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Income prospects and challenges of tamarind collectors in Bastar

[1]Kumari Shilpa, [2]Karan Bhagel, [3]Sanjay Kumar Joshi and [4]Hulas Pathak

[1]MBA (ABM) Student, Department of Agri-Business & Rural Management, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

[2]Department of Genetics and Plant Breeding, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

[3]Assistant Professor, Department of Agri-Business and Rural Management, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

[4]Professor & HOD, Department of Agri-Business and Rural Management, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

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Corresponding Author: Kumari Shilpa

Abstract

The study was undertaken in Bastar district of Chhattisgarh to analyse the income levels of tamarind collectors who largely belong to tribal and rural households. Primary data was collected from 100 tamarind collectors across nine villages using structured interviews. The analysis employed descriptive statistics and cost-benefit analysis to estimate net incomes. Results revealed that income varied significantly with the quantity of tamarind collected. Collectors with less than 300 kg annual harvest earned a net income of only ₹3,150 per year, whereas those harvesting more than 500 kg earned an average of ₹9,900. The overall average net annual income was ₹5,915 per collector. The findings highlight the critical role of tamarind as a seasonal but vital source of cash income for tribal households. Enhancing market access, reducing dependency on intermediaries, and promoting value addition can significantly improve livelihood security of tamarind collectors.

Keywords: Tamarind collection, tribal households, rural livelihoods, income analysis, non-timber forest products (NTFPs), Bastar district, value addition, market access, livelihood security

Introduction

Tamarind (*Tamarindus indica*), originally native to tropical Africa, is now cultivated widely in more than 50 countries across Asia, Africa, and the Americas. Its drought tolerance and adaptability to dry forests make it an important agroforestry species and commercial crop, particularly for smallholder and tribal communities. India remains the world's largest producer and consumer, with major producing states including Chhattisgarh (notably Bastar), Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Maharashtra, and Kerala. In 2021-22, India produced about 174,020 metric tonnes from 45,000-50,000 hectares, with yields averaging 3.5-4.0 tonnes per hectare. The tamarind trade within India is valued at INR 300-500 crores annually, and exports have grown steadily, reaching 20,700 MT worth ₹1,267 crore in 2023-24. Vietnam, Bangladesh, UAE, Saudi Arabia, Malaysia, and the United States are among the leading importers.

Beyond India, Southeast Asia plays a prominent role, with Thailand producing about 150,000 MT annually, primarily of the sweet variety, and Indonesia also contributing significantly to processed product markets. In Latin America, Mexico leads cultivation, while Pakistan, Bangladesh, and Sri Lanka produce mainly for domestic use. In Africa, Nigeria, Uganda, and Kenya grow tamarind primarily for local markets, with smaller-scale production in Egypt and Malaysia. Tamarind products such as pulp, paste, concentrate, and candy are widely traded, while tamarind seed gum finds industrial applications in textiles, pharmaceuticals, adhesives, and cosmetics. Recent production shortfalls in countries like Indonesia and Myanmar have further strengthened India's global market position, highlighting its dominance in both production and exports and reinforcing tamarind's growing importance as a high-value non- timber forest product in global trade.

Tamarind Production in Chhattisgarh

Tamarind holds a central place in the rural economy of Bastar division in Chhattisgarh, serving as both a significant forest product and a crucial source of livelihood for tribal and marginalized communities. The collection of tamarind, concentrated mainly between January and April, provides seasonal employment opportunities and sustains thousands of households. The Jagdalpur Krishi Upaj Mandi, recognized as Asia's largest tamarind auction centre, highlights the scale and importance of this trade. According to Forest Department estimates, Bastar contributes nearly 21,430 metric tonnes of tamarind annually, valued at approximately ₹10.35 crore, along with 5,660 tonnes of tamarind seeds worth about ₹3.02 crore. This activity alone

is estimated to generate nearly 24,000 man-days of employment each year.

Despite this immense potential, tamarind collectors continue to face challenges such as low and uncertain incomes, dependence on middlemen, and limited knowledge of processing and marketing practices. Although government procurement under the Minimum Support Price scheme (₹3,600/q for seeded and ₹6,300/q for deseeded tamarind) provides a safety net, the benefits have not translated into sustainable livelihood enhancement. The growing domestic and international demand for processed tamarind underscores the need to understand the socio- economic conditions of collectors, examine the income they derive from tamarind collection, and explore viable measures for improving their earnings and overall livelihood security.

Materials & methods

The present study was conducted in Bastar district, Chhattisgarh, a major tamarind- producing region of the state. Among the seven blocks in the district, Bastar and Jagdalpur were purposively selected due to their higher tamarind production and tree density. From these blocks, nine villages were selected based on accessibility and intensity of tamarind collection: Biringpal, Parpa, Khumarwand, Adawal, and Pandripani (Jagdalpur block), and Chapka, Sonarpal, Bhanpuri, and Chakua (Bastar block).

A total of 120 respondents were randomly selected, comprising 100 tamarind collectors and 20 traders, with adequate representation from each village. Both primary and secondary data were used. Primary data were collected through personal interviews using a pre-tested structured schedule, covering socio-economic characteristics, collection practices, income from tamarind, post-harvest handling, marketing channels, and constraints faced. Secondary data were sourced from government publications, forest department records, cooperative societies, and relevant research studies.

Data were analyzed using descriptive statistics such as averages, frequencies, and percentages to assess socio-economic features and distribution patterns. Garrett's ranking technique was employed to identify and prioritize key constraints faced by producers and traders. Cost-benefit analysis was used to estimate profitability, with net income calculated as the difference between total revenue and total costs including expenses on collection, processing, storage, and transportation.

Results and Discussion

Table 1 indicates that the majority of respondents (50.00%) belonged to the middle age group (36 to 50 years), followed by 43.00% in the young age group (up to 36 years), and only 7.00% were in the old age category (above 50 years). Gender-wise distribution shows that females constituted a slightly higher proportion (53.00%) compared to males (47.00%), highlighting the active involvement of women in tamarind-related activities.

In terms of educational status, the largest group of respondents (35.00%) were illiterate, indicating limited formal education among the tamarind-producing community. However, 25.00% had attained middle school education, 19.00% had completed high school, and 10.00% had studied up to the primary level. A smaller proportion had reached higher secondary (9.00%) and graduation levels (2.00%). This suggests that while a portion of the population has some level of education, the overall literacy level remains low, which may impact their access to market information and value addition opportunities.

Experience in tamarind collection and trade was found to be relatively high among the respondents. A majority (58.00%) had between 21 to 30 years of experience, 31.00% had less than 21 years of experience, and 11.00% had over 30 years of experience. This indicates a strong traditional knowledge base in tamarind collection practices among the community.

Table 1: Distribution of respondents according to their socio-economic profile

Particulars	Frequency	Percentage(%)
landholdings		
Marginal (less than 1 ha)	25	25.00
Small (1 to 2 ha)	26	26.00
Medium (2 to 4 ha)	41	41.00
Large (more than 4 ha)	8	8.00
Age group		
Young (Upto 36)	43	43.00
Middle (36 to 50)	50	50.00
Old (Above 50)	7	7.00
Gender		
male	47	47.00
female	53	53.00
Education		
Illiterate	35	35.00
primary	10	10.00
Middle	25	25.00
High	19	19.00
Higher sec.	9	9.00
Graduation	2	2.00
Experience		
<21 years	31	31.00
21 to 30 years	58	58.00
>30 years	11	11.00

Harvesting of tamarind

Harvesting of tamarind fruits commences when the pods become brittle by pressing. The methods of harvesting include hitting the fruit with long sticks after climbing the tree or plucking it off from the low hanging branches or by shaking the tree. Generally, the mode of drying is done by the fruits are left in-shell and allowing it to dry on ground.

Table 2 show the various methods used by farmers for harvesting tamarind in the study area. The most commonly used method, practiced by 60% of the respondents, involves climbing the tree and shaking or beating the branches to collect the pods. This traditional technique remains popular due to its simplicity and familiarity. Around 25% of the respondents reported using a long bamboo stick to hit the fruits, while 15% preferred pulling the pods using a sickle. As shown in Figure 4.7 the majority still rely on manual and labour-intensive methods, indicating limited use of improved or mechanized harvesting tools in the region.

Table 2: Harvesting methods practiced by tamarind farmers

S. No	Method of Harvest	No. of Respondents	Percentage (%)
1.	Climb the tree and beat the fruits or shake the branches	60	(60.00)
2.	Hitting the fruit with Long Bamboo	25	(25.00)
3.	Pulling the pods stick with using Sickle	15	(15.00)

Processing of tamarind

The farmers generally process the tamarind fruit by using traditional methods of seed expulsion such as beating with wooden mallet, stone or hammer. Entire post-harvest operations like dehulling, defibring and deseeding are usually carried out simultaneously by engaging the laborers. But, the efficiency of these operations depended on labour availability and favourable weather conditions.

In the study under area 49% per cent, of the farmers followed processing of tamarind by beating with the wooden mallet to remove the tamarind husk, followed by 36% per cent of farmers practiced beating with hammer and only 15% per cent of the farmers followed beating with stone for deseeding. Harvesting and processing of tamarind provides sufficient labour employment as most of these activities are labour intensive.

Table 3: Method of processing of Tamarind

S. No	Method of Processing	No of Respondents	Percentage (%)
1.	Beating with wooden mallet	49	49.00
2.	Beating with stone	15	15.00
3.	Beating with hammer	36	36.00

Income of Tamarind Collectors

Table 4 presents the economic analysis of Tamarind collection based on different quantity categories collected by the respondents. The respondents were grouped into four categories: less than 300 kg, 300-400 kg, 400-500 kg, and more than 500 kg. It is evident that 33 respondents collected less than 300 kg, 25 respondents collected between 300-400 kg, 22 respondents were in the 400-500 kg category, and 20 respondents collected more than 500 kg of Tamarind. The average quantity collected ranged from 150 kg in the lowest category to 450 kg in the highest category.

The selling price per kilogram varied slightly across groups, with prices ranging from ₹33 to ₹35 per kg. Meanwhile, the collection and transportation cost showed a decreasing trend per kilogram with increasing quantity, from ₹14/kg in the <300 kg group to ₹12/kg in the >500 kg group. This indicates economies of scale in collection and transportation in terms of individual revenue, collectors in the <300 kg group earned ₹5250, whereas those in the highest category (>500 kg) earned ₹15,300. Correspondingly, the costs incurred ranged from ₹2100 to ₹5400. The net income per collector showed a significant increase with quantity: ₹3150 in the lowest group to ₹9900 in the highest group. The total net income for the group (i.e., all collectors in each category) was ₹1,03,950 for the <300 kg group, ₹1,25,000 for the 300-400 kg group, ₹1,61,700 for the 400-500 kg group, and the highest ₹1,98,000 for those collecting more than 500 kg.

Table 4: Income of Tamarind Collectors based on Quantity Collected per year.

S. No	Particulars	<300 (kg/year)	300-400 (kg/year)	400-500 (kg/year)	>500 (kg/year)	Overall
1.	No. of Respondent	33	25	22	20	100
2.	Average quantity collected (kg/year)	150	250	350	450	279
3.	Selling price/kg	35	33	33.5	34	33.76
4.	Collection and transporting cost/kg	14	13	12.5	12	13.02
5.	Revenue per Collector (₹)	5250	8250	11725	15300	9,444.5
6.	Cost incurred by Collector (₹)	2100	3250	4375	5400	3,548
7.	Net income per Collector (₹/year)	3150	5000	7350	9900	5,915
8.	Total net income of group (₹)	103950	125000	161700	198000	5,88,650

(Source: own survey result, 2025)

Similar work related to the present investigation was also carried out**.** Giri *et al.* (2005) [5]; Tejaswi (2008) [6]; Omari (2016) [9]; Mandal and Gupta (2019) [8]; Mahapatra *et al.* (2023).

Conclusion

The income analysis of tamarind collectors reveals a strong correlation between the quantity collected and the net income earned. Respondents were grouped into four categories based on annual collection: less than 300 kg, 300-400 kg, 400-500 kg, and more than 500 kg. As quantity increased, both revenue and net income per collector rose significantly. Collectors in the lowest category (<300 kg) earned an average net income of ₹3,150 per year, while those collecting more than 500 kg earned ₹9,900. The selling price per kg ranged from ₹33 to ₹35, and collection and transport costs decreased with higher volumes, showing economies of scale. Total net income for each group also increased with quantity, ranging from ₹1,03,950 in the lowest group to ₹1,98,000 in the highest. Thus, larger-scale collection enhances profitability, underscoring the economic benefits of improved harvesting capacity and efficiency.

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