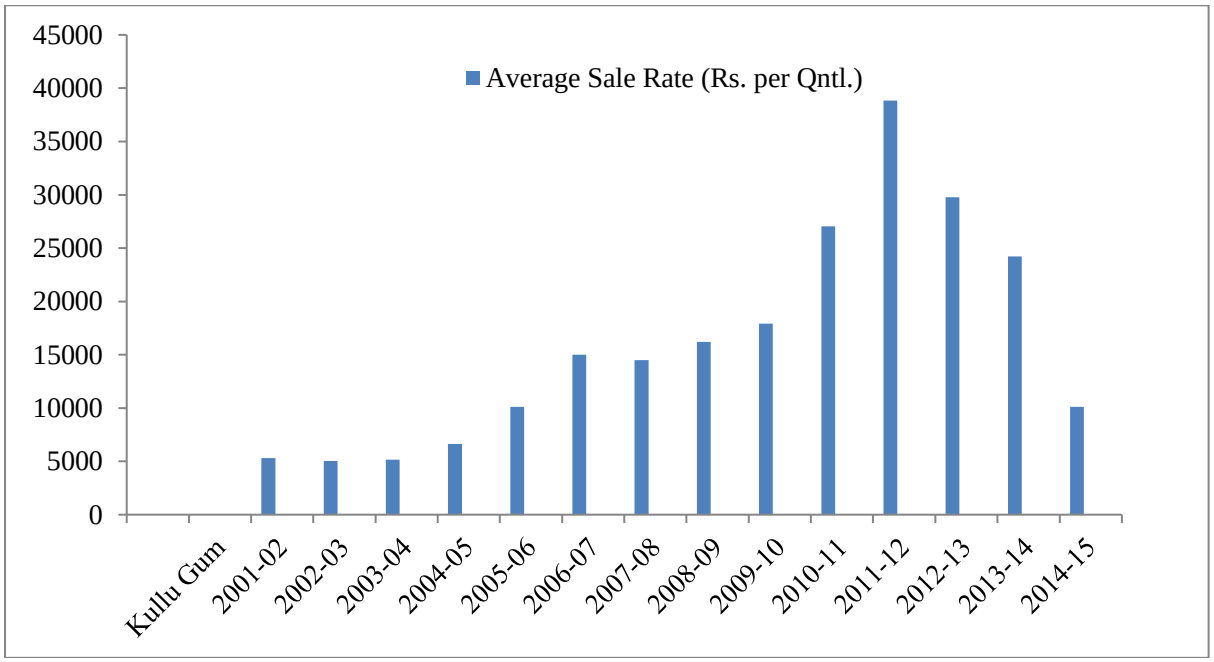

Fig. 11. YearWise Detail of Average Sale Rate ofKullu Gums in Chhattisgarh State.
Source: https://www.cgmfpfed.org/new/

Table 6. Year Wise Detail of Collection and Sale of Gums in Chhattisgarh State

Year	Quantity Collected (Qtls.)	Collection Wages (Rs. Lakhs)	Sale Value (Rs. Lakhs)	Average Sale Rate (Rs. per Qntl.)
Kullu Gum				
2001-02	247.52	12.38	13.17	5322
2002-03	494.60	24.73	24.99	5053
2003-04	1058.60	52.93	54.68	5168
2004-05	1283.07	82.12	85.06	6629
2005-06	676.795	62.70	68.37	10103
2006-07	435.84	58.61	65.43	15013
2007-08	1076.596	149.43	151.53	14500
2008-09	864.190	133.06	140.01	16201
2009-10	1750.135	297.48	313.33	17903
2010-11	389.68	85.73	105.34	27033
2011-12	138.50	37.40	53.79	38837
2012-13	190.89	42.87	47.29	29784
2013-14	18.40	3.73	3.34	24212
2014-15	40.27	5.27	3.50	10100
2015-16	40.27	5.27	3.50	10100
2016-17	4.00	0.537	0.064	1599
Dhawda/Khair/Babul Gums				
2001-02	1196.12	27.89	16.11	1749
2002-03	904.23	16.74	17.52	2622
2003-04	403.53	7.60	8.02	2639
2004-05	742.16	12.33	13.34	2704
2005-06	145.00	2.38	2.75	2882
2006-07	141.58	2.89	3.27	2826
2007-08	306.00	5.10	5.90	2893
2008-09	560.00	11.39	12.21	3060
2009-10	619.25	14.40	19.49	3723
2010-11	26.74	0.74	1.78	6644

Year	Quantity Collected (Qtls.)	Collection Wages (Rs. Lakhs)	Sale Value (Rs. Lakhs)	Average Sale Rate (Rs. per Qntl.)
2011-12	64.50	1.87	3.07	4756
2012-13	45.20	0.96	1.02	3078
2013-14	7.00	0.20	0.23	3302
2014-15	7.00	0.20	0.23	3302
2015-16	7.00	0.20	0.23	3302
2016-17	27.500	0.798	0.825	3000

Source: https://www.cgmfpfed.org/new/

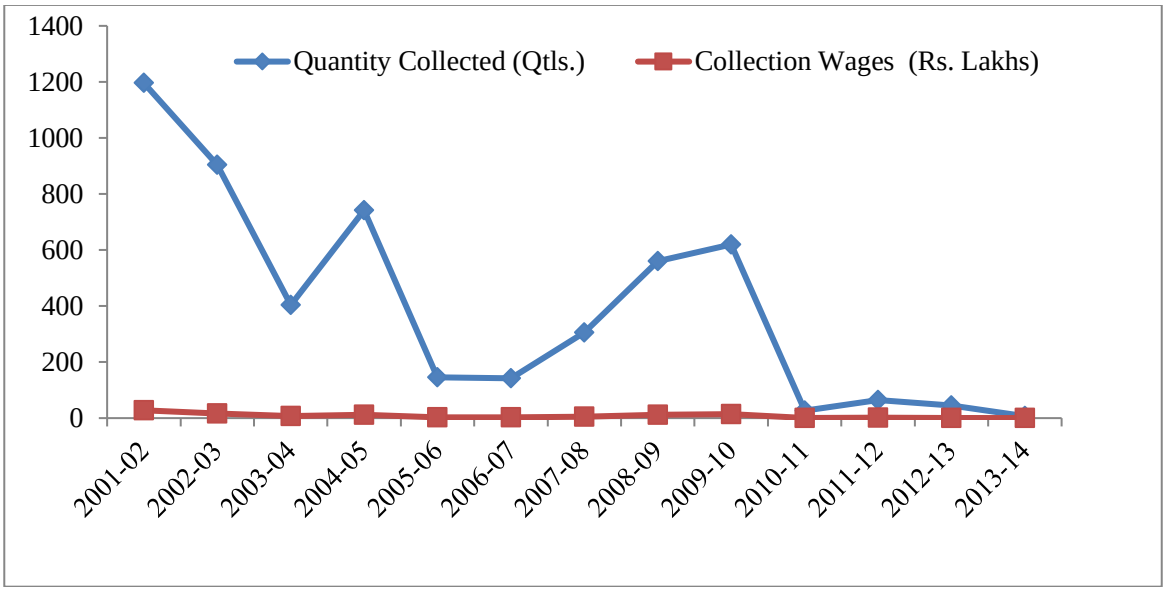

Fig. 12. Year Wise Detail of Collection Wages and Quantity Collected ofDhawda Gums in Chhattisgarh State

Source: https://www.cgmfpfed.org/new/

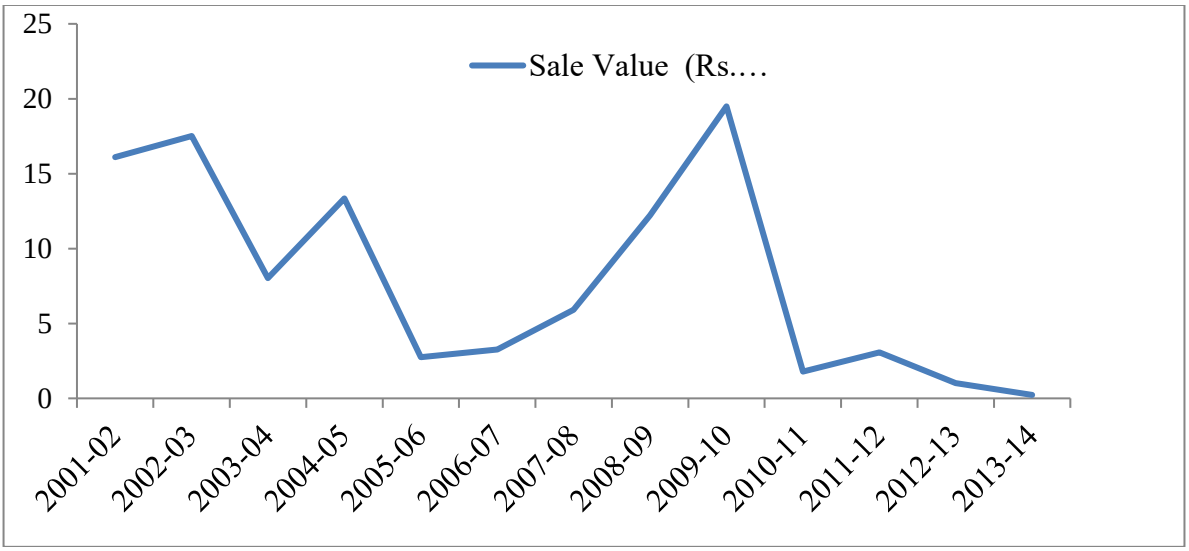

Fig. 13. Year Wise Detail of sale values ofDhawda Gums in Chhattisgarh State.

Source: https://www.cgmfpfed.org/new/

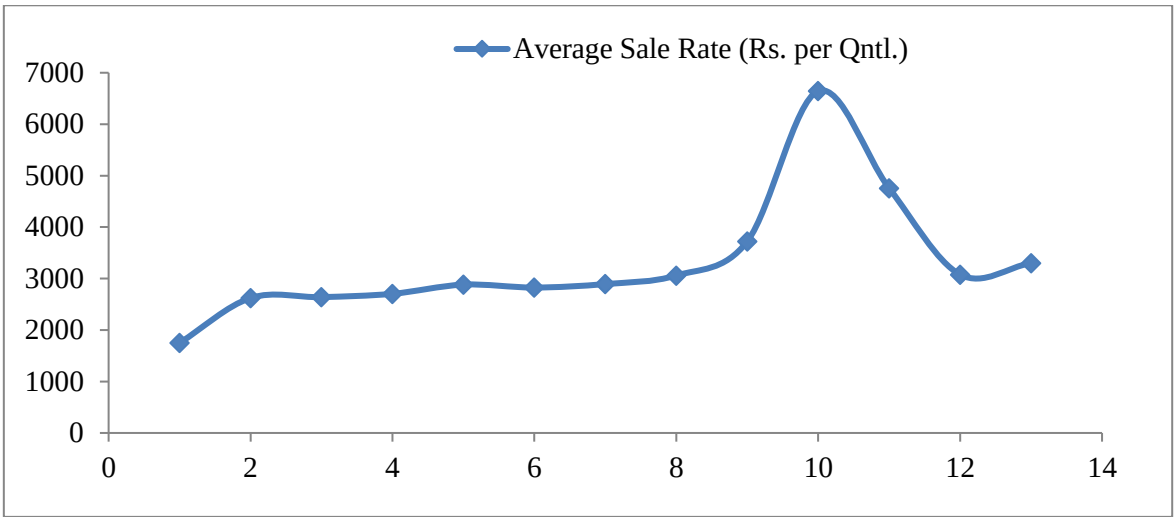

Fig. 14. Year wise detail of average sale rate ofDhawda Gums in Chhattisgarh State.
Source: https://www.cgmfpfed.org/new/

1.5 Leavesbased NWFPs

Tendu leaves are highly prized for their use in bidi rolling, making them a valuable economic asset. Tendu plants grow slowly and are relatively easy to collect. Harvesting of semi-mature leaves typically occurs from late April to early May. The Sal tree plays a crucial role in the socio-economic lives of local tribes in the area. Every part of the Sal tree—wood, seeds, leaves, and young shoots—is widely used in daily activities. For example, Sal leaves are occasionally used for serving food. Unlike many other forest products, Sal leaves are collected throughout the year for both personal use and sale. Siari leaves are especially valued for their quality in producing leaf plates, which are mainly used for serving food at special occasions. However, Siari leaves are predominantly used domestically and are preferred by households over industrial uses.

1.5.1 Flower based NWFP

In the research area, substantial quantities of Mahua flowers were collected. The Mahua tree is highly significant in the socio-economic and cultural life of local communities, with every part of the tree—wood, seeds, leaves, flowers, liquor, and shade—being used regularly by forest-dwelling people. The flowers are mainly used for producing liquor, and many individuals prefer to sell them rather than use them at home.

1.5.2 Fruit based NWFP

Key fruits include tamarind, chironji, harra, baheda, and aonla. The fruit and seeds of the tamarind tree are especially sought after in the market. For collectors, the sale of these fruits is a major source of income.

1.5.3 Seed based NWFP

In the study area, the main non-timber forest products (NTFPs) that include oil seeds are mahua seed, sal, kusum, karanja, kewati, and several others.

1.5.4 Stem based NWFP

Stem-based non-timber forest products (NTFPs) are resources derived from the stems or trunks of plants and trees in forested regions. Examples include bamboo, rattans, gum, and resins.

1.5.5 Root based NWFP

Root-based non-timber forest products (NTFPs) are resources sourced from the roots of plants or trees in forested areas. These products are commonly used for medicinal purposes, dyeing, and various cultural applications.

1.6 Marketing of Minor Forest Produce (MFP) through Minimum Support Price (MSP) and Development of Value Chain for MFP

The Ministry of Tribal Affairs (MoTA) of the Government of India launched the *"Mechanism for Marketing of Minor Forest Produce (MFP) through Minimum Support Price (MSP) and Development of Value Chain for MFP"* scheme in 2013-14.The scheme was initiated to ensure fair pricing for MFP gatherers for the minor forest

produce they collect. The Ministry of Tribal Affairs (MoTA), with support from the Tribal Co-operative Marketing Development Federation (TRIFED), oversees the scheme's implementation through the State Government. In Chhattisgarh, the Scheduled Tribes and Scheduled Caste Development Department serves as the Nodal Department, while the Chhattisgarh State Minor Forest Produce (Trading & Development) Co-operative Federation Ltd. acts as the State Procurement Agency (SPA) for the scheme. The MSP for various MFPs is set by MoTA in consultation with experts and implementing agencies. For the collection year 2022-23, MoTA has announced the MSP for the MFPs gathered in Chhattisgarh.

Table 7. Marketing of Minor Forest Produce (MFP) through Minimum Support Price (MSP) and Development of Value Chain for MFP

S. No.	Local Name	Botanical Name	Status	Ntfp Parts Purchased by Government	Msp Cg 2022-23
1.	Malkangani Seed	*Celastruspaniculatus*	Climber	Seed	10000
2.	Kalmegh	*Andrographis Paniculata*	Herb	Dry Root	3500
3.	Aonla Seedless	*Emblica Officinalis*	Tree	Dry Fruit	5700
4.	Rangini Lakh	*Kerria Lacca*	Insect Extract	Lac	22000
5.	Ritha Fruit	*Sapindusmukorossi*	Tree	Fruit	1400
6.	Vanjeera Seed	*Vernonia Anthelmintica*	Herb	Seed	6300
7.	Satawar Root	*Asparagus Recimocus*	Herb	Root	10700
8.	Charota Seed	*Cassia Tora*	Herb	Seed	1600
9.	Nagarmotha	*Cyperusscariosus*	Herb	Whole Plant	3000
10.	Mahul Leaf	*Madhucalatifolia*	Tree	Leaf	1500
11.	Harra	*Terminalia Chebula*	Tree	Fruit	1500
12.	Harrakacharia	*Terminalia Chebula*	Tree	Crushed Fruit	2500
13.	Baheda	*Terminalia Bellirica*	Tree	Fruit	1700
14.	Bahedakacharia	*Terminalia Bellirica*	Tree	Crushede Fruit	2000
15.	Giloy	*Tinosporacordifolia*	Climber	Stem	4000
16.	Kusumi Lac	*Kerria Lacca*	Insect Extract	Lac	30000
17.	Vantulsi Seed	*Ocimumtenuiflorum*	Herb	Seed	1450
18.	Bhilwa	*SemicarpusAnacardium*	Tree	Fruit	975
19.	Shika Kai Falli	*Senegaliarugata*	Tree		5000
20.	Imli	*Tamrandusindica*	Tree	Fruit With Seed	3600
21.	Imli Flower	*Tamrandusindica*	Tree	Flower	6900
22.	Imli Seed	*Tamrandusindica*	Tree	Seed	1100
23.	Mahua Flower	*Madhucalatifolia*	Tree	Flower	3000
24.	Mahua Seed	*Madhucalatifolia*	Tree	Seed	2900
25.	Fooljhadu		Grass	Grass	5000
26.	Kounch Seed	*Mucunapruriens*	Climber	Seed	2100
27.	Dhawai Flower	*Woodfordiafruticosa*	Shrub	Flower	3700
28.	Chironji Seed	*Buchananialanzan*	Tree	Seed	12600
29.	Karanj Seed	*Milletriapinnata*	Tree	Seed	2400
30.	Bael Dry Pulp	*Aeglemarmelous*	Tree	Pulp	3000
31.	Kullu Gum	*SterculiaUrens*	Tree	Gum	1250
32.	Kaju Seed	*AnacardiumOccidentel*	Tree	Seed	9000
33.	Sal Seed	*Shorearobusta*	Tree	Seed	2000
34.	Kusum Seed	*Schleicheraoleosa*	Tree	Seed	2300
35.	Neem Seed	*Azadirachtaindica*	Tree	Seed	2700
36.	Jamun Seed	*Syziumcuminio*	Tree	Seed	4200
37.	Malkangini	*Celastruspaniculatus*	Climber	Unripen Fruit	1700
38.	Kalmegh	*Andrographis*	Herb	Wet Plant	550

S. No.	Local Name	Botanical Name	Status	Ntfp Parts Purchased by Government	Msp Cg 2022-23
		Paniculata			
39.	Aonla Fruit	*Emblica Officinalis*	Tree	Unrippen	2800
40.	Rangini Lac	*Kerria Lacca*	Insect Extract	Lac	27500
41.	Harra	*Terminalia Chebula*	Tree	Unrippen Fruit	600
42.	Harra Ball	*Terminalia Chebula*	Tree	Fruit	3000
43.	Baheda	*Terminalia Bellirica*	Tree	Unrippen Fruit	500
44.	Giloy	*Tinosporacordifolia*	Climber	Wet Plant Stem	550
45.	Kusumi Lac	*Kerria Lacca*	Insect Extract	Lac	55000
46.	Mahua Flower	*Madhucalatifolia*	Tree	Wet Flower	1000
47.	Jhadu Kata		Grass	Grass	2500
48.	Jhaduchind	*Phoenix Acaulis*	Grass	Grass	1500
49.	Bael Fruit	*Aegle Marmelous*	Tree	Whole Fruit (Wet)	1000
50.	Jamun Fruit	*Syzygiumcumini*	Tree	Fruit (Wet)	2300
51.	Rally Silk	*Erythroxylum Coca*	Insect Extract	Silk	420
52.	Sawai	*Eulaliopsisbinata*	Grass	Grass	1500
53.	Kodo	*Paspalumscrobiculatum*	Herb	Grain	3000
54.	Kutki	*Picrorhizakurrooa*	Herb	Grain	3100
55.	Ragi	*Eleusinecoracana*	Herb	Grain	3578
56.	Patalkumhda	*Pueraria Tuberosa*	Climber	Rhizome	2000
57.	Safedmusli	*Chlorophytumborivillianum*	Herb	Rhizome	65000
58.	Tikhur	*Curcuma Angustifolia*	Herb	Rhizome(Wet)	1700
59.	Ashwagandha	*Withganiasomnifera*	Herb	Dry Root	18000
60.	Koriya Seed	*Holarrhenaantidysenterica*	Shrub	Seed	5000
61.	Kutaj Bark	*Wrightiaantidysenterica*	Tree	Bark	1200
62.	Palash Flower	*Butea Monosperma*	Tree	Dry Flower	1150
63.	Mango	*Mangiferaindica*	Tree	Fruit Powder	12000

Source: https://www.cgmfpfed.org/new/

Fig. 15. Scope of Non Wood Forest Products (NWFPs)

Scope of Non Wood Forest Products (NWFPs): Non-Wood Forest Products (NWFPs) encompass a wide range of items, including fruits, nuts, berries, mushrooms, medicinal plants, resins, essential oils, and natural dyes. They also include honey, game, handicrafts, and ornamental plants. The primary areas of NWFPs include:

1.6.1 Economic

Non-Wood Forest Products (NWFPs) are economically important, particularly for rural and indigenous communities, where they frequently play a crucial role in livelihoods and income generation. Additionally, NWFPs can hold significant commercial value both nationally and internationally.

1.6.2 Ecological

Many Non-Wood Forest Products (NWFPs) are vital to forest ecosystems. They can help maintain biodiversity, serve as food sources for wildlife, and contribute to nutrient cycling and soil fertility.

1.6.3 Cultural and social

Non-Wood Forest Products (NWFPs) are frequently embedded in cultural practices and traditions. They may hold spiritual or ceremonial importance for indigenous peoples and local communities, forming a key aspect of their cultural heritage.

1.6.4 Sustainable management

Given their significance, implementing sustainable management practices for NWFPs is essential. This includes ensuring that harvesting methods do not exceed the resources' natural ability to regenerate and that ecosystems remain healthy.

1.6.5 Research and development

Research is continually being conducted on the potential applications of NWFPs, such as their pharmaceutical properties, nutritional benefits, and industrial uses (e.g., biofuels). This research frequently aims to improve the value and sustainable use of these products.

1.6.6 Policy and governance

Governments and international organizations frequently implement policies and regulations to oversee the extraction, trade, and conservation of Non-Wood Forest Products (NWFPs), aiming to ensure their sustainable use and fair distribution of benefits.

2. CONCLUSION

The Chhattisgarh, rich in forest resources, plays a vital role in the collection and trade of Non-Wood Forest Products (NWFPs). The state's diverse NWFPs—including medicinal plants, tendu leaves, bamboo, honey, and various nuts and fruits—are central to the local economy and cultural heritage. These products are crucial for the livelihoods of millions of forest-dependent communities in Chhattisgarh, providing supplementary income and supporting rural economies. A cooperative approach between NTFP industry players and government policymakers can create a thriving sector that supports both economic development and environmental conservation. By aligning interests and fostering dialogue, stakeholders can ensure the long-term sustainability and resilience of the NTFP industry.The state's economy benefits from NWFP trade, contributing to local and state revenue through organized collection and sales. Chhattisgarh's forests boast a variety of NWFPs, reflecting its rich biodiversity, with significant products like tendu leaves for bidi rolling, mahua flowers, and medicinal plants. The types and availability of NWFPs vary by district and forest region, influenced by local ecological conditions. NWFPs are sold in both traditional markets and modern commercial channels, with a growing trend towards formalizing these markets and improving value chains.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

I hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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