

Forest Produce Collection and Income Generation Among Tribal Communities: A Study of Mulugu District, Telangana

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ABSTRACT

Forest produce collection is an important livelihood activity among tribal communities living in and around forest areas of Mulugu district, Telangana. Forest products such as tamarind, honey, bamboo, mahua flowers, leaves, seeds, gums, medicinal plants and other naturally available resources provide food, household necessities and income to many forest-dependent families. The present study examines the role of forest produce collection in income generation among tribal communities in selected villages of Kannaigudem Mandal of Mulugu district. The study focuses on the major types of forest produce collected, frequency of collection, annual income, contribution to household income, marketing practices, access to market information, price received, transportation and storage facilities, value addition and the major problems faced by tribal collectors. Primary data were collected from 70 tribal forest produce collectors using a structured interview schedule. The collected data were analysed through frequencies, percentages and Pearson's Chi-square test. The findings show that forest produce collection provides seasonal employment and an additional source of income for tribal households. At the same time, collectors face several difficulties, particularly low prices, dependence on local traders, transportation problems, inadequate storage facilities and limited access to market information. These factors reduce the economic benefits obtained from forest produce. The study highlights the need for better collective marketing, timely market information, improved storage and processing facilities, value

addition and stronger direct market linkages. Greater awareness of available institutional and government support can also help tribal collectors improve their income and strengthen their livelihood opportunities in Mulugu district.

Keywords: Forest Produce, Tribal Communities, Mulugu District, Minor Forest Produce, Income Generation, Tribal Livelihoods, Forest Economy, Marketing, Value Addition, Market Access.

I INTRODUCTION

Mulugu district of Telangana has a predominantly rural and forest-based livelihood setting, where many tribal households depend on a combination of agriculture, wage employment, livestock activities and forest resources. For communities living close to forest areas, collection of forest produce is an important livelihood activity. It provides food, household resources and opportunities for earning cash income, particularly during periods when agricultural employment is limited. Minor Forest Produce (MFP) includes a variety of naturally available products such as tamarind, honey, bamboo, leaves, seeds, flowers, gums and medicinal plants. These products are collected during different seasons according to their availability. Some are used for household consumption, while others are sold in local markets to meet daily household expenses. Thus, forest produce collection contributes both to household consumption and income generation. The extent of income obtained from this activity depends on the type and quantity of produce collected, frequency of collection, seasonal availability and prevailing market prices. In Mulugu district, tribal collectors

may sell forest produce through village markets, weekly haats, local traders, middlemen, cooperative organisations or directly to consumers. The choice of marketing channel can influence the price received by collectors. Local traders may provide a convenient and easily accessible market, particularly where transportation facilities are limited. However, dependence on intermediaries may reduce the bargaining power of individual collectors. Limited information about market prices can further affect their ability to obtain better returns. Transportation and storage are also important factors affecting forest produce income. Collecting products from distant forest locations and transporting them to markets can involve considerable time and expense. Inadequate storage facilities may compel collectors to sell their produce soon after collection, even when prices are not favourable. Seasonal products may also lose quality when proper storage and handling facilities are unavailable. Value addition provides another opportunity to improve the economic benefits obtained from forest produce. Activities such as cleaning, grading, drying, processing and packaging can increase the marketability of products and create additional employment within tribal communities. Similarly, collective marketing through self-help groups, cooperatives or community organisations may improve bargaining opportunities and reduce dependence on individual intermediaries. Against this background, the present study focuses on selected tribal communities in Kannaigudem Mandal of Mulugu district and examines forest produce collection as an income-generating activity. The study examines the major types of forest produce collected, frequency of collection, annual income, and contribution to household income, marketing channels, market information, price realisation, transportation, storage, value addition and major challenges faced by tribal collectors. The study seeks to understand the economic importance of forest produce collection and identify practical measures that can support better marketing

opportunities and improved livelihood outcomes for tribal households.

II LITERATURE REVIEW

1. Reddy and Naveen (2016) examined the economic importance of Minor Forest Produce in the tribal economy. Their study found that MFP contributes significantly to the livelihood and income of tribal households. The authors observed that the value of forest produce depends on collection patterns, availability and economic conditions, highlighting its role in tribal income generation.
2. Kumar and Meena (2018) studied employment, income generation and marketing of Minor Forest Produce among tribal households. They found that MFP collection provides seasonal employment and supplementary income. Income varied according to the type of product, collection season, family labour and accessibility. The study also identified marketing difficulties affecting the returns received by tribal collectors.
3. Kareemulla, Sharma and Babu (2018) examined the tribal produce marketing system in India. They found that intermediaries and different marketing arrangements influence the returns received by tribal collectors. The authors highlighted the importance of institutional marketing, price support and organisations such as TRIFED in improving market opportunities and strengthening the economic position of tribal producers.
4. Kumar, Nirmal Ravi Kumar, Solmon Raju Paul, Sathya Gopal and Srinivasa Rao (2022) examined the impact of market information on MFP price realisation in Andhra Pradesh. They found that better access to market information was associated with improved price realisation. Mobile phones, education, training and contact with procurement centres helped tribal producers access market information.

5. Kumar, Nirmal Ravi Kumar, Solmon Raju Paul, Sathya Gopal and Srinivasa Rao (2023) studied market-information infrastructure and MFP arrivals in Andhra Pradesh. They found that remunerative prices, prompt payment, timely market information and road facilities influenced market participation. The authors suggested improving infrastructure, awareness and value-addition activities to strengthen the MFP marketing system.
6. Acharya (2023) examined the status and problems of Minor Forest Product marketing in India. The study found that inadequate marketing arrangements, price-related difficulties and limited institutional support can reduce the benefits received by primary collectors. The author emphasised stronger marketing systems, better price realisation and institutional interventions to improve tribal producers' economic returns.

III OBJECTIVES

1. To examine the sources and level of income generated through forest produce collection among tribal communities in Kannaigudem Mandal of Mulugu district.
2. To analyse the marketing practices, pricing, market information and channels used by tribal collectors in selling forest produce.
3. To identify the major business and marketing challenges and assess the opportunities for value addition and improved income generation from forest produce.

IV HYPOTHESIS

H₀₁: There is no significant association between frequency of forest produce collection and annual income of tribal collectors.

H₁₁: There is a significant association between frequency of forest produce collection and annual income of tribal collectors.

H₀₂: There is no significant association between marketing channel and annual income from forest produce.

H₁₂: There is a significant association between marketing channel and annual income from forest produce.

H₀₃: There is no significant association between market information and price received for forest produce.

H₁₃: There is a significant association between market information and price received for forest produce.

V RESEARCH METHODOLOGY

The study adopted a descriptive and analytical research design and covered 70 tribal forest produce collectors from selected villages of Kannaigudem Mandal, Mulugu district. Respondents were selected through purposive sampling based on their direct involvement in forest produce collection and sale. Primary data were collected through a structured interview schedule covering collection, income, marketing channels, price realisation, market information, costs and value addition. Secondary data were collected from relevant reports and literature. Data were analysed using frequencies, percentages and Pearson's Chi-square test to examine the relationship between marketing practices and income generation.

VI DATA ANALYSIS AND INTERPRETATION

Table 1: Age-wise Distribution of Respondents

Age Group	Number	Percentage
Below 30 Years	16	22.9%
31–40 Years	21	30.0%
41–50 Years	20	28.6%
Above 50 Years	13	18.6%
Total	70	100.0%

The age-wise distribution shows that 21 respondents (30.0%) are in the 31–40 years age group, followed by 20 respondents (28.6%) in the 41–50 years group. Respondents below 30 years account for 22.9%, while those above 50 years

constitute 18.6%. The figures suggest that people in the 31–50 years age range form a major part of the forest produce collecting population.

Table 2: Major Forest Produce Collected

Forest Produce	Number	Percentage
Tamarind	18	25.7%
Honey	14	20.0%
Bamboo/Canes	12	17.1%
Flowers	10	14.3%
Leaves/Seeds	9	12.9%
Other Products	7	10.0%
Total	70	100.0%

Tamarind is the most commonly collected forest produce, reported by 18 respondents (25.7%). Honey comes next with 14 respondents (20.0%), followed by bamboo/canes with 12 respondents (17.1%). Flowers, leaves/seeds and other products account for smaller shares. The results show that tamarind and honey are important forest products for the respondents.

Table 3: Frequency of Forest Produce Collection

Frequency of Collection	Number	Percentage
Regularly/Daily	15	21.4%
Frequently during Season	31	44.3%
Occasionally	17	24.3%
Rarely	7	10.0%
Total	70	100.0%

A considerable number of respondents, 31 (44.3%), collect forest produce frequently during the season. Another 15 respondents (21.4%) report regular or daily collection. About 17 respondents (24.3%) collect occasionally, while only 7 respondents (10.0%) collect rarely. This indicates that forest produce collection is mainly linked to seasonal availability rather than being a uniform activity throughout the year.

Table 4: Annual Income from Forest Produce

Annual Income	Number	Percentage
Below ₹20,000	17	24.3%
₹20,001–₹40,000	25	35.7%

₹40,001–₹60,000	18	25.7%
Above ₹60,000	10	14.3%
Total	70	100.0%

The largest group, consisting of 25 respondents (35.7%), earns between ₹20,001 and ₹40,000 annually from forest produce. Eighteen respondents (25.7%) earn ₹40,001–₹60,000, while 17 respondents (24.3%) earn less than ₹20,000. Only 10 respondents (14.3%) earn more than ₹60,000. The figures indicate that forest produce provides an additional source of income, but earnings remain relatively limited for most respondents.

Table 5: Marketing Channel Used for Selling Forest Produce

Marketing Channel	Number	Percentage
Local Traders/Middlemen	32	45.7%
Weekly Market/Haat	18	25.7%
Cooperative/Tribal Organisation	12	17.1%
Direct Sale to Consumers	8	11.4%
Total	70	100.0%

Local traders and middlemen are the main marketing channel, used by 32 respondents (45.7%). Weekly markets or haats are used by 18 respondents (25.7%), while 12 respondents (17.1%) sell through cooperatives or tribal organisations. Direct sale to consumers is reported by only 8 respondents (11.4%). The heavy dependence on traders and middlemen suggests that many collectors have limited direct access to consumers and organised markets.

Table 6: Marketing Cost Incurred by Collectors

Annual Marketing Cost	Number	Percentage
Below ₹2,000	20	28.6%
₹2,001–₹5,000	28	40.0%
₹5,001–₹10,000	15	21.4%
Above ₹10,000	7	10.0%
Total	70	100.0%

The highest proportion of respondents, 28 (40.0%), spend ₹2,001–₹5,000 annually on marketing. Twenty respondents (28.6%) spend less than ₹2,000, while 15 respondents (21.4%) spend ₹5,001–₹10,000. Only 7 respondents (10.0%) incur marketing costs above ₹10,000. Thus, marketing expenditure is generally within a moderate range for most respondents.

Table 7: Market Information and Price Realisation

Market Information	Low Price	Moderate Price	High Price	Very High Price	Total
High	1	4	5	3	13
Moderate	5	12	11	1	29
Low	8	9	1	2	20
No Access	1	0	3	4	8
Total	15	25	20	10	70

Chi-square test: $\chi^2 = 24.52$, df = 9, Critical value at 5% = 16.919

The distribution shows noticeable differences in price realisation according to the level of market information available to respondents. Those with better access to market information are represented more frequently in the high and very high price categories, whereas respondents with low or no access are more concentrated in the low and moderate price categories.

Table 8: Frequency of Collection and Annual Income

Frequency of Collection	Below ₹20,000	₹20,001 – ₹40,000	₹40,001 – ₹60,000	Above ₹60,000	Total
Regularly/Daily	5	5	4	1	15
Frequently during Season	11	10	4	6	31
Occasionally	1	9	4	3	17
Rarely	0	1	6	0	7
Total	17	25	18	10	70

Chi-square test: $\chi^2 = 22.73$, df = 9, Critical value at 5% = 16.919

The income pattern differs across the various collection-frequency groups. Respondents who

collect forest produce frequently during the season are found across all income categories, while occasional collectors are more concentrated in the ₹20,001–₹40,000 income group. The distribution suggests that collection frequency and income are related, although the relationship is not uniform across all groups.

Table 9: Marketing Channel and Annual Income:

Marketing Channel	Below ₹20,000	₹20,001–₹40,000	₹40,001–₹60,000	Above ₹60,000	Total
Local Traders/Middlemen	10	8	12	2	32
Weekly Market/Haats	4	8	4	2	18
Cooperative/Tribal Organisation	3	3	1	5	12
Direct Sale to Consumers	0	6	1	1	8
Total	17	25	18	10	70

Chi-square test: $\chi^2 = 19.53$, df = 9, Critical value at 5% = 16.919

Income varies among respondents depending on the marketing channel they use. Those selling through local traders and middlemen are distributed across all income categories, while respondents using cooperatives or tribal organisations include a relatively higher proportion in the above ₹60,000 category. Direct sellers are mainly concentrated in the ₹20,001–₹40,000 income group.

Table 10: Value Addition and Income Generation

Value Addition Practice	Number	Percentage
No Value Addition	45	64.3%
Cleaning/Grading	10	14.3%
Drying/Processing	8	11.4%
Packaging	5	7.1%
Other Value Addition	2	2.9%

Total	70	100.0%
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A large majority of respondents, 45 (64.3%), do not undertake any form of value addition. Only 10 respondents (14.3%) undertake cleaning or grading, while 8 respondents (11.4%) engage in drying or processing. Packaging is reported by 5 respondents (7.1%), and only 2 respondents (2.9%) report other value-addition activities. This shows that most forest produce is sold in its basic form, with limited processing or packaging. Greater attention to value addition could provide opportunities for collectors to improve the marketability and income potential of forest products.

VII TESTING OF HYPOTHESIS

Hypothesis	χ^2	df	Critical value	Decision
Collection frequency $\times$ Annual income	22.73	9	16.919	Reject H_{01}
Marketing channel $\times$ Annual income	19.53	9	16.919	Reject H_{02}
Market information $\times$ Price realisation	24.52	9	16.919	Reject H_{03}

- **Collection Frequency $\times$ Annual Income:** The calculated χ^2 value (22.73) is greater than the critical value (16.919). Thus, H_{01} is rejected, indicating a significant association between collection frequency and annual income.
- **Marketing Channel $\times$ Annual Income:** The calculated χ^2 value (19.53) exceeds the critical value (16.919). Thus, H_{02} is rejected, indicating a significant association between marketing channel and annual income.
- **Market Information $\times$ Price Realisation:** The calculated χ^2 value (24.52) is higher than the critical value (16.919). Thus, H_{03} is rejected,

indicating a significant association between market information and price realisation.

VIII KEY FINDINGS AND DISCUSSION

1. The respondents are mainly from the economically active age groups. About **58.6%** belong to the 31–50 years age groups. This suggests that forest produce collection is an important livelihood activity among adults who are actively engaged in household income generation.
2. Tamarind (25.7%) is the most commonly collected forest produce, followed by honey (20.0%) and bamboo/canes (17.1%). These products appear to have greater economic and livelihood importance for the respondents.
3. About 44.3% of respondents collect forest produce frequently during the season, while 21.4% collect regularly or daily. This indicates that collection is strongly influenced by the seasonal availability of forest resources. Such seasonal dependence may also affect the regularity of household income.
4. The largest group (35.7%) earns between ₹20,001 and ₹40,000 annually from forest produce. Only 14.3% earn more than ₹60,000. The findings indicate that forest produce provides an important source of supplementary income, but earnings remain limited for a considerable proportion of collectors.
5. Nearly half of the respondents (45.7%) sell their products through local traders or middlemen. Weekly markets are used by 25.7%, while only 11.4% sell directly to consumers. The pattern shows that direct access to consumers and organised markets is still limited.
6. About 40.0% of respondents spend ₹2,001–₹5,000 annually on marketing, while 28.6% spend below ₹2,000. Marketing expenses such as transportation and market-related costs may reduce the net income received by collectors, particularly when the volume of produce sold is small.

7. The distribution of respondents shows differences in price realisation across different levels of market information. The calculated χ^2 value of 24.52 is higher than the critical value of 16.919 at the 5% level. Therefore, the null hypothesis is rejected. The finding indicates a significant association between market information and price realisation. Better access to information on prevailing prices and market conditions is associated with differences in the prices received by collectors.
8. Income levels vary across respondents according to their frequency of forest produce collection. The calculated χ^2 value of 22.73 exceeds the critical value of 16.919. Hence, the null hypothesis is rejected. There is a significant association between collection frequency and annual income, indicating that the pattern and extent of collection are related to income outcomes.
9. The income distribution also differs according to the marketing channel used. The calculated χ^2 value of 19.53 is greater than the critical value of 16.919. The null hypothesis is therefore rejected, indicating a significant association between marketing channel and annual income. This highlights the importance of market access and the choice of selling channel in determining economic returns.
10. A major finding is that 64.3% of respondents do not undertake any value addition. Only 14.3% undertake cleaning or grading, 11.4% undertake drying or processing and 7.1% use packaging. The limited use of value addition means that most products are sold in their basic form, reducing opportunities to obtain higher market returns.
11. Taken together, the findings show that the economic benefits of forest produce depend not only on the quantity collected but also on access to market information, marketing channels and opportunities for value addition. Dependence on middlemen, seasonal

collection and limited processing are important issues affecting the income potential of forest produce.

12. The findings point to the importance of strengthening cooperative and tribal marketing arrangements, improving access to market-price information, encouraging direct marketing and promoting simple value-addition activities such as cleaning, grading, drying and packaging. These measures could help collectors obtain better market opportunities and improve the economic contribution of forest produce to household livelihoods.

IX SUGGESTIONS

1. Better market information: Forest produce collectors need regular information about current market prices, demand and buyers. Local departments, cooperatives and tribal organisations can help provide this information in a simple and accessible form.
2. Reduce dependence on middlemen: Many respondents depend on local traders for selling their produce. Providing more opportunities for direct selling can help collectors improve their bargaining position and retain a greater share of the value of their products.
3. Strengthen tribal cooperatives: Cooperatives and tribal organisations can take a more active role in collecting, storing and marketing forest produce. Collective marketing may help small collectors access better markets and reduce individual marketing difficulties.
4. Encourage value addition: Since a large majority of respondents sell forest produce without processing, simple activities such as cleaning, grading, drying and packaging should be encouraged. Even basic value addition can make products more attractive to buyers.
5. Provide local processing and storage facilities: Small processing and storage centres near forest villages would be useful. Collectors could store their products safely and undertake

basic processing instead of selling them immediately after collection.

6. Reduce transportation difficulties: Better road connectivity and affordable transport facilities are important, particularly for collectors living in remote forest areas. Lower transportation costs can help increase the amount of income retained by collectors.
7. Provide practical training: Training programmes should focus on proper collection methods, handling, grading, processing, packaging and marketing. The training should be practical and suited to the local forest products and livelihood conditions.
8. Promote direct markets: Periodic tribal markets or local forest-produce markets can provide collectors with an additional option for selling directly to consumers, retailers and other buyers.
9. Support alternative livelihoods: Since collection is largely seasonal, suitable supplementary livelihood opportunities should be promoted during periods when forest produce is not readily available. This can help households maintain a more stable income throughout the year.
10. Improve access to financial support: Eligible collectors should be connected with institutional credit, self-help groups, cooperatives and relevant government support programmes. Easier access to finance can help them meet marketing and small business expenses.
11. Promote sustainable collection: Forest produce should be collected in a manner that protects the natural regeneration of forest resources. Local awareness and training can help communities balance income generation with long-term resource conservation.
12. Increase women's participation in marketing and processing: Women who are already involved in collection and household-level processing can be encouraged to participate in self-help groups, cooperatives and small

enterprises. This can create additional income opportunities within the household.

13. Improve storage practices: Appropriate storage facilities can help prevent spoilage and quality deterioration, particularly for products that are collected in large quantities during a particular season.
14. Strengthen bargaining capacity: Collectors should be given basic knowledge about market prices, product quality and buyer requirements. This can help them negotiate prices more confidently instead of depending entirely on the prices offered by traders.
15. Encourage small-scale forest-based enterprises: Community groups and interested individuals can be encouraged to develop small businesses based on processing and marketing forest products. Such activities can generate local employment and increase the economic value of forest resources.

X CONCLUSION

Forest produce continues to be an important source of livelihood and supplementary income for the respondents. The findings show that tamarind, honey and bamboo/canes are among the major products collected, with collection taking place mainly during the season. For most respondents, the income obtained from forest produce falls within the lower- and middle-income categories, indicating that forest-based activities make a useful contribution to household earnings but do not provide high returns for many collectors. The study also highlights important marketing-related issues. A large proportion of respondents depend on local traders and middlemen, while direct selling remains limited. The significant association between market information and price realisation shows the importance of access to timely market information. Similarly, significant associations were observed between collection frequency and annual income and between marketing channel and annual income. These findings indicate that the economic return from forest produce is influenced not only by collection activity but also by the way

products are marketed. Another important concern is the limited practice of value addition. Most respondents sell forest produce without cleaning, processing, grading or packaging. Greater attention to these activities, along with improved storage, transportation, cooperative marketing and direct market access, can create better income opportunities. Strengthening these areas while promoting sustainable collection practices can help improve the livelihood benefits of forest produce and support the long-term well-being of forest-dependent communities

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