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The role of minor forest products in enhancing livelihoods of farmers in Gadchiroli District

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Abstract

Minor Forest Products (MFPs) are essential for the livelihoods of rural and tribal communities living in and around forest areas. This non-timber forest products supplement household income and ensure food, nutritional, and economic security. This study examines the extent to which MFPs contribute to the livelihood of farmers in Gadchiroli district, Maharashtra, with a focus on three main forest products: Mahua flowers, Charoli seeds, and Gum. Using primary data from 120 farmers categorized by landholding size, the study analyzes socio-economic status, income structure, seasonal dependence on MFPs, and the major constraints in their collection and marketing. Findings indicate that MFPs contribute about 13.26% to total household income, with a significantly higher share among small landholders. Despite their contribution, several challenges such as market exploitation, lack of value addition, and wildlife threats hinder effective utilization. The paper suggests policy reforms to strengthen MFP-based livelihoods through support mechanisms, value chain integration, and tribal empowerment.

Keywords: Contribution of MFP, economic importance, Mahua flowers, Charoli seeds, Gum, constraints

Introduction

Forests have historically provided sustenance to human societies through food, medicine, and other essential materials. In India, Minor Forest Products (MFPs), also known as Non-Timber Forest Products (NTFPs), play a vital role in supporting the socio-economic fabric of forest-dependent and tribal populations. In districts like Gadchiroli, where agriculture is marginal and seasonal, MFPs provide essential supplementary income, especially during non-cropping seasons. Despite this, MFPs receive limited recognition in formal economic planning and rural development initiatives. This study explores the real and potential contributions of MFPs to the livelihoods of farmers in Gadchiroli district, emphasizing their economic value, seasonal significance, and the socio-political context within which they are collected and marketed.

With following objectives

1. To estimate share of income from minor forest product collection in total income
2. To identify the constraints in minor forest product collection

Materials and Methods

Forests have historically provided sustenance to human societies through food, medicine, and other essential materials. In India, Minor Forest Products (MFPs), also known as Non-Timber Forest Products (NTFPs), play a vital role in supporting the socio-economic fabric of forest-dependent and tribal populations. In districts like Gadchiroli, where agriculture is marginal and seasonal, MFPs provide essential supplementary income, especially during non-cropping seasons. Despite this, MFPs receive limited recognition in formal economic planning and rural development initiatives. This study explores the real and potential contributions of MFPs to the livelihoods of farmers in Gadchiroli district, emphasizing their economic value, seasonal significance, and the socio-political context within which they are collected and marketed.

Results and Discussions

Socio-Economic Characteristics

Classification of minor forest product farmers collector according to landholding

The socio-economic characteristics of the minor forest product farmers collector were examined through factors such as landholding size, age, education, family size, land use pattern and cropping pattern. These aspects were essential for understanding the economic status of minor forest products farmer collectors.

From the Table 1. it is showed that the distribution of farmers collector based on landholding size shows that a majority fall under the small category. Out of a total of 120 farmers collector, 92 farmers (76.67 per cent) hold land up to 2 hectares, with an average landholding size of 1.19

hectares. Farmers collector with medium landholding, owning between 2.01 to 4 hectares, account for 21 farmers (17.50 per cent) with an average holding of 2.13 hectares. Only 7 farmers (5.83 per cent) fall under the large category, owning more than 4.01 hectares, with an average holding size of 4.15 hectares. The overall average size of landholding among all farmers collector is 2.49 hectares. This distribution highlights the dominance of farmers collector with small landholding among the farmers collector. Similar results were found by Alexander *et al.* (2024) [2] that average size of land holding in case of small, medium and large group were 1.28 hectares, 2.21 hectares and 4.16 hectares respectively. Overall land holding was 2.55 hectares.

Table 1: Classification of minor forest product farmers collector according to landholding

Sr. No.	Land holding size	Size limit (ha)	Farmer collectors	Average size of holding
1	Small	Up to 2.00	92 (76.67)	1.19
2	Medium	2.01 to 4.00	21 (17.50)	2.13
3	Large	Above 4.01	7 (17.74)	4.15
		Total	120 (100.00)	2.49

Educational status of minor forest product farmers collector

Education is an important factor in understanding importance and availability of technology and its adoption. It is also one of the most important aspects which affect the standard of living.

The information presented in Table 2. revealed that among the 92 minor forest products farmers collector, 7 (7.60 per cent) were illiterate, 16 (17.39 per cent) have completed primary school, 11 (11.95 per cent) have studied up to middle school, 23 (25.00 per cent) have attended high school, another 23 (25.00 per cent) have completed higher secondary, and 12 (13.04 per cent) are graduates or above.

Among medium farmers collector (21 in total), 3 (14.28 per cent) are illiterate, 3 (14.28 per cent) studied up to primary, 2 (9.52 per cent) up to middle school, 7 (33.33 per cent) have attended high school, 2 (9.52 per cent) completed

higher secondary, and 4 (19.04 per cent) have a graduation or higher qualification.

For the 7 large landholders, 1 each (14.28 per cent) is illiterate, primary-educated, and graduate, while none are educated up to middle school, 3 (42.85 per cent) completed high school, and 1 (14.28 per cent) finished higher secondary.

Overall, out of 120 minor forest product farmers collector, 11 (9.17 per cent) are illiterate, 20 (16.16 per cent) have primary education, 13 (10.83 per cent) have studied up to middle school, 33 (27.50 per cent) attended high school, 26 (21.67 per cent) completed higher secondary, and 17 (14.66 per cent) are graduates or above. This indicates that a significant portion of landholders are educated up to high school or higher, especially among medium and large farmers.

Table 2: Educational status of minor forest product farmers collector

Sr. No.	Particulars	Land holding size			
		Small	Medium	Large	Overall
1	Illetrate	7 (7.60)	3 (14.28)	1 (14.28)	11 (9.17)
2	Primary school (1-4 Std.)	16 (17.39)	3 (14.28)	1 (14.28)	20 (16.16)
3	Middle school (5-7 Std.)	11 (11.95)	2 (9.52)	0 (00.00)	13 (10.83)
4	High school (8-10 std.)	23 (25.00)	7 (33.33)	3 (42.85)	33 (27.50)
5	Higher secondary school (11-12 Std.)	23 (25.00)	2 (9.52)	1 (14.28)	26 (21.67)
6	Graduation and above	12 (13.04)	4 (19.04)	1 (14.28)	17 (14.66)
	Total	92 (100.00)	21 (100.00)	7 (100.00)	120 (100.00)

Land utilization pattern of minor forest product farmers collector

Land utilization patterns indicate the area of land actually utilized for different purpose like crop production, irrigated area, un-irrigated area and net sown area. The results of table revealed that the land utilization pattern and cropping intensity of selected minor forest products farmers collector in Gadchiroli district.

The information presented in the Table 3. showed that the average total landholding size of minor forest product farmers collector is 1.19 ha for farmers collector with small landholding, 2.13 ha for medium, and 4.15 ha for large

farmers collectors, with an overall average of 2.49 ha. Among these, the net cultivated area constitutes the major share i.e. 85.71 per cent (1.02 ha) for small, 84.97 per cent (1.81 ha) for medium, and 94.45 per cent (3.92 ha) for large farmers collector, resulting in an overall net cultivated area of 2.25 ha (90.36 per cent).

Fallow land accounts for 0.17 ha (14.28 per cent) in small land holding farmers collector, 0.32 ha (15.02 per cent) in medium, and 0.23 ha (5.54 per cent) in large farmers collector, averaging 0.24 ha (9.63 per cent) overall.

In terms of irrigation, small farmers collector irrigate 0.39 ha (32.77 per cent), medium farmers collector 0.90 ha

(42.25 per cent), and large farmers collector 1.77 ha (42.65 per cent), with an average irrigated area of 1.02 ha (40.96 per cent).

Regarding cropping pattern, the gross cropped area is 1.66 ha for small farmers collector (139.49 per cent), 2.87 ha for medium farmers collector (134.74 per cent), and 6.06 ha for

large (146.0 per cent) farmers collector, leading to an overall gross cropped area of 3.53 ha (141.7 per cent). The area sown more than once stands at 0.64 ha (53.78 per cent), 1.06 ha (49.76 per cent), and 2.14 ha (51.56 per cent) respectively, averaging 1.28 ha (51.40 per cent).

Table 3: Land utilization pattern of minor forest product farmers collector

Sr. No.	Particulars	Land size holding			
		Small	Medium	Large	Overall
1	Total land holding	1.19 (100.00)	2.13 (100.00)	4.15 (100.0)	2.49 (100.0)
2	Fallow land	0.17 (14.28)	0.32 (15.02)	0.23 (5.54)	0.24 (9.63)
3	Net cultivated area	1.02 (85.71)	1.81 (84.97)	3.92 (94.45)	2.25 (90.36)
4	Area under irrigation	0.39 (32.77)	0.90 (42.25)	1.77 (42.65)	1.02 (40.96)
5	Area sown more than once	0.64 (53.78)	1.06 (49.76)	2.14 (51.56)	1.28 (51.40)
6	Gross cropped area	1.66 (139.49)	2.87 (134.74)	6.06 (146.0)	3.53 (141.7)
7	Cropping intensity	162.74	158.56	154.59	158.63

Contribution of MFPs to Household Income

Average Income generation from different minor forest product collection by farmers collector

Minor Forest Products contributes significantly to the income of forest-dependent communities, particularly tribal, small, and marginal farmers. Its importance lies in both its direct income benefits and the economic resilience it offers. From the Table 4. it revealed that the income from minor forest product varies across different landholding sizes, with small farmers earning the highest overall at Rs. 20,772.00. Among small landholders, Mahua flowers contribute Rs. 8,930.56, Charoli seeds Rs. 7,016.32, and gum Rs. 4,825.12. Medium farmers earn a total of Rs.17,335.66, comprising Rs. 7,402.47 from Mahua flowers, Rs. 5,470.14 from

Charoli seeds, and Rs.4,363.05 from gum. Large farmers generate Rs. 14,752.73 in total, with Rs.6,548.24 from Mahua flowers, Rs. 4,097.57 from Charoli seeds, and Rs. 4,106.92 from gum. On an overall basis, the average income from minor forest products across all landholding sizes is Rs. 17,586.79 with Mahua flowers being the highest contributor followed by gum and Charoli seeds. This data underscores the critical role of minor forest produce, especially for small farmers who rely more heavily on this source of income. Similar results were found by Alexander *et al.* (2024) ^[2] that overall annual income from collection of mohaflower was 4570.6 rupees which was highest as compared with charoli 1937.5 rupees and gum 1595 rupees which account 19.68

Table 4: Average Income generation from different minor forest product collection by farmers collector

Sr. No.	Particulars	Land holding size			
		Small	Medium	Large	Overall
1	Mahua Flowers	8930.56 (42.99)	7402.47 (42.94)	6548.24 (44.38)	7627.09 (43.35)
2	Charoli Seeds	7016.32 (33.38)	5470.14 (31.74)	4097.57 (27.78)	5528.01 (31.46)
3	Gum	4825.12 (23.23)	4363.05 (25.32)	4106.92 (27.84)	4431.69 (25.19)
	Total	20772.00 (100.00)	17235.66 (100.00)	14752.73 (100.00)	17586.79 (100.00)

Distribution of farmers collector involved in minor forest product collection

From the Table 5. it is revealed that the collection of minor forest products is a significant activity among farmers, with Mahua flowers being the most commonly collected item. Out of a total of 120 farmer collectors, 116 (96.67 per cent) collect Mahua flowers, indicating its widespread importance. Charoli seeds are collected by 92 farmers, accounting for 76.67 per cent of the total, while gum is collected by 79 farmers, representing 65.83 per cent. This data highlights the dependence of a large proportion of farmers on forest produce, particularly Mahua flowers, as a supplementary source of livelihood.

Table 5: Distribution of farmers collector involved in minor forest product collection

Sr. No.	Particulars	Farmers collector	Percentage
1	Mahua Flowers	116	96.67
2	Charoli Seeds	92	76.67
3	Gum	79	65.83
	Total	120	100.00

Distribution of income generation of farmers collector according to land holding

From the Table 6. it is revealed that the income distribution data across different landholding sizes reveals clear trends in the dependence on various sources of livelihood. Among small landholders, income is fairly diversified, with agriculture contributing 45.99 per cent, livestock 32.92 per cent, and Minor Forest Produce (MFP) a notable 21.09 per cent. In contrast, medium landholders show a stronger reliance on agriculture (61.47 per cent), while livestock and MFP contribute 23.72 per cent and 14.81 per cent respectively. For large landholders, agriculture dominates income sources at 77.46 per cent, with livestock and MFP forming much smaller portions—14.46 per cent and 8.08 per cent, respectively. Overall, agriculture remains the primary source of income across all groups, contributing 64.98 per cent, followed by livestock at 21.74 per cent, and MFP at 13.26 per cent.

In conclusion, the data indicates that MFP plays a more significant role in the incomes of small landholders, serving as a vital supplementary source of livelihood. As the

landholding size increases, the reliance on MFP declines, while agricultural income becomes more dominant. This highlights the importance of MFP, especially for marginal households, and points to the need for supportive policies to enhance its value and sustainability for small and resource-constrained farmers.

Table 6: Distribution of income generation of farmers collector according to land holding

Sr. No.	Particulars	Income	Percentage
Small			
1	Agriculture	45318.98	45.99
2	Livestock	32446.59	32.92
3	MFP	20772.00	21.09
	Total	98537.57	100.00
Medium			
1	Agriculture	71574.69	61.47
2	Livestock	27628.05	23.72
3	MFP	17235.66	14.81
	Total	116438.40	100.00
Large			
1	Agriculture	141504.67	77.46
2	Livestock	26400.12	14.46
3	MFP	14752.73	8.08
	Total	182657.73	100.00
Overall			
1	Agriculture	86132.78	64.98
2	Livestock	28824.92	21.74
3	MFP	17586.79	13.26
	Total	132544.49	100.00

Seasonality and Gender Roles in MFP Collection

MFP collection was concentrated in the summer months (March to May), aligning with lean agricultural periods. This seasonal income was particularly important for maintaining household liquidity and nutrition. Women

played a significant role in MFP collection and processing, especially in drying, cleaning, and storage. However, marketing was largely male dominated, with women having limited access to price information or decision-making roles.

Constraints in MFP Collection

Constraints faced in collection of minor forest product for farmers collector

The data from Table 7. it is revealed that MFP collecting farmers faced multiple challenges that significantly impacted their livelihoods. The most severe constraint was the threat from wild animals, reported by 113 farmers (94.17 per cent), making it the highest-ranked issue due to the direct danger involved in collection activities. The unpredictable nature of MFP collection was the second-most reported problem, affecting 107 farmers (89.17 per cent), highlighting the uncertainty in availability of forest produce. Low and fluctuating prices, cited by 102 farmers (85.00 per cent), ranked third and reflected the instability in income from MFP. A significant number of farmers, 93 (77.50 per cent), also struggled with storage problems, while 89 farmers (74.17 per cent) found the collection process to be time-consuming. Exploitation by traders, reported by 66 farmers (55.00 per cent), further reduced their bargaining power and income. Although ranked lowest, 45 farmers (37.50 per cent) still considered the lack of primary processing units a constraint, as it limited value addition opportunities.

MFP collectors in the past experienced a combination of physical, environmental, and market-related constraints. These issues not only increased the difficulty of collection but also limited the income and sustainability of MFP-based livelihoods, particularly for small and tribal farmers. Addressing these challenges was essential for improving their economic conditions and ensuring safer and more profitable forest-based income.

Table 7: Constraints faced in collection of minor forest product for farmers collector

Sr. No.	Constraints	No. of MFP farmers collector	Percentage	Rank
1	Unavailability of primary processing unit	45	37.50	VII
2	Storage problem	93	77.50	IV
3	Unpredictable collection	107	89.17	II
4	Threat from wild animals	113	94.17	I
5	Time consuming	89	74.17	V
6	Exploitation by trader	66	55.00	VI
7	Low and fluctuating prices	102	85.00	III

Conclusion

Minor Forest Products offer a lifeline to tribal and smallholder farmers in forest-dominated regions like Gadchiroli. While agriculture remains the primary livelihood source, MFPs provide essential seasonal income and food security. agriculture remains the primary source of income across all groups, contributing 64.98 per cent, followed by livestock at 21.74 per cent, and MFP at 13.26 per cent. Their significance is particularly high among land-constrained households. However, the full potential of MFPs remains untapped due to market, infrastructural, and policy constraints. The most severe constraint was the threat from wild animals, reported by 113 farmers (94.17 per cent), With targeted interventions focused on value addition, gender equity, cooperative organization, and policy support, MFPs can emerge as a cornerstone of sustainable and inclusive rural development.

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