

<https://doi.org/10.33472/AFJBS.6.6.2024.6006-6013>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Agricultural Information Transfer in Tribal Areas of North-Eastern India

Sanju Saha¹, Lalichetti Sagar², M. Devender Reddy³

¹Department of Agricultural Extension Education, M.S.Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha -761211
Email: sahasanju111@gmail.com

²Department of Agronomy and Agroforestry, M.S.Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha -761211
Email: lalichetti.sagar@cutm.ac.in

³Dean, M.S.Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha -761211
Email: devender.reddy@cutm.ac.in

Article Info

Volume 6, Issue 6, June 2024

Received: 18 April 2024

Accepted: 29 May 2024

Published: 22 June 2024

doi: [10.33472/AFJBS.6.6.2024.6006-6013](https://doi.org/10.33472/AFJBS.6.6.2024.6006-6013)

ABSTRACT:

India has the world's highest concentration of tribal people (8.2%), with the North East area accounting for 8.55% of the tribal population of India. Of the seven states in Northeast India, in four states the majority of the population is tribal: Mizoram (94.5%), Nagaland (89.1%), Meghalaya (84.9%), and Arunachal Pradesh (64.2%). Further, even after continuous efforts of extension organisations, 60% of the farmers do not access any source of information for advanced agricultural technological information, resulting in a huge adoption gap. To tackle this issue, understanding the most efficient source of information transfer in the aforementioned region is imperative. In light of the above facts, this comprehensive review has been conducted focusing on the dissemination of knowledge, adoption of innovative practices, and empowerment of local communities. The key insight drawn from this study was that in Assam 75% of the agricultural information was mainly transferred through television. Similarly, in Mizoram and Manipur agricultural information was transferred to the tribal community through television in the tune of 50.91% and 63.64% respectively. On the other hand in Meghalaya(71.60%) and Tripura(78.75%), mobile phone was found to be the most impactful medium for information transfer. Therefore, it can be safely concluded that mobile and television were two major sources of information transfer in Northeast India.

Keywords: Agricultural information, Tribal of Northeast region, ICTs

© 2024 Sanju Saha, This is an open access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made

1. Introduction

The area in India's northeast is bordered by Bhutan, Tibet, China, Myanmar, and Bangladesh. It is connected to West Bengal by a long, narrow passageway in the west. North Eastern India makes up more than 7% of India's total land area, covering an area of 255,000 square kilometres (Pradhan, 2008). The North-Eastern States of India which includes 7 state Arunachal Pradesh, Assam, Nagaland, Manipur, Mizoram, Tripura, and Meghalaya that make up the "seven sisters" of northeastern India which is characterized with India's northeast, one of the most culturally diverse regions in the world (Dikshit, 2014).

India has the world's highest concentration of tribal people (8.2%), with the North East area accounting for 8.55% of the tribal population. This region is the homeland of over 145 tribal communities, of which 78 are higher categories, each with a population of over 5000 people. Lusai, Kuki, Garo, Khasi, Jaintia, Mikir, Naga, Kuki, Mikir, Garo, Khasi, Jaintia, Chakma, Garo, Khasi, Kuki, Lusai, Meities, Pangals, Lalung, Hajong, Meities, Pangals, Naga tribes, Kuki, etc. are some of the prominent tribal communities among them (Paltasingh and Paliwal, 2014). There are four states out of the seven where the majority of the population is tribal: Mizoram (94.5%), Nagaland (89.1%), Meghalaya (84.9%), and Arunachal Pradesh (64.2%) (Census 2011).

The states of the northeast are frequently portrayed as a homogeneous entity inhabited by tribal communities, despite India these states share certain common issues such as ethnic unrest, poor agricultural production, insurgency, immigration, drug trafficking and communication gaps (Hatiboruah, 2022). The Government of India is promoting different plans and projects to be conducted in these states to improve the socioeconomic condition of impoverished farmers.

The Indian Council of Agriculture and Research, New Delhi is providing a special budget/funding to transfer useful technologies to the North- Eastern States in order to improve the agriculture system and crop productivity, as these states are one of Asia's most ethnically and linguistically diverse regions, with distinct cultures and traditions (Malik et al., 2020). The majority of ICT initiatives in India are implemented in the socio-economically developed states. There isn't an ICT project at the village level in any of the seven North East Indian states that are inhabited by tribals. The Ministry of Information Technology, Government of India, established Community Information Centers at all head offices of 487 blocks in 79 districts of North-East India, taking into account the remoteness of the area (Raj 2008). In this paper, an effort has been made to identify the ways through which the agricultural information is communicated and received by the farmers in tribal areas of northeast India.

2. Significance of Information Transfer Technology in Agriculture

I. Role of information in agricultural development - Technology has played a significant role in improving agricultural practices in India. Information and communication have always been important in agricultural growth. In view of the fact that rural people practice farming, livestock rearing, and catching fish, they need information. They also want information on input costs and market prices for their products in local and distant markets. They also need education-related information for their family members. Land records, birth and death certificates, different rural development programmes, and health service-related information are wanted by rural people (Advance in Extension Education and Rural Development book). ICTs are a wide category that encompasses an increasing number of technologies used for communication assistance and information processing. They include, among other things, technology for cultivation, storing, processing, transferring, and displaying information in

any format (speech, data, text, and picture), as well as computers, the Internet, CD-ROMs, email, phones, radios, TVs, video, and digital cameras (Chatterjee and Nath, 2015). Farmers can benefit from radio and television broadcasts of seasonal crop information and weather forecasts (Dutta and Anand, 2023), (Baruah et al., 2021).

II. Challenges faced by tribal communities in agricultural information transfer

Northeast India is well-known for its varied and difficult topographical landscape, which includes hills, mountains, and deep forests. This can stymie the development of a strong communication infrastructure, making it harder to construct dependable and quick information transfer systems (Agrawal and Dixit, 2022). Also, some parts of Northeast India may have limited access to contemporary communication infrastructure, such as high-speed internet, which might stymie information movement. The main obstacle to information sharing in this area is the frequency of natural disasters like earthquakes and floods, which can destroy the current communication infrastructure and make it difficult to set up trustworthy systems. The majority of the villages in this area are tribal, and they are distinguished by a rich cultural heritage that includes many different ethnic groups and languages. This heritage can make it difficult to design unified information transfer systems that accommodate population-wide language and cultural variances. There is a significant technological divide among remote tribal agricultural communities due to a lack of technical manpower, poor transportation and communication infrastructure, a lack of funding for technology transfer, and inadequate infrastructure. Agriculture exhibits low, unpredictable productivity due to tribal farmers' lack of access to new technology information, resulting in food insecurity and offering major developmental issues to policymakers (Raj, 2008), (Singh et al., 2017).

3. Agricultural Information Sources

Farmers have access to different information sources based on the type of activity and services they provide. Information sources are instruments used by information carriers to satisfy extension workers' information requirements. Information sources are quite diverse and can be found in both print and non-print formats (Ajuwon and Odeku 2012). Print includes publications such as books, magazines, technical reports, government papers, pictures, maps, bibliographies, indexes, abstracts etc. It may also be in digital format. That include audiovisual, multimedia, microfilms, electronic books, journals, images, texts/records from the internet, online documents, and more. These data sources are available online, in libraries, and through human archives (Yusufu et al., 2016) and agricultural data are categorized into the following groups.

Technological information: Such data is made available through research and development programmes conducted at academic institutions, private agricultural research companies, agricultural colleges, and agricultural research institutes.

Commercial information: This category's content provides insight into how to promote agricultural products to maximize earnings.

Social information: This includes background data, training conducted in various communities, information on customary farming techniques, local customs, norms, and values, as well as information on labour availability, etc.

4. Information Communication Technologies (ICTs) in Agriculture

ICT also encompasses all of the technological tools used to manage information and enable communication. The ICTs are a category of electronic technologies that include a wide range

of media such as telephones, fax machines, TVs, and radios. Among the newer ICTs include the Internet, e-mail, computers, smartphones, digital cameras, databases, and portals . Farmers are receiving more and more information through ICTs. Agriculture-related content is included on both TV and radio shows (Anonymous, 2023).

Table 1: Distribution of respondents based on information source in Assam (N = 300)

| Sl. No. | Information Source | Percentage use |
|---------|----------------------------|----------------|
| 1. | Television | 75% |
| 2. | Radio | 52.7% |
| 3. | News Paper | 48.3% |
| 4. | Computer & Internet | 26.1% |
| 5. | Mobile phone with Internet | 13.7% |

Source : Das and Senapati, 2017

In Assam, of the 300 farmers whom data was collected, 75 per cent of farmers use television for their agriculture information because it provides information related to farming practices, pest management, crop care, and market updates. Also, 52.7 per cent of people use the radio and 13.7 per cent use the mobile phone with internet for their agriculture information transfer. The reason for using the internet frequency is low because Assam is having mainly a rural areas that often lack robust internet connectivity due to geographical isolation, hilly terrain, and inadequate infrastructure (Das & Senapati 2017, Saravanan 2012).

Table 2: Accessibility of ICT among farmers in Meghalaya (N= 120)

| Sl. No. | Information Source | Percentage use |
|---------|--|----------------|
| 1. | Mobile | 71.60 |
| 2. | Television | 50.00 |
| 3. | Radio | 18.30 |
| 4. | Information Kiosk / Common service centres | 25.83 |
| 5. | Internet | 12.50 |
| 6. | Computer | 5.00 |

Source: Syiem and Raj, 2015

A survey on the availability and accessibility of ICTs among the 120 farmers of Meghalaya state revealed that all the farmers had mobile phones. Overall, the mobile phone was regarded as the most frequently used ICT tool (71.60%) among the farmers using it very frequently. This revealed that the use of mobile phones is expanding at a greater pace in the state. In addition, Meghalaya states 24% of farmers use television and 28 per cent of the Common service centres. It was observed that the use of radio is lower for agricultural information compared to mobile phones and television since the degree of availability and accessibility of ICTs is also lower when compared to other ICTs. Internet and its applications are still being used rarely by a few of the farmers who are young and educated (Mascarenhas 2010, Sife et al.,2010 and Syiem, & Raj 2015).

Table 3: Distribution of information sources for farm information in Mizoram (N= 110)

| Sl. No. | Information Source | Percentage use |
|---------|--------------------|----------------|
| 1. | Mobile | 16.36 |
| 2. | Television | 50.91 |
| 3. | Radio | 0 |

| | | |
|----|---------------|-------|
| 4. | News Paper | 34.45 |
| 5. | Farm magazine | 19.09 |

Source: Nath et al.,2023

The majority of the farmers (50.91 per cent) of the 100 farmers in Mizoram receive farm information from television followed by 35.45 per cent from newspapers and 16.36 per cent by mobile phone. It might be due to the remoteness of the location. In summary, television serves as a valuable channel for sharing agricultural knowledge and helping farmers stay informed about practices, innovations, and challenges. To enhance television reception, establishing booster stations in areas like Mizoram could further improve information dissemination. Also, Mizoram state that 19.09 per cent of 110 farmers read farm magazines is the information source and 34.45 per cent of their information through the newspaper (Nath et. al., 2022 and Nath et al.,2023).

Table 4: Distribution based on their information sources in Tripura (N= 240)

| Sl. No. | Information Source | Percentage use |
|---------|--------------------|----------------|
| 1. | Mobile | 78.75 |
| 2. | Television | 54.17 |
| 3. | Radio | 0 |
| 4. | News Paper | 14.17 |

Source: Das & Majumder 2022

In Tripura state, 78.75 per cent of 240 farmers use mobile phones as mass media information sources. Further, 54.17 per cent of 240 farmers use television as their information source and 14.17 per cent of 120 farmers read the newspaper for agricultural information. The independent variables like Education, Size of land holdings, Extension contact, and Farming experience had positive and age had a negative and significant association with the dependent variable 'information sources utilization' at a 1 per cent level of probability. Farmers who have higher annual income and high training exposure have higher utilization of information sources (Chavai et al.,2015, Marak and Bandyopadhyay 2015,).

Table 5: Distribution of respondents based on information source utilisation for farm information in Manipur (N= 110)

| Sl. No. | Information Source | Percentage use |
|---------|------------------------|----------------|
| 1. | Radio | 50.00 |
| 2. | Television | 63.64 |
| 3. | Farm magazine/journals | 20.91 |
| 4. | News Paper | 39.09 |
| 5. | Telephone call | 34.55 |

Source: Nath et al., 2022

In Manipur, the majority of the respondents (63.64 per cent) received information from television followed by radio (50 per cent) and newspaper (39.09 per cent) as a mass media source of information. From other mass media sources of information, viz., farm magazines or journals and also 20.19 per cent of information farm magazines or journals (Nath et al., 2022).

5. The following are the reasons for the successful adoption of agriculture information.

I. A greater need for information

Growing, commercialized production units and declining terms of trade are driving a continuous structural adaptation process in agriculture (Ministry of Agriculture and Rural Development, 1999). Greater crop diversity and larger production units necessitate more advanced data management and decision-supporting tools.

II. Timely information

When information is not accessible at a critical moment, a decision is made on the basis of an alternative scenario that exists at the moment. ICT makes it possible to get information and data when needed. This can be attributed to how easy it is to enter data and extract reports.

III. Farmers that get information can become more aware of and confident in new technology since they can observe proof of their efficacy and contextual fit (Kalaitzandonakes et al.,2018).

IV. Farmers may obtain trustworthy and pertinent information from a variety of sources, including extension agencies, research institutions, NGOs, the media, and other farmers, which can lower the cost of learning and experimentation for them (Jack and Tobias, 2017)

6. Suggestions

The states of the northeast are in remote locations, and although the farmers have a strong willingness to learn new technologies, their education level creates a barrier to acquiring knowledge. Farmers require a specific degree of education related to their occupations. These areas are to be provided with easily accessible network services. It is necessary to develop ICT tools in the state which are important for farmers and provide regular training along with awareness programmes. Farmers should have access to free or inexpensive local language SMS services from the government. In these remote locations, uninterrupted electrical facilities have to be made accessible. Every rural region of the state should have greater internet access so that the adoption of technology can be encouraged by providing high-quality audiovisual support. In the tribal regions of northeast India, where agriculture is the main sector, women are vital to the agricultural sector. Improving traditional farming techniques helps women become more productive at a cheaper cost, which increases their income and standard of living. The government of the northeast focus on improving the women's skill development programme.

7. References

1. Adio, E. O., Abu, Y., YUsuf, S. K. and Nansoh, S. (2016). Use of agricultural information sources and services by farmers for improve productivity in Kwara State. *Library Philosophy and Practice*, 1456, 1â.
2. Agrawal, N., & Dixit, J. (2022). Topographic classification of North Eastern Region of India using geospatial technique and following seismic code provisions. *Environmental Earth Sciences*, 81(18), 436.
3. Ajuwon,G.A. and Odeku, E.L (2012) Module One Information Sources Ibadan: African Journals Online Retrieved 20/6/2012 from<http://ajol.info>
4. Anonymous. (2014). *Advance in Extension Education and Rural Development book*

5. Anonymous. (2023). Unraveling the Role of ICT in Agriculture: Harnessing Modern Technology for Farming. Available at: <https://www.cropin.com>
6. Baruah, A. and Mohan, G. M. (2021). Exploring the ICT preferences of personnel from agricultural extension organizations in the northeastern region of India. *Asian Journal of Agriculture and Development*, 18(1), 106-120.
7. Chatterjee, S. and Nath, A. (2015). The role of information and communication technologies in rural development in India. *International Journal of Emerging Technology and Advanced Engineering*, 5(3), 251-259.
8. Chavai AM, Makar HB, Barange PK (2015) Adoption of potato production technology by the farmers of Maharashtra. *J Agric Res Tech* 40(1): 94-97.
9. Das, R., & Majumder, S. (2022). Identification of different information sources utilized by the selected horticultural growers of Tripura.
10. Das, T. K., & Senapati, C. (2017). An ICT-Based Framework for Agricultural Development in Rural Assam.
11. Dikshit, K. R., Dikshit, J. K., Dikshit, K. R. and Dikshit, J. K. (2014). Population of the north-eastern states of India. *North-East India: Land, People and Economy*, 421-456.
12. Hatiboruah, D. (2022). The Northeast India: Colonial Construct of Identity. In *Tribe, Space and Mobilisation: Colonial Dynamics and Post-Colonial Dilemma in Tribal Studies* (pp. 151-165). Singapore: Springer Singapore.
13. International Fund for Agricultural Development (2003). The role of Information and Communications Technologies, IFAD Side Event, World Summit on the Information Society, Geneva, December
14. Kalaitzandonakes, N., Carayannis, E. G., Grigoroudis, E. and Rozakis, S. (2018). Introduction: innovation and technology transfer in agriculture. From Agriscience to Agribusiness: Theories, Policies and Practices in Technology Transfer and Commercialization, 1-10.
15. Marak BR, Bandyopadhyay AK (2015) Analysing the factors contributing towards technological gap of scientific rice cultivation in west Garo Hills District of Meghalaya. *J Crop Weed* 11(1): 124-132.
16. Mahajan V., E. Muller and F.M. Bass. (1990): New Product Diffusion Models in Marketing: A Review and Directions for Research. *Journal of Marketing*, 54:1-26.
17. Mascarenhas, O. (2010) Broadening the agenda for ICTs for poverty reduction: PICTURE-Africa. *Information Technologies & International Development*, 6: 37-44
18. Malik, M., Sehgal, M., Kanojia, A. K. and Singh, R. V. (2020). Use of information and communication tools for north-Eastern region of India: A paradigm shift. *Journal of Pharmacognosy and Phytochemistry*, 9(4S), 595-598.
19. Nath, Dipak, Diana Sagolsem Diana, Chongtham, Sunilkumar, Ananad Rupart, et al. Communication sources for farm information and involvement in homestead activities by the women beneficiaries of PMVDY in Sikkim. *The Pharma Innovation Journal*. 2022;SP-11(8):1703-1706.
20. Nath, D., Lalhmingsanga, L., Sawant, C. G., Kumar, A., Sadhukhan, R., & Sharma, P. R. (2023). Communication sources for farm information and involvement in homestead activities by the women beneficiaries of PMVDY in Mizoram.
21. Nath, D., Phurailatpam, S., Khangjarakpam, G., & Sharma, K. S. P. R. (2022). Communication sources for farm information and involvement in homestead activities by the women beneficiaries of PMVDY in Manipur.
22. Paltasingh, T. and Paliwal, G. (2014). Tribal population in India: regional dimensions & imperatives. *Journal of Regional Development and Planning*, 3(2), 27-36.
23. Pradhan, R. P. (2008). Quality of life in north-eastern India: The totally fuzzy analysis. *Social Change*, 38(2), 163-183.

24. Raj, S. (2008). e-Arik: ICTs for agricultural extension services to the tribal farmers. IAALD AFITA WCCA.
25. Rogers E.M. (1995): Diffusion of Innovations – 4th Edition, New York: The Free Press
26. Saravanan, R. (2012, September). ICTs for agricultural extension in India: policy implications for developing countries. In Proc. of 8th Asian Conference for Information Technology in Agriculture, AFITA (pp. 1-11).
27. Sife, A., Kiondo, E. and Lyimo-Macha, J. G. (2010) Contribution of mobile phones to rural livelihoods and poverty reduction in Morogoro Region, Tanzania. The ElectronicJournal on Information Systems in Developing Countries 42 (3): 1-15.
28. Singh, S., Ahlawat, S. and Sanwal, S. (2017). Role of ICT in Agriculture: Policy implications. Oriental Journal of Computer Science and Technology, 10(3), 691-697.
29. Syiem, R., & Raj, S. (2015). Access and usage of ICTs for agriculture and rural development by the tribal farmers in Meghalaya state of North-East India. Agrarinformatika/Journal of Agricultural Informatics, 6(3), 24-41.