

*Chakraborty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

# *Eastern* **HIMALAYAS** **CULTURAL DIVERSITY**

Bedika Rai

Dr. Basudeo Thapa

Dr. Minakshi Chakraborty



*Chakraborty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

# Eastern Himalayas. Cultural Diversity

First Volume

Editors

Bedika Rai  
Dr. Basudeo Thapa  
Dr. Minakshi Chakraborty



*Chakraborty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra  
Dixit

Title of the Book: Eastern Himalayas: C

First Volume: 2023

Copyright 2023 © Authors and Editors

Editors

Bedika Rai, Assistant Professor in the Department of I  
Mahavidyalaya, Bagdogra, Dist. Darjeeling, West Bengal

Dr. Basudeo Thapa, Assistant Professor in the Dep  
Ghosh Tarai Mahavidyalaya, Bagdogra, Dist. Darjeeling,

Dr. Minakshi Chakraborty, Principal, Kalipada Gh  
Bagdogra, Dist. Darjeeling, West Bengal.

No part of this book may be reproduced or transmitted  
electronic or mechanical, including photocopy, recording,  
and retrieval system, without permission in writing from th

**Disclaimer**

The authors and editors are equally responsible for the cont  
The publishers or editors do not take any responsibility fo  
Errors, if any, are purely unintentional and readers are requ  
errors to the editors or publishers to avoid discrepancies in fi

ISBN: 978-93-5747-691-1

MRP Rs. 349/-

**Publisher, Printed at & Distribution by:**

Selfypage Developers Pvt Ltd.,

Pushpagiri Complex,

Beside SBI Housing Board,

K.M. Road Chikkamagaluru, Karnataka.

Tel.: +91-8861518868

E-mail: [publish@iiponline.org](mailto:publish@iiponline.org)

**IMPRINT: I I P Iterative International Publishers**

For S...

# Contents

Introduction	1
<hr/>	
<i>Bedika Rai and Dr. Basudeo Thapa</i>	
An Ethnomusicological Study of the Sherpas of Darjeeling Hills	10
<hr/>	
<i>Anand Sherpa</i>	
A Comparative Study on Nutritional Status between Urban and Rural School Boys in the Eastern Himalayan Belt of India	20
<hr/>	
<i>Sri Arindam Ghosh, Dr. Lokendra Bahadur Kathayat</i>	
Different Facets of Indigenous Ecological Living in Northeast India: An Exploration in the Light of Select Stories from Arunachal Pradesh and Nagaland	28
<hr/>	
<i>Dr. Arpita Dasgupta</i>	
Khortsas's 'The Tibetan Suitcase', a Himalayan Story: Symbolic Boundary of the Tibetan Identity	37
<hr/>	
<i>Bedika Rai</i>	
Ecology and Lepcha Folktale	45
<hr/>	
<i>Bishwa Bhushan Tamang</i>	
Climatic Change and its Impact on Subsistence Farming and Changing Pattern of Socio-economic Life of Indigenous People	52
<hr/>	
<i>Debasree Shil</i>	
An Enquiry into Some Traditional Beliefs and Practices of the Meches of Terai-Dooars Region in Pre-Colonial India	59
<hr/>	
<i>Dr. Manadev Roy</i>	

*Chakrabarty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

Bridging the Financial Inclusion Gap: Understanding Factors  
Influencing Rural Customers Intent to Use Agency Banking  
Services

*Dr. (CS) Pintu Prasad Jaiswal*

Precision Farming Techniques Revolutionizing North Bengal's  
Agriculture 79

*Dr. Shyam Charan Barma*

Ritualistic Healing and Indigenous Medicinal Practices:  
A sociological Study among the Lepcha Ritualistic Lama  
Healers of Singhi, Kalimpong 97

*Jigme Dhondup*

Encouraging Sustainability through Indigenous Food Culture  
in the Eastern Himalayas during COVID 19 107

*Mau Basu*

Human- Wildlife Conflict: A Challenge to the Biodiversity  
Conservation in Northern West Bengal 120

*Meeta Bala, Monoranjan Chowdhury*

Globalisation and Socio-Economic and Political Impact:  
Challenges in Establishing a Sustainable Human Society 136

*Pawan Gurung*

Understanding the New Image of Sherpas of Darjeeling 144

*Pemu Sherpa*

An Analysis of Pineapple Production in Eastern Himalayan  
Region: A Review 156

*Rahul Mahato*

*Chakrabarty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

Socio Cultural Knowledge of Indigenous People and Their  
Impacts on Environment: Study of Santhals from the foothills  
of the Himalayan Belt

*Rama Murmu*

*Rongnyu-Rongeet*, a Lepcha Folklore and Prakash Kovid's  
*Teesta-Rangeet*: A Geocritical Study 171

*Rippandi Lepcha*

Comparative Analysis between two different Traditional  
Healthcare Practices of India viz. Asthavaidya System of  
Kerala & Local Healthcare System of Darjeeling Hills 176

*Dr. Sapan Tamang*

Human Rights of Indigenous Peoples in India 187

*Sarat Chandra Ray*

Indigenous knowledge and Traditional healing  
Practices in Sikkim 195

*Saurav Pradhan*

Innovating Cultural Identity through Indigenous  
Gastronomical Knowledge 207

*Sharddha Shah*

Changing Livelihood of Indigenous Communities – A Study  
of Mech Tribe in Sub-Himalayan Region of West Bengal 213

*Sheela Karjee*

Development-Induced Displacement of Indigenous People in  
Eastern Himalayas, India 219

*Sneha Ghosh*

*Chakrabarty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

Livelihood Pattern of the Tea Garden Workers in Western  
Dooars of Jalpaiguri District, West Bengal

*Dr. Suraj Tamang*

Change of Livelihood among Asur Community in India: An  
Appraisal in The Light of Indigenous Knowledge of Tribes 238

*Sutapa Das*

The Ahom Coins: A Historical Study 246

*Tapas Biswas, Banani Sarkar*

*Chakrabarty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

# Encouraging Sustainability through Indigenous Food Culture in the Eastern Himalayas during COVID 19.

*Mou Basu*

SACT-I, Department of Sociology,  
Kalipada Ghosh Tarai Mahavidyalaya, Bagdogra, Darjeeling.  
mou.basul@gmail.com

## Abstract

The Eastern Himalayas is home to a rich and diverse indigenous food culture that has sustained the local communities for generations. COVID-19 pandemic has highlighted the necessity of food security and sustainability and there has been a growing interest in promoting indigenous food systems as a means of accomplishing these objectives. This article examines how the pandemic has triggered human agency to resort to indigenous food culture in form of traditional farming and culinary practices in the Eastern Himalayas that have reflected and shaped the perceptions of sustainable food production, consumption and preservation in the recent times. This article further highlights the potential of local food systems in promoting food security, environmental sustainability, and cultural preservation as food is the linchpin of existence and also a means of retaining our cultural identity. COVID 19 has had an immense effect on the life-chances as well as life styles of people where the pandemic has bared the vulnerability of our food sources. As a coping mechanism to the pandemic, the native inhabitants have restructured their culinary ethos prioritizing ecological considerations meanwhile contributing to de-globalization of contemporary food practices thereby enhancing and glorifying local food and culinary practices which satiates the gastronomical souls and creates ecological awareness through sustainable food regeneration that prevents displacement or impinge on their landscape.

**Keywords:** Indigenous food culture, COVID-19, food security, sustainability, food regeneration.

## I. Introduction

The globe has recently witnessed the outbreak of Novel Corona virus disease with resultant highly transmittable viral infection, leading to a pandemic. Among the vulnerabilities across various domains, apart from health aspects and medical emergencies, social and economic well-being, food safety and sustainability has increased the attention towards the implementation of a various range of crisis management mechanism. Lockdowns, social distancing



Chakrabarty  
Principal

Encouraging Sustainability | Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

protocols, restrictions imposed on transport economic activities imposed by the authorities to control and prevent outbreak of the pandemic have caused disruptions in most production supply chains around the world (Jribi et al., 2020). These restrictions specifically on people's global movement and transactions, resulting in deficiency of distribution of resources and supply chain systems. Pandemic has forced individuals and companies to relocate, restructure, and redesign their production processes and in some extreme cases suspend their activities temporarily or permanently. Hence, COVID-19 has had a severe impact on the income of most of the developing countries where by a significant food insecurity is manifested. The pandemic has exposed the necessity to adopt sustainable practices to mitigate the devastating effects of the crises and build up strategies which could minimize the drawbacks.

COVID-19 pandemic has brought significant challenges to food systems and agricultural practices worldwide. In the Eastern Himalayas, where indigenous food culture has sustained communities for centuries, the pandemic has highlighted the importance of traditional knowledge and practices in promoting resilience and sustainability (Mishra et al., 2020). Food security issues have shifted their food preferences due to lockdowns. Scarce food supply has emphasized the necessity to utilize available resources and focus on sustain people and battle the deadly disease. As a coping mechanism, indigenous food systems have played a vital role in promoting food security, environmental sustainability, and cultural preservation. However, these systems face continuous threat from a wide range of factors such as climate change, urbanization, and globalization among many.

### • Challenges Faced By the Indigenous Communities

The challenges faced by indigenous communities in the Eastern Himalayas are complex and multifaceted. They face issues pertaining to land degradation, loss of their land and territory, threat of industrial agriculture, deforestation, and climate change, that threaten their life chances. This region, being rich in natural resources are continuously being threatened and exploited for economic gain, leading to displacement from their own land which has a severe impact on their food and cultural practices. Rapid urbanization, commercialization, and loss of traditional knowledge, leading to the erosion of traditional knowledge, and water scarcity, undermining the resilience of

Nonetheless, this region is vulnerable to the effects of climate change & global warming and melting of glaciers and changing rainfall pattern serious consequences as these communities rely on natural resources such as water, forest and agriculture. Climatic shocks leads to crop failure, loss of livestock, and food shortage. Apart from the aforesaid challenges, discrimination and marginalization of the indigenous communities and lack of access to necessary resources like healthcare, education and employment accounts for their backwardness. Natural disasters like floods, landslides and earthquakes have devastating effects on their life and property. The pandemic has exacerbated the challenges even further as restrictions on movement and economic activity has affected their livelihood. The pandemic has had severe impacts on the Eastern Himalayas' food systems, which rely heavily on local markets and traditional supply chains. Lockdowns and other measures to control the spread of the virus have disrupted these supply chains, leading to food shortages, price hikes, and reduced access to nutritious food (FAO, 2020).

- **Emphasis on Healthy Dietary Practices During COVID-19**

Studies on nutritional behavior among people have revealed that malnutrition affect one in every three people globally. Nutritional imbalance and a weak immune system lead to a lot of diseases. Nutritional deficiencies of high-quality macro and micronutrients are strongly associated with a depressed immune function and increased susceptibility to infection (Naja, F. et., al 2020). The International Committee on Taxonomy of viruses and the World Health Organization (WHO) termed the contagious viral infection as COVID-19 and hence, global containment and quarantine were imposed in order to combat spread of the disease. According to a study published online September 6, 2021, by the Journal *Gut*, a healthy diet is associated with a reduced risk of developing COVID-19 and its serious complications. Researchers have found a link between COVID and a poor diet or socio-economic disadvantages. Carlin Rafie, a registered dietician and Professor in Virginia Tech's College of Agriculture and Life Sciences, asserts the necessity of having a healthy diet in order to build a strong Immune system to lessen susceptibility of infection, including corona virus.

- **Global Crises and Food Insecurity**

The 2030 Agenda for Sustainable Development, SDG 2 aims to end hunger, achieve food security and improve nutrition. Several efforts to make progress towards the SDG2, are proving insufficient due to challenges posed by COVID-19 corona virus pandemic. The intensification of recent food insecurity and malnutrition trends due to conflicts, extreme climatic conditions and instable economy along with rising cost of food and economic inequality continues to

*Chakrabarty*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

*Encouraging Sustainability through Indigenous Food Culture in the Eastern Himalayas during COVID 19*

*Encouraging S*

challenge food security and nutrition. The prevalence of undernourishment (PoU) rose to around 9.9 percent in 2020, from 8.4 percent in 2019. It is presumed that around 660 million people may face hunger in 2030, due to the lasting effects of the COVID-19 pandemic on global food security (FAO, 2021.) The corona virus outbreak has exacerbated discrepancies in the economy and food sector, destabilizing the global food security system, ranging from the producers, the processing and distribution chain, consumers, and the economic environment and waste management systems.

The food industry has been impacted severely due to COVID-19 pandemic in India. The mountain dwellers faced difficulty in purchasing essential commodities. According to the official Food and Agriculture Organization (FAO) "Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their daily needs and food preferences for an active and healthy life". When people don't have access to food through any means, food insecurity occurs. Food security was already a matter of concern due to population explosion and limited access to food but during the pandemic, food security has declined sharply. Disruption in the transportation and supply chains has significantly affected the distribution of food and other essential commodities during lockdown.

#### • Food Environment and Global Food Culture

Food practices enables to construct and maintain our beliefs, cultural, racial, and ethnic identities thereby enriching our cultural heritage. Cultural innovation and fusion leads to behavioral change and alternative pathways. It has enabled human to evolve their life styles and life-chances to a great extent. Globalization has evoked shift in agricultural demand-supply pattern, dietary and nutrition transition. Consumption of fast food, processed food, packaged food, sweets and bakeries are increasing. Food behavior transition is also observed through recent trends in food selection, purchasing patterns, reduction in healthy food intake, increased use of processed food, sweets, sugar and salt, animal food and chemicals. Easy availability of processed food raises some security concerns such as growing use of pesticides and chemical fertilizers in agriculture, contaminated produce grown in unclean water, extensive use of non-permitted additives, adulteration, unsafe and un-hygienically catered food, unsafe and widespread use of plastics in packaging, use of antibiotics, and hormones for animal foods, expired date products are raising an alert among the health practitioners due to an increase in life-threatening diseases.

#### • Sustainability and Food Regener

Sustainability and food security are concerns about health, environment, and ecological footprint. Pandemic food supply chains relying on trans access to markets. The challenges p for the agrifood systems to be trans low cost nutritious food sustainabl tremendous resilience of the self-re of the indigenous people. Sustain retained through agriculture practi and local resources. For example integrate trees and crops, can im enhance the resilience of crops to food environment and changing c with positive impact on health crises.

#### II. Objective of the Present S

The main objectives of my prese

- To identify how indigeno during world crises cau inhabitants of Eastern Hi
- To understand the cl preservation and consum
- To understand and veri and resultant de-globaliz

#### III. Methodology

This paper is based on conc through comprehensive revi gathered from secondary : books, Ethnological monog synthesizing key findings r other relevant documents f identifying key themes on t blog posts, and other online from online sources such topic.

## • Sustainability and Food Regeneration

Sustainability and food security are complex systems. Food sustainability concerns about health, environment, natural resources and their natural, social and ecological footprint. Pandemic has exposed the vulnerabilities of global food supply chains relying on transportation, corporate farming systems and access to markets. The challenges posed by the Pandemic makes it imperative for the agrifood systems to be transformed, become more resilient and deliver low cost nutritious food sustainably and inclusively. It also emphasized the tremendous resilience of the self-reliant bio-cultural food systems and practices of the indigenous people. Sustainability in the Eastern Himalayas could be retained through agriculture practices that are based on traditional knowledge and local resources. For example, the use of agro-forestry practices, which integrate trees and crops, can improve soil health, increase biodiversity, and enhance the resilience of crops to climate change (FAO, 2019). Strengthening food environment and changing consumer behavior to promote dietary patterns with positive impact on health and environment was highly felt during the crises.

## II. Objective of the Present Study

The main objectives of my present paper are:

- To identify how indigenous food culture is being revived and rewarded during world crises caused due to COVID-19 pandemic among the inhabitants of Eastern Himalaya.
- To understand the changes undergone in the food production, preservation and consumption pattern among the inhabitants.
- To understand and verify the notion of sustainability of local resources and resultant de-globalization of food culture.

## III. Methodology

This paper is based on conceptual knowledge. Facts have been strengthened through comprehensive review of existing literature. Information have been gathered from secondary sources such as academic and medical journals, books, Ethnological monograph, news papers, and online databases, and synthesizing key findings related to the topic. Policy statements, reports and other relevant documents from government, NGOs, and other organizations, identifying key themes on the topic have been reviewed. Relevant news article, blog posts, and other online sources have been sought. Data has been gathered from online sources such as government statistics and reports related to the topic.

*Kalipada Ghosh*  
Principal

Kalipada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

### IV. Main Findings of the Study

Gastronomy is grounded in the relationship between celebrated among various communities across region most indulged pleasure, an essential element of culture and preserves our cultural heritage. Food has often been found to bridge gaps between culture, ethnicity and nationalism.

The role of indigenous food culture in promoting sustainability can be characterized by the diversity, resilience and sustainability of traditional food systems based on traditional knowledge, cultural practices, and local resources that is well adapted to local ecological conditions. "The COVID-19 pandemic has highlighted the importance of indigenous food culture in the Eastern Himalayas, as it has enabled communities to maintain their food security and self-sufficiency during the crisis" (Ghosh, 2021). Food systems in this region include a wide range of crops and livestock, traditional food processing and preservation techniques. Ethnic cuisine incorporates local ingredients, including herbs, spices, vegetables, and meats, and is typically influenced by the terrain, climate, and cultural practices of the region. Traditional farming practices such as shifting cultivation, crop rotation, and mixed cropping is used to maintain soil fertility and biodiversity. The region's food is locally sourced and seasonal ingredients ensure that the food consumed is fresher, nutritious, and has a lower carbon footprint. These systems have developed over generation and well adapted to grasslands, wetlands, and mountain slopes. Traditional farming practices are based on principles of agro-ecology, such as crop diversity, soil fertility, and water management that promote ecological resilience and support biodiversity conservation. For example, farmers in the Eastern Himalayas practice terrace farming, crop rotation, and intercropping, which help to prevent soil erosion, improve soil health, and reduce pest and disease outbreaks (Mishra et al., 2020). These systems have developed over generation and well adapted to ecological conditions.

### • Conspicuous Consumption replaced by Conscious Consumption

Food has leveled up our interest in the climate change battle where people are realizing how food makes a difference. The country is embracing organic food and shifting their focus to sustainable and conscious eating habits. Direct from farms and a rise in organic farming is indicative of the need to free food while conserving the planet. According to Indian \$849.5 Million is the value of the Indian organic

Food culture in the Eastern Himalayas highlights revival and promote traditional cuisine, driven by a growing interest in locally sourced food, recognition of nutritional value and health benefits of traditional cuisine, and efforts to preserve and promote indigenous culture and community resilience. Dhiman et al., (2021) found that traditional food crops such as millets, maize, and buckwheat were highly nutritious and were better adapted to the local environment, making them resilient to climate change.

In the Eastern Himalayas including eastern Nepal, Bhutan, Sikkim, Darjeeling, Arunachal Pradesh, Assam, Meghalaya, Tripura, Mizoram, and Manipur in North-East India cultural diversity is evident due to multiple passes of the Himalayas and Indo-Burmese hills which have enabled migration of various ethnic groups. It is a melting pot of over 100 ethnic identities such as Garo, Khasi, Lepcha, Limbu, Bhotiya, Naga, Adi, Monpa and Bangri. These ethnic groups have witnessed cultural assimilation and a synthesis of food and lifestyle though each community has its distinct and unique food practice.

These multiethnic people savor rice, pulses and cereals, vegetables, fish and meat, milk and milk products as staple food in a lot of variety. Due to altitudinal variation, multi-ethnic presence, socio-economic status and traditional knowledge, the food culture has evolved over a period of time. Cultivation of agricultural crops like maize, wheat, finger millet, barley, potato, soybeans, seasonal vegetables and fruits is evident. Their traditional culinary practices involves all edible parts of the plants such as seeds, leafs, stem, roots, fruits and flowers. Poultry and livestock accounts for a steady and regular supply of eggs, meat and milk.

Some of the popular traditional Himalayan food includes:

- Buckwheat: A staple food in many parts of the Himalayas, buckwheat is a nutritious grain that is gluten-free and high in protein and fiber. It is used to make a variety of traditional dishes, including pancakes, noodles, and bread.
- Sattu: A roasted grain flour made from a variety of grains, including chickpeas, barley, wheat, sattu is a popular food, often used to make porridge, drinks and snacks.
- Yak meat: A staple food in the high-altitude regions, yak meat is lean, low in cholesterol, and high in protein. It is typically used in traditional dishes such as momos (dumplings) and thukpa (soup).
- Sea buckthorn: A small, tart berry that is native to the Himalayas, sea buckthorn is high in antioxidants and vitamin C and is often used to make juices, jams, and sauces.

The shift towards indigenous food culture in the Himalayas is an important trend that reflects a growing appreciation for traditional practices and a desire to preserve and promote local culture and heritage. Several government schemes have encouraged and promoted indigenous food culture through community-led initiatives that build local food networks.

The government has launched a program to promote organic farming and local food production in Sikkim which provides training and support to small-scale farmers, and initiatives to promote traditional food practices and local food markets. The program has been successful in promoting sustainable agriculture and preserving indigenous food culture, improving food security and reducing dependence on imported foods.

In Arunachal Pradesh, the "Slow Food movement" has incorporated local communities and is based on principles of "good, clean, and fair" food, prioritizing the quality and sustainability of food production as well as the socio-economic wellbeing of food producers and consumers.

The "Green Livelihood Alliance" initiative in Nepal has focused on empowering women and marginalized communities through community forestry, sustainable agriculture, and income-generating activities (Shrestha et al., 2020).

The pandemic has also necessitated the importance of food sovereignty. Food sovereignty is the right of the indigenous communities to control their own food systems. This reflects a deep understanding of environment and biodiversity. In Nagaland, the government has launched a training program that supports farmers to grow traditional crops, took initiatives to promote local food markets and support food processing and preservation. Whereas, in Bhutan, the government has implemented policies to protect traditional land and water resources and promoting the sustainable use of wild food resources.

- **Role of Women in Preservation and Promotion of Food Culture and a Visible Shift in Local Gastronomy**

Women in the Eastern Himalayas play a crucial role in sustaining traditional food culture. They preserve and disseminate traditional agricultural knowledge and methods related to food and agriculture and also serve as the main food producers and processors. They are involved in a range of agricultural activities, including cultivation, harvesting, and processing of crops such as rice, maize, millet, and buckwheat (Bhattacharjee et al., 2020). Women are also involved in the collection of wild food resources such as mushrooms, berries, and medicinal plants, which are an important source of nutrition and income (Mishra et al., 2020). Women's collectives and self-help groups have been instrumental in

promoting the cultivation of added products, such as vegetables (Bhattacharjee et al., 2020).

The pandemic has significantly impacted local communities. The closure of markets and the shift towards home-cooked food, including immunity-boosting local food culture, are close to nature and that does not impinge on the environment during lockdown has led to organic and home-cooked food satiating the gastronomic immunity and resistance.

- **Traditional Knowledge**

A major shift is evident in the mindsets of people across the country. Food sovereignty and sustainable food systems for food security has become a priority.

Food fermentation is a traditional method of producing edible products in the Eastern Himalayas. It plays a significant role in dietary culture, with traditional fermented foods being the Nepali staple. The use of wild plants and animals in traditional diets, resulting from traditional food processing, is a result of the availability of agricultural raw materials harvested from the region. The conversion of starch into the monosaccharides and other components which are used in fermented foods is a result of food fermentation. The sources either natural or cultured (s) contain biochemically interesting compounds for the consumers (Tang et al., 2020). The geographical location of the region is also a factor in the development of traditional food culture.

promoting the cultivation of traditional crops and the production of value added products, such as jams and pickles, made from indigenous fruits and vegetables (Bhattacharjee et al., 2020).

The pandemic has significantly altered the food habits and preferences of the local communities. Factors influencing interest in local gastronomy include the closure of markets and restaurants, alterations in the food supply chains and including immunity building foods have induced the importance of home-cooked food. Social media also played a vital role in promoting and preserving local food culture during pandemic (Shrestha, et al., 2021). Himalayan women are close to nature and try to nurture it by adopting sustainable measures that does not impinge on their natural landscape. Scarcity of processed food during lockdown has influenced the natives to shift their taste-buds to a local, organic and home-based dietary practice. Traditional cuisines have not only satiated the gastronomical souls but also acted as a protective shield providing immunity and resistance against the deadly corona virus.

#### • Traditional Knowledge of Food Preservation

A major shift is evident in changing relationship with food culture, the evolving mindsets of people and ways in which the pandemic has changed the palate of the country. Food crises have prompted the mountain inhabitants to practice sustainable food habits. One of the most enduring, effective and luscious form of food security has been food preservation and fermentation.

Food fermentation is one of the oldest traditional techniques for preservation of edible products in the development of human civilization. It plays an eminent role in dietary culture of the Eastern Himalayan region. Historical contributors being the Nepali and the Gorkha community, fermentation of edible parts of plants and animals have been survival systems of the ancient Himalayan people resulting from traditional knowledge, food preferences, climate conditions, and availability of agro-biological resources. It is a unique technique to preserve the raw materials harvested by the farmers in large scale and the process specially converts the starch and other polysaccharides into monosaccharide and finally the monosaccharide are converted into organic acids, ethanol and important components which can be utilized further as foods and medicines. Ethnic fermented foods are produced by the ethnic people using their native knowledge of food fermentation from locally available raw materials of plant or animal sources either naturally, spontaneously or back-slopping or by adding starter culture(s) containing functional microorganisms which modify the substrates biochemically into edible products that are culturally and socially acceptable to the consumers (Tamang, J.P., 2022). Tamang further asserts that due to diverse geographical coordinates and agro-climatic variations, more than 400 different



*Chakrabarty*  
Principal

Kalpida Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalpida Ghosh Tarai  
Mahavidyalaya  
Bagdogra

types of ethnic fermented foods and alcoholic fermented and alcoholic drinks by the multiethnic Himalayan people considered to be nutritious and have endless medicinal fermentation of Gundruk and Sinki, common traditional non-salted fermented vegetable products, species of *Lactobacillus* and *Pediococcus* produce lactic acid and acetic acid, which reduce the pH of the substrates making the products more acidic in nature and inhibit the growth of pathogenic microorganisms, thus foods are safe for consumption (Tamang, et al., 1993). Most of the fermented food is organically prepared using traditional knowledge practices which can be preserved for a long time without addition of any synthetic preservative. Perishable vegetables and legumes, milk and milk products, and meat are preserved using fermentation in the Eastern Himalayan regions enabling affordability and bio-preservation of the available resources.

• Revival of Traditional Practices during COVID-19 Pandemic

In the early 2020, when COVID-19 pandemic broke out, urban population was struggling to support themselves and their families. Global food supply chains were highly affected due to subsequent lockdowns that impaired long distance transportation and farming systems that hugely depend on access to markets for commodity exchange. Migrant laborers' were extremely vulnerable as they couldn't support themselves and their families in the cities due to lack of economic resources. These migrant laborers, who initially have been farmers returned to their land and eventually started their traditional farming practices.

Even the indigenous population was highly vulnerable during lockdown due to physical and social exclusion, food and nutritional insecurity and reduced access to food, changes in local diet, and economic losses. It was during this period that tremendous resilience of the self-reliant bio-cultural food systems of indigenous people around the world came to rescue. They were able to ensure food security and sustain themselves using their localized, bio-diverse, circular food systems founded on ancestral knowledge and cultural values. A steep move towards indigenous farming practices, traditional culinary ethos, local food storage and preservation techniques could be observed during pandemic. The International Network of Mountain Indigenous Peoples ( INMIP), a global network of indigenous farming communities spanning 11 countries including India, have enabled these communities to maintain and strengthen their indigenous food systems through participation in community learning exchanges. As per Ms. Cass Madden, coordinator and project manager for the secretariat of the International Network of Mountain Indigenous People, INMIP farmers in India's Eastern Himalayas reported that "despite the many challenges that the pandemic has brought, we see a positive side: many returning urban

migrants using ancient and traditional practices started growing native crops, preparing meals using native crops and wild plants and even began marketing some of these products to support their livelihoods. They are earning profit from ancient practices and knowledge, proving that one does not need to move to the city to have economic opportunities”.

Food culture in the Eastern Himalayas also includes a rich culinary heritage that reflects the region's cultural diversity and history of trade and exchange. Local cuisines feature a range of spices, herbs, and condiments that are used for flavoring, preservation, and medicinal purposes. For example, the use of ginger, garlic, and turmeric is widespread in traditional Himalayan cuisine, and is believed to have medicinal properties that promote health and wellbeing (Thakur et al., 2021).

Unadulterated organic food, vegetables and fruits played a vital role in building blocks to a healthy, sustainable, eco-friendly livelihood across generations. Whatever challenges COVID-19 has posed, such as food insecurity and exhaustion of economic opportunities, these indigenous communities have braved to sail through it not only prioritizing social profitability but preserving their natural habitat.

## V. Conclusion

COVID-19 pandemic has had a tremendous impact on the native food culture and sustainable strategies of the inhabitants in the Eastern Himalayas. While the pandemic posed difficulties in terms of transportation and market access, it also provided chances for communities to restore links to their traditional food systems and knowledge practices. Indigenous culinary practices have helped these populations to survive the pandemic through innovative and adaptive approaches. Home gardens, community-based seed banks, and the resurgence of age-old methods of food processing and preservation are a few instances. Local communities now have access to fresh, nutritious food, and their efforts have also helped to preserve biodiversity and promote sustainable farming.

Further, the efforts of various organizations, NGOs, and government entities are vital in preserving the native food culture and sustainable strategies. These groups have extended technical and financial aid to the communities to promote sustainable agricultural methods, create local markets, and improve the value chain of indigenous food items. Hence, local food systems can be strengthened by promoting direct marketing channels, such as farmers' markets and community-supported agriculture, that enable farmers to connect with consumers and reduce dependence on external supply chains (Bhandari, 2021). The importance of indigenous communities in conserving biodiversity,

Chakraborty  
Principal

Kalpada Ghosh Tarai Mahavidyalaya

PRINCIPAL  
Kalpada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

*Encouraging Sustainability through Indigenous Food Culture in the Eastern Himalayas during COVID-19*

developing sustainable agriculture, and maintaining traditional knowledge and practices must be acknowledged. This entails putting laws into place that encourage sustainable agricultural practices, the development of regional markets, and the promotion of value-added goods made from locally grown commodities. It is equally crucial to acknowledge the contribution of women in advancing indigenous food traditions and sustainability and to give them the aid and resources they require to continue their enriching efforts.

Finally, the Eastern Himalayan region's relevance of its own food culture and sustainability has been highlighted by the COVID-19 pandemic. The local populations' ability to adapt and endure during the pandemic is indicative of how crucial these knowledge practices are to ensuring food security, protecting biodiversity, and advancing sustainable agricultural methods. In order to maintain these practices for future generations, it is essential to acknowledge their contribution, to give them the assistance and resources they need. Furthermore, indigenous food systems are often based on communal sharing, which eventually fosters social cohesion and resilience.

## References

- [1] Agrawal, A. (2020). Local seeds for resilient farming systems in the Himalayas. Food and Agriculture Organization of the United Nations.
- [2] Bhandari, H. (2021). Exploring Community Supported Agriculture in the Eastern Himalayas. *Journal of Agriculture, Food Systems, and Community Development*, 10(1), 103-119.
- [3] Bhattacharjee, S., Sarkar, S., & Chakraborty, D. (2020). Women in the Eastern Himalayas: Traditional agricultural practices and food security. *Journal of Rural studies*, 80, 158-167.
- [4] Garg, S., & Chaturvedi, R. K. (2020). COVID-19 pandemic and agriculture sector: challenges and mitigation strategies for sustainable food security. *Environment, Development and Sustainability*, 1-23.
- [5] Jribi, S., Ismail, H.B., Doggui, D., & Debbabi, H. (2020). COVID-19 virus outbreak lockdown: What impacts on household food wastage? *Environmental Development and Sustainability*, 22, 3939-3955.
- [6] Kala, C. P., & Farooque, N. A. (2013). Medicinal plants: utilization and conservation. *Journal of Applied and Natural Science*, 5(2), 394-400.
- [7] Khaling, S., & Tamang, J. P. (2016). *Ethnic fermented foods and beverages of India: Science history and culture*. Springer International Publishing.
- [8] Marcone, M. F. (2015). Traditional food products: the role of the EU in promoting quality, safety and authenticity. *Journal of Food Science and Technology*, 52(5), 2279-2292.
- [9] Mishra, S., Pradhan, R., Rai, R., & Pandey, S. (2020). Traditional farming practices and agroecology in the Eastern Himalayas. *Journal of Agriculture and Rural Development in the Tropics and Sub tropics*, 121(1), 95-110.
- [10] Naja, F., & Hamadeh, R. (2020). Nutrition amid the COVID-19 pandemic: A multi-level framework for action. *Clinical Nutrition*, 39(6), 1983-1987.
- [11] Regmi, A., Thapa, G. B., & Shrestha, K. K. (2020). COVID-19 and food systems in Nepal: Impacts and implications".
- [12] Shrestha, R., & Pant, A.D. (2021). Shift in the Gastronomy of eastern Himalayas During the COVID-19 Pandemic. *Journal of Gastronomy and Tourism*, 6(2), 171-182.
- [13] Tamang, J.P., & Sarkar, S. (1993). Ethnomedicinal uses of plants among the Limbu tribe of eastern Nepal. *Journal of Ethnopharmacology*, 39(3), 185-198.
- [14] Tamang, J. P., Tamang, N., Thapa, S., & Tamang, B. (2020). Ethnic fermented foods and alcoholic beverages of Asia: Potential probiotics for human health. *Journal of Ethnic Foods*, 7(1), 1-13.
- [15] Tamang, J.P. (2022). Ethno-microbiology of ethnic Indian fermented foods and alcoholic beverages. *Journal of Applied Microbiology*, 133(1), 145-161.

- [16] Teigiserova, D.A., Hamelin, waste and loss: Clarifying de the Total Environment, 706, 1
- [17] Thakur, D., Sharma, A., Se Himalayan Cuisine: A review

## Online Sources of Refer

- [1] FAO. (2019). Agroforestry <http://www.fao.org/3/ca5183>
- [2] FAO. (2020). COVID-19 th Organization of the United N
- [3] IIED. (2020, June 18). Indig <https://www.iied.org/indige>
- [4] MedicalXpress. (2021, Janu 5, 2023, from <https://medica>
- [5] MedicalXpress. (2021, Jan March 5, 2023, from <https://>
- [6] World Health Organization Geneva, Switzerland <https://www.who.int/public>

- [16] Teigiserova, D.A., Hamelin, L. & Thomsen, M. (2020). Towards transparent valorization of food waste and loss: Clarifying definitions, food waste hierarchy, and role in the circular economy. *the Total Environment*, 706, 13-6033.
- [17] Thakur, D., Sharma, A., Semwal, A.D., Kumar, R., & Kumar, D. (2021). Traditional Knowledge of Himalayan Cuisine: A review. *Journal of Ethnic Foods*, 8, 5-18

PRINCIPAL  
Kalipada Ghosh Tarai  
Mahavidyalaya  
Bagdogra

### Online Sources of References

- [1] FAO. (2019). Agroforestry for food security and nutrition in the Hindu Kush Himalaya. Retrieved from <http://www.fao.org/3/ca5183en/ca5183en.pdf>
- [2] FAO. (2020). COVID-19 the impact on food security in the Asia Pacific region. Food and Agriculture Organization of the United Nations. Retrieved from <http://www.fao.org/3/ca9730en/CA973>
- [3] IIED. (2020, June 18). Indigenous food systems prove highly resilient during COVID-19. Retrieved from <https://www.iied.org/indigenous-food-systems-prove-highly-resilient-during-covid-19>
- [4] MedicalXpress. (2021, January 21). Why healthy eating can help you fight COVID-19. Retrieved March 5, 2023, from <https://medicalxpress.com/news/2021-01-healthy-covid-.html>
- [5] MedicalXpress. (2021, January 25). How to stay healthy during the COVID-19 pandemic. Retrieved March 5, 2023, from <https://medicalxpress.com/news/2021-01-healthy-covid-.html>
- [6] World Health Organization. (2015). WHO Handbook on Indoor Radon: A Public Health Perspective. Geneva, Switzerland: World Health Organization. Retrieved from <https://www.who.int/publications/i/item/9789241547673>