

# Indigenous Root Vegetables in Zimbabwe: A Qualitative Study of Local Knowledge, Consumption, and Health Perceptions

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## Abstract

African countries are endowed with diverse indigenous root vegetables; however, they remain insufficiently studied and documented, despite their potential to support health and wellness. The rising global burden of non-communicable diseases and malnutrition hinders progress toward the Sustainable Development Goals (SDGs) of zero hunger and good health and well-being. This qualitative study explored indigenous root vegetables consumed in rural Rusape, Zimbabwe. The focus was on their availability, consumption patterns, and perceived health benefits. Using snowball sampling, twenty-five (25) farmers and consumers were interviewed, and free-listing techniques captured local knowledge. Thematic analysis revealed both common and unique root vegetables, though consumption has declined, particularly among younger generations. Although elders continue to value the nutritional and medicinal importance of indigenous root vegetables, indigenous knowledge is diminishing. The findings underscore the need to systematically document indigenous root vegetables and to enhance food security, preserve cultural heritage, and advance sustainability. Further scientific validation of perceived medicinal properties, alongside value addition and commercialization, could strengthen their role in national diets and extend their impact beyond Zimbabwe.

**Keywords:** Consumption patterns, Indigenous root vegetables, Local knowledge, Perceived health benefits, Zimbabwe.

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## 1. Introduction

Diet-related health challenges remain a growing concern worldwide, prompting increased attention to the role of food systems in supporting health and well-being (Hussain et al., 2025). Indigenous food crops, especially root vegetables, have significant potential to help fight various diseases (Verma & Nandan, 2023). The term “indigenous vegetables” can vary depending on the context, institution, and country. This study adopts the definition by Atuna et al. (2022), who define indigenous vegetables as plant species that are native or introduced and have become integral to the community’s culture and traditions, such as taro root (*Colocasia esculenta*/madhumbe). There is no specific definition for indigenous root vegetables. In this study, indigenous root vegetables are abbreviated to (IRVs).

IRVs possess important nutritional and medicinal properties that can be used to fight multiple ailments

(Cereda et al., 2024). They also contain higher levels of essential nutrients compared to exotic vegetables (Nyaruwata, 2019). However, their consumption remains very limited, as they are often consumed during droughts and times of hunger (Nyaruwata, 2019). As in many parts of the world, a decline in consumption has also been observed in Africa. The same challenge is being experienced in South America, Asia, and Europe (Cereda et al., 2024; Sarkar et al., 2020). This has negative effects on human health and overall wellness. Since the beginning of human history, IRVs have been recognized as a primary source of health-promoting properties due to their active ingredients (Kulshrestha, 2018). Over the years, globalization influenced diets, leading consumers to favor highly processed foods (Nabeshima et al., 2020; Magbalot-Fernandez & Umar, 2018). Currently, the use of IRVs is rare among urban populations. They are increasingly losing touch with these healthy foods due to their greater exposure to the modern environment

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(Lotter et al., 2014). However, Nxusani et al. (2023) indicated that rural communities still value the benefits of consuming IRVs.

Aside from minimal consumption, the economic crisis in Zimbabwe has affected the healthcare system, including the supply of medical drugs (Mangundu et al., 2023; Kamvura et al., 2022). This economic crisis worsens the disease burden. IRVs have been associated with important claims regarding their potential to support health maintenance and overall well-being (Knez et al., 2022; Bazine & Arslanoğlu, 2020; Chandrasekara & Josheph Kumar, 2016). IRVs are plentiful and accessible to different demographics, whether rich or poor, making them suitable for the current health situation.

According to Akinola et al. (2020), the benefits and value of indigenous foods, including root vegetables, within the African context have not been fully understood and synthesized. Akinola et al. (2020) added that their potential contribution to the African food system could be improved if their benefits were more thoroughly explored. In the Wedza district, of Zimbabwe, IRVs are consumed as a temporary measure during droughts and periods of hunger (Nyaruwata, 2019). Additionally, some consumers view them as food for people experiencing poverty and overlook them in their diets (Masarirambi et al., 2020). This situation highlights the need for consumer awareness to promote regular consumption.

The primary aim of this study is to identify indigenous root vegetables that local communities perceive as supportive of health and to document the purposes for which they are traditionally used. By recording culturally acquired knowledge and practices, the study seeks to preserve cultural heritage and provide researchers with a clearer contextual basis for future investigations of indigenous food resources.

To achieve this, the study adopted a qualitative research design, using face-to-face interviews with community members in a rural area of Zimbabwe.

In the present study, research questions are as follows:

1. Which indigenous root vegetables are found in Rusape?
2. How often are indigenous root vegetables consumed in Rusape?
3. What health and wellness-related benefits do local communities associate with indigenous root vegetables?

## 2. Literature Review

Indigenous vegetables can be produced year-round and withstand harsh environments (Cereda et al., 2024). However, they are overlooked and are gradually being replaced by modern varieties (Shrestha, 2013). Like other indigenous vegetables, the root part plays a vital role in human health (Knez et al., 2022; Turner et al., 2011).

### 2.1. IRVs found in Zimbabwe

Indigenous root vegetables found in Zimbabwe include, but are not limited to, sweet potato (*Ipomoea batatas / mbambaira*), taro root (*Colocasia esculenta / madhumbe*), Livingstone potato (*Coleus esculentus / tsenza*), dwarf babiana (*Babiana hypogaea / hwenya*), cassava (*Manihot esculenta Crantz / mufarinya*), yam (*Dioscorea steriscus / manyanya*), cocoyam (*Colocasia esculenta / magogoya*), tiger nut (*Cyperus esculentus / pfende*), air potato (*Dioscorea bulbifera / idiya*), and African arrowroot (*Tacca leontopetaloides / bepe*), (Manduna & Vibrans, 2018; Chemura et al., 2022; Jani, 2022; Kujeke et al., 2019; Mupakati et al., 2017; Washaya et al., 2016; Chivenge et al., 2015). Among the preceding IRVs, particular attention has been given to vegetables that have become part of Zimbabwean tradition, norms, and culture. Very minimal attention has been given to the native plants. Examples of exotic root vegetables include, but are not limited to, potatoes (*Solanum tuberosum*), carrots (*Daucus carota*), onions (*Allium cepa*), ginger (*Zingiber officinale*), beets (*Beta vulgaris*), turnips (*Brassica rapa*), parsley (*Petroselinum crispum*), and radishes (*Raphanus sativus*). Since IRVs are often neglected in research in favor of other plant parts, as posited by Knez et al. (2022), this study sought to bridge that gap.

### 2.2. Consumption patterns of indigenous root vegetables

Root vegetables are abundant worldwide, but they are being consumed less, especially when compared to their indigenous counterparts (Cereda et al., 2024; Chopera et al., 2022; Knez et al., 2022). Moreover, they fall under neglected and underutilized species (Saranraj et al., 2019). Throughout human history, IRVs have been recognized as major sources of health and wellness benefits thanks to their active ingredients, such as bioactive compounds with antioxidant activity (Kulshrestha, 2018). Since the start of the Green Revolution in the 1960s, most focus has shifted to exotic vegetables, replacing many locally grown species (Akinola et al., 2020; Onomu, 2023). This shift altered consumer habits (Magbalot-Fernandez & Umar, 2018),

from eating indigenous foods to varieties with limited nutrients. This shift contributed to an increase in diet-related diseases (Chopera et al., 2022). Over time, indigenous foods, including roots, were seen as poor man's food, fuelling the challenge of under-consumption, especially among young urban dwellers (Lotter et al., 2014). In rural areas, consumption remained relatively stable but was less extensive than ancient times (Nxusani et al., 2023). As trends continued to evolve, consumption shifted toward exotic root vegetables (Nxusani et al., 2023). Similarly, Sarkar et al. (2020) noted that changes in dietary patterns and increased intake of ultra-processed foods have contributed to a rapid rise in diet-related non-communicable chronic diseases (NCDs) worldwide.

In the Andean Region (South America), IRVs are experiencing a decline in consumption, where their intake has been observed in small isolated regions, and the aggregate level was said to be below 10% (Cereda et al., 2024; Sarkar et al., 2020). In addition, Park et al. (2016) postulated that the introduction of food from Asia and Europe shifted American diets, and at present, only a few people consume foods inherited from their ancestors. Public health reports indicate that Native American communities are encountering increased health challenges (Sarkar et al., 2020), which may be ameliorated if consumers resort to indigenous foods, including root vegetables, as they contain health benefits that go beyond basic nutrition (Nayak et al., 2025).

In Ghana, the use and exploitation of native produce to combat diet-related diseases have been limited (Atuna et al., 2022). Similarly, in the Kingdom of Eswatini, these vegetables have received little attention and are seen as food for the needy, with minimal research focus, which likely led to irregular consumption (Masarirambi et al., 2020). This highlights the importance of promoting locally naturalized foods. Chopera et al. (2022), who studied barriers and enablers of consuming these foods, found that indigenous foods (including roots) are rarely part of the Zimbabwean diet, with only 9.3% eating them daily. This under-consumption is not just happening in the countries mentioned but across many nations worldwide (Shrestha, 2013). Since many countries have abundant IRVs (Jamir et al., 2024; Atuna et al., 2022), encouraging their consumption by bringing them back into focus can help address health and wellness challenges. IRVs are not only a basic source of nutrients but also have several medicinal properties that can support health if fully utilized. Though consumption has decreased, existing research does not

provide data on how much IRVs were consumed in the past compared to now; a quantitative comparison is missing.

### 2.3. The value of Indigenous Root Vegetables

According to Akinola et al. (2020) and Nxusani et al. (2023), IRVs have several uses within communities; however, their benefits and value in African settings remain insufficiently explored and integrated. Moreover, they have received little attention from researchers and the commercial market (Chopera et al., 2022; Singh et al., 2018). They are often looked down upon as food for people experiencing poverty (Masarirambi et al., 2020) and are sometimes considered weeds, as is the case with tiger nut (Li et al., 2024). Despite negative connotations from other consumers, IRVs are prominent as superior sources of calories, nutrients, and minerals that are vital for health and wellness (Kulshrestha, 2018). Root vegetables like yams (*Dioscorea spp.*) not only provide food but also offer important pharmaceutical benefits supporting millions worldwide, especially in humid and semi-humid regions (Verma & Nandan, 2023). Similarly, in Northern Philippines, IRVs sustain daily dietary needs and are also used for medicinal purposes due to their high therapeutic value.

In Korean culture, IRVs are traditionally regarded as the primary medicine because of their numerous health benefits and have been used for centuries to maintain health and harmony (Oktay & Ekinci, 2019). One key feature is their richness in bioactive compounds that go beyond basic nutrition (Knez et al., 2022; Cereda et al., 2024; Mbhenyane et al., 2015). Despite their contributions to human health and wellness, IRVs are undervalued in Southern Africa (Nxusani et al., 2023). Since they possess health-promoting properties (Masarirambi et al., 2020), incorporating them into our regular diets can significantly help achieve the Sustainable Development Goals by 2030. One way to encourage the consumption of these vegetables is through value-added processes (Atuna et al., 2022; Kuo et al., 2022), emphasizing their appearance, taste, texture, and color to make them more attractive to all consumers.

In Zimbabwe, the use of plants for therapeutic purposes has long been practiced by the local people (Maroyi, 2013; Tapera et al., 2020). Traditional or wild plant medicine has long been a recognized form of healthcare in addition to nourishment by great-grandfathers on the African continent. IRVs, to be precise, have long been used to treat diseases in both humans and animals (Mujuru et al., 2020). For instance, yams (*Dioscorea steriscus*), which are

normally found in Zimbabwe and southern Africa, are popularly used as food and as a source of traditional medications in the northern parts of Zimbabwe. Similarly, Kujeke et al. (2019) conducted a study on Livingstone potato and highlighted that the vegetable has been used traditionally for food, without neglecting its medicinal benefits. To add on, Jani (2022) conducted a study on resource management, livelihoods, and ethnic minorities in Doma, Zimbabwe. He discovered that its people are still relying on gathering various tubers, including *Dioscorea steriscus* (manyanya), *Dioscorea bulbifera* (idiya), *Tacca leontopetaloides* (bepe), and *Boscia angustifolia* (mupama), for food and medicinal purposes. The author added that the Doma people do not seek medical attention because they trust their herbal remedies. Because people were sustained for ages by relying on indigenous foods (root vegetables included), one can strongly argue that their indigenous knowledge was not merely anecdotal but reflected longstanding local experience. Moreover, this long-standing historical use of plants as therapeutic resources may suggest their efficacy. Although there is a long-standing history of using plants for therapeutic purposes, their consumption has been in decline. Therefore, it is crucial to explore IRVs that are available for health and wellness sustenance in the Zimbabwean context.

#### **2.4. The importance of Indigenous Root Vegetables to Zero Hunger and Good Health and Well-being (SDG2 and SDG3)**

SDG 2 aims to end hunger by 2030. Hunger and food insecurity have been rising at an alarming rate (Mazike et al., 2023). This persistent surge calls for immediate attention and coordination among nations. According to Nayak et al. (2025), IRVs are high in starch, a primary energy source. IRVs are also drought-tolerant, making them ideal for communities prone to climate change (Mabhaudhi et al., 2016).

Beyond hunger, health care inequalities persist globally (Mangundu et al., 2023; Martirosyan & Stratton, 2023). The United Nations urges countries worldwide to take immediate and decisive action to predict and counteract health challenges. IRVs contain bioactive compounds that go beyond basic nutrition. If their potential is further explored, they may contribute to efforts to address non-communicable diseases. Moreover, they are abundant (Jamir et al., 2024) and can be accessed by diverse demographics, making them suitable for addressing current health challenges.

### **3. Methodology**

This study adopted a phenomenological research philosophy to gain insights through the exploration of lived experiences and how people perceive the phenomenon (van Manen, 2023). A qualitative stance was adopted as the researchers recognize that reality is shaped by cultural and social contexts (Creswell et al., 2006). A phenomenological research design was used to focus on the exploration and identification of the fundamental nature of human experiences related to indigenous root vegetables and how they sustain human health and wellness. This study targeted a heterogeneous population comprising community farmers and consumers aged twenty (20) and above. Non-probability sampling, particularly the snowball sampling technique, was used because it was challenging to identify participants knowledgeable about IRVs (Parker et al., 2019). This technique also helped gather real-time information in a time-efficient manner.

To facilitate planning and resource allocation, this study targeted a sample of thirty (30) participants, consistent with Ahmed's (2025) recommendation that a sample of five (5) to thirty (30) participants is adequate for qualitative research using a phenomenological design. Face-to-face interviews with open-ended questions were used to collect primary data from participants, with sessions lasting twenty (20) to thirty (30) minutes per person. The free-listing technique was also used to explore how groups of people perceive or think about a particular health-related domain. Sessions were audio-recorded with participant consent. Permission from various stakeholders was sought and granted. In line with the study's objectives, participants were asked questions such as "Which IRVs are found in Rusape?" and "Why do communities consume these IRVs?"

The thematic data analysis method was used to identify, analyze, and interpret themes within a dataset. The steps used to analyze data included familiarization, coding, generating themes, reviewing themes, defining and naming themes, and lastly writing up in accordance with Braun and Clarke (2006). Each participant was assigned a code (e.g., P1, P2, and P3) to ensure transparency and traceability in reporting participants' voices. The codes were used when presenting direct quotations in the Results and Discussion section. The lead researcher coded the interview transcripts, and the second researcher reviewed a subset of data to increase consistency.

Differences in interpretation were deliberated, and an agreement was reached. The positionality of the lead researcher was acknowledged, drawing on experience as a Master of Philosophy student that provided theoretical and practical grounding for engaging with various community members. Reflexive notes were maintained throughout to minimize bias and ensure transparency in data interpretation.

This study was conducted in accordance with ethical guidelines. The institution granted approval to conduct the research. A research permit to interview participants was granted by the Makoni Rural District Council, and participant consent was sought and granted.

Geographically, this study focused on IRVs found in rural Rusape, which falls under Makoni District. This district is located in Zimbabwe's Eastern Highlands (Manicaland Province), Zimbabwe. Based on Geloky, the approximate coordinates for Makoni District are 18.3355°S, 32.1465°E. This study was conducted in rural Rusape because it is one of the areas where IRVs are abundant and thrive well due to favorable humid weather conditions (Matikiti et al., 2017). The production of many IRVs is facilitated by the humid weather.

#### 4. Results and Discussion

This study targeted thirty (30) participants and successfully collected data from twenty-five (25), which is eighty-three percent (83%). Although statistics are important, in qualitative studies, numbers are less significant than data quality and achieving data saturation. Data saturation was observed after the twenty-second (22<sup>nd</sup>) participant, as new insights stopped emerging and the data gathered became repetitive. Interviews ceased upon reaching the twenty-fifth participant (25<sup>th</sup>).

The demographic profile of the respondents is presented in Table 1, which indicated the dominance of female participants, accounting for more than half of the response rate. Additionally, female participants may have been more available during the data collection period, as noted by Thebe (2018). This situation makes female participants more available and accessible. The widowed are disproportionately represented among females, showing a higher representation of widowed female participants in this sample. In this study, gender and marital status helped in understanding gender-based trends and household dynamics.

Table 1. Summative demographic profile of respondents

<i>Characteristic</i>	<i>Detail</i>	<i>n</i>	<i>Per. (%)</i>
Gender and marital status	Male and married	5	20
	Female and married	5	20
	Male and single	3	12
	Female and single	4	16
	Female and widowed	8	32
	Total	25	100
Age range	20–30 years	2	8
	30–39 years	3	12
	40–49 years	3	12
	50–59 years	3	12
	60–69 years	6	24
	70–79 years	4	16
	80–89 years	2	8
	90–99 years	2	8
	Total	25	100
Occupation	Small-scale farmers / consumers	16	64
	Commercial farmers / consumers	9	36
	Total	25	100

The dominance of the age range sixty to sixty-nine (60–69 years) reflects the willingness of older adults to participate in a study. In addition to willingness, interviews were guided by snowball sampling, in which one participant recruits another (Bhardwaj, 2019). A closer look at the data shows that participants in this age range possess a distinct type of information compared with other groups. The age range of seventy to eighty-nine (80-89) years also had a notable number of participants, indicating the availability of indigenous knowledge among older generations (Mungofa et al., 2022).

The middle-aged range of twenty to fifty-nine (20-59) had fewer participants, reflecting the current perception of indigenous knowledge (IK) erosion among the younger generation (Gayao et al., 2017). This indicates the need for mechanisms to spread indigenous knowledge to the younger generations to minimize the loss of IK. Participants beyond eighty years were also few, and this may be due to changes in life expectancy in Zimbabwe.

Regarding occupation distribution, the majority of participants were small-scale farmers who were also consumers, indicating the dominance of small-scale farmers who usually rely on traditional farming methods. A notable number was also observed among commercial farmers who grow their produce for resale.

This section acted as an umbrella, shielding various subsections. Under this umbrella, the sub-themes (Table 2) are discussed in relation to the study's main objective.

Table 3 shows IRVs found in Rusape and summarizes selected health-related and functional properties reported in the literature for the identified species.

Table 2. Themes and sub-themes

Main theme	Sub-Themes
IRVs found in Rusape	Common roots Unique roots
Consumption patterns	Consumption decline Regular consumption Limited consumption Changes in dietary preferences Adaptation strategy
Health and wellness benefits	Perceived diabetes, cramps, and HIV remedy Perceived disease prevention Perceived immune system boosting Perceived life-longevity Taste and enjoyment Feeling of satiety

Table 3. IRVs found in Rusape

Name(s) of IRV	Health benefits/Functional properties	References
Tiger nut ( <i>Cyperus esculentus</i> /pfende)	Contains arginine, which stimulates the release of the hormone responsible for insulin production. Prevents colon cancer, cardiovascular disease, coronary heart disease, gastrointestinal diseases, obesity, and diabetes. Promotes iron absorption and maintains vitamin E levels. Improves fertility in both men and women. Helps in repairing testicular damage caused by antiretroviral drug (HAART) and improves testicular structure.	Sánchez-Zapata et al. (2012); Adenowo & Kazeem (2020); Ogedengbe et al. (2023)
Taro root ( <i>Colocasia esculenta</i> , madhumbe)	It is gluten-free and helpful to people with celiac disease, and those who are allergic to milk. Possess anti-tumor, antimetastatic, antioxidant, and anti-inflammatory effects. Have potential therapeutic agents for the treatment of eczema, rheumatism, and bone fractures. Taro extracts accelerate healing from snake bites and septic wounds.	Boakye et al. (2018); Ferdaus et al. (2023)
Livingstone potato ( <i>Coleus esculentus</i> / tsenza)	Treats stomach aches and digestive problems. It is also used as an anthelmintic to treat pain, and has anti-tumor and anti-cancer properties.	Kujeke et al. (2019)
Sweet potato ( <i>Ipomoea batatas</i> / mbambaira)	Improves vitamin A status, anti-diabetic, anti-cancer, anti-oxidant and anti-inflammatory, improves intestinal health.	Alam (2021)
Cassava ( <i>Manihot esculentus</i> / mufarinya)	Helps in managing diabetes	Onodu et al. (2018); Nwose et al. (2017)
Hwenene	Plant profiling is still desired	-

#### 4.1. IRVs found in Rusape

Rusape is endowed with both common and unique root vegetables. In this study, common root vegetables are those commonly used in day-to-day cooking and often found in most commercial markets. Unique root

vegetables are those that might be less common to the majority of consumers, but they possess unique flavours and uses.

**Common roots:** It is evident that Rusape is endowed with a range of IRVs. However, the findings indicate

that some species are more common than others, especially among the younger individuals. Regarding common roots, P3, a 33-year-old man, said, “*We have the likes of yams, cassava, and sweet potatoes.*” Similarly, P2, who was a 37-year-old lady and a small-scale farmer, said, “*You can find wild and domesticated Livingstone potatoes, yams, cassava, and sweet potatoes.*” The recurrence of cassava, sweet potato, and yams may mean that these root vegetables are usually included in diets or that they are cultivated by various communities. Apart from the commonly found roots, other participants listed IRVs that are less common, especially among the younger generation.

**Unique roots:** The majority of participants in Rusape are familiar with IRVs that were introduced and became part of our traditional cuisine as time continued to unfold. However, some participants identified interesting roots that are not so common to the majority. With regards to this, P1, a 92-year-old widow from Sabhabha village, said, “*Here in Makoni you can find hwenene, ndekede [dwarf babiana] and mabvumbe [Livingstone potato]*”. In the same way, P5, a 72-year-old widow from Mutewere village, said, “*You can find tsenza [Livingstone potato], hwenya [dwarf babiana], and pfende [tiger nut]*”.

The elderly possess more indigenous knowledge than the younger generation, judging by their ability to uncover IRVs that are not common among the younger generation. Since indigenous knowledge is passed down orally from generation to generation, the preceding findings also show disparities in this knowledge. Lack of commonness of native vegetables among the younger generation is a true representation of indigenous knowledge erosion. This is in line with findings by Akinola et al. (2020), who found that knowledge is being lost from one generation to the next, potentially with dire consequences for long-term sustainable food security. Overall, findings indicate that Rusape is still rich in IRVs; however, indigenous knowledge is gradually fading, and those who possess it can die without passing it to the next generation. Concerning this observation, there is a need for urgent action in documenting indigenous knowledge before it is too late.

#### 4.2. Consumption patterns

Since IRVs play a central role in human health and wellness sustenance, it is prudent to understand consumption patterns among rural communities. Concerning this, the following sections unpack consumption patterns among communities.

**Consumption decline:** Indigenous root vegetable consumption has gradually decreased over the years

despite its health benefits. This was noted as participants indicated that they used to consume IRVs regularly years back, but nowadays the consumption has declined. In relation to this, P11, a 59-year-old commercial farmer from Mugari village, said,

*These days, we rarely consume the likes of Livingstone potato, dwarf babiana, and even tiger nuts. Because bread is readily available, people no longer want to cook time-consuming meals. The affluent rarely consume, but those with little income often consume. The low-income earners can even consume these crops daily.*

A decline in consumption was noted mainly for wild root vegetables, such as *dwarf babiana* and Livingstone potato. This decline indicates dietary shifts away from traditional foods, signifying the dominance of modern influences overriding indigenous practices. This observation is in tandem with findings by Cereda et al. (2024) and Sarkar et al. (2020), who postulated that there is a decline in consumption of most of the IRVs, threatening their cultural legacies. Apart from the quest for modern foods among the majority, there is a relationship between consumption and socioeconomic status. Findings indicate that low-income earners tend to rely more on indigenous foods, while wealthier individuals tend to prefer modern vegetables. Taking a close stance, relative consumption of indigenous foods among the low-income earners is not by choice but due to a lack of required disposable income. This may mean that nowadays consumption of IRVs among populations is closely associated with deficiencies. This observation concurs with findings by Chemura et al. (2022), who highlighted that indigenous foods are usually looked down upon as food for people experiencing poverty, often used during times of shortages. Therefore, economic factors play a central role in dietary choices, signifying that IRVs may serve as a vital food source for economically disadvantaged societies. It is also evident that low consumption among communities is attributed to the time it takes to prepare these root vegetables. This then calls for value-addition processes that can reduce cooking times and increase consumption, especially for consumers who are constrained by time.

**Regular consumption:** Although there is a significant fraction of the population under-consuming these vegetables, from the findings, only P1 indicated that they consume yams (as a family) very often as a substitute for bread and said, “*Yams are regularly consumed as a substitute for bread. Even daily. However, you can only consume yams when they are in season.*” The participant also pointed out that they

only consume these root vegetables when they are in season. This regular consumption may be attributed to the fact that a few individuals in the population still value what they eat for health and wellness. This minority population shows a willingness to rely on indigenous foods, although seasonal constraints limit consumption. This therefore shows the need for addressing seasonality issues through processing these root vegetables to ensure availability throughout the year. Generally, the aspect of rare consumption among the majority concurs with Nyaruwata (2019), who stated that IRVs are rarely consumed and are often used as a temporary measure during droughts and food shortages.

**Limited consumption:** Generally, there is very minimal acceptance of IRVs among children, teenagers, and young adults. With regards to minimum acceptance leading to neglecting IRVs in diets, P19, who was a small-scale farmer from Sabhabha village, said,

*Our children no longer like these vegetables; this generation is different from us, and they are too selective. Maybe little children can adapt if you teach them, but the younger generation can be problematic.*

Similarly, P24, who was also a small-scale farmer from Mudonhi village, said,

*The children do not even want to eat these vegetables, except for a few who like yams. They say they have a bitter taste, especially the Livingstone potato, but the adults like IRVs."*

Another participant (P15), a commercial farmer, also said,

*Today's generation does not even like these foods. One can just eat a small portion. We used to eat from one plate, competing with each other, which could help us consume more and build relationships. Nowadays, it has become very rare for "vanhu vakutya kuroiwa" (people are now afraid of witchcraft).*

Findings indicate the abandonment of IRVs among the children and the younger generation. One of the participants highlighted the aspect of limited indigenous knowledge transfer. Indigenous knowledge on food is passed down through generations. However, it is evident that there is a knowledge gap among the current generation as far as indigenous foods (roots included) are concerned. Another reason for the under-consumption of IRVs among the younger generation is attributed to changes in dietary patterns towards modern foods. The introduction of readily available

food options that appeal to younger generations, such as bread, is seen as a barrier to the consumption of IRVs. These findings are consistent with Chopera et al.'s (2022) findings, who highlighted that consumers nowadays are more inclined to ready-to-eat foods that came with globalization. Therefore, there is a need to process root vegetables in a form that is more appealing and easier to prepare, to meet the demand for convenient foods without compromising the integrity of the IRV.

A bitter taste was also mentioned in relation to the Livingstone potato, which contributes to its under-consumption, especially among children. This shared experience shows the relationship between organoleptic properties and consumption. An inviting taste stimulates one's appetite to eat more, especially among the young (Bawajeeh et al., 2020). The aspect of bitter taste also concurs with Masarirambi et al. (2020), who posit that indigenous vegetables are often sidelined due to their appearance, taste, and color. These findings necessitate the need to look for mechanisms that can be adopted to enhance their organoleptic properties.

**Changes in dietary preferences:** Apart from organoleptic properties, this generation's dietary preferences are highly influenced by modern-day food and exposure to Western diets. According to Cereda et al. (2024), the devaluation of indigenous foods, which began after colonization, is a process that takes time to reverse. Therefore, it is crucial to adopt contemporary value-addition processes to revalue our native vegetables. However, other participants blamed exposure to education amongst the young generation. In line with this view, P9, a small-scale farmer, said,

*Nowadays, these children no longer like these roots or even their young mothers. They say, "Hatidy midzi, mishonga, zvinodyiwa nemabhoi, ndezvetsvina" (we do not eat root vegetables; they are not hygienic, and they are food for the lower class). These roots are looked down upon. These children see themselves as superior. That's why cancer is now more common than it was years ago. I blame their education!*

There is a percentage of the participants who believe that the generation of today is more exposed to modern foods and lifestyles, which are closely linked to cancers and other diet-related diseases. Sentiments shared by the participant are in line with scholars like Kujeke et al. (2019) and Sánchez-Zapata et al. (2012), who reported that IRVs, such as tiger nut and Livingstone potato possess anti-cancer and anti-tumor properties. Time immemorial, people relied on word of mouth on

what to eat and what not to eat. However, the present generation is exposed to a wider knowledge of the benefits and challenges of consuming certain foods. Apart from this, today's generation prefers foods that are scientifically proven. Considering the case of IRVs in Zimbabwe, plant profiling of wide varieties is yet to be considered (Munsaka, 2019). This may be one of the reasons why the present generation tends to doubt the capacity of scientifically unproven foods to sustain their health and wellness. In order to gain the attention of present-day consumers, it is crucial for all indigenous foods to go through quality checks.

**Adaptation strategy:** Although the younger generations have negative perceptions about IRVs, other participants have confidence that youngsters can adapt if they are taught about their benefits, as P1 said,

*Today's generation does not like eating these foods, but what we can do is to encourage mothers to cook these foods and force their children to eat. Children should not challenge their parents on what to eat and what not to eat.*

This highlights the importance of education and parental influence in promoting health and wellness. These shared sentiments indicate the importance of knowledge transfer, exposure, and coercion. This finding resonates with Haines et al. (2019), who postulated that many parents struggle to establish healthy eating patterns in their children due to exposure to the modern lifestyle. From a social science perspective, these findings may mean that children inherit dietary behaviors from those with whom they spend most of their time. Parents and guardians should foster a habit of healthy eating in their children so that they grow with indigenous knowledge embedded in them.

Although the majority of the present generation has a negative attitude towards IRVs, the older generation chooses these foods to a greater extent, as one participant (P11) said, *"I prefer yams to bread; in fact, I buy bread on rare occasions. Health-wise, I believe yams are better,"* and another participant also said, *"People are loving and consuming yams and sweet potatoes."* This confidence in indigenous foods among adults can be attributed to their lived experiences during the olden days. It is evident that people relied on wild and indigenous foods for their survival, and there were rare cases of non-communicable diseases (Tapera et al., 2020). Despite adults' notable appreciation of native foods, it is crucial to note that the majority prefer yams and sweet potatoes over other IRVs. This preference can be closely linked to taste and appearance. Yams and sweet potatoes have an inviting

taste and aroma as compared to the Livingstone potato, which is widely known for its bitter taste. Although the elderly still value these native root vegetables, findings indicate that the general consumption has dwindled, and there are other root vegetables that the elderly rarely consume, such as tiger nut and *dwarf babiana*.

The big picture coming out in this theme is that there is a generational difference in acceptance and consumption of IRVs in Rusape. The majority of those with low acceptance and minimal consumption in this case are the children, young adults, and their young parents who are below the age of forty (40). Responses related to children emphasize stigma, consumer superiority, and exposure to modern lifestyles. The minority who are in their 50s and above acknowledge these native foods, although consumption has also declined compared to past years. Younger generations are more receptive to yams and sweet potatoes than to other root vegetables, such as the Livingstone potato, which is one of the least popular because of its bitter flavor. Nonetheless, older generations continue to value it because they understand its nutritional advantages.

According to participants' responses, this under-consumption is said to contribute to diet-related diseases. Younger generations may not recognize and accept the health advantages of these foods due to a lack of exposure or negative perceptions. By reconnecting younger people with their cultural heritage through food education and community projects, acceptance and dietary diversity may be enhanced. Therefore, it is an urgent matter to find mechanisms that can be adopted to enhance indigenous root vegetable acceptance and consumption.

#### **4.3. Perceived health and wellness sustenance benefits of IRVs**

The term "medical value" herein describes perceived advantageous qualities of IRVs that can be used to manage, prevent, or treat illnesses and ailments. Findings indicated that IRVs were not just nutrient providers but were perceived to contain medicinal properties. This was evidenced by P18 (a small-scale farmer from Mugari village), who believed that IRVs are medicines in themselves. Another small-scale farmer (P13) from Kamba village shared the same sentiment. From a phenomenological stance, the opinions shared suggest that root vegetables are not ordinary foods but possibly possess healing qualities. Beliefs shared by communities are closely related to Sarkar et al. (2020), who opined that there is no difference between food and medicine. Moreover, in

Korean culture, IRVs are normally considered the first medicine due to countless health benefits and have been used for centuries to maintain health and harmony (Oktay & Ekinici, 2019). Participants also revealed the specific health benefits that these root vegetables are believed to treat, and these will be discussed in the preceding paragraphs.

**Perceived diabetes, cramps, and HIV remedy:**

Apart from general medicinal value, findings indicate that communities believe that specific ailments may be ameliorated by consuming IRVs. One of the participants (P25), a commercial farmer from Mutenure village, reported that “Cassava is believed to help people with sugar problems. Cassava porridge is also perceived to heal cramps (chiveve).” Another participant (P18) from Kamba village said, “I eat cassava because I believe it will help maintain my sugar level.” These findings express a deeper understanding that one may have acquired through personal experience. Shared sentiments may mean that cassava may not be just an ordinary crop but a beneficial root vegetable that can promote one’s well-being if regularly consumed. Findings on cassava are closely related to those of Onodu et al. (2018) and Nwose et al. (2017), who reported that cassava has nutraceutical effects for diabetes management. Although cassava is rich in potassium and magnesium, which are crucial for muscle function, and lack of these nutrients can lead to cramps, however scholarly evidence on the healing properties of cassava for cramps was not found. Although this finding may be true, there is a need to scientifically prove the claim.

Apart from cassava, one of the elderly from Mutewere village expressed belief in tiger nut in relation to individuals who live with HIV. The participant said, “People always say tiger nut is very helpful if you are HIV positive. I believe it helps because those who say so seem to be benefiting from consuming it” (P18). The participant also “I don’t know the magic behind it, but I believe tiger nut is helpful.” Shared sentiments may mean that rural communities perceive IRVs as a source of health and well-being. Literature on the overall health benefits of tiger-nuts is abundant; however, no directly linked studies on tiger-nuts’ healing properties on HIV patients were found. Rather, this study found evidence from Ogedengbe et al. (2023), who tested the protective role of tiger nut; their results indicated that the root vegetable helped repair testicular damage caused by the antiretroviral drug HAART and improved testicular structure. Therefore, scientific studies to validate claims on tiger nuts in relation to HIV are desired.

**Perceived disease prevention:** It is believed that *dwarf babiana* helps unborn babies avoid developing belly-button challenges called *ndongorongo* in the Shona language. *Ndongorongo* is a green vein that normally develops under the belly button soon after childbirth. This green vein can cause discomfort in infants and often requires medical attention. One of the elderly participants who associated the consumption of *dwarf babiana* and belly button challenges (P5) said, “Pregnant mothers eat *dwarf babiana* to prevent their unborn child from developing *ndongorongo*. I did this with all my pregnancies.” The repeated use of this native root vegetable among pregnant mothers may indicate its effectiveness in indigenous systems. Despite this discovery, no scientific evidence on *dwarf babiana* and pregnant mothers could be found. Apart from a lack of specific literature, there is a general scarcity of scientific literature on this native plant’s health and wellness benefits, which is a true indicator of the need to conduct research around this root vegetable.

Although indigenous root vegetables are perceived to be abundant in medicinal properties, other participants indicated that they used to consume them, unaware of health benefits, as one of the participants (P11) said,

*I believe these vegetables could heal us, especially dwarf babiana (ndekede), which people would consume to sustain their health. But we used to consume them not knowing these roots contain medicinal value, but as we were growing up, we ended up knowing. We can say these foods help in one’s health.*

This shared sentiment indicates that specific indigenous knowledge on certain root vegetables is partially available. This may be because indigenous knowledge is usually passed down from generation to generation using word of mouth with little or no documentation. Word of mouth can be easily forgotten, highlighting the importance of documenting the IKS currently possessed by our elders to eradicate the “indigenous knowledge erosion” mantra.

The medicinal values of native root vegetables mentioned are directly linked to indigenous knowledge passed down from one generation to another, and knowledge was discovered through experience. This knowledge and experience also indicated dependence on natural sources of medication, as many rural communities are often marginalized, with minimal access to modern health facilities. Despite extensive knowledge of the contribution of IRVs, the lack of scientific evidence on other root vegetables indicates a

gap between traditional knowledge and modern research that could validate these claims.

**Perceived immune system boosting:** Participants associated IRVs with immune system boosting. However, the responses given did not specify the exact species with that capacity. The confidence in indigenous knowledge displayed by participants indicates far-reaching trust in IRVs. Although their knowledge is obtained through trial and error, the method is believed to have helped the majority in its time. Findings on perceived immune system enhancement and boosting are in line with Ojimelukwe et al. (2021), who posited that yam varieties strengthen/boost the immune system and help in wound healing. Empirical evidence also shows that people rarely visit hospitals, and this could be tied to various nutrients found in root vegetables, such as fiber, vitamins, and minerals. However, it is crucial to note that health properties were usually discovered retrospectively, indicating a historical education gap on the nutritional and medicinal value of indigenous foods, which could have led to their minimal use in modern diets. Among the various responses, an aspect of longevity emerged.

**Perceived Life-Longevity:** Longevity refers to living a long time. In this scenario, longevity refers to foods that communities believe contribute to a longer, healthier life. Regular consumption of indigenous food has been believed to contribute to longevity due to their nutrients and natural properties. One of the participants from Muteweyi village who expressed this belief said,

*People consume these root vegetables because they know that they will help them live longer. For instance, one of the residents in this village lived up to around 98 years because she would eat Livingstone potatoes very often. So I think it may have contributed to her living longer (P23).*

The above participant confidently believes that consuming IRVs contributes to long life, as evidenced by one of the village dwellers who lived up to ninety-eight years. From a phenomenological stance, the shared sentiment reflects the belief that indigenous foods may contribute to longevity if consumed regularly. The reference made towards “food consumed during their time” highlights an aspect of dietary changes between past and present diets. Sentiments about longevity are closely related to findings by Kuhnlein (2015), who postulated that people who lived back then had a longer life span due to limited exposure to modern, highly processed foods. Therefore, one can argue that there may be a positive relationship between

regular consumption of IRVs and life longevity. Apart from longevity, enjoyment emerged as another reason for consumption.

**Taste and enjoyment:** Findings indicate that other people consume IRVs for the sake of enjoyment, as one of the participants (P9) said, “We used to eat these roots just for fun,” and another one shared the same sentiment and said,

*People consume Livingstone potatoes because they like the vegetable, especially those from the city. People consume because they believe that these root vegetables help us health-wise somewhere-somewhat (P16).*

Another elderly person had this to say, “Although I enjoy Livingstone potato, my grandchildren spit it out due to its bitter taste. I urge them to consume it anyway. The fact that one of the participants indicated that they used to consume them may mean that consumption of root vegetables was not always health-driven but was part of enjoyment. To add on, these sentiments also show that food choices are tied to one’s preferences and sensory experiences. Livingstone potato, for instance, is often neglected by children due to its bitter taste. However, findings under this theme highlighted that people have different tastes and preferences when it comes to food. These findings are in line with Bawajeet et al. (2020), who indicated that several studies conducted on taste preference and dietary consumption between adults and younger individuals show that adults prefer to consume bitter-tasting vegetables as compared to younger individuals. The broader view emerging from this theme is that people have different food choices and preferences. Apart from enjoyment, satiety also emerged as another theme.

**Feeling of satiety:** There is also another group of people who consume these vegetables solely for the feeling of satiety, as one of the participants said, “We eat these root vegetables just to feed a hungry stomach, so long as we have eaten something” (P3). Similarly, another participant said,

*We consume yams and sweet potatoes just to feed the hungry stomach. For me, these vegetables make you feel full, and that’s what we need, especially when going to do weeding in the garden. The next meal will be seen in the afternoon or even evening (P4).*

Taking a look using a phenomenological stance, these responses reflect the practical eating of root vegetables as a basic need to deter hunger rather than as a health and nutritional motive. The fact that aspects of taste, preference, and other benefits are not

considered in these responses may mean that IRVs are consumed as a survival strategy. The primary motive is availability rather than choice. One can argue that people consume IRVs to address hunger and food security issues. These results are compatible with those of Mgwenya et al. (2025), who stated that indigenous vegetables can be a reliable source of sustenance during times of scarcity, particularly in rural and resource-constrained communities.

To sum up, the findings indicate that people consume indigenous foods for various reasons, although overall consumption has declined. Some people consume for the sake of satiety, not by choice, and some consume for the sake of fun without expecting more benefits. Despite varied consumption motives, IRVs are associated with various nutritional and medicinal claims; however, more scientific literature to prove the claims mentioned is still desired.

## 5. Conclusion

Rusape is endowed with common and lesser-known IRVs such as tsenza (Livingstone potato), pfende (tiger nut), hwenya/ndekede (dwarf babiana), madhumbe (taro), mbambaira (sweet potatoes), mufarinya (cassava), and hwenene available for health and wellness sustenance. Despite the availability of various IRVs, consumption in general has declined. Communities consume IRVs for various reasons, such as taste and enjoyment, satiety, and for the sake of their health and wellness benefits. However, scientific studies to demonstrate the perceived medicinal benefits and efficacy of IRVs remain desired. More attention is needed, especially on IRVs with limited existing research, such as Livingstone potato, dwarf babiana, tiger nut, and hwenene. This study advances knowledge on under-studied IRVs, highlighting generational differences in indigenous knowledge. It also provides insights for food security, nutrition, and public health. By documenting culturally acquired knowledge and practices, this study provides a basis for further research and informed consideration of indigenous root vegetables within broader food system discussions.

### 5.1. Limitations

Although this qualitative study provides valuable insights into local knowledge and perceptions, it is subject to limitations that should be acknowledged. The use of snowball sampling may have introduced bias into participant recruitment. Although the method was effective in reaching participants with knowledge of IRVs, it relied heavily on social networks and referrals.

Consequently, participants may have shared similar backgrounds, which may have limited the diversity of views represented. Those outside referrals and social networks who may hold different perceptions were less likely to be included in data collection. This study relies on self-reported data, which present inherent challenges. Self-reporting is prone to social desirability bias, in which participants may give responses that are favourable to themselves. Participants may have unintentionally exaggerated or minimized certain practices. This could have affected the overall accuracy of the findings. Participants were asked to reflect on past experiences and habits, giving answers based on memory, which may not always be precise. This limitation may impact the reliability of the reported data.

This study was also affected by seasonality factors. Data were collected during a specific period, limiting the capture of the full range of IRVs across different seasons. Seasonal variations in the availability of IRVs may provide only a partial picture of community practices. This study did not use multiple data sources; reliance was on interviews. Although the methodological choice was practical, it may restrict the robustness of conclusions. These limitations necessitate the need to take caution when generalizing findings beyond the context of the study. Future research may address these limitations by considering multiple sampling strategies and employing quantitative, experimental, or longitudinal studies to account for seasonal variation.

Geographically, data were collected exclusively in Rusape, Makoni District. Although this focus provided contextual richness, the generalizability of the findings to other provinces in Zimbabwe is limited. The health-related knowledge documented in this study is grounded in indigenous perceptions and experiential understanding rather than empirical or biomedical measurements. Although these beliefs and perceptions are valuable for capturing indigenous knowledge, they may not align with scientific or clinical evidence. The absence of biomedical validation limits the generalizability of outcomes as medically proven. The reliance on beliefs and perceptions underscores the need not to treat findings as definitive evidence of health. Lastly, the accessibility and availability of other community members limited participation due to personal commitments and obligations. Despite the limitations encountered, this study provides important insights into health and wellness and lays a foundation for further research.

## 5.2. Theoretical contribution

This study contributes to theoretical discussions on food sovereignty and cultural sustainability by demonstrating how IRVs are embedded in local practices and health and wellness perceptions. This study contributes to theories of indigenous knowledge systems (IKS) integration through the documentation of experiential understandings of health and wellness.

## 5.3. Areas for future research

Further research may include experimental and interdisciplinary studies to explore health-related claims documented through indigenous knowledge and local practice. In addition, further scientific investigation is needed to characterize indigenous root vegetables better and explore their potential relevance within broader discussions of nutrition and health.

## 5.4. Disclaimer

The health- and wellness-related claims in this paper reflect participants' perceptions and local knowledge rather than scientifically validated evidence. These claims should be interpreted as expressions of local beliefs and practices, which require further scientific research for validation.

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## Declarations

### Competing Interest

The authors declare that they have no financial or non-financial competing interests.

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### Ethics Statement

This study was conducted in accordance with ethical guidelines. Ethical approval was obtained from the Chinhoyi University of Technology. Permission to interview participants was also granted by the Makoni Rural District Council. Informed consent was obtained from all participants before the interviews were conducted.

## Data Availability Statement

Data are available from the corresponding author upon reasonable request, subject to ethical approval.

## AI statement

Generative AI tools were used only in a limited and controlled manner for language editing. Language editing support was provided using Grammarly and Microsoft Copilot. All content was reviewed and approved by the authors.

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## References

- Adenowo, A. F., & Kazeem, M. I. (2020). Tiger nut as a functional food, pharmacological and industrial agent: A mini review. *Annals of Science and Technology*, 5(1), 31-38. <https://doi.org/10.2478/ast-2020-0004>
- Ahmed, S. K. (2025). Sample size for saturation in qualitative research: Debates, definitions, and strategies. *Journal of Medicine, Surgery, and Public Health*, 5, 100171. <https://doi.org/10.1016/j.gjmedi.2024.100171>
- Akinola, R., Pereira, L. M., Mabhaudhi, T., de Bruin, F. M., & Rusch, L. (2020). A review of indigenous food crops in Africa and the implications for more sustainable and healthy food systems. *Sustainability*, 12(8), 3493. <https://doi.org/10.3390/SU12083493>
- Alam, M. K. (2021). A comprehensive review of sweet potato (*Ipomoea batatas* [L.] Lam): Revisiting the associated health benefits. *Trends in Food Science & Technology*, 115, 512-529. <https://doi.org/10.1016/j.tifs.2021.07.001>
- Atuna, R. A., Djah, J., Achaglinkame, M. A., Bakker, S., Dari, L., Osei-Kwarteng, M., Mahunu, G. K., Koomen, I., & Amagloh, F. K. (2022). Types of indigenous vegetables consumed, preparation, preferences, and perceived benefits in Ghana. *Journal of Ethnic Foods*, 9(1), 38. <https://doi.org/10.1186/s42779-022-00154-3>
- Bawajeel, A. O., Albar, S. A., Zhang, H., Zulyniak, M. A., Evans, C. E. L., & Cade, J. E. (2020). Impact of taste on food choices in adolescence-systematic review and meta-analysis. *Nutrients*, 12(7), 1985. <https://doi.org/10.3390/nu12071985>
- Bazine, T., & Arslanoğlu, Ş. F. (2020). Tiger Nut (*Cyperus esculentus*): Morphology, Products, Uses, and Health Benefits. *Black Sea Journal of Agriculture*, 3(4), 324-328. <https://izlik.org/IA96SH48TE>

- Bhardwaj, P. (2019). Types of sampling in research. *Journal of the Practice of Cardiovascular Sciences*, 5(3), 157-163. [https://doi.org/10.4103/jpcs.jpccs\\_62\\_19](https://doi.org/10.4103/jpcs.jpccs_62_19)
- Boakye, A. A., Wireko-Manu, F. D., Oduro, I., Ellis, W. O., Gudjónsdóttir, M., & Chronakis, I. S. (2018). Utilizing cocoyam (*Xanthosoma sagittifolium*) for food and nutrition security: A review. *Food Science & Nutrition*, 6(4), 703-713. <https://doi.org/10.1002/fsn3.602>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Cereda, M. P., Vilpoux, O. F., & Sørensen, M. (2024). Introduction—underground starchy crops in food use. In M. P. Cereda and O. F. Vilpoux (Eds.), *Traditional Starch Food Products: Application and Processing: Volume 4*, (pp. 1-13). Academic Press. <https://doi.org/10.1016/B978-0-323-90844-3.00014-7>
- Chandrasekara, A., & Joseph Kumar, T. (2016). Roots and tuber crops as functional foods: A review on phytochemical constituents and their potential health benefits. *International Journal of Food Science*, 2016(1), 3631647. <https://doi.org/10.1155/2016/3631647>
- Chemura, A., Kutuywayo, D., Hikwa, D., & Gornott, C. (2022). Climate change and cocoyam (*Colocasia esculenta* (L.) Schott) production: assessing impacts and potential adaptation strategies in Zimbabwe. *Mitigation and Adaptation Strategies for Global Change*, 27(6), 42. <https://doi.org/10.1007/s11027-022-10014-9>
- Chivenge, P., Mabhaudhi, T., Modi, A. T., & Mafongoya, P. (2015). The potential role of neglected and underutilised crop species as future crops under water scarce conditions in Sub-Saharan Africa. *International Journal of Environmental Research and Public Health*, 12(6), 5685-5711. <https://doi.org/10.3390/ijerph120605685>
- Chopera, P., Zimunya, P. R., Mugariri, F. M., & Matsungu, T. M. (2022). Facilitators and barriers to the consumption of traditional foods among adults in Zimbabwe. *Journal of Ethnic Foods*, 9(1), 5. <https://doi.org/10.1186/s42779-022-00121-y>
- Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The Counselling Psychologist*, 35(2), 236-264. <https://doi.org/10.1177/0011000006287390>
- Ferdaus, M. J., Chukwu-Munsen, E., Foguel, A., & da Silva, R. C. (2023). Taro roots: an underexploited root crop. *Nutrients*, 15(15), 3337. <https://doi.org/10.3390/nu15153337>
- Gayao, B. T., Meldoz, D. T., & Backian, G. (2017). Indigenous knowledge and household food security: the role of root and tuber crops among indigenous peoples in the Northern Philippines. In A. Niehof, H. N. Gartaula, & M. Quetulia-Navarra (Eds), *Diversity and Change in Food Wellbeing* (pp. 43-69). BRILL. [https://doi.org/10.3920/978-90-8686-864-3\\_3](https://doi.org/10.3920/978-90-8686-864-3_3)
- Haines, J., Haycraft, E., Lytle, L., Nicklaus, S., Kok, F. J., Merdji, M., Fisberg, M., Moreno, L. A., Goulet, O., & Hughes, S. O. (2019). Nurturing Children's Healthy Eating: Position statement. *Appetite*, 137, 124-133. <https://doi.org/10.1016/j.appet.2019.02.007>
- Hussain, M. A., Li, L., Kalu, A., Wu, X., & Naumovski, N. (2025). Sustainable food security and nutritional challenges. *Sustainability*, 17(3), 874. <https://doi.org/10.3390/su17030874>
- Igartua, J. J., Rodríguez-Contreras, L., Guerrero-Martín, Í., & Honorato-Vicente, A. (2023). "It happened to me, and it's serious": Conditional indirect effects of infection severity narrated in testimonial tweets on COVID-19 prevention. *International Journal of Environmental Research and Public Health*, 20(13), 6254. <https://doi.org/10.3390/ijerph20136254>
- Jamir, S., Devi, K. S., Ningombam, E., & Verma, A. (2024). A review on post-harvest technology of an underutilized vegetable bitter tomato (*Solanum aethiopicum* L cv. gilo) of the North-eastern region of India. In *BIO Web of Conferences* (Vol. 110, p. 02006). EDP Sciences. <https://doi.org/10.1051/bioconf/202411002006>
- Jani, V. (2022). Resource management, livelihoods and ethnic minorities: The case of the Doma, Northern Zimbabwe. In K. Helliker, P. Chadambuka, & J. Matanzima (Eds.), *Livelihoods of ethnic minorities in rural Zimbabwe* (pp. 89-105). Springer International Publishing. [https://doi.org/10.1007/978-3-030-94800-9\\_5](https://doi.org/10.1007/978-3-030-94800-9_5)
- Kamvura, T. T., Dambi, J. M., Chiriseri, E., Turner, J., Verhey, R., & Chibanda, D. (2022). Barriers to the provision of non-communicable disease care in Zimbabwe: a qualitative study of primary health care nurses. *BMC Nursing*, 21(1), 64. <https://doi.org/10.1186/s12912-022-00841-1>
- Knez, E., Kadac-Czapska, K., Dmochowska-Ślęzak, K., & Grembecka, M. (2022). Root vegetables—composition, health effects, and contaminants. *International Journal of Environmental Research and Public Health*, 19(23), 15531. <https://doi.org/10.3390/ijerph192315531>
- Kuhnlein, H. V. (2015). Food system sustainability for the health and well-being of Indigenous Peoples. *Public Health Nutrition*, 18(13), 2415-2424. <https://doi.org/10.1017/S1368980014002961>
- Kujeke, G. T., Mazarura, U., Ngadze, E., Gasura, E., Rugare, J. T., Matikiti, A., & Masekesa, R. T. (2019). Untapped potential of the Livingstone potato, an indigenous and underutilized root crop in Zimbabwe: A review. *African Crop Science Journal*, 27(2), 307-320. <https://doi.org/10.4314/acsj.v27i2.14>
- Kulshrestha, K. (2018). Horticultural Crops Value Addition for Nutritional Security. *International Journal of Research - Granthaalayah*, 6(10), 110-120. <https://doi.org/10.5281/zenodo.1475432>
- Kuo, G., N'Danikou, S., Dinssa, F., Roothaert, R., Rugalema, R., Simon, J. E., Wopereis, M., & Van Zonneveld, M. (2022). All-Africa summit on diversifying food systems with African traditional vegetables to increase health, nutrition, and wealth. *Journal of Medicinally Active Plants*, 11(3), 1-57. <https://doi.org/10.7275/v7fs-ij07>
- Lotter, D. W., Marshall, M. J., Weller, S., & Mugisha, A. (2014). African indigenous and traditional vegetables in Tanzania: Production, post-harvest management, and marketing. *African Crop Science Journal*, 22(3), 181-190.
- Li, Z., Shen, L., Liu, T., Wei, W., & Wang, J. (2024). Effects of different crop intercropping on the growth, root system, and yield of tiger nuts. *Agronomy*, 14(6), 1270. <https://doi.org/10.3390/agronomy14061270>
- Mabhaudhi, T., O'Reilly, P., Walker, S., & Mwale, S. (2016). Opportunities for underutilised crops in southern Africa's post-2015 development agenda. *Sustainability*, 8(4), 302. <https://doi.org/10.3390/su8040302>
- Magbalot-Fernandez, A., & Umar, M. (2018). A Review on Root Crops Processing for Food Security and Health. *Journal of South Pacific Agriculture*, 21, 26-33.
- Manduna, I., & Vibrans, H. (2018). Consumption of Wild-Growing Vegetables in the Honde Valley, Zimbabwe. *Economic Botany* 72(4), 436-449. <https://doi.org/10.1007/s12231-019-9441-y>
- Mangundu, M., Roets, L., & van R. ES, J. (2023). The economic crisis (2008-2019) and Health care in Zimbabwe: A structured literature review. *The Open Public Health Journal*, 16(1), e187494452302211. <https://doi.org/10.2174/18749445-v16-e230320-2022-216>
- Maroyi, A. (2013). Traditional use of medicinal plants in south-central Zimbabwe: Review and perspectives.

- Journal of Ethnobiology and Ethnomedicine*, 9(1), 31. <https://doi.org/10.1186/1746-4269-9-31>
- Martirosyan, D., & Stratton, S. (2023). Quantum and tempus theories of functional food science in practice. *Functional Food Science*, 3(5), 55–62. <https://doi.org/10.31989/ffs.v3i5.1122>
- Masarirambi, M. T., Nxumalo, K. A., Kunene, E. N., Dlamini, D. V., Mpofu, M., Manwa, L., Earnshaw, D. M., & Bwembya, G. C. (2020). Traditional/indigenous vegetables of the Kingdom of Eswatini: Biodiversity and their importance: A Review. *Journal of Experimental Agriculture International*, 42(9), 204–215. <https://doi.org/10.9734/jeai/2020/v42i930602>
- Matikiti A. A., Allemann J. A., Kujeka G.B., Gasura E. B., Masekesa, T., & Chabata, I. B. (2017). Nutritional composition of cocoyam (*Colocasia esculenta*), grown in Manicaland province in Zimbabwe. *Asian Journal of Agriculture and Rural Development*, 7(3), 48–55. <https://doi.org/10.18488/journal.1005/2017.7.3/1005.3.48.55>
- Mazike, H. G., Chipurura, B., & Macheke, L. (2023). Value addition of African indigenous vegetables (AIVs) and their utilization as food to improve food and nutrition security: A review. *Food Reviews International*, 39(8), 5164–5184. <https://doi.org/10.1080/87559129.2022.2062765>
- Mbhenyane, X. G., Mushaphi, L. F., Mabapa, N. S., Makuse, S. H., & Amey, A. (2015). The consumption of indigenous fruits and vegetables and health risk in rural subjects of Limpopo province, South Africa. *Indilinga: African Journal of Indigenous Knowledge Systems*, 12(1), 160–168. <https://hdl.handle.net/10520/EJC141610>
- Mgwenya, L. I., Agholor, I. A., Ludidi, N., Morepje, M. T., Sithole, M. Z., Msweli, N. S., & Thabane, V. N. (2025). Unpacking the multifaceted benefits of indigenous crops for food security: A review of nutritional, economic, and environmental impacts in Southern Africa. *World*, 6(1), 16. <https://doi.org/10.3390/world6010016>
- Mujuru, L., Jimu, L., Mureva, A., Mapaura, A., Nyakudya, I. W., & Muvengwi, J. (2020). Diversity of local knowledge on the use of wild food and medicinal plants in communities around five biodiversity hotspots in Zimbabwe. *Advances in Traditional Medicine*, 20(4), 663–671. <https://doi.org/10.1007/s13596-020-00512-z>
- Munsaka, C. (2019). *Examination of the perceived contribution of edible indigenous plants in combating food and nutrition insecurity in the Tonga community of Zimbabwe* [Master's thesis, University of Venda]. University of Venda Institutional Repository.
- Mungofa, N., Sibanyoni, J. J., Mashau, M. E., & Beswa, D. (2022). Prospective role of indigenous leafy vegetables as functional food ingredients. *Molecules*, 27(22), 7995. <https://doi.org/10.3390/molecules27227995>
- Mupakati, T., & Tanyanyiwa, V. I. (2017). Cassava production as a climate change adaptation strategy in Chilonga Ward, Chiredzi District, Zimbabwe. *Jambá: Journal of Disaster Risk Studies*, 9(1), 1-10. <https://doi.org/10.4102/jamba.v9i1.348>
- Nabeshima, E. H., Moro, T. M. A., Campelo, P. H., Sant'Ana, A. S., & Clerici, M. T. P. S. (2020). Tubers and roots as a source of prebiotic fibers. In A. G. da Cruz, E. S. Prudencio, E. A. Esmerino, & M. C. da Silva (Eds.), *Advances in Food and Nutrition Research* (Vol. 94, pp. 267-293). Elsevier. <https://doi.org/10.1016/bs.afnr.2020.06.005>
- Nayak, L., Barik, M., Tiwari, R. K., Kumar, R., & Kumar, A. (2025). Overview of underground vegetable crops. In M.K. Lal, R. K. Tiwari, A. Kumar, R. Kumar, & B. Singh (Eds.) *Abiotic stress in underground vegetables*. Academic Press. <https://doi.org/10.1016/B978-0-443-23961-8.00001-2>
- Nwose, E. U., Onodu, B. C., Anyasodor, A. E., Sedowo, M. O., Okuzor, J. N., & Culas, R. J. (2017). Ethnopharmacological values of cassava and its potential for diabetes and dyslipidemia management: Knowledge survey and critical review of reports. *Journal of Inter-cultural Ethnopharmacology*, 6(3), 260–266. <https://doi.org/10.5455/jice.20170606094119>
- Nxusani, Z. N., Zuma, M. K., & Mbhenyane, X. G. (2023). A systematic review of indigenous food plant usage in Southern Africa. *Sustainability*, 15(11), 8799. <https://doi.org/10.3390/su15118799>
- Nyaruwata, C. (2019). Contribution of selected indigenous vegetables to household income and food availability in Wedza District of Zimbabwe. *Acta Scientific Agriculture*, 3(3), 170–188.
- Ogedengbe, O. O., Bature, A., Fafure, A. A., Kehinde, S. O., Adekeye, A. O., Akintayo, C. O., Ajiboye, B. O., & Adeeyo, O. A. (2023). Evaluation of testicular function and structural changes of wistar rats following antiretroviral Exposure: Protective Role of *Cyperus esculentus*. *Nigerian Journal of Physiological Sciences*, 38(2), 201–209. <https://doi.org/10.54548/njps.v38i2.9>
- Onodu, B. C., Culas, R. J., & Nwose, E. U. (2018). Facts about dietary fibre in cassava: Implication for diabetes' medical nutrition therapy. *Integrative Food, Nutrition and Metabolism*, 5(3), 1-5. <https://doi.org/10.15761/IFNM.1000216>
- Onomu, A. R., Taruvinga, A., & Chinyamurindi, W. T. (2023). Potential and transformation of indigenous floral foods in Africa: What research tells over the past two decades (2000–2022). *Advances in Agriculture*, 2023(1), 8877953. <https://doi.org/10.1155/2023/8877953>
- Ojmelukwe, P., Muoasinam, C., & Omodamiro, R. (2021). Current perspectives on the nutrient composition and health benefits of yams (*Dioscorea species*). *International Journal of Agriculture, Environment and Food Sciences*, 5(2), 179–190. <https://doi.org/10.31015/iaefs.2021.2.7>
- Oktay, S., & Ekinci, E. K. (2019). Medicinal food understanding in Korean gastronomic culture. *Journal of Ethnic Foods*, 6(4), 1-11. <https://doi.org/10.1186/s42779-019-0003-9>
- Park, S., Hongu, N., & Daily III, J. W. (2016). Native American foods: History, culture, and influence on modern diets. *Journal of Ethnic Foods*, 3(3), 171-177. <https://doi.org/10.1016/j.jef.2016.08.001>
- Parker, C., Scott, S., & Geddes, A. (2019). Snowball sampling. Sage research methods foundations. SAGE. <https://doi.org/10.4135/9781526421036831710>
- Sánchez-Zapata, E., Fernández-López, J., & Angel Pérez-Alvarez, J. (2012). Tiger nut (*Cyperus esculentus*) commercialization: Health aspects, composition, properties, and food applications. *Comprehensive Reviews in Food Science and Food Safety*, 11(4), 366-377. <https://doi.org/10.1111/j.1541-4337.2012.00190.x>
- Saranraj, P., Behera, S. S., & Ray, R. C. (2019). Traditional foods from tropical root and tuber crops: Innovations and challenges. In C. M. Galanakis (Ed.), *Innovations in traditional foods* (pp. 159-191). Woodhead Publishing. <https://doi.org/10.1016/B978-0-12-814887-7.00007-1>
- Sarkar, D., Walker-Swaney, J., & Shetty, K. (2020). Food diversity and indigenous food systems to combat diet-linked chronic diseases. *Current Developments in Nutrition*, 4(1), 3–11. <https://doi.org/10.1093/cdn/nzz099>
- Singh, S., Singh, L. B., Singh, D. R., Chand, S., Zamir Ahmed, S. K., Singh, V. N., & Dam Roy, S. (2018). Indigenous underutilized vegetables for food and nutritional security in an island ecosystem: *Journal of Food security*, 10(5), 1173-1189. <https://doi.org/10.1007/s12571-018-0840-1>
- Shrestha, D. (2013). Indigenous vegetables of Nepal for biodiversity and food security. *International Journal of Biodiversity and Conservation*, 5(3), 98–108.

- Tapera, M., Wanjau, R., Dzomba, P., Machocho, A. K., & Mburu, J. (2020). Phytochemical study to validate the ethnobotanical importance of *Dioscorea steriscus* tubers obtained from Zimbabwe. *Sted Journal*, 2(1), 1–10. <https://doi.org/10.7251/sted2002001t>
- Thebe, V. (2018). 'Men on transit' and the rural 'farmer housewives': women in decision-making roles in migrant labor societies in Northwestern Zimbabwe. *Journal of Asian and African Studies*, 53(7), 1118-1133. <https://doi.org/10.1177/0021909618773781>
- Turner, N. J., Luczaj, L. J., Migliorini, P., Pieroni, A., Dreon, A. L., Sacchetti, L. E., & Paoletti, M. G. (2011). Edible and tended wild plants, traditional ecological knowledge, and agroecology. *Critical Reviews in Plant Sciences*, 30(1–2), 198–225. <https://doi.org/10.1080/07352689.2011.554492>
- van Manen, M. (2023). Phenomenology of practice: Meaning-giving methods in phenomenological research and writing. *Routledge*. <https://doi.org/10.4324/9781003228073>
- Verma, R., & Shah, N. (2023). A Study on Potential and Value Addition of a Rare Medicinal/Culinary Plant, *Dioscoria Belophylla*, Tarar (Wild Yam) of Shivalik Belt in Sunderbani Forest Range, District Rajouri. *International Journal of Innovative Science and Research Technology*, 8(1), 445-455. <https://doi.org/10.5281/zenodo.7567316>
- Washaya, S., Mupangwa, J. F., & Muranda, E. (2016). Nutritional value and utilization of yams (*Dioscorea steriscus*) by residents of Bindura Town high density suburbs, Zimbabwe. *Advances in Agriculture*, 2016(1), 5934738. <https://doi.org/10.1155/2016/5934738>