Food and Agriculture Organization of the United Nations

Integrating Africa's forgotten foods for better nutrition

A companion publication for the **Compendium of forgotten foods**

FARA
Forum for Agricultural Research in Africa

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Democratic Republic of the Congo. A vendor at the central market in Kabalo

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Foreword

Agriculture in Africa is faced with multiple pressures beckoning for a change in the way the sector operates. The state of food and nutritional security also calls for a re-think of the continent's approach to sourcing a sustainable solution. Current statistics indicate that 2.4 billion people globally were moderately or severely food insecure in 2022; the majority reside in Africa and southern Asia. The food situation is characterized by access to food, availability and affordability.

Taking a global perspective, the availability of food is not a key problem as the world is already producing more food than what is required to feed the world population. The core issue is that food is not well distributed since it is regarded as a commercial product. Hence, affordability seems to be the core constraint. In principle, food security correlates strongly with possession of money to buy food rather than having access to food production assets and the capacity to produce food. Affordability of food strongly describes food security in Africa – a continent that is largely a net importer of food.

An associated problem with food security in Africa is undernutrition, otherwise referred to as hidden hunger. This describes a situation where the food consumed does not contain balanced nutrients i.e. the essential minerals and vitamins to support a fully functional and healthy life. Nutritional insecurity is prevalent and could have a devastating effect on the longevity of life, effectiveness of the labour force, and level of cognition in the population.

Undernutrition in the first 200 days of life has been reported to have an irreversible effect on the mental development of an individual. When this is prevalent it leads to overall poor intellectual capacity within the population. There is an urgent need to proactively respond to food and nutritional security issues by using an approach which tackles the problem from its root cause rather than treating the symptoms.

A closer look at the food production and consumption dynamics in Africa has revealed a shift towards a few commodities that are globally promoted. These few food commodities have been well supported by research over the decades and are produced by the majority. This trend has relegated a large number of indigenous and traditional food commodities – that are highly nutritious and are well adapted to different production domains and cultural and socioeconomic structures – to the backbench, becoming forgotten foods.

Efforts at the global level meet the need to reintegrate the traditional and forgotten foods back into the mainstream food commodities as an integral part of the renewed agrifood systems drive by the United Nations. The Global Forum for Agricultural Research (GFAR) has mobilized the different regions of the world to develop their continental manifestos in order to reintegrate the forgotten foods into the food systems. The various manifestos were merged to develop the global manifesto on forgotten foods. The Africa manifesto led by the Forum for Agricultural Research in Africa (FARA) identified seven key action areas to mainstream forgotten foods: one is the reassessment of forgotten foods and development of a clear compendium with analysis to inform research and other actions for the development of the commodities. This comprehensive work addresses that objective. It documents the outcomes of rigorous research to provide an appropriate label derived by stakeholders' consensus for the forgotten foods. It also documents a prioritization exercise that rates the identified commodities for consideration, and it produces a compendium of forgotten foods. This work has resulted in two publications, this resource on Integrating Africa's forgotten foods for better nutrition and the accompanying Compendium of forgotten foods which contains a comprehensive listing, nutritional content and pictorial presentation of 100 forgotten foods in Africa.

We recommend these vital resources to all stakeholders in Africa's agriculture, food, and nutrition sectors for judicious use as a source of information to drive the mainstreaming of forgotten foods into Africa's agrifood systems.

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Preface

Deliberate promotion of forgotten foods, in a food systems perspective, has been identified as a potential avenue to ending hunger and malnutrition (Sustainable Development Goal 2), and other dietary challenges in Africa. In preparation for the UN Food Systems Summit 2021, FARA (in collaboration with GFAR) led regional consultations on the development of an Africa manifesto and plan of action on forgotten foods.

As a follow-up, a scoping study, stakeholders' engagement, and other activities were carried out to identify and characterize forgotten food commodities in Africa with the potential of being mainstreamed into the evolving agrifood systems. The studies were in two parts. Part 1 was a scoping study to appropriately define and characterize the terms "forgotten", "underutilized" and other related terms used to describe such food commodities; to identify, prioritize, and document forgotten food commodities with high potential to contribute to food and nutritional security in Africa; and compile and document the nutritional value of the forgotten foods. Part 2 was to develop and validate a compendium of at least 100 identified forgotten foods in Africa. This publication reports the key outputs of the study and provides a succinct recommendation on the pathway to mainstream the forgotten and underutilized food commodities into the food system at the country level.

Online stakeholder consultations and systematic desk reviews were used to obtain primary and secondary data on forgotten foods. The primary data was obtained by administering two survey tools to specific FARA Dgroup members. Dgroup is an online platform for individuals and international organizations working in international development. A stratified proportionate sampling technique was used to guide the selection of target countries for the surveys. The respondents were required to specify the agroecological zones (AEZs) in their respective countries where the named crops were predominantly grown. The resulting data from the Dgroup surveys were subjected to descriptive and qualitative content and thematic analyses. Desk reviews involved systematic searches conducted on NOW Corpus, Google Books Ngram Viewer, Google Scholar and the Directory of Open Access Journals (DOAJ). The searches were mainly on the frequency of citations of the common descriptors, nutritional profile, and medicinal uses of forgotten foods.

For the first survey, a total of 164 responses were received from 25 African countries. In decreasing order, Nigeria, Kenya, Ghana, Uganda and South Africa returned the highest number of survey responses. The survey respondents were mainly from universities, national agricultural research institutes (NARIs), non-governmental organizations (NGOs), the private sector, government ministries, and international agricultural research centres (IARCs). The respondents were predominantly men (70 percent) with a mean age of 45 years, and about 70 percent were working on various types and aspects of forgotten foods. Of those that clearly stated their areas of focus, the majority were working on post-harvest value-added processing, followed by agronomy/agroecology, breeding and variety development, seed systems, and value chain analysis.

The stakeholder respondents provided their views on the practical meaning of a set of descriptors or adjectives used variously in literature to describe the range of plant sources of food that are primarily consumed to supply the bodily nutrient requirements and have the potential for ensuring sustainable food and nutrition security in the African context, but are not accorded the attention they deserve. Nine descriptors were defined, namely: traditional, forgotten, minor, neglected, underutilized, orphan, underdeveloped, cheat-hunger, and poor people's. Where possible, the stakeholder descriptions were compared to existing definitions in the relevant literature.

In an attempt to broker consensus on a widely used descriptor (from among the nine listed) with clear and acceptable meaning that could be recommended for general adoption by stakeholders, we conducted the following: i) compared the cumulative frequency of usage of the descriptors in the literature over the last 70 years; ii) obtained responses from stakeholders on the most frequently encountered descriptor in the literature accessed; and iii) obtained responses from stakeholders on their most preferred descriptors and the reasons for their preferences.

Based on the sum of ranks for the relative frequency for each of these methods, the most appealing descriptors in decreasing order of preference were: traditional, underutilized, neglected, and forgotten.

However, it was suggested that the term 'traditional' may invoke a negative sense of appeal among young people

who view everything traditional as retrogressive and to be abandoned.

To identify and characterize such food commodities with high potential to contribute to food and nutritional security in Africa, a semi-structured questionnaire was administered to key informants in various countries, via online Dgroup surveys, to obtain first-hand and context-specific information.

A total of 40 valid responses (38 percent women) were received from 16 African countries, with Nigeria, Ghana and Uganda providing the bulk of the responses. About 68 percent of the respondents were from research and academic institutions. Over 150 different crops were identified by the respondents. These crops were characterized in terms of their common names, scientific names, agroecological zones, traditional uses, and putative medicinal benefits. The crops included roots and tubers, cereal and legume grains, leafy vegetables and fruits.

The respondents scored each of the crops they identified for nine different attributes or criteria that were of relevance to the integration of these crops into the evolving African food systems. The sum of the scores for each crop was weighted by a frequency of mention factor and the weighted scores were then ranked. On the top 10 of the ranked list were an assortment of root crops, cereal grains, legume grains, and vegetables, namely: Bambara groundnut, yam, taro, sorghum, African yam bean, cowpea, pearl millet, pumpkin, pigeon pea, and African nightshade. In terms of regional appeal (as proxied by the number of countries of the respondents who mentioned the crops), sorghum and yam were most desirable, followed by amaranth, Bambara groundnut, pearl millet, pumpkin, taro, cassava, cowpea and moringa.

Finally, the first 100 ranked crops were characterized in terms of their nutritional and phytochemical composition.

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- members of the African Community of Practice on Forgotten Foods for the prompt response to the various survey instruments to gather intelligence information; and
- the team of experts from the FAO Regional Office for Africa for the various technical comments.

Abbreviations

AEZ	agroecological zones
DOAJ	Directory of Open Access Journals
FAO	Food and Agriculture Organization
FARA	Forum for Agricultural Research in Africa
GFAR	Global Forum on Agricultural Research
IARCs	international agricultural research centres
NARIs	national agricultural research institutes
NGOs	non-governmental organizations
NUC/NUS	neglected and underutilized crops/neglected and underutilized species
SDGs	Sustainable Development Goals
WWF	World Wide Fund for Nature

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Chapter 1

Introduction

Africa is home to a diversity of indigenous food crops that are locally adapted and relatively easier to grow compared to exotic cultivars. Indigenous foods are foods of plant and animal origin that naturally exist in specific agroecological domains and are produced and consumed as part of traditional diets (Rampa *et al.*, 2020).

Although indigenous foods have the potential to sustainably provide the much-needed dietary nutrients to various communities across Africa, they have suffered progressive loss of cultural image, denigration, and utter neglect, being largely substituted with exotic foods. Consequently, they have earned the unenviable appellations of "forgotten", "neglected", or "orphan" foods due to the fact that they have received relatively little or no policy and research attention – especially towards their genetic improvement, value chain development, and dietary integration.

The Forum for Agricultural Research in Africa (FARA) and partners have identified the deliberate promotion of such forgotten foods, in a food systems perspective, as a potential avenue to ending hunger and malnutrition (SDG 2), and other dietary challenges in Africa. The forgotten foods lend themselves suitably to all the five UN Food Systems Summit 2021 action tracks, namely: i) ensuring access to safe and nutritious foods for all; ii) shifting to sustainable consumption patterns; iii) boosting nature-positive production at sufficient scale; iv) advancing equitable livelihoods and value distribution; and v) building resilience to vulnerabilities, shocks and stresses (Von Brown *et al.*, 2020).

In preparation for the UN Food Systems Summit 2021, FARA (in collaboration with GFAR) led regional consultations on the development of an African manifesto and plan of action on forgotten foods. As a follow-up, the Food and Agriculture Organization and FARA launched a consultancy to carry out scoping studies, stakeholders' engagement, and other activities to identify and characterize forgotten food commodities in Africa with the potential of being mainstreamed into the evolving food systems.

WHY "FORGOTTEN FOODS"?

In the African context, there are food crops that contributed significantly to the traditional diets of communities in the past but have been progressively denigrated or abandoned altogether due to a variety of factors that impinge on agrifood systems, including biodiversity loss, nutritional transition, inappropriate agricultural research and development policies, and globalization. Agrifood systems as used here refers to "the complete set of people, institutions, activities, processes, and infrastructure involved in producing and consuming food for a given population" (Gladek *et al.*, 2017).

The contemporary global agrifood system depends on only a few crops that are cultivated on extensive monoculture. At least 30 000 of the 350 000 known plant species on our planet are edible, but only 170 are cultivated for food on any significant scale. Indeed, just 12 plant species (and five types of animals) make up 75 percent of the world's food sources. Around 60 percent of all the calories and proteins we obtain from plants come from just three crops: rice, maize and wheat (GFAR, 2022).

Relying on so few plant species to feed the world is fraught with risks. Biotic threats, accentuated by climate change, such as the recent Fall Armyworm devastation of large swathes of maize fields across Africa, is a typical case in point. Similarly, the Panama Disease has decimated Cavendish bananas in over 100 countries worldwide; while the cassava mosaic virus nearly obliterated cassava production in many African countries. Although breeding efforts have meant some gains in the fight against such invasive pests and devastating diseases, rotational cultivation of broad-based plant germplasm on crop fields is a time-tested preventive measure against biotic and abiotic threats.

In many cases, the forgotten foods exhibit adaptability and resilience to the local agro-climatic conditions and appeal to traditional farming systems that rely on farmer-preserved germplasm and regenerative agricultural principles. Increasingly, many actors are realizing that such undervalued crops have the power to combat hunger and malnutrition, respond to climate change, promote

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biodiversity, improve rural livelihoods, and support healthier and more secure food systems.

Thus, especially in the African context, reviving forgotten food crops is not turning back the clock on modern agriculture; rather it is recalibrating agriculture to ensure food and nutritional security sustainably and in perpetuity. Potentially, mainstreaming of forgotten foods will promote biodiversity and minimize production risks associated with the current agrifood system.

APPROACH AND METHODOLOGY

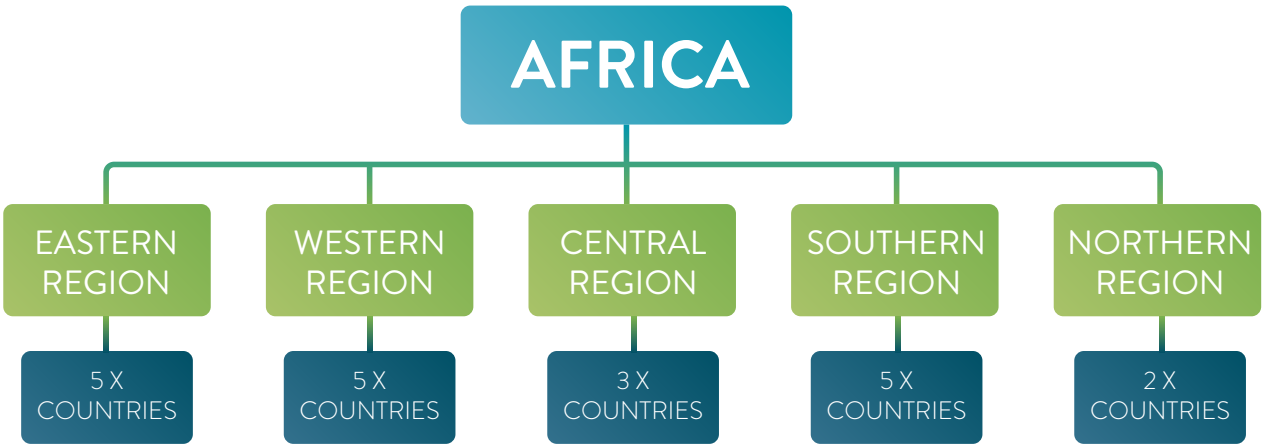
The FARA Secretariat dispatched an official letter of introduction to key organizations (e.g. Ministries of Agriculture, universities, NARIs, and NGOs) in each of the targeted African countries. The letter introduced the subject, scope of the assignment, and the consultant. Due to FARA's social capital amongst agricultural stakeholders on the continent, the introductory letter fostered buy-in and goodwill for the study and ensured favourable disposition of targeted stakeholders to respond to the survey questionnaires.

The African Union has grouped the 55 member states into five geographical regions, namely, Western Region (15 countries), Eastern Region (14 countries), Southern Region (10 countries), Central Region (9 countries), and Northern Region (7 countries). A stratified proportionate sampling technique was used to guide the selection of target countries for the surveys as shown in Figure 1.

Stakeholder consultations (primary data) and systematic desk review (secondary data) were undertaken to identify an appropriate descriptor and broker a semantic consensus around its use in describing foods that might have previously played an important role (or have the potential to play an important role) in African diets but, for one reason or another, are currently not given proper attention. A survey tool (Appendix 1) was used to solicit responses from targeted stakeholders in various African countries. The tool was administered online using the KoBoToolbox (https://www.kobotoolbox.org/) to FARA Dgroup members.

The respondents were required to specify the AEZs in their respective countries where the named crops were predominantly grown. Ultimately, survey responses did not emanate strictly as desired from all the regions in the sampling plan above. Especially, very few responses were received from the Northern region. Perhaps this was so due to the existing mix of regional representation in the membership of the FARA Dgroup. The resulting data from the Dgroup survey was subjected to descriptive and qualitative content and thematic analyses.

Figure 1. Sampling plan



Source: authors' own elaboration

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Chapter 2

Defining the meaning and scope of traditional or forgotten foods

STAKEHOLDER AND LITERATURE ATTRIBUTION OF WORD MEANING

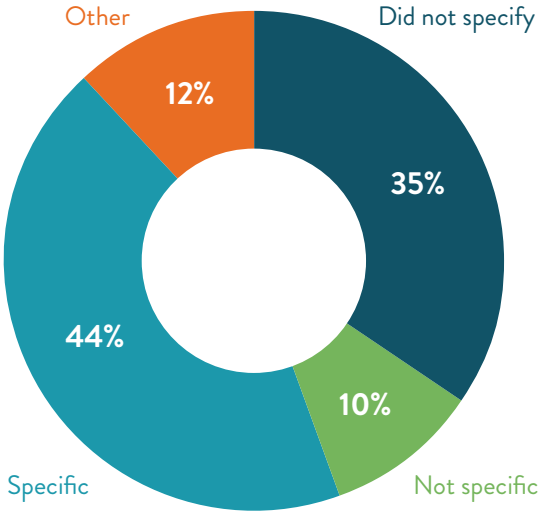
The countries initially selected for the study and the countries from which the survey responses were obtained are shown in Appendix 2. Except for Northern Africa, responses were received from more countries than those initially targeted in each of the regions. A total of 164 responses were received from 25 African countries. The responses were in accordance with the geospatial or demographic hierarchy of the various African regions i.e. Western region returned the highest number of responses at 88, eastern was second at 41, followed by southern at 22, central at 10, and northern at 3. In decreasing order, Nigeria, Kenya, Ghana, Uganda and South Africa returned the highest number of survey responses.

The survey respondents were mainly from universities, national agricultural research institutes (NARIs), NGOs, private sector, government ministries, and international agricultural research centres (IARCs). The respondents were predominantly men (70 percent) with a mean age of 45 years, and about 70 percent were working on various types and aspects of forgotten foods. As shown in Figure 1, 35 percent of the respondents did not specify the areas that they were focusing on, 10 percent indicated the types of forgotten foods of focus but did not specify what they were doing with those foods, while 44 percent clearly stated their areas of focus on specific forgotten foods (Figure 2).

Of those who clearly stated their areas of focus, the majority were working on post-harvest value-added processing, followed by agronomy/agroecology, breeding and variety development, seed systems, and value chain analysis (Figure 3).

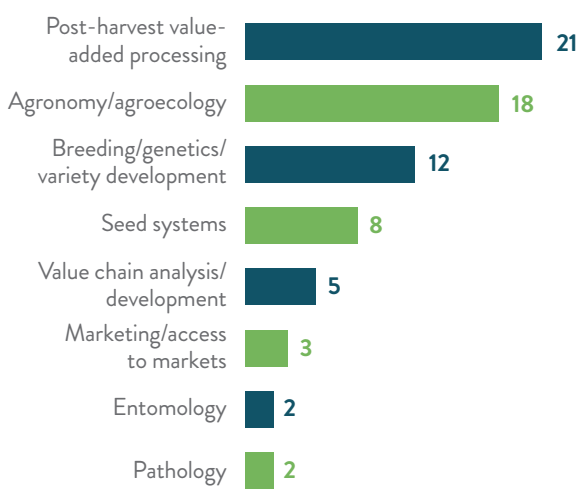
Considering that we do not have consensus on the proper term to use at this stage, the sort of commodities referred to in this assignment include the range of plant sources of food that are primarily consumed to supply the bodily nutrient requirements and have the potential for ensuring sustainable food and nutrition security in the African context; yet, contemporarily, they are not accorded the attention they deserve.

Figure 2. Respondent specification of their areas of focus



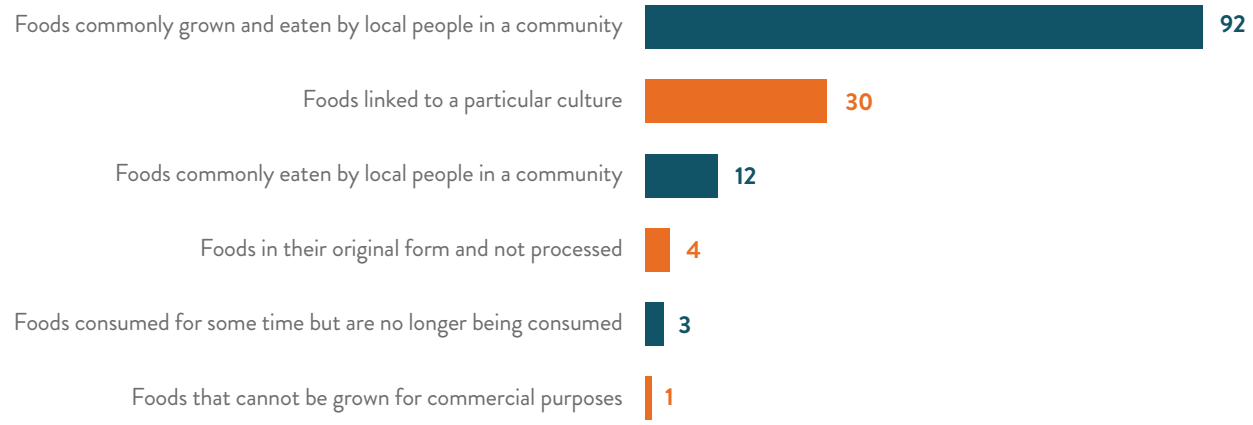
Source: stakeholder survey responses

Figure 3. Key areas of focus on forgotten foods by respondents



Source: stakeholder survey responses

Figure 4. Meanings attached to traditional foods



Source: stakeholder survey responses

Such foods might have had prominent status in traditional diets, but for decades have been progressively denigrated and literally substituted by mostly exotic food.

A wide range of adjectives have been used in the literature to refer to such food crops e.g., traditional, forgotten, minor, neglected, underutilized, orphan, cheat-hunger, poor people's, underdeveloped, and so on. A good attempt at aligning the literature definitions for some of these terms has been provided by Modi and Mabhaudhi (2016). Our intention here is not to add to the existing semantic mix-up in the literature, but, rather, to offer a perspective view of the practical meaning these terms by a cross-section of African stakeholders working on some of these food crops.

TRADITIONAL FOOD CROPS

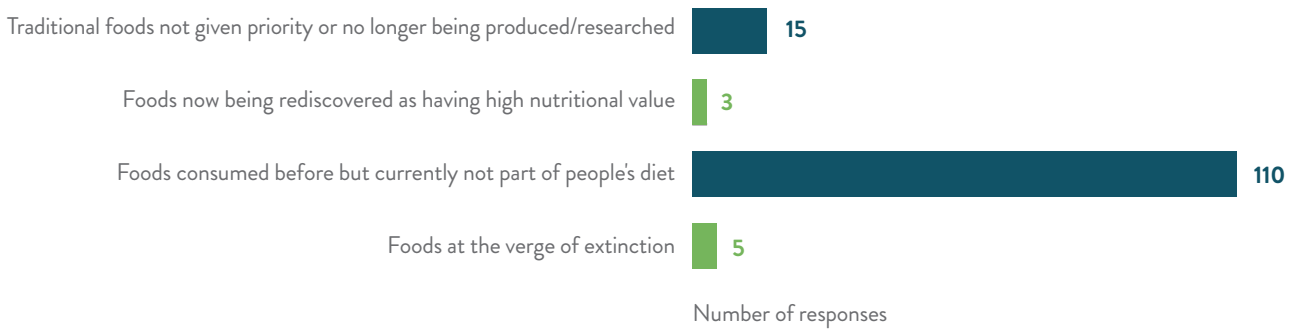
The word 'traditional' evokes a habitual and long-established practice in a particular context. Majority of the respondents related traditional foods to commonly established dietary practices typical of a defined or localized community group of people (Figure 4). Such foods constitute a regular dietary regimen spanning generations amongst a culturally distinct group. They are staple foods that have been used by natives belonging to a particular culture for generations. According to one respondent, "traditional food crops are those crops that have been in existence and are used by a community in a given geographic locality since time immemorial, thereby contributing to food security and community balance." Such crops are also referred to as landraces (Modi and Mabhaudhi, 2016).

Rocillo-Aquino *et al.* (2021), whilst admitting the futility of attempting a universal definition for such a dynamic and conceptually diverse term as traditional foods, have nonetheless distinguished four dimensions exhibited by such foods: place, time, knowhow and cultural meaning. All these dimensions feature in some way in the above stakeholder definition of traditional crops.

FORGOTTEN FOOD CROPS

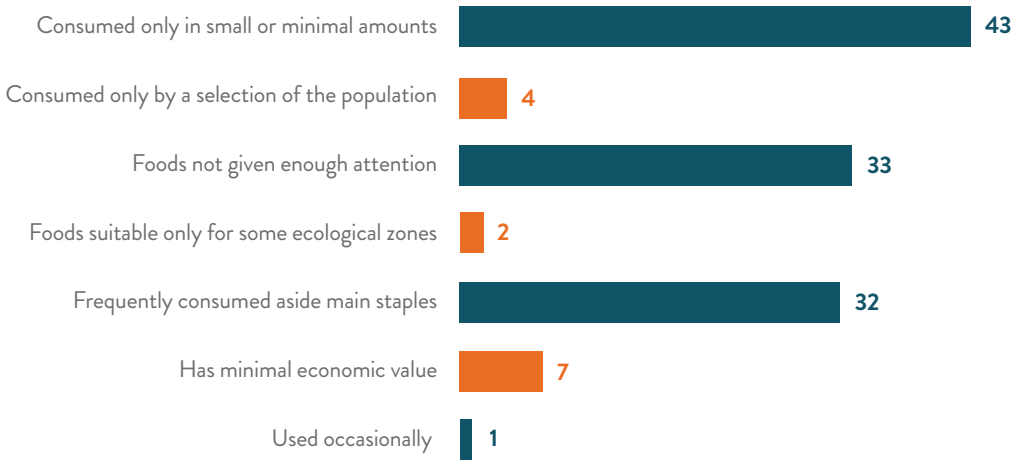
The meanings attributed to forgotten foods by the respondents could be grouped into four main categories as shown in Figure 5. The definition offered by the majority of stakeholders was that forgotten foods exhibit

Figure 5. Meanings attached to forgotten foods



Source: stakeholder survey responses

Figure 6. Meanings attached to minor foods



Source: stakeholder survey responses

a generational disconnect in that they might have been consumed before, but are no longer an important part of contemporary diets. These foods are unfashionable, have lost their appeal and worth, are crowded out of use and production, and are abandoned in diet and research priority. Some of the reasons cited by stakeholders as contributing to their abandonment include: negligence or ignorance of their nutritional, production, and commercial potential; changes in consumer preferences and adoption of new food fads due to modernity and fashion; inherent lack of genetic ability for fast growth and high yields; no longer available e.g. due to climate change and biodiversity loss; and insufficient research focus and promotional efforts.

MINOR FOOD CROPS

Stakeholder meanings attached to 'minor foods' clustered around three main themes, namely, the proportion of consumption (either in terms of quantities consumed by population or the proportion of the population consuming them), degree of (research) attention, and dietary role as a staple (Figure 6). These are foods playing a minor role in the ordinary diets of various communities across Africa and, consequently, might have suffered less research and promotional attention. Some respondents indicated that these foods had a low role in terms of caloric intake and food security, being used only in small quantities, perhaps as a side staple, and did not belong to the mainstream food system. Examples cited are African egg plants, bitter berries and bitter greens in Uganda; Bambara nut, cowpea, and wild fruits in Zimbabwe; millet in Malawi; walnuts in Nigeria; and Amaranthus in Ghana.

According to Pannacci *et al.* (2017), the official definition of a minor crop by the European Union is a crop that is cultivated on an area covering 600 to 10 000 ha, the total production is lower than 200 000 tonnes per year, and the daily dietary intake contribution is comparatively insignificant at between 1.5 to 7.5 grams per day. These authors cite examples of minor crops in the European context as mostly vegetables, fruits, and seed crops, herbs and plants used as spices and for medicinal purposes. In other jurisdictions, the production volume and dietary importance seem to be the main criteria for designating crops as minor. Usually, minor crops are either neglected or underutilized.

NEGLECTED FOOD CROPS

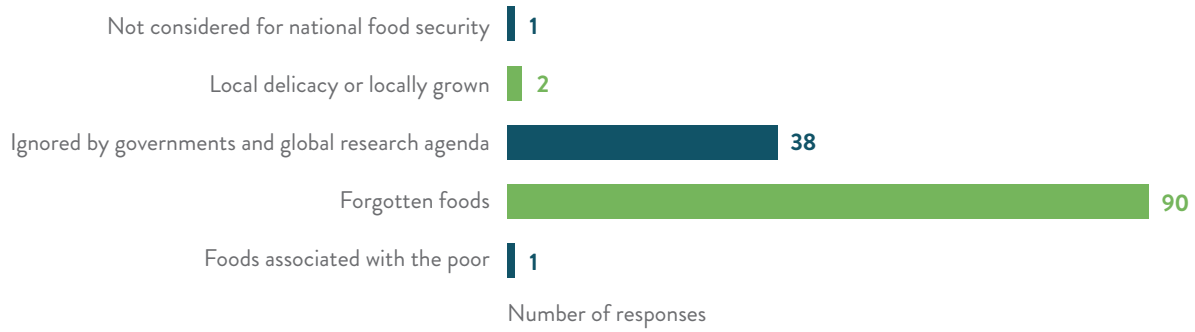
Majority of the respondents thought that neglected foods were synonymous with forgotten foods (Figure 7). Some of these food crops might have high nutritive potential, but have been neglected in the diet and by researchers due to cultural taboos, low agronomic performance, and unsupportive policies. Examples cited are fish and eggs due to tribal taboos in Sudan; sorghum in the Gambia; yams in the Democratic Republic of the Congo; black pepper, cocoyam, and okra in Nigeria; and mangoes in Mali.

According to Hammer *et al.* (2011), neglected crops have been ignored by science and development, but are still being used in those areas where they are well adapted and competitive. Chivenge *et al.* (2015) propose a rather inclusive definition of neglected foods as those that are under-researched, have low levels of utilization, and confined to smallholder farming areas.

UNDERUTILIZED FOOD CROPS

Majority of the survey respondents were of the general opinion that underutilized foods are those that may have inherent agronomic, genetic and nutritive potential, yet they are not fully explored, improved, exploited, harnessed, tapped, maximized, or utilized. Thus, the values and benefits

Figure 7. Meanings attached to neglected foods



Source: stakeholder survey responses

of these crops are undermined. Examples cited include Cleome gynandra in Malawi; breadfruit, breadnut, and walnut in Nigeria; Bambara nut and cowpea in Zimbabwe; cocoyam, Lima beans, sweet potato, and taro in Ghana; and Bidens pilosa in Zambia.

Hammer *et al.* (2011) have referred to underutilized crops as those which were formerly widely grown and consumed and have fallen or are falling into disuse. According to Pedulosi and Hoeschle-Zeledon (2004) of the International Plant Genetic Resources Institute (IPGRI) (currently Bioversity International) underutilized crops are those non-commodity crops, which are part of a larger biodiversity portfolio and were once popular but are neglected today by various actors for a variety of agronomic, genetic, economic, social and cultural factors.

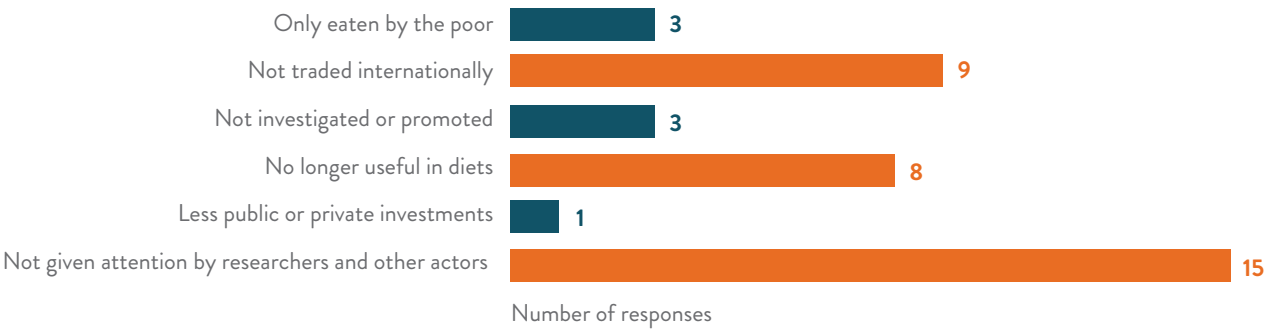
This definition also introduces a historical domain that was apparently lost on the respondents in our survey, but at the same time frustrates efforts at decoupling the terms 'neglected' and 'underutilized'. Not surprisingly, a lot of related literature have tended to use these terms concurrently, giving rise to the commonly encountered acronyms of NUC/NUS (neglected and underutilized crops; neglected and underutilized species) (Jain and Gupta, 2013).

ORPHAN FOOD CROPS

Based on stakeholder survey responses (Figure 8), orphan food crops are those that are not accorded proper attention by researchers and other actors because of their relatively low international trade volumes and low importance in the diets of communities. Cited examples include finger millets in Zambia; pearl millet and sorghum in Kenya; yam in Nigeria; cocoyam and taro in Ghana; foxtail millet in Zimbabwe; and beans and millet in Uganda. In an apparent agreement with this view, Varshney *et al.* (2012) defined orphan crops as those not extensively traded and which receive little attention from researchers compared to the main crops but are nonetheless important crops for marginal environments of Africa, Asia and South America. Orphan crops occupy smaller areas, have more limited markets and receive little scientific focus or funding relative to their importance for food security in the world's poorest regions (Naylor *et al.*, 2004).

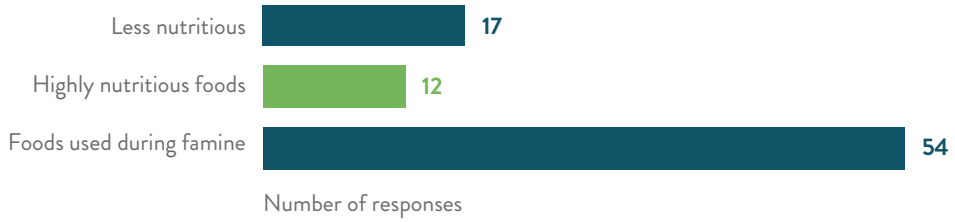
According to Dawson *et al.* (2007), orphan crops are those "that have either originated in a geographic location or those that have become 'indigenized' over many years (> 10 decades) of cultivation as well as natural and farmer selection." Mabhaudhi *et al.* (2017) further observe that the term 'orphan' has often been used to refer to crops

Figure 8. Meanings attached to orphan foods



Source: stakeholder survey responses

Figure 9. Meanings attached to cheat-hunger foods



Source: stakeholder survey responses

that may have originated elsewhere, but have undergone extensive domestication locally, thus giving rise to local variations, i.e., 'naturalized/indigenized crops'. Clear disambiguation is, however, lacking in this description, as the terms orphan and indigenized seem to be semantically inconsistent.

CHEAT-HUNGER FOOD CROPS

As shown in Figure 9, the respondents associated cheat-hunger foods with those resorted to merely for survival especially during times of food scarcity or famine. Such crops may not necessarily be nutritious, but form the core of resilience strategies in circumstances of vulnerability of the food supply. Examples are cassava and sweet potato in Uganda; cocoyam in Malawi; and African yam bean in Nigeria. However, this descriptor is very seldom used in the technical and professional literature.

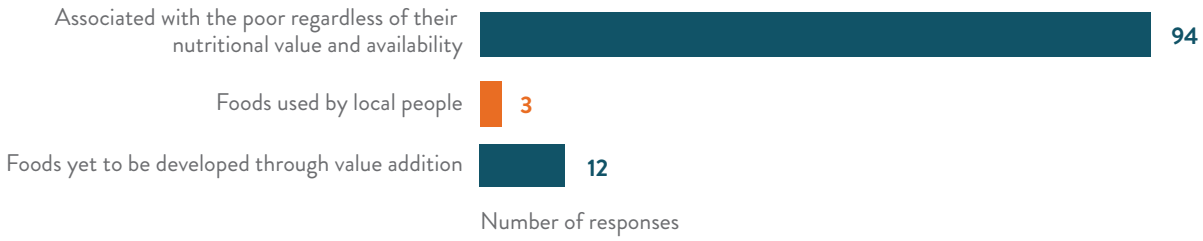
POOR PEOPLES' FOOD CROPS

The respondents associated these types of food crops with limited market value, low esteem, low prices and being patronized mainly by the poor (Figure 10). Often, they are obtained from the wild; are linked to rural gastronomy; and are inadvertently perceived as having low nutritive value. Examples given are Galinsoga parviflora in Kenya, cocoyam and cassava in Nigeria, and sweet potato in Ghana.

UNDERDEVELOPED FOOD CROPS

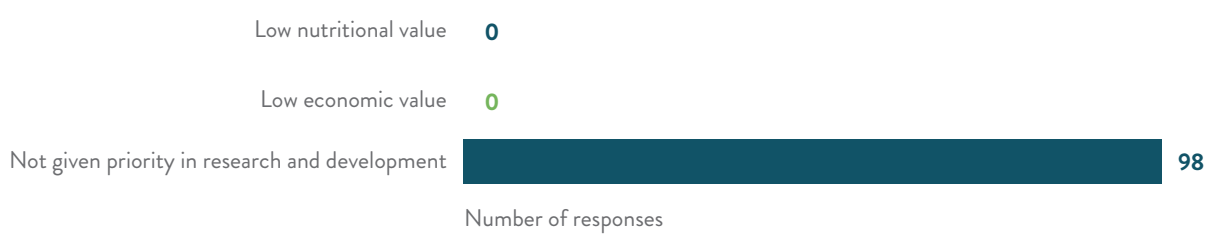
Majority of the survey respondents indicated that underdeveloped foods refer to those not given priority and attention in research and development (Figure 11). Such foods are not promoted, not well used, have little value addition, lack genetic improvement, and have unrealized or unexploited potential. The use of this term in the literature appears scanty.

Figure 10. Meanings attached to poor peoples' foods



Source: stakeholder survey responses

Figure 11. Respondent meanings attached to underdeveloped foods



Source: stakeholder survey responses

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Table 1. Most encountered descriptors in the literature

	DESCRIPTOR	FREQUENCY
1	Traditional crops	727
2	Minor crops	185
3	Orphan crops	76
4	Underutilized crops	40
5	Neglected crops	16
6	Forgotten crops	5
7	Underdeveloped crops	1
8	Poor people's crops	0
9	Cheat-hunger crops	0

Source: authors' own elaboration

MOST ENCOUNTERED DESCRIPTORS IN THE LITERATURE Corpus analysis

A cursory analysis on NOW Corpus generated the cumulative frequency in the usage of the various descriptors since 2010 as shown in Table 2. The most used descriptor over the last decade or so has been traditional crops, followed in decreasing order by minor crops, orphan crops, underutilized crops, neglected crops, and forgotten crops. Only one publication mentioned underdeveloped crops, while cheat-hunger and poor peoples' crops were never used in any publication over the review period.

According to Google Books Ngram Viewer, "minor crops" was the predominant descriptor found in the literature until around 1990 when it was surpassed by "traditional crops". It is also apparent that interest in these crops peaked in the early 1990s and thereafter, for some 25 years, steadily waned until some semblance of reawakening around 2015.

The usage of the descriptors "traditional crops" and "minor crops" over the last 70 years decreased between 1990 and 2015. After this period, usage of "traditional crops" started to increase again. By 2019, "traditional crops" and "minor crops" were still the most frequently used terms. In contrast, the frequency of usage of the other descriptors "orphan", "underutilized", and forgotten crops have, in decreasing order, been on the rise over the same period albeit to a much lesser extent (Figure 12).

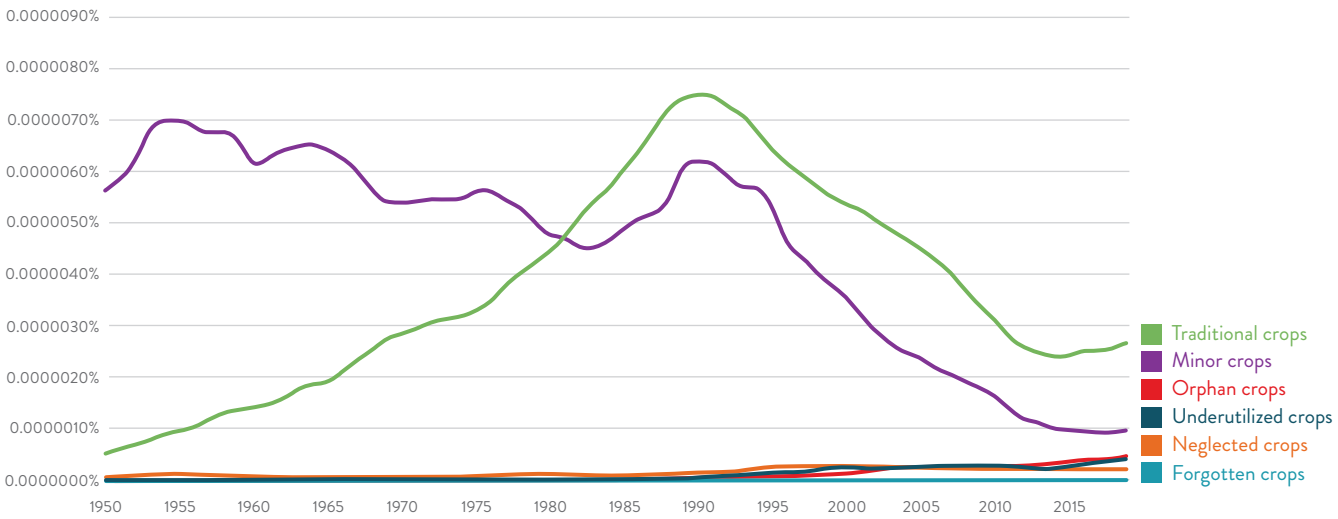
STAKEHOLDER RESPONSES

The survey respondents were asked to indicate which terms they encounter to describe foods that might have played an important role in the African diets but, for one reason or another, are currently not given proper attention. Figure 13 is a word cloud depicting the relative frequency of encounter of the descriptors in the literature by the respondents. In this case, the greater the size of the word, the higher the frequency of occurrence. Forgotten crops, neglected crops, traditional crops, and orphan crops, in decreasing order, were the most popular descriptors at least in the literature accessed by the respondents (Figure 13).

DESCRIPTORS PREFERRED BY STAKEHOLDERS

Asked which of the descriptors they would prefer to use for foods that might have played an important role in the African diets but, for one reason or another, are currently not given proper attention, the majority of the respondents

Figure 12. Trends in usage of descriptors since 1950



Source: Google. (n.d.). Google Books Ngram Viewer. https://books.google.com/ngrams

13. Word cloud of literature occurrence of descriptors

Source: authors' own elaboration

14. Word cloud of most preferred descriptors by respondents

Source: authors' own elaboration

indicated that they would prefer to use, in decreasing popularity, underutilized crops, neglected crops, forgotten crops, and traditional crops (Figure 14).

The respondent stakeholders specified the reasons for their choice of these descriptors (Appendix 3). For "neglected foods", the reasons cited were: lack of scientific research or promotional efforts, not given priority by farmers, and pushed out of relevance even though the crops may have value.

The descriptor "underutilized foods" was preferred by some respondents due to the following reasons:

- the poor usage of the crops as food or feed;
- unexploited potential;
- such a framing provokes the quest to investigate and to innovatively explore opportunities with these categories of foods;
- it moves away from any implications of the food being of inferior quality or value than any other food;
- ingredients and means of preparation of the foods are available, but there is decreasing patronage;
- the foods are yet to be fully explored and incorporated into agrifood systems in terms of nutrition and research;
- it is more descriptive of the extent of use and less attached to economic or cultural orientation of the user;
- the need to move on from the label "traditional foods" as many young consumers have poor associations with this term and it is more positive to view such foods as "waiting to be developed" rather than being eaten for cultural reasons; and
- it is a broad word to describe and support the promotion of such foods across the globe.

Some reasons indicated for preference of the descriptor "traditional foods" by the respondents were as follows:

- these foods have been used in the past, but due to urbanization those in towns cannot access them;
- they are common types of foods used locally by various communities within the same country or across Africa;
- they are foods and dishes that are passed on through generations or which have been consumed for many generations;
- they are traditional in nature, and may have an historic precedent in a national dish, regional cuisine or local cuisine;
- they are foods that people have lived with for a lifetime and their consumption is associated with culture, tradition and norms of a given community; and
- refers to foods that come directly from local farms.

Similarly, the use of the term "forgotten foods" was preferred for the following reasons:

- the foods are promising, but forgotten by science;
- they are of good nutritional value but abandoned due to introduction of new food types;
- they are essential food components but not valued;
- many people now prefer food that aligns with improved status in society; and
- the foods are no longer grown or are unavailable in the market.

Further reasons as to why the other descriptors were preferred are given in Appendix 3. The respondents also suggested additional descriptors for such foods, such as:

- future foods: it brings them to the fore of all generations as something to look forward to even with small tweaks in agronomy or technologies and to inspire a rebranding of the whole field;
- indigenous foods: conveys culture and specific recipes;
- underexploited foods: encourages their use for nutritional gains;

- native foods: because we should appropriate it or be recognized in it as our own food; and
- contingency foods: due to the dimension of using some of these foods in times of extreme events or vulnerabilities in households.

Table 2 shows the relative popularity of the descriptors by assigned ranks based on the four different methods outlined. The sum of the ranks can be used to judge the cumulative order of popularity in usage of the various descriptors, with those with least rank sums being the most preferred. Accordingly, the decreasing order of preference would be: "traditional crops", "underutilized crops", "neglected crops", "forgotten crops", "minor crops", "orphan crops", and "underdeveloped crops".

"Poor people's crops" and "cheat-hunger crops" were not ranked as they did not feature in all the methods. Thus, based on data obtained from this scoping study, "traditional foods" would appear to be the most appealing descriptor. However, the term may invoke a negative sense of appeal amongst the youth as one survey respondent observed, "I think we need to move on from the label of traditional foods as many young consumers have poor associations with this term."

The youth tend to think that anything traditional is retrogressive and should be abandoned. So, this may inadvertently contribute to an increased neglect of these crops amongst a key demographic group to whom the future belongs. That leaves "underutilized crops" as the next best option in line for possible adoption by stakeholders working in this field.

Table 2. Ranking of the popularity of descriptors by various methods

DESCRIPTOR	RANKS BY TYPE OF METHOD				SUM OF RANK
	Frequency of use since 2010 (Corpus)	Frequency of mention in Google Books Ngram Viewer (2019)	Frequency of encounter by respondent stakeholders	Frequency of preference by respondent stakeholders	
Traditional crops	1	1	3	4	9
Minor crops	2	2	6	6	16
Orphan crops	3	3	4	7	17
Underutilized crops	4	4	5	1	14
Neglected crops	5	5	2	2	14
Forgotten crops	6	6	1	3	16
Underdeveloped crops	7	7	7	5	26

Source: stakeholder survey responses

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Chapter 3

Identification, characterization and documentation of forgotten food commodities with high potential to contribute to food and nutritional security

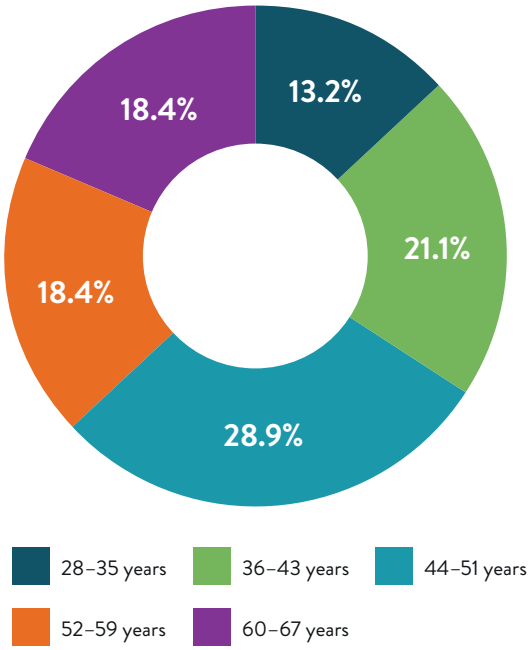
NATURE OF SURVEY RESPONDENTS

A semi-structured questionnaire was administered to key informants in various countries via online Dgroup surveys to obtain first-hand, context- specific information on forgotten foods (Appendix 4). A total of about 40 valid responses (38 percent women) were received from 16 different African countries, with Nigeria, Ghana and Uganda providing the bulk of the responses. The age distribution of the respondents was as shown in Figure 16, with the age bracket of 36–59 contributing nearly 70 percent of the responses. Over 68 percent of the respondents were from research and academic institutions.

IDENTIFICATION AND CHARACTERIZATION OF "FORGOTTEN" FOOD CROPS

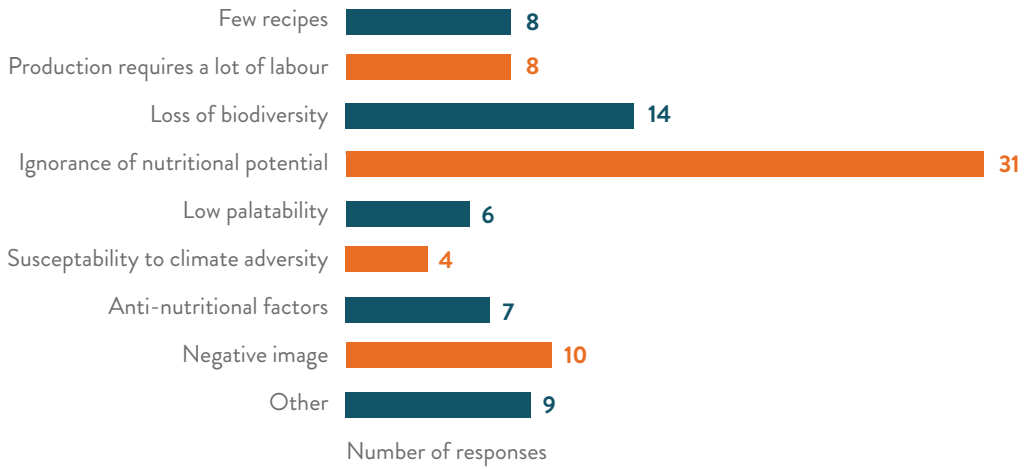
Over 150 different crops were identified by the respondents (see Chapter 4). These crops were characterized in terms of their common names, scientific names, agroecological zones, traditional uses, and

Figure 15. Age distribution of respondents



Source: stakeholder survey responses

Figure 16. Reasons for lack of attention on crops



Source: stakeholder survey responses

putative medicinal benefits. The crops included roots and tubers, cereal and legume grains, leafy vegetables, and fruits. However, a rigorous authentication of the taxonomic, common, and traditional names in various parts of Africa still needs to be done to avoid any possible misrepresentation of the crops.

REASONS FOR LACK OF ATTENTION

On the reasons that these crops are not given the attention they possibly deserve, the respondents selected multiple reasons amongst the choices provided for some of the identified crops. The cumulative results are shown in Figure 16.

Ignorance of the nutritional potential of the crops was the overriding reason, followed by loss of biodiversity, negative image, few recipes, intensive labour involved in the production of the crops, presence of anti-nutritional factors, and low sensory palatability.

Additional reasons furnished by the respondents as contributing to the obscurity of these crops were low yields; lack of improved methods of cultivation; underdeveloped marketing channels; preference for foreign, modern or exportable crop species (e.g. maize, rice, wheat, soybean); shifts in cultural food habits; apathy towards farming; loss of indigenous knowledge systems on the foods as old farmers retire; and lack of funding for research and improvement.

The respondents scored each of the crops they identified for the following 10 attributes on a scale of 1 (least) to 9 (best):

1. adaptability to marginal climatic and soil conditions across the African agro-ecological landscape;
2. potential for alleviating common food and nutritional security issues besetting many parts of Africa (e.g. micronutrient deficiency);
3. prospects for value chain upgrading;
4. cross-cultural appeal;
5. climate-smart potential;
6. income potential;
7. environmental and cultural advantages;
8. potential for dual function as food and feed;
9. women empowerment potential; and
10. presence of anti-nutritional and toxic factors.

The first nine attributes were considered favourable for integration of these crops into the evolving food systems of African countries (negative sign), while the last one was deemed unfavourable (positive sign). Moreover, no crop was scored for the 8th attribute on the potential for dual function as food and feed by the respondents, leaving only nine attributes to consider. Thus, the total sum of scores for the nine attributes for each crop was given by:

$$S_j = \sum_{i=1}^{n} S_{ij} - S_{(n+1)j}$$

Where S_{ij} refers to the score for the ith attribute for the jth crop, and $i = 1, 2, 3, \ldots n$ (the number of the scoring attributes or criteria), while $j = 1, 2, 3, \ldots m$ (the number of crops). $S_{(n+1)}$ was the score for the presence of anti-nutritional factors for the jth crop. A frequency-weighted sum of scores (WS) for each of the crops was then calculated as follows:

$$WS = S_j r = r\left\{\sum_{i=1}^{n} S_{ij} - S_{(n+1)j}\right\}$$

Where r is the relative frequency of mention of the crop by the respondents given by:

$$r = \frac{\textit{Number of times the crop is mentioned}}{\textit{Cumulative total mention for all the crops}}$$

The crops were then ranked based on their frequency-weighted sum of scores. Table 3 shows the first 40 ranked crops using this method. On top of the list are an assortment of root crops, cereal grains, legume grains, and vegetables i.e. Bambara groundnut, yam, taro, sorghum, African yam bean, cowpea, pearl millet, pumpkin, pigeon pea and African nightshade. A more comprehensive table of all the crops is shown in Chapter 4.

Table 3. Ranking of crops based on stakeholder responses

#	CROP	FREQUENCY OF MENTION	TOTAL SCORES	WEIGHTED TOTAL SCORES
1	Bambara groundnut	12	52	2.71
2	Yam	8	56	1.95
3	Taro (*Colocasia spp.*)	8	52	1.81
4	Sorghum (*Sorghum bicolor*)	7	51	1.55
5	African yam bean	6	49	1.28
6	Cowpea	6	49	1.28
7	Pearl millet	5	57	1.24
8	Pumpkin	4	70	1.22
9	Pigeon pea	5	53	1.15
10	African nightshade	4	62	1.08
11	Cocoyam (*Xanthosoma spp.*)	5	49	1.07
12	Okra	4	60	1.04
13	Amaranth	4	58	1.01
14	African star apple	3	65	0.85
15	Millet	4	47	0.82
16	Cassava	4	46	0.8
17	Bush mango	3	61	0.8
18	Water yam	3	56	0.73
19	Finger millet	3	55	0.72
20	Moringa	3	52	0.68
21	Breadfruit	3	49	0.64
22	Pawpaw	2	71	0.62
23	Pumpkin (*Cucurbita pepo*)	2	69	0.6
24	Sierra Leone bologi (worowo)	2	69	0.6
25	Plantain banana	2	67	0.58
26	Sweet potato	3	44	0.57
27	Rosselle (hibiscus, zobo)	2	65	0.57
28	Black pepper	2	63	0.55
29	Kidney bean	3	40	0.52
30	Gooseberry (ebtuttu)	2	60	0.52
31	Tomato	2	60	0.52
32	Eggplant	2	58	0.5
33	Lima bean	2	58	0.5
34	Aerial yam	2	57	0.5
35	African walnut	2	57	0.5
36	Bitter leaf	2	57	0.5
37	African yam	2	56	0.49
38	Fonio (hungry rice)	2	51	0.44
39	Melon	2	51	0.44
40	Tondolo (*Aframomum alboviolaceum*)	2	50	0.43

Table 4 shows the countries of the respondents that named the first 40 crops. Sorghum and yam were specified by respondents from five different countries, indicating that these crops had the greatest regional appeal. These were followed by amaranth, Bambara bean, pearl millet, pumpkin, and taro, each of which was mentioned by respondents from five different countries.

Table 4. Countries of respondents specifying a crop as forgotten

#	COMMON NAME	SCIENTIFIC NAME	COUNTRY NAMES	NO. OF COUNTRIES
1	Sorghum	*Sorghum vulgare (S. bicolor)*	Mali, Kenya, Malawi, Gambia, South Africa, Uganda, Ethiopia	7
2	Yam	*Dioscorea spp.*	Rwanda, Mauritius, Ghana, Uganda, Kenya, Ethiopia, Malawi	7
3	Amaranth	*Amaranthus spp.*	Nigeria, Rwanda, Ghana, Uganda, Kenya	5
4	Bambara bean	*Vigna subterranea*	Nigeria, South Africa, Ghana, Mali, Uganda	5
5	Pearl millet	*Pennisetum glaucum*	Mali, Nigeria, Kenya, Gambia, South Africa	5
6	Pumpkin	*Cucurbita pepo*	Nigeria, Ghana, Cameroon, Uganda, Rwanda	5
7	Taro	*Colocasia esculenta*	Nigeria, Ghana, Rwanda, Mali, Ethiopia	5
8	Cassava	*Manihot esculenta*	Nigeria, Gambia, Rwanda, Malawi,	4
9	Cowpea	*Vigna unguiculata*	Uganda, South Africa, Nigeria, Benin	4
10	Moringa	*Morienga*	Nigeria, Ghana, Ethiopia, Democratic Republic of the Congo	4
11	Black nightshade	*Solanum aethiopicum*	Nigeria, Uganda, Rwanda	3
12	Sweet potato	*Ipomoea batatas*	Ethiopia, Mauritius, Nigeria	3
13	Water yam	*Dioscorea alata*	Cameroon, Nigeria, Uganda	3
14	Aerial yam	*Dioscorea bulbifera*	Nigeria, Uganda	2
15	African yam bean	*Sphenostylis stenocarpa*	Ghana, Nigeria	2
16	Avocado	*Persea americana*	Cameroon, Nigeria	2
17	Baobab	*Adansonia digitata*	Ghana, Benin	2
18	Breadfruit	*Artocarpus altilis*	Nigeria, Mauritius	2
19	Ceylon spinach	*Basella alba*	Uganda, Nigeria	2
20	Cocoyam	*Xanthosoma sagittifolium*	Nigeria, Ghana	2
21	Dandelion	*Taraxacum officinale*	Nigeria, Kenya	2
22	Finger millet	*Eluisine indica*	Nigeria, Ethiopia	2
23	Kidney bean	*Phaseolus vulgaris*	Uganda, Benin	2
24	Lima bean	*Phaseolus lunatus*	Nigeria, Uganda	2
25	Mango	*Irvingia gabonensis*	Cameroon, Nigeria	2
26	Okra	*A. Esculentus and A. Caillei*	Nigeria, South Africa	2
27	Pigeon pea	*Cajanus cajan*	Nigeria, Uganda	2
28	Plantain banana	*Musa x paradisiaca*	Kenya, Mauritius	2
29	Roselle (hibiscus, zobo)	*Hibiscus sabdariffa*	Cameroon, Nigeria	2

Table continues overleaf

#	COMMON NAME	SCIENTIFIC NAME	COUNTRY NAMES	NO. OF COUNTRIES
30	Soursop	*Annona muricata*	Ghana, Nigeria	2
31	Wild lettuce	*Lactuca virosa (Launaea taraxacifolia)*	Kenya, Nigeria	2
32	African black plum	*Vitex doniana*	Benin	1
33	African jointfir (wild spinach, afang leaf)	*Gnetum africanum*	Nigeria	1
34	African locus bean	*Parkia biglobosa*	Benin	1
35	African native potato	*Solenostemon rotundifolius*	Nigeria	1
36	African plum (safo)	*Dacryodes edulis*	Cameroon	1
37	African spider flower	*Gynandra gynandropsis*	Kenya	1
38	African star apple	*Chrysophyllum abidun*	Nigeria	1
39	African winged bean (kikalakasa)	*Psophocarpus scandens*	Democratic Republic of the Congo	1
40	Alligator pepper leaf	*Aframomum melegueta*	Nigeria	1

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Chapter 4

Compendium of forgotten foods in African countries

The table in this chapter contains the Dgroup survey respondents' answers to the questionnaire (Appendix 4) on forgotten foods. A rigorous authentication of the taxonomy and properties of a selection of forgotten foods can be found in the sister publication *Compendium of forgotten foods in Africa*.

Table 5. Countries of respondents specifying a crop as forgotten

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
AERIAL YAM air potato, cheeky yam, aduh (Igbo), esuru (Yoruba), tuwon biri (Hausa), up yam (Nigerian pidgin)	*Dioscorea bulbifera*	Humid tropics; central and eastern Elgon area (Kenya)	Can be boiled or roasted; eaten as special food at traditional functions.	Yes	The juice is thought to expel worms and germs, and treat sore throats, scorpion bite, leprosy and tumours. The bulbils have properties that are believed to help treat dermal parasites, fungal infections, piles, ulcers, syphilis and inflammation. The vine is used to treat snake bite.
AFRICAN (BUSH) MANGO ugiri or ogbono (Igbo), biri, goron, goronor (Hausa), ogwi (Benin), mbukpabuyo (Ibibio, Efik), oro, apon or aapon (Yoruba), bobo, manguier or manguier sauvage (French), apioro (Deltan), sweet bush mango, odika, iba-tree, chocolatier, dika nut, duiker nut, wild mango, irvingia and dika bread tree.	*Irvingia gabonensis*	Dense moist forest regions	Fruit pulp can be used as a drink and jam production. The kernel can be processed into flour by extraction, drying and grinding, and oil can be extracted for cooking, and soap and cosmetics production. The pounded seed is added to meat and various vegetable dishes as a sauce. Seeds are used as cattle cake in Ghana. The hardwood timber from the tree can be used in construction. Bark and reports reportedly contain tannin for dyestuff. The trees are also useful for erosion control and shade.	Yes	Used to relieve diarrhoea and dysentery and as a purgative, for gastrointestinal and liver conditions, for sterility, hernias and urethral discharge, and is considered to be a powerful aphrodisiac. The seed is capable of reducing fasting blood glucose levels, suitable for regulating the serum cholesterol levels, and has antidiabetic properties.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
AFRICAN BLACK PLUM	*Vitex doniana*	Dry areas	Food and medicinal uses.	Yes	Treatment for ulcer and stomach disorders.
AFRICAN BREADFRUIT	*Treculia africana*	Well drained loamy soil, rainforest zone. Does not tolerate frost.	The fruit ripens to a custard-like consistency that can be eaten raw. The fruit can also be processed into a gluten-free flour. The male breadfruit flower is highly effective at repelling mosquitoes and other insects. The sap excreted from the breadfruit can be used as waterproof caulking and as chewing gum. Fibres from the bark can be harvested without killing the crop and used to make mosquito nets, clothing, accessories, artwork and paper. Fallen fruits, as well as the leaves of the tree, can be used as nutritious animal feed.	Yes	High in carbohydrates and a good source of antioxidants, calcium, carotenoids, copper, dietary fibre, energy, iron, magnesium, niacin, omega 3, omega 6, phosphorus, potassium, protein, thiamine, vitamin A and vitamin C. Contains lutein. Half a cup of breadfruit provides 25% of the recommended daily intake (RDA) of fibre and 5 to 10% of the RDA for protein, magnesium and potassium.
AFRICAN CHERRY agbalumo	*Chrysophyllum albidium*	Rainforest	Used for fruit.	Yes	Has high antioxidant activities and phenolic compounds.
AFRICAN EGGPLANT	*Solanum macrocarpon*	Rainforest	Young leaves and new shoots, raw or cooked, are added to soups.	Yes	Used in manufacture of analgesic, ointments and treatment of dropsy.
AFRICAN EGGPLANT garden egg, tomato fruited eggplant, afufa or mkpuruofe (Igbo), bamomi or igbagba (Yoruba), gauta (Hausa), gboma (Liberia)	*Solanum aethiopicum*	Humid tropics and Guinea savannah	Used in cooking.	Yes	The fibre improves gastrointestinal and heart health. It contains natural antioxidants (manganese) necessary to fight cancer.
AFRICAN JOINTFIR afang leaf	*Gnetum africanum*	Rainforest	Used in soup.	Yes	Very rich in antioxidants.
AFRICAN LOCUST BEAN	*Parkia biglobosa*	Sub humid and arid zones	Food, medicine and cultural uses.	Yes	Hypertension

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
AFRICAN NATIVE POTATO Hausa potato, Sudan potato, Zulu round potato, nduku nwa afo africa (Igbo), odunkun (Yoruba), inkonfe (kwazulu, South Africa)	*Solenostemon rotundifolius*	Humid lowland and Guinea savannah	Used in cooking.	Yes	It is used to treat urinary tract disorders (cystitis), prostrate problems and lung disease.
AFRICAN PLANTAIN	*Musa paradisiaca*	Murang'a and Machakos areas (Kenya)	Used as a snack or meal accompaniment.	Yes	Used to balance calcium levels.
AFRICAN PLUM safou	*Dacryodes edulis*	Western Africa including coastal areas	Used in cooking.	Yes	Leaves are used to treat dysentery, anaemia and tonsillitis.
AFRICAN RICE	*Oryza glaberrima*	Niger delta	Used in cooking.	No	
AFRICAN SPIDER FLOWER Wild lettuce	*Gynadra gynadrosis*	Kiambu, Nyandarwa and Nairobi	Used in cooking.	Yes	Contains vital minerals, vitamins and dietary fibre.
AFRICAN STAR APPLE agbalumo or udara (Yoruba)	*Chrysophyllum africanum*	Southern Nigeria	Used for fruit.	No	
AFRICAN WALNUT	*Plukenetia conophora*	Rainforest zone of south and southeast Nigeria	Used as a soup thickener.	Yes	Boiled seeds are eaten to prevent or manage dementia.
AFRICAN YAM	*Dioscorea spp. such as D. cayenensis and D. rotundus*	Murang'a, Meru and Nyeri (Kenya)	Used in cooking.	Yes	Used to treat arthritis and bone health issues.
AFRICAN WALNUT	*Lovoa trichilioides*	Rainforest zone of south and southeast Nigeria	Used as a soup thickener.	Yes	Boiled seeds are eaten to prevent or manage dementia.
AFRICAN YAM BEAN	*Sphenostylis stenocarpa*	Rainforest; Southeast and Southern Nigeria; Central Kenya (Murang'a, Nyeri, Embu and Meru)	Used in cooking.	Yes	Rich in nutrients, antioxidants and slowly-digested starches. Commonly used to manage menopausal symptoms and is believed to prolong the fertility of women.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
ALLIGATOR PEPPER LEAF	*Aframomum melegueta*	Rainforest	Used in soup.	Yes	Used in the treatment of measles and gastrointestinal issues.
ALMOND	*Prunus dulcis*		Used in cooking and as a snack.	Yes	Rich in nutrients.
AMARANTH	*Amaranthus Viridis, A. cruetus, A. graecisans*	Lake Victoria crescent and central parts of Kenya	Leaves and grains are used for food.	Yes	Used to help process iron, and reduce the risk of heart disease, diabetes, and cancer. Used to aid digestion, blood glucose control, lower blood pressure, and improve wound healing.
AVOCADO	*Persea americana mill*	Southeast Nigeria; most parts of Kenya	Used as food, including extracting a cooking oil.	Yes	Main bioactive compounds identified in avocado are polyphenols, carotenoids, tocopherols, and phytosterols.
BALSAM APPLE African pumpkin	*Momordica balsamina*		Used in cooking.	Yes	Used to treat malaria.
BAMBARA BEAN earth pea, hog peanut, Bambara nut, okpa (Igbo), epa-roro (Yoruba), kwaru or gurjiya (Hausa)	*Vigna subterranea*	Across the semi-arid sub-Saharan Africa region; humid tropics and savannah regions	Used in cooking. Can be milled to make flour. Also used as a feed for animals.	Yes	The nuts contain calcium and phosphorus for bone health. It's used in cancer prevention, malnutrition and pregnancy.
BAOBAB	*Adansonia digitata L.*	Savannah and dry zones	Used as food. Dried powder is used for cereal composites, medicine, and cultural uses; The tree is emblematic of Africa and used in tourism.	Yes	Used as an antioxidant, and for malaria, tiredness, and as an immunity booster.
BARBADOS CHERRY	*Malpighia glabra*	Low to medium altitude areas			
BITTER BERRIES katunkuma	*Prunus virginiana*	Most parts of Kenya excluding Karamoja region	Used in cooking.	Yes	Used in preventing conditions like diabetes and hypertension.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
BITTER KOLA orogbo (Yoruba)	*Garcinia kola*	Southwest Nigeria	Eaten raw.	Yes	Used as a treatment of gastric and liver disorders. Thought to fight infections and inflammatory conditions such as arthritis.
BITTER LEAF ewuro (Yoruba)	*Vernonia Amygdalina*	Rainforest and derived savannah areas; southern Nigeria	Used in soups and as a herbal drink.	Yes	Used to treat high blood pressure.
BLACK BEAN black turtle bean	*Phaseolus vulgaris*	Guinea savannah	Used in cooking.	Yes	High in antioxidants that prevents heart diseases and cancer.
BLACK NIGHTSHADE osun (Yoruba)	*Solanum aethiopicum (Solanum nigrum)*	Rainforest	Used for soup.	Yes	Used to treat diabetes and alleviate inflammation. Antioxidant-rich.
BLACK PEPPER uziza	*Piper nigrum*	Southeast Nigeria	Used for soup.	Yes	High in fibre. Used to help prevent constipation.
BREADFRUIT ukwa (Igbo)	*Artocarpus altilis*	Rainforest	Used for food.	Yes	Used to lower cholesterol and promote youthful skin and healthy hair.
BREADNUT maya nut	*Brosimum Alicastrum*	Humid lowland tropical forests	Used for food.	Yes	Used for pain relief, reducing allergic symptoms and lowering cholesterol. High in potassium and vitamin C.
CAPE GOOSEBERRY golden gooseberry, Peruvian ground berry	*Physalis peruviana*	Everywhere	Fruit	No	
CASSAVA	*Manihot esculenta*	Upland areas	A staple food.	Yes	Leaves are used for a broad range of treatments such as for tiredness, dehydration, sepsis and to induce labour.
CEYLON SPINACH amunututu (Yoruba)	*Basella alba*	Rainforest and savannah	Used for food and medicine.	Yes	Used to treat eye problems, and is thought to improve testosterone levels in males. Leaves are crushed and applied as a cure on wounds and burns.
CHESTNUT	*Castanea sativa*	Well-drained, upland sandy soil	Used as a food including as a snack.	Yes	High in antioxidants and minerals such as magnesium and potassium. Thought to help heart health and inflammation.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
CHIA	*Salvia hispanica*	Upland areas	Used for food.	Yes	Regulates blood pressure and blood sugar levels.
CORIANDER	*Coriandrum sativuum*	Rainforest	Used as a herb in food preparation.	Yes	Rich in vitamin K.
COWPEA Black eyed pea	*Vigna unguiculata*	Pan-African	Used in cooking.	Yes	High in fibre, vitamins and minerals. Used to help reduce blood sugar, improve cholesterol levels and help maintain a healthy gut, among other uses.
CUBEB PEPPER tailed pepper	*Piper cubeba*	Forest zone	Dietary supplement.	Yes	Used as an aphrodisiac.
CUMIN	*Cuminum cyminum*	Savannah	Used as a spice.	Yes	Thought to improve brain functioning.
EBOLO redflower ragleaf	*Crassocephalum crepidiodes*	Rainforest	Used as a vegetable in soups and stews.	Yes	Used to treat indigestion, stomachache, epilepsy, sleeping sickness, and swollen lips.
EGUSI white-seed melon	*Cucumeropsis mannii*	Forest and semi transitional zones	Dried powder for soup and stew.	No	
ELEPHANT'S EAR arrowleaf, American taro	*Xanthosoma sagittifolium*	Rainforest	Used for food.	No	
ETHIOPIAN BANANA Abyssinian banana, false banana	*Ensete ventricosum*	Ethiopian highlands	The stems and roots are fermented and used to make porridge and bread.	Yes	Used as a traditional cure for many illnesses.
FINGER MILLET	*Eleusine coracana (Eleucine indica)*	Northern part of Nigeria; low to medium altitude of Ethiopia	Used for food and beer brewing.	Yes	High in calcium.
FLUTED PUMPKIN ugu	*Telfairia occidentalis*	Rainforest, sub-arid regions	Shoots and leaves are used in soup. Seeds are eaten whole, ground into powder for soup, or made into a fermented porridge.	Yes	The leaf extract is thought to lower cholesterol and boost male fertility. The seeds are rich in vitamin A.

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Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
FONIO white fonio, black fonio, hungry rice, acha, fonio millet	*Digitaria exilis (white fonio) Digitaria iburua (black fonio)*	Savannah areas of west Africa	Used in ceremonial dishes and as a less-preferred food between main harvests. Can be eaten as a porridge or milled into a flour.	Yes	High in minerals.
GARDEN EGG igbagun (Yoruba)	*Solanum melongena*	Southeast and southwest Nigeria	Used as a food.	Yes	Thought to reduce digestive problems and improve vision.
GARDEN PEA	*Pisum sativum*	Temperate areas	Used as a food.	Yes	Used as an aphrodisiac and for mental health.
GINGER	*Zingiber officinale*	Savannah	Used as a spice and in tea.	Yes	Used in a range of treatments.
GOLDEN APPLE Great Hog Plum, Otaheite Apple, Yellow Plum, Jew Plum, Ambarella	*Spondias cytherea*	Tropical zones	Eaten raw as a fruit.	Yes	High in vitamin C.
GOOSEBERRY Entuntunu	*Ribes uva-crispa*	Lake Albert crescent	Eaten raw as a fruit.	Yes	Rich in antioxidants.
GROUNDNUT	*Arachis hypogaea*	Pan-African	Used in main meals and as a snack.	No	
GUAVA	*Psidium guajava*	Central, eastern and western Uganda	Eaten raw as a fruit. Wood from the tree is used in house construction.	Yes	Rich in vitamin C. A drink derived from boiled leaves is used to treat a range of conditions including diarrhoea, diabetes and cough.
IYANA IPAJA (Yoruba)	*Jatropha tanjorensis*	Rainforest and savannah	Used for soup and as a leaf extract.	Yes	Leaf extract is used for replenishing blood.
JACK BEAN	*Canavalia ensiformis*	Derived savannah	Used for food.	No	
JACK FRUIT ffene	*Artocorpus heterophillus*	Lake Victoria crescent	Eaten raw as a fruit.	Yes	Rich in potassium which can help lower blood pressure, and stave off heart disease, stroke, and bone loss.
JUTE MALLOW	*Corchorus olitorius*		Used for soups and stews.	Yes	
KERSTING'S GROUNDNUT	*Macrotyloma geocarpum*	Derived savannah	Used for food.	No	
KIDNEY BEAN	*Phaseollus vulgaris*		Used for food.	Yes	Kidney beans are rich in proteins that prevent malnutrition.

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KIWIFRUIT	*Actinidia deliciosa*		Eaten raw as a fruit.	No	
GIANT PASSION FRUIT grenadine	*Passiflora quadrangularis*	Eastern-Elgon area (Kenya)	Eaten raw as a fruit.	No	
LIMA BEAN	*Phaseolus lunatus*	Central Region (Ghana), derived savannah	Used in sauce/stew.	No	
LOCUST BEAN iru (Yoruba)	*Parkia biglabosa*	North central zone of Nigeria	Used mainly for a condiment and natural sweetener in local stews and soups.	No	
MANGO	*Mangifera indica*	Semi transitional zone	Eaten raw or dried as a fruit, and as a juice.	No	
MARULA	*Sclerocarya birrea*	Savannah and dry zones	Used as a juice drink and oil extracted for cosmetics including hair oil.	No	
MELON squash, gourd, egusi (Igbo and Yoruba), agushi (Hausa), agushie (Ghana), pasteque (French)	*Citrullus lanatus*	Humid tropics	Used in melon soup, fermented melon seeds and cake.	Yes	It has anti-inflammatory properties that help treat infections and injury, fights cancer. Also used for dermatological purposes and contains anti-arthritic property
MORINGA	*Moringa oleifera (Moringa stenopetala)*	Southwest and southeastern Nigeria; Guinea savannah; low to medium altitude areas; rainforest	Used as a food and dietary supplement.	Yes	The seeds and leaves are used to treat a large variety of health issues.
MUNG BEAN	*Vigna radiata*	North central and southern Nigeria; derived savannah	Used as food and medicine.	Yes	It is used as a blood booster and energizer.
MUSHROOM	*Agaricus bisporus*	Rainforest	Used as food.	No	
NJANGSA	*Ricinodendron heudelotii*	Humid areas	Used as food and medicine.	Yes	Anti-cancer properties

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
OKRA okuru (Igbo), obe lla (Yoruba)	*Abelmoschus esculentus*	Humid tropics and Guinea savannah; all parts of Nigeria; central, eastern and northern Uganda	Used in soups and sauces.	Yes	Contains glutathione vitamin K and vitamin C. Consumed for reproductive organ function in women, correcting hormonal imbalances, and is thought to treat diabetes.
PAWPAW amapapari, ibepe	*Carica papaya*	Rainforest and derived savannah	Eaten raw as a fruit or juice. A leaf extract is used as medicine.	Yes	Used to reduce the risk of heart disease, diabetes and cancer, aid in digestion, and improve blood glucose control in people with diabetes. Leaf extract is used to treat high blood pressure.
PEARL MILLET	*Pennisetum glaucum*	Northern Nigeria; Segou, Sikasso, Bougouni, Koulikoro, Mopti (Mali); eastern Kenya	Used in cooking, such as a breakfast porridge and as a drink.	No	
PIGEON PEA	*Cajanus cajan*	Tropics, Guinea savannah, derived savannah.	Used for food, cover crop, and processed into feed for animals.	Yes	Leaves and seeds are thought to cure a wide range of illnesses such as inflammation, male incontinence, respiratory infection, malaria, measles, smallpox and chicken pox.
PINEAPPLE	*Ananas comosus*	Rainforest and derive savannah	Eaten raw as a fruit or juice.	Yes	Used to treat stomach and skin problems.
PLANTAIN BANANA	*Musa × paradisiaca*	Machakos, Murang'a, and Meru in Kenya	Used in cooking e.g. roasted and fried.	Yes	Used to treat digestive and bone issues.
PUMPKIN mira nkwongere, omwongo, squash	*Cucurbita Pepo*	Forest, rainforest, savannah, derive savannah and dry zones	The pulp is eaten as a vegetable or in soup. The young leaves and shoots, and flowers, are used as a potherb.	Yes	The pumpkin edible plant parts are high in antioxidants. The seeds are high in zinc.
PURSLANE luni	*Portulaca oleracea*	Upland and lowland areas	Used in cooking.	Yes	Used to treat malaria.
RED RICE	*Oryza longistaminata*	Guinea savannah	Used in cooking.	Yes	Thought to improves red blood cell count.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
RED SPINACH red fox, feather cockscomb, plumed cockscomb, feathery amaranth, woolflower	*Celosia Argentia*	Southwest	Used in soup.	Yes	High in vitamins and minerals.
ROSELLE hibiscus	*Hibiscus sabdariffa*	Segou, Koulikoro, Sikasso, Bougouni, Mopti (Mali); Zone I (Cameroon)	Used as a cold drink or tea.	Yes	Used to treat a wide variety of illnesses including fever, high blood pressure, colds, toothaches, urinary tract infections and hangovers.
SCENT LEAF efinrin (Yoruba)	*Ocimum gratissimum*	Southern Nigeria	Used in soup and as a medicine.	Yes	Used for stomach aches, dysentery, diarrhoea, vomiting and to lower blood sugar levels.
SILVER SPINACH woolflower, cockscomb, ajefowo	*Celosia trygina*	Southwest Nigeria; rainforest	Used in cooking.	Yes	The plant is included in medicinal preparations used to treat women's disorders such as excessive menstruation.
SORGHUM	*Sorghum bicolor (Sorghum vulgare)*	Nigeria; eastern regions of Kenya; low to high altitudes of Ethiopia	A staple food, used to make porridge, a breakfast drink, ugali, beer and more.	Yes	Used to improve the digestive system and boost immunity.
SOURSOP ebo (Yoruba), pomme cannelle	*Annona muricata*	Southwest zone of Nigeria	Eaten raw mostly.	Yes	Used to treat diverse ailments such as fever, pain, respiratory and skin illnesses, internal and external parasites, bacterial infections, hypertension, inflammation, diabetes and cancer.
SPIDER PLANT	*Gynandra gynadropsis*	Kiambu, Murang'a and Baringo in Kenya	Used in cooking.	Yes	Used as a liver cleanser.
SUGAR CANE	*Vernonia amygdalina*	Rainforest and derive savannah	Used to make juice or eaten raw.	Yes	Used to treat kidney problems.
SWEET BERRY miracle berry	*Synsepalum dulcificum*	Rainforest zone	Used as sweetener, snack, and as a raw fruit.	Yes	The fruit is used to treat diabetes and correct chemotherapy-related taste disturbances. Also used as a low-calorie, sugar-free sweetener.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
SWEET POTATO	*Ipomoea batatas*	Rainforest; Jos in northern Nigeria; low to medium altitude in Ethiopia	Used in cooking.	Yes	High in vitamin A.
SWEETSOP	*Annona squamosa*	Forest and semi-deciduous areas	Eaten raw as a fruit.	No	
TAMARILLO	*Solanum betaceum*	Central, western and eastern Uganda	Eaten raw as a fruit	Yes	Rich in vitamin C.
TAMARIND	*Tamarindus indica*	Savannah and dry zones	Dried into a powder for cooking.	No	
TARO cocoyam, yantia, arrowroot, ede ofe (Igbo), mass (Hausa), nduma (Kenya), macabo (Cameroon), madumbe or amadumbe (South Africa)	*Colocasia esculenta*	Tropical and sub-tropical regions; derived savannah	Can be eaten boiled, roasted or pounded into a soup thickener.	Yes	Taro roots and leaves are high in antioxidants, vitamins C and A, calcium and high level of potassium. Used to treat high blood pressure and cardiovascular disease.
TEFF	*Eragrostis teff*		A staple crop in Ethiopia and Eritrea, used to make injera bread.	No	
TIGER NUT	*Cyperus esculentus*		Used as a food including ground into a powdered food supplement.	Yes	Used as an aphrodisiac.
TOMATO	*Solanum lycopersicum*	Pan-African	Eaten raw and in cooking, such as salads, soups and stews.	No	
TRIFOLIATE YAM bitter yam, yellow yam, white yam	*Dioscorea dumetorum*	Central, rainforest, Lake Victoria crescent; low to high altitude areas of Ethiopia	Used in cooking.	No	
TURKEY BERRY intagarasoryo	*Solanum torvum*		Used in soups and stews.	Yes	
WALNUT akhrot	*Juglans regia*	Southwest Nigeria	Boiled and eaten as a snack, or combined with other foods as a condiment.	Yes	High in antioxidants and omega-3 fats.

Common name	Scientific name	Agroecological zones	Traditional uses	Medicinal value	Type of medicinal value
WATER BITTER LEAF ewuro odo	*Struchium sparganophora*	Southwest Nigeria; rainforest	Used as a leafy vegetable.	Yes	
WATERLEAF Surinum purslane, Ceylon spinach	*Talinum triangular*	Sub-humid area (Guinean zone)	Food and medicinal uses	Yes	Used as an antibiotic.
WATER YAM purple yam, white yam, winged yam, greater yam, memories ji (Igbo), ojojo (Yoruba), ruwa yam (Hausa)	*Dioscorea alata*	Middle belt savannah and humid tropics	Used in cooking, particularly for food security because they can be stored for a long time.	Yes	Contains antioxidants and vitamin C and has a low glycaemic index.
WILD CARDAMOM tondolo, odjom (Cameroon)	*Afromomum angustisma (Aframomum alboviolaceum)*	Savannah	Used as a flavouring additive.	Yes	Used to treat stomach ache.
WILD LETTUCE dandelion greens	*Taraxacum officinale*		Used as a food and to make syrup, medicine, wine and dye.	Yes	Dandelion greens are high in vitamin A, iron, and calcium.
WINGED BEAN kikalakasa	*Psophocarpus tetragonolobus*	Savannah	Used as food, including as a leafy vegetable and as a powder.	Yes	
WOROWO Sierra Leone bologi, ogumo (Yoruba)	*Senecio biafrae*	Southwest Nigeria; rainforest	Used as a leafy vegetable.	Yes	Used to treat microbial gastroenteritis.
YANRIN African lettuce, wild lettuce	*Launaea taracifolia*	Southwest Nigeria; rainforest	Leaves are eaten fresh as a salad or cooked in soups and sauces.	Yes	
YELLOW PEPPER	*Capsicum annuum*	Tropical zones but adapted to cultivation in temperate regions.	Used as a spice for cooking.		

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Appendices

APPENDIX 1

Questionnaire on meanings and usage of terms found in the literature to describe foods

Name: _____

Affiliation: _____

Gender: _____

Age: _____

Country: _____

Profession: _____

Instructions: Please provide answers to each of the following questions based on your personal understanding.

1. What is the meaning you attribute to each of the following terms in describing foods that might have played an important role in African diets but, for one reason or another, are currently not given proper attention?

a) traditional foods
b) forgotten foods
c) minor foods
d) neglected foods
e) underutilized foods
f) orphan foods
g) cheat-hunger foods
h) poor people's foods
i) underdeveloped foods

2. Which of the above terms have you encountered most frequently in the literature describing such foods?

3. Which of the above terms would you prefer in describing such foods?

4. State the reason for choosing the term in No. 3 above

_____

5. Is there a more appropriate term or word, which is not included above, that you would prefer in describing such foods? (Yes/No)

6. If so, please indicate the term

_____

7. Why do you prefer such a term?

_____

APPENDIX 2

Targeted and respondent countries

REGION	SELECTED COUNTRIES	RESPONDENT COUNTRIES	FREQUENCY OF RESPONSES
EASTERN	Ethiopia	Ethiopia	3
	Kenya	Kenya	19
	Rwanda	Rwanda	5
	Uganda	Uganda	11
		United Republic of Tanzania	2
		Mauritius	1
		Sub-Total	**41**
WESTERN	Burkina Faso	Burkina Faso	2
	Ghana	Ghana	15
	Nigeria	Nigeria	59
	Senegal	Senegal	1
	Côte d'Ivoire	Côte d'Ivoire	3
	Benin	Benin	2
		Mali	5
		Gambia	1
		Sub-Total	**88**
CENTRAL	Cameroon	Cameroon	5
	Democratic Republic of the Congo	Democratic Republic of the Congo	3
		Congo	2
		Sub-Total	**10**
SOUTHERN	Malawi	Malawi	2
	South Africa	South Africa	8
	Zambia	Zambia	3
	Zimbabwe	Zimbabwe	5
	Malawi	Malawi	2
		Mozambique	2
		Sub-Total	**22**
NORTHERN	Algeria		
	Morocco		
	South Sudan		
	Tunisia		
		Egypt	1
		Sudan	2
		Sub-Total	**3**
		GRAND TOTAL	**164**

APPENDIX 3

Respondents' reasons for use of specific descriptors

NEGLECTED FOODS

- Because they have been neglected by mainstream research agenda.
- The reason is that, in some local areas, these foods are utilized by households, or communities but researchers do not show interest in developing them further.
- The reason is that the farmers and local consumers have developed them to improve food security, but they are neglected by researchers and policy, which made them not contribute to the food system.
- Foods that do not enjoy the attention of the population no importance is attached to it even by researchers.
- No research or attention on them.
- Because they are not given attention in terms of research, production and availability on the market for consumers.
- They have not received needed attention in terms of genetic improvement and conservation despite the huge role they play in meeting the economic and nutritional needs of the poor across sub-Saharan Africa.
- People have abandoned their traditional foods to new foods or advertised foods.
- They have not been given priority by most farmers.
- They are not promoted.
- Due to lack of improvement to meet their desired characters.
- Other questions can be raised for all the other terms, which leaves "neglected crops" as the terminology with the least baggage in my view.
- Because they are unutilized due to neglect.
- Because they can be available at low cost of production, they can be adapted to African climatic conditions and have importance. In short, there is no reason to avoid their utilization.
- Because very little attention is paid to them.
- To neglect suggests that the food is pushed out of relevance even though it has so much value.

UNDERUTILIZED FOODS

- Poorly used as food for man and animals.
- Such a framing provokes the quest to investigate and to innovatively explore opportunities with these categories of foods.
- It moves away from any implications of the product being of less quality or value than any other food (perceptions are everything with food).
- I think that they are foods that we have not yet exploited their potential.
- We are yet to fund research enough to see the values of most crops that could address the challenges of food insecurity.
- More commonly used term.
- Because not much has been done on research and development.
- Ingredients and means of preparation of the foods are available but there is decreasing patronage.
- A crop can be orphaned and still be well utilized, so, either orphan, neglected or forgotten, the food is underutilized.
- The term indicates that they are foods yet to be fully explored and incorporated into the food systems in terms of nutrition and research.
- Because there are possibilities to develop more of such foods.
- Available but not being utilized.
- Common in literature.
- Most of such foods are available but people don't use them basically because of lack of education on their importance.

UNDERUTILIZED FOODS (CONTINUED)	• This is because we are talking about foods that research has not done well in value addition or the utilization aspect of the food has not been properly documented. • It is more descriptive of the extent of use and less attached to the economic or cultural orientation of the user. • Because less attention leads to untapped or underutilized potential • I think we need to move on from traditional foods. Many young consumers have poor associations with this term. I would prefer to see foods as 'waiting to be developed' rather than things we should be eating for cultural reasons. • It is a broad way/word to describe and support promotion of such food across the globe. • Such foods might not have been completely neglected or forgotten but the potential value (nutrition and health) and benefits of such foods might not have been explored perhaps in terms of the percentage of people consuming them where they are found or other valuable/ beneficial products that could be derived from such foods through processing. • Simplicity. • The simple reason is because their potentials have not been fully harnessed.
TRADITIONAL FOODS	• Because these have been used in the past but due to urbanization those in towns cannot access them • Because they are common types of foods made locally by various communities within the same country or across Africa • Traditional foods are foods and dishes that are passed on through generations or which have been consumed for many generations. Traditional foods and dishes are traditional in nature and may have a historic precedent in national dishes, regional cuisine or local cuisine. • Because no one forgets food. • Because these are foods that people have lived with for lifetime, their consumption is associated with culture, tradition and norms of a given community. • Locally available. • It triggers interest, other terms are segregatory. • A crop can be orphaned and still be well utilized, so, either orphaned, neglected or forgotten, the food is underutilized. • The term indicates that they are foods yet to be fully explored and incorporated into the food systems in terms of nutrition and research. • Because there are possibilities to develop more of such foods. • Available but not being utilized.
FORGOTTEN FOODS	• Most suitable term. • Promising but forgotten by sciences. • Because I encountered the term several times. • Better clarification of the problem. • Because they have been ignored. • It's already a common term in society and will easily be maintained rather than trying to change it. • Whatsoever name they may have, they are forgotten and not utilized well, no care, no conservation, no preservation. The simple word is that they are forgotten! • Whether neglected or underutilized, it is possibly because the value of these foods or their cultivation and management has been relegated along with the eroding culture of the African. There is practically less knowledge, less desire for these foods, and less markets and a lot of stereotypes around such foods. • They are of good nutritional value but abandoned due to the introduction of new food types. • They are essential food components but not valued.

	• This is because many people now prefer food that aligns with improved status in the society. • Forgotten foods are no more grown or available in the market.
UNDER-DEVELOPED FOODS	• Because of the lack of processing, the status of these crops is not changed; otherwise, they can be diversified. • The term describes the lack of development attention given to this category of foods. • Science has neglected such foods. • The issue is about re-alignment of the value chains for these foods. So, I feel it's more about the foods' transformation in the various social, economic, institutional and political will facets. • Theses food sources are known because they are not so often consumed in one form, hence not fully utilized for health of an individual.
MINOR FOODS	• The reason is that there is potential for improvement in handling, processing and utilization but this is not done.
FUTURE CROPS	• Because they are underutilized and have to be promoted in line with diversification of production for climate resilience.
CHEAT- HUNGER FOOD	• Because it is the term that is frequently used by many people.
POOR - PEOPLE'S FOODS	• Such foods are usually linked with the less privileged or uncivilized.

APPENDIX 4

Questionnaire on context-specific information on forgotten foods

1. List at least 10 crop species, which – in your view – used to be important or could be important in African diets, but are not given the proper attention they deserve.

2. Give the scientific and common names of such crop species

3. If possible, please give the agroecological zones where each crop is most frequently found

4. What are the reasons that these crops are not given the attention they deserve?

5. What are the current traditional uses of such crops?

6. Does the crop have any perceived medicinal value?

7. If so, which one…

8. On a scale of 1 (least) – 9 (best), please score each of the crops for the following:
   a. adaptability to marginal climatic and soil conditions across the African agroecological landscape
   b. potential for alleviating common food and nutritional security issues besetting many parts of Africa (e.g. micronutrient deficiency)
   c. prospects for value chain upgrading
   d. cross-cultural appeal
   e. climate-smart potential
   f. income potential
   g. environmental and cultural advantages
   h. potential for dual function as food and feed
   i. presence of anti-nutritional and toxic factors
   j. women empowerment potential

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