

INTERNATIONAL CONFERENCE-
CUM-WORKSHOP

“CLIMATE
CHANGE,
INDIGENOUS
KNOWLEDGE
SYSTEMS AND
FOOD
SOVEREIGNTY”



Organised by
Internal Quality
Assurance Cell (IQAC),
Lady Keane College,
Shillong

In collaboration with
North East Society for
Agroecology Support (NESFAS)
&
Meghalaya Climate Change
Centre, Meghalaya Basin
Development Authority (MBDA)

Date – 19th & 20th March, 2024

Abstract Book

Content:

Sl. No.		Page No.
1.	Concept Note	1-2
2.	Brochure	3-4
3.	Programme	5-6
4.	Abstracts	7-23

International Conference-cum-Workshop

Climate Change, Indigenous Knowledge Systems and Food Sovereignty

Concept Note

The United Nations' Intergovernmental Panel on Climate Change (IPCC) has stated unequivocally that human influence on the climate system is clear: emissions of greenhouse gases from human activity are the highest in history, and recent changes in the climate have had a significant impact on human and natural systems across the world. Climate change has already increased the intensity and frequency of extreme weather events such as floods, droughts, heat-waves, wildfires and cyclones, and has contributed to changing rainfall patterns and rising sea levels. Such extremes and variability in the climate harm people directly and have severe implications for ecosystems, the world of work, health, livelihoods, food production, infrastructure, settlements and other areas that are fundamental to human well-being.

Indigenous peoples live in geographical regions and ecosystems that are most vulnerable to climate change. These include polar regions, humid tropical forests, high mountains, small islands, coastal regions, and arid and semi-arid land among others. They are among the first to experience the direct impacts of climate change, even though they contribute little to greenhouse-gas emissions. They are also directly affected by environmental destruction, which is a leading cause of climate change, such as deforestation, land degradation, and pollution from mining and oil and gas extraction. Climate change poses severe threats to their livelihoods, cultures, identities and ways of life because the majority of indigenous peoples have a close cultural relationship with the environment, and are often dependent on land and natural resources to meet their livelihood needs. They constitute an estimated 5 per cent of the World's population and are among the poorest of the poor, and thus the most threatened segment of the world's population in terms of social, economic and environmental vulnerability and constitute nearly 15 per cent of the world's poor.

Traditional Knowledge refers to knowledge or practices passed down from generation to generation that form part of the traditions or heritage of Indigenous communities. This also includes understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings. This knowledge is integral to a cultural complex that also encompasses language, systems of classification, resource use practices, social interactions, ritual and spirituality. These unique ways of knowing are important facets of the world's cultural diversity and provide a foundation for locally-appropriate sustainable development.

Food sovereignty is a food system in which the people who produce, distribute, and consume food also control the mechanisms and policies of food production and distribution. This stands in contrast to the present corporate food

regime, in which corporations and market institutions control the global food system. Food sovereignty emphasizes

local food economies, sustainable food availability, and centres culturally appropriate foods and practices. Changing climates and disrupted foodways disproportionately impact indigenous populations and their access to traditional food sources while contributing to higher rates of certain diseases.

Climate change can force indigenous peoples to migrate which often leads to the loss of their traditional economic, social and cultural activities. Equally important, it leads to the loss of traditional knowledge, and this knowledge is essential for climate action to be successful. Livelihood systems, occupations, traditional knowledge and ways of life are essential for combating climate change effectively. This is particularly so in the case of mitigation efforts directed at reducing emissions from deforestation and forest degradation, fostering conservation, sustainable management of forests, and enhancement of forest carbon stocks, as well as the adaptation of agricultural practices to climate change.

Traditional Knowledge systems such as managing genetic biodiversity, forest management, agriculture, food habit, etc. are a major resource for adapting to climate change. Such forms of knowledge are often neglected in policy and research, and their mutual recognition and integration with scientific knowledge will increase the effectiveness of adaptation.

The proposed Conference aims at creating awareness on impacts of climate change on livelihood and food availability, importance of food sovereignty and to provide a platform for exchange of ideas between indigenous people's communities and scientists on how traditional knowledge systems can be utilised to mitigate climate change.

Registration

Registration can be done in advance by filling up the registration form with payment (if applicable) or it can also be done on the spot on the first day of the programme.

Registration fee

- ❖ Paper presenters: Rs. 500.00 only
- ❖ Faculty (participation without paper presentation): Rs. 200.00 only
- ❖ Students, Research Scholars, others (participation without paper presentation): Free

How to reach:

Lady Keane College, Shillong is located in the heart of Shillong city. Nearest airport: Shillong airport or Guwahati International airport. Nearest Railway station: Guwahati Railway station.

Organizing Committee

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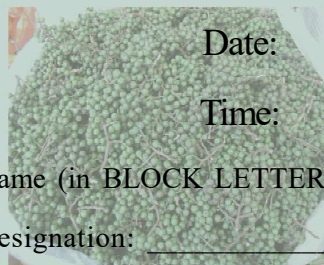
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Registration Form

International Conference-cum-Workshop

On the Theme

“Climate Change, Indigenous Knowledge Systems and Food Sovereignty”



Date: _____

Time: _____

1. Name (in BLOCK LETTERS): _____
2. Designation: _____
3. Institute Affiliation: _____
4. Mailing Address with pin code: _____
5. Gender: _____
6. Mobile Number: _____
7. E-mail: _____
8. Title of the paper: _____
9. Accommodation required: Yes/No
10. Registration fee: _____
11. DD. No./Cash/RTGS/NEFT: _____

Demand Draft in favour of Principal, Lady Keane College, Shillong payable at Canara Bank Lady Keane Branch, Shillong. RTGS/NEFT – Lady Keane College General Fund, A/c. No. 8672214000004, IFSC No. CNRB0008672.

Date

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International Conference-cum-Workshop

on

“Climate Change, Indigenous Knowledge Systems and Food Sovereignty”

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&

Meghalaya Basin Development Authority
(MBDA)

19th & 20th March 2024

About the Conference

Climate change can have a very debilitating impact on indigenous peoples by disrupting their habitat from which they generate food, forcing them to migrate leading to loss of their traditional economic, social and cultural activities. Equally important, it leads to the loss of traditional knowledge, and this knowledge is essential for climate action to be successful. In fact, livelihood systems, occupations, traditional knowledge and ways of life of indigenous peoples are essential for combating climate change effectively.

Traditional Knowledge systems of indigenous peoples, in particular, such as managing genetic biodiversity, forest management, agriculture, food habit, etc. are a major resource for adapting to climate change. Such forms of knowledge are often neglected in policy and research, and their mutual recognition and integration with scientific knowledge will increase the effectiveness of adaptation.

The conference aims at creating awareness on impacts of climate change on livelihood and food availability, importance of food sovereignty and to provide a platform for exchange of ideas between indigenous people's communities and scientists on how traditional knowledge systems can be utilised to mitigate climate change.

Objectives

1. To create awareness on the effect of climate change on biodiversity and on food production
2. To provide a platform for exchange of knowledge and ideas
3. To promote indigenous peoples' knowledge systems
4. To provide an opportunity for the students to interact with the experts

Sub-themes

- ❖ Indigenous peoples' knowledge system
- ❖ Indigenous peoples' food system
- ❖ Traditional healing practices
- ❖ Traditional conservation practices
- ❖ Non-timber forest products
- ❖ Food sovereignty
- ❖ Ethnobotany
- ❖ Ethnozoology
- ❖ Impact of climate change on food production
- ❖ Any topic related to the theme of the conference

About Lady Keane College

Lady Keane College, Shillong was established in 1935. It is a premier girls' college located in the heart of Shillong city. It offers undergraduate studies in Arts, Science, Bachelor of Computer Applications and Bachelor of Tourism and Travel Management. It is affiliated to North-Eastern Hill University, Shillong and falls under the financial status of UGC 2f and 12 (B). It is NAAC accredited and has completed cycle 3 of accreditation. The College has a large campus area and equipped with classrooms, laboratories, libraries, seminar room, conference room and auditorium with modern technologies. The college has established a reputation of inculcating a healthy interactive relationship between faculty and students promoting social responsibilities and citizenship roles among students. In addition to its achievement in academics, the college is also well known for its contribution to the society through extension services.

About NESFAS

NESFAS, North East Society for Agroecology Support, was set up in 2012 with the intention to connect people to the pleasure of tasty, healthy, local food that is inseparable from our responsibility towards the environment and the preservation of agrobiodiversity. It emerged as an outcome of collaborative activities between the Indigenous Partnership for Agrobiodiversity and Food Sovereignty (TIP) and Slow Food International. The themes with which NESFAS is concerned with are Indigenous Peoples' Food System, agroecology, food sovereignty, nutrition, sustainable livelihood, climate change adaptation and natural resource management and conservation. Over the years, NESFAS has undertaken many projects under this theme and introduced initiatives to support these themes. For that it has gained national and global recognition having been felicitated with awards and recognition.

About MBDA

The Meghalaya Basin Development Authority (MBDA) is a Society registered under the Societies Registration Act 1860. Set up in March 2011 and headed by the Chief Secretary, Government of Meghalaya its Registered Office is situated at Nongrim Hills, Shillong. MBDA aims to address management of natural resources in the state while addressing issues of livelihoods among the rural communities with emphasis on sustainable good practices. Its strategies focus on leveraging the strengths of the land while adapting to climate change, without degradation to the environment.

Accommodation

Accommodation will be ensured for those who clearly write in advance for the same and will be arranged in hotels and guest house on payment basis. All correspondence regarding accommodation may be addressed to Dr. Shairi Nongbri, Associate Professor. Mobile number: 9436706236. Email: slnongbri@yahoo.co.uk

How to submit abstract

Abstract should be maximum of 300 words, Times New Roman font, font size 12, typed in MS word file. Abstract should bear article title, author name, author affiliation, pin code, e-mail of corresponding author and 4-6 key words. Abstract to be submitted to the following email: iqacladykeanecollege@gmail.com

Important dates:

Abstract submission opening date
19th February, 2024

Abstract submission closing date
10th March, 2024

Notification of acceptance
12th March, 2024

**International Conference-cum-Workshop on
“Climate Change, Indigenous Knowledge Systems and Food Sovereignty”
Organised by
The Quality Assurance Cell (IQAC), Lady Keane College, Shillong
In collaboration with
North East Society for Agroecology Support (NESFAS)
&
Meghalaya Climate Change Centre, Meghalaya Basin Development Authority (MBDA)
Date: 19th & 20th March, 2024**

Day – 1 (19.03.2024)

Registration – 9:00 AM

Inaugural Programme (9:45 – 11:00 AM)

- Host – Dr. Stephane P. Basaiawmoit (3 Mins)
- Welcome Song – Khasi Traditional Music (5 Mins)
- Welcome Address – Principal (3 Mins)
- Felicitation of Guests
- Keynote Address – Mr. Dhruwad Choudhury, Senior Adviser, NESFAS (20 Mins)
- Speech from Chief Guest – Mr. Phrang Roy, Founder, NESFAS (20 Mins)
- Vote of Thanks – Dr. K. Makdoh (2 Mins)

Tea Break (11:00 – 11:30 AM)

Technical Session – 1 (11:30 – 1:30 PM)

Chairperson: Dr. Bhogtoram Mawroh, Co-ordinator, TIP-NESFAS INT IP Food Issues, NESFAS

- **Resource Person:** Prof. Madho Singh Bisht, Department of Environmental Studies, North-Eastern Hill University, Shillong “Climate Change, Indigenous Knowledge and Food Sovereignty: Few of My Views” (30 Mins)
- **Sharing of knowledge by the Community Members (4 Members) and Comments and Suggestions by Resource Persons/Experts**

Lunch Break (1:30 – 2:15 PM)

Technical Session – 2 (2:15 – 4:00 PM)

Chairperson: Dr. C. S. Rao, Retd. Associate Professor

- **Resource Person:** Dr. Bhogtoram Mawroh, Co-ordinator, TIP-NESFAS INT IP Food Issues, NESFAS “Food System and Resilience to Climate Change” (30 Mins)
- **Resource Person:** Shri. Vivek Lyngdoh, Junior Research Fellow, Meghalaya Climate Change Centre, Shillong “Climate Change in Meghalaya: an overview of evidence, impacts and adaptations.” (30 Mins)

- **Resource Person:** Mr. Thomas Iangjuh, Junior Scientist, Bio Resource Development Centre, Shillong “Traditional Healing Practices in Meghalaya: BRDC’s Initiatives” (30 Mins)

Day – 2 (20.03.2024)

Technical Session – 1 (9:00 – 10:30 AM)

Chairperson: Mr. K.L. Chaudhary, Associate Professor

- **Resource Person:** Ms. Amica L. Nongrang, Programme Associate, GIS, Meghalaya Climate Change Centre “Climate Change Vulnerability Assessment on Agriculture Sector of Meghalaya” (30 Mins)
- **Resource Person:** Dr. Debashish Chakraborty, National Fellow, Principal Scientist, Division: Agricultural Physics ICAR “Climate change in North Eastern India and Adaptation Options for Risk Minimization” (30 Mins)
- **Resource Person:** Dr. Bhaskar Saikia, Assistant Zoologist, Zoological Survey of India, North Eastern Regional Centre, Shillong “Edible Frogs: Documenting the Indigenous Food System” (30 Mins)

Tea Break (10:30 – 10:45 AM)

Technical Session – 2 (10:45 – 1:15 PM) (Two Parallel Sessions)

Chairpersons:

- Paper Presentation – 19 Presenters (15 Minutes each)

Lunch Break (1:15 – 2:00 PM)

Technical Session – 3 (2:00 – 3:30 PM)

Chairperson: Dr. Albert Chiang, OSD, MBDA

- **Resource Person:** Dr. Heiplanmi Rymbai, Senior Scientist (Horticulture – Fruit Science), Division of System Research & Engineering, ICAR “Nutritional Aspects of Indigenous Fruits” (30 Mins)
- **Resource Person:** Dr. Y. Mahesh, Senior Preservation Assistant, Botanical Survey of India, Eastern Regional Centre, Shillong “Non-Timber Forest Products (NTFPs) of Meghalaya” (30 Mins)
- **Resource Person:** Ms. Gratia Dkhar, Senior Associate Programme, NESFAS “Strengthening Evidence on Indigenous Peoples’ Food Systems as Game Changers” (30 Mins)

Valedictory Function (3:30 – 4:00 PM)

Indigenous Principles of Environment Governance: A Case Study of the Law Lyngdoh Sacred Forest, Nonglait, Eastern West Khasi Hills

Banshaikupar Lyngdoh Mawlong
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Abstract

The state of the environment has direct impacts on human lives and development. Environment has never remained static, it changes in time and space. Moreover, the environmental resources are limited. Further these resources are being exploited by unprecedented growth of population, unplanned and unsustainable economic development. The sustainable use of environmental resources is the foremost and mandatory requirement for sustainable development. These resources are depleted by environmental pollution, exploitation and over-exploration. One of the features of the environmental governance structure in the Khasi Hills of Meghalaya is the existence and the indispensable role of institutions at the local level in the form of traditional institutions and clans, besides the government machineries. This paper will attempt to analyze the environmental governance practices and the efforts undertaken by clan Lyngdoh Nonglait in the conservation of the Law Lyngdoh Sacred forest at Nonglait village under Eastern West Khasi Hills district of Meghalaya. It will also attempt to examine the issues and challenges facing the clan in the governance of the sacred forest.

Key Words: Environment governance, traditional institutions.

Sacred Natural Sites and Cultures in Transition: The Dynamics of Changing Belief Systems and Their Impact on Sacred Groves with Special Reference to Meghalaya, India.

Bennathaniel H. Diengdoh¹

Abstract

Sacred natural sites(SNS) have existed since time immemorial and constitute an important component of human religious and cultural experiences. The concept of a sacred site is also inextricably interwoven with the culture and belief system from which it stems, such that a change in the latter often leads to a change in the former as well. Sacred groves are an important form of SNS that can encapsulate traditional practices, perceptions, attitudes and beliefs with forest conservation practices, found in many areas across the globe, sacred groves exist in a variety of communities, religions and worldviews, and belief systems from which they originate also show commensurate variation from one location and culture to another. Sacred groves in Meghalaya are important artifacts of religious and cultural significance, particularly among those who adhere to the indigenous belief systems. However, the religious and cultural changes that have risen with the advent of Christianity, among other factors have had an impact on how sacred groves are perceived and maintained as well. The changes are nuanced and vary from one community to the next. This paper seeks to explore the nature and extent of the impact of religious and cultural transition on sacred groves, especially in the Meghalayan context. To this end the paper draws upon past literature to explore the concept of SNSs, and, the status of sacred groves as a type of SNS in order to elucidate the relationship between changing beliefs, cultural norms, perceptions and the status, integrity and conservation of sacred groves laying special emphasis on those groves found in the state of Meghalaya with a view of arriving at a strategy that seeks to mitigate any detrimental impacts that may have been or continue to be brought about partly or completely as a result of religious and cultural change.

Indigenous Knowledge and Food Preservation Techniques: A Study among the Bodos of Kokrajhar District of Assam

Dr. Shabnam Bormon
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Food is a basic need of human beings and is considered a part of intangible cultural heritage. The present paper reviews the indigenous knowledge of the Bodo people of Assam in food preservation. Traditional recipes and food preservation techniques which have been passed down from generation reflect the values and beliefs of Bodo tribal community and are all vital parts of their cultural identity. The study was carried out through observations, surveys and interviews. The paper argues, as an intangible heritage, traditional food preservation methods can be used for continuous sustainable development.

Keywords: Intangible Cultural Heritage, Indigenous Knowledge, Bodo, Sustainable.

Economics of Arecanut Production in East Garo Hills District, Meghalaya

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ABSTRACT

Arecanut (Areca L. Catechu) is one of the most important cash crops in India. It holds significant cultural, economic, and social importance across various parts of Asia, particularly in India. Meghalaya holds 5th position in producing the arecanut in India. The study reveals that the benefit cost ratio from the production of arecanut was found to be 1.37. The study also investigates the constraints encountered by arecanut farmers, focusing on a sample size of 200 growers. The primary issues identified include inadequate transport facilities, non-availability of local markets, absence of market information, low prices due to the prevalence of middlemen, problems of storage, and the existence of market middlemen. It can be noted that 100 percent of the participants reported storage problems, leading to reduced demand, abnormal color and odors, and weight loss in the arecanut, suggesting that improved storage facilities could significantly benefit supply quality. The study highlights the need for interventions to address these constraints, improve market access, and enhance the economic viability of arecanut cultivation.

Keyword: Arecanut, constraints, land holdings, marketing, middlemen,

An ethnobotanical study of an endangered plant species, *Canarium strictum* Roxb., with reference to its morphological features.

Kliret Terangpi, Dr. Longjam Malemganbee Chanu,
Assam Don Bosco University, Tepesia Gardens, Kamarkuchi, Sonapur,
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Abstract:

Majority of the population in developing countries such as India have a long history of using medicinal plants as source of traditional medicines. Recently, traditional medicines and plant based products have been gaining much attention and popularity because of being presumed to have lesser side effects as compared to the synthetic alternatives which has led to their increasing demands but the demands exceeds the plant sources. Therefore, the stress on the natural habitats of these medicinal plants is being overexploited but many methods and techniques of biodiversity conservation have been initiated by different organizations to preserve for future generations and studies. Recently, advances in modern technologies have led to the discovery of various compounds from plants that could be used in making new drugs which are useful for mankind. These plants showcases various medicinal properties such as anti-bacterial, anti-microbial, anti-inflammatory, anti-diabetic, anti-cancer and anti-fungal apart from being used in traditional medicines and practices. *Canarium strictum* Roxb., is traditionally used for performing ceremonial and religious rituals and for treating minor ailments such as stomachache or dysentery but mostly used as a mosquito repellent. Plants have the basic morphological features if observe at a glance but some changes occurs in their features depending on their habitats and influence of environmental factors. Observing these features of a plant serves in proper identification of a plant from another plant in the same genus or family. There are still many information and data left undiscovered and undocumented about traditional practices and medicinal plants used by different indigenous communities all around the world which might aid for new drugs and sustainable by-products for daily purposes with proper identification and exposure.

Keywords: *Medicinal plants, Canarium strictum* Roxb., *Conservation, Indigeneous knowledge*

A Study on the awareness and utilization of Traditional Medicine among students of Shillong College, Shillong, Meghalaya, India.

¹Marvellous B. Lynser & Bennathaniel H. Diengdoh
Department of Environmental Science, Shillong College, Shillong - 793003

Abstract

Traditional medicine is an important but often professionally overlooked part of health services. It has a long history of use in health maintenance and in disease prevention and treatment. Currently, Traditional Medicinal Knowledge (TMK) may be under threat from a shift towards conventional medicinal practices, and a decline in interest among members of younger generations. The present study attempts to investigate the awareness of and uses of Traditional Medicine amongst students of Shillong College, Shillong, Meghalaya. An online questionnaire survey was conducted on at least ten percent of the student population of the college across different streams, backgrounds, ethnicity and place of origin for the purpose of data collection. A 5-point Likert scale was implemented to analyze students' views on traditional practices and traditional medicine in particular. The findings reveal that students seem to understand the importance of age-old traditions. Over ninety percent agreed that medicinal plants are important but only sixty percent have the knowledge on them and less than forty percent of the students collect and use medicinal plants. The majority of students who consider medicinal plants to be important stated that they are effective in treating ailments and are affordable and easily available. Respondents who collect medicinal plants do so mainly for their personal use. There is a lack of awareness on aspects related to collection or harvesting of medicinal plants. Concern for the erosion of practice of traditional medicine was expressed among students and, according to them, the factors contributing to this loss include environmental damage, change in religious beliefs and cultural values and in economic conditions as well. A majority of students agreed that there is a need to conduct scientific studies and proper documentation on medicinal plants and related practices in order to foster and encourage an interest among younger generations in said medicinal plants and associated practices.

Keywords: Traditional knowledge, medicinal plants, erosion, environmental damage

A study on Banana Cultivation in Goalpara District: Its challenges and prospects

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Dr. D. C. Kalita, Professor
Department of Rural Development and Agriculture Production, NEHU

Banana is one of the most nutritious foods which India has dominant in production and export. India produced 33,062,000.00 Tons of Banana in 2021 and is the largest producer. Assam ranks 9th in terms of Banana production and produce 1,108.00 Tons of Banana Goalpara district ranks 4th among all district of Assam and produce 26639 Tons of Banana. It is one of the highest exporters of Banana and exports Banana to neighbouring country. Darranggiri Banana market in Goalpara district is Asia's largest Banana market. The planters face several challenges while plantation and in marketing the product. To understand the prospect of Banana cultivation, associated cost in plantation and marketing the product a descriptive research frame had been constituted and a survey of 258 cultivators has been conducted. Out of 5 blocks in Goalpara district 2 blocks had been selected for study using convenient sampling techniques. Also try to understand the role of government in providing various assistance to the planters. It was found that on average, planters spend Rs. 1,04,839 and produce 1474 bunches of Banana of various quality, out of which 3%, they use for self-consumption and remaining 97% the cultivators supply it to the market as surplus. Out of total marketable surplus around 64% is taken away by local traders, 26% cultivators sell directly in the local market, around 9% was taken away by wholesalers and around 1% generally does have pre-paid contracts with the cultivators. About 79% of banana cultivators were found satisfied with selling price of Banana. It was also found that cultivators are getting government assistance and rate 3 out of 5 in satisfactions rating where 1 means least satisfied and 5 means most satisfied.

Keyword: Banana plantation, production, expenditure, selling price

ECONOMIC ANALYSIS OF EFFICIENCY IN GINGER PRODUCTION WITH SPECIAL REFERENCE TO GARO HILLS DISTRICT OF MEGHALAYA, INDIA

Koyel Roy and Prof. D.C Kalita²

Research Scholar

Department of Rural Development and Agricultural Production North Eastern Hill University, Tura Campus

Abstract

India is a predominantly agricultural economy. More than 70% of its population is directly or indirectly involved in agricultural activities. India is one of the foremost producers of spices in the world. According to the Bureau of Indian Standards (BIS), 63 spices are grown in India. Ginger is one of the main spices and plays a vital role in the production and export of the country. Meghalaya's economy is predominantly agriculture-based, with 81% of its population depending on agriculture, though agricultural productivity in Meghalaya is very low. This paper analyzes resource use efficiency in Ginger Production in Meghalaya's West Garo Hills district. The study is based on both primary data. The multi-stage random sampling technique was used to select 300 ginger farmers. To estimate resource use efficiency in Ginger production, the Cobb-Douglas type of production function was best fitted to the data. Independent variables identified were land (X1), seed (X2), labor (X3), harvesting cost (X4), marketing cost (X5), and others include hoe, dao (wait), digging spades (X6), and dependent variables as production of ginger(Y). Among the inputs used for the production of ginger, which have positive and significant influences at the overall level, the MVP to PX ratio was less than one for land (0.07), seed (0.26), human labor (0.08), harvesting cost (0.08), marketing cost (0.13) and others (0.09) indicated under-utilization of these resources in the cultivation of ginger.

Keywords: Ginger, Resource-Use Efficiency, Cobb-Douglas production Function, Marginal Value Product, Marginal Input Cost.

Economic Impact of Climate Changes on Food Security of Indigenous People.

Rajesh Safi

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Union Christian College, Umiam Khwan, Pin code-793122, Ri Bhoi District, Meghalaya

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Abstract

Climate change is one of the most daunting challenges confronting our world today on the lives of the indigenous people living in the community. Climate change has already increased the intensity and frequency of extreme weather events such as floods, droughts, heat-waves, wildfires and cyclones, and has contributed to changing rainfall patterns and rising sea levels which has brought a huge impact on the cropping pattern as well as food security. Indigenous peoples are among the first to experience the direct impacts of climate change, in such regions which have strong implications for the ecosystem-based livelihoods on which many indigenous peoples depends. Climate change poses severe threats to their livelihoods, cultures, identities and ways of life because the majority of indigenous peoples have a close cultural relationship with the environment, and are often dependent on land and natural resources to meet their livelihood needs. This paper will attempt to analyse in particular the challenges faced by the indigenous people by the direct impact of climate change on food security.

Key Words: **Food security, indigenous people, resources.**

Chemopreventive potential of medicinal plants available in Northeast region of India: Ethnobotanical use, Anticancer Bioactive Compounds, Chemopreventive mechanisms and Synergistic Effects with Chemotherapeutic Drugs.

1. Disha Hazarika, Research Scholar, Department of Applied Biology, University of Science and Technology, Meghalaya-793101. Email- dishahaza@gmail.com
2. Binapani Sanjrmbam, Research Scholar, Department of Applied Biology, University of Science and Technology, Meghalaya-793101.

Abstract

Northeast India is a repository of rich plant resources and traditional knowledge of medicinal plants. These plants are in use by different ethnic groups of the region for various ailments and diseases. This paper reviews the ethnobotanical and therapeutic applications of medicinal plants known to various ethnic group in Northeast India that have been passed down through generations. It identifies the key bioactive compounds from the plants responsible for anticancer activities, making them a potential chemopreventive agents. Furthermore, the paper also underlines the synergistic effects of these plants when combined with chemotherapeutic drugs. Thus, shedding light on combinatorial approach that can aim to enhance the effectiveness of cancer treatment.

Keywords: Chemoprevention, anticancer, Phytochemical, Northeast India, Bioactive compound, medicinal plant.

Traditional Wisdom and Applications of *Nicotiana tabacum* (Solanaceae) in Meghalaya

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Abstract

Traditional knowledge and beliefs in Meghalaya, which are unexplored and unknown to many, hold the potential to unfold new findings which are associated with past activities. Recognizing Meghalaya as a sanctuary of diverse flora and fauna, the already documented indigenous plants and herbs have helped in serving the rural areas of the state in traditional medicinal purposes, organic pest control, and also as food preservatives. *Nicotiana tabacum* (Solanaceae) is one of the well-known tobacco leaves which has ethno properties and is used not only as medicine in many parts of the country and globally but also as an oral tobacco product in Meghalaya. Keeping *Nicotiana tabacum* inside the mouth between the cheeks and the lower gum is believed to prevent gums from bleeding, infections, and cure for toothaches. Locals residing in the villages of Meghalaya have also used *Nicotiana tabacum* as a leech repellent and also as an organic and environmentally friendly pesticide. *Nicotiana tabacum* has also been used as a food preservative in ancient times during wars.

Keywords: *Nicotiana tabacum*, leech repellent, organic pesticides, preservatives, folk medicine, Traditional knowledge.

GC-MS profiling and assessment of antioxidant and antibacterial activity of methanolic extract of *Ilex venulosa* Hook. leaves

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Abstract

The Aquifoliaceae is a significant botanical family that has only one genus, *Ilex*. This genus is highly diverse and consists of almost 600 species of trees or shrubs that are dioecious and found in tropical and temperate regions. It is of significant importance in the domains of medicine, ornamental plants, ethnobotany, and market value due to its wide range of uses. *Ilex venulosa*, often referred to as Soh Phoh Khlaw in Meghalaya, is an endangered plant species. Its fruits, which may be consumed as raw and cooked like a vegetable, possess a substantial amount of easily digestible carbohydrates. This characteristic renders them a promising candidate for inclusion in animal feed formulations as a supplementary source of nutrition. This study aimed to explore the phytochemical composition and biological potential, namely antibacterial and antioxidant activities, of the methanolic extract derived from the leaves of *Ilex venulosa*. The extract was evaluated for its total phenolic content (TPC), total flavonoid content (TFC), antioxidant potential (DPPH-1,1-diphenyl-2-picrylhydrazyl), and antibacterial activity against *Escherichia coli*, *Staphylococcus aureus*, *Bacillus cereus*, and *Bacillus thuringiensis*. The methanolic extract was also subjected to GC-MS analysis in order to assess the composition of various volatile phytoconstituents and revealed the presence of various compounds like maleic hydrazide, Clindamycin, 1,2,4-Benzenetriol, oleic acid, 4-Hydroxy-3-Methylacetophenone, sucrose, N-Hexadecanoic Acid, (E)-4-(3-Hydroxyprop-1-en-1-yl)-2-Methoxyphenol, etc. The TPC was reported to be 0.2508 ± 0.01 GAE mg/g, the TFC was 30.95 ± 0.01 QE mg/g, and the antioxidant activity by DPPH assay was to be calculated (IC_{50} value = 0.00459 μ g/ml). From the antibacterial assay, it has been found to have better inhibition against *Bacillus cereus* with an inhibition zone of 27 mm, while showing weaker antibacterial activity against *Staphylococcus aureus* with an inhibition zone of 10 mm. The present results suggest that *Ilex venulosa* has many important bioactive compounds that have antibacterial and antioxidant properties as a plant species for future use.

Keywords: *Ilex venulosa*, bioactive compounds, antioxidants, antibacterial.

Elaeagnaceae (The Oleaster Family): Exploring Traditional Medicinal Uses and Novel Therapeutic Roles in Addressing Various Human Ailments.

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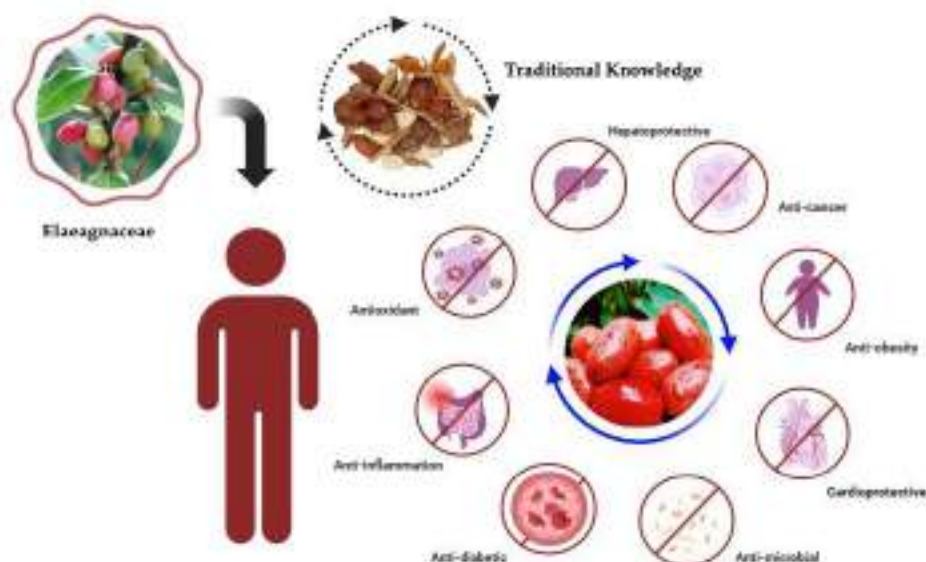
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Abstract:

Family Elaeagnaceae also known as the oleaster family comprises ca.104 species, distributed in three genera (*Elaeagnus* L., *Hippophae* L., and *Shepherdia* Nutt) throughout worldwide. Several species of the family have been investigated for ethnopharmacological studies to cure a wide variety of ailments. This paper presents a comprehensive review of the family emphasizing the ethnopharmacological uses along with the phytochemical and biological activities of their fruits. The traditional evidence of the taxa provides a connection between traditional applications and the phytochemical profile that is said to be responsible for the pharmacological effects. These species have been used to cure a wide variety of illnesses since the dawn of civilization and have employed a variety of treatment techniques and local therapies to do so. The World Health Organisation (WHO) states that the majority of the population around the globe is dependent on medicinal plants to meet their basic health needs. The present study showed that Elaeagnaceae fruits contain a wide variety of phytochemicals like Amino acids, Carbohydrates, Carotenoids, Vitamins, Minerals, Fatty acids, Flavonoids, Phenolic acids, etc., which have displayed various biological activities including Anti-Inflammatory, Anti-oxidant, Anti-cancer, Antidiabetic, Hepatoprotective, and Cardio-protective. It is necessary to develop and promote research in the pharmaceutical industry for exploring and isolating secondary metabolites having antioxidant and other biological potentials from these plants. Therefore, pharmacological information collected can be useful for supporting the medicinal potential of the Elaeagnaceae which would help in the development of new drugs for curing a wide range of ailments.

Keywords: Elaeagnaceae species; Medicinal plants; Pharmacological activity; Traditional knowledge; Wild Olive

Graphical Abstract:



Traditional Knowledge and Practices of *Tipuana tipu*, *Musa paradisiaca*, and *Vitex negundo*, in Meghalaya: A Comprehensive Exploration

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Abstract:

This ethnobotanical study looks into the traditional knowledge and practices of *Tipuana tipu*, *Musa paradisiaca*, and *Vitex negundo* in Meghalaya, India. The research uses a multidisciplinary approach, including ethnobotanical surveys and traditional ecological knowledge interviews, to document the plant species' diverse cultural, medicinal, and economic uses. The study also looks into how this knowledge is passed down to the younger and future generations and how it is preserved within indigenous communities, emphasizing the importance of oral traditions, rituals, and social networks. Additionally, the study attempts to evaluate these traditional practices' sustainability in light of challenges related to modernization, climate change, and biodiversity conservation.

Keywords: ethnobotanical, traditional knowledge, *Tipuana tipu*, *Musa paradisiaca*, *Vitex negundo*, Meghalaya.

Conservation and Utilization of Rare and Endangered Medicinal plants of Mokokchung Nagaland by the Potential use of Plant Growth Promoting Rhizobacteria (PGPR): A Review

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ABSTRACT

The traditional use of medicinal plants among the Ao Naga tribe has been practiced since time immemorial and has been passed on from one generation to other. These techniques has been the main source of remedy from various illness before the civilization came into being. But due to the extreme use by human for their well-being, most of them have been over exploited and certain measures have to be taken to sustain the use of these medicinal plants. Also, due to increase in population these wild areas are being urbanized thus, these plants are at a high risk of extinction. This review paper emphasizes on conservation and utilization of some of the various medicinal plants available in Mokokchung Nagaland by the use of plant growth promoting rhizobacteria (PGPR).The plants reviewed are *Cissus quadrangularis* L, *Adenia hondata* (Gaertn.) W. J. De, *Dendrobium densiflorum* Wall., *Drymaria cordata* Willd, *Elsholtzia blanda* Benth., *Ficus hirta* Vahl, *Hibiscus rosasinensis* L., *Mikania cordata* (Burm.) B. L. Robinson, *Perilla frutescens* (L.) Britt., *Rubia cordifolia* L. having many different medicinal purposes. With the field application of PGPR, these medicinal plants can be conserved and further studied for socioeconomic growth of Nagaland.

Keywords: Mokokchung, Nagaland, traditional knowledge, medicinal plants, Plant Growth Promoting Rhizobacteria (PGPR)

Amplifying Indigenous Wisdom: Plant Healing Insights from the Local Communities in the South Garo Hills District of Meghalaya

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Abstract

An ethnomedicinal investigation was carried out in the South Garo Hills district of Meghalaya, India, aiming to shed light on traditional healing practices of plants used for treating diverse ailments in Baghmara and Gasuapara Blocks. Information such as vernacular names, common names, scientific classifications, family affiliations, growth habits, habitats, utilized plant parts, and comprehensive medicinal preparation procedures were meticulously documented with the assistance of knowledgeable traditional health practitioners (THPs), who generously shared valuable insights. Following thorough data collection, an assessment revealed 76 plant species belonging to 49 families were found to have healing properties against various afflictions. Prominent among these species were *Phyllanthus urinaria* Linn., *Scoparia dulcis* L., *Crinum defixum* Ker Gawl., *Curcuma elata* Roxb., *Azadirachta indica* A. Juss., *Chromolaena odorata* Linn., *Justicia gendarussa* Burm., *Piper nigrum* L., *Calotropis gigantea* (L.) Dryand, *Curcuma longa* L. The majority of identified plants were comprised of trees (23), followed by herbs (23), shrubs (20), climbers (7), and ferns (3). Notably, leaves emerged as the most commonly utilized plant part, followed by bark, fruit, roots, rhizome, and stems. Traditional Health Practitioners (THPs) employed distinctive healing methodologies by blending diverse plant species to address a spectrum of ailments, including stomach ache, tooth pain, gastritis, jaundice, anaemia, migraine, asthma, cough and cold, diarrhoea, malaria, skin allergies, sinusitis, gallstones, etc. Furthermore, the study noted that older individuals possessed more profound knowledge of medicinal plants compared to younger generations. This present paper documents the indigenous knowledge of plants used by Garo THPs. It aims to provide a detailed exposition of the preparation and treatment procedures practiced by Garo THPs in the South Garo Hills of Meghalaya, thereby contributing to the preservation and understanding of traditional healing practices.

Keywords: Ethnobotany, Herbal medicines, Garo Hills, Northeast India, Traditional Healer

GC-MS study and assessment of morphological damages caused by *Cyperus compressus* on *Raillietina echinobothrida*

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Abstract:

This study evaluates the anthelmintic potential of the methanolic extract of the roots of traditionally used anthelmintic plant; *Cyperus compressus* against the fowl tapeworm *Raillietina echinobothrida*. Concurrently, the investigation employs Gas Chromatography-Mass Spectrometry (GCMS) to identify the phytochemicals responsible for the observed effects. Live tapeworms were subjected to a concentration of 30 mg/ml of the methanolic extract. On attaining paralysis, the parasites were analysed for morphological deformities caused by extract exposure through Scanning Electron Microscopy (SEM).

The results revealed noteworthy alterations in the microtriches of *Raillietina echinobothrida*, portraying visible breakage and damage. The tegument exhibited regularly arranged segments, accompanied by mild shrinking. GC-MS analysis uncovered 30 prominent peaks, with 7-Methyl-Z-tetradecen-1-ol acetate emerging as the predominant compound. Additional major compounds identified include 5-Hydroxymethylfurfural, Phorbol, 6-Acetyl- α -D-mannose, Octadecanoic acid, and 9-Octadecanoic acid (Z)-, 2-Hydroxy-1-(hydroxymethyl) ethyl ester.

These findings collectively validate the anthelmintic efficacy of *C. compressus* root extract against *R. echinobothrida*, manifesting through structural damages as elucidated by SEM. The identification of bioactive compounds through GC-MS provides a valuable foundation for understanding the chemical basis of these effects. This study contributes to the exploration of natural sources for developing effective anthelmintic agents and invites further investigations to validate the practical applications of these findings.

Keywords: Anthelmintic, *Cyperus compressus*, GC-MS, *Raillietina echinobothrida*, SEM

Traditional Indigenous Healing Foods used amongst the Khasi Community during the COVID-19 Pandemic

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Abstract:

Food as medicine has been practiced in Meghalaya since time immemorial. Indigenous foods have been traditionally used in communities to prevent the severity and treat diseases. This integrative practice has been explored and researched to establish that indigenous foods contain bioactive components and phytochemicals that can bring about beneficial effects in diseases. The objective of the study is to explore the traditional usage of indigenous healing foods amongst the selected participants of the Khasi community. **Materials and Methods:** A total of 424 adults in the age group of 20 to 50 years participated in this cross-sectional study. A web-based tool was designed. The tool comprised of a structured food frequency and a detailed tool to investigate the healing foods used during the COVID-19 pandemic. **Results:** 68 per cent of the study participants were males and 32 per cent were females. 11 per cent of the population used colocasia leaves for fever, 21.4 per cent of the participants used ginger during cough, 10.9 per cent of the selected participants used a combination of ginger, pepper, garlic, honey and turmeric for cough and cold, 15 per cent of the population used guava leaves for diarrhea, 7.07 per cent of the participants used soups for weakness, 21.5 per cent of the population used beet root and its leaves for the treatment of anemia. 3 per cent of males and 7.6 per cent of females were affected by COVID-19. **Conclusion:** Indigenous foods have been used traditionally amongst the Khasi community. Indigenous traditional healing practices have been a preferred choice of treatment, especially during the COVID-19 pandemic. Hence traditional knowledge systems need to be revived and documented and can even be incorporated into the mainstream healthcare system and bring about food sovereignty.

Keywords: Indigenous, bioactive, healing foods, COVID-19

Fruits, flowers, leaves and seeds that you have never eaten: Rejuvenating the traditional knowledge of food plants of EKH, Meghalaya

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Abstract:

This paper presents some indigenous plants that yield edible fruits, leaves, flowers and seeds. Many of these were enjoyed by people who went out into the forests in course of their daily routine such as cattle grazing, foraging, hunting or travelling. Some of these were even occasionally sold in some local village markets. Most of them were fairly common in the villages and adjacent village forests in the recent past, whose populations are now reducing, therefore are hardly seen and consequently forgotten even in the rural areas. With many in the younger generation moving out to urban areas of the state or outside for study or work, their connect with plants have decreased. This paper tries to raise awareness about such plants that may be used for economic benefit as well as ensuring their effective conservation

Keywords: indigenous plants, edible plants, fruits, seeds, flowers, East Khasi Hills, Meghalaya

*International Conference-cum-Workshop
on
“Climate Change, Indigenous Knowledge Systems
&
Food Sovereignty”*

organised by

*Internal Quality Assurance Cell (IQAC)
Lady Keane College, Shillong*

In collaboration with

*North East Society for Agroecology Support (NESFAS)
&*

*Meghalaya Climate Change Centre,
Meghalaya Basin Development Authority (MBDA)*

on 19 & 20 March, 2024









No. of Participants – 211

1. Students – 137
2. Resource Persons & Chairpersons – 13
3. Paper Presenters – 19
4. Community Members (Present Papers) – 4
5. Community Members (Participants) – 27
6. Organisers – 11

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18.	Manbhalang Marpa	" "	<i>Manbhalang Marpa</i>
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54	Mercy Mary Maulang	Shillong College	
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57	Sharon Dai	Shillong college	Sharon Dai
58	Nambha Pohmen	Shillong College	
59	Lestly Sentuga	Shillong college	Lestly Sentuga
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61	Mebakulin Rynghoi	Saint Mary's College	Rynghoi
62	Hercham Awungshi	Shillong college	Hercham
63	Exim Raikhan	Shillong college	Exim
64	Kawokampibo Zeliang	Shillong college	Zeliang
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67	Idawawlang Gunfad	St. Mary's College	Gunfad
68	Dorshana Talukdar	Lady Keane College	Talukdar
69	Bidisha Gogoi	"	Bidisha

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23)	Ms. Bioletly Sawkmi	LKC	B. Sawkmi

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19	Skaphrang Morwein	"	
20	Teiborlang Moakhen	"	
21	Bianglin Nongbet	Nongwah	
22	Thirida Khasain	Nongwah	
23	Sueelbeta Kani	Nongpao	

**International Conference-cum-Workshop on
"Climate Change, Indigenous Knowledge Systems and Food Sovereignty"**

Organised by

The Quality Assurance Cell (IQAC), Lady Keane College, Shillong

In collaboration with

North East Society for Agroecology Support (NESFAS)

&

Meghalaya Climate Change Centre, Meghalaya Basin Development Authority (MBDA)

Date: 19th & 20th March, 2024

Participants

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26	Ishan Chandan Datta	St. Anthony's college	Ishan
27	Shivam Kumar Singh	St. Anthony's College	Shivam
28	Vijayraj A. Hork	St. Anthony's college	Vijayraj
29.	Philapynkmen d. Katreai	Synod College	Philapynkmen
30	Sirena Chyngap	Synod College	Sirena
31	Surbasmita Lyngdoh	Synod College	Surbasmita
32	Mambhalang Kharriang	Synod College	Mambhalang
33.	Sarangthem Nolmi Chanu	USTM	Nolmi
34	Mophibaichhuen Lyngdoh Mawnai	St. Mary's College	M Mawnai
35	Medaichuen Kharkongor	St. Mary's college	Medaichuen
36	Susmita Gwurmayem	St. Mary's College	Susmita
37	Yonna Careen Dha	St. Mary's College	Yonna
38	Naoume Jehnali Derri	St. Mary's college	Naoume
39.	Daphika Mexia Lyngmai	St Mary's College	Daphika
40	Peyum Karap	St. Mary's College	Peyum
41.	Loisi Lalnuntiani	St. Mary's college	Loisi
42.	Rose Mary	St - Mary's college	Rose
43	R.K. Pna	Lady Keane college	Pna
44	Namajongphi Lathong	Lady Keane College	Namajongphi
45	Chibame Maxak	Lady Keane College	Chibame
46	Alia Devi Maharabam	Lady Keane college	Alia