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Fond Recollections, Bittersweet Memories, or Markers of a Forgotten Past? Uncultivated Foods in Rural Chintamani, Karnataka

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Fond Recollections, Bittersweet Memories, or Markers of a Forgotten Past? Uncultivated Foods in Rural Chintamani, Karnataka

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Abstract: *Some experts consider “food” as the most critical issue of the 21st century. Countries such as India are experiencing what has been described as a triple burden of malnutrition – characterised by high prevalence of undernutrition, obesity, and micro-nutrient deficiency. These are a result of inadequate access to healthy foods, increased use of highly processed foods, and low dietary diversity, besides factors related to sanitation. Changes in the practice of agriculture has resulted in a reduction in agrobiodiversity. The challenges to accessing food during shocks such as the COVID-19 pandemic and conflicts in various parts of the world demonstrated the importance of local food security and reminded people of the importance of local food sources, including uncultivated or wild foods.*

There is ample literature on the contribution and types of uncultivated foods in various parts of the world, across high-income and low-income countries, in urban and rural areas. Research has also tried to characterise these foods, their nutritive value, and more recently, their potential role in sustainable diets. Furthermore, scholars have discussed the importance of local foods as part of culture, increasingly seeing foods as a political expression of identity. The recently introduced food environment framework (studying the interface between the food systems and the consumer) has also been used to better describe people’s food options and choices.

Given this background, we sought to understand the role of uncultivated foods in the communities living in the diverse landscapes of Chintamani taluk of Chikballapur district of Karnataka. Elderly people from ten panchayats in Chintamani from various castes recollected their life situations from over fifty years ago, their experiences of hunger and poverty, and their sources of food from fields, forests, lakes, hills, and forests. They described the practices of collecting uncultivated foods, preparing them, and their taste. They reflected on changes in food consumption and their life situations, and how the use of uncultivated foods has reduced. We discuss how the changes in foods consumed are linked to socio-ecological changes. We add to the argument that uncultivated foods should be considered more seriously in deliberations on food policy, in relation to dietary diversity and strengthening local food systems.

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1. Introduction

1.1. *Food and nutrition in the global context*

Food and nutrition have been an important national and global concern for several decades. In India, where devastating famines occurred in the colonial period, governmental programmes in the post-Independence period have tried to increase the access to food (at least to cereals such as rice and wheat), either through food-for-work programmes, public distribution (including most recently, the National Food Security Act, 2013), and other poverty alleviation schemes (Pradyumna et al., 2022). The abolition of the zamindari system, as well as modest land reforms (seen more effectively in Kerala and West Bengal) and tax relief, played a role in improving foodgrain yields and food availability in the decades after Independence. Further, interventions to increase food production through increasing access to high-yielding variety seeds, fertilizers and other agricultural technology through, for example, the Green Revolution contributed the grain stocks that were required for distribution (Kumar, 2019). Globally, food aid has been an important philanthropic activity towards low-and-middle-income countries.

At the turn of the 21st century, as part of the Millennium Development Goals, eradicating extreme poverty and hunger were part of Goal 1. This included targets addressing poverty, livelihoods and hunger – to reduce them to half the current burden (UN, 2015a). Moving forward, the Sustainable Development Goals also awarded prime positions to the goals addressing poverty (Goal 1 on No Poverty) and hunger (Goal 2 on Zero Hunger), with more ambitious targets to eradicate poverty and hunger by the year 2030. Goal 2 also included specific commitments on child undernutrition which were agreed upon during the second International Conference on Nutrition held in Rome in 2014 (UN, 2015b).

Due to the high prevalence of undernutrition, micronutrient deficiency, and obesity, India is experiencing a “triple-burden of malnutrition” (see Table 1). Both undernutrition and obesity increase the risk of other conditions such as diabetes and hypertension, which in turn increase the risk of heart disease, stroke and cancer. Overall, non-communicable diseases have become the main contributor to disease and death in the country and have created a large financial burden on the population due to the need for lifelong treatment, and the increased chances of medical complications and hospitalisation.

Table 1: Nutritional challenges in India

Indicator	India (%)	Karnataka state (%)	Chikkaballapura district, Karnataka (%)
Proportion of children aged under 5 years who are underweight	32.1	32.9	25.2
Proportion of women aged 15-49 years with anaemia	57.0	47.8	45.5
Proportion of women aged 15-49 years with obesity	24.0	30.1	26.6
Children aged 6-23 months receiving an adequate diet	11.3	12.8	18.1

Source: (IIPS, 2021b, 2021a, 2021c)

“Food” did not just concern Goal 2 as part of the SDGs. There are also concerns related to the activities and impacts of how food was produced, processed, distributed, consumed and disposed (von Braun et al., 2021). Hence, it is not just food, but “food systems” that took centre-stage as part of the SDGs. These included Goal 3 on human health (‘Good Health and Wellbeing’, especially the targets on reducing non-communicable diseases, child mortality, maternal mortality, and communicable diseases), Goal 12 (‘Responsible Production and Consumption’, with targets on sustainable use of natural resources, reduction of food waste, reduced use of chemicals), Goal 13 (‘Climate Action’), Goal 14 (‘Life under Water’, including targets to protecting marine ecosystems from the effects of pollution, climate change and sustainable fishing), and Goal 15 (‘Life on Land’, including targets on conserving terrestrial ecosystems such as forests, mountains and inland freshwater ecosystems, protect biodiversity and prevent trade in wildlife products, and integrate biodiversity values in local and national planning) (Pradyumna, 2021). In relation to biodiversity, agrobiodiversity is also a concern with food security now based on just a few cultivated species, with over half of the world’s daily requirement of proteins and calories from three crops—wheat, maize and rice; and with just 12 food crop species contributing 80 per cent of total dietary intake (Bharucha & Pretty, 2010).

Overall, there is now a widespread recognition that food and nutrition challenges are complex. However, though nine years have passed since the inauguration of the SDGs, this perspective has not yet adequately translated to transformation of policies and practices – the main aim of the SDGs.

1.2. Food systems and food environments – understanding the complexities of food access and nutritional outcomes

1.2.1. Food systems

Food systems include all the activities related to the production, processing, distribution, consumption and disposal of food, alongside the actors involved in each of these activities, and importantly, also the socio-economic and other implications of these activities. Efforts have been made to create food systems typologies, ranging from agrarian to industrial, based on contextual characteristics such as the size of farms, use of modern technology, and presence of retail market chains (IFPRI, 2015).

Though trade in food products has existed for centuries, the majority of the world's population produced food for local consumption until a few decades ago. Now food trade within and between countries has greatly increased and so has the role of national governments and corporations in influencing production and access to food. In countries such as the US and in Europe, food systems (described in a recent typology paper as “industrial and consolidated”) are quite uniform (Marshall et al., 2021). Farmers practice industrial agriculture which is closely linked to food corporations and retail chains, the latter serving as the main source of food procurement in both urban and rural areas in those contexts. While this is not yet the case in a country such as India, food systems here are in transition, incorporating aspects from industrial food systems, while retaining some elements of the agrarian food system. Most farmers continue to produce at least some food for personal consumption, while industrial methods continue to be adopted to produce for the market, and supermarkets and for processed foods that penetrate the hinterlands.

The literature has classified India's food system as “rural and traditional”, based on the dominance of smallholders, low yields, focus on staples, small role of international food trade, seasonal variations and lean periods, limited technology, and with predominantly informal markets (Marshall et al., 2021). The definitions of food systems and the criteria for the typology have considered agriculture in particular and cultivation in general (including livestock and fisheries) as the main source of food, though the recent Food Systems Summit definition has included forestry as a source of food, for instance (von Braun et al., 2021).

Agriculture indeed contributes mainly to the food security of the world population, but there are other sources contributing to food and nutritional security. More recently, some aspects of the food systems framework have received greater attention, especially the spaces occupied by food consumers. This has been due to the growing health-related concerns of modernised food systems. One way in which food sources have been studied in a deeper way is through the “food environment” framework, which is also considered as a part of the food system (Marshall et al., 2021; Turner et al., 2018) as described below.

1.2.2. Food environments

The food environment has been defined as “the consumer interface with the food system that encompasses the availability, affordability, convenience, promotion and quality, and sustainability of foods and beverages in wild, cultivated, and built spaces that are influenced by the socio-cultural and political environment and ecosystems within which they are embedded” (Downs et al., 2020). In other words, “food environments are where people access food for their own consumption”. In rural contexts in low-and-middle-income countries, the food environment is more diverse and complex as compared to food environments in Western contexts (including their rural areas) where agriculture caters fully to the market and not household consumption, and where farmers are dependent on the market for their food (Turner et al., 2018).

The food environment is the space that influences what individuals, families and communities eat, and therefore it becomes important to describe it. Through this, gaps and concerns in the food environment can be identified and addressed. This framework is embedded in food systems thinking, and so, within the broader context of the production, processing and other relevant activities, actors, and outcomes (Downs et al., 2020; Turner et al., 2018). The framework is informed by the socio-ecological model which explains how health-related behaviours are influenced by inter-linked individual, local, and broader environmental factors – including, but not limited to the community, ecology, economy, socio-cultural aspects, and political aspects (cited in Turner et al., 2018). Figure 1 depicts how the food environment is related to the individual, the broader food system, and its drivers.

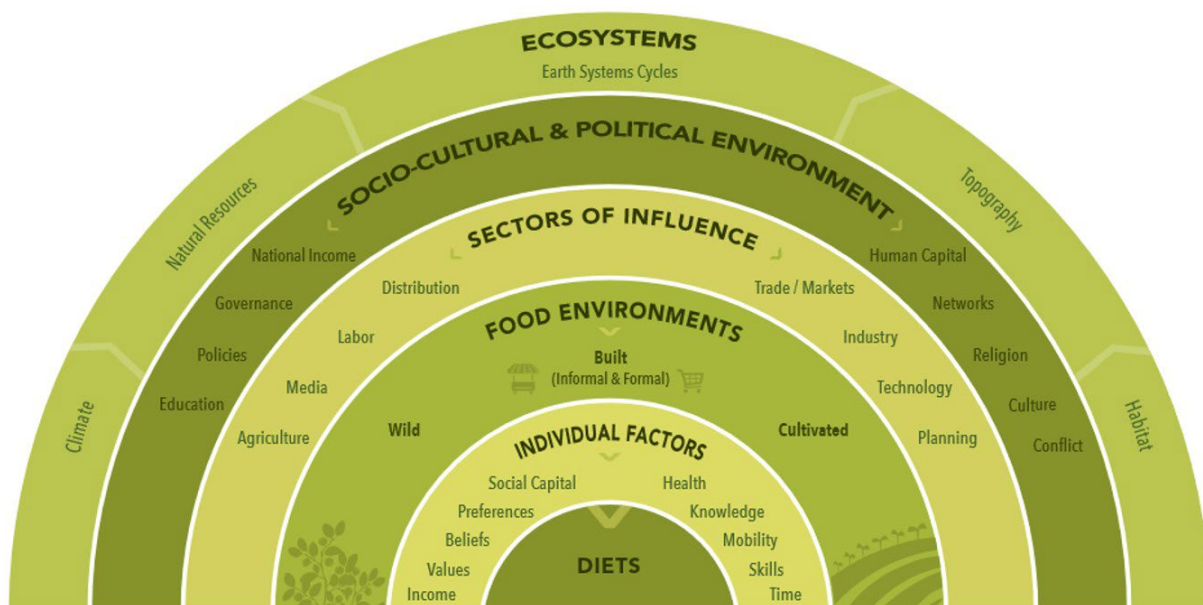


Figure 1: Using the socio-ecological model to place food environments within the broader food system and relevant social, cultural, political and environmental systems.

Source: (Downs et al., 2020)

One framing of the food environment focuses primarily on the “external factors” ignoring, for instance, factors such as taste and preferences of the local people (described as “individual-level factors”). However, these factors “interact with the food environment” (Downs et al., 2020) and hence become relevant for a deeper understanding of foods consumed. The framing by Turner and colleagues (2018) includes these individual-level factors too as part of the food environment framing.

The types of food environments include: 1) natural, i.e., wild food environments, cultivated food environments, and more recently, the recognition of a wild-cultivated food environment continuum (Zeitler et al., 2024), and 2) built food environments (informal and formal market food environments). In high-income countries, formal markets predominate for fresh and processed foods. More recently, at smaller scales, the role of informal and natural food environments is being recognised and promoted (e.g., through kitchen gardens and farmers markets). On the other hand, in low-and-middle-income countries, there are many sources of food, and hence studying the food environment is more complicated (Turner et al., 2018). The sources of food in a particular context usually involve more than one of these food environment types. In addition, in these contexts, the food environments can change during the course of the year, based on season and other factors (Downs et al., 2020).

Some literature is emerging on the food environment in the Indian context. One study described the food acquisition practices in peri-urban Hyderabad. It focused more on vendor characteristics, and recognised the role of affordability, quality, and social capital in determining the choices made. The growing concern among respondents regarding processed food acquisition practices among children and adolescents as part of the local food environments was also reported (Turner et al., 2022).

In our paper, after we analyse our data inductively, we contextualise it in the food environment framework to help understand the role played by uncultivated foods as a source of food in our study area over decades. This includes some description of trends in availability, affordability, convenience, quality, and promotion of uncultivated foods, alongside personal factors such as desirability (taste and preference), and the drivers of these aspects. The rationale for choosing the food environment framework for the analysis were: 1) it has been put forth as a framework that emphasises the immediate drivers of food consumption in a particular area – how the local people are interacting with what is on offer in terms of food in the particular local area – and so it was felt to be relevant; 2) the framework has a public health underpinning as the elements provide an avenue to identify shortcomings in access to health-promoting foods, and 3) it has not been applied much in the Indian context, and even less so in areas where uncultivated foods are consumed, and so it was felt interesting from an academic perspective. First, we briefly describe here the extant literature on uncultivated foods from a global and local perspective.

1.3. The literature on uncultivated foods and their importance

Uncultivated foods are also described as wild foods in literature, while the notion of “wildness” of these foods has been challenged. This is due to the fact that many of these foods that are termed as “wild” are “actively managed” by people (Bharucha & Pretty, 2010). For the purpose of our shared understanding, wild or uncultivated foods can be defined as follows: They are “...plant and animal species that are not domesticated or cultivated but rather are gathered, hunted, foraged, fished, or procured outside formal cultivation” (cited in Zhu et al., 2024). The use of uncultivated foods has been linked with the presence of diverse landscapes such as forests and grasslands. The importance of these foods, and their decline due to deforestation, changes in land use, pollution etc. have been documented in communities across the world (Deb et al., 2014; Rowland et al., 2017).

The contribution of uncultivated foods to food and nutrition is difficult to estimate, as consumption is variable across seasons and even on a daily basis. Consumption varies across gender, and women’s consumption is often under-reported (Rowland et al., 2017). However, the importance of these ‘free foods’ is significant enough to have been captured in the National Sample Surveys (NSS), with estimates from as recent as 2011-12 suggesting that 5.8% of all Indian households had relied on at least one such food in the month preceding the survey (Narayanan, 2021). There is increasing recognition of the contribution of uncultivated foods to the food basket and more importantly to essential nutrients (Zhu et al., 2024). A literature review estimated that the average use of wild foods is in the order of 90–100 species per place and community group across 22 countries in Asia and Africa (Bharucha & Pretty, 2010). These foods are important not only to hunter-gatherer communities but also to farmers for whom it has provided a ‘hidden harvest’, such as through collecting fish from rice fields (Bharucha & Pretty, 2010), implying their availability even within cultivated landscapes. Motivations for consuming wild foods was also diverse, such as taste, high quality nutrition, and a perception of self-sufficiency (Smith et al., 2019). There are diverse types of uncultivated foods. Most are recognised to have high levels of micronutrients, but low energy density (except for honey and fatty organs and possibly tubers). In addition to nutritional benefits, wild plants are also used as medicine and other uses (Bharucha & Pretty, 2010).

Several studies have been conducted in India too, documenting the types of wild foods and practices related to them. The focus has especially been on forested and hilly areas with tribal groups, such as in Jharkhand (Ghosh-Jerath et al., 2020), Meghalaya (Paul, 2013), and Karnataka (Laddimath, 2021; Laddimath et al., 2022; Nandini et al., 2015; Prashanth Kumar et al., 2016), with fewer studies focusing on other agroecological zones such as dryland districts of Nalgonda (Soujanya et al., 2021) and Chikkaballapura (Gowthami et al., 2016). Some of these areas have been recognised as facing nutritional challenges, and with people having limited access to cultivable land (Sabar, 2016), it makes uncultivated foods particularly important for their health (Ghosh-Jerath et al., 2020).

Studies have revealed between 22 and 56 species of uncultivated edible plant species in various parts of Karnataka, with diversity being higher in the Western Ghats and forested parts of Karnataka. These plants were documented from forest edges, in communities, and in agricultural lands, and a large proportion of them were commonly available (Nandini et al., 2015).

Uncultivated foods have interested the organisation for a while, with some youth recording the names of the greens that went into the *nooru soppina saaru* (rasam made with one hundred greens), a local specialty. Hence, there was a desire in the organisation to further explore this topic. The local cultural troupe, *Beru Bevaru Kala Balaga*, shared this interest as it relates to local culture and practices, and we, the collaborators of this study, felt that cultural outputs (e.g. songs in the local language) should be an important part of this project – as a way to claim local knowledge, promote it and remember it. Some of the members of the cultural troupe were an integral part of study planning and data collection. Hence, our primary goal was to support local awareness and action rather than adding to the literature.

With this objective of understanding the role and utilisation of uncultivated foods among rural communities in Chintamani Taluk, we conducted a qualitative study between February and December 2023. The study covered 12 villages from 12 of the 36 panchayats in Chintamani Taluk (see Figure 3). These villages were selected purposively, to ensure diverse local ecological and population characteristics, with some of them having been familiar to the study collaborators through their earlier projects.

The main approach to data collection was through focus group discussions (FGD), as 1) the knowledge and practices related to uncultivated foods is shared, and 2) because recollections of one person could trigger such memories and insights from others, as we learned that practices have reduced in the younger generations. One FGD was conducted in each of these villages with five to eight participants, alongside observations of the local ecology during the visit. We spoke mainly to elderly persons, including men and women, and also persons from different socio-economic

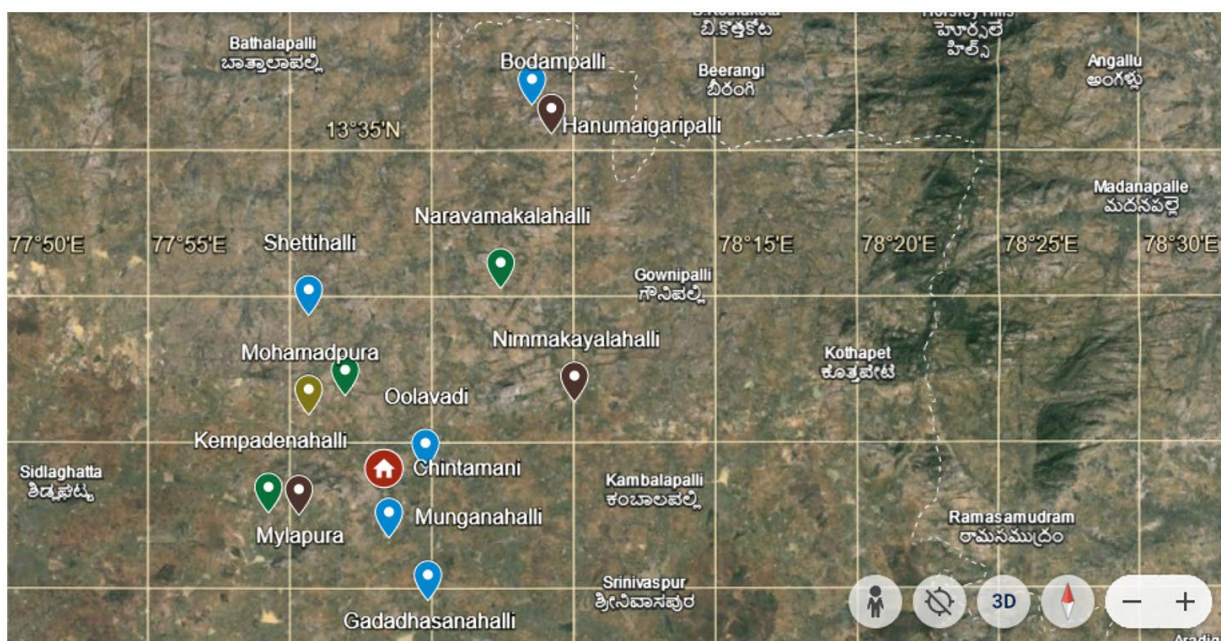


Figure 3: Location of the 12 project villages; pin colours of villages indicate the reported important local ecological feature/s: blue pin indicates lake, brown pin indicates hill; green pin indicates forest, and gold pin indicates mixed local ecological features; red pin is the taluk headquarters of Chintamani (created by authors in Google Earth)

backgrounds (see Table 2). This is because local ecological knowledge varies within the community based on gender and other social roles, and hence each part of the community holds some degree of specialised knowledge (Bharucha & Pretty, 2010). The interviews were conducted in a mix of Kannada and Telugu, as most elders are comfortable in Telugu while youth, who have been educated in Kannada, are more comfortable with that language. Names of plants and animals mentioned by the respondents span both languages.

Table 2: Details of participants

Village name	Caste of participants	Main feature/s of the local ecology*	Total participant (female participants)	Age range (years)
Bodampalli	SC and ST (Nayaka, Bhovi, Agasa)	Konguntlu hills	6 (3)	48-80
Dhanamittanahalli	ST (Nayaka, Bhovi)	Forest	8 (2)	42-80
Gadadhasanahalli	SC (Maadiga)	Lake	6 (4)	48-90
Hanumaigaripalli	SC	Lake	6 (2)	60-90
Kempadenahalli	Reddy	Forest	5 (4)	50-63
Mohamadpura	SC	Forest, lake hill	7 (7)	52-90
Munganahalli	SC	Lake	7 (3)	45-65
Mylapura	SC (Maadiga)	Hills	6 (6)	50-65
Naravamakalahalli	SC	Forest	6 (6)	48-70
Nimmakayalahalli	Muslim	Murugamalla Hills	8 (1)	38-80
Oolavadi	SC	Lake	7 (7)	60-75
Shettihalli	SC and ST	Lake	8 (7)	35-58

*The local ecology of each village mentioned here are based on the impressions of the project's field researchers and insights from local people. For instance, while officially a particular village boundary may not have forests, their proximity to another village's forest has been considered.

In addition, follow-up interviews were conducted with few participants for clarifications (IDI), and one key informant interview (KII) was also conducted with a retired revenue official. The study participants enthusiastically recollected experiences, and shared stories and songs from several decades ago, which provided deep insights into their past lives, where uncultivated foods were an important part. They further discussed their perspective of how things have changed. After identifying potential participants, informed oral consent was taken for the participation in the group discussions and for the use of photographs for written outputs. While we promised confidentiality, we were told by the participants that they did not want anonymity.



Figure 4: Photographs of some of the focus group discussions (credit: authors)

Following the collection and translation of the qualitative data, members of Beru Bevaru Kala Balaga (Shashiraj and Chandrashekar) composed a few songs to capture key insights and emotions from the interviews. Early versions of the songs were presented and performed to some of the respondents as part of a consultation, where they provided feedback. (The studio-recorded version of songs will be available open access online on YouTube by mid-2025). The broader goal of the project is that the songs will be performed as part of public gatherings in Chintamani – those that are part of governmental initiatives and also those planned by community-based organisations. In addition, making them available online will encourage performers in other parts of the state to also consider performing them. Additional written reflections of the project process and the process of song preparation, dissemination and reception will be led by the community collaborators in the coming months. We will also use the collected information to create a list of uncultivated foods, their characteristics, where they can be found, and how they can be used. This last activity may require some additional consultation, which will be done in the coming months.

The qualitative data was analysed thematically. First, the data was transcribed from audio and translated to English. This was followed by reading, and re-reading the data, which was then coded inductively. The codes were then organised into categories and themes describing the context, the utilisation of and perspectives about uncultivated foods. These findings are then further reflected upon through the lens of the food environment framework which includes aspects of availability, affordability, quality, convenience and preference (Downs et al., 2020; Turner et al., 2018). In the following sections, the literature and our findings are presented together to convey a more comprehensive picture.

3. The project site: Chikkaballapura district and Chintamani taluk (sub-district)

Chikkaballapura district, which is found to the north of Bangalore City, was formed out of Kolar district in 2007 (see Figure 2). According to the 2011 Census, the population of the district was 12,54,377, with over 77% of the population in rural areas (Government of Karnataka, n.d.). Described on the district government website as a “A major site for grape, grain, and silk cultivation” and also as “known for silk and milk”, the main agricultural and horticultural products included cereals such as ragi and maize, pulses such as red gram and cowpea, groundnut, mulberry (as a feed for silkworms), fruits such as mango, grape and sapota, and vegetables such as tomato, potato, cole crops (cabbage, cauliflower etc.), carrot and beetroot, and flowers such as rose, chrysanthemum and marigold, each covering from hundreds to tens of thousands of hectares (Government of Karnataka, n.d.).

Chikkaballapura is part of the “eastern dry zone”, where kharif crops are grown predominantly. Deshpande and Malini cite Francis Buchanan’s observations of Kolar region (of which Chikkaballapura was a part) from 8 July 1800. He mentions there being little vegetation and dry fields in Kolar as compared to fields in Mysore. He also notes that famines were common in the region, and that local mechanisms were in place to manage them. He identified weaving as the main profession, and that small tanks and water bodies were used for water conservation and irrigation (Deshpande & Tantri, 2008). The main soil type is red-loamy, with lateritic soils in other areas of the district (Singha & Chakravorty, 2013). The district (as part of insights on undivided Kolar district) is known for relatively low rainfall; studies have reported increased dry spells, shorter rainy periods, and reduction in water resources (due to increasing extraction of groundwater) as compared to over 40 years ago (Singh et al., 2018). The average annual rainfall in Chikkaballapura district is 677mm according to a farmer portal maintained by the University of Agricultural Sciences, Bengaluru.

Climate change, the symptoms of which local people have noticed especially since the 1990s, has affected both mulberry cultivation and survival of silkworm, and hence affected livelihoods. Ragi crops have also been affected due to untimely rains. These factors have also influenced migration (Krishnakanth & Nagaraja, 2020; Singh et al., 2018). One study looking at rainfall patterns until 2010 in Chintamani indicated a trend of decreasing rainfall and increasing variability (Patil et al., 2013). The increased use of groundwater had started affecting marginal farmers by early 1990s, whereas farmers using groundwater continued with cultivation of cash crops (D. S. K. Rao, 1993).

A contrary finding on migration came from an interesting study by Engberg-Pedersen, who was primarily interested in local institutions for water- and land-sharing. It demonstrated that farming as a livelihood and land as a resource had become less important to richer sections of the community, especially as subsequent generations have taken up mainstream jobs through accessing higher education, with many of them living in cities or outside the country (Anecdotally however, we note that farmlands of richer households that have migrated continue to be cultivated with irrigated crops by tenant farmers or have been planted with fast-growing trees such as eucalyptus which

have a negative impact on local ecology). On the other hand, it was noted that local resources were of interest to marginal farmers and the landless as it was perceived that migrating to and living in cities was more expensive. Hence, it was felt that these dynamics would influence for the future of management of these local resources (Engberg-Pedersen, 2011).

The district, however, continues to contribute significantly to the state's total fruit production in the order of 9% (Singha & Chakravorty, 2013). Cash crops had been promoted and adopted in the district since the 1980s, with mango being the main fruit crop. It was also noted that diversification of crops has also been an important strategy to reduce risks of climatic vagaries amongst the landed (Singh et al., 2018).

In terms of quality of food consumption in the region, it was reported that livelihood strategies were associated with consumption of vegetables, fruits, milk, edible oil, and egg (foods considered important for minerals and vitamins). It was found to be higher in households whose strategy involved "Crop with Dairy and Sericulture", and the lowest in households with the strategy "Crop and Sheep", potentially due to lower returns. Also, consumption of meat was more in households with "Crop and Dairy" strategy (Harishkumar et al., 2016). While overall the prevalence of undernutrition among children in Chikkaballapura was lower than in India (25.2% vs 32.1%) and the consumption of an adequate diet higher among young children (18% vs 11%) (see Table 1), nutrition remains a significant concern. In addition, the prevalence of obesity among women was higher in Chikkaballapura as compared to the India average (26.2% vs 24%, but lower as compared to the stage average of Karnataka at 30.1%) (see Table 1), which also has important implications for health and development.

The study by Enberg-Pedersen from the neighbouring Kolar district showed that poverty was a "well known phenomenon" in the region, and that hunger is not unknown. Women reported about hunger "being the worst thing", having worked on an empty stomach and having "eaten leaves". Poverty was found to be linked with land ownership and access to irrigation, and was disproportionately more among oppressed caste groups (Engberg-Pedersen, 2011). While several governmental initiatives have improved food security in the region, one study reported some households having reduced their food intake during lean months (Singh et al., 2018), and another study reported households having experienced inadequate food during the past two years (Pradyumna et al., 2021) indicating that food insecurity is still experienced in the region.

3.1. The study population

Table 3 provides some details on the socio-demographic aspects and governmental services in the study villages. The villages are between 4 km to 35 km from Chintamani town. They have between 16.6% to 59.7% Scheduled Caste (SC) population and between 0% and 38% Scheduled Tribe (ST) population. All villages have public primary schools and access to electricity. As of 2009, few villages did not have black topped roads and ration shops (Directorate of Census Operations Karnataka, 2014).

Table 3: Socio-demographic insights on study villages*

Village name (Gram Panchayat name)	Sub-district head quarter (distance in km)	Govt primary school (number)	Black topped (pucca) road (availability)	Public Distribution System (PDS) shop (availability)
Oolavadi (Oolavadi)	4	1	Yes	Yes
Munganahalli (Moodlagollahalli)	5	1	No	Yes
Mylapura (Perumachanahalli)	5	1	Yes	Yes
Kempadenahalli (Upparapete)	7	1	Yes	No
Mohamadpura (Upparapete)	7	2	Yes	Yes
Dhanamittanahalli (Konapalli)	8	1	Yes	No
Gadadhasanahalli (Kuruburu)	11	1	Yes	No
Nimmakayalahalli (Nandiganahalli)	14	2	No	Yes
Shettihalli (Shettihalli)	18	2	No	Yes
Naravamakalahalli (Yegavakote)	23	1	Yes	No
Bodampalli (Batalahalli)	25	1	Yes	No
Hanumaigaripalli (Kadadalamari)	35	1	Yes	Yes

*(Directorate of Census Operations Karnataka, 2014)

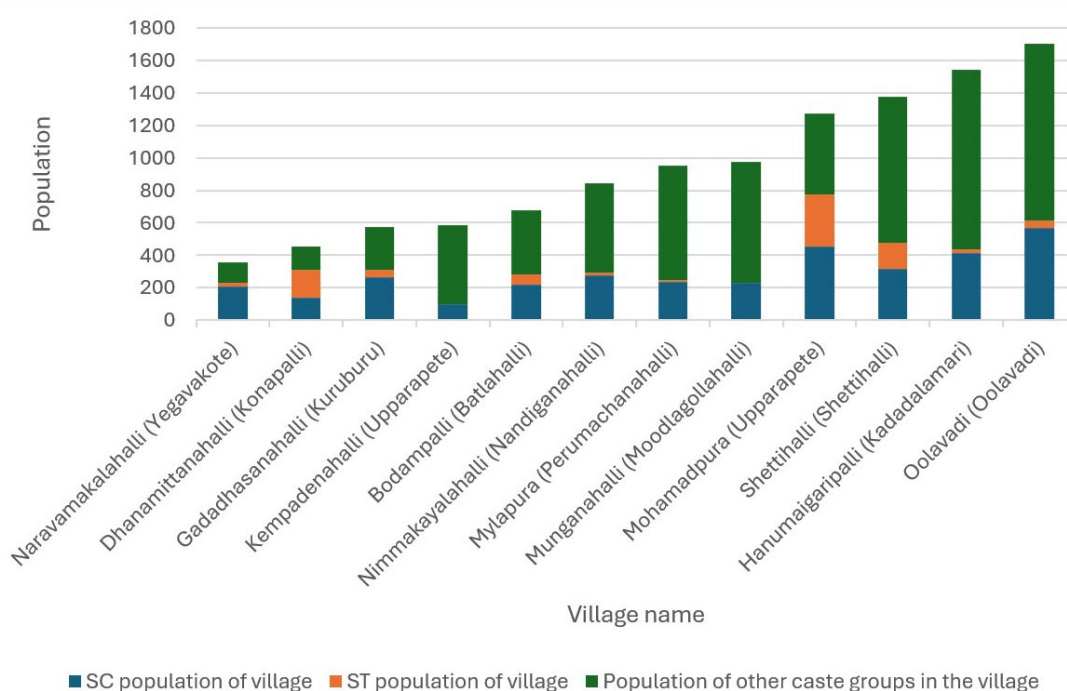


Figure 5: Population size and caste distribution in the project villages

3.2. Trends in land use and management

“Until 1980, it was mostly forested here” [KII1, retired revenue official].

Chikkaballapura was part of the erstwhile Mysore state, with the kings sometimes giving entire villages as gifts to their “*jodidaars*”. Sometimes smaller pieces of land were gifted to local officials and workers such as the *neeruganti* (who had a key role in organising irrigation from the lakes - which were commissioned by local kings/chieftains and the communities). “The farmers weren’t allowed to live grandly...they had small houses. Water was plentiful in the lakes back then, and the livestock were taken to forests to graze. There was plenty of mutton” (KII1, retired revenue official).

Social norms also created challenges for those with marginal lands to cultivate. They were forced to work for landowners and be dependent on them for food or wages as this quote illustrates.

“Even though we had land, we could not farm. When we were young, we were forced to work in the zamindar’s field. He gave us ragi balls to eat. It was necessary to work hard. We had to do everything like threshing grain and making flour in the zamindar’s houses. We had to lift as many bales as men lift when they go to work. If we did not do equal work, it meant less salary and less food. We picked up bundles and even carried them up from the Kaiwara lake (~4 kms)” [FGD8, women, SC].

The year 1964 brought changes in how the land was owned and managed when SC households began to be allocated land. This process led to the diversion of common lands such as “*kharab, banjar*” (wastelands), “*gomala*” (grazing lands), and forests for agriculture. They were able to place “*darkhast*” (request) for land based on their current land ownership. Various other sub-castes and local tribal households also started demanding lands, and the “*kharab, banjar, gomala*” lands were distributed to them (KII1, retired revenue official). However, despite reforms, the land holdings of the colonial times had an impact on the caste-wise holdings even after Independence. The situation of the landless did not improve much because of loopholes in redistributing lands to family and friends of landed households (Besley et al., 2016).

Back then, it was reported that manure and lakebed soil were also used regularly in the fields, especially when the lakes dried up, and this increased the yields of their crops. One respondent said, “When we used this soil on 5 acres, we could harvest 100 sacks of groundnuts” [IDI1, 65-year-old man]. Now the management practices for lakes have changed. With panchayats gaining power from the 1990s onwards, the old water management systems which relied on collective efforts by villagers have fallen out of favour, and so, lakebed soil is often not used. Further, over the last 8-10 years, district-level officials have decreed that lake water is only to be used for livestock and human needs and not for irrigation, so some of the larger lakes do not dry up now.

Table 4 provides further insights on agriculture and Figure 6 on land use in the study villages. Based on the Census of 2011, forests are found in three of these villages, grazing lands in six, and lakes in six.

Table 4: Agriculture and land use in study villages*

Village name	Total geographical area (in hectares)	Agricultural commodities (first)	Agricultural commodities (second)	Tank/Pond/Lake (availability)
Bodampalli	405.91	Ragi	Ground nut	No
Dhanamittanahalli	197.74	Ragi	Ground nut	No
Gadadhasanahalli	106.99	Ragi	-	Yes
Hanumaigaripalli	482.08	Ragi	-	Yes
Kempadenahalli	175.64	Ragi	-	No
Mohamadpura	213.48	Ragi	-	No
Munganahalli	277.99	Ragi	Pulses	Yes
Mylapura	294.71	Silk		No
Naravamakalahalli	260.51	Ragi	Ground nut	Yes
Nimmakayalahalli	285.47	Ragi	Ground nut	No
Oolavadi	451.86	Ragi	-	Yes
Shettihalli	749.28	Ragi	Ground nut	Yes

*(Directorate of Census Operations Karnataka, 2014)

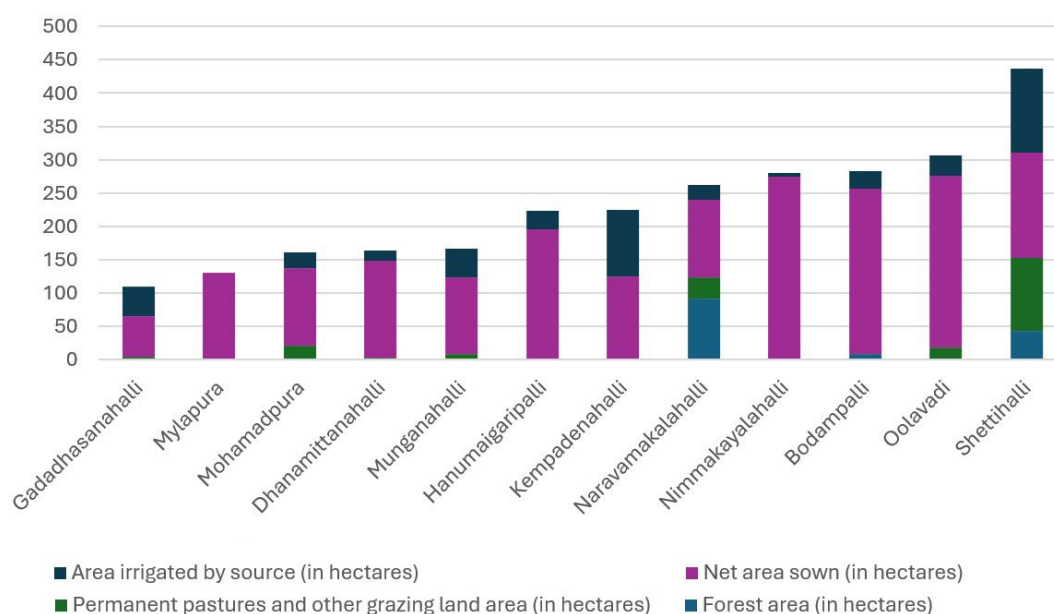


Figure 6: Land use in the study villages

3.3. Irrigation practices

Lakes were the main source of irrigation prior to the 1980s, when borewells came into the picture. The *neeruganti* played a central role – they would decide how much land could be irrigated with the stored water, and how much of it would be released. They were paid with a share of the harvest, and were occasionally rewarded with small pieces of land.

The method of irrigation management and cropping in the area was called the *Damash* system. Here, if there was plentiful “water in the lake, all the land in the command area would be cultivated by the farmers. ..this method detects the water level and determines how much can be cultivated in the land.” [FGD1, mixed, SC/ST]. The *neeruganti* were charged with ensuring irrigation access to farmers and equitable distribution of water.

“At the level of the slope from the well, we used to form a slope of kilometres and make a bag to keep the water at about 15 to 20 *bindige* (pots). If we started at 6 in the morning and worked till 6 in the evening, we were given meals twice. Even though we worked so hard, they used to give us only half a bag of rice after the harvest. Some just gave food” [FGD4, mixed, SC].

The practice of using lake water was the main approach until around 40 years ago, when borewells made their way into the villages. In addition, schemes were introduced towards equitable access to groundwater for SC households.

“After 1970, handpumps were installed for drinking water in villages, and seeing this, people began installing borewells in their villages after 1975. First the big farmers did this, and then, even the small farmers. SC/ST farmers didn’t have money, and so government funds supported them to dig borewells. Earlier, we could dig and find water, now it comes from *paatala* (hell)” [KII1, retired revenue official].

This also led to change in the nature of crops produced. However, even before the advent of borewells, in land-owning households, silk was already being produced. And the change in availability of groundwater has been palpable for these farmers.

“Tomatoes, chillies, cauliflowers have all started growing after these bores came, and silk cultivation has continued even after the bore has come. The borewell came 40 years ago and silk has been grown here for the last 50 years. Our main crop is irrigated silk” [FGD5, women, Reddy].

4. The food context from a few decades ago in Chintamani

This section discusses the foods that were consumed in earlier times by our respondents, and connects it with their livelihoods, living conditions and the local ecology.

4.1. The production and consumption of cereals

“We have all eaten corn porridge and ragi porridge and so are strong today”
[FGD7, mixed, SC].

The main crops and food of most respondents (most of whom belonged to SC and ST backgrounds) were *saame* (little millet), *haraka* (kodo millet), *navane* (foxtail millet), *sajje* (pearl millet), *ragi* (finger millet), *muskina jola* (maize), and *erra jonnu* (red jowar). Depending on the rainfall, land type and availability of irrigation, some types of rice were also grown, such as *baira*, *teladaka*, *navaru*, and *bellaru*. Even among the landowning castes, it was only the richer households that cultivated paddy. Rice was expensive. *Mudde* was cooked without rice because they “couldn’t afford it” [FGD11, women, SC].

“Usually in our homes, rice was made only when we celebrated a festival. We were slaves in the houses of the rich. When they made rice, we celebrated” [FGD4, mixed, SC].

The other factor was also the precarity of rain in this region, which pushed the poorer households to work as labourers irrespective of the little land they owned.

“We had to work on someone else’s fields to survive. Then they used to pay us only 2 rupees per day. We didn’t have that much land, and even if we had, we couldn’t farm it. We used to sow seeds in it, believing in the rain. The rich people in the town used to farm using bore wells” [FGD9, women, SC].

There was clearly a situation of great disparity between the land-owning and working classes. It was not just disparity in the adequacy of food, but also in what may have been perceived as permissible for those from oppressed castes to eat. In this anecdote, a respondent mentions a tale she has heard about her grandfather, and about how rice was reserved for the dominant castes.

“Our grandfather went to work at the Reddy’s house in my village. All the workers were given *mudde* sambar every day, while the Reddy household ate rice. But one day, a grain of rice fell along with the *mudde* on our grandfather’s plate. Then he said to the rice grain, “You should not be in my plate.” Then the rice grain replied, “You have sown and cultivated me, you cleaned me, so you should be able to eat me.” The Reddy overheard this conversation and thought – yes, it’s true. And the next day, the Reddy told his wife to serve a little rice with the *mudde*. That is how our grandfather began to get rice with *mudde*” [FGD11, women, SC].

After harvesting crops in the field, labourers would glean grains that had fallen down during the harvesting process, and it was expected that a portion of the gleaned grains needed to be returned to the landlords.

“We picked up the small (ragi) grains that fell to the ground while harvesting and collected them for ourselves. But the Gowdas (landowners) had a share in that too. If we got four *ser* of ragi, half had to be returned to them. We lived life with all these hardships” [FGD8, women, SC].

The work of processing grains and preparing food was also intense. Women faced these challenges on an everyday basis as part of cooking ragi for the household where “every night she grinds ragi into flour, and in the morning, she cooks it into ragi balls” [FGD3, mixed, SC]. The food requirement was also higher due to the physically intense nature of the work as was reported in several discussions.

“For the amount of work we were doing...at one time, we used to eat seven ragi balls in one meal” [FGD7, mixed, SC].

In some of the land-owning villages, farmers shifted from growing seasonal crops to horticulture, especially mangoes. This has reduced their need for irrigation and has led to better income.

“Earlier, we grew vegetables, grains, beans, peas, mustard, and horse gram for sale and domestic consumption. Then a farmer in our village started a mango plantation, and he was successful and earned a lot of money. So, we all started cultivating them. Also, we planted the trees once and took care of them for 5 years, after that there was very little maintenance or water required” [FGD10, men, Muslim].

4.2. Production and consumption of dairy

Dairy was also important in the local food system. Several respondents mentioned the presence of *naati* (local breeds of) cattle and buffaloes in the household or villages, and the production and consumption of milk, curd, buttermilk, butter, and ghee. Dairy seemed plentiful. “We fed buttermilk, butter and ghee to all” [FGD10, men, Muslim]. Landowning households especially had several cattle, and this was also connected with local agroecology, and the opportunity of grazing cows in the forest.

“In the past there were cows and buffaloes. We would add milk, curd, buttermilk, butter, and eat it with our hands. The fields were good for cows and goats. After planting crops such as tomato, mulberry and flowers, the land became less, and cows and goats could not graze. Earlier we had 18-20 buffaloes and 12-13 *naati* cows.” [FGD5, women, Reddy].

Like with the farming situation, the cattle in the landowning households were looked after by the SC households too.

“Every day we used to live in the cow shed. We used to take care of cattle - taking the calves to the forest for grazing” [FGD4, mixed, SC].

4.3. *Deprivation, drought, and caste*

“Hunger is very cruel. We have faced many difficulties for one meal.” [FGD4, mixed, SC]

The repeated utterance of phrases such as “our life was difficult” and terms such as “survival” and “struggle” were noted across FGDs – regarding the lives of respondents 40-50 years ago. They described particularly the difficulty in accessing food because of limited livelihood options, drought, and poverty.

Several respondents were dependent on their employers for food on a daily basis, and often, food was the main or only form of payment. This made their situation even more precarious at times when they were unable to work. The landlords expected a lot of work and would penalise workers coming in a bit late or not completing the tasks on time. A respondent, who mentioned he was a bonded labourer, said that if he “did not go on time, the zamindars would scold and would not give proper food” [FGD4, mixed, SC].

Others added,

“...we work all day long for food without asking for money...just surviving for food” [FGD7, mixed, SC].

Some respondents mentioned how they depended on celebrations in the houses of rich families to find work and food. For instance, women went “...to the place where the wedding was taking place, worked there and collected ragi balls, cut them into pieces and gave them to their children to eat” [FGD6, women, SC]. People would also beg in such situations. Some participants also remember crying with hunger. A participant recounts an experience when she was just 15 years old:

“We went to higher caste wedding events where we would beg for food. If they pushed me, I would say, “Swami, I am hungry”, then we would fall at his feet and plead with him. If they shouted, we just stood in a corner with our hands folded and our heads bowed.” [FGD7, mixed, SC].

These life conditions were accentuated by the regular occurrence of drought, when people would again have to resort to begging for food. Alongside this, caste-based discrimination was also common, such as was experienced in a local school,

“...despite our difficult circumstances, we enrolled our children in the school. We also sent them to evening classes to learn English. There, the children of the rich were seated in chairs inside, while our children were made to sit outside on the floor. If our children tried to go inside, they were scolded” [FGD11, women, SC].

The challenges imposed by drought and deprivation also led to desperation expressed in other forms. For instance, some mentioned how food would not be shared between neighbours, and also instances of competition for food and resorting to “stealing” some raw ragi from the fields [FGD6, women, SC].

“...in our family there were 10 children, there wouldn’t be enough for our family. My home’s problems were mine, others’ problems were solved by them, and nobody used to share...” [FGD3, mixed, SC].

Based on our observations, access to land and water is still inequitable in the region. Most Dalit farmers have marginal landholdings of poor fertility, and only a few own borewells for irrigation.

5. The utilisation of uncultivated foods

This section deals specifically with the use of uncultivated or wild foods in the local population, after having foregrounded the ecology and the living conditions of people in the previous sections. The focus here is on which uncultivated foods were consumed by whom, when and how. These insights have been organised based on where the foods were found, which is closely linked with time spent by people in these places, and the habitats of the respective foods.

While the utilisation of uncultivated foods also happened on a regular basis at varying levels for most households, it was the times of drought that accentuated the importance of uncultivated foods for people. Respondents discussed a range of drought foods such as greens, tubers, fruits, fish and meats, and also the fact that they would search for whatever was edible to satiate their hunger.

“Greens, tubers, whatever we could find, we would bring, cook and eat. In our houses, men had to get up in the morning and bring anything they could find, otherwise they would not get anything. But we never let our children experience hunger. We cooked and ate whatever greens were available around our house” [FGD6, women, SC]

Even in a non-drought situation, several households faced challenges of food security due to the general state of deprivation. For all these households, uncultivated foods became particularly important. At this time, the ration shop was an important source of some basic needs such as kerosene, cloth, and food, where they would give “one saree a year. And the men didn’t have shirts” [FGD7, mixed, SC]. Many of these households “did not have money” to buy food [FGD1, mixed, SC/ST]. During some periods, things got so dire that even the availability of uncultivated foods was not enough as the demand became high and “everyone was eating the same food” [FGD12, women, SC/ST]. However, they did not migrate even in dire circumstances, with some selling collected fruits in the market at Chintamani to get by.

5.1. Availability, access and knowledge of uncultivated foods

“If we eat hundred-and-one types of greens, that gave us strength. We cooked them on the woodstove and ate it” [FGD5, women, Reddy].

Respondents had deep knowledge, and personal and collective experience of the use of uncultivated foods. They reported names of the food sources, when and where they were found, and how they were processed. Tubers, greens, fruits, and meat were particularly important. Many of these foods were only available seasonally. For instance, greens were more plentiful during the winters, whereas vegetables and tubers were more available during the summer and rainy seasons.

5.1.1. Those found in the fields

“Then, we used to survive by bringing greens, tubers and vegetables found in the fields, cooking them and eating them” [FGD1, mixed, SC/ST].

Fields were an important source of uncultivated foods. They would find tubers, rats, and greens when they worked in the fields of landed households. In addition, they would collect the grains that had fallen during the harvesting and take a share of it.

The tubers that grew in the fields were actually part of the “tall and thorny” hedge plants that were put there to protect the crops from animals [FGD8, women, SC]. These included *kattaligadde*, *nasanasagadde* [FGD5, women, Reddy] and *munugaddlu* [IDI1, 65-year-old man]. The process to make *kattali* tubers edible and tasty was long.

“...cut it into small pieces and cook it in a pot, and add tamarind greens to it, because otherwise when we eat it, it would irritate our tongue. We cook it all night. We then dry it on a mat made from the leaves of the *ichal* tree and eat it after drying. Then it was very tasty and as sweet as dates” [FGD10, men, Muslim].

Rats were also commonly hunted by labourers in the fields, especially in those where cereals were cultivated. They had many ways in which the rats were forced out and trapped. Both women and men participated in hunting rats while working in the fields.

“When it rained, we used to hunt rats in the fields. They are found in different fields like paddy fields, ragi fields. We often put water in the rats’ burrows first. Rats came out of the burrow as the water filled up. In another method, we used to light a fire in front of the rat burrow and release smoke into the burrow. Then they came out of the burrow struggling to breathe. We used to catch rats that way. There are 3 to 4 types of rats” [FGD2, mixed, ST].

Greens were also collected from fields. Some of these grew even in fallow lands when there was no rain. Several varieties were listed.

“Without the rain, there were no crops, so we would pick greens and eat them. Our parents used to find these in the fields and bring them. We remember that they used to bring *dantu soppu*, *chudike soppu*, *dagri soppu*, *kobbari soppu*, *palak*, *huli soppu*, *guruk soppu* and many other greens” [FGD10, men, Muslim].

In addition to this, it was reported that vegetables that would grow in the compost heaps in the fields, such as tomatoes, were collected [FGD11, women, SC]. Respondents also mentioned that flowers such as hibiscus could be eaten [FGD8, women, SC].

5.1.2. Those found in the commons

“When we were children, we used to go in search of many kinds of vegetables and fruits in the forest. In our homes, nothing was bought from outside. So, we used to go to the hills to pick and eat many kinds of vegetables such as *garekai*, *echalkai*, *kuratekai*, *karibevu kai*, *pulaneppurakai*, *attikai* and *budamkai*” [FGD9, women, SC].

A variety of uncultivated foods were available in forests, hills and lakes. Indeed, there is an overlap between these ecologies, with people mentioning the existence of lakes in forests, and forests in the hills, for instance. They would visit the hills, forests and lakes either with the primary purpose of finding and collecting wild foods, or as part of their daily routine such as for grazing the cattle during which time they also consumed these foods. The foods included tubers, small animals, eggs, greens, vegetables, fish, crabs, birds, mushrooms, fruits and berries. As part of the forest ecology, several varieties of fruits and vegetables were listed (see Table 6 in the Appendix).

“When we used to go to the forests to graze our animals, then we would get *naagadalakai*, *jala kai*, *uliavalakai*, *elaka jeevulu*, *lavatanagaddlu* – we plucked all these and ate them” [IDI1, 65-year-old man].

Tubers were an important wild food found in the commons. Several varieties of tubers were mentioned across FGDs, and some of these tubers were especially important in drought times as they became the bulk of the food. The latter were collected when the lakes became dry. Even the leaves of some of these plants were consumed (for instance, of *nemtamgadde* [FGD9, women, SC]). See Figure 7 for the location of one of the tubers (*Kunkuruwadde*).



Figure 7: Tubers found in and near lakes (a) *Kunkurugadde* with the characteristic white flowers which are dug up when lakes dry up and used for making *mudde*; (b) and (c) are pictures of *chambugadde* which is used to make chutney

“*Kunkurugadde* has a small flower, which can be found where there is less water. From that. The plant can be identified, and we looked for these tubers after the water dried up” [FGD1, mixed, SC/ST].

Several types of animals were hunted in the forests, hills and lakes by communities in most of the study villages. These included rats, hare, mongoose, peacocks, wild boar, deer, ducks, and also aquatic fauna such as crabs and fishes. Hunting was both a necessity and a hobby. There were various practices for hunting (group, night hunting, weekly frequency), storing (when there was excess – indicating that it contributed well to food security), and sharing of meats.

“We used to go hunting in the same way as we used to look for vegetables and fruits in the forest. Night hunting was a hobby. The men in our houses used to hunt. They used to bring rat and hare meat, and fishes and crabs and ducks from the lakes. We also remember hunting peacock and deer. We have tasted all these meats” [FGD9, women, SC].

Several types of greens were identified across FGDs. These included green leafy vegetables, and also leaves of trees and of vegetable plants such as pumpkin [FGD8, women, SC]. See Figure 8.

“We got *kashaku*, *enduraku*, *gadari soppu*, *baddi soppu*, *chikkagurugaku*, *doddagurugaku*, *chanchali soppu*, *bele soppu*, *bandraku* and so on in the wild. We used to bring home many greens and cook them” [FGD1, mixed, SC/ST].



Figure 8: Wild greens brought by participants during a consultation (credit: authors)

The respondents demonstrated knowledge of mushroom species and how the safe ones were identified, and that they “taste like mutton in sambar” [FGD8, women, SC]. See Figure 9.

“There are several types of mushrooms. White coloured mushrooms are cooked. Do not eat brown and red coloured mushrooms. Mushrooms are available only when it rains, for one month in the year” [FGD11, women, SC].



Figure 9: Wild mushrooms available for one month in a year (credit: authors)

Respondents talked about the “advantages” of having lakes in their vicinity, and how they were plentiful of aquatic fauna. They spoke of catching “small fishes, crabs, etc” [FGD2, mixed, ST]. They would also consume storks and peacocks that would come to visit the lake [FGD6, women, SC].

“We also caught crabs and made sambar with chickpeas. And we eat their legs without cooking. If you are hungry and eat them uncooked, it is better. We ate well and stayed healthy” [FGD3, mixed, SC].

There were norms for fishing in some of the villages. For instance, in one village, based on instructions from the headman, “all of them would go on the same day” to catch fish, and some would “catch fish in nets, some in saris, and some in sieves” [FGD5, women, Reddy]. They also recollected how they caught crabs in the lake.

“An *othiketa* (garden lizard) was killed for bait, and its tail was tied to a thread. When the crabs came, we placed two legs on its claws and lifted the shell up with our hands, and scooped out the insides” [FGD7, mixed, SC].

5.1.3. Those found in the neighbourhood

Foods found in the neighbourhood included meat of dead cattle, and winged termites. The animal meat here is of animals that had died due to disease or natural causes in the households of dominant caste groups. This was part of the caste practices that was seen earlier, as has been well documented in literature (Sathyamala, 2019).

“We ate dead cattle. We used to eat the animals that died of disease as meat. The upper caste farmers would bring and throw away the dead animals. We took them, washed and dried them on the rocks and ate the meat” [FGD11, women, SC].

In addition to this, winged termites which are found for a short period during the monsoon season were also widely consumed. Respondents were able to describe the types of winged termites – *rakta ishilla* (red or blood winged termite) and *palu ishilla* (white winged termite) [FGD1, mixed, SC/ST] – how they were collected, and processed before consumption (“roasted, and then the addition of salt, chilli, garlic, and Bengal gram” [FGD1, mixed, SC/ST]). People enjoyed consuming winged termites, some suggesting that it tastes like “puffed rice” [FGD5, women, Reddy], and informed that when “they have small wings they don’t taste good. They taste good after their wings grow” [FGD3, mixed, SC]. See Figure 10.

“Everyone eats them except a few people of the upper castes. The termites appear outside when the rainy season begins. This is a rare food which is seen only for 2-3 days. They fly around lights. We used to spread a mat under them, sweep the termites with a broom and keep them in a pot. By morning, the wings would fall off. Then we dried them well in the sun on a cloth and cooked and ate them afterwards” [FGD2, mixed, ST].



Figure 10: Winged termite (*ishillu*) (a) catching them under the lights; (b) ingredients for preparation including horsegram, red rice, and curry leaves; and (c) the final product (credit: authors)

5.2. Medicinal aspects of wild foods

“We used to cook and eat using whatever was available in the environment as much as possible. Diseases generally stayed away from us” [FGD1, mixed, SC/ST].

The relationship between food and health was perceived as strong and important, irrespective of whether the foods were cultivated or wild. The protective and curative aspects of various foods were mentioned by respondents based on a local understanding of health and disease. This included paying attention to physiological states such as pregnancy and lactation. The types of foods that were recognised particularly were wild greens (mainly for their curative properties) and meat (for their strengthening properties).

“All the greens can be combined to make *mosappu sambar*. *Moringa*, *mindaku*, *bandraku* can be used. This sambar is not made for festivals, it is made for nursing mothers” [FGD8, women, SC].

Uncultivated greens were also an important part of local treatment for common illnesses such as fevers and aches. There were detailed insights on how these medicines should be administered too.

“If you crumple the leaves of *kinnelleru* and put them into the ears, it is good for cold. The leaves are bitter but if eaten or drunk as a decoction, it is good for diabetes. *Doddapatre* - this leaf helps treat cough, cold and sore throat among children. Since it is spicy, it can be mixed with jeera, jaggery and milk, even with mother’s milk [FGD8, women, SC].

Medicinal properties of fruits were recognised too. For instance, it was mentioned of the sweet and sour *nagadalikai* that it “is good for girls to eat if they have a cold” [FGD12, women, SC/ST]. Overall, there was a perception that food quality in general has worsened over the years, and this is not conducive to good health. This was not just related to what was eaten, but also related to what is being cultivated, how it is being cultivated, and the relationship with the local ecology.

This was interesting to note, especially because of the narrations of hunger from earlier times. It was perceived that though the amount of food was less back then, food that is consumed now is not conducive to good health.

“Back then we did not use any fertilizers or chemicals. We used to apply manure to our fields to grow crops. By consuming food grown in this way, we lived for 80, 90, 100 years. Also, apart from growing and eating, we also ate natural foods that were not grown. But now they are using chemicals in farming. Consuming such food is not healthy. Even vegetables, greens, and fruits are now contaminated. It is doubtful whether those who eat this food would live up to 50 years. We had plague and cholera as big diseases at that time. But now, chest pain, cancer and diabetes are more common at a young age” [FGD2, mixed, ST].

6. Trends in acceptability, interest and the ecology of uncultivated foods

“All these conditions existed 50 years ago, but now life has improved. Children have gained some education, freed from bonded labour and there has been a change in foods. But there are more diseases” [FGD4, mixed, SC].

Based on the several FGDs and follow-up interviews with respondents, we tried to discern the factors that drove the consumption of uncultivated foods. This would help us understand the acceptability and the trend in acceptability of these foods to the community. The respondents recalled the inviting smell of some of these foods. “...if you boiled *saame* on the rocks and made...*saame mudde* with it and ate it with crab sambar, the whole village would smell good” [FGD7, mixed, SC].

The taste of foods was also linked to how the foods and spices were processed and cooked, and not just the ingredients. The processing of spices was mentioned several times, but also other foods such as jaggery - “could smell it from a mile away and was black in colour” [FGD12, women, SC/ST] and pulses [FGD3, mixed, SC].

“If we didn’t have all the spices, we ground chilli, salt, onions and pepper on a stone and made sambar with that, *aha*...it was tasty. Now we use chilli powder and coriander powder ground in a machine, it does not taste as good as when they were ground on a stone” [FGD12, women, SC/ST].

However, some respondents mentioned that the bitter taste of some of the green leaves (such as *elasankranti soppu*) makes the younger generation disinterested in eating them, and that these foods were particularly important for satiating hunger.

From the perspective of caste, we see that all caste groups reported experience of using uncultivated foods, but to varying degrees. The variety of such foods reported by those from SC and ST backgrounds was much higher, as compared to those from Reddy and Muslim communities. This appears to be

clearly linked to the deprivation faced by those from SC and ST backgrounds, who reported hunger, poverty and circumstances of begging for food, whereas those from Reddy and Muslim background had greater access to food through horticulture, plantations, irrigation, and cattle ownership. Some uncultivated foods were clearly linked with caste (those from SC background mentioned dead cattle, and, to a great extent, wild meats), but most others (greens, tubers, fish, winged termites etc) were consumed by all interviewed caste groups.

Some uncultivated foods continue to be consumed, but to a lesser extent. These mainly include some fruits and greens, and to an even lesser degree, some of the tubers [follow up interviews with FGD participants]. The process of disappearance of these items from the local plate has happened over two generations and varied along caste lines. The elderly respondents in one village mentioned

“There is a lot of difference between then and now. These children know nothing about other tubers” [FGD8, women, SC].

There are various reasons why this has happened, including some foods that have become less acceptable due to the perceived impact on dignity, changes in culture, changes in agriculture (which has impacted availability), knowledge about other types of foods, and changes in daily activities for various demographic groups.

“Even now, I can catch crabs. But people complain to our children and make fun of us, so we don’t catch crabs” [FGD8, women, SC].

A reduction in the consumption of uncultivated foods is also reported in other studies. For instance, in a study by Ghosh-Jerath and colleagues, only half of the documented indigenous foods were now being consumed, and the ones that continue to be consumed were due to “easy accessibility, availability and desirable taste” (Ghosh-Jerath et al., 2020).

In our study area, it was also perceived that foods that were popular in Indian fast-food outlets in cities have become popular in Chintamani and are perceived to be of better taste. In addition, rice has become the principal staple as compared to millets. This was also, at least in part, due to food welfare schemes that distributed rice to poorer households “since over thirty years” [FGD5, women, Reddy].

“Back then, if you ate *ragi mudde*, you could walk any distance. But today’s children say, I don’t want *ragi mudde*, amma, make rice” [FGD3, mixed, SC].

There is also a decreasing familiarity with these foods and the ecology in which these foods are collected. These are linked to the drastic change in the activities of children. They are now busy with formal education – often outside the village, using electronic gadgets and not being involved in household chores and livelihood activities (such as grazing).

“My children did eat these foods, but my grandchildren don’t know about them. They are afraid; they think there are snakes in the fields and forests” [KII2].

So, indeed there is a loss of knowledge and experience in terms of the available uncultivated foods in the local ecology. The literature also points to how changes in livelihoods, changes in involvement of young people, increase in choices, and eventual loss of “local ecological knowledge” leads to reduction in the consumption of uncultivated foods and the perception of their consumption being a source of shame (Bharucha & Pretty, 2010). However, the changing of the food plate is not just due to the reduction in consumption of uncultivated foods, but also that of cultivated crops such as *saame* (little millet). This is due to changes in agriculture and livelihoods, access to irrigation, technology, and markets.

“*Saame, sajje, araka* all disappeared 34 years ago and the *ragi* machine came 53 years ago” [FGD7, mixed, SC].

The changes in cultural norms on what is acceptable to eat have also played a role. For instance, the consumption of beef and pork has reduced due to social pressure, “...if we eat cow meat, people tell us not to eat it...and we don’t even touch pork mutton” [FGD6, women, SC]. These are linked to religious beliefs and related practices and rituals. People described how wedding ceremonies were conducted a few decades ago and the changes that have occurred as follows,

“...if we had mutton, then the wedding would be complete, but now only after the wedding is done can we eat mutton. This practice ended 30 years ago. Back then, we did not have to give *jataka* (horoscopes) for our weddings. If the *poojari swami* (Hindu priest) told us that the wedding should be on this day, the wedding would take place on that day, but the *poojari* did not come to the wedding. Now, weddings take place only if the *poojari* comes.”

“We used to hunt wild boar in the forests. However, we don’t eat pork in our homes now. No one on our street does either, because we now worship Narasimha Swamy, who rides on a boar” [FGD8, women, SC].

To contextualise the second statement, earlier Dalit families were not allowed to worship at the village Narasimha Swamy temple, but now they are. This empowerment has come at the cost of giving up pork, which these families consider an acceptable compromise.

There has also been a change in the way the commons are managed. For instance, “...now all lakes are contracted out. So, we can’t catch fish” [FGD10, men, Muslim]. There has also been improved access to land among formerly landless households through governmental interventions, which the locals perceive as having improved their lives.

“Yes (life has improved after getting more land from the government), then I could farm on more land, got better harvests. If you have land, you can do all kinds of things. Before that it was very difficult. My father and mother went for daily wage work (coolie), made *boggulu* (peat) and sold it in Chintamani. They would buy corn flour for eating. One kg of corn flour was enough for four people. My mother would make *mudde* with it... So many struggles in my parents’ lives...I grew up in such difficult times. But I freed my parents from their difficulties” [IDI1, 65-year-old man].

These allotted lands were formerly part of the commons and are now being used in agriculture. Hence, while land use change may have affected local natural resources, they have also contributed to improving the socio-economic conditions of several households. The literature has described the impact of various proximal and distal factors on indigenous food systems. These include globalisation, urbanisation, industrial agriculture and food systems, and changes in land ownership among others. There are also factors such as degradation of local natural resources such as soil and water, and also the implications of climate change (Ghosh-Jerath et al., 2020). The quality of the changed food has been questioned though, in terms of their ability to provide the diversity of nutrients that uncultivated foods added to local diets (Bharucha & Pretty, 2010), which is indeed a concern with trends clearly showing reduction in the use of uncultivated foods. Table 6 in the Appendix provides details of all the uncultivated foods identified during the project, and organises them into food groups defined by the Food and Agriculture Organization (FAO, 2021), which shows that they are linked to six of the ten main food groups, demonstrating their potential to contribute to dietary diversity.

7. Reflections on the findings from a “food environment” perspective

We reflect on our findings using the elements of the food environment framework, which together embody the interface between food consumer and the larger food system. We discuss the changing food environments in the study area, and how this has influenced the role of uncultivated foods.

- **‘Availability’** deals with “Whether a food item is present within a given physical range” (Downs et al., 2020). We found that uncultivated foods were indeed available in the neighbourhood, the fields, and in the local commons. Currently, some of these uncultivated foods have become “unavailable” due to various changes. For instance, the wild meats have become unavailable due to bans on hunting and the threat of legal action (hence, not a physical but a legal barrier). Fish have become unavailable due to the new practice of contracting out lakes for commercial fisheries. Greens in the field have become unavailable due to changes in the agricultural practices in terms of use of chemicals and weeding. In general, people reported that most wild food species continue to exist in the local area, albeit in smaller quantities. While uncultivated foods were very important in times of scarcity, they were not enough by themselves to fully satiate hunger. However, and importantly, food security (including availability) has increased through food welfare outlets, shops, markets, increased income, and due to the increased

access to land. Hence, the role for uncultivated foods now would be less about being a primary food, but rather to improve the food basket (this has been discussed later).

Another dimension of “availability” that the food environment literature may not have considered is knowledge. If there is no knowledge that something is a food, can we talk about availability? This aspect is of particular concern for wild food environments where knowledge is being lost, such as seen in our study area. This is in addition to the erosion of the local language among the younger generation, most of whom were reportedly going to English medium schools (and less often in Kannada medium schools), which would also have implications on their familiarity with names of local flora and fauna. Our collaborators from Beru Bevaru cultural troupe have already been involved in Kannada language promotion in the region. One more point to note about availability is that though this region is part of the so-called agroclimatic “dry zone”, we see the high prevalence and diversity of uncultivated foods, potentially challenging the notion that such foods may only be found in areas of high rainfall.

- **‘Affordability’** pertains to “The prices of food items relative to other foods or to a defined income standard” (Downs et al., 2020). Our respondents repeatedly mentioned the fact that uncultivated foods did not cost anything. More importantly, they consumed these foods in the past precisely because they did not cost anything, as market foods were unaffordable to many of these households. Now the picture of affordability of foods has changed (from food welfare, markets and agriculture – incomes of several households have increased too) and have made the affordability factor of wild foods less important. While uncultivated foods are still free of cost, other foods (e.g., cereals through governmental schemes, and ultra-processed foods such as biscuits and instant noodles) have become more affordable too.
- **‘Convenience’** has been defined as “Time cost of obtaining, preparing, and consuming a food item” (Downs et al., 2020). There were aspects of uncultivated foods that made them convenient and inconvenient. They were available in people’s places of work or residence, such as greens, tubers and rats in the fields; tubers, greens, eggs, mushrooms and crabs when they went grazing the cattle; and the winged termites near their homes. However, due to the low energy density of these foods, a lot would need to be searched for and consumed, and so it was time-consuming. If this searching was done during farmwork or grazing – as many respondents reported – it would prove to be convenient. During times of hunger, people would go searching for uncultivated foods and that was time-consuming. Even when hunting was described, it took a substantial amount of time. Currently, people would not be willing to spend a substantial amount of time searching for food. Intensive agriculture, food welfare, and food markets – all being either in the village or in its vicinity, have become more convenient options. Convenience has also changed for various demographic groups. For instance, children earlier would spend more time outdoors and help with grazing of animals. Indeed, grazing of goats and cattle was mentioned by various respondents as a very important activity during which fruits, tubers and greens were collected. As they spend less or no time on these activities now, uncultivated foods have become particularly inconvenient for them.

- **‘Quality’** has been described as “External characteristics of food including its freshness, integrity, safety, nutrient and phytochemical profiles, objective sensory attributes” (Downs et al., 2020). Participants repeatedly described the nutritional and health benefits of uncultivated foods (and other traditional foods such as millets). The fact that these foods were harvested from the sites of production and consumed immediately either raw (for instance, berries and fruits in the forest) or cooked (crabs, greens, meat, tubers) is evidence of their freshness. All of this contributed to nutritional security. Respondents were also able to discern wild plants and mushrooms that were unsafe for consumption. Only the consumption of dead cattle raises questions in terms of food safety – through infectious agents. However, this was a practice forced upon some communities because of deprivation. There is a strong perception that current food crops cultivated with chemical agriculture or those available in the market were not good for health. There was a perception that chemicals in the field may have also affected the quality of wild greens and tubers. In addition, packaged foods and ultra-processed foods have become an important part of regular diet especially among the younger generation, which have poor nutritional value.
- **‘Promotion’** (alongside marketing and regulation) relates to “How a food item is presented, marketed, promoted, and front-of-pack labelling” (Downs et al., 2020), and “policy regulations pertaining to the sale of foods” (Turner et al., 2018). No one is promoting uncultivated foods, though the elderly do talk about these foods in the study area. Some fruits and greens which are more easily accessible continue to be occasionally consumed. On the other hand, the ban on hunting could be considered as promotion against use of wild meats. Overall, during a period of two generations, the value of these foods has reduced. While some wild fruits may be sold in the local market, there is no marketing, advertising, or packaging of these foods, and hence they remain invisible in the context of the informal and formal food environment. The songs that we have created as part of this action-research project based on the study data could be termed as “promotion” as the goal is to sing them in the local communities to start discussions.
- **‘Sustainability’** pertains to “the environmental and social impact associated with the food item” (Downs et al., 2020). Uncultivated foods are growing by themselves in their natural habitat, without external inputs, and without the need for storage, refrigeration, transportation and marketing (all of which require substantial amounts of energy and other resources). This makes uncultivated foods sustainable, especially if harvested in a careful manner. Some literature does mention pressure on wild animal populations due to demand for meats in some contexts (Bharucha & Pretty, 2010). Conversely, there are calls in southern India to revoke hunting bans since the populations of animals such as deer, wild boar, peacock have exploded and are exacerbating the human-animal conflict (Gadgil, 2022). There is a need for further studies on this dimension in the context of promotion of uncultivated foods in our study area.
- **‘Desirability’** can be understood in terms of “people’s individual preferences, acceptability, tastes, desires, attitudes, culture, knowledge and skills to shape the desirability of food vendors and products”. These are described under the “personal” domain of the food environment

(Turner et al., 2018). Based on insights from participants, we learned that several of these foods were indeed perceived as tasty. However, the preferences and tastes have changed in the younger generations, with a greater exposure to processed foods, fast foods, and to rice-based foods. Some of these foods have also become less acceptable due to them being perceived as not desirable (such as catching crabs or rats), cultural change (unacceptability of boar meat due to religious changes) and change in knowledge about these foods (identifying uncultivated foods).

Overall, there has been a significant change in the food environments over a period of decades. In the past, the natural food environments (that is, the wild and cultivated food environments) were the primary ones for the local community, whereas currently it is the built food environment that is significant (both the informal and formal food environments). The natural food environments have drastically changed, and the built food environments are a more recent phenomenon. Table 5 provides an overview of changes in the food environment.

Table 5: A socio-ecological understanding of differences in the food environment based on insights from the study area

The Socio-ecological model	Before (~50-60 years ago)	Current (~2023)
Ecosystems	Forested, surface waterbodies, droughts, predictable climatic variations	Reduced forests, reduced surface water, increased agricultural land, use of chemicals, depleted groundwater, urbanisation, unpredictable climate
Socio-cultural and political environment	Strong caste-related practices, authority of landowners, permissibility of hunting and consumption of dead cattle, acceptability of consuming crabs and wild fruits	Influence of globalised and urban culture through media exposure, welfare programmes, forest conservation, homogenisation of religious practices, continuing inequity along caste lines, high migration
Sectors of influence	Bonded labour in agriculture and animal husbandry	Agri-technology (irrigation, chemicals), food welfare, modern medicine, food corporations
Food environment	Predominance of wild and cultivated environments, and informal environments (such as work for food with landlords), absence of formal food markets	Increase in cultivated and built food environment (informal markets and formal markets), and reduction in wild food environment
Individual factors	Hunger, deprivation, knowledge of uncultivated foods	Increased income, changed preferences, change in knowledge, continuing malnutrition
Diet	Millets, jowar, pulses, dairy, uncultivated foods (tubers, greens, meats, fish, crabs, mushrooms, wild fruits, winged termites etc.)	Rice, processed foods, limited varieties of fruits, vegetables and meats (consumption of millets, including ragi, has sharply declined, while rice consumption has increased)

There have been several drivers of these changes. Actors such as the government, agri-business, and food markets have played an important role. Food welfare, industrialisation of agriculture, and market linkages have influenced food environments as described above and continue to do so. Despite the recognition for the need for sustainable food systems, diversity on the plate, and the potential of wild foods, policy focus continues to be on food security using a few food crops and products (Pradyumna et al., 2022). Traditional food practices, including both of cultivated and uncultivated foods, continue to be marginalised (Bharucha & Pretty, 2010). There has also been a neglect of traditional institutions of water and land management in the community and in governmental policies (Rao & Gopalappa, 2004). As we see in our project, the knowledge of these foods and their preparation has also eroded. And with eroding knowledge, the motivation to use, and motivation to preserve them would have reduced. While the alleviation of hunger in all its forms is indeed a very important goal, there is a need to more closely consider how local knowledge and resources could be mobilised to support action towards this goal.

8. Implications and the way forward

“They don’t know about these, poor things. We haven’t got them used to these foods. We should make it a habit for young people to eat these foods. They are good for you, you won’t get sugar (diabetes) and all these diseases” [IDI1, 65-year-old man].

Our respondents demonstrated strong memories of the food they consumed, the practices around finding them and processing them, and the circumstances in which they were done. The consumption of uncultivated foods has been a very important part of their lives, as their vivid, detailed and numerous collective recollections demonstrated. While it was associated for many with pains of hunger, there was also a strong feeling of the importance of these food sources for their good health. They reflected strongly on the enjoyable taste of these foods, though they were associated with a degree of drudgery in collecting and processing them.

Keeping these aspects in mind, respondents did feel that efforts should be made to revive the use of traditional food practices in general, and the use of uncultivated foods in particular – with concern for health of their children and grandchildren.

“...then there were no diseases like this, then we used to eat and drink *jonnalu* (jowar), *saddalu* (bajra), *perugu* (curd), milk and buttermilk and then we lived for 70-80 years but now we don’t even live for 30-40 years” [FGD12, women, SC/ST].

However, as described earlier, the changes in the food systems and the food environment are substantial. While efforts are being made by NGOs, individuals, and even some local governments to support agroecological practices, these are currently few and far between. Similarly, some consumers also try to support local and organic products, and some social enterprises are making efforts to shift food systems incrementally.

Specifically in terms of uncultivated foods, in this action research project we always considered the community as an important actor with the relevant knowledge and resources. Therefore, an important output of this project has been the production of five songs in the local language (Kannada) to highlight the main insights gained from the data (three of these songs have been included in the Appendix). We anticipate that these songs will be used in public forums in the study area, and also elsewhere in the state, to spur discussion on this topic, and to also remind people of the knowledge and experience that exists within communities.

Undernutrition, micronutrient deficiencies, and non-communicable diseases such as diabetes are a reality. The ongoing consumption of uncultivated foods, though at a reduced level in Chintamani, is also a reality. The knowledge and interest exist among some local people, and the resources, while reduced, still exist and has the potential for enhancement. With large land-owning households now less invested in agriculture, and thereby in local natural resources (Engberg-Pedersen, 2011), these are now potentially more available for poorer households which are disproportionately affected by nutritional challenges. Studies have also shown that it is not possible to conserve wild food species outside their habitats, indicating the need to also protect habitats (Ghosh-Jerath et al., 2020). To be useful for nutrition though, access to these ecologies should also be addressed. Literature has highlighted the importance of wild foods as part of agroecology (Zhu et al., 2024) – and so the most effective leveraging of wild foods may happen alongside a transformation in agriculture towards agroecology. This may become increasingly important in the future, as with climate change and rapid groundwater depletion, crop cultivation may become more challenging, and more resilient practices will need to be adopted. Such promotion and adoption would also contribute to food sovereignty in the area, as uncultivated foods have been observed to be consumed in the area where they are found. This was found to be important during the COVID-19 pandemic lockdown, and there are possibilities for such shocks in the future too.

Literature suggests that policies and interventions to address nutritional challenges should include uncultivated foods as part of the strategy. The potential of greater attention of wild foods and food systems to addressing a variety of SDGs has been acknowledged. Earlier, it was “push” factors such as hunger that compelled people to increase wild food consumption, but now it will need “pull” factors such as health and sustainability considerations as there is less of a “push”.

In our study, despite the deep experience of the communities, they did not directly assert a strong cultural connection with wild foods. This is in contrast with studies from indigenous communities from North America where wild foods have been asserted as part of their cultural identity and heritage (Smith et al., 2019). The action-research dimension of our project aims partly to rekindle the cultural connection through the songs and the stories referred to in the songs. Also, the concern that may exist in terms of overharvesting of wild foods in communities that lack access to food (Bharucha & Pretty, 2010) would be of less concern here, as food security is not considered a major challenge at this time. On the other hand, while climate change is projected to undermine food security in this region, it is unclear what implications climate change would have on the various uncultivated foods. Our study shows that they were particularly important during drought, which may worsen due to climate change.

Through our project, we found that there is a rich knowledge and experience of using uncultivated foods. We also found that the knowledge and interest in these foods have greatly reduced, alongside ecologies that support them. However, we see great potential in uncultivated foods in adding to and improving the local food basket, by facilitating opportunities for a closer connection with the local ecology and strengthening the local food system. There is a need for a deeper deliberation with local communities on these opportunities and for policy consideration. Janapara Foundation has already been undertaking activities that provide opportunities to revive local ecologies that can utilise the findings of this study. These include:

- Supporting millet-based mixed cropping and agro-forestry for more than 15 years, with small and marginal rainfed farmers reviving millet-based mixed cropping. In recent years, there have been efforts to incorporate agro-forestry. A month ago, these efforts were bolstered with the delivery of approximately 30,000 saplings for planting in about 200 acres. Within mixed crop fields, uncultivated greens, fruits and tubers are available and are being harvested in a limited way and that will be the case within the agroforestry spaces as well. In the coming years, we hope to expand understanding of uncultivated foods in these spaces, thereby leading to increased consumption.
- Janapara Foundation's youth outreach programmes have an environmental component under which various activities and campaigns have been organised, such as a birdwatching activity on Kaiwara Hill from which a booklet has emerged. In the coming year, workshops and activities will be arranged with youth on uncultivated foods.
- Biodiversity Management Councils (BMC) and other panchayat-level initiatives: The Janapara team has been active in a number of panchayats on issues of livelihood, food and social security and planning. The team has been discussing taking up environmental activities such as documenting wild plant and animal species, rejuvenating commons etc. in some active panchayats, helping form Biodiversity Management Councils to facilitate this.

From a policy perspective, the findings of our study are relevant to the agriculture, environment and health sectors. The National Health Policy of 2017 which states that “dietary diversification remains the most desirable way forward” (Government of India, 2017). It is difficult to imagine how dietary diversity would be achieved through centralised approaches, neglecting local food systems. Policy interventions focusing on agrobiodiversity, organic farming, community-led forest management, watershed development, and prevention of anaemia and non-communicable diseases (through the involvement of health workers) have the scope to incorporate considerations about uncultivated foods. These could be done, in part, through supporting community-based organisations that have worked on food, agriculture, nutrition and livelihoods.

9. References

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10. Appendix

10.1. List of uncultivated foods

The table below lists the names of all the uncultivated foods that were mentioned by the respondents during the data collection. It has been classified into the food groups defined by the Food and Agriculture Organization (based on the authors' best guess into where they fit) (FAO, 2021). We estimate the uncultivated foods were related to 6 of the 10 main food groups, and an even greater number of subgroups. The most populated groups in terms of diversity were the green leaves (34+), fruits (14), meats (10+), and tubers (9+). This is additional evidence of their ability to contribute to the dietary diversity of the local population.

Table 6: Contribution of uncultivated foods in Chintamani to food diversity in the past, based on the FAO food groups list

Food groups	Row	Food group subdivisions	Names of uncultivated foods mentioned by our study participants in Chintamani	Frequency (n)
1. Grains, white roots, and tubers, and plantains	A	Foods made from grains	NA	
	B	White roots and tubers, or plantains	<i>Chambugadde, Goddugadlu Ichalu gadde (Ithgagge), Kattaligadlu, Kunkurugadde, Lavatamgadde, Maragensu, Munugaddlu, Nasanasagadlu, Nemtamgadde*</i>	9+
2. Pulses (beans, peas or lentils)	C		NA	
3. Nuts and seeds	D		NA	
4. Dairy	E	Milk	NA	
	F	Dairy foods		
5. Meat, poultry and fish	G	Organ meats	NA	
	H	Red flesh meat from mammals	Rats, rabbits, mongoose, deer	4
	I	Processed meat	NA	
	J	Poultry and other white meats	Ducks, stork, peacock, winged termites (<i>ishillu</i>)	4
	K	Fish and seafood	Crabs, fish	2+
6. Eggs	L		Wild eggs	1+

Food groups	Row	Food group subdivisions	Names of uncultivated foods mentioned by our study participants in Chintamani	Frequency (n)
7. Dark green leafy vegetables	M		<i>Attimaamadaku, Baddakku soppu, Balyaku, Bandraku, Bele soppu, Burugaku, Chanchali soppu, Chiguru hunase, Chikkagurugaku, Chudike soppu, Dagri soppu, Dantaku, Dantu soppu, Doddagurugaku, Doddapatre, Enneduraku soppu, Gadari soppu, Guruk soppu, Guvanjaku, Gyadaraku, Halu soppu, Kamatulsi, Kanyaku, Kashaku (kashi soppu), Kashyaku Gurgaku, Kere soppu, Kinnelleru* Kobbari soppu, Maddyaku, Mindlu Kuraku*, Nugge soppu, Munagaku, Paavalaku, Palak, Poth Kuraku, Kumbalakayi soppu, Ull Belaku*</i>	
8. Vitamin A-rich fruits and vegetables	N	Vitamin A-rich vegetables or roots	NA	
	O	Vitamin A-rich fruits	NA	
9. Other vegetables	P		<i>Adavi eragadda (forest onion)</i>	
10. Other fruits	Q		<i>Adavi chintakai (kaadu hunase hannu), Atti hannu, Bettada karibevu kai, Budama kai, Elaka jeevulu (bellada hannu), Ichalu hannu, Jambu nerale, Karekai (garekai), Kashikai, Kukke nerale (nai nerale), Kuratekai, Mindkai (pulaneppurakai), Nagadalikai (kathali hannu), Sitaphal</i>	14

*Indicates some uncertainty in the data in terms of the pronunciation of the food; + indicates that this is a conservative estimate either due to not having details of the specific varieties (for instance, the diversity of wild eggs consumed) or because the names of some foods were unclear.

10.2. Songs developed from the project (in original Kannada written by Shashiraj Haratale, with English translation by Dr Lahari S.)

ನೆಲದಮ್ಮನ ಬುತ್ತಿ

ಉತ್ತಲಿಲ್ಲ ಬಿತ್ತಲಿಲ್ಲ ಕಳೆಕಿತ್ತು ಸಲಹಲಿಲ್ಲ
ಬುತ್ತಿ ಕಟ್ಟಾಳಮ್ಮ
ನೆಲದಮ್ಮ ಅನ್ನ ಕೊಟ್ಟಾಳಮ್ಮ

ಎರೆಡದ ಮಳೆ ಬಿದ್ದಿದೆ ಈಶಿಶು ಎದ್ದಿದೆ
ಕೆರೆಯಲ್ಲಿ ಎಡಿ ಮೀನು ಒಟ್ಟಾಗಿ ಈಜೆವೆ
ಹಣಬೆಯು ಮೂಡಿದೆ, ಬೇಲಿ ಹೂ ಬಿಟ್ಟಿವೆ
ಹಸಿದವರ ಪಾಲಿಗೆ ನೆಲವೆ ಹಸಿರಾಗಿದೆ
!!ಬುತ್ತಿ ಕಟ್ಟಾಳಮ್ಮ!!

ಹೊಲದಲ್ಲಿ ನೂರಾರು ಬೆರಕೆಯ ಸೊಪ್ಪುಗಳು
ಹಾದಿಯ ಬದಿಯಲ್ಲಿ ಹತ್ತಿ, ಬೇಲ ಹಣ್ಣುಗಳು
ಬೆಟ್ಟ ಗುಡ್ಡದಲಿ ಕುರುಟಿ, ನಲ್ಲಿ ಪಾಪಸ್ಯೆ
ಈಚಲ ಸೀತಫಲ ಎಲಚಿ ಹಿತವಾಗಿವೆ
!!ಬುತ್ತಿ ಕಟ್ಟಾಳಮ್ಮ!!

ಕತ್ತಾಳೆ ಗಡ್ಡೆಯನು ಬೇಲಿಯಲಿ ಇಟ್ಟವಳೇ
ಕಾರೆಯ ಹಣ್ಣುಗಳ ಮುಳ್ಳಿನಲಿ ಜೋಡ್ಯವಳೇ
ಕೆರೆಯಲ್ಲಿ ಕುಂಕುರಗಡ್ಡೆ ಹೊಲದಲ್ಲಿ ನಸಗಡ್ಡೆ
ಲವಟಮು ಗಡ್ಡೆಗಳ ಪೊದೆಯಲಿ ಬಚ್ಚಿಟ್ಟವಳೇ
!!ಬುತ್ತಿ ಕಟ್ಟಾಳಮ್ಮ!!

ಬಿಲದಲ್ಲಿ ಇಲಿಗಳು, ಮರದಲ್ಲಿ ಹೆಜ್ಜೆನು
ಹೊಲದಲ್ಲಿ ಓಡಿವೆ ಕಾಡ್ಡೆಕ್ಕು ಮೊಲಗಳು
ಬೇಲಿಯಿಂದ ಹಾರಿವೆ ಕಾಡ್ಡೋಳಿ ಹಕ್ಕಿಗಳು
ಹಸಿದವರ ಬಾಳಿಗೆ ಅನ್ನದ ಅಗುಚಾಗಿವೆ
!!ಬುತ್ತಿ ಕಟ್ಟಾಳಮ್ಮ!!

ಉತ್ತಲಿಲ್ಲ ಬಿತ್ತಲಿಲ್ಲ
ಕಳೆ ಕಿತ್ತು ಸಲಹಲಿಲ್ಲ
ಬುತ್ತಿ ಕಟ್ಟಾಳಮ್ಮ
ನೆಲದಮ್ಮ ಅನ್ನ ಕೊಟ್ಟಾಳಮ್ಮ



MOTHER EARTH PROVIDES*

We neither ploughed nor sowed,
Didn't deweed this Mother Earth,
Yet she provides, this Mother,
She prepares a buffet.

The rain falls, termites arise,
Crabs and fishes, together in the pond,
Mushrooms have sprouted, flowers bloom
on the fence,
The ground is green for those hungry!
She prepares a buffet.

The fields house hundreds of herbs,
Bela and cotton fruits, on the streets abound,
Prickly pears, gooseberries, on the hills
Fine sitaphals, palm dates and jujubes thrill!
She prepares a buffet.

She has buried kittale tubers in the fence,
She has assorted kaarey fruits on thorns,
Hidden kunkura tubers in lakes, nasa
tubers in fields,
Lavatamu tubers in bushes!
She prepares a buffet.

Rats in burrows, beehives on trees,
Wildeats and rabbits run on fields,
Wild roosters and birds hop the fence,
Morsels for the hungry!
She prepares a buffet.

We neither ploughed nor sowed,
Didn't deweed this Mother Earth
Yet she provides, this mother,
She prepares a buffet.

ಕಥೆಯ ಕೇಳಿರೋ.. *

ಕಥೆಯ ಕೇಳಿರೋ
ನಮ್ಮ ಜನರ ಕಥೆಯ
ಈ ನೆಲದ ಕಥೆಯ
ಬಡವರ ಅನ್ನದ ಕಥೆಯ

ಕಥೆ ಎಂದರೆ ಬರಿ ಕಥೆಯಲ್ಲ
ಸುತ್ತು ಪೊಳ್ಳಿನ ಕಥೆಯಲ್ಲ
ತತ್ವ ತುಂಬಿದ ಸತ್ಯ ಅಡಗಿದ
ಜನರ ಕಥೆ ನಮ್ಮ ಜನರ ವೃಥೆ
ಕಥೆಯ ಕೇಳಿರೋ..!!

ಎಲ್ಲರದಾಗಿದ್ದರೂ.. ಊರು,
ಉಳ್ಳವರದೆ ಧರ್ಬಾರು
ಗುಡಿಸಲುಗಳನು ಸುಟ್ಟರು
ಊರಾಚೆ ತಳ್ಳಿದರೂ..

ಉಣ್ಣಲು ಊಟ ಇಲ್ಲ
ಉಳಿಯಲು ಸೂರು ಇಲ್ಲ
ಹಸಿವಿನ ಯಾತನೆಗೆ
ಬಡಲು ಸುಟ್ಟಿತಲ್ಲಾ..

ಹಸಿವಿಗೆ ಹಸಿ ಗಡ್ಡೆ ತಿಂದು
ಹಸಿವಿನ ಬೆಂಕಿಲಿ ಅದು ಬೆಂದು
ಅರಗಿಸಿಕೊಂಡು ಬಾಳಿದವರ
ಕಥೆಯ ಕೇಳಿರೋ

ನಮ್ಮ ಪಾಲಿಗೆ ಏನು ಇಲ್ಲ
ದುಡಿಮೆಯೇ ನಮ್ಮ ಬಾಳು
ಹೊಲ ಗದ್ದೆಗಳು ಎಲ್ಲಾ
ಉಳ್ಳವರದೆ ಪಾಲು

ಉಳುವವರು ನಾವೂ...
ಉಣ್ಣುವವರು ಅವರು
ಬಿತ್ತುವವರು ನಾವೂ..
ಬೆಳೆ ಅವರ ಪಾಲು

ನ್ಯಾಯ ಕಾಣದ ಬಾಳು
ನ್ಯಾಯ ಕಾಣದ ಬಾಳು
ನ್ಯಾಯ ಕಾಣದೆ ನೊಂದವರ
ಕಥೆಯ. ಕೇಳಿರೋ

ಪಸಲು ತೆಗೆದ ಹೊಲಗದ್ದೆಗಳಲ್ಲಿ,
ಅಳಿದುಳಿದ ತೆನೆಗಳ ಆಯ್ಕೆ
ತೂರಿ ಬಿಟ್ಟ ಜಿಣ್ಣುಗಳನ್ನು
ಮತ್ತೆ ಮತ್ತೆ ಕೇರಿ ತೂರಿ.

ಸಿಕ್ಕ ಎರೆಡು ಗಟ್ಟಿ ಕಾಳುಗಳ
ಕುಟ್ಟಿ ಅನ್ನವ ಮಾಡಿ
ಬಡಲ ತುಂಬಿಸಿಕೊಂಡವರ
ಕಥೆಯ ಕೇಳಿರೋ

ಬೆಟ್ಟ ಗುಡ್ಡ ಕಾಡುಗಳು...
ಕೆರೆ ಕುಂಟೆ ಗೋಮಾಳಗಳು
ಬಡವರ ಅನ್ನದ ಕಣಜಗಳು
ಹಸಿವು ನೀಗಿಸೋ ತಾಣಗಳು

ಗಡ್ಡೆ ಗೆಣಸು, ಬೇರುಗಳು
ಕಾಯಿ ಹಣ್ಣು ಸೊಪ್ಪುಗಳು
ಕಾಡು ಪ್ರಾಣಿ ಏಡಿ ಮೀನು
ಜೀವ ತುಂಬಿದವು ತಲೆ ಮಾರುಗಳು
ಜೀವ ತುಂಬಿದ ತಲೆಮಾರುಗಳ
ಕಥೆಯ ಕೇಳಿರೋ...



HEAR OUR STORY!*

Hear our story, hear our story
The story of our people,
The story of this land,
The story of the food of the poor!

A story which is history,
A story not ridden with lies,
A story filled with substance and truth,
People's truth and people's plight,
Hear our story!

Though nature belongs to all,
The mighty rule the land,
They burnt our huts,
And banished us.

No food to eat,
No place to stay,
Hunger tortured
And burned our bodies.

Raw roots were our meals,
Digested by the fire of hunger,
Digested by our people,
Listen to our story!

No wealth we could own,
To toil was our only fate,
On the farms and fields
That the mighty owned.

We plowed,
They ate,
We sowed,
They reaped.

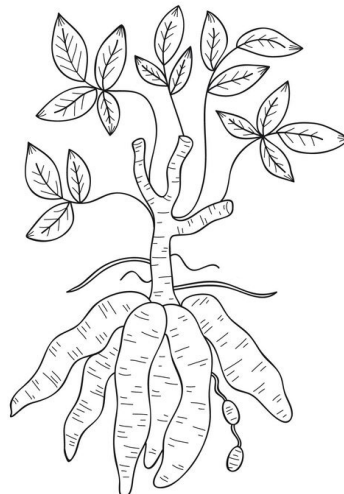
A life without justice,
A life of injustice,
We who suffered injustice,
Hear our story!

After harvesting the fields,
We sought the leftover crop,
And we gleaned the crop
As we sifted again and again.

And the two grains that we got thus,
We made rice,
And that was what we filled ourselves with.
Hear our story!

But the hills, mountains and forests,
The lakes, tanks, and common lands
Were treasure troves of food for the poor,
Places that satiated our hunger.

Tubers, sweet potatoes and roots,
Vegetables, fruits, and leaves,
Wild animals, crabs, and fishes,
Fueled life to generations.
Hear the story of generations!
Hear our story!



ಏನಮ್ಮ ಕದಿರಮ್ಮ ನಿಮ್ಮ ಕಾಲ ಹೇಗಿತ್ತು *

ಏನಮ್ಮ ಕದಿರಮ್ಮ
ನಿಮ್ಮ ಕಾಲ ಹೇಗಿತ್ತು, !2!
ನಿಮ್ಮ ಕಾಲದ ಊಟ
ಹೇಳಮ್ಮ ಹೇಗಿತ್ತು !2!

ಬಾರಪ್ಪ ಮೊಮ್ಮಗನೆ...
ಕಾಲದ ಕಥೆ ಹೇಳುವೆ,
ಕಾಲದ ಕಥೆ ಹೇಳುವೆ
ಅನ್ನದ ಕಥೆ ಹೇಳುವೆ
ಅನ್ನದ ಕಥೆ ಹೇಳುವೆ
ನಮ್ಮ ಕಾಲದ ಕಥೆ ಹೇಳುವೆ

ಹೊತ್ತಾರೆ ಎಲ್ಲಾ ಎದ್ದು
ಹತ್ತಾರು ಜನರು ಸೇರಿ
ಕಾಡು ಹೊಲ ಬೆಟ್ಟ ಸುತ್ತಿ
ಬೇಟೆಯಾಡಿ ಪ್ರಾಣಿ ಹಿಡಿದು
ಬೆರಕೆ ಸೊಪ್ಪು ಗಡ್ಡೆ ಕಿತ್ತು
ಕಾಡು ಹಣ್ಣು ಕಾಯಿ ಕೋಯ್ದು

ಎಲ್ಲಾ ಸೇರಿ ಹೊತ್ತುಕೊಂಡು
ಕೇರಿ ಬೆಳಗೆ ಬಂದೆವೆಂದ್ರೆ...
ಕೇರಿಯೇ ಎದ್ದು ಕುಣಿತುತ್ತು
ಇಡಿ ಕೇರಿಯೇ ಎದ್ದು ಕುಣಿತುತ್ತು.
!!ಏನಮ್ಮ ಕದಿರಮ್ಮ!!

ಬೇಲಿ ಪೊದೆಗಳನ್ನು ಹುಡುಕಿ
ಕತ್ತಾಳೆ ಗಡ್ಡೆ ಕಿತ್ತು
ಎಳು ವರೆ ಸೌದೆಯಲ್ಲಿ
ರಾತ್ರಿ ಇಡಿ ಬೇಯಿಸಿಕೊಂಡು

ಮಾರನೆ ದಿನ ಬಿಸಿಲಿಗೆ ಹಾಕಿ
ಚೆನ್ನಾಗಿ ಒಣಗಿಸಿಕೊಂಡು
ಕಾರ ಬೆರಸಿ ತಿಂದೆವೆಂದ್ರೆ
ಕಜ್ಜಾಯದಂತೆ ರುಚಿ ಇತ್ತು.
ಆಹಾ ಕಜ್ಜಾಯದಂತೆ ರುಚಿ ಇತ್ತು.
!!ಏನಮ್ಮ ಕದಿರಮ್ಮ!!

ಕೆರೆ ಕುಂಟೆ ಬಾವಿಗೋರಿ
ಕುಂಕುರಗಡ್ಡೆ ಕಿತ್ತು ತಂದು
ಚೆನ್ನಾಗಿ ಒಣಗಿಸಿಕೊಂಡು
ನುಚ್ಚಿನಂತೆ ಪುಡಿ ಮಾಡಿ
ರಾಗಿ ಹಿಟ್ಟು ಬೆರೆಸಿಕೊಂಡು
ಮುದ್ದೆ ಮಾಡಿ ತಿನ್ನಲು...
ಒಡಲಿಗೆ ತಂಪು ಸಿಗುತ್ತಿತ್ತು
ನಮ್ಮ ಒಡಲಿಗೆ ತಂಪು ಸಿಗುತ್ತಿತ್ತು.
!!ಏನಮ್ಮ ಕದಿರಮ್ಮ!!

ಹೊಲಗಳಲ್ಲಾ ಓಡಾಡಿ
ನಸಗಡ್ಡೆ ಅಗೆದು ತಂದು
ಚೆನ್ನಾಗಿ ತೊಳೆದು ಕೊಂಡು
ಹೆಚ್ಚಾಗಿ ಹುಣುಸೆ ಬೆರೆಸಿ
ಉಜ್ಜೆ ನಸೆಹೊಟ್ಟು ತೆಗೆದು
ಕುಟ್ಟು ಕುಟ್ಟು ಹಿಟ್ಟು ಮಾಡಿ...
ದೋಸೆಮಾಡಿ ತಿನ್ನಲು ಹಿತವಿತ್ತು.
ದೋಸೆ ಮಾಡಿ ತಿನ್ನಲು ಹಿತವಿತ್ತು

ಹೌದಮ್ಮ ಕದಿರಮ್ಮ ನಿಮ್ಮ ಕಾಲ ಚೆನ್ನಾಗಿತ್ತು
ಗೆಡ್ಡೆ ಗೆಣಸು ಬೆರಕೆ ಸೊಪ್ಪು ಮತ್ತೆ ನಾವೂ ಉಣ್ಣುವ
ತಂದಾನೆ ತಾನೆ ತನನೇನ...



OH KADIRAMMA!*

Oh Kadiramma!
How was your time?
The food of that time?
Tell us, how was it?

Come listen, my grandson,
Let me tell you the tale
The tale of my time,
The tale of our food,
The tale of our food,
The tale of our time!

We rose early in the morning,
Many of us set forth together,
We scouted the forests, fields
and mountains,
And hunted animals,
And foraged herbs and tubers,
And collected wild fruits and vegetables,
And returned to the keri**.
And upon seeing us with the bounty,
The whole keri gathered around
And rejoiced with dance.
Oh is it, Kadiramma!

Searching the bushes,
we sought the kattale tubers,
And on the coals of seven and half logs
Cooked all night to softness,
And dried them the next day,

And ate them with chilli powder.
It tasted great like kajjaaya.
Aha! Like kajjaaya.
Oh is it, Kadiramma!

In the lakes, tanks and wells,
We found the kunkura tubers,
And dried them well,
And ground them like grits,
Mixed this with ragi flour,
When made into mudde (balls)
and eaten.

Oh, how it cooled our body!
Greatly cooled our body!
Oh is it, Kadiramma!

From the fields
We dug up nasa tubers,
And washed them well,
Mixed it with a lot of tamarind,
And scrapped the outer skin,
And ground them to make batter.
The dosas thus made tasted great!
The dosas thus made tasted great!

Yes, grandma Kadiramma, your times
were great!

Let us again use tubers, sweet potatoes
and herbs, and feast,
Tandaane taane tanane naa!

*ರಜನಿ: ಶಶಿರಾಜ್ ಹರತಾಲೆ; written by Shashiraj Haratale, translated by Dr Lahari S

**Hamlet outside the main village, mainly populated by Dalit castes

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Adithya Pradyumna is a faculty member of Azim Premji University since 2020. He teaches courses on environmental health, food and nutrition, and evidence. Prior to joining the university, he worked for eight years with health- and environment-oriented civil society organisations that he continues to support in a voluntary capacity. He is trained in medicine and public health.

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Sudha Nagavarapu supports grassroots organizations such as Sangtin in Uttar Pradesh and Janapara Foundation in Karnataka, India with the design and implementation of interventions in agriculture, livelihoods, food and health. She has also co-organized and participated in various campaigns for health rights, social justice and equity. She has worked on community-driven, collaborative research into maternal health, health systems, neglected diseases and food cultures.

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Soreppalli Chandrashekhar hails from Soreppalli village in Chintamani taluk of Chikkaballapur district. While studying MA Kannada, he took folk art as an optional subject. After graduating, he formed Beru Bevaru cultural group, which performs folk songs, as well as environmental songs and songs promoting justice and equity. He has set to tune songs composed by several poets and has performed in Karnataka and across the country.

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Shashiraj Haratale has been involved in social work for the past 20 years, working with farmers, workers, Dalits, women and youth at FEDINA, Samvada, SOIL and other organizations. He currently manages the work of Janapara Foundation. He is a poet and songwriter, and has written more than 40 songs in Kannada for various campaigns and movements.

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Muskan Babajan is originally from Doddaballapura and lives in Kaivara in Chintamani block. While studying for her diploma, she became active in youth programmes organized by Janapara Foundation, including preparing a book on local birds and conducting sessions on responsible citizenship for local schoolchildren.

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