**Constraints faced by tribal farmers in seeking livelihood security through forest based resources**

**Abstract**

Tribal farmers in India depend heavily on forests for livelihoods, but face challenges like insecure land rights, poor market access, weak institutional support, and climate change. Rajasthan state blessed with Aravali as wall of nature and have significant population of different tribal groups. This study surveyed 240 farmers in Udaipur and Pratapgarh, Rajasthan, using a three-point scale to rank key constraints. Results highlight major barriers to livelihood security and point to the need for targeted policies and sustainable forest management. A total **of 30 major constraints** were identified and categorized into eight thematic areas: Legal and Regulatory Constraints, Marketing Constraints, Financial Constraints, Land Encroachment and Deforestation Constraints, Socio-Cultural Constraints, Technical Knowledge Constraints, Social and Institutional Support, and Shifting Agricultural Practices. The Mean Percentage Score (MPS) was calculated for each constraint statement to assess its severity and significance as perceived by the farmers. Based on the MPS values, constraints were ranked to determine their relative importance. The findings provide critical insights into the most pressing challenges faced by tribal communities and offer a basis for policymakers, development agencies, and extension workers to design focused interventions aimed at improving the livelihood security of tribal farmers through sustainable use of forest resources. Tribal farmers in Rajasthan face common challenges like land insecurity and poor market access, but water scarcity and harsh climatic conditions make their struggles more severe than in many other states. Infrastructure and service delivery are also more limited in Rajasthan’s tribal regions.

**Keywords:** Forests, Tribal, Legal and Regulatory Constraints, sustainable forest management.

**Introduction:**

Forest-based resources play a pivotal role in sustaining the livelihoods of tribal communities across India, particularly in states such as Madhya Pradesh, Chhattisgarh, Odisha, Jharkhand, and Rajasthan. Tribal farmers depend heavily on forests for food, fuel, fodder, medicinal plants, and non-timber forest products (NTFPs) like tendu leaves, mahua, honey, sal seeds, and lac, which contribute significantly to household income and livelihood security (Sahoo *et al.*,2022). According to the Ministry of Tribal Affairs (2021), around 8.6% of India’s population comprises Scheduled Tribes, many of whom are forest-dependent. However, tribal farmers face multiple constraints in harnessing forest-based resources for livelihood security. These include insecure land and forest tenure, restrictive implementation of forest and conservation laws, weak institutional support, poor access to credit and markets, lack of infrastructure for storage and processing, and exploitation by intermediaries (Tejaswi, 2008). Moreover, climate change impacts, declining forest productivity, and deforestation have heightened the vulnerability of tribal livelihoods, often forcing farmers to migrate for wage labor or switch to less remunerative livelihoods (Pandey, 2016). Although the Forest Rights Act (FRA) of 2006 was intended to secure tribal land and forest rights, its uneven implementation has limited the intended benefits. Studies have shown that lack of awareness, bureaucratic delays, and political resistance have constrained the realization of FRA entitlements, further marginalizing tribal communities (Colchester, (1994)) .A nuanced understanding of these constraints is essential for designing policies and interventions that not only improve the income and livelihood security of tribal farmers but also promote sustainable forest management and conservation (Sarap, 2007 )

**Materials and Methods:**

Southern Rajasthan comprises seven districts: Udaipur, Rajsamand, Dungarpur, Bhilwara, Banswara, Pratapgarh, and Chittorgarh. For the study, two districts—Udaipur and Pratapgarh—were selected based on their Scheduled Tribe population and forest area. Udaipur comprises 11 tehsils out of which Jhadol and Kotra were selected on the basis of maximum schedule tribe population and forest area cover. Similarly, Pratapgarh comprises 5 tehsils among which Peepalkhoont and Arnod tehsils were selected on the basis of same criterion.Three villages were selected from each tehsil purposively fulfilling the criteria of forest and schedule tribe population. Thus, 6 villages were selected from each selected district. Total 12 villages were selected for present study. 20 farmers were selected randomly from each selected village. Thus, a total of 240 farmers were selected for the present investigation. To identify the constraints faced by tribal farmers in achieving livelihood security through forest-based resources, responses from the respondents were recorded using a three-point continuum: Most Severe (score: 2), Severe (score: 1), and Not Severe (score: 0).The recorded responses were tabulated, and the scores for each statement were counted and converted into a Mean Percent Score (MPS). Based on these scores, the constraints were ranked to highlight the most significant challenges faced by the farmers.

**Result and discussion:**

**Aspect wise constraints faced by tribal farmers in seeking livelihood security through forest- based resources.**

For analysis constraints faced by tribal farmers in seeking livelihood security through forest- based resources., 30 major constraints were enlisted in eight different categories as “Legal and Regulatory Constraints”, “Marketing constraints”, “Financial constraints”, “Land Encroachment and Deforestation constraints”, “Socio-Cultural constraints”, “Technical Knowledge Constraints”, Social and Institutional Support and Shifting Agricultural Practices. The MPS for each statement was computed and based on MPS rank was allotted. The analyze data were presented in the table below.

**Table 1: Aspect wise distribution of respondents related to constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Aspect wise constraints** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| 1 | Legal and Regulatory Constraints | 72.08 | 2 | 69.90 | 4 | 70.98 | 2 |
| 2 | Marketing constraints | 66.77 | 5 | 71.15 | 2 | 68.96 | 5 |
| 3 | Financial constraints | 66.25 | 7 | 66.77 | 8 | 66.51 | 8 |
| 4 | Land Encroachment and Deforestation constraints | 70.83 | 3 | 68.44 | 6 | 69.64 | 4 |
|
| 5 | Socio-Cultural constraints | 70.21 | 4 | 72.92 | 1 | 71.56 | 1 |
|
| 6 | Technical Knowledge Constraints | 65.10 | 8 | 70.73 | 3 | 67.70 | 7 |
|
| 7 | Social and Institutional Support | 72.36 | 1 | 68.06 | 7 | 70.20 | 3 |
| 8 | Shifting Agricultural Practices | 66.53 | 6 | 69.03 | 5 | 67.78 | 6 |

Table 1 outlines the various constraints faced by tribal farmers, presenting their mean percentage score (MPS) and corresponding ranks. The data shows that "Socio-Cultural Constraints" received the highest rank with a mean percentage score of 71.56. The Pratapgarh district holds the top rank for this category, while Udaipur district ranks fourth with a score of 70.20.

Following this, "Legal and Regulatory Constraints" ranks second overall with a mean score of 70.98. In this category, Udaipur district achieved a second rank with a score of 72.08, while Pratapgarh district is ranked fourth with a score of 69.90.

Further examination of Table 1 indicates that "Social and Institutional Support" ranks third with a mean score of 70.20. Udaipur district secured the first rank with a score of 72.36, whereas Pratapgarh district placed seventh with a score of 68.06.

Additionally, the analysis reveals that "Land Encroachment and Deforestation Constraints" rank fourth overall with a mean score of 69.64. Udaipur district ranks third with a score of 70.83, while Pratapgarh district is in sixth place with a score of 68.44.

The analysis of marketing constraints shows an overall mean score of 68.96, ranking fifth. Udaipur district received a fifth rank with a score of 66.77, while Pratapgarh district placed second with a score of 71.15.

Moreover, "Shifting Agricultural Practices" constraints are ranked sixth with an overall mean score of 67.78. In Udaipur district, this constraint maintains the sixth rank with a score of 66.53, while Pratapgarh district stands fifth with a score of 69.03.

According to the analysis, "Technical Knowledge" constraints rank seventh with an overall mean score of 67.70. Udaipur district is ranked eighth with a score of 65.10, while Pratapgarh district holds the third rank with a score of 70.73.

Finally, "Financial Constraints" have an overall rank of eighth with a mean score of 66.51. Udaipur district achieved the seventh rank with a score of 66.25, and Pratapgarh district placed eighth with a score of 66.67.

**Legal and Regulatory Constraints**

Tribal Farmers face numerous “Legal and Regulatory Constraints” that can significantly impact their operations. Major constraints related to product are enlisted as complex and restrictive laws and regulations related to forest resources, Lack of clarity in land, inadequate recognition of traditional rights and limited access to permits and licenses.

**Table 2: Distribution of respondents according to their constraints related to legal and regulatory constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Legal and Regulatory Constraints** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| 1 | Complex and restrictive laws and regulations related to forest resources | 78.33 | 1 | 75.83 | 1 | 77.08 | 1 |
| 2 | Lack of clarity in land | 70.42 | 3 | 63.33 | 4 | 66.87 | 4 |
| 3 | Inadequate recognition of traditional rights | 66.67 | 4 | 71.67 | 2 | 69.17 | 3 |
| 4 | Limited access to permits and licenses | 72.92 | 2 | 68.75 | 3 | 70.83 | 2 |

Table 2 outlines the legal and regulatory constraints faced by tribal farmers, presenting their mean percentage scores (MPS) and ranks. The data indicates that the constraint related to "complex and restrictive laws and regulations concerning forest resources" received the highest rank, with an overall MPS of 77.08. Specifically, in the Udaipur and Pratapgarh districts, this constraint ranked first, with scores of 78.33 MPS and 75.83 MPS, respectively.

Further analysis of the table shows that the constraint of "limited access to permits and licenses" secured the second rank, with an overall MPS of 70.83. In district-wise analysis, Udaipur district ranked second with a score of 72.92 MPS, while Pratapgarh district ranked third with an MPS of 68.75.The table also reveals that the constraint of "inadequate recognition of traditional rights" earned the third rank, with an overall MPS of 69.17. In district-specific terms, Udaipur ranked fourth with an overall score of 66.67, whereas Pratapgarh secured second rank with an MPS of 71.67.Additionally, the constraint categorized as "lack of clarity in land" received the fourth rank, with an overall MPS of 66.87. District-wise, Udaipur ranked third with a score of 70.42, while Pratapgarh ranked fourth at 63.33 MPS.

**Marketing constraints**

Agricultural Tribal Farmers face several marketing constraints that impact their ability to serve farmers for their products and generate profitability. Major constraints related to marketing were Limited transportation infrastructure, lack of market linkages, Transportation cost is high, and information gaps about market demand and prices.

**Table 3: Distribution of respondents according to their constraints related to marketing constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Marketing constraints** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| **1** | Limited transportation infrastructure | 65.83 | 3 | 76.25 | 1 | 70.04 | 3 |
| **2** | lack of market linkages | 60.00 | 4 | 67.08 | 4 | 63.54 | 4 |
|
| **3** | Transportation cost is high | 72.50 | 1 | 69.58 | 3 | 71.04 | 1 |
| **4** | Information gaps about market demand and prices | 68.75 | 2 | 71.67 | 2 | 70.20 | 2 |

Table 3 outlines the marketing constraints faced by tribal farmers, displaying their mean percent scores (MPS) and corresponding ranks. The data reveals that the constraint “Transportation cost is high” ranked first overall, with an MPS of 71.04. Specifically, in Udaipur, it also ranked first with an MPS of 72.50, while in Pratapgarh, it ranked third with an MPS of 69.58.

The analysis further indicates that the constraint “Information gaps about market demand and prices” secured the second rank, with an overall MPS of 70.20. In district-wise assessment, both Udaipur and Pratapgarh ranked second, with MPS scores of 68.75 and 71.67, respectively.

Additionally, the constraint “Limited transportation infrastructure” ranked third overall, with an MPS of 70.04. In Udaipur, it ranked third, yielding an MPS of 65.83, while in Pratapgarh, it achieved the first rank with an MPS of 76.25.

Lastly, the constraint “Lack of market linkages” obtained the fourth rank, with an overall MPS of 63.54. Both Udaipur and Pratapgarh also secured the fourth rank in this category, with MPS scores of 60.00 and 67.08, respectively.

**Financial constraints**

Tribal Farmers of both the districts i.e. Udaipur and Pratapgarh face several financial constraints that impact their ability to acquire income generating assets. Major constraints related to finance were limited access to credit, lack of investment opportunities, inadequate support for infrastructure development e.g. processing facilities or storage units and high Cost of Inputs and Lack of Price Information.

**Table 4: Distribution of respondents according to their constraints related to financial constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Financial constraints** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| **1** | Limited access to credit | 68.33 | 3 | 64.17 | 3 | 66.25 | 3 |
| **2** | Lack of investment opportunities | 72.50 | 1 | 70.83 | 1 | 71.66 | 1 |
|
| **3** | inadequate support for infrastructure development | 70.42 | 2 | 69.17 | 2 | 69.79 | 2 |
| **4** | High Cost of Inputs and Lack of Price Information | 55.83 | 4 | 59.17 | 4 | 57.50 | 4 |

Table 4 presents the financial constraints faced by Tribal Farmers, along with their mean percentage scores (MPS) and corresponding ranks. The data reveals that the constraint related to the "lack of investment opportunities" secured the top rank, with an overall MPS of 71.66. Both Udaipur and Pratapgarh districts also ranked first in this category, with MPS scores of 72.50 and 71.66, respectively.

The next constraint, "inadequate support for infrastructure development," ranked second with an overall MPS of 69.79. When analyzed by district, Udaipur and Pratapgarh received second place with MPS scores of 70.42 and 69.17, respectively.

Additionally, the constraint of "limited access to credit" achieved third rank, with an overall MPS of 66.25. In Udaipur, this constraint also ranked third with an MPS of 68.33, while Pratapgarh ranked third with an MPS of 64.17.

Lastly, the constraints of "high cost of inputs" and "lack of price information" both earned fourth rank, with an overall MPS of 57.50. District-wise analysis shows that Udaipur and Pratapgarh ranked fourth as well, with MPS scores of 55.83 and 59.17, respectively.

**Land Encroachment and Deforestation**

Tribal Farmers of both the districts i.e. Udaipur and Pratapgarh face several land encroachment and deforestation that impact their environment and livelihood. Major constraints related to land encroachment and deforestation were Threats to availability and sustainability of forest resources, Increased pressure from outside communities, illegal logging and land-use changes.

**Table 5: Distribution of respondents according to their constraints related to land encroachment and deforestation constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Land Encroachment and Deforestation** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| 1 | Threats to availability and sustainability of forest resources | 76.25 | 1 | 70.83 | 2 | 73.54 | 1 |
| 2 | Increased pressure from outside communities | 66.25 | 4 | 68.33 | 3 | 67.29 | 3 |
|
| 3 | Illegal logging | 69.58 | 3 | 72.92 | 1 | 71.25 | 2 |
| 4 | Land-use changes | 71.25 | 2 | 61.67 | 4 | 66.45 | 4 |

Table 5 presents the constraints of land encroachment and deforestation faced by tribal farmers, along with their mean percentage scores (MPS) and ranks. The data indicate that the constraint related to the “Threats to the availability and sustainability of forest resources” ranked first with an overall MPS of 73.54. A district-wise analysis reveals that Udaipur secured the top rank for this constraint, achieving an MPS of 76.25, while Pratapgarh followed in second place with an MPS of 70.83.

The analysis further shows that the constraint of “illegal logging” ranked second, with an overall MPS of 71.25. In this case, Udaipur was ranked third with an MPS of 69.58, while Pratapgarh took the first rank with an MPS of 72.92.

Lastly, the table indicates that the constraint of “increased pressure from outside communities” secured third place, with an overall MPS of 67.29. In district rankings, Udaipur came in fourth with an MPS of 66.25, and Pratapgarh ranked third with an MPS of 68.33.

**Socio-Cultural constraints**

Agricultural Tribal Farmers face several Socio-Cultural constraints that impact their representation and role in decision making for overall development of social structure. Major constraints related to Socio-Cultural constraints were adhere to traditional beliefs and practices, Limited access to education, caste discrimination and limited roles and opportunities for women in farming.

**Table 6: Distribution of respondents according to their constraints related to socio-cultural constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Socio-Cultural constraints** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| **1** | Adhere to traditional beliefs and practices | 78.75 | 1 | 78.33 | 1 | 78.54 | 1 |
| **2.** | Limited Access to Education | 68.33 | 3 | 72.08 | 3 | 70.20 | 3 |
|
| **3** | Caste Discrimination | 72.92 | 2 | 76.25 | 2 | 74.58 | 2 |
| **4** | Limited roles and opportunities for women in farming | 60.83 | 4 | 65.00 | 4 | 62.92 | 4 |

Table 6 presents the socio-cultural constraints faced by tribal farmers, along with their mean percentage scores (MPS) and ranks. The data indicates that the constraint related to "Adherence to Traditional Beliefs and Practices" ranks first, with an overall MPS of 78.54. A district-wise analysis reveals that both Udaipur and Pratapgarh districts secured the top rank, with scores of 78.75 and 78.33 MPS, respectively.

The analysis further shows that "Caste Discrimination" ranks second, with an overall MPS of 74.78. In a district-wise breakdown, Udaipur ranks second with a score of 72.92 MPS, while Pratapgarh also ranks second, achieving a score of 76.25 MPS.

Additionally, the constraint of "Limited Access to Education" ranks third, with an overall MPS of 70.20. In terms of district-specific analysis, Udaipur and Pratapgarh both rank third, with scores of 68.33 MPS and 72.08 MPS, respectively.

Finally, the constraint regarding "Limited Roles and Opportunities for Women in Farming" ranks fourth, with an overall MPS of 62.92. A district-wise analysis indicates that Udaipur and Pratapgarh each obtained the fourth rank, with scores of 60.83 MPS and 65.00 MPS, respectively.

**Technical Knowledge Constraints**

Tribal Farmers face several technical knowledge constraints that impact their skill oriented work to cop up with advanced market trends and improving standard of living. Major constraints related to technical knowledge constraints were Limited access to training, Modern agricultural practices, insufficient knowledge of sustainable harvesting techniques and processing methods and market-oriented skills.

**Table 7: Distribution of respondents according to their constraints related to technical knowledge constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Technical Knowledge Constraints** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| **1** | Limited access to training | 64.17 | 3 | 68.75 | 4 | 66.45 | 3 |
| **2** | Modern agricultural practices | 66.67 | 2 | 69.58 | 3 | 68.12 | 2 |
|
| **3** | Insufficient knowledge of sustainable harvesting techniques and processing methods | 59.17 | 4 | 70.83 | 2 | 65.00 | 4 |
| **4** | market-oriented skills | 70.42 | 1 | 72.08 | 1 | 71.25 | 1 |

Table 7 outlines the technical knowledge-related constraints faced by Tribal Farmers, presented with their mean percent scores (MPS) and ranks. The data indicates that the constraint related to "market-oriented skills" ranked first, with an overall MPS of 71.25. In the district-wise analysis, both Udaipur and Pratapgarh districts achieved first place, with MPS scores of 70.42 and 72.08, respectively.

The analysis also reveals that the constraint concerning "modern agricultural practices" secured the second rank with an overall MPS of 68.12. In this case, Udaipur ranked second with an MPS of 66.67, while Pratapgarh ranked third with an MPS of 69.58.

Additionally, the constraint "limited access to training" ranked third overall with an MPS of 66.45. In Udaipur, it ranked third with an MPS of 64.17, and in Pratapgarh, it ranked fourth with an MPS of 68.75.

Lastly, the constraint regarding "insufficient knowledge of sustainable harvesting techniques and processing methods" received the fourth rank, with an overall MPS of 65.00. For the district-wise analysis, Udaipur ranked fourth with an MPS of 59.17, while Pratapgarh secured second place with an MPS of 70.83.

**Social and Institutional Support**

Tribal Farmers faces several Social and Institutional Support constraints not only improve agricultural productivity but also enhance food security, environmental sustainability and the overall well-being of tribal communities. Major constraints related to social and institutional Support were Discrimination, Lack of representation in decision-making processes and inadequate support from government agencies or non-governmental organizations.

**Table 8: Distribution of respondents according to their constraints related to socio and institutional support constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Social and Institutional Support** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| **1** | Discrimination | 72.08 | 2 | 68.75 | 2 | 68.96 | 2 |
| **2** | Lack of representation in decision-making processes | 80.42 | 1 | 69.58 | 1 | 75.84 | 1 |
|
| **3** | Inadequate support from government agencies or non-governmental organizations | 64.58 | 3 | 67.08 | 3 | 65.83 | 3 |

Table 8 presents the social and institutional support challenges faced by tribal farmers, along with their mean percentage scores (MPS) and respective rankings. The data reveals that the constraint related to the "Lack of representation in decision-making processes" received the highest rank, with an overall MPS of 75.84. A district-wise analysis shows that Udaipur district achieved a score of 80.42, securing the top rank, while Pratapgarh district followed with a score of 69.58.

The next constraint, labeled "Discrimination," ranked second with an overall MPS of 68.96. In this case, Udaipur and Pratapgarh districts both achieved second place, with scores of 72.08 and 68.75, respectively.

Lastly, the constraint regarding "Inadequate support from government agencies or non-governmental organizations" was ranked third, with an overall MPS of 65.83. The district-wise analysis indicates that Udaipur district scored 64.58, while Pratapgarh district scored 67.08, placing them both in third rank.

**Shifting Agricultural Practices constraints**

Shifting agricultural practices in tribal communities remains significant for food security, cultural preservation, and ecological balance. Major constraints related to shifting agricultural practices were Shift in market demands, migration to urban areas and adoption of commercial farming practices.

**Table 9: Distribution of respondents according to their constraints related to shifting agricultural practices constraints**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.no.** | **Shifting Agricultural Practices** | **Udaipur** | | **Pratapgarh** | | **Overall** | |
| **MPS** | **Rank** | **MPS** | **Rank** | **MPS** | **Rank** |
| **1** | Shift in market demands | 64.17 | 3 | 62.50 | 3 | 63.33 | 3 |
| **2** | Migration to urban areas | 71.25 | 1 | 75.00 | 1 | 73.12 | 1 |
|
| **3** | Adoption of commercial farming practices | 65.42 | 2 | 72.92 | 2 | 69.16 | 2 |

Table 9 highlights the constraints related to shifting agricultural practices faced by tribal farmers, along with their mean percentage scores (MPS) and ranks. The data reveals that the constraint of "migration to urban areas" ranks first, with an overall MPS of 73.12. A district-wise analysis shows that both Udaipur and Pratapgarh districts secured first place, with MPS values of 71.25 and 75.00, respectively.

The next constraint, "adoption of commercial farming practices," ranks second with an overall MPS of 69.16. In this case, both Udaipur and Pratapgarh districts achieved second rank, with MPS values of 65.42 and 72.92, respectively.

Lastly, the constraint of "shift in market demands" ranks third, with an overall MPS of 63.33. In Udaipur, this constraint also ranks third, with an MPS of 64.17, while in Pratapgarh, it maintains the same rank with an MPS of 62.50.

**Conclusion:** Our present study concluded that the socio-cultural constraints ranked first (71.56 MPS), followed by legal and regulatory constraints (70.98 MPS) and social and institutional support (70.20 MPS) faced by tribal farmers. Land encroachment and deforestation constraints ranked fourth (69.64 MPS), marketing constraints ranked fifth (68.96 MPS). Shifting agricultural practices and technical knowledge constraints ranked sixth (67.78 MPS) and seventh (67.70 MPS), respectively, while financial constraints came last at eighth (66.51 MPS). District-wise, Udaipur ranked socio-cultural constraints fourth but led in social and institutional support, while Pratapgarh ranked socio-cultural constraints first and technical knowledge third. The results highlight the variation in constraint severity between the two districts, pointing to the need for location-specific interventions for tribals.

**Importance:** To address the constraints faced by tribal farmers, policies should focus on securing land rights through effective implementation of the Forest Rights Act and improving irrigation via community-managed systems. Access to quality inputs and credit can be enhanced through tribal-specific extension services and rural banking. Market access should be strengthened by developing infrastructure and supporting FPOs. Skill development and climate-resilient farming practices should also be promoted for sustainable livelihoods.

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

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1.

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