

INFORMATION LITERACY AMONG BETEL NUT FARMERS IN MEGHALAYA: A REVIEW OF LITERATURE

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<https://doi.org/10.37602/IJEBSSR.2025.3404>

ABSTRACT

This paper presents a review of the existing literature on the information literacy of betel nut (areca nut) cultivators, with a particular focus on those in Meghalaya, India. It explores the concept and significance of information literacy in the agricultural context and examines studies related to rural farmers' information needs and information-seeking behavior. The literature reveals that cultivators commonly seek information on sowing techniques, pest and disease management, weed control, crop yield enhancement, use of fertilizers, agricultural tools, and market access. Preferred information sources include informal networks such as friends, neighbors, elders, and community leaders, as well as mass media like television and radio. Formal sources such as libraries are less frequently consulted, although the literature highlights their potential in fostering information literacy among farmers. Several challenges hinder the effective role of libraries in rural areas, including inadequate infrastructure, political instability, high rates of illiteracy, limited availability of resources in local languages, shortage of trained professionals, and insufficient funding. While research on betel nut cultivation in Meghalaya exists, there is a notable gap in the literature specifically addressing the information literacy levels of these cultivators. This review underscores the need for further research and targeted interventions in this area.

Keywords: Information Literacy, Betel Nut Cultivation, Rural Farmers, Meghalaya, Agricultural Information, Information-Seeking Behavior, Library Access, Knowledge Systems.

1.0 INTRODUCTION

In the era of the knowledge economy, information plays an increasingly vital role in every sphere of the development process. As a new paradigm for lifelong learning, information literacy (IL) has become a key subject of interest and discussion across a wide range of scientific and professional literature. Since the 1980s, with the rapid and widespread adoption of computer-centered information technologies, the significance of information literacy has gained broader recognition (Bachhav, 2012). The concept of information literacy (IL) was first introduced by Mr. Paul Zurkowski, president of the Information Industry Association of the United States, in 1974. He described information literacy as “the competence to use information, study information technology, and mold information solutions to problems” (Loertsue, 1999). According to John (2005), “IL is the ability to identify information needs, seek out resources to meet those needs, and then analyze, evaluate, synthesize, and communicate the resulting knowledge. It includes an ability and willingness to understand the

value of information, to recognize entrepreneurial opportunities in the sector, to locate, evaluate, and select appropriate information sources, and to translate information into knowledge to be used productively, even strategically. It is usually said that an information-literate society is a necessary precondition if the promised returns on an investment in information and communications technology are to be realized.” The current era has rightly been called the Information Age, as information has become one of the most critical elements in societal progress. In the agricultural context, timely and relevant information enables farming communities to make informed decisions that support sustainable agricultural growth. The use of information in the agricultural sector enhances productivity in various ways—by providing data on weather trends, best farming practices, and timely access to market information, farmers are empowered to decide what crops to plant, where to sell their produce, and where to buy necessary inputs (Bachhav, 2012). India, being an agriculture-based country, relies heavily on farming and related activities, which account for a substantial portion of its GDP and employment. The agricultural sector employs about 65% of the workforce, contributes 27% to the GDP, and makes up 21% of total exports while supplying raw materials to several industries. Thus, information serves as a powerful tool in meeting agricultural needs, and when used effectively, it can potentially transform the nation's economy (Malhan & Rao, 2007).

1.1 Concept of Information Literacy (IL)

To be information literate, a person must be able to recognize when information is needed and possess the ability to locate, evaluate, and effectively use the required information. Information-literate individuals are those who have learned how to learn (American Library Association, 1995). Information literacy is directly linked to critical thinking skills and emphasizes activities such as selection, rejection, evaluation, organization, topic definition, and question formulation (Connell & Franklin, 1994).

The term "Information Literacy" was coined by Zurkowski (1974) during his tenure as president of the Information Industry Association. Zurkowski's vision was prophetic. As early as 1974, he observed that people were increasingly encountering a wide range of information-seeking procedures, which resulted in a "multiplicity of access routes and sources" to satisfy their information needs. However, he noted that these new access points were "poorly understood and vastly underutilized." He laid the groundwork for the future by stating, "More and more of the events and artifacts of human existence are being dealt with in information equivalents, requiring retraining of the whole population." To clarify his concept, Zurkowski wrote:

"People trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to their problems."

The US National Commission on Library and Information Science, in the UNESCO-sponsored Meeting of Experts on Information Literacy held in Prague, described information literacy as encompassing "... knowledge of one's information concerns and needs, and the ability to identify, locate, evaluate, organize, and effectively create, use, and communicate information

to address issues or problems at hand; it is a prerequisite for participating effectively in the Information Society and is part of the basic human right of lifelong learning" (US National Commission on Library and Information Science, 2003).

1.2 Role of Information in Agricultural Practices

The role of information in any society, community, or organization cannot be overemphasized. Information is very important in all phases of life. Communication is the transfer of a message (personal knowledge) from one person (the "Source") to another (the "Receiver") through a medium (Idiegbeyan-Ose Jerome & Theresa, 2009). Information is very useful in decision-making; its availability enables individuals, groups, or organizations to make rational decisions and reduce their level of uncertainty.

According to Idiegbeyan-Ose Jerome & Theresa (2009), "the farmers have to be introduced to additional information regarding soil preparation, weed and pest control, climatic conditions, how to arrange for seed, pesticides, and bags for harvesting, and how to go about borrowing money and paying back loans, etc. If implemented properly, these factors may lead to an increase in productivity and subsequently rapid development of the livelihood of farmers."

Information has consistently been a significant element in the development of human society and has, over a long period of time, shaped the way in which we think and act (Meyer, 2005). It is crucial for increasing agricultural production and improving marketing and distribution strategies (Oladele, 2006). Information also opens windows for sharing experiences, best practices, sources of financial aid, and access to new markets. By the same token, it enables farmers to make informed decisions regarding production, marketing, and managing their lives successfully to cope with everyday problems and realize their opportunities (Matovelo, 2008; Idiegbeyan-Ose Jerome & Theresa, 2009). As discussed by Aina et al. (1995), information has a vital part to play in improving and sustaining the agricultural production of any country or nation.

Ochieng (1999) also asserts that access to information is a vital tool for empowering individuals to make informed decisions or take actions for themselves or for community development.

Durutan (1999) stated that agricultural producers already recognize the importance and value of information; all they need is timely access in order to improve agricultural production. According to Camble (1994) and Sturges & Neill (1990), a lack of adequate and relevant information has negatively impacted many development processes, including agriculture. Ferris (2005) adds that access to accurate, timely, and appropriate information enables farmers to make better decisions about what to produce, when to produce, and where to sell it—more so than those who do not have such information. Similarly, Byamugisha et al. (2008) note that the possible benefits of using current agricultural information include improvements in farming techniques and knowledge on when to use manure or fertilizer, how to treat diseases, and which crops to plant.

Information centers should be established in rural areas and equipped with complete information and communication gadgets. Such equipment must include computers, internet access, local and wide area networks, radio and television sets, telephones, video and audio recorders, and libraries staffed with skilled professionals and information scientists. These

professionals would be responsible for capturing information and sending it to ministries of agriculture and other related organizations. This information can be repackaged into a form that is usable by non-literate and semi-literate farmers. These information centers would also benefit from resources like films, CDs, and audio and video cassettes that demonstrate agricultural practices from other parts of the world. With time, rural farmers could begin to apply this knowledge practically. Beyond agriculture-related information, the centers should also provide general information relevant to other aspects of rural life.

Internet facilities in rural areas are also very limited or nonexistent in some parts. Since the internet is a fast mode of disseminating information, it should be extended to rural areas where most farmers reside. This can be achieved by developing rural telecommunication infrastructure.

Information on market availability should also be made accessible to rural dwellers. When they become more involved in economic processes, the nation as a whole will benefit. To reinforce the importance of information accessibility, Kpakol (2007) discussed a newly introduced program called Village Economic Development Solutions (VEDS), initiated by the National Poverty Eradication Programme (NAPEP). Kpakol (2007) also emphasized that such initiatives could help stimulate economic activities.

The tendency to migrate to urban areas may be significantly reduced if rural populations gain access to useful information. In terms of marketing, traders would benefit from having access to information about buying and selling. Therefore, it is of paramount importance that services such as internet connectivity are extended to rural areas (Nabwowe, 2009).

2.0 INFORMATION NEEDS AND INFORMATION-SEEKING BEHAVIOUR OF FARMERS

Metei and Devi (2009), in their study, attempted to understand the information needs of individuals engaged in agricultural activities, particularly the farming community in rural areas of Manipur. They found that mass media such as radio, television, and newspapers were the major sources of knowledge and information for the majority of the rural poor in Manipur. Their study concluded that an agriculture information support system based on ICT applications is highly significant for the effective dissemination of agricultural information and technologies to the rural farming community.

Mohammad and Sunetha (2014) conducted a study on the agricultural information needs of farm women in North India. Employing a descriptive research design, they selected a sample of 120 farm women from eight randomly selected villages in Uttarakhand. The findings indicated that the women expressed a strong need for information regarding disease control/management, weed control/management, high-yielding variety crops, fertilizer requirements, use of improved farm implements, and marketing-related information. An appropriate Information Communication Strategy, the researchers noted, could be developed based on the observed patterns of information-seeking and sharing behaviors.

Their study also ranked the specific information needs of farm women. Weed and pest control ranked first, followed by seed treatment and rate (second), fertilizer requirement and application (third), land area and allocation (fourth), and decision about crops to be grown

(fifth). Other needs included processing (sixth), method of harvesting (seventh), time of harvesting (eighth), land preparation methods (ninth), irrigation/water requirements (tenth), storing (eleventh), and right time of sowing (twelfth). Sowing method and spacing received the lowest priority, with a weighted mean score of 2.55. They also found that the farm women had limited knowledge of modern farming practices.

According to Parvathamma and Pattar (2013), the rural community in Bellary district lacks awareness of the information they need and does not have access to reliable sources of information in familiar languages. This severely limits their potential to enhance productivity and income. These communities require a range of information—not only agricultural, such as seed varieties, weather updates, cultivation and harvesting methods, and marketing strategies—but also in areas such as health, food, education, politics, and financial assistance.

2.1 Sources of Agricultural Information for Farmers

An information source can be defined as an institution or individual that originates or disseminates a message (Statrasts, 2004). Varshney (2011) describes an information source as anything that provides knowledge to someone—ranging from observations, speeches, and documents to organizations, pictures, books, periodicals, and newspapers. The effectiveness of an information source is determined by its timeliness, accuracy, relevance, cost-effectiveness, trustworthiness, usability, exhaustiveness, and aggregation level (Statrasts, 2004). The choice of a particular source depends on various factors, including income level, farm size, geographical location, age, and educational background (Riesenberg & Gor, 1999).

Adhiguru et al. (2009), using data from the Indian NSSO 2003 survey, observed that small and marginal farmers accessed fewer information sources compared to medium and large-scale farmers. Other researchers—such as Ogboma (2010), Buba (2003), Meitei and Devi (2009), and Mtega and Benard (2013)—have identified information sources used by farmers as including newspapers, journals, bulletins, community leaders, and farmer groups.

A study by Daudu et al. (2009) reported that farmers accessed information through agricultural extension agents, posters, television, and radio. Similarly, the FAO (1997) revealed that fellow farmers, neighbors, and farmers' cooperative societies are commonly preferred sources of agricultural information.

Further findings by Daudu et al. (2013) in Nigeria emphasized that extension agents, friends, radio, and libraries were primary sources of information for farmers. Given that farmers prefer certain sources or channels over others, it is important to carefully assess the information needs before selecting the most effective channel.

Parvathamma and Pattar (2013) noted that friends, neighbors, and elders remain key sources of information, while television and radio are the most preferred channels for receiving agricultural updates. In Bellary District, libraries are not commonly used as information channels. However, the authors argue that rural libraries—if equipped with television and internet connectivity—could play a pivotal role in delivering information literacy to the villagers.

Oladeji (2011) emphasized that agricultural advertisements in newspapers are instrumental in creating awareness, boosting agricultural enterprises, and ensuring the broad dissemination of agricultural information. Such channels provide vital first-hand information to potential buyers and encourage industrial-level purchasing and storage. Agricultural cooperatives also serve as crucial platforms for enhancing information literacy and awareness among farmers, thus contributing to improved agricultural productivity and food security. The establishment of agricultural farm centers for town meetings—where librarians can present processed information tailored to farmers' needs—would further strengthen this effort.

Syiem and Raj (2015), in their study of East Khasi Hills and Ri Bhoi Districts in Meghalaya, found that most farmers were registered under various ICT initiatives, particularly mobile-based programs. These farmers predominantly used mobile phones to acquire agricultural information. Additionally, Chutia, Goswami, Nongkynrih, Das, and Rao (2014) highlighted the role of the Agricultural Planning and Information Bank—a joint initiative by the Central Government of India and the North East Space Applications Centre—as an essential platform for disseminating crucial agricultural information to farmers in Meghalaya.

2.2 Role of Rural Libraries in Imparting Information Literacy in Rural Areas

“Rural libraries and information centers could play a significant role in the socio-economic development of rural areas by providing information and communication services to rural people. To improve the quality of life and enhance the potential of rural people to participate in a knowledge-based society, there is a clear need for rural libraries. These libraries play a vital role in the spread of knowledge and information within rural communities. To benefit rural populations and support rural activities, rural libraries must be equipped with all the necessary facilities. By providing needed information, rural libraries help keep the knowledge of the rural community fresh and relevant. Thus, rural libraries are essential for uplifting rural communities” (Kumbar & Lamani, 2014).

Kantumoya (1992) suggested that for public libraries to provide effective community information service programs for their respective communities, they must assess the social, ethnic, and cultural setup of the people they serve. Libraries should plan in advance the form, language, and methods of disseminating information to individuals and groups; critically study community information programmes of public libraries in other developing countries; monitor government policies and legislation, interpreting them for the public when necessary; and liaise with government ministries, departments, and non-governmental organizations working in their communities. They should also build collections of books, journals, and other information sources relevant to their communities; develop pamphlets, booklets, and newspaper articles on subjects such as health, sanitation, agriculture, and civil rights; repackage relevant information from government bodies, mass media, and NGOs into formats suitable for rural people; and disseminate this information through displays, meetings, talks, demonstrations, films, slides, or other audiovisual presentations.

Vavrek (1995) recommended considering the nature of small and rural public libraries in the United States in light of the opportunities they provide for adult lifelong learning and pondering the future of collaborative services. The role of public libraries in lifelong learning involves factors such as (1) library financing; (2) the conservative nature of rural and small towns; (3) a

lack of academically trained staff in America's libraries; (4) trustee development; (5) the fact that typical rural public libraries have probably not conducted any form of community or user surveys; (6) despite the age of electronic access to information via various networks, rural libraries are still primarily perceived as places for books; (7) female library users outnumber males; (8) implications of technology for future planning; and (9) the provision of library and information services to Native Americans.

Small, Zakaria, and El-Figuigui (2004) stated that the role of community college librarians in curriculum development and support can be viewed as partners in the classroom, specialists, and facilitators in the use of information and retrieval of print media, as well as electronic/digital information environments. One major challenge facing information literacy (IL) instructors is to provide active learning strategies and experiences that motivate students to learn and apply IL skills. Hence, librarian support positively affects student motivation.

According to Dent (2007), rural community libraries have the potential to impact small-scale local economic development and offer local people ways to improve their lives. Abu (2014), in a study in Malaysia, found that the government has invested in public libraries intending to promote development, particularly in rural areas. Despite the increasing number of rural public libraries being built throughout Malaysia and providing various services, activities, and programs, previous research indicates these libraries are underutilized. Programs are often standardized and mostly limited to children, taking little account of local community information needs. "The Australian rural public libraries facilitate greater community participation and involvement, are more responsive to the needs of local communities, and provide support and assistance for lifelong learning and access to information literacy. Besides children, senior adults visit rural public libraries not just for reading—they meet, talk, share, and form connections with each other." (Abu, 2014).

According to Ajegbomogun (2015), information is the bedrock of knowledge development and essential for achieving societal growth. One of the most obvious trends recently has been the rapid growth of information that transforms economies and their structures. However, developing countries have struggled to keep pace with this global phenomenon. Lifestyles in much of the developing world have continued to deteriorate due to government insensitivity to citizens' plight, with many people suffering from poverty, debt crises, communal violence, diseases, food shortages, and malnutrition. This study focused on the library's role in developing information literacy and fostering societal growth. Ajegbomogun (2015) emphasized that "knowledge acquisition, preservation, access to information, and dissemination always enhance development and will continue to change the way people seek and use information." The study concluded that the application of IT across all economic sectors will encourage self-sufficiency in food production and rapid development among citizens.

Nwokocha and Chimah (2016) found that public libraries should coordinate their activities to avoid duplication and share resources to benefit more people. Rural residents need information on health, daily living challenges, occupational concerns, government operations, education, religious matters, and recreation. They recommended that librarians in public or community libraries use village squares and native languages to disseminate information on agriculture, government policies, and more.

Oméluzor, Oyovwe-Tinuoye, and Emeka-Ukwu (2017) found that in Delta State, Nigeria, libraries were unable to fulfill their roles adequately. The information needs that brought rural people to libraries were not met due to hindrances such as inadequate up-to-date materials, lack of awareness, illiteracy, language barriers, insufficient skilled personnel, and inadequate infrastructure and facilities.

Singh and Nazim (2008) noted that libraries played many important roles in past agrarian and industrial societies, although those roles were limited in scope. In the 21st century, libraries must perform pivotal roles in disseminating and sharing the culture of knowledge. In this age of knowledge, libraries should be repositories of all accumulated human knowledge and information. They must store all forms of material and information and disseminate them beyond geographical boundaries. Today's advanced information technology enables libraries to accomplish this immense task.

Bandyopadhyay (2008) found that public libraries in West Bengal offer services related to occupations, health and family welfare, jobs, and careers. These services are generally delivered through TV programs, audiovisual materials, information kiosks, and internet access to websites. Many sections of society have benefited, with increased participation in government schemes for women and rising literacy and work participation rates among tribal people.

According to Lamani and Kumbar (2014), rural libraries face various challenges in uplifting their communities. These include a lack of independent library buildings, political interference in establishing library buildings and personnel recruitment, non-professional staff, financial constraints, and a lack of interest among rural people in using library services. Lamani and Kumbar (2014) suggested that all concerned authorities should come forward to support the development of rural libraries.

2.3 Problems and Challenges Faced by Libraries in Rural Areas

Hildreth (2007) found that rural communities face distinct challenges compared to metropolitan areas. These challenges include isolation, low population density, limited mobility advantages, scarcity of financial resources, lack of expertise and human resources, personal familiarity, resistance to change and innovation, and the absence of ancillary services. Similarly, Kamba (2009) observed that the provision of information services in Africa has been dispersed, making access difficult—particularly for rural people who often lack the individual means to become literate due to factors such as illiteracy, age, poverty, or ill health caused by economic and informational poverty.

According to Real, Bertot & Jaeger (2014), the condition of public libraries varies significantly across a country, with the majority of rural public libraries often being in poor states. Many lack dedicated buildings, instead operating out of small thatched huts or sharing premises with other institutions. Their storage facilities are inadequate, and the stock of reading materials is limited. Compared to urban and suburban libraries, rural libraries have been relatively understudied and tend to lag behind in technology service offerings. However, the disparities are not solely due to weaker technological infrastructure. Rather, rural libraries

are constrained by lower staffing levels—though staff remain highly dedicated—and funding models that rely primarily on local revenues, limiting their ability to reach full customer service potential.

Salman, Mostert & Mugwisi (2014) examined issues affecting public library services in Nigeria, identifying challenges such as inappropriate policies, insufficient professional staff, inadequate facilities and services, and a lack of awareness and understanding of public library concepts, which result in underutilization by potential users. They suggest that user satisfaction diminishes over time, so the continuous introduction of new services is crucial to sustain high levels of patronage.

Anyalabechi & Udo-Anyanwu (2016) conducted a study on public library services and social well-being in Enugu State, Nigeria. Using a survey research design with structured questionnaires, the study found that respondents primarily use libraries for information, education, and social purposes. Although libraries provide reference materials, government publications, serials/journals, and textbooks, none of these resources are highly adequate. Furthermore, none of the libraries offer mobile library services. Users expressed high satisfaction with reprographic, reference, and extension services. The main challenges identified include inadequate resources, traditional library practices, lack of awareness, and poor reading culture. Based on these findings, the study recommended that the government prioritize library development, revitalize mobile library services, provide internet connectivity to facilitate global information access, and reduce dependency on government subvention.

Ghosh (2013) emphasized that quality information and understanding it are essential for developing information literacy. Ayup (2015), in his study of ICT in rural libraries of West Bengal, found that technological advancement has transformed the world into a global village and provided easier access to knowledge. However, traditional rural libraries face significant challenges in delivering proper information without up-to-date technologies. Out of 11 rural libraries surveyed, only 4 had computers, 3 had internet facilities, and none had advanced library software for service management. Key obstacles to ICT adoption include lack of infrastructure, political instability, illiteracy and low education levels, lack of skilled professionals, inadequate management support and funding, a passive role of rural information centers, and insufficient books and documents in local languages, which fail to attract native users. Ayup concluded that rural libraries should be emphasized not only as places for gaining knowledge but also as institutions that provide knowledge beyond their physical collections.

3.0 STUDIES ON AGRICULTURAL INFORMATION LITERACY

Knowledge is always regarded as the driving force behind agricultural development. Society's attention towards information and knowledge is steadily increasing, and people's demand for them is growing step by step. The blending of indigenous and scientific knowledge systems is vital for the sustainable intensification of agriculture (Gohain, 2017).

Agricultural information serves as essential data for decision-making and is a crucial resource that must be acquired and used to make informed decisions. As Tshbalala (2001) states, "Information is a powerful tool in addressing other agricultural needs, and if used appropriately, it can transform a nation's economy." Umali (1994) classified agricultural information into two broad groups: pure agricultural information and agricultural information

inherently tied to new physical inventions. Pure agricultural information includes any information that can be used without acquiring technology—such as self-standing advice on production techniques, farm management, marketing, processing, and community development. In contrast, agricultural inventions or technologies include agricultural inputs, management technologies to facilitate farm management, and marketing and processing equipment.

Effective dissemination of agricultural information to the farming community is essential for increasing agricultural production and ensuring food security for millions in the country. A well-planned information literacy program can help reach those previously unreached. Agricultural extension services and information literacy initiatives have traditionally received limited attention in agricultural projects and research, despite information being recognized as a key resource for improving agricultural production. Agricultural scientists and extension personnel can play a vital role in spreading agriculture-related information among farmers through various effective information literacy programs—such as organizing live demonstrations, TV and radio programs, and writing agriculture-related articles in newspapers (Gohain, 2017).

Zijp (1994) identified factors such as poor educational levels, low adoption of innovations, lack of skills, insufficient human involvement, and political and social barriers as reasons why information does not reach rural people. Similarly, Sokoya, Onifade, and Alabi (2012) observed that “interpersonal connectivity between farmers and agricultural extension agents enhances farmers’ information literacy, knowledge, and awareness of current farming trends, which boosts farming stages and ensures an abundant food supply. The importance of farmers’ information literacy cannot be overemphasized, as they produce what the nation needs to feed its population all year round.” According to Oladeji (2011) and Meitei (2009), using different methods to disseminate information to farmers—especially considering the limited manpower of agricultural extension agents—positively affects the level of farmers’ information literacy in rural and remote areas.

3.1 Studies on Agriculture Information Literacy in Northeast India

The economy of the North Eastern States (NES) remains predominantly agriculture-based, contributing about 20 percent in Manipur to 30 percent in Assam. While the potential for rural economic development through agriculture is vast, the sector has not progressed much compared to the rest of the country due to factors such as infrastructure bottlenecks, institutional weaknesses, and technological gaps (Dev and Datta Ray, 2006).

In the context of economic liberalization and globalization, agriculture in NES—with its diversity of plant species and climate—can produce a variety of commodities with high export value in regional and global markets. Since land holdings in NES are generally small, farmers should shift from subsistence farming to high-value crops like vegetables, fruits, and medicinal and aromatic plants. These crops require more labor and specialized cultivation knowledge, as well as support from modern technologies, cold storage, and marketing (Neog, 2006).

Farmers in the region need timely expert advice to become more productive and competitive. Because agricultural problems are better understood through information processing and decision support, the benefits of Information and Communication Technology (ICT) must be

made accessible to the farming community in the region. The Agriculture Planning and Information Bank (APIB) is one such initiative, providing single-window access to agricultural and allied sector knowledge useful to farmers, extension personnel, and planners (Chutia, Goswami, Nongkynrih, Das & Rao, 2014).

Planning and decision-making in agriculture differ from other sectors because production and consumption are controlled by many individual players and factors. Technologies like the Internet, satellite communication, Remote Sensing, and GIS offer new opportunities to connect people, obtain and disseminate information, and potentially revolutionize agriculture.

Modern agriculture is highly knowledge-intensive and depends on ICT support. It is hoped that ICT can reach the unreached and provide livelihood opportunities for unemployed rural youth (Nageswara Rao, 2004 and 2006).

To facilitate information access in rural areas using these technologies, NESAC, in collaboration with the Central Department of Agriculture and Cooperation and the Government of Meghalaya, decided to set up an Information Kiosk modeled after the APIB for the East Khasi Hills district, focusing specifically on agricultural development. The basic goal of APIB is to develop a reliable, updated, relevant, easily accessible, affordable, and readily available decision support system tailored to meet location-specific needs of various users (Chutia, Goswami, Nongkynrih, Das & Rao, 2014). The introduction and integration of such information systems are crucial for developing the agricultural information literacy of farmers in Northeast India.

A study by Gohain (2017) examined the roles of different stakeholders—including agricultural scientists, agricultural development officers, village-level extension workers, and voluntary organizations—in disseminating necessary information to farmers. The study also explored the various information channels farmers use in their own contexts and identified problems faced by farmers in accessing required information. It highlighted communication barriers and other drawbacks in the dissemination and accessibility of agricultural information. The study found that most farmers cultivate their own land and rely on information from family members, neighbors, local traders, and agricultural scientists, which they consider more reliable. “The role of extension personnel from the agriculture department is not prominent. On the other hand, frequent contact with agricultural scientists is difficult to establish” (Gohain, 2017).

4.0 BETEL NUT IN THE NATIONAL ECONOMY

Areca nut (*Areca catechu*), commonly known as betel nut, is believed to have originated in the Philippines or Malaysia and has since been widely cultivated in China, India, Bangladesh, Sri Lanka, and other countries. According to Dr. T.N. Prakash Kammardri (Kammardi, 2012), India is the world’s traditional areca-growing country.

At the time of partition in 1947, nearly half of the area under areca nut cultivation was lost to Pakistan. As a result, India faced a shortage in areca nut supply during the early 1950s. The rising internal demand was initially met by importing areca nut from Sri Lanka and Malaysia. To address this, the government encouraged large-scale expansion of areca nut cultivation

and provided liberal financial assistance through cooperatives and scheduled banks. Consequently, production steadily increased, and the country achieved self-sufficiency by the early 1960s (Kammardi, 2012).

4.1 National Production

India is the largest producer of Areca nuts followed by China and Myanmar. India also happens to be the largest consumer of areca nuts too. According to the National horticultural Board, Karnataka is the highest producer of Areca nuts (63.16%), followed by Kerala (15.88%). Meghalaya holds the 4th position in the production of areca nuts in India, producing 3.05% of the total production of areca nuts in India.

Table 1: State-wise production of areca nut in India (2017-2018) (Production 000 Tonnes)

		2017-2018	
SL No	State	Production	Share (%)
1	Karnataka	517.35	63.16
2	Kerala	130.10	15.88
3	Assam	77.90	9.51
4	Meghalaya	24.99	3.05
5	West Bengal	22.85	2.79
7	Tripura	20.41	2.49
8	Tamil Nadu	10.14	1.24
9	Mizoram	7.27	0.89
10	Maharashtra	3.41	0.42
11	Andhra Pradesh	2.37	0.29
12	Nagaland	2.30	0.28
	Total	819.09	100

(Source: National Horticulture Board (NHB))

4.2 Meghalaya Production Scenario

Areca nut has been traditionally cultivated by the tribes of Meghalaya since time immemorial. Areca nut is grown in East Khasi Hills, Jaintia Hills, West Garo Hills, and East Garo Hills of Meghalaya. Areca nut is planted on the hill slopes in Meghalaya, and the climate of the state is congenial for the growth of areca nuts, which requires 14 degrees to 36 degrees temperature and well-distributed rainfall. In the year 2012-2013, areca nuts were produced in 14600 hectares of area with a production of 19800 Metric tons. (Institute of Livelihood Research and Training)

Table 2: Area, production and productivity of areca nuts in Meghalaya

Year	Area (ha)	Production (M tons)	Productivity (MT/ha)
2010-2011	12,400	17100	1.4
2011-2012	14600	19800	1.4
2012-2013	14600	19800	1.4

(Source: National Horticulture Board (NHB))

Table 3: Year-wise Areca nut Productivity in Meghalaya

Arecanut

A=Area in hectare; P = Production in M.T.; Y = Yield in Kg./hectare

DISTRICTS	Stage	YEAR				
		2013-14	2014-15	2015-16	2016-17	2017-18
Ri-Bhoi	A	170	176	182	190	192
	P	110	123	130	106	108
	Y	647	699	714	558	563
East Khasi Hills	A	4879	4886	4924	5431	5433
	P	5564	5788	5936	4846	4855
	Y	1140	1185	1206	892	894
West Khasi Hills	A	769	771	783	789	790
	P	831	897	968	974	976
	Y	1081	1163	1236	1234	1235
South West Khasi Hills	A	556	573	598	611	613
	P	568	602	754	753	756
	Y	1022	1051	1261	1232	1233
West Jaintia Hills	A	1589	1591	1607	1550	1552
	P	2565	2577	2657	2480	2487
	Y	1614	1620	1653	1600	1602
East Jaintia Hills	A	256	257	264	255	256
	P	303	307	326	270	271
	Y	1184	1195	1235	1059	1059
East Garo Hills	A	1261	1268	1287	1489	1490
	P	1506	1568	1629	1678	1682
	Y	1194	1237	1266	1127	1129
North Garo Hills	A	963	967	983	1035	1037
	P	1229	1251	1296	1364	1369
	Y	1276	1294	1318	1318	1320
West Garo Hills	A	4505	4514	4547	4998	5000
	P	9245	9312	9563	8188	8199
	Y	2052	2063	2103	1638	1640
South West Garo Hills	A	1373	1385	1404	1455	1457
	P	2650	2682	2854	2582	2587
	Y	1930	1936	2033	1775	1776
South Garo Hills	A	357	380	386	387	389
	P	543	684	689	690	695
	Y	1521	1800	1785	1783	1787
MEGHALAYA	A	16678	16768	16965	18190	18209
	P	25114	25791	26802	23931	23985
	Y	1506	1538	1580	1316	1317

(Source: megplanning.gov.in)

4.3 Studies on Betel Nut Farmers in Meghalaya

The northeast region of India is considered one of the richest biodiversity centers of the Indian subcontinent (Tynsong & Tiwari, 2015). It is the center of origin of angiosperms (Takhtajan, 1988). Meghalaya, a constituent of the Indo-Burma biodiversity hotspot, harbors 3,128 species of angiosperms, including 1,237 endemic species and 53 threatened plant species (Khan et al., 1997). The biodiversity of primary forests in Meghalaya has been explored by scholars such as Upadhyay (2002), Jamir and Pandey (2003), and Tripathi et al. (2006).

Agriculture in the region is largely confined to small valleys, where tuber crops are mainly cultivated. Betel nut, orange, areca leaf, jackfruit, bay leaf, honey, and broom grass are among the region's key agricultural products. The area is predominantly inhabited by the War Khasi people, a tribal community with a long-standing tradition of forest conservation (Tynsong & Tiwari, 2015). Farmers in south Meghalaya have developed a unique system in which betel nut groves are deliberately and intricately cultivated while preserving most of the biodiversity elements of the natural forests (Tiwari, 2005).

A comparative analysis of the species richness between betel nut agroforests in south Meghalaya and cocoa agroforests in southern Cameroon reveals significant differences. The tree species richness in betel nut agroforests of south Meghalaya was markedly higher (83 species) compared to cocoa agroforests in southern Cameroon (21 species). However, the cocoa agroforests in southern Cameroon exhibited greater herb species richness (48 species) compared to the 41 herb species found in betel nut agroforests of south Meghalaya (Sonwa et al., 2007).

In the areca nut agroforests of south Meghalaya, plant genera are represented by multiple species, contributing to the high species richness and overall diversity of the forest ecosystem. This high level of species richness indicates that traditional agroforestry systems are well-suited to the edapho-climatic conditions of the region and support biodiversity conservation. While pinpointing specific causes for this richness is complex, it appears that favorable climatic conditions, distinctive topography, and the deliberate, long-term management of plant species are major contributing factors. These betel nut agroforests emulate natural forests to a certain extent in both structure and function (Saha and Azam, 2004).

According to Tynsong & Tiwari (2015), betel nut agroforests are a polyculture type of system in which betel nut (*Areca catechu* L.) is cultivated alongside numerous native wild plants. In the initial year of cultivation, most trees are cut to create a 5 m × 5 m gap for betel nut planting. From the second year onward, farmers begin enriching these gaps by introducing economically valuable plant species in addition to betel nut, the principal cash crop. The combination of retained forest trees and newly introduced native and exotic plants shapes the composition and structure of these agroforests. The result is typically a multi-stratum; multi-species agroforest whose species composition reflects the diverse needs of the local community.

These betel nut agroforests maintain substantial plant diversity, comparable to that of primary forests in south Meghalaya. The Shannon diversity index values for betel nut agroforests were 3.3 for trees, 2.8 for shrubs, 3.4 for herbs, and 2.01 for climbers—figures that are quite similar to those found in primary forests, which had indices of 3.9 for trees, 3.5 for shrubs, 3.0 for herbs, and 2.2 for climbers (Tynsong, 2009). Additionally, the average tree basal cover in betel nut agroforests (53.95 ± 3.02 m²/ha) was found to be nearly equal to that of primary forests.

For instance, the subtropical forests of south Meghalaya had a basal cover of 57.82 m²/ha (Tynsong, 2009), while the subtropical evergreen forests of Jaintia Hills recorded a basal cover of 53.5 m²/ha (Upadhyay, 2002).

The high proportion of useful plant species in betel nut agroforests suggests that farmers actively retain or introduce such species, which is understandable given the rural population's reliance on plant resources for food, shelter, medicine, and fuelwood. The presence of these useful species within areca nut agroforests helps farmers meet essential needs for sustenance, health, energy, and housing (Tiwari et al., 2004).

Tynsong & Tiwari (2010) further investigated the plant diversity in betel nut agroforests of south Meghalaya and observed that farmers maintain a variety of economically valuable plant species within these systems. Their findings demonstrate that betel nut agroforests offer cash income, medicinal plants, timber, fuelwood, and edible products for both household consumption and commercial purposes. A more recent study by Tamang (2020) on betel nut cultivation and its challenges confirms that despite certain difficulties, betel nut farming yields significant economic benefits. As agriculture remains a primary livelihood for these communities, the cultivation of betel nut continues to offer a sustainable income source for farmers.

5.0 CONCLUSION

Betel nut cultivation plays a significant role in the rural economy, and throughout its cultivation process, farmers require access to various types of information. To ensure good yield and to address the challenges associated with betel nut farming, information literacy is crucial. This is supported by the existing literature. Betel nut cultivation is particularly important to the rural economy of Meghalaya; however, there has been no dedicated study examining the information literacy levels of betel nut cultivators in these areas. Similarly, there is a noticeable gap in research concerning the role of libraries in providing information literacy support to farmers in Meghalaya.

In this context, both formal and informal information sources play important roles. While libraries have the potential to contribute meaningfully to the information literacy of betel nut farmers, their impact remains limited—especially in rural areas—due to a lack of resources and the remoteness of these regions. Given the economic importance of betel nut farming in countries like India, it is imperative for various institutions and organizations to take active steps in promoting information literacy among farmers. Libraries, in particular, should take a leading role in this initiative. More importantly, focused studies are urgently needed to explore and understand the information literacy needs and practices of betel nut farmers in Meghalaya.

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