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CONSTRAINTS OF FARMERS TOWARDS THE USAGE OF INDIGENOUS TECHNICAL KNOWLEDGE IN ARUNACHAL PRADESH, INDIA

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ABSTRACT

Indigenous Technical Knowledge (ITK) refers to the knowledge, skills, practices, and innovations developed by indigenous communities over generations to address their specific needs and challenges. The study was conducted in the year 2021-22. Anjaw district was purposively selected to ensure comprehensive data representation, encompassing all four blocks in the study. From a total of 44 villages, 11 were randomly selected from each block, with a sample size of 220 respondents. The study followed a descriptive and multistage purposive cum random sampling design. The findings of the study indicate 57.72 per cent of the participants were classified as middle-aged, 60.91 per cent were male, and 68.64 per cent were found to be illiterate. In terms of farming experience, 61.81 per cent of respondents had between 12 to 28 years of experience. A significant proportion (74.54%) possessed medium-sized landholdings. The majority of respondents were primarily involved in agriculture, with a mere 0.45 per cent participating in both agriculture and livestock activities. The study revealed that 88.63 per cent of respondents had medium income level category, and 77.73 per cent had a medium income level derived from farming activities. The major constraints faced by the respondents with respect to ITK practice was availability of items and resources as substitute for tools and implements and farm produce from market which scored the highest total Garret score of 13655 and a percentage of 62.06. More documentation efforts and awareness initiatives among the users are essential to ensure the preservation of ITK.

(Key words: Agriculture, Arunachal Pradesh, constraints, ITK, Mishmi, socio-economic)

INTRODUCTION

Indigenous Technical Knowledge (ITK) plays a pivotal role in agriculture and related fields. It encompasses the unique, traditional, and locally developed knowledge that exists within specific communities. Unlike formal scientific knowledge, which often originates from universities and research institutions, it is deeply intertwined with the culture and historical context of the local community, forming an integral part of their identity (Borthakur and Singh, 2012). It is dynamic, adaptive, and evolves over time, reflecting the wisdom universities and research institutions; it is deeply intertwined with the culture and historical context of the local community, forming an integral part of their identity (Borthakur and Singh, 2012). It is dynamic, adaptive, and evolves over time, reflecting the wisdom accumulated across generations. Indigenous knowledge informs decision-making in various domains, including agriculture, animal husbandry, healthcare, and natural resource management. Passed down orally, it bridges the gap between scientific understanding and practical wisdom, ensuring sustainable and context-specific solutions for the well-being of communities. These practices unless documented will die with the passage of time (Nagi *et al*., 2023). Indigenous Technical Knowledge places a strong emphasis on the cultural values within a community and encompasses the technologies that farmers have developed over generations through experimentation and learning from their mistakes. These technologies are specifically tailored to adapt to the local agro-climatic and social conditions prevailing in the community (VenkataRamaiah and Rama Raju, 2004). Consequently, indigenous communities worldwide are facing on going challenges in preserving their rights, traditions,

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and invaluable knowledge amidst these changes (Sultana *et al*., 2018). Given this context, it is logical to anticipate that the nature and dynamics of agricultural production have undergone transformations over time. Concerns have arisen regarding the long-term sustainability of the current food production system. Accumulating evidence indicates that although capital and technology-intensive farming systems have demonstrated high productivity and competitiveness, they also give rise to a range of economic, environmental, and social issues. On the other hand, indigenous knowledge, derived from agro-ecological and ethno-ecological approaches, highlights that these systems are characterized by productivity, sustainability, ecological soundness, and alignment with the social, economic, and cultural aspects of farmers (Singh and Sureja, 2008).

MATERIALS AND METHODS

The study was conducted in Anjaw district of Arunachal Pradesh during the period of 2021-22. The research design followed for the study was descriptive and multistage purposive cum random sampling design. For the study Anjaw district was purposively selected to ensure comprehensive data representation, encompassing all four blocks in the study. 11 villages were randomly selected from each block, with a sample size of 220 respondents from a total of 44 villages. An interview schedule was prepared based on the objectives set for the study. Primary data was collected from the respondents through personal interview and group discussion. For drawing valid conclusions, the data's were processed, classified, tabulated and systematically analyzed using percentage, arithmetic mean, and standard deviation. For measuring constraints for the study Garrett's Ranking Technique was used. With the help of Garrett's table, the per cent position estimated is converted into scores by referring to the table

$$\text{Per cent position} = \frac{100\,(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given for the i^{th} variable by the j^{th} respondents

N_j = Number of variable ranked by the respondents

RESULTS AND DISCUSSION

Table 1 depicts the status of ITK practitioners in respect of their socio-economic characteristics. Majority (57.72 %) of the respondents belonged to the category middle age group of 38-60 years (Laldampuii *et al.,* 2023). It also reveals that majority (60.91 %) of the respondents were male respondents and majority (68.64 %) were found to be illiterate (Sharma *et al.,* 2023). It was also found that majority (68.63 %) were living as joint family. Majority (61.36 %) of the respondents belonged to the medium sized family of 5 to 8 members. Majority (61.81 %) of the respondents were under the category of medium farming experience of 13 to 27 years. Respondents with medium land holding category of 0.9 to 2.73 acres formed the major segment (74.54 %). Majority (77.28%) of the respondents were under farming alone category. Majority of the respondents (88.63 %) were under medium annual income category of Rs. 0.41 lakh to Rs. 3.21 lakh. Majority of the respondents (77.73 %) were under medium farm income category of Rs. 0.70 lakh to Rs. 1.72 lakh.

The data regarding major constraints faced by the ITK users in practice of indigenous technical knowledge in agriculture were identified based on the available literature, opinion of the respondents, and expert suggestions. In this study a total seven major constraints were selected and ranking was done following the Garett ranking method.

From Table 2 it can be depicted that "availability of items and resources as substitute for tools and implements and farm produce" from market scored highest total Garret score of 13655 and a percentage of 62.06, thus making it rank first among all the constraints identified. It was reported that easy availability of modern items and resources lead to shift away from traditional practices, including the use of ITK. This occur because they may be perceived as easier to use and more efficient than traditional ones. "Shift from agriculture to horticulture crops" was ranked as the second most important constraint as reported in the study area. It scored a total Garret score of 12475 and percentage of 56.70. Introduction of horticultural cash crops has led to gradual decrease in area under traditional agricultural practices associated with indigenous knowledge systems. "Ignorance of youths towards practice of indigenous technical knowledge" ranked the third most important constraint with total Garret score of 12427 and a percentage of 56.48. Cultural shift leads to decrease in the transmission of ITK from one generation to the next. "Traditional agriculture gives lower production and lower income" ranked as fourth major constraint as reported by the respondents in the study area. The total Garret score for the statement was 10902 and percentage was 49.55. Lack of knowledge and awareness about improved practices limits their production and hence leads to low-income generation. "Youths engaged in education related activities" ranked as fifth major constraint with total Garret score of 9556 and a percentage of 43.43. As younger generations engage more with activities related to education and allied livelihood components, they become detached from traditional methods of learning such as the transmission of traditional knowledge orally about the village ecosystem, thus, creating a gap for learning. "No proper strides taken to preserve and document indigenous technical knowledge" ranked as sixth major constraint with total Garret score of 9324 and percentage of 42.38. As most of the respondents were illiterate, they may not have access to the technology or resources necessary to document ITK in written format, also lack of incentives and recognition for farmers to document ITK would discourage them from doing so. "Traditional agriculture is labour intensive" ranked as

seventh major constraint with total Garret score of 9101 and percentage of 41.36. Familiarity with labour intensive nature of traditional agriculture, has been a part of their farming practices for many years, this reason makes it least important among all the constraints.

Easy availability of modern items, labour intensive nature, low production and income, poor documentation and ignorance of youths has led to gradual decrease in use of ITK enrooted to the culture. Integrating the documented ITKs in the education curriculum, collaborative efforts with scientists, ITK practitioners, and involving local communities and organizations, can foster a sense of ownership and pride in ITK, contributing to its preservation and transmission to future generations.

Table 1. Socio economics characteristics of the respondents N=220

Sl. No.	Variables	Category	Frequency	Percentage	Mean	SD
1.	Age	Middle age (38-60)	127	57.72	48.51	11.97
2.	Gender	Male	134	60.91		
3.	Education	Illiterate	151	68.64		
4.	Family type	Joint	151	68.63		
5.	Family size	Medium (5-8)	135	61.36	6.09	2.62
6.	Farming experience	Medium (13-27)	136	61.81	19.74	7.99
7.	Operational land holding	Medium (0.9-2.73)	164	74.54	1.77	0.97
8.	Occupational status	Farming alone	170	77.28		
9.	Annual income	Medium (Rs. 0.41 - Rs. 3.21 lakh)	195	88.63	1.81	1.41
10.	Farm income	Medium (Rs. 0.70- Rs.1.72 lakh)	171	77.73	1.21	0.52

Table 2. Constraints faced by the ITK users in practice of indigenous technological knowledge in agriculture

Constraints	Garret Score	Percentage	Rank
Traditional agriculture is labour intensive	9101	41.36	VII
Traditional agriculture gives lower production and lower income	10902	49.55	IV
Shift from agricultural to horticultural crops	12475	56.70	II
No proper strides taken to preserve and document ITKs	9324	42.38	VI
Ignorance of youths towards practice of ITKs	12427	56.48	III
Availability of items and resources as substitute for tools & implements and farm produce from market	13655	62.06	I
Youths engaged in educational related activities	9556	43.43	V

REFERENCES

Borthakur, A. and P. Singh, 2012. Indigenous Technical Knowledge (ITK) and their Role in Sustainable Grassroots Innovations: An Illustration in Indian Context. In Proceedings of International Conference on Innovation & Research in Technology for Sustainable Development, pp.38-42.

Lalampuii, J. Longkumer, T. Longchar, M. N.Odyuo and Sashilila, Ao, 2023. Status of grape production practices in Champhai district, Mizoram, India. J. Soils and Crops. **33** (2): 253-257.

Nagi, Thejanei, Mary N. Odyou and J, Longkumer, 2023. Inventory of Indigenous Technical knowledge and extend usage of field implements of Angami tribes, Nagaland, India. J. Soils and Crops. **33** (1): 85-89.

Sharma, Vicky, J. Longkumer, N. O. Mary, Sentinungshi and Sanjoy Das, 2023.Constraints in Ginger Cultivation by Farmers of West Garo Hills District of Meghalaya. Int. J. Econ. Plants.**10** (3):252-255.

Singh, R. K. and K. A.Sureja, 2008.Indigenous knowledge and sustainable agricultural resources management under rainfed agro-ecosystem.Indian J. Trad. Know. **7**(4): 642 – 654.

Sultana, R., N.Muhammad, and A.K.M. Zakaria, 2018.Role of Indigenous Knowledge in Sustainable Development. IJDR.**8** (2): 18902 – 18906.

Venkata Ramaiah, P. and K. V. Rama Raju, 2004.Blending of indigenous technologies with judicious use of external inputs for sustainable agriculture development. In: Peoples wisdom (ed. S. N. Gosh), National council of development communication, Sundarpur, Varanasi, pp. 249-253.

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