



An Offering of Grain: The Agricultural and Spiritual Cycle of a Food System in the Kailash Sacred Landscape, Darchula, Far Western Nepal

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Foodscape are commonly embedded in spiritual landscapes, making the spiritual dimension of local and indigenous food systems an important element of food sovereignty. However, this dimension is often overlooked in food systems research and policy making. Based on ethnobiological fieldwork conducted in the Kailash Sacred Landscape of far western Nepal, we show how religious festivals and rituals reenact the covenant between people and the land through the numinous intercession of Hindu gods and landscape deities. To demonstrate this, we present the local calendar of the agricultural and ritual year based on data collected through household surveys and participation in festivals and agricultural activities. The complex fabric of the local agri-food system is revealed as articulated in the warp and weft of interwoven agricultural and spiritual cycles. These cycles contribute to respectful and sustainable landscape management practices by shaping the relationship people have with the land. In the annual women's festival of Gaura, the fertility and well-being of people and land is affirmed through the offering of locally produced pulses and grains. Furthermore, local gastronomic identity is enriched by the incentive to cultivate heirloom varieties of crops that are prescribed in rituals performed during Gaura and other major festivals. We conclude that spiritual practices should be considered key elements of biocultural diversity, and recommend that they receive more attention in the implementation of sustainable development that aims to embody the principles of food sovereignty.

Keywords: food sovereignty, agri-food system, agro-spiritual calendar, traditional knowledge, biocultural diversity, agricultural ritual, sacred landscape, agro-spiritual cycle

INTRODUCTION

Local and indigenous food systems in rural areas have long been contested spaces where interests are negotiated by different actors with often conflicting agendas. The stakes of research and development involving traditional and local knowledge, including Traditional Food Knowledge, are high. Kimmerer (2012) has vividly expressed a concern about knowledge mining that we, as researchers, are acutely aware of: "knowledge mining or the extraction of useful facts from the body of knowledge, without exploration of the cultural context in which they belong, can do a disservice

to the information as well as to the culture. Just as gold mining degrades a large area of land for the extraction of what is perceived as valuable “ore” and leaves a wasteland in its place, extraction of valuable data from traditional knowledge without consideration of its cultural context can also be damaging.” A general disconnect between top-down development and management, and local and indigenous relations to their lands, tends to “persist in ways that erode even the best attempts at collaborative management and plans for long-term sustainability in our contemporary plural societies,” Felice Wyndham has observed (Wyndham, 2009). Li (2007) has exposed how organizations’ “claim to expertise in optimizing the lives of others is a claim to power.” Co-management has often had the effect of, at best involuntarily, forcing rural and indigenous communities into tacitly accepting assumptions about the nature of the land and the species to be managed, with state institutions failing to understand local values and worldviews (Nadasdy, 2005), and thus imposing the institution-held scientific assumptions rather than engaging in cross-cultural co-construction of knowledge (Apgar et al., 2016).

Food sovereignty has increasingly been adopted by civil society organizations and global social movements as a tool for contestation, reconfiguration and metamorphosis (Pimbert, 2006; Patel, 2007, 2009; Van der Ploeg, 2008, 2010; Rivera-Ferre, 2018). Food sovereignty, as defined in the Declaration of Nyéléni (2007), attests to the right of people to define their own food systems in ways that are empowering, context-dependant and culturally appropriate, prioritizing local and national economies rather than the demands of the corporate trade market. The Declaration was crafted by local and Indigenous communities from all over the world who demanded to place at the heart of food systems policy the very people and communities who produce, distribute and consume food.

Conversely, the top-down scholarly and policy making framework of food security, as suggested by Patel, “is agnostic about the production regime, about the social and economic conditions under which food ends up on the table” (Patel, 2007). Food security oriented policy is rooted in the narrative of food scarcity, and it has occasionally provided a justification to the narrative of *terra nullius* - empty land (Harvey, 2007; White et al., 2012), which has historically legitimized land expropriation and all sorts of abuse on indigenous territories around the world (Coates, 2004). Policy framed uniquely by a concern for food security may tend to prioritize quantity over quality, and to overlook discourses on modes of production and distribution, alongside their impact on local and global social dynamics. The discipline of political ecology is well-suited for agri-food systems research, as it focuses strongly on both social-ecological interactions and political-economic dynamics (Hall, 2015). A political ecology framework invites analysis that attempts to understand “the ways in which food, agriculture, and the environment are understood and valued, and the profound inequalities that underpin the production, transformation, and consumption of food” (Hall, 2015). Quoting Slow Food’s slogan, Nabhan (2014) invites a partnership between ethnobiology and political ecology to predict “how we can better design our food

systems, not only to be resilient in the face of climate change and other “shocks,” but to be “good, clean and fair” as well.”

In an ethnobiological approach to food systems, the entire dimension of social-ecological systems is considered, including ecosystems, place-related history, culture, and importantly, the spiritual aspects comprising local diversity (Pieroni et al., 2016). The Declaration of Nyéléni (2007) acknowledges all of these aspects of social-ecological systems, and embraces a view of nature as including both spiritual and material beings. Yet, very little attention in the declaration is directed toward the spiritual landscapes underlying traditional and indigenous food systems. In the reports of the Food and Agriculture Organization (FAO) and the High Level Panel of Experts for Food Security and Nutrition (HLPE), the spiritual dimension is either not mentioned, or touched upon in rather reductive and generic terms by including it among cultural ecosystem services alongside aesthetic, recreational, inspirational and educational benefits (HLPE, 2017; FAO, 2019; FAO and UNEP, 2020). In Nepal, food sovereignty was recognized as a constitutional right in 2064 (Interim Constitution of Nepal 2063, 2007). The right to food sovereignty in Nepal was further defined in the The Right to Food and Food Sovereignty (2018), where the government also commits to protect traditional and indigenous food. Still, in the act no mention is made of the spiritual dimension of traditional and indigenous food.

While the literature discussing food sovereignty and exploring all elements of local and Indigenous food systems, including spirituality, is broad, few works have demonstrated the importance of the sacred domain in food sovereignty, and the role of spiritual beliefs and practices in protecting and contributing to biocultural diversity in sustainable food systems. Rappaport (1968) was among the first scholars to discuss the role of ritual in the Tsembaga’s food system in New Guinea as regulators of relationships with animals and plants and conservation of certain species. Barrera-Bassols and Toledo (2005) discuss the complex entanglement of beliefs, knowledge and landscape management by presenting aspects of the Yucatec Mayan spiritual landscape and the sacred dimension as a key contributor to their social-ecological resilience. Håland (2009, 2012, 2015) has discussed ritual and agricultural yearly cycles by comparing modern and ancient Greek festivals, and illustrated the importance to farmers of fertility magic to ensure good harvests both in modern and ancient Greece. Salmón (1999) shows how the physical, social and mental health of northern Mexico Rarámuri are closely related to their cycle of ceremony. Felice Wyndham further explored Rarámuri landscape management from a relational perspective by discussing what she calls the *subtle ecologies* of people’s relations and interactions with the landscape. She shows how “the subtle material effects of ritual and exchanges with the spirit world” affect the making and unmaking of landscapes over time (Wyndham, 2009). Wyndham also denounces a persisting disjunction between Western management practices and indigenous relations to landscape, and highlights the importance of investigating people-landscape relationality in Western inquiries into indigenous land management. Part of a growing trend for the recognition of food sovereignty as

a key element in *in-situ* biodiversity conservation, Sarmiento et al. (2019) present case studies from Andean agri-food systems and highlight the role of the spiritual dimension of indigenous foodscapes in the preservation of heirloom varieties with special spiritual status. Haider et al. (2020) discuss the role of traditional practices and rituals in defining alternative development pathways, and focus on the social-ecological implications of an introduced wheat on the food practices of a New Year ritual in two communities in the Pamir Mountains.

Based on ethnobotanical fieldwork conducted in the village of Malikarjun, in the Kailash Sacred Landscape of far western Nepal, this study contributes to these discourses by revealing the complex fabric of a village agri-food system as articulated in the warp and weft of its interwoven agricultural and spiritual cycles.

METHODOLOGY

Field Site Description

Fieldwork centered on the community of Malikarjun, located in Darchula District of far western Nepal. Malikarjun is a small village of around 500 households located <10 km from the Mahakali River, which forms the border with India. Malikarjun falls within the Kailash Sacred Landscape (KSL), which encompasses far western Nepal and the neighboring regions of India and China. The International Center for Intermountain Development (ICIMOD) designated the KSL as a critical transboundary landscape in 2010 due to its rich ecological and cultural diversity and heritage (Oli and Zomer, 2010). At the spiritual heart of this landscape is Mt. Kailash in Tibet, a sacred site for millions of Hindus, Buddhists, Sikhs, Bönpos, and Jains (Zomer and Oli, 2011). The entire region comprises an intricate network of spiritual sites, many connected to the ancient pilgrimage routes that center on Mt. Kailash. Malikarjun, located 165 km south of Mt. Kailash, is the site of its own sacred mountain, which bears the same name as the community.

The community centers on a market and temple, which are located at 1,800 m on a narrow ridge. The community is distributed along the ridge up to 2,100 m, and down to the small streams that run in the valleys on both sides of the ridge. Other than these streams, located well below the community center, the only sources of surface water are a handful of springs along the slopes of the ridge and the lower parts of Malikarjun mountain. The mountain rises above the community to 2,500 m, and its lower slopes are divided into three community forests administered by community forest user groups (CFUGs). Three additional community forests are located in other areas of the community, and the majority of households in Malikarjun are members of one of these CFUGs.

Malikarjun is located along the road that connects the district capital of Darchula with the nearest market center, Gokuleshwar, as well as Baitadi and the distant Terai beyond. During fieldwork in 2018, a short spur road connected this main artery to the Malikarjun market, but was blocked or impassable beyond. By 2020, however, 3–5 roads starting at the market or main community gate had been cleared, extended or built by the regional government further into the community. These roads are putting an increasing number of houses

into direct connection with distant markets, but they have not yet significantly impacted life in the village, as very few households own vehicles that could transport their goods to larger markets. Houses are widely scattered, except for the market and community center, and are usually surrounded by or adjacent to their farming lands. All agricultural land is terraced and nearly all, with the exception of the narrow ridgetop (Figure 1), located on steep slopes. Water access is scarce throughout the community, and irrigation is non-existent except for the valley bottoms. The community are primarily subsistence farmers, with most households supplementing their income through out-migration for work in India and elsewhere in Nepal. Most of the business owners of the market shops are locals, and have their own houses and farming lands within the community.

Malikarjun is also the name of the lineage god, who was brought with the people from their original home in India several centuries ago. Malikarjun is seen as an emanation of Shiva (Sanskrit Śiva), who has chosen to dwell in a cave on Malikarjun mountain. The community settled here in response to his choice of this particular location. This temple, the mountain, and the deity who animates both, are the center of an important regional cult. The Malikarjun tradition is inextricably linked to the physical landscape, which in turn is narrated and mapped out in the origin stories contained in many of the local sacred songs. In addition to Malikarjun mountain, many members of the Malikarjun familial pantheon have their own specific sacred sites and temples up to several days travel by foot throughout the surrounding landscape. The most prominent of these within the community are two smaller temples to Latinath, the first son of Malikarjun and an emanation of Ganesh (Sanskrit Ganeśa). Sacred sites also mark the route by which Malikarjun and his people traveled from India. The female lineage is also represented in the landscape in the form of Malikarjun's seven wives, who are associated with specific temples and locations throughout the regional landscape. The principal wives, Baghashree and Shobhashree, live within the community and are connected to a series of sacred springs, whose water is used in the most important rituals performed yearly at the Malikarjun and Latinath temples.

Methods

Fieldwork was carried out between May and June 2018, and again between March and June 2020. In 2018 this comprised a series of visits of 1 week or less, while in 2020 the research team rented a local house and lived in Malikarjun, providing an experience of the conditions of daily life in the community. The primary aim of the 2020 fieldwork was to record the sacred oral epics performed at annual festivals, which are one of the key elements in maintaining the community's ties to the land and their gods. Complications due to the Covid-19 crisis, particularly the impossibility of holding the large gatherings which are necessary for the performance of the songs, resulted in redesigning the project aims. With freed up time and resources, the team decided to focus on collecting data about the local agri-food system and its embeddedness in the spiritual landscape which is evoked in the sacred oral literature.



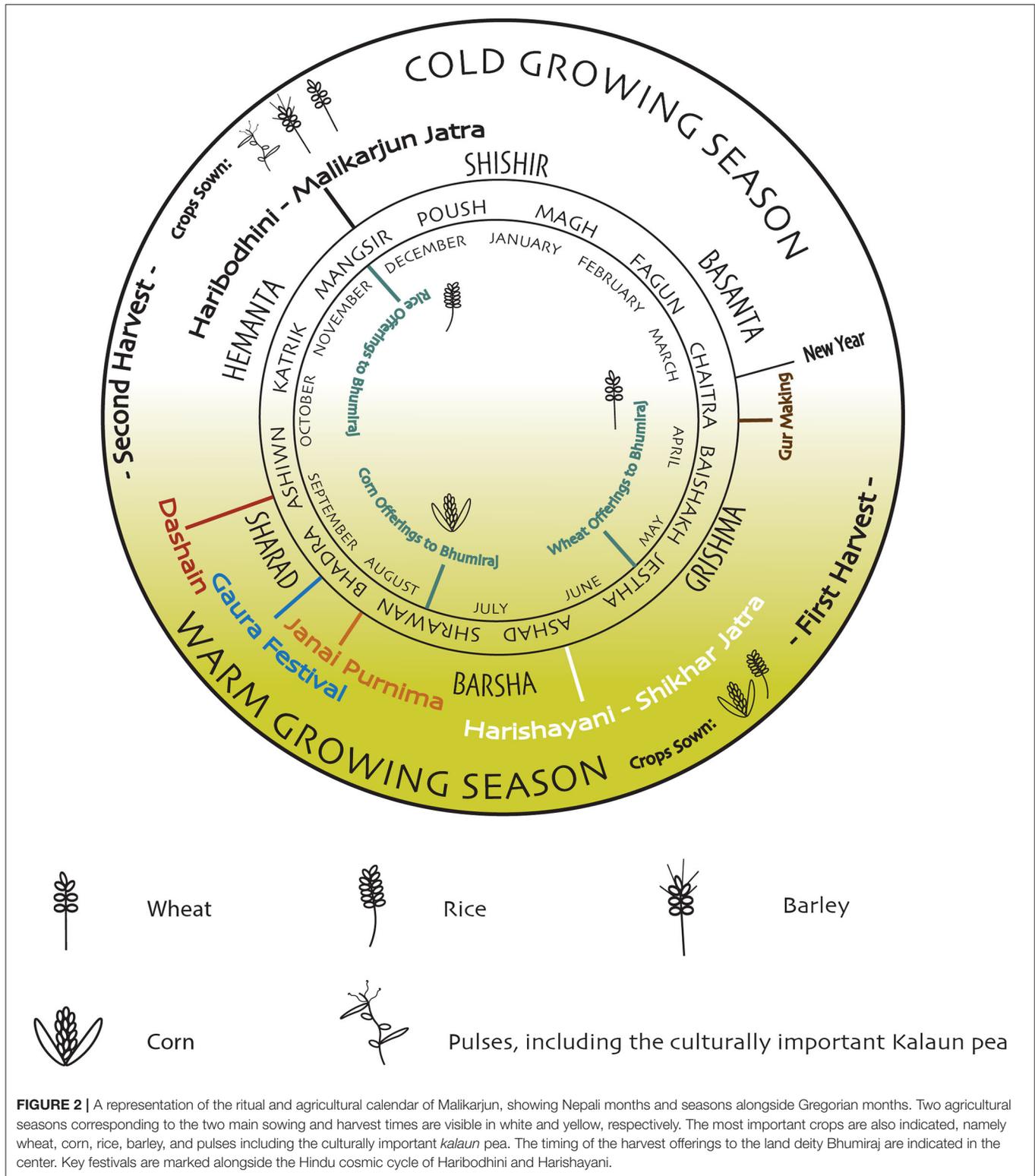
FIGURE 1 | Wheat and barley growing on terraces in Malikarjun.

Participant observation in agricultural activities and religious ceremonies; audio recording of soundscapes, stories and songs; interviews; and home garden surveys were the primary methods employed to gather data about agricultural practices, gastronomic ethnobotany, and local spiritual traditions. Author B.J. is from the region, and given his knowledge of the local Doteli dialect, acted as interpreter for interviews, translator of audio recordings, and more generally as “cultural broker” for the rest of the team. In 2018, 14 individual interviews and 15 group interviews were conducted, alongside five recording sessions of informal group singing. In 2020, 10 garden surveys, 24 individual and group interviews, and nine recording sessions of traditional songs commonly performed during festivals were conducted.

The practices and timings of the local agri-food system and rituals that will be discussed are synthesized and visually represented in a calendar (**Figure 2**). Calendars can be powerful tools as they allow us to visualize how agro-ecological and ritual cycles intertwine with one another. The calendar presented here encapsulates a preliminary overview of the yearly agro-spiritual cycle of Malikarjun. We took inspiration from Kassam et al. (2018), who have described ecological calendars as context-specific and “embedded in the relationships

of people to their own ecosystem.” Ecological calendars are inspired by historical and contemporary observation of the systems people have developed to guide their planning and decision making in a given environment. Developed over sustained occupancy of ecosystems, these commonly include forecasting methods and other methods for timing livelihood practices and their inextricable spiritual practices (Orlove et al., 2002; Mondragón, 2004; Kassam et al., 2011, 2018; Prober et al., 2011; Rautela and Karki, 2015; Cochran et al., 2016).

The home garden surveys included sketching the gardens (**Figure 3**), recording all species of plants, and a structured interview covering agricultural production, growing seasons and practices, grain varieties, and associated spiritual knowledge. Visual representation of the data facilitated mutual understanding with the participants. Homes were selected for these garden surveys in an attempt to represent the community’s full topographical and elevational range. Further context on the results of these structured surveys was provided by the semistructured techniques used for the 24 interviews, which focused on agricultural knowledge and practices, uses of domesticated and wild plants, and associated stories and descriptions of rituals and ceremonies connected



to sowing and harvesting times, or to specific plants. In 2018 the chairman of the rural municipality connected us to several initial key knowledge holders, and snowball sampling was used to expand the network. The fieldwork in 2020 built on

the relationships previously created to contact additional local knowledge holders.

The Code of Ethics of the International Society of Ethnobiology guided the research, and oral prior and informed

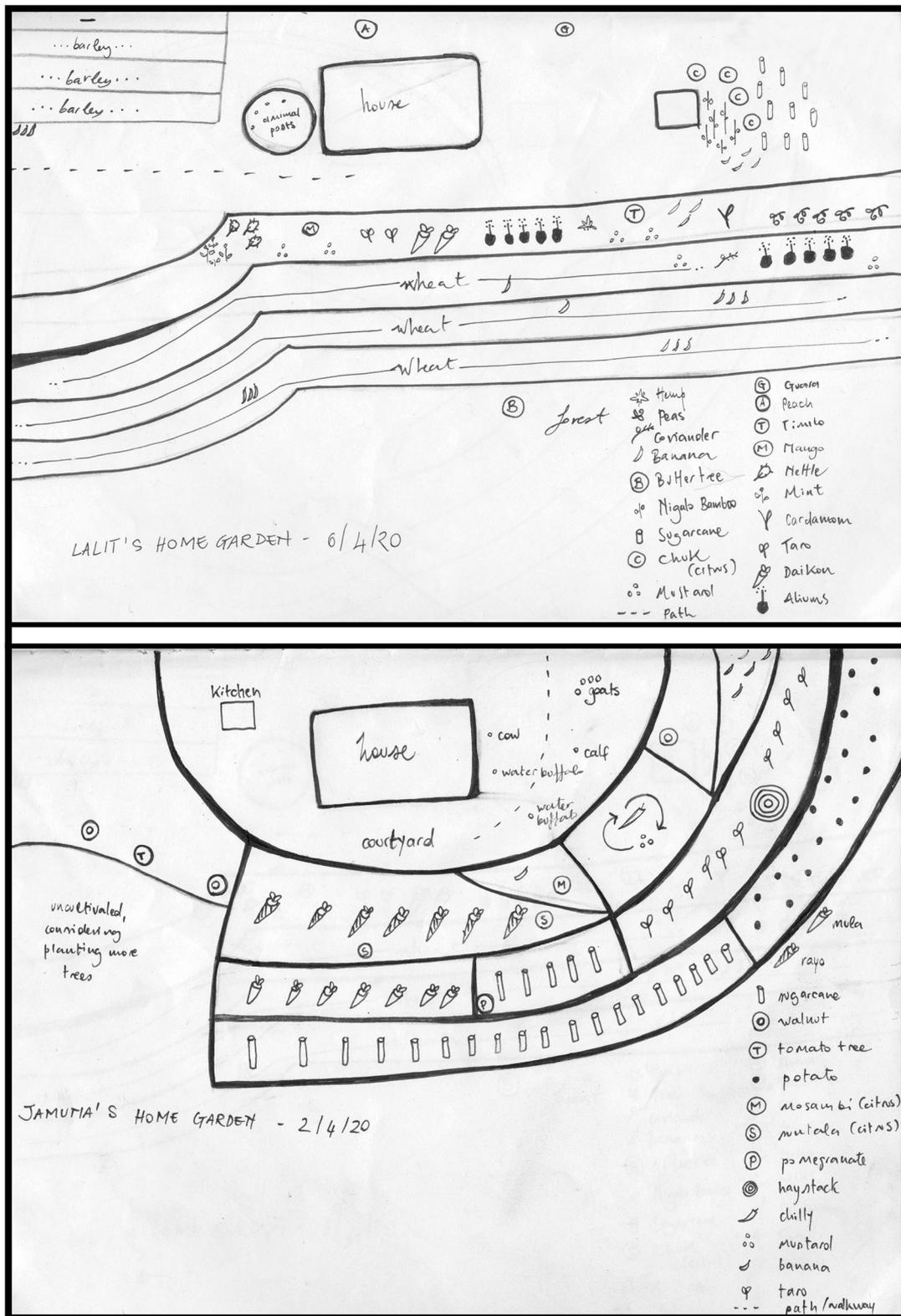


FIGURE 3 | Home garden sketches.

consent was received for all interviews, surveys and audio/visual recordings. Most garden surveys involved a full household with husband and wife as primary respondents, whose average age ranged between 35 and 55. Children of all ages also sometimes participated in the garden surveys, as they are responsible for many important chores in the household, the garden and the fields. Grandparents would sometimes also contribute, so survey responses often benefited from intergenerational input.

Botanical specimens of ethnobotanical plants were collected in the community forests during the first phase of the research in 2018, and in 2020 some further collections of ethnobotanical, home garden and wild plants were made. Donations were made to the community forests committees where plant collection was performed to support their conservation and capacity-building activities. A total of 20 collecting trips were made, which yielded 156 herbarium specimens. Physical descriptions, site descriptions, GPS locations and elevation data were recorded to accompany each specimen. Permits for plant collection were issued by the national Department of Forestry in 2018 and 2020, and the local Department of Forestry office in Darchula facilitated the transportation of specimens to Kathmandu, where they are in the process of being identified and deposited at the National Herbarium & Plant Laboratories (KATH). Plants were identified according to the Linnaean classification system in order to enable future comparative research, however local names were employed in the field because of relevance in the local community.

RESULTS: FOOD SYSTEM OF MALIKARJUN

Agricultural System and Diversity

The agricultural cycle of Malikarjun, which is typical of much of the mid-hills of Nepal (Khatti, 2012), has two growing seasons. In both home gardens and the terraced fields, crops are sown for the summer season in *Baishakh* or *Jestha* (May/June) and harvested in *Ashwin* or *Kartik* (September/October), then again for the winter season in *Kartik* or *Mangsir* (October/November) and harvested in *Chaitra* (March/April) (Figure 2). The main winter crop is wheat, although barley is also grown by every household (Figure 4), as much for its ritual significance as for its contribution to human and animal diets. Wheat and barley are grown separately, but both are intercropped with mustard and *kalaun*, a local pea variety, and more rarely with lentils, chickpeas and linseed. In the summer the main crop is corn, with households also cultivating rice whenever their land allows it (70% of surveyed households).

Corn is intercropped with a wide variety of Cucurbitaceae vegetables and legumes, in particular soybeans, black gram, french bean, rajma bean, and black-eyed peas. Many legumes are also grown on the terraces or edges of fields rather than mixed directly in with the terrace grains. A total of 10 legume species were reported, with at least 70% of households growing *kalaun* pea, soybean, black gram, and black-eyed pea. Rice is intercropped with sesame, and to a lesser extent with black gram and foxtail millet, a common staple crop across far western Nepal

(Kunwar et al., 2012). More than half of the surveyed households grow a little finger millet, which is not intercropped due to its high density of growth. About one third of surveyed households also grow oats, and several grow *wah*, naked barley, described by locals as an old grain declining in use.

Landrace diversity varies significantly among the main staple grains. Wheat has only five reported varieties (Dauti, Bikashi, Jhuse, Chaute, Dhole), with the majority of households growing only Dauti and Bikashi. Barley is often reported to have no or only one variety, although a few households reported that it had two varieties (Jhuse and Thade). Corn has seven varieties grown in the community (Rato, Daule/Seto, Shankarmukha, Bikashi, Nanduk, Mankamana 3), including one for popcorn (Murli), although two basic red and white varieties (Rato and Seto) predominate. Rice has by far the highest diversity, with 16 reported varieties (Nanidhan, Choti, Khele, Basmati, Rate, Bure, Rebele, Naka, Jini, Ara, Kaldhan, Kaljade, Jaule, Bungau, Chamade, Tede), although most households reported growing 3–7 varieties. Many of these appear to be local, perhaps unique to the region. Oats and millet were also reported to have no or only one variety. Peas were recognized as being either typical peas, or *kalaun*, a local variety with particular culinary and spiritual significance to the community (Figure 5).

It appears that landrace diversity is due to several different factors. Rice varieties are usually described as having particular qualities and are used for specific purposes, such as the highly-specialized Kaldahn, a rare variety which is harvested before the grains fully mature, so that it can be crushed, mixed with milk and sugar and eaten fresh. In the case of rice, it appears that the culinary qualities and associated cultural values of different varieties have led to their preservation, which is why they are stored and consumed separately. Heirloom varieties like the *kalaun* pea have their own origin stories, and their use is prescribed in important rituals like the women's festival of Gaura. These biocultural indicators explain both landrace diversity and preference for local cultivars. Wheat varieties, on the other hand, are preserved because of their variability in growing season, yield, response to drought, etc. Aside from those kept for seed, different wheat varieties are mixed together for consumption. In this case, it appears that landrace diversity is being preserved in order to increase the resilience of winter crops against fluctuations in climate and precipitation.

Home gardens contribute to food and household income, producing a variety of vegetables, fruits, and other essential products (Table 1). In fact, drawing a division between “home gardens” and “agricultural fields” is impossible; in lived experience, the location of a particular plant is a question of proximity to the home. The gardens and terraced fields blend seamlessly together, a porous boundary that oscillates throughout the seasons and years. Gautam et al. (2008) have described home gardens as “a land use practice around a homestead where many annual and perennial plant species are planted and maintained by the members of the household.” Home gardens in Nepal have also been described as “a micro-environment composed of a multi-species . . . , multistoried and multipurpose garden situated close to the homestead (Gautam et al., 2006)” For the purpose of this study we have defined the home garden as the portion of ground



FIGURE 4 | Barley harvest sorted and left to dry.

devoted to vegetables, trees, legumes, or agricultural plants other than the staple grains described above.

Home gardens are relatively small and generally aimed at fulfilling household needs rather than producing goods for sale, although many households do sell surplus produce or valuable commercial plants like *okhars* (*Juglans regia*) and *timur* (*Zanthoxylum armatum*) from the home garden (Kunwar et al., 2012). A few households have been given the materials to build greenhouses by the USAID project PAHAL, local non-profit Community Rural Development Society (CRDS-Nepal), or other organizations, which allows them to grow tomatoes or other crops for sale. Many households also sell fruit, which is generally produced in excess of family needs. One of the surveyed households has transitioned away from growing grains to focusing exclusively on trees, and has a current orchard of more than 2,000 fruit and nut trees of 27 species.

In complete surveys of 10 home gardens, 91 species of fruits, vegetables and other plants were cultivated (see **Table 1**). Individual households grow 32–59 species of plants, including grains and legumes. The 38 species of vegetables includes a high diversity of Cucurbitaceae (11 spp). More than 80% of surveyed households grow onion, garlic, potato, tomato, daikon radish, mustard greens, cress, ridge gourd, and cucumber. Taro, pumpkin, chili and fenugreek are also commonly cultivated, and a wide variety of other vegetables and spices, depending on taste,

enthusiasm, and garden characteristics. The 23 species of fruit trees include a high diversity of citrus (6 spp), and more than 80% of households grow peach, banana and citron. At least 50% of households also grow tangerine, orange and a local variety of sour pomegranate called *darim*.

Not all cultivated home garden plants fall into the “food” category; some are also grown for seed, nuts, oil, medicine, fiber, or flowers that can be used as offerings in household rituals (*pujas*). We found 18 additional non-tree species, which includes some semi-wild plants at the interface between cultivated and uncultivated, such as mint, cannabis, buckwheat (*Fagopyrum* spp), *Chenopodium*, and *Amaranthus*, as well as planted flowers useful for *puja* (chrysanthemum, hibiscus, *Datura*, crape myrtle, and rose). There were also nine additional tree species, although only walnut was grown by more than 80% of households. The remaining trees include those useful for fodder, a spiritually significant bamboo also used for making a wide variety of baskets, a *Bauhinia* with edible buds, and a number of other useful species with commercial value (butternut, soap nut, cinnamon, and *Zanthoxylum armatum*) (Kunwar and Bussmann, 2009).

The entire agricultural system of Malikarjun, and thus the lives of community members, is intimately linked to their practice of animal husbandry. Every household keeps animals, in numbers roughly equal to but usually slightly exceeding the number of human household members. Domestic animals are cow, water



FIGURE 5 | *Kalaun*, a local pea variety with ritual significance in the community.

buffalo and goat; there are no sheep or yak at this elevation, and <5 horses in the community. The animals are kept at night in the ground story of the home, with the second floor housing the human inhabitants. Bedding plants are added daily to the rooms where animals are kept. The urine and dung mixes with successive layers of bedding and slowly breaks down. Twice a year, during the preparations of the fields for the planting of summer and winter crops, this mixture is shoveled out of the animals' quarters and left for a few days to decompose into fertilizer, which is carried out to the fields and spread on each terrace. This fertilizer, produced on a household scale, is the only input used in Malikarjun, and thus the role that these animals play in the agricultural system is critical.

Agricultural Labor

Agricultural labor is differentially distributed throughout the seasons and between groups in the community. Farming is generally a female domain, and women are the main tenders of the fields during the long periods waiting for the growth and ripening of crops. During the intensive periods of planting and harvest, all available community members are mobilized, with

extended families and neighbors often gathering together into small groups to more efficiently harvest one household's crops at a time. Plowing and tilling is done by men, using bulls and handmade wooden plows, and women and children follow them seeding the rows during planting. Children will often assist with the harvest and planting, but do not work much in the fields at other times.

The home garden is tended by a collaborative and flexible group of adults. Women are often responsible for planting many of the vegetables and culinary plants, while men may plant fruit trees, and an elder man might zealously tend a little patch of tobacco. Animal husbandry, however, is largely a female responsibility. Women spend much of their time gathering fodder (two or three times a day) and bedding (daily or a few times a week), often at great distances from the house, and carrying it back to the animals in the ubiquitous *dhoko*, bamboo carrying baskets. Women also milk the buffalo and cows, and manage most of the process of dairy production, including making buttermilk, ghee, and sometimes a kind of fresh cheese called *galyun*. Children and women are often the ones looking after animals when they are sent to graze in the community forests. Children and teenagers, particularly boys, are sent with the animals to more distant grazing grounds which some families have inherited rights to use. Men and the elderly will look after the home garden or graze the animals depending on age, ability, fitness and interest.

The tradition of making *gur*, an unrefined solid sugar produced from sugarcane juice, encapsulates the communal tradition of shared intergenerational and multispecies agricultural labor. Each household grows a variable amount of sugarcane during the winter season. Once the sugarcane is ready to be harvested, the entire process becomes communal; all genders and generations partake. Groups of multiple households of relatives and neighbors gather together, with women moving from house to house and cutting the cane, while the men assemble a sugarcane press, which is communally owned, on a flat spot kept for this purpose near the participating households. Over a few days or up to a week, the sugarcane yields of all the families are processed, and the final product is distributed between the participating households. Animals initiate the heavy labor of pushing the beam that runs the sugarcane press. However, by late morning it is too hot for the animals to continue, and children and women take over the working of the press, laughing and joking as they work. Small children or elderly women usually feed sugarcane into the press, a task they can attend to while sitting comfortably on the ground, with an eye to the turning beam passing above their heads (**Figure 6**). Men are responsible for building the fires and overseeing the boiling and slow reduction of the juice, in huge cauldrons over many hours. When the *gur* is nearly ready, elder men direct the pouring of the thick sugarcane syrup into a hollowed out tree trunk, and the stirring and forming into balls as the *gur* cools and solidifies.

Consumption Patterns and Important Foods

The household diet is vegetarian and based primarily on a combination of rice and other grains with pulses, vegetables and dairy products. Morning meals usually consist of semolina halva

TABLE 1 | Home garden survey results of crops grown in gardens and terraced land include English names, percentage of households cultivating the plant, a name in the local Doteli dialect, a Nepali name, and the Linnean family and name.

English name	% Cultivating	Local name	Nepali name	Family	Latin name
Grain (8 spp)					
Corn	100	Ghoga	Makai	Poaceae	<i>Zea mays</i> L.
Wheat	90	Gahun	Gahun	Poaceae	<i>Triticum aestivum</i> L.
Barley	90	Jaun	Jaun	Poaceae	<i>Hordeum vulgare</i> L.
Rice	70	Dhan	Dhan	Poaceae	<i>Oryza sativa</i> L.
Finger Millet	60	Kodo	Kodo	Poaceae	<i>Eleusine coracana</i> (L.) Gaertn.
Oats	30	Jwato	Jai	Poaceae	<i>Avena sativa</i> L.
Naked Barley	20	Wah	Uwa	Poaceae	<i>Hordeum distichon</i> L.
Foxtail Millet	10	Kaun	Kaguno	Poaceae	<i>Setaria italica</i> (L.) P.Beauv.
Legumes (10 spp)					
Kalau Pea	80	Kalaun	Kerau	Fabaceae	<i>Pisum sativum</i> L.
Black-eyed Peas	80	Shotta	Gajalu bodi	Fabaceae	<i>Vigna unguiculata</i> (L.) Walp.
Black Gram	80	Mas	Mas	Fabaceae	<i>Vigna mungo</i> (L.) Hepper
Soybean	70	Bhatt	Bhatmas	Fabaceae	<i>Glycine max</i> (L.) Merr.
Lentils	40	Masoor	Masoor	Fabaceae	<i>Lens culinaris</i> Medik.
Kidney Bean	30	Rajma	Ghiu simi/Rajma	Fabaceae	<i>Phaseolus vulgaris</i> L.
Rice Bean	30	Gurans	Jhlangi	Fabaceae	<i>Vigna umbellata</i> (Thunb.) Ohwi and H. Ohashi
Horse Gram	20	Gaut	Gahat	Fabaceae	<i>Macrotyloma uniflorum</i> (Lam.) Verdc.
Peas	10	Matar/kalaun	Kerau	Fabaceae	<i>Pisum sativum</i> L.
Green Gram	10	Mung	Mung	Fabaceae	<i>Vigna radiata</i> (L.) R.Wilczek
Vegetables (38 spp)					
Coriander	100	Dhaniya	Dhaniya	Apiaceae	<i>Coriandrum sativum</i> L.
Mustard	100	Toori	Toori	Brassicaceae	<i>Brassica juncea</i> (L.) Czern.
Onion	90	Piaj	Pyaj	Amaryllidaceae	<i>Allium cepa</i> L.
Potato	90	Aloo	Aloo	Solanaceae	<i>Solanum tuberosum</i> Lindl.
Sugarcane	90	Likhu	Ukhu	Poaceae	<i>Saccharum officinarum</i> L.
Garlic	80	Lasun	Lasun	Amaryllidaceae	<i>Allium sativum</i> L.
Tomato	80	Tamatar	Golbheda	Solanaceae	<i>Solanum lycopersicum</i> L.
Daikon	80	Mula/choto	Mula	Brassicaceae	<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin
Broadleaf Mustard	80	Rayo	Rayo	Brassicaceae	<i>Brassica juncea</i> (L.) Czern.
Cress	80	Chansoor	Chansoor	Brassicaceae	<i>Lepidium sativum</i> L.
Ridge Gourd	80	Toriya	Pate ghiraula	Cucurbitaceae	<i>Luffa acutangula</i> (L.) Roxb.
Cucumber	80	Kakara	Kakra	Cucurbitaceae	<i>Cucumis sativus</i> L.
Pumpkin	70	Farsi/Kadu	Farsi	Cucurbitaceae	<i>Cucurbita</i> L. hybrids
Spinach	70	Palungo	Palungo	Amaranthaceae	<i>Spinacia oleracea</i> L.
Taro	70	Pidau	Pidalu	Araceae	<i>Colocasia esculenta</i> (L.) Schott
Chili	60	Khursani	Khorsani	Solanaceae	<i>Capsicum annum</i> L.
Fenugreek	60	Nethi	Methi	Fabaceae	<i>Trigonella foenum-graecum</i> L.
Bitter gourd	50	Tite karela	Tite karela	Cucurbitaceae	<i>Momordica charantia</i> L.
Bottle gourd/Opo	50	Lauka	Lauka	Cucurbitaceae	<i>Lagenaria siceraria</i> (Molina) Standl.
Ash gourd	50	Kopindo	Kupindo	Cucurbitaceae	<i>Benincasa hispida</i> (Thunb.) Cogn.
Yam	50	Gittha	Tarul	Dioscoreaceae	<i>Dioscorea deltoidea</i> Wall. Ex Griseb.
Chives	40	Sekuwa	Jimbu	Amaryllidaceae	<i>Allium schoenoprasum</i> L.
Eggplant	40	Baigan	Bhanta	Solanaceae	<i>Solanum melongena</i> Wall.
Cabbage	40	Kopi	Banda	Brassicaceae	<i>Brassica oleracea</i> L.
Cauliflower	40	Cauli	Cauli	Brassicaceae	<i>Brassica cretica</i> Lam.
Sesame	40	Til	Til	Pedaliaceae	<i>Sesamum indicum</i> L.
Bell Pepper	30	Simla/sage Khursani	Bhede Khorsani	Solanaceae	<i>Capsicum annum</i> L.
Carrots	30	Ganjer	Ganjar	Apiaceae	<i>Daucus carota</i> subsp. <i>sativus</i> (Hoffm.) Arcang.

(Continued)

TABLE 1 | Continued

English name	% Cultivating	Local name	Nepali name	Family	Latin name
Sweet bitter gourd	30	Karela	Barela	Cucurbitaceae	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
Okra	20	Bhindi	Ramtoriya	Malvaceae	<i>Abelmoschus esculentus</i> (L.) Moench
Snake Gourd	20	Chichindo	Chichindo	Cucurbitaceae	<i>Trichosanthes cucumerina</i> L.
Long bean	20	Simi	Simi	Fabaceae	<i>Vigna unguiculata</i> subsp. <i>sesquipedalis</i> (L.) Verdc.
Broccoli	10	Bracauli	Brocauli	Brassicaceae	<i>Brassica cretica</i> Lam.
Sponge Gourd	10	Ghiraula	Ghiraula	Cucurbitaceae	<i>Luffa cylindrica</i> (L.) M.Roem.
Zucchini	10	Bote kadu	Lamcho farsi	Cucurbitaceae	<i>Cucurbita pepo</i> L.
Chayote	10	Iskus	Iskus	Cucurbitaceae	<i>Sechium edule</i> (Jacq.) Sw.
Green Bean	10	Simi	Simi	Fabaceae	<i>Phaseolus vulgaris</i> L.
Linseed	10	Alsi	Alas	Linaceae	<i>Linum usitatissimum</i> L.
Other (18 spp)					
Cannabis	70	Bhang	Bhang	Cannabinaceae	<i>Cannabis sativa</i> L.
Rose	50	Gulab	Gulaf	Rosaceae	<i>Rosa</i> L.
Buckwheat	50	Phapar	Phapar	Polygonaceae	<i>Fagopyrum</i> Mill. spp
Black Cardamom	40	Thulo Alaichi	Alaichi	Zingiberaceae	<i>Amomum subulatum</i> Roxb.
Mint	40	Pudina	Babari	Lamiaceae	<i>Mentha</i> L. spp
Chrysanthemum	40	–	Guldaudi	Asteraceae	<i>Tagetes erecta</i> L.
Tobacco	30	Tamakh	Tambaku	Solanaceae	<i>Nicotiana tabacum</i> L.
Artemisia	30	Kurjo	Titepati	Asteraceae	<i>Artemisia</i> sp
Aloe	30	Ghiu Kumari	Ghiu kumari	Asphodelaceae	<i>Aloe vera</i> (L.) Burm.f.
Crape Myrtle	30	Asare	Asare	Lythraceae	<i>Lagerstrœmia indica</i> L.
Datura	20	Bhokarya Ful	Dhaturu*	Solanaceae	<i>Datura suaveolens</i> Willd.
Stinging Nettle	20	Sinno	Sisnu	Urticaceae	<i>Urtica dioica</i> L.
Amaranth	20	Chuwa	Lunde	Amaranthaceae	<i>Amaranthus</i> L. sp
Satuwa	10	Satuwa	Satuwa	Melanthiaceae	<i>Paris polyphylla</i> Sm.
Hibiscus	10	Ghanti Ful	Ghanti ful	Malvaceae	<i>Hibiscus</i> L.
Begonia	10	Chitra Ful	Kagaje ful	Begoniaceae	<i>Begonia</i> L.
Chenopodium	10	Bethe	Bethe	Chenopodiaceae	<i>Chenopodium boscianum</i> Moq.
Perilla	10	Bhangiro	–	Lamiaceae	<i>Perilla frutescens</i> (L.) Britton
Fruit (23 spp)					
Peach	90	Aru	Aru	Rosaceae	<i>Prunus persica</i> (L.) Stokes
Banana	80	Kela	Kera	Musaceae	<i>Musa x paradisiaca</i> L.
Citron	80	Chouk	Amilo	Rutaceae	<i>Citrus medica</i> L.
Orange	60	Mosambi	Mausam/Junar	Rutaceae	<i>Citrus sinensis</i> (L.) Osbeck
Darim	60	Darim	Darim	Lythraceae	<i>Punica granatum</i> L.
Tangerine	50	Suntala	Suntala	Rutaceae	<i>Citrus reticulata</i> Blanco
Plum	40	Pum	Arubakhada	Rosaceae	<i>Prunus</i> L. sp
Mango	40	Aam	Aanp	Anacardiaceae	<i>Mangifera indica</i> L.
Lime	40	Kagati	Kagati	Rutaceae	<i>Citrus limon</i> (L.) Osbeck
Guava	20	Amba/Amrood	Amba	Myrtaceae	<i>Psidium guajava</i> L.
Papaya	20	Papita	Mewa	Caricaceae	<i>Carica papaya</i> L.
Kumquat	20	Matya kakadi	Muntala	Rutaceae	<i>Citrus japonica</i> Thunb.
Pomegranate	20	Anar	Anar	Lythraceae	<i>Punica granatum</i> L.
Grapes	20	Angur	Angur	Vitaceae	<i>Vitis</i> L. sp
Apple	10	Shyou	Shyau	Rosaceae	<i>Malus domestica</i> Borkh.
Persimmon	10	Haluwabed	Haluwabed	Rosaceae	<i>Diospyrus kaki</i> L.f.
Sour Orange	10	Jamir	Jyamir	Rutaceae	<i>Citrus x aurantium</i> L.
Opuntia	10	Siundo	Siundi	Cactaceae	<i>Opuntia ficus-indica</i> (L.) Mill.
Lychee	10	Lychee	Lychee	Sapindaceae	<i>Litchi chinensis</i> Sonn.

(Continued)

TABLE 1 | Continued

English name	% Cultivating	Local name	Nepali name	Family	Latin name
Lapsi	10	Lapsi	Lapsi	Anacardiaceae	<i>Choerospondias axillaris</i> (Roxb.) B.L.Burt and A.W. Hill
Kaphal	10	Kaphal	Kaphal	Myricaceae	<i>Myrica esculenta</i> Buch.-Ham. ex D. Don
Amla	10	Amla	Amala	Phyllanthaceae	<i>Phyllanthus emblica</i> L.
Tree Tomato	10	Rukh tamatar	Tyamatar	Solanaceae	<i>Solanum betaceum</i> Cav.
Other Trees (12 spp)					
Walnut	90	Okhad	Okhar	Juglandaceae	<i>Juglans regia</i> L.
Timilo	70	Timilo	Timilo	Ficaceae	<i>Ficus auriculata</i> Lour.
Bamboo	50	Ninglo	Nigalo	Poaceae	<i>Drepanostachyum falcatum</i> (Nees) Keng f.
Timur	40	Timur	Timur	Rutaceae	<i>Zanthoxylum armatum</i> DC.
Dudhilo	40	Dudhilo	Dudhilo	Ficaceae	<i>Ficus neriifolia</i> Sm.
Belta	30	Belta	Berulo	Ficaceae	<i>Ficus subincisa</i> Buch.-Ham. ex Sm.
Butternut	20	Chiuri	Chiuri	Sapotaceae	<i>Diploknema butyracea</i> (Roxb.) H.J.Lam
Cottontree	20	Kapash	Kapash	Malvaceae	<i>Gossypium arboreum</i> L.
Oak	20	Bnaj	Katus	Fagaceae	<i>Quercus oblongata</i> D.Don
Koiralo	20	Koiral	Koiralo	Fabaceae	<i>Bauhinia variegata</i> L.
Rittha	10	Rittha	Rittha	Sapindaceae	<i>Sapindus mukorossi</i> Gaertn.
Cinnamon	10	Daichin	Tejpat	Lauraceae	<i>Cinnamomum tamala</i> (Buch.-Ham.)T.Nees and Eberm.



FIGURE 6 | Women feeding sugarcane into a gur press.

or *roti* made of corn or rice flour accompanied by a vegetable dish. The midday and evening meals are derived from the classic Nepali *dahl bhat* meal of rice or *roti*, a dahl of cooked pulses, a vegetable *tarkari* dish, and a dish of cooked greens, *saag*. However, in homes, not all of these elements will usually be present in any given meal. *Achar*, a condiment which is either a fermented pickle or freshly made sauce (mint, sesame, tomato, hempseed, etc.), accompanies most meals. In far western Nepal, rice is usually not consumed after dark, so for the evening meal *roti* of wheat or corn flour usually accompany pulses and/or vegetable dishes.

Cows and water buffalo produce sufficient milk for household dairy needs. Buttermilk is usually prepared once daily in the early morning, and the butter produced as a side product is saved and clarified into ghee. Milk and buttermilk are drunk and used for cooking. Buttermilk is an important element of local cuisine and is often added to vegetables dishes or other regional dishes such as *dukpa*, a buttermilk sauce with dumplings made from the *kalaun* pea. Vegetable dishes and dahls are cooked with either ghee, depending on how much a household is able to produce, or vegetable oil purchased from outside the community. Other kinds of cooking oils are also sometimes produced and used locally, including from mustard seed, linseed, and butter nut (*Diploknema butyracea*). Dishes are seasoned with *masalas* made from a wide variety of spices, many of which are produced in the home gardens, such as garlic, turmeric, coriander, cumin, black cardamom, mustard, etc.

Enough wheat, corn, barley, and vegetables are produced by most families to meet household needs. Whether a household can rely solely on its crops of grains, pulses and vegetables may depend on the amount of land cultivated by the family and the available workforce. The largest component of the diet purchased from outside the home is rice, which can only be produced on a limited amount of land in the community. Many households may also need to purchase dahl to supplement their production, and there is a ready household trade in spices, seeds and grain.

Wild plants do not contribute significantly to the diet, although there are many species which are known and used. Perhaps the most popular is *kaaphal* (*Myrica esculenta*), a common tree in local oak forests, whose fruit is widely gathered and enjoyed in the spring, and sometimes sold to visitors and buses passing along the road to Gokuleshwor. A number of other wild fruits, notably *ainselu* (*Rubus ellipticus*) and *kirimuda* (*Berberis asiatica*), are also eaten by children and adults in the fields and forest edges. A few other wild species are sought out and brought back to the home, including the fern *liudo* (*Dryopteris cochleata*), the young greens of *jarko* (*Phytolacca acinosa*), and the buds of *koiralo* (*Bauhinia variegata*). Wild yams, *tarul* (*Dioscorea deltoidea*), are often dug and consumed in the forest, either raw or roasted. The leaves of buckwheat or *phapar* (*Fagopyrum esculentum* and *F. tataricum*), which grow on the edges of terraces and gardens, are commonly gathered and cooked as *saag*.

Meat is generally considered an impure food in Hinduism, so its consumption is fairly limited and it is often excluded from the household kitchen. Nonetheless many people do occasionally eat goat, which is not milked like cows and water buffalo. Goats

are bought and sold and can be another significant source of household income. Goats are also sacrificed and offered to a variety of gods and local deities, often at prescribed locations and during specific festivals and life events (Gray, 1979; Govindrajana, 2015). A variety of special foods and dishes are prepared at temples and during festivals which are not part of typical household cuisine, such as *mohan bhag* (food of god), toasted wheat flour with ghee, coconuts and other condiments. The main meal eaten at festivals consists of *poori*, rice, *tarkari*, *dahl*, etc., while fruits and sweets are offered as *prasada*, or blessings.

Agro-Spiritual Cycle

The agricultural cycle of Malikarjun is embedded within the traditional Hindu Bikram Sambat calendar, which lays out the timing of festivals and prescribes auspicious and inauspicious dates and periods for nearly every kind of life activity. This 12-month lunisolar calendar (Figure 2) begins with the month of *Baishakh* (roughly corresponding to mid-April to mid-May), and is divided into six *ritu*, or seasons. The spring season of *Basanta* is characterized by warm temperatures. In the summer season of *Grishma*, rice is sown, which grows throughout the monsoon season of *Barsha*. It is followed by *Sharad*, the festival season, when rice is harvested, and then the winter seasons of *Hemanta* and *Sisir*. Each major event in the agricultural cycle is reflected in this calendar, and at the same time, lived experience in the fields contributes to shaping the calendar's local manifestation by determining the precise timing of certain festivals and events.

The two most important festivals in Malikarjun are local versions of *Haribodhini* and *Harishayani*, which are celebrated throughout the Hindu world. Hari refers to the god Vishnu (Sanskrit *Viṣṇu*), the preserver of the universe, who is understood to undergo an annual cycle that is linked with the seasonal cycle of the earth. During *Harishayani* ("Hari sleeps"), in Shrawan (June/July), Vishnu goes to sleep in the cosmic realm and manifests on earth, bringing with him the fertility that manifests in the monsoon rains and the growth of the summer rice and corn. Then in Poush (November/December), on *Haribodhini* ("Hari wakes"), Vishnu leaves the earth and wakes up once again in the cosmic realm, releasing the earth to undergo winter. The months of *Poush* and *Magh* (roughly December to February), during Hari's absence, are believed to be the least fertile time of the year, and thus not a propitious time for marriage.

In Malikarjun these two festivals are known as Shikhar Jatra (*Harishayani*) and Malikarjun Jatra (*Haribodhini*), and both are celebrated by festivals that draw thousands of people to the community to undertake *jatra*, pilgrimages to the Shikhar (ridge) of the sacred mountain (Figure 7), the dwelling place of Malikarjun the deity. Shikhar Jatra is intimately linked with the harvest of the winter crops, in particular barley, which is recognized as the most pure of all the crops grown in Malikarjun. In an outbuilding of the main temple complex, ripe heads of recently-harvested barley are placed on the earthen floor, and milk (another pure substance) is poured over them each day until they sprout. On the 8th day from their sprouting, some of the seedlings are uprooted and offered to Malikarjun at the main temple. On the following day, more seedlings are uprooted and offered to Balichan, a companion deity of Malikarjun. Then

on the 10th day from sprouting, all the remaining seedlings are uprooted and brought to the top of the sacred mountain to offer to Malikarjun (and by extension, Shiva and all the other gods).

The other staple grains, although they are not seen as intrinsically pure like barley, have their own special times of offering. In the month of *Jestha*, just after the spring harvest, heads of new wheat are ground into flour, which is made into *rotis* and offered to Bhumiraj, the “lord of the earth,” who is responsible for caring for the soil. Then in *Shrawan* or *Bhadra*, during the *Janai Purnima* festival when Hindu men renew their *janai*, or sacred thread, whole heads of recently harvested corn are offered. Finally in *Mangsir*, the recently harvested rice is offered. Each family makes their offerings of grain to Bhumiraj at a site they have selected in their terraced fields, often marked with a white *dhaja* or prayer flag, as well as to Malikarjun at one of the main temples. After offering grain to these main deities, people are free to offer at other locations and to any other gods that they may have a local or familial connection to. Not only grains, but all the most important “fruits” of agricultural production are first offered to the gods before being consumed and used by people, including newborn calves, a cow’s first milk, freshly-made *gur*, etc.

The offering of grains and other agricultural products to the gods, in recognition of their critical role in plant growth and health, is not the only way in which the agricultural system of Malikarjun is connected to spiritual practice. Nearly every offering, blessing, or ritual employs agricultural products, in particular pure substances like milk and barley, as well as rice, fruits such as banana, which represent fertility, and various flowers which are grown in the household gardens specifically for this purpose. For example, in mid-*Chaitra* (April), in the midst of the spring harvest, people bless the temples, their houses, storehouses, and even the large chests used for storing grain by applying *tika* to them made of cow dung (another pure substance), with sprigs of newly-harvested barley, *kalaun* pea and mustard stuck into the dung (three plants which are intercropped during the winter growing season). *Tika*, marks made on the forehead with colored pastes, rice and other substances (similar to *bindi*), are applied when people visit temples, perform rituals, welcome guests, practice *puja*, or during any other spiritual practice in Nepal and throughout the Hindu world. As such, the placing of *tika* on buildings and temples associates these structures with the human body and identifies them as carriers of divine energy.

Another clear example of the interweaving of spiritual and agricultural practice is the annual women’s festival of *Gaura*, a local expression of a wider Hindu festival unique to the far western region of Nepal. This festival celebrates Gauri (Sanskrit Gauri), a form of *devi* or the goddess, who embodies motherhood, nourishment and fertility. *Gauri* is strongly associated with a feminine nurturing principle, and this is reflected in the nature of the *Gaura* festival, which culminates in women dancing in a circle, singing and giving blessings so that their families, community and land may continue to thrive, nourish and be nourished “as long as there is snow in the Himalayas, as long as there is water in the seas.” *Gaura* lasts for 4 days of rituals and culminates in a final community-wide

festival. On the 1st day, women bring a special mix of grains and pulses called *biruda* (wheat, *kalaun* pea, horse gram, black gram, and rice bean) to one of the sacred springs associated with Malikarjun’s wives (**Figure 8**), and soak it in the water from the spring. Every household contributes their own *biruda*, which is grown especially for use in *Gaura*. On the 2nd day, the women wash the *biruda* five times in the water from the spring. On the 3rd day, they build and decorate a statue from a wide range of natural and pure substances, including flour made from the *biruda*, flowers, fruits, copper, etc. New *duvdhagas*, the female sacred thread, which is unique to far western Nepal, are hung on the statue to offer and bless them. On the 4th day, the women exchange their old *duvdhagas* for the new ones, taking them from the statue. The statue is then brought to Malikarjun Mandir, where multiple smaller “sister Gauras” meet and offer their statues and *biruda* at the temple. The women then bless their husbands and each member of their family in turn, after which the *biruda* is distributed among all households in the community. The typical blessing used at *Gaura* and other holidays employs many images of flourishing to describe different manifestations of fertility:

A hundred festivals, a hundred celebrations
 May you celebrate; biruda of Panchami
 Jamara of Dashain, beaten rice of Dutya
 May you have rice and milk
 May you have a comfortable bed to sleep on
 May you have a pair of bulls for ploughing
 May you have water from the spring to drink
 May you marry the daughter of a noble
 May you receive the blessings of God
 May you hold the favor of the king
 May you spread like a lawn of *dubo* grass
 May you spread like the banana
 May you bend like the uvula
 May you blossom as fluff
 As long as there is snow in the Himalayas
 As long as there is water in the seas
 May you live forever!

The three festivals specifically mentioned evoke the festival season of *Sharad* by identifying the *biruda* mix of *Gaura*; the barley from which *jamara* (germinated seeds given by the elders as a blessing with *tika*) is made during the important Dashain festival, and the rice which is beaten and offered during other festivals. All of these crops are either sowed or harvested during the *Sharad* festival period, so that the rituals indicated in the *Gaura* blessing encompass the entire annual agro-spiritual cycle.

Agricultural rituals are not only connected to the major grains and pulses grown in the community. In the household gardens, each woman maintains a *tulsi* (*Ocimum tenuiflorum*) or holy basil shrine (**Figure 9**), which is commonly built facing the east. *Tulsi* is a holy plant in Hinduism with a complex origin story which culminates in a mythic woman committing suicide after Vishnu deceives her into believing that he is her husband (Narayan, 1997). In compensation, she is turned into the *tulsi* plant. Each year on *Haribodhini*, the *tulsi* plant is ritually married to Vishnu in the form of sugarcane. *Tulsi* also plays an important role during human wedding ceremonies and in the annual



FIGURE 7 | One of the last gates before the Shikhar (ridge) of Malikarjun mountain visible beyond.

ancestral rites, in which *tulsi* leaves are used to purify the offering water, and the soil from which it grows is used in the offering shrine. Women make daily offerings at the *tulsi* shrines from the moment the seeds are sown on *Harishayani*. The offerings include incense and *diyo*, or oil offering lamps with cotton wicks made from either commercially available cotton or the cotton

tree, *kapash* (*Gossypium arboreum*), which is sometimes grown in household gardens. *Tulsi* shrines can be understood as the domestic and private expression of the public female ceremonial role in ensuring fertility and prosperity for family, community, and land, which is embodied in the rituals and blessings of *Gaura*.



FIGURE 8 | The Malikarjun Naula, one of the sacred springs where water is gathered by women for use in Gaura.

DISCUSSION

The festival of *Gaura* and the other rituals of the agricultural and spiritual cycle of Malikarjun presented here serve multiple and multifaceted purposes. On the one hand, gods and goddesses are honored and the covenant with the land is reenacted, through celebrating, making offerings and praying for the prosperity of family, community and land. In the specific case of *Gaura*, the five grains and pulses of the *biruda* symbolically represent the food of the entire community, and by purifying and offering them the women symbolically purify and offer all the food of the community. Further, culturally important foods are preserved, and local gastronomic identity is enriched, by the incentive to cultivate heirloom crops that are prescribed for use in rituals, such as the *kalaun* grown for *Gaura* and the barley grown for *Harishayani* and *Dashain*. Simultaneously, the cultivation of landraces has the double benefit of promoting resilience through plant diversity and preserving species adapted to local conditions (Sunderland, 2011; Nabhan, 2014).

The agro-spiritual rituals also have implications for community identity: by participating in *Gaura*, young brides who have recently married into the community (which is patrilocal) receive their *duvdhaga*, the womens' sacred thread, which like the festival itself, is unique to far western Nepal. Traditionally,

women only become officially integrated into the ceremonial life of the community once they have married and received their *duvdhaga* by participating in *Gaura* (men are also not fully integrated into the spiritual community until they have received *janai*). As such, *Gaura* not only celebrates and prays for the fertility and health of the community and land, it also affirms the belonging of individuals within the broader spiritual community, and links that belonging with the role of upholding fertility.

As Haider et al. (2020) suggest while describing the ritual use of the red wheat *Rashtak* in the Pamirs, "It is difficult now to disentangle whether the culture expressed so distinctly through ritual and daily practice exists because of the seed or if the seed exists to serve these cultural practices." This is certainly true in regard to the interpenetration of agriculture and ritual in Malikarjun. However, it is not just the value of these agricultural products to the community that makes them effective in spiritual practice. The cultivation of these products *is itself* perceived as possessing both a material and a spiritual quality, since it depends on the farmers' labor and knowledge *as much as* it relies on the elemental and cosmic forces of rain, sun, and soil fertility, which depend on the numinous intercession of gods, goddesses and landscape deities. Seasonal and spiritual cycles are intertwined and inseparable. Thus, through farming, the farmers of Malikarjun participate in something similar to



FIGURE 9 | A typical *tulsī* shrine in a yard in Malikarjun.

what Kimmerer (2013) calls “ceremonies of practical reverence,” powerfully pragmatic “acts of reverence,” in which manifest and material action has seemingly unmanifest and immaterial effects. When agriculture is understood as a spiritual practice, then the deities who participate in that process are manifest in agricultural products, just as they are also manifest in natural features of the earth like springs, mountains, and caves, as well as in certain specific plants, such as *pipal* (*Ficus religiosa*) and *tulsī*. In this

way, the offering of crops completes a cycle by recognizing and returning the energy of life (in the form of food) to its spiritual source.

For anyone intending to engage in, and fully grasp, the practices and the needs of the people of Malikarjun, it is of critical importance that the local food system is understood as the result of the combination of material, spiritual and multispecies relations. From a multispecies perspective, traditional grains and



FIGURE 10 | Landslides caused by poorly-implemented road construction in Malikarjun.

pulses like the *kalaun* pea have evolved over time to play a mediation role in which they allow the covenant between the people the deities, and their divine blessing, to become manifest as nutritious food. Hence, traditional and culturally important foods are spiritually embedded in ways that food produced and purchased outside the community is not. Similarly, in traditional Hopi culture, “...corn is the central bond. Its essence, physically, spiritually, and symbolically, pervades their existence. For the people of the mesas corn is sustenance, ceremonial object, prayer offering, symbol, and sentient being unto itself [...] The connection between the people and the corn is pervasive and deeply sacred. In a remarkable symbiosis between the physical and the spiritual, the Hopi people sustain the corn and the corn sustains Hopi culture” (Wall and Masayeva, 2004).

Road development appears to be one of the main threats to the current food system of Malikarjun. Increased consumption of exogenous and mass produced foods due to better road connections may over time create a disconnect between people and their culturally important foods, and ultimately between people and the land. A decline in local biocultural diversity is a plausible outcome of this disconnect, as rituals and practices may lose salience along with meaning (Pretty et al., 2009). This would likely affect *in situ* conservation of genetic crop diversity, given that landraces are an invaluable genetic source

of disease-resistant material and contribute variation associated with various terroir-dependant flavor profiles, in a context of unpredictability brought about by climate change and cultural transition (Pretty et al., 2009; Sunderland, 2011; Nabhan, 2014). From a food security and quantitative point of view, increased connectivity to distant markets may bring more wealth to individual households, which may in turn improve the general living condition of local families. On the other hand, from the perspective of food sovereignty, opening the local food system to a wider market may result in eroded traditional practices and beliefs; loss of local gastronomic identities, and of landrace diversity in favor of more high-yield or commercially valuable cash crops, with an overall negative impact on local biocultural diversity.

Destruction derived from poorly implemented road development affects households’ self-sustenance capacity. In fact, some of the community members lamented lost portions of home-gardens and terraced fields because of poor management of debris from road construction and increased risk of landslides (Figure 10). In the long run, diminished availability of land may cause families to abandon certain crops, hence impacting both plant diversity and diversity in household diet. Another threat to local self-sufficiency is the widespread out-migration in search of work opportunities in the Nepali cities or abroad,

as decreased workforces seriously impacts families' capacity to meet household needs.

CONCLUSION

Situated at the intersection of political ecology and ethnobiology, this study demonstrates why spiritual practices should be considered key elements of biocultural diversity. By presenting both agricultural practices and spiritual beliefs, we show how the local food system is embedded within a broader spiritual landscape. We discuss how the covenant between people and the land is constantly reenacted in the yearly festivals and how these provide an incentive to cultivate specific landraces whose use is prescribed in rituals, as in the case of the Gaura festival, where the fertility and well-being of people and land is affirmed through the offering of locally produced heirloom pulses and grains.

Collection and analysis of stories and songs, as well as the investigation of local rituals, constitute crucial methods to reveal the complexity of the agri-food system of Malikarjun's. Stories and songs powerfully encapsulate and store history; ecological and traditional knowledge; shared values; ethics. *"The songs are sung in the forest, and if people do not go to the forest, they will lose their songs"*, one of the most knowledgeable local singers, Binda, pointed out during a recording session. Binda succinctly expresses a key issue for many rural and indigenous communities: access to traditional food and the continuation of its linked practices are paramount to the preservation of their knowledge, and *vice versa*. For communities stories and songs are the seeds of the world to come: alongside self-determination and access to land the continuation of traditions and identities depend on them. A great deal of knowledge is lost when people are prevented from being in, or relating to, their homelands in their traditional ways, "gathering plants and animals for food and ceremonies and performing the ceremonies that ensured the prosperity of the earth and its life-forms," (Deloria et al., 1999). We therefore recommend that in the implementation of sustainable development that aims to embody the principles of food sovereignty, local and indigenous ways of knowing should be foundational to all interventions, through the tools of consultation and knowledge co-construction through participatory and community-informed holistic approaches, and indigenous and decolonizing methodologies (Smith, 1999; Pimbert, 2006; Wilson, 2008; Kovach, 2010; Chilisa, 2012; Drügge, 2016). In particular, we strongly advocate that spiritual practices should be considered key elements of biocultural diversity and the right to food sovereignty, and we urge that they receive greater attention in the academic and policy-making fora, and in all stages of agricultural development.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants, in accordance with the local legislation and institutional requirements. The participants provided their informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

Fieldwork in 2018 was carried out by AG, with assistance from JB. JB translated collected stories and songs. FC was responsible for visual and audio documentation, and the photos and infographics for the manuscript. All authors conducted fieldwork in 2020 and shared the conceptualization, analysis, and writing of this manuscript.

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Don't be fooled by finding our names at the top of this paper. The knowledge, experience, and practices described here belong to the intangible heritage of the people of Malikarjun Rural Municipality. The role of the author is to shape themselves into one minute tube of xylem, to employ the capillary action of the writing process to transport the water of knowledge from where it rests in the roots upward, fighting cultural entropy to bring it at last to the leaves, where it will hopefully diffuse into the atmosphere at large. In this case the roots have names, and it is only through their blessing that you receive this water. Thanks to the chairman of Malikarjun Rural Municipality, Narendra Singh Dhama, the *mukhya* of Malikarjun Mandir, Rudra Singh Dhama, to Jamuna Devi Dhama, Binda Devi Dhama, and all the others singers, Madan Singh Dhama and the rest of the Music Committee of Chaud Mandir, to the chairpersons and committee members of the community forests, Gopal Singh Dhama, Gyan Singh Dhama, Moti Devi Dhama, Kalyan Singh Dhama, the other Kalyan Singh Dhama and the other Madan Singh Dhama, to our dear friends Lalit Singh Dhama and Lambodar Bist, and to countless others who opened their mouths and doors to let this water flow, too many to name. Thanks also to the partners who laid the groundwork: the intrepid translator Rajendra Bom, the unmatched facilitator Krishna Thagunna and his incredible staff at the Social Awareness and Development Association, Laxmi Bhatta and the International Center for Integrated Mountain Development, Suresh Ghimire at the University of Tribhuvan, Binod Basnet and Hem Paudel at the Kathmandu Herbarium and Rajindra Puri at the University of Kent. And thanks to the mountain that oversees all, who gathers the waters that flow down to the communities below. Jay Malikarjun!

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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