

Exploring ethnic foodscape in food desert: the case of Kolasib, Northeast India

K P Chaudhary^a, Michelle C Lallawmkimi^b, Carolyn Zothansiami^b, P Adhiguru^c, P K Singh^d & D K Pandey^{e,*†}

^aCentral Agricultural University (Imphal)- KVK, Aizawl 796 014, India

^bKrishi Vigyan Kendra, Kolasib, Mizoram 796 082, India

^cAgricultural Extension Division, Indian Council of Agricultural Research, KAB-I, New Delhi 110 012, India

^dCentre for Protected Cultivation Technology, ICAR-IARI, New Delhi 110 012, India

^eCollege of Horticulture & Forestry, CAU (I), Pasighat, Arunachal Pradesh 791 102, India

*E-mail: dkpextension@gmail.com

Received 22 March 2021; revised 11 March 2022; accepted 24 March 2022

Of late, ‘Food deserts’,— places where there are no supermarkets for residents in the locality—are triggering policy debates among the policy-makers, academics, activists and media and advocating policy-led interventions to establish accessible new supermarkets. However, in some food deserts, local communities may traditionally follow their own indigenously adapted approaches for consumption of healthy diets. In this paper, we contend that policy-makers sometimes rather than strengthening in-situ opportunities may even rattle low-cost healthy food access pathways by new supermarket mediations. Based on qualitative tools, i.e., focused group discussion (FGD), the current study has delved into the availability of range of ethnic traditional cuisines from the foodscape of Kolasib, generally consumed by the Lushai tribe in Mizoram, Northeast India. Our study proposes new boulevards for conducting research and possible provision of financial impetus to prevailing community-based practices for establishing food banks and leveraging farm-to-market opportunities.

Keywords: Ethnic foodscape, Food desert, Indigenous food system, Pandemic

IPC Code: Int Cl.²³: A23L 3/00, A23L 5/00, A23L 25/00

Access to adequate food is a fundamental right to every human on this earth. This necessity is clearly pronounced by the High Level Panel of Experts on Food Security and Nutrition¹. The Panel report spells out the ‘food environment’ as how decisions about acquiring, preparing, and consuming food are taken by consumers in a food system amidst varying physical, economic, political and socio-cultural contexts¹. In this background, the term ‘foodscape’ denotes “the kind of interconnections between food, people and places and accentuates the associated spatialization of food ways². In other words, it is a “socially-constructed expression of the field of food³. Also, etymologically, it is “a marriage between food and landscape—both in terms of conceptual notion (idea) of landscape and actual, physical landscapes”—as opined by Adema⁴. A typical scenario posing a health issue is living in areas characterized by poor access to large food outlets or constrained by physical access to supermarkets and even to grocery stores which can be more aptly called as ‘food deserts^{5,6}. “The dynamic inter-relation that a distinct community has with food

in a particular place in an orchestral manner is conceptually depicted as foodscape⁷. Further, this term ‘foodscape’ is favoured for comprehending and addressing the complex elements of the food system, the context may range from micro-scale individual practices to the global food regime. Though this term ‘foodscape’ means as that of ‘food system’, it also includes places linked to food. For instance, across the food chain, i.e., from production to consumption, the set of places and spaces linked to food is called as ‘foodscape^{8,9}. In the case of indigenous people, ‘ethnic foodscape’ aids forging the social identities of those communities residing in neighbourhoods. For such kinds of benefits, the ‘local food systems’ or ‘place-based foodscapes’ are found to be more sustainable alternatives¹⁰.

Food systems and territorial management practices of indigenous people depend on collective rights to local natural resources and community land. Movement, nomadism and shifting cultivation characterize the food systems of these people¹¹. The food systems prevailing among indigenous people could underline the potentiality to counter the effects of the COVID-19 crisis in a long-term manner. As the

*Corresponding author

indigenous people are capable of producing their foods by conventionally adopting their ancestral and traditional territorial management practices, they are able to manage their consumption in a sustainable way, thereby substantially avoiding their dependency on external foods, incomes and markets¹². Indigenous food system knowledge is especially susceptible to socio-economic and ecological disturbances because it is primarily transmitted verbally. The vast majority of indigenous food systems are still largely undocumented, making them even more susceptible to outside disruptions and making them invisible in discussions about the global administration of food systems. Therefore, comprehensive documenting of epistemic resources and their significance for livelihoods and environmental sustainability is required to address the marginalisation of indigenous knowledge in food system transformations¹³. In view of this, the prevailing indigenous food systems are to be well understood, forged, and protected, especially in the context of a changing climate which also is to be key consideration during post-pandemic recovery¹⁴. It is against this background that the present study

attempts to explore an ethnic foodscape of Lushai tribe mainly dependent on shifting cultivation in Kolasib district of Mizoram, Northeast India.

Methodology

Study area

Situated in the Northeastern part of India, Mizoram covers geographical area of 21,081 sq km, which is 0.64% of the geographical area of the country (Fig. 1 & Table 1). A primarily agrarian economy characterises the state. The people's major activity is agriculture, which is dominated by the traditional form of shifting cultivation (Jhum). The Lushai are one of the most well-known Mizo tribes (whose name is often mistakenly applied to the entire Mizo community). Traditional cuisine is well-known in Kolasib. It is quite different from typical Mizo cuisine; the peculiarity can be attributed to the vast number of tribal people who live here. The detail profile and location of the Kolasib district is given in Table 1 and Figure 1, respectively.

To document food diversity, three focus group discussions (FGDs) were conducted at Kirshi Vigyan Kendra (Farm Science Centre) Kolasib during November-December 2020 because FGDs are increasingly used for eliciting qualitative information on the sensory properties of foods and on how those properties relate to food acceptability¹⁵. The three FGDs were carefully planned, ensuring that each group consisted of at least 10-12 participants and that roughly 50% of them were women. The one-to-two-hour meetings were aimed to gather as much information as possible on the product or attribute of interest. We informed the participants that their identities would be kept private and that the outcomes of the conversations would only be used for this research. In the case of cultivated and wild plants and livestock species, the moderators (subject matter specialists primarily from KVK, Kolasib) asked each participant about the food products that are commonly



Fig. 1 — Map of Mizoram showing the study area (Kolasib district)

Table 1 — Profile of the Kolasib district, Mizoram, Northeast India

Geographical area (GA) ^a (in sq Km)	Geographical coordinate of the district		Average rainfall mm per annum	Forest cover of total Geographical Area (%)	Scheduled tribes population to total population ^a (%)	Literacy Rate ^a (%)	Population density ^a (per sq. km)	Number of household engaged in Jhum cultivation	Area under Jhum cultivation (2015-16) ^c (in sq Km)
	Latitude	Longitude							
1,382.0	24°00' N to 24°15' N	92°30' E to 94°45' E	2703	83.40	87.70	94.54	60.07	7930	17.92

^aCensus of India-2011, ^bForest Survey of India-2019, ^cWasteland Atlas of India-2019

prepared and consumed in their respective villages in order to place the products in the appropriate category.

Results and Discussion

As can be seen in Table 2, the Lushai tribe in Kolasib district consume diverse (as many as 20) sources of food by exploiting the available

biodiversity, apart from wild foods foraged from the fringes of the forest. The largest category was rice-based foods made from glutinous rice grains as the main substrate, which is grown in abundance on jhum lands. Equal number of food products was reportedly made from meat and fresh/fermented bamboo shoots. Most products were seasonal, particularly fruits and vegetables (Table 2), whereas eleven food products

Table 2 — Ethnic foods consumed by the Lushai tribe in Kolasib district of Mizoram, Northeastern India

Local food or dish based on	Composition	Source (including wild edible plants)	Frequency of intake
Rice			
1. Chhang ban	Buh ban dip (flour of sticky rice)	<i>Oryza sativa</i>	Occasional
2. Buhban chum (Steamed sticky rice)	Buh ban (sticky rice)	<i>Oryza sativa</i>	Occasional
3. Buh chhum	Plain boiled rice	<i>Oryza sativa</i>	Everyday
4. Buhchhiar	Local rice variety with meat/vegetables	<i>Oryza sativa</i>	Occasional
5. Zu fang (Rice beer)	Cook sticky rice with yeast	<i>Oryza sativa</i>	Occasional
6. Chhahwhchi hlawn	Ground roasted Perilla with plain boiled rice		Occasional
7. Buh bawl	Cool plain boiled rice with onion leaves fermented pork fats, sodium bicarbonate	<i>Oryza sativa</i>	Occasional
Millets			
1. Faisa kan puah	Grains of pearl millet with salt/jaggery	<i>Pennisetum glaucum</i>	Occasional
2. Buhtun	Cook grain		
Meat			
1. Sa chum hang	Pork/beef/fish with dry/green rosella leaves	<i>Hibiscus sabdariffa</i>	Weekly
2. Sa rep/sa hring chhum	Smoke pork/beef with green leafy vegetables, ginger, salt, rosella leaves	<i>Zingiber officinale</i> , <i>Hibiscus sabdariffa</i>	Weekly
3. Sa rep bawl (Smoke beef chutney)	Smoke beef with green chilli and fermented pork fats	<i>Capcicum annum</i>	Occasional
4. Sa um	Fermented pork fats		Weekly
Bamboo			
1. Mautuai bai	Bamboo shoot with chilli, fermented pork fats	<i>Dendrocalamus hamiltoni</i> , <i>Capcicum annum</i>	Seasonal
2. Rawtuai bai	Bamboo shoot with water, chilli, sodium bicarbonate, fermented pork fats	<i>Dendrocalamus longispatus</i> , <i>Capcicum annum</i>	Seasonal
3. Mautuai bawl	Bamboo shoot with chilli, fermented pork fats, sodium bicarbonate	<i>Dendrocalamus hamiltoni</i> , <i>Capcicum annum</i> , <i>Hibiscus sabdariffa</i>	Seasonal
4. Mautuai althak	Tender bamboo shoot with dry chilli (chutney)	<i>Dendrocalamus longispatus</i> , <i>Capcicum annum</i>	Seasonal
Cultivated and wild fruits			
1. Chengkek	Whole fruits and endocarp of <i>Garcinia cowa</i>	<i>Garcinia cowa</i>	Seasonal
2. Keifang	Whole fruit except the seed <i>Myrica esculenta</i>	<i>Myrica esculenta</i>	Seasonal
3. Sarzuk	Whole fruit except the seed of <i>Elaeagnus latifolia</i>	<i>Elaeagnus latifolia</i>	Seasonal
4. Khawmhma	Whole fruits of <i>Rhus chinensis</i>	<i>Rhus chinensis</i>	Seasonal
5. Theiria	Whole fruit of <i>Carallia brachiata</i>	<i>Carallia brachiata</i>	Seasonal
6. Pangkai	Except exocarp of <i>Baccaurea ramiflora</i>	<i>Baccaurea ramiflora</i>	Seasonal
7. Theitat	Whole fruit of <i>Artocarpus lacucha</i> except the seed and core	<i>Artocarpus lacucha</i>	Seasonal

(Contd.)

Table 2 — Ethnic foods consumed by the Lushai tribe in Kolasib district of Mizoram, Northeastern India (*Contd.*)

Local food or dish based on	Composition	Source (including wild edible plants)	Frequency of intake
8. Hatkora	Fruits of <i>Citrus macroptera</i>	<i>Citrus macroptera</i>	Seasonal
9. Tawito	Fruits of <i>Spondias pinnata</i>	<i>Spondias pinnata</i>	Seasonal
10. Hruipui	Except exocarp of <i>Calamus erectus</i>	<i>Calamus erectus</i>	Seasonal
11. Thei kum	Except exocarp of mangosteen	<i>Garcinia mangosteen</i>	Seasonal
12. Chawngbawla ser	Fruits of <i>Citrus jambhiri</i>	<i>Citrus jambhiri</i>	Seasonal
13. Thei arlum	Except seeds of <i>Prunus nepalensis</i>	<i>Prunus nepalensis</i>	Seasonal
14. Mizo balhla	Except the skin of <i>Musa spp.</i>	<i>Musa latunda</i>	Weekly
15. Maipawl	Except the epicarp of <i>Benincasa hispida</i>	<i>Benincasa hispida</i>	Weekly
16. Zawngtah	Whole fruits except the epicarp	<i>Parkia timoriana</i>	Seasonal
17. Tumbu	Whole fruits of wild banana flower with ginger, perilla seeds, wild coriander leaves	<i>Musa spp.</i>	Weekly
18. Tawkte	Whole fruits of <i>Solanum violaceum</i>	<i>Solanum violaceum</i>	Weekly
19. Behliang	Tender fruits of <i>Cajanus cajan</i> , fermented pork fats	<i>Cajanus cajan</i>	Seasonal
20. Chhawchhi	Whole fruits of <i>Perilla frutescens</i>	<i>Perilla frutescens</i>	Weekly
21. Kawhte bel	Whole fruits and tender branches of <i>Trevesia palmata</i> with chilli	<i>Trevesia palmata</i>	Seasonal
22. Samtawk	Whole fruits of <i>Solanum aethiopicum</i>	<i>Solanum aethiopicum</i>	Weekly
Cultivated and wild leaves			
1. Khanghu	Tender leaves of <i>Senegalia pennata</i>	<i>Senegalia pennata</i>	Seasonal
2. Phuihnam chhum	Leaves of <i>Clerodendrum colebrookianum</i>	<i>Clerodendrum colebrookianum</i>	Weekly
3. Antam	Leaves of local mustard	<i>Brassica spp.</i>	Weekly
4. Behlawi bai	Cow pea leaves with sodium bicarbonate	<i>Vigna unguiculata</i>	Weekly
5. Mai an bai	Whole leaves with chilli, sodium bicarbonate	<i>Cucurbita spp.</i>	Weekly
6. Ankasa tauh	Tender leaves and flowers of <i>Acmella paniculata</i>	<i>Acmella paniculata</i>	Weekly
7. Bekang um	Fermented soyabean		
Fish			
1. Sangha leh tumthang par chhum	Freshwater fish with flower of <i>Crotalaria tetragona</i> , ginger	<i>Crotalaria tetragona</i> , <i>Zingiber officinale</i>	Occasional
2. Sangha rep chhum	Dry fish with flower of <i>Crotalaria tetragona</i> , ginger	<i>Zingiber officinale</i>	Occasional
3. Ngharep rawt	Dry/fermented fish with chilli, ginger, onion	<i>Zingiber officinale</i> , <i>Capicum annum</i>	Occasional

were consumed occasionally. Foodscape research focuses on three main topics—community health, social justice, and sustainability¹⁶—hence, the results are discussed in light of these aspects. Living in 'food deserts,' or places with restricted physical access to grocery stores and supermarkets may thus be a health concern. However, the studied foodscape of the Lushai community offers diverse (as many as 20) sources of foods, which contributes to the community health significantly, for example, bamboo shoots have a lot of promise as a food source, and it is one of the most widely picked, consumed, and marketed nutritious vegetables in Northeastern India's tribal and rural communities. They are said to be a good source of nourishment because they are high in fibre and low in fat. They contain significant antioxidants and

medicinal components that can help prevent the beginning of metabolic problems, in addition to being a storehouse of nutritious materials¹⁷. Owing to their strong nutritional and therapeutic value, fermented bamboo shoots are vital to human survival. Bamboo shoots are also an important part of the tribe's diet. They are high in dietary fibre and minerals, low in fat, and have a significant economic impact. Bamboo shoots are used in traditional medicine systems such as Ayurveda to treat a variety of diseases¹⁸. The documented ethnic foods (Table 2 & Fig. 2) are mainly contained alkaline food items viz., green leafy vegetables, root vegetables, local seasonal fruits particularly citrus fruits, turmeric and ginger. Indeed, in recent years, alkaline diet has secured a large number of proponents and gained

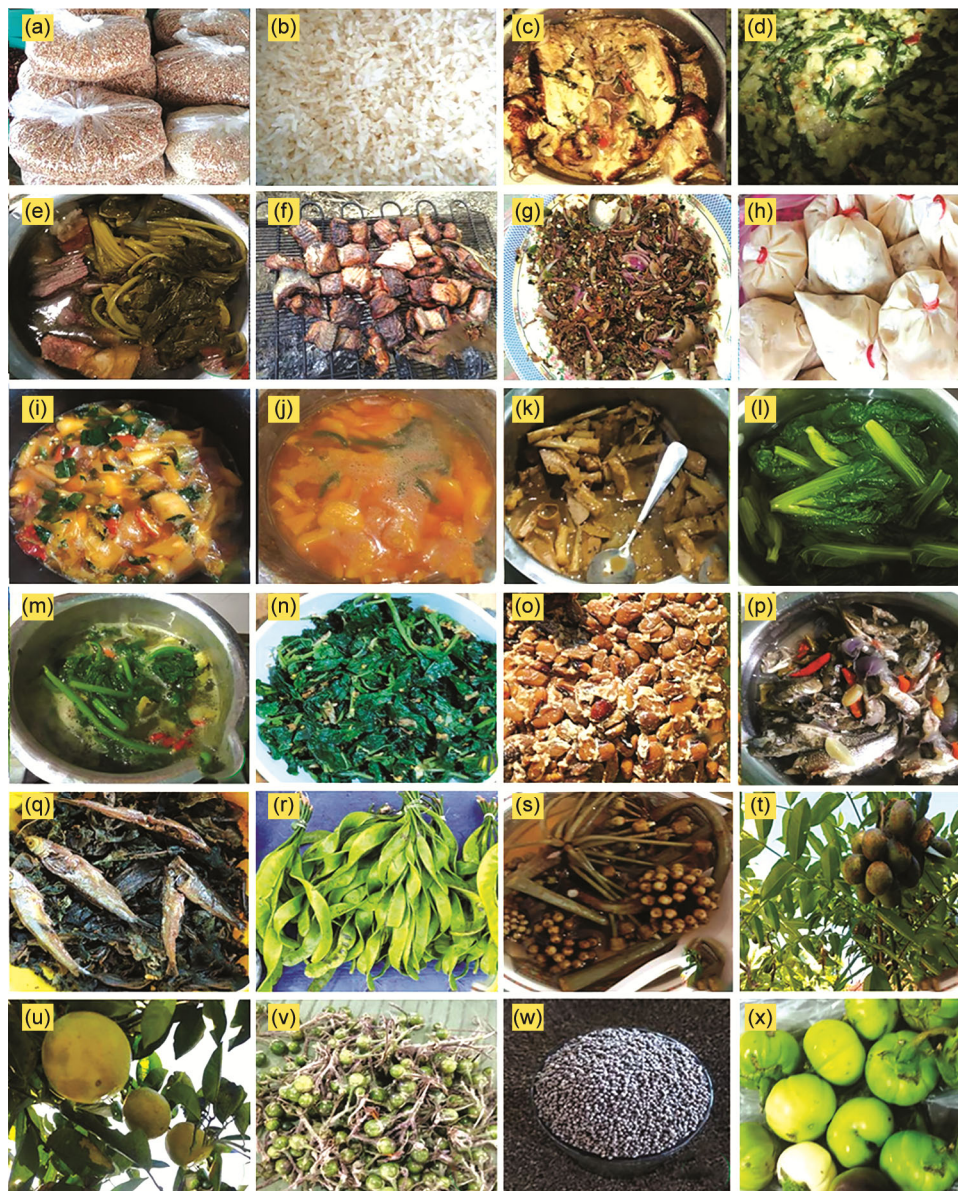


Fig. 2 — A. Buhban fai, B. Buh Chhum, C. Buh Chiar, D. Buhbawl, E. Sachhum, F. Sarep, G. Sa rep bawl, H. Sa um, I. Mautuai bai, J. Rawtuai bai, K. Mautuai bawl, L. Antam, M. Maian bai, N. Ankasa Tauh, O. Bekang, P. Sangha Chhum, Q. Sangha rep, R. Zwangtah (*Parkia timoriana*), S. Bekang (*Glycine max*), T. Tawito (*Garcinia cowa*), U. Chawngbawla ser (*Myristica fragrans*), V. Tawkte (*Solanum violaceum*), W. Chawhchhi (*Sesamum indicum*), X. Samtawk (*Solanum indicum*).

popularity among the scientific community as well. Its significance for the treatment of many non-communicable diseases has been well recognized. Such diet could significantly boost an individual's physiological resistance and immunity against 2019-nCoV by targeting endosomal pH which plays a vital role in viral pathogenesis. Hence, consuming the food which has low dietary acid load (alkaline diet) aids in boosting the physiological resistance resulting in improved health conditions to fight against 2019-

nCoV^{19,20}. Although, documented economic plant diversity is expected to have a minor but positive impact on dietary diversity among *Lushai*'s households, especially when market access is limited. Nonetheless, the foodscape of *Lushai* community ensures availability of diverse foods, representing five food groups: (1) starchy staples (rice and millets), (2) vegetables (cultivated and wild), (3) fruits (cultivated and wild), (4) fleshy foods (meat and fish) and (5) fermented foods.

Within a society, social justice is defined as equal access to resources, opportunities, and privileges. The majority of community forests in Northeast India's hill regions have been managed by traditional local institutions for centuries, and the majority of these institutions are still in operation today. Traditional institutions effectively manage community forests in the region, as evidenced by higher forest coverage on private and community properties compared to government land²¹. Although such a system and community ownership of resources provide adequate possibilities and privileges for equal access to many wild foods, its use is determined by indigenous traditional knowledge of gathering, processing, and preservation. Thus, the foodscape of Lushai people contributes to healthy and sustainable eating choices that are made possible by sustainable food systems which fosters socio-ecological sustainability and resiliency within the food system to improve community health and sustainable food security.

Conclusion

The present case study depicts a large genetic pool of plants and livestock species with enormous value, as well as numerous traditional food products that are useful not only as natural resources, but as vital elements of the foodscape that have traditionally evolved in a coordinated manner in farming systems. The *Lushai* people have been eating traditional foods for generations, practically all of which are derived from locally available sources, implying a stronger reliance on indigenous biodiversity, which serves as the foundation for their livelihoods and the consumption of a diverse and healthful diet. Traditional meals, as well as foods that are essential for completing numerous social roles, are usually deeply embedded in cultural norms and obtain local value, ensuring the food and nutritional security of these indigenous peoples. These foods are regarded as essential food ingredients for the conduct of rituals on numerous life occasions such as birth, death, wedding ceremonies, illness, healing ceremonies, and other festivals, in addition to being used at *Kut* festivals. Our research proposes new avenues for conducting research and possibly providing financial support for existing community-based practises for establishing and strengthening food banks, as well as leveraging farm-to-market opportunities. For example, by promoting traditional ethnic foods and increasing demand for corresponding local small farm produce, the connection between farmers and consumers, such

as farmers markets and local restaurants, will be strengthened. Indeed, the Lushai food system's has promise for culinary tourism, which may serve as a catalyst for the growth of the local economy and socio-cultural revival.

Acknowledgements

We would like to thank everyone who took part in the focused group discussion held at KVK Kolasib, Mizoram.

Conflict of Interests

There are no conflicts of interest declared by the authors.

Authors' Contributions

Each author made an equal contribution.

References

- 1 HLPE, Nutrition and food systems, A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome, 2017, p. 93-97, Report No. 12, <http://www.fao.org/3/a-i7846e.pdf>.
- 2 Yasmeen G, Plastic-bag housewives" and postmodern restaurants?: Public and private in Bangkok's foodscape, *Urban Geogr*, 17 (1996) 526-544.
- 3 Johnston J & Goodman M K, Spectacular foodscapes: Food celebrities and the politics of lifestyle mediation in an age of inequality, *Food Cult Soc*, 18 (2015) 205-222.
- 4 Adema P, Garlic Capital of the World: Gilroy, Garlic, and the Making of a Festive Foodscape, Jackson: Univ Press Mississippi, 2009, p. 67.
- 5 Spears K, Powell P & Kim W Y, What is a Food Desert?, University of Nevada Cooperative Extension, Fact Sheet-2014, p. 14-105.
- 6 Beaulac J, Kristjansson E & Cummins S A, Systematic Review of Food Deserts, 1966-2007, *Prev Chronic Dis*, 6 (3) (2009) 1-10.
- 7 Miewald C & McCann E, Foodscapes and the geographies of poverty: sustenance, strategy, and politics in an urban neighborhood, *Antipode*, 46 (2014) 537-556.
- 8 Fraser A, Global Foodscapes: Oppression and resistance in the Life of Food, Abingdon: Routledge; 2017, p. 14-18.
- 9 Lowitt K N, A coastal foodscape: examining the relationship between changing fisheries and community food security on the west coast of Newfoundland, *Ecol Soc*, 19 (3) (2014) 48.
- 10 Sonnino R, Local foodscapes: place and power in the agri-food system, *Acta Agric Scand Sect B-Soil Plant Sci*, 63 (2013) 2-7.
- 11 FAO, COVID-19 and indigenous peoples, Food and Agricultural Organisations of United Nations, Rome, 2020, <http://www.fao.org/3/ca9106en/CA9106EN.pdf>.
- 12 Indigenous Voices, Nepal's Indigenous Communities face a bigger threat than COVID-19 pandemic, 2020, <https://www.indigenousvoice.com/en/nepals-indigenous-communities-face-a-bigger-threat-than-covid-19-pandemic.html>.

- 13 Vijayan D, Ludwig D, Rybak C, Kaechele H, Hoffmann H, *et al.*, Indigenous knowledge in food system transformations, *Commun Earth Environ*, 3 (1) (2022) 213.
- 14 Zavaleta-Cortijo C, Ford JD, Arotoma-Rojas I, Lwasa S, Lancha-Rucoba G, *et al.*, Climate change and COVID-19: reinforcing Indigenous food systems, *Lancet Planet Health*, 4 (9) (2020) 381-382.
- 15 Murray J M & Baxter I A, SENSORY EVALUATION| Food Acceptability and Sensory Evaluation, 2003, p. 23.
- 16 Vonthron S, Perrin C & Soulard C T, Foodscape: A scoping review and a research agenda for food security-related studies, *PLoS One*, 15 (5) (2020) e0233218.
- 17 Singhal P, Bal L M, Satya S, Sudhakar P & Naik S N, Bamboo shoots: A novel source of nutrition and medicine, *Crit Rev Food Sci Nutr*, 53 (5) (2013) 517-34.
- 18 Behera P & Balaji S, Health benefits of fermented bamboo shoots: The twenty-first century green gold of northeast India, *Appl Biochem Biotechnol*, 193 (6) (2021) 1800-1812.
- 19 Gawade A E & Bale S R, A nutritional intervention against COVID-19: Possibilities on the use of an alkaline diet to boost physiological resistance and immunity, *Indian J Tradit Know*, 19 (Suppl) (2020) 158-163.
- 20 Sharma N, Chandel M & Sharma N, Studies on traditional Indian (turmeric) pickle as probiotic pickle for therapeutic uses in view of COVID-19 pandemic, *Indian J Tradit Know*, 19 (Suppl) (2020) 143-152.
- 21 Tiwari B K, Tynsong H, Lynrah M M, Lapasam E, Deb S, *et al.*, Institutional arrangement and typology of community forests of Meghalaya, Mizoram and Nagaland of North-East India, *J For Res*, 24 (1) (2013) 179-86.