



Surveying the Use of Neglected and Underutilized Food-plant Species in Africa

Case of Hoima, Uganda

Alliance



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Cover Photo: A display of local foods and traditional cooking items during a seed fair in Hoima, Uganda.

Credit: Tobias Recha/Bioversity International.

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Contents

Executive Summary	5
Acknowledgement	6
1. Introduction	7
1.1 Brief description of Hoima	7
2. Methodology	10
3. Listing of different crop and crop varieties, including NUS	11
4. Reasons for production and use	12
5. Five-cell analysis of the production and diversity status of all crops cultivated in Hoima	12
6. Seasonal calendar for crops on production and consumption patterns	14
7. Food analysis of all crops	15
8. Diet diversity for NUS crops in Hoima	16
9. Crop cultivation, climate change, and other stress factors	17
10. NUS priority setting	17
11. NUS photos	18
12. Appendices	22
Appendix I: Longlisting of NUS in Hoima (in parenthesis the number of varieties mentioned)	22
Appendix II: Attributes of longlisted NUS.....	24
Appendix III: Five-cell analysis tables for production diversity.....	27
Appendix IV: Diet diversity and consumption analysis.....	30
Appendix V: Seasonal calendar of production and use.....	33
Appendix VI: Crops cultivation, climate change, and stress factors	37
Appendix VII: NUS priority setting.....	40

Tables

Table 1.	Different NUS crop and number of varieties identified in Hoima.....	11
Table 2.	Summary of NUS diversity analysis in Hoima Uganda	13
Table 3.	The NUS food categories based on farmers perception.	15
Table 4.	The different consumption patterns of NUS in Hoima Uganda	16

Figures

Figure 1.	Map of the Kyabigambire Sub-county project site in Hoima, Uganda.....	7
Figure 2.	Annual maximum temperatures Bulindi 2006–2020	8
Figure 3.	Annual minimum temperatures Bulindi 2006–2020.....	8
Figure 4.	Annual precipitations ratures Bulindi 2006–2020.	9
Figure 5.	Annual aridity index Bulindi 2006–2020.	9

Executive Summary

For centuries, neglected and under-utilized species (NUS) have been grown for their food, fiber, fodder, oil, and medicinal properties. Sometimes known as forgotten foods, they include cultivated, semi-domesticated and wild species and traditional varieties. Their roles have been increasingly undervalued, and their importance increasingly neglected by researchers, policymakers, and markets.

This report presents a case study that focuses on the uses of NUS in Hoima, Western Kenya, grown in two contrasting agro-ecologies (semi-arid, and sub-humid), both characterized by rising maximum temperatures and precipitation, decreasing minimum temperatures, and an increasing aridity index.

In recent years, the Alliance of Bioversity International and CIAT, and partners, have worked on improving smallholders' livelihoods through participatory action research on agrobiodiversity (e.g., crop improvement, establishment of community seedbanks, value chain development, empowerment of women and youth). This study builds on this work using action learning (Vernooy, 2021)¹ via i) Longlisting NUS and their reasons for use; ii) Assessing NUS diversity status; iii) Drafting seasonal NUS calendars; iv) NUS grouping; v) Diversity analysis; vi) Identifying NUS custodian farmers; vii) Identifying well-known local food recipes and status; viii) Assessing climate-change factors influencing NUS. The final step involved identifying available priority NUS with the greatest potential to contribute to: i) healthier, more diverse diets; ii) income generation; iii) more resilient production systems; iv) a more dynamic local food culture; and v) community empowerment.


The study characterized individual species in terms of their uses (cultural, medicinal, dietary, fodder, emergencies), seasonal calendars, and gender perspectives within the following plant groups: groundnuts; cowpeas and pigeon peas; yams; fruits; finger millet; sorghum; vegetables; medicinal plants; herbs and spices; wild fruits and roots. The study's **diversity analysis** findings indicate that for several crops, farmers are substituting local/traditional varieties with improved varieties, for several reasons including low yield, poor resistance to pests and diseases, limited seed availability and/or access, and poor market value or potential value of the local/traditional varieties. The **seasonal calendar** analysis shows the risks of seasonal shortages are minimized by the very large diversity of crops cultivated, with harvesting periods of "seeds" (grains), fruits, stem, roots, and tubers, and leaves and shoots distributed over all almost all the months, with only February appearing as a "lean" month in terms of harvest.

Certain crops are harvested throughout the year such as banana, yam, and some herbs and spices. Some are based on particular seasons such as bean, but the consumption months are sometimes short, when harvests are poor. Most production is for home consumption. Different parts are used for food, such as fruits, leaves, stems, tubers. The crops grown in Hoima have a good distribution across the different main types. In principle, this could contribute to a balanced, nutritious and healthy diet. Smallholder farmers in Hoima consume NUS for different and varied reasons, the most common reasons being for their medicinal and nutritional benefits. Taste and availability are also important factors that determine the frequency of use. Some crops are very climate-resilient including the banana variety, Bogoya; the groundnut variety Ebinyobwa; the bean variety Tintina basezi, and almost all yam varieties (therefore making it a famine survival crop). Wild fruits also show high stress resilience. Farmers collectively prioritized varieties for scaling research and development activities, including the brown variety of cowpea; Kanyunyuzi, and Kibobo finger millet varieties, and the white variety of sorghum. The study has highlighted those NUS varieties grown by "few households and ... in small areas of the farm," which could mean that they are under pressure of becoming lost varieties, and so offer a red-flag for their conservation.

¹ Vernooy R. 2021. Action Research on Neglected and Underutilized species. A methodological guide. Bioversity International, Rome, Italy. Available at: <https://hdl.handle.net/10568/116208>



Hoima farmers and some of the neglected and under-utilized species cultivated.

 Tobias Recha

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1. Introduction

For centuries or even millennia, neglected and under-utilized species (NUS) have been grown for their food, fiber, fodder, oil, and medicinal properties. Sometimes known as forgotten foods, they include cultivated, semi-domesticated and wild species and traditional varieties. Their roles have been increasingly undervalued, and their importance increasingly neglected by researchers, policymakers, and markets. NUS play at least nine roles as follows, they:

- i. Act as key elements of multifunctional, diversified and sustainable agri-food systems.
- ii. Are nutrient-rich and contribute to food and nutrition security, income generation, good health, and wellbeing.
- iii. Are often embedded in cultural and ethnic identities and traditions, which they sustain and by which they are sustained.
- iv. Can diversify staple foods' production and thus the intake of more diversified foods.
- v. Can generate employment and new income streams.
- vi. Are well adapted to marginal environments and perform well in unfavorable agro-ecological and low input conditions.
- vii. Can play a key role in the diversification and resilience of farming systems in the face of climate change
- viii. Contain valuable genetic material that can be used for crop improvement and plant breeding.
- ix. Can play a key role in empowering rural communities, notably of youth and women, through adding social, cultural, environmental, and economic value to their associated forgotten foods.

This report presents a case study that focuses on NUS in Hoima, in the west of Uganda.

1.1 Brief description of Hoima

Hoima is located in Western Uganda along Latitude 1.4273554°S and Longitude 31.3484448°E with an altitude range of 900 to 1500 m and a land area of 3,664 km² (Figure 1). The area has a sub-humid climate and an average annual rainfall of 1400 mm, with bimodal peaks between March and May, and between August and November. Hoima experiences maximum and minimum temperatures of about 35 and 14°C respectively. Recent climate challenges have included shifting and shortening of seasons, longer dry seasons, and erratic rainfall patterns. The soils are mainly dark-red clay loams with relatively high fertility, useful for growing many crops.

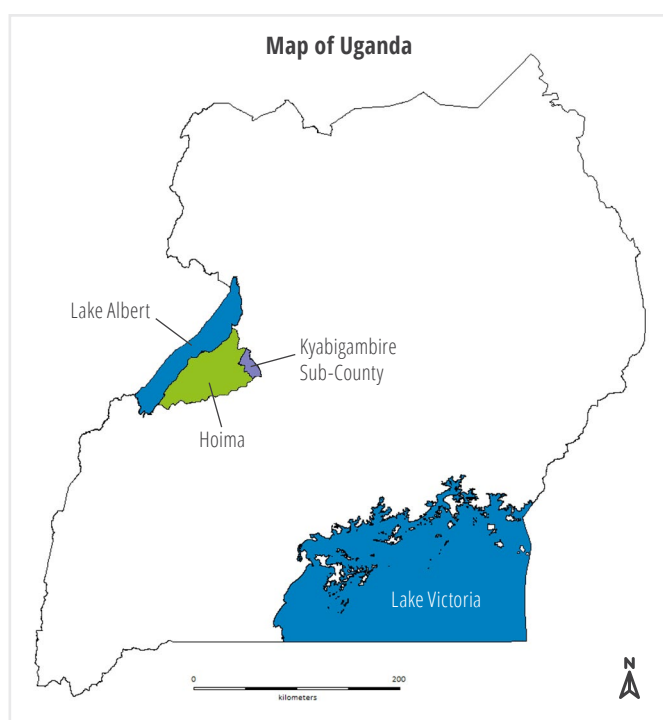


Figure 1. Map of the Kyabigambire Sub-county project site in Hoima, Uganda.

Figures 2-5 present historic climate data covering the period 2006–2020 for Bulindi, which is situated adjacent to Hoima. (Source: aWhere Weather Apps). The Aridity Index (AI) is a numerical indicator, which is used for measuring the degree of dryness of climate of a place. It is calculated as the ratio of P/PET, where P is the average annual precipitation and PET is the potential evapotranspiration. All key indices (temperatures, precipitation, aridity) show increases, with direct impact on the cultivation and performance of crops and trees.

Annual Maximum Temperature Variability for All seasons (1, 31) Bulindi, Uganda
Maximum Temperature mean= 27.6, CV= 1%, SD= 0.39, P-value= 0.039

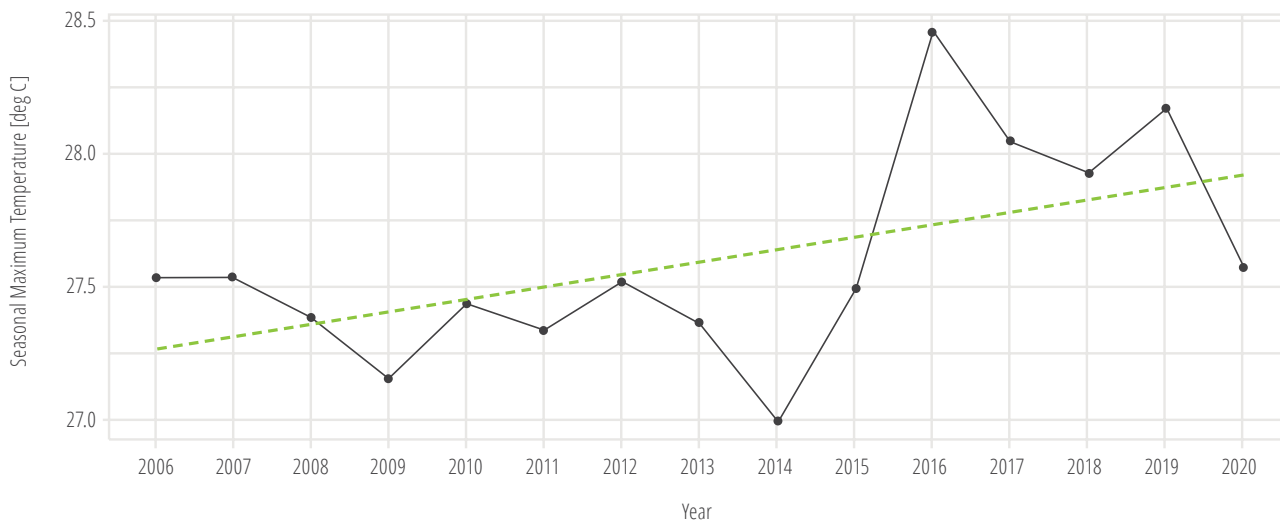


Figure 2. Annual maximum temperatures Bulindi 2006–2020.

Annual Minimum Temperature Variability for All seasons (1, 31) Bulindi, Uganda
Minimum Temperature mean= 19.64, CV= 2%, SD= 0.49, P-value= 0.012

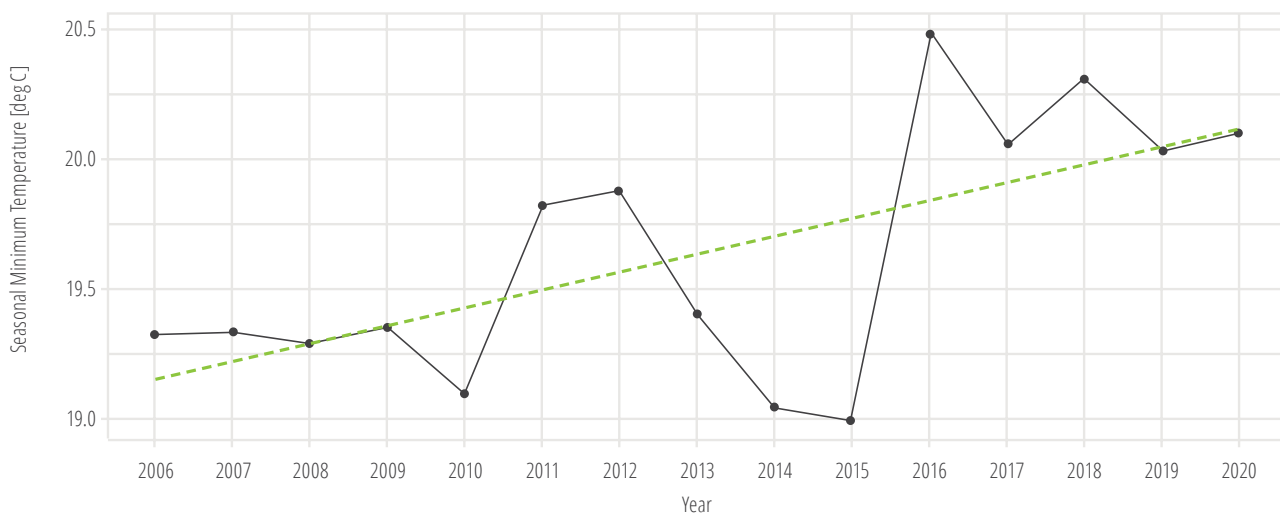


Figure 3. Annual minimum temperatures Bulindi 2006–2020.

Annual Precipitation Variability for All seasons (1, 31) Bulindi, Uganda
 Precipitation mean= 1316.97, CV= 28%, SD= 365.79, P-value= 0.572

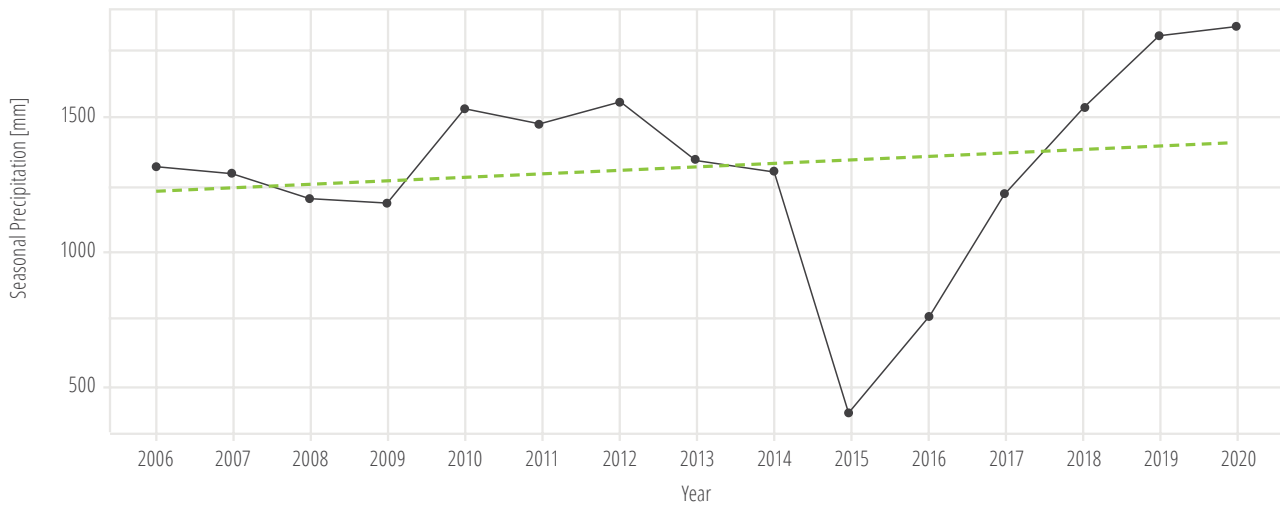


Figure 4. Annual precipitations Bulindi 2006–2020.

Annual P/PET Variability for All seasons (1, 31) Bulindi, Uganda
 P/PET mean= 0.92, CV= 26%, SD= 0.24, P-value= 0.711

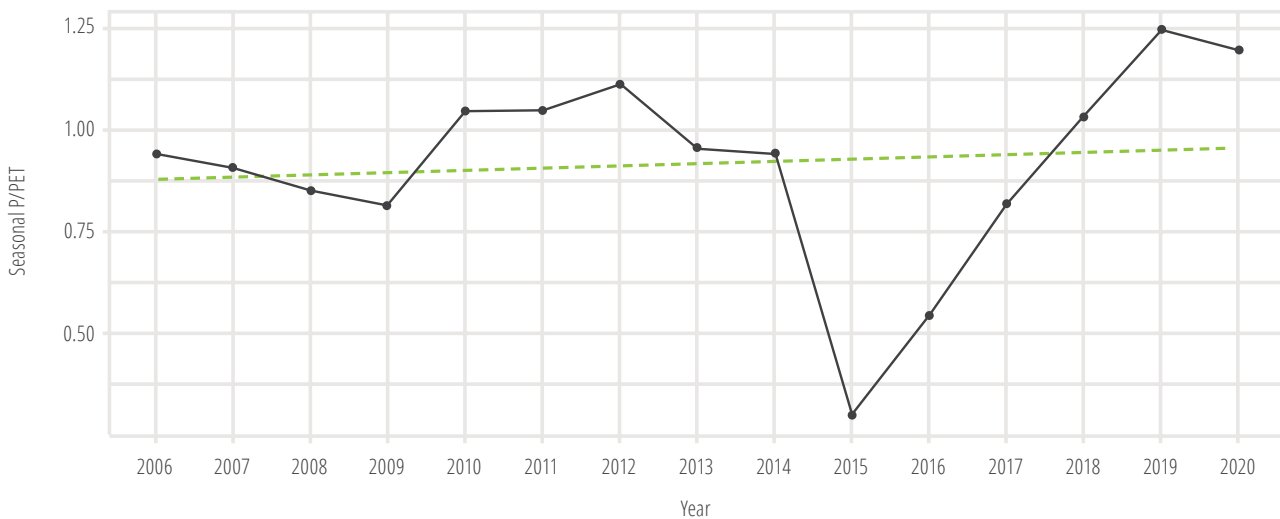


Figure 5. Annual aridity index Bulindi 2006–2020.

Hoima was designated as a climate-smart area where the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has carried out research on introducing novel climate-smart technologies and practices. The Alliance of Bioversity International and CIAT has been actively involved in the area to promote resilient seed systems, adaptation to climate change and rural livelihood improvement. This is in close collaboration with national research and development partners such as National Agricultural Research Organization’s Bulindi Zonal Agricultural Research and Development and the Plant Genetic Resources Centre. Key outputs of the resilient seed systems work included i) the introduction of vegetable, finger millet and bean diversity for climate-change adaptation; ii) the development of value chains for sorghum and bean, and iii) the establishment of the Hoima community seedbank.

2. Methodology

This work adopted the methodology developed by Vernooy (2021)². The data was collected using a focus group discussion of 40 well-informed farmers (50% women, 50% men), including willing community seedbank members, and local NUS seed custodians. They were grouped into two, Kyabigambire group and Kyamaleera group. These are farmers groups spread across the eight villages in Hoima, Kyabigambire sub county. The research did not aim for perfect community representation in terms of types of farmers, economic status and social/ethnic/religious characteristics. Being knowledgeable about NUS was more important. The participants provided information based on the following steps:

- i. **NUS Longlisting and reasons for use:** participants listed all NUS species and provided reasons for growing them. Men and women were separated, and their feedback was compared and collated.
- ii. **Assessing NUS diversity status:** participants evaluated the diversity of NUS cultivated on-farm and those harvested in the wild. This was done using a five-cell analysis (e.g., see Dulloo et al., 2017)³.
- iii. **Drafting seasonal calendar of all NUS:** the participants identified the parts used as food, their form of use (whether fresh, dried or pickled), labor involved (whether by men, women or both) and months harvested, and months used.
- iv. **NUS grouping:** where they grouped all NUS in the seasonal calendar depending on the species type, or benefits they receive from consuming them, i.e. green leafy vegetables, fruits rich in Vitamin A, cereals, oil crops and nuts etc.
- v. **Diversity analysis:** where they determined the most-consumed and rarely-consumed NUS using a four-cell analysis approach.
- vi. Identification of NUS (seed) custodian farmers in the community.
- vii. Identification of any well-known local food recipes and whether they are still popular or have disappeared.
- viii. **Assessing climate-change factors on NUS:** where we evaluated to what degree NUS tolerate factors such as too much water, prolonged drought, pests and diseases, etc.
- ix. **Priority setting:** this was the last and important part that relied on the feedback provided during all other steps. This included grouping NUS that have potential to contribute towards:
 - a. A healthy diet, by improving diet diversity and/or redressing under-consumption of one or more food groups and nutrients.
 - b. Adding value to NUS through value-chain development and income generation.
 - c. More resilient food and seed systems better adapted to climate change.
 - d. A more dynamic local food culture.
 - e. Community empowerment, of women and youth, and stronger local organizations, e.g., the community seed banks and self-help groups.

The participants finally identified NUS that are available in the community and could be prioritized for future work, as well as any that might not be available anymore, but the communities wished could be re-introduced.

2 *Ibid.*

3 Ehsan Dulloo M; Rege JEO; Ramirez M; Drucker AG; Padulosi S; Maxted N; Sthapit B; Gauchan D; Thormann I; Gaisberger H; Roux N; Sardos J; Ruas M; Rouard M. 2017. Conserving agricultural biodiversity for use in sustainable food systems. In: Bioversity International. Mainstreaming Agrobiodiversity in Sustainable Food Systems: Scientific Foundations for an Agrobiodiversity Index. Bioversity International, Rome, Italy, pp. 103–140. Available at: <https://hdl.handle.net/10568/89049>



3. Listing of different crop and crop varieties, including NUS

Hoima farmers produce and collect/harvest a large number of different crops and trees (17 species) and a very large number of varieties (82), most of them local/traditional and some improved, including cereals, legumes, roots and tubers, oil crops, African green leafy vegetables, fruits, herbs and spices, and medicinal plants (Table 1 and Appendix I; for some images, see section 10 at the end of the report). The crops have a very wide range of important uses for nutrition, food and beverages, (animal) feed, fuel, artisanal industry (e.g. weaving), mulching, health and medical care, cultural and religious customs and practices, income generation, to support social activities, and to serve as new planting material (Appendix II). Appendix II presents the major attributes of all crop varieties, which allows identifying the relative merits (benefits) of each individual variety and the overall merits (benefits) of the “baskets” of varieties per species that can be found in Hoima.

Table 1. Different NUS crop and number of varieties identified in Hoima.

Crop	Varieties
Pea/Pigeon pea	5
Mango	6
Finger millet	9
Sorghum	4
Groundnut	4
Yam	7
Avocado	2
Pawpaws/Papaya	1
African eggplant	4
Black nightshade	2
Spider plant	1
Amaranthus	4
Wild fruits	17
Herbs and spices	6
Medicinal plants	8

Hoima, Uganda, is also rich in many other crops, such as soybean, bean, and banana. The participants mentioned that two varieties of soybean, 27 of bean and 27 of banana are also being under-utilized and, in some cases, neglected, as farmers opt for improved and higher yielding ones. However, some of the neglected varieties are still being grown by a few farmers who consider them to be resilient against climate shocks, such as low and short precipitation, and some pests and diseases. They are also culturally, medicinally, and nutritionally important.

4. Reasons for production and use

The following are the reasons that were given on why NUS are still grown by farmers in Hoima.

- i. **Groundnuts** are used to make sweet sauce (to complement staple foods) and can be eaten roasted. They are medicinal and command high prices when sold.
- ii. **Cowpeas and pigeon peas** are very nutritious and can be eaten alongside other dishes.
- iii. **Yams** are a starchy, long-lasting food and therefore important during drought times/famine. They are tasty, marketable and possess medicinal value for post-natal abdominal pains.
- iv. **Fruits** are valued for their sweetness. They are highly nutritious and full of vitamins, especially vitamin C, and are used for home consumption. Their leaves provide effective cough treatments, and the fruits can be sold at the market to generate extra income.
- v. **Finger millet** is mainly used for food, income generation, and making local beer and porridges. The porridges include hot porridge, and sour porridge made from fermented finger millet.
- vi. **Sorghum** is used for making local beer (tonto), as food at home, and for income generation. Some varieties have medicinal value when mixed with banana juice for treating hernias.
- vii. **Vegetables** are used for food at home and to enhance brain function. Their seeds are also eaten; they are marketable for generating extra income, rich in vitamins and have medicinal value to treat high blood pressure, diabetes, measles, and increasing blood in the body. They are also effective in bone hardening and help support pregnant mothers for more comfortable births.
- viii. **Medicinal plants** are useful to treat coughs, fevers and flu. They help improve skin condition and remove pimples and scars. Some can be eaten as a sauce. They cleanse the womb and are used for body cleansing, treating sexually transmitted diseases (STDs), and enhancing (male) libido.
- ix. **Herbs and spices** are used for flavoring food, body steaming and cleansing, as a flavor for boiled tea, and for income generation.
- x. **Wild fruits and roots** are medicinal, can treat STDs and ulcers, and are good for the nervous system. Fruits can be used medicinally for treating fever, coughs, ulcers, and reducing stomach pain. They can also be sold to generate income; and some can be used to make juices, porridge, and local alcoholic drinks.

5. Five-cell analysis of the production and diversity status of all crops cultivated in Hoima

Table 2 presents the results of the five-cell analyses carried out for all the major crops. Of concern are usually the varieties listed in the cell “few households and grown in small areas of the farm,” which could mean that they are under pressure of becoming lost varieties. The findings indicate that for several crops, farmers are substituting local/traditional varieties with improved varieties, due to several reasons (sometimes combined), including low yield, poor resistance to pests and diseases, limited seed availability and/or access, and poor market value or potential value of the local/traditional varieties. Detailed analyses can be found in Appendix III.



Table 2. Summary of NUS diversity analysis in Hoima, Uganda.

Crop	Production area on the farm	Number of varieties	Reasons
Pigeon pea and cowpea	Many HH large area	2	They are delicious, a source of income, and are not easily affected by diseases.
	Few HH small area	5	Mainly affected by low moisture, and there is seed scarcity.
Groundnut	Few HH large area	1	The varieties grown by few households and in small areas have no seeds available for easy access. Those grown by a few households in and large areas have good resistance to diseases and a big seed size. Seeds are no longer available for those that have disappeared.
	Few HH small area	1	
	Disappeared	3	
Yam	Many HH small area	1	Those grown in few households and small area have no market. The ones grown by many households and in small areas is mainly for market. Yams have medicinal benefits and are a good source of food. They are also useful in hunger periods as they are hardy and still productive even in drought.
	Few HH small area	6	
Sorghum	Many HH small area	1	The variety grown by a few households and small areas is for home consumption. The one grown by many households in small areas has a ready market and is high yielding. The disappeared varieties do not have seeds.
	Few HH large area	1	
	Disappeared	3	
Finger millet	Few HH small area	9	The varieties grown by a few households and small areas have been neglected for maize production.
Mango	Many HH large area	1	The varieties grown by a few households in small areas produce small fruits and are mostly used for charcoal making. Those grown by many households are very sweet, considered to be very nutritious and marketable.
	Many HH small area	2	
	Few HH large area	1	
	Few HH small area	3	
Pawpaw/Papaya	Few HH small area	1	The pawpaw variety is grown by a few households and small areas for home consumption. It is easily affected by diseases, takes a long time to mature and there is limited knowledge for its large-scale production.
Avocado	Many HH small area	1	The avocado variety grown by few households and in small areas is for home consumption and has no market. The variety produced by many households and small areas is for sale due to its high market demand.
	Few HH small area	1	

Crop	Production area on the farm	Number of varieties	Reasons
African eggplant	Many HH small area	1	The varieties grown by a few households and small areas lack adequate seed supply compared to those produced by many households and small areas. However, all the varieties have medicinal importance, in particular for diabetic people.
	Few HH small area	3	
Amaranth	Many HH small area	1	The varieties grown by few households in small areas do not have readily available seeds. Some of the varieties are collected from the wild. However, they are still considered nutritious (but not marketable). The disappeared varieties were considered a weed and therefore have been cleared by farmers.
	Few HH small area	1	
	Disappeared	2	
Black nightshade	Few HH small area	2	The varieties grown by few households in small areas lack seed availability. However, they have medicinal properties.
Spider plant	Many HH small area	1	The varieties grown by few households in small areas have nutritional benefits and medicinal properties, but seeds are not readily available. Those grown by many households have an attractive taste and are marketable. Generally, this crop has cultural value as it is used in ceremonies.
	Few HH small area	1	
Herbs and spices	Many HH small area	2	The varieties grown by a few households and small areas are for home consumption and usually there are no seeds available for multiplication. Varieties grown by many households and small areas have an attractive flavor and are marketable.
	Few HH small area	4	
Medicinal plants	Many HH small area	2	The varieties grow on their own and are considered useful to boost health by farmers. However, they do not have a ready market.
	Few HH small area	6	

6. Seasonal calendar for crops on production and consumption patterns

A seasonal calendar presents a summary of the period in which the crops are planted, harvested, and consumed within a year. It also indicates the source of food whether cultivated, wild or (obtained) from the market. It shows the parts used, labor source (whether its men, women, or both), months harvested, and months consumed. The calendar allows for the identification of months when there could be a food shortage. In Hoima, the likelihood that this occurs is minimized by the very large diversity of crops cultivated, with harvesting periods of “seeds” (grains), fruits, stem, roots, and tubers, and leaves and shoots distributed over all almost all the months, with only February appearing as a “lean” month in terms of harvest. Appendix V shows a summary of the seasonal calendar.

Certain crops are harvested throughout the year such as banana, yam, and some herbs and spices. Some are based on particular seasons such as bean, but the consumption months are sometimes short, when harvests are poor. Most production is for home consumption. Different parts are used for food, such as fruits, leaves, stems, tubers.



7. Food analysis of all crops

The crops grown in Hoima have a good distribution across the different main types. In principle, this could contribute to a balanced, nutritious, and healthy diet.

Table 3. The NUS food categories based on farmers perception.

Green leafy vegetables	Other vegetables
Amaranthus Night shade Spider plant Enteke-okra Yam (bwaise, ebihane) Pea-enkole	African eggplant
Fruits rich in vitamin A	
Mango Avocado Pawpaw/papaya	
Wild fruits	
Enseka Amasaasa Obukanjakanja Ebihomози Obusekera Orutotoima Entuutu Jambalawo Mukooge Ekituugo	
Cereals	Pulses/legumes
Millet Sorghum Groundnut	Pea Herbs and spices Mint sauce Kalifuwa Omujaaja Dalasiini Ebinzaale Ehohwa
Medicinal plants	Roots and tubers
Ekigagyi Endeleva Omuka Ekibirizi Kyalihamo Omukyoora Embirimhiri Omulondo	Yam Ebinzaali (spices and herbs)

8. Diet diversity for NUS crops in Hoima

Smallholder farmers in Hoima consume NUS for different and varied reasons. Table 4 shows a summary of consumption patterns – the most common reasons given being medicinal and nutritional benefits from consuming the foods. Taste and availability are also important factors that determine the frequency of use. Appendix IV shows how varieties of crops are consumed differently.

Table 4. The different consumption patterns of NUS in Hoima, Uganda.

Crop	Consumption pattern	Number of varieties	Reasons
Peas and cowpeas	Frequently many HH	5	The varieties rarely consumed are difficult to cook and in some cases are less tasty than those that are frequently consumed.
	Rarely many HH	2	
Finger millet	Frequently many HH	1	The frequently consumed finger millet is known to be tasty and can easily be grown compared to rarely consumed ones. The conservation of millet varieties is one of the tasks of the Hoima community seedbank.
	Rarely many HH	8	
Sorghum	Frequently many HH	1	The frequently consumed sorghum varieties are high yielding and tasty. The availability of seeds for rarely consumed ones is low and therefore less planted by farmers.
	Rarely few HH	3	
Groundnuts	Frequently many HH	2	The frequently consumed varieties are delicious while the rarely consumed ones are low yielding and therefore not easily available.
	Rarely few HH	3	
Yam	Frequently many HH	3	The frequently consumed varieties are delicious and considered to be rich in nutrients. The rarely consumed ones are wild and mostly less tasty.
	Frequently few HH	4	
Mango fruits	Frequently many HH	3	Mango trees are very common in Hoima (approximately one in every five households grows them), in particular the frequently consumed varieties - due to their sweet taste. Rarely used varieties usually take long to bear fruit and few households have them.
	Frequently few HH	1	
	Rarely few HH	2	
Avocado fruits	Frequently many HH	2	The frequently consumed avocado fruits are tasty and can easily be grown.
Pawpaw/Papaya	Frequently few HH	1	The fruit is tasty and can easily be grown.
Amaranth	Frequently many HH	2	The frequently consumed varieties by many HH are known to have medicinal properties for treating smallpox and increasing blood count in the body, as well as being tasty. Those consumed by few have thorns and small leaves, therefore, hard to handle.
	Frequently few HH	2	
African eggplant	Frequently many HH	4	All the eggplants are frequently used by many households due to their medicinal properties, in particular to treat diabetic people.
Spider plant	Frequently many HH	1	Eyobwo variety of spider plant is known to be medicinal in nature.
Black nightshade	Rarely few HH	2	All the black nightshade varieties are rarely used by few households. However, they are considered to be effective for treating diabetes, and are delicious when consumed with cassava and sweet potato.
Herbs and spices	Frequently many HH	2	The frequently consumed herbs and spices are used for making tea, a frequently consumed hot beverage in Uganda. The varieties used rarely by few households are good for making a cooking sauce. Farmers rarely produce them because there are cheap packed spices in shops and local markets.
	Rarely few HH	4	

Crop	Consumption pattern	Number of varieties	Reasons
Wild fruits	Frequently many HH	4	The rarely consumed fruit types are scarce. Those that are frequently consumed are delicious and available in plenty. The disappeared varieties can no longer be found in Hoima.
	Rarely many HH	1	
	Frequently few HH	1	
	Rarely few HH	4	
	Unavailable	7	
Medicinal plants	Frequently many HH	3	The frequently used medicinal plants are easily available in the community compared to the rarely used ones.
	Frequently few HH	1	
	Rarely few HH	4	

HH = households

9. Crop cultivation, climate change, and other stress factors

As the impact of climate change is increasing, varieties that are more stress tolerant and resistant will have a considerably better chance of survival. Across all the crop species, there are evidently some varieties that appear to have such better “traits” as identified by the farmers. For the identification and selection of priority crops/varieties for further research and development (section 10), the varieties with good scores should be considered carefully.

Some crops are very climate resilient, but do not rank high on farmers’ agenda for immediate action including the banana variety, Bogoya; the groundnut variety Ebinyobwa; the bean variety Tintina basezi, and almost all yam varieties (therefore making it a famine survival crop). Wild fruits also show high stress resilience. For detailed information, refer to Appendix VI.

10. NUS priority setting

As the concluding exercise, male and female farmers reviewed all the crops in terms of five key values (i.e., contribution to a healthy diet; income generation; ease of adoption/conservation; roles in local food supply (culture); and contribution to empowerment (of women and youth in particular) and scored each value accordingly: 3= not important, 7= important, and 10 as very important. This exercise served to identify the crops seen with the highest total values (the maximum is 50), by women and men (some varieties have high differences in scores between the sexes) which could be candidates for further research and development activities, by crop species and across all species. Refer to Appendix VII.

Farmers collectively identified the following varieties as the most relevant to be considered for scaling up research and development activities, with a strong interest in varieties that have good market potential. Varieties are:

- Brown variety of cowpea
- Kanyunyuzi and kibobo finger millet varieties
- White variety of sorghum

11. NUS photos



1. Brown peas



2. African eggplants



3. Spider plant



4. Groundnuts



5. White peas





6. Hot chili



7. White ginger roots



8. Amaranth



9. Lantana camara



10. Green Peas



11. Obukanja wild fruits



12. An assortment of legumes, tubers, and spices





13. An assortment of wild fruits and herbs

12. Appendices

Appendix I: Longlisting of NUS in Hoima (in parenthesis the number of varieties mentioned)

Mango (6)	Finger millet (9)	Sorghum (4)	Cowpea (2)
Biyembedodo enkoto	Makerere	Empwera	Green variety
Biyembedodo entaito	Kibani	Kajwenge	Brown variety
Nyamusongola	Kabiriti	Nyinabalongo	
Kayembehuzi kasaija	Rwabaluli	White sorghum	
Munyama	Mukidi		
Kayembe sweet	Kanyerebalye		
	Ihenda muhiho		
	Simbantalo		
	Mugali		
Pea (enkuku) – pigeon pea (5)	Avocado (2)	Pawpaw/papaya (2)	Groundnut (5)
Brown variety	Obunyoro obukoto	Erinyoro (red)	Ebinyobwa bwomuti
Spotted variety	Obunyoro obutito	Green colour papaya	Nyabiri
White variety			Ebinyobwa (omuti/tree)
Short variety			Empande
Binayisa pea			Ebinyobwa (white)
Yam (8)	African eggplant (4)	Nightshade (2)	Amaranthus (4)
Endali	Katunkuma	Enswiga white	Dodo eyamahwa
Ebihuna ebinyoro	Masununu	Enswiga (dark green)	Dodo eyensagama
Bwaise	Obwekera small		Teke
Nyalendo	Obwa green small		Sukumawiki enyoro
Baluku			
Mabeeregensa			
Amakingyo			
Endiga			

Wild fruits (17)	Herbs and spices(6)	Medicinal plants (8)
Enseka (<i>Ximenia americana</i>)	Mintisaucе (<i>Mentha spicata</i>)	Ekigagi (<i>Aloe Vera</i>)
Endali (<i>Eriobotrya japonica</i>)	Kalifuwa (<i>Cymbopogon citrates</i>)	Endelema (<i>Basella alba</i>)
Obukanja (<i>Rhus vulgaris</i>)	Omujaja (<i>Ocimum gratissimum</i>)	Omuka
Omubengaya	Budalasini (<i>Cinnamomum zeylanicum</i>)	Ekibirizi (<i>Vernonia amygdalina</i>)
Amasasa (<i>Ximenia coffra</i>)	Ebinzali (<i>Curcuma longa</i>)	Kyalihano
Emizabibu (<i>Vitis vinifera</i>)	Ehahwa	Omukyolo
Obukanjakanja (<i>Rhus pyroides</i>)		Omubiribiri (<i>Tridax</i> spp)
Ebihomozi (<i>Siraitia grosvenorii</i>)		Omulondo (<i>Mondia whitei</i>)
Obusekera (<i>Lantana camara</i>)		
Amakeere (<i>Morus macroura</i>)		
Emikodoikodo		
Obutotoyima		
Entutu (<i>Physalis minima</i>)		
Jambalawo (<i>Java plum</i>)		
Mukoge (<i>Tamarindus indica</i>)		
Ekitugo (<i>Borassus aethiopum</i>)		

Appendix II: Attributes of longlisted NUS

Species/variety	Good yield	Good market	Good taste	Easy to cook	Easy to grow	Easy to harvest	Easy to process	Animal feed	Cultural/religious
Cowpea									
Green variety	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Brown variety	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Pea/Pigeon pea									
Brown variety	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spotted	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Binayisa	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Groundnut									
Ebinyobwabyomuti	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes
Nyaibiri	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ebinyobwabwomuti (tree)	Yes	Yes	No	No	Yes	No	Yes	No	Yes
Empande	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ebinyobwa white	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yam									
Nyalendo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Baluku	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Amakingo	Yes	No	No	-	Yes	Yes	Yes	No	Yes
Endiga	Yes	Yes	No	No	Yes	No	Yes	No	Yes
Ebihuuma ebinyoro	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Bwaise	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Nyalendo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mango									
Nyamusongola	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Emiyembe dodo big	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Emiyembe dodo small	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Kayembehuzi kasaija	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes
Munyama	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Kayembe sweet	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes

Species/variety	Good yield	Good market	Good taste	Easy to cook	Easy to grow	Easy to harvest	Easy to process	Animal feed	Cultural/religious
Finger millet									
Makere	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kabiriti	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kanyunyuzi	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kanyerebalye	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
Ihendamuhiho	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mukidi	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kibobo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Simbantalo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mugali	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sorghum									
Enkweru	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Kajwenge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
White sorghum	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Nyinabalongo	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes
Avocado fruit									
Obunyoro obukoto	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No
Obunyoro obutaito	Yes	Yes	No	Yes	Yes	No	No	Yes	No
Pawpaw									
Erinyoro red	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
African eggplant									
Katunkuma	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Masunumu	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Obwekera small	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Obwa green small	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Herbs and spices									
Mintisauce	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
Kalifuwa	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
Omujaja	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
Budalasini	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
Ebinzali	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ehahwa	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No

Species/variety	Good yield	Good market	Good taste	Easy to cook	Easy to grow	Easy to harvest	Easy to process	Animal feed	Cultural/religious
Nightshade									
Enswiga white	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
Enswiga (dark green)	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
Spider plant									
Eyobwo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Amaranth									
Dodo eyamahwa (<i>Amaranthus spinosus</i>)	Yes	No	No	No	No	No	No	No	No
Dodo eyansagama	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Teke	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Sukumawiki enyoro	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Wild fruits									
Enseka	Yes	Yes	No	No	Yes	Yes	No	No	No
Amasasa	Yes	Yes	No	No	Yes	Yes	No	No	No
Obukanjakanja	Yes	Yes	No	No	Yes	Yes	No	No	No
Ebihomozi	Yes	No	No	No	Yes	Yes	No	No	No
Obusekera	Yes	Yes	No	No	Yes	Yes	No	No	No
Obutotoyima	Yes	Yes	No	No	Yes	Yes	Yes	No	No
Entutu	Yes	Yes	No	No	Yes	Yes	No	No	No
Jambalawo	Yes	Yes	No	No	Yes	Yes	No	Yes	No
Mukoge	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Ekitugo	Yes	Yes	Yes	No	No	No	Yes	No	No
Medicinal plants									
Ekigagi	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No
En-delema	Yes	Yes	No	No	Yes	Yes	Yes	No	No
Omuka	Yes	Yes	No	No	No	Yes	Yes	Yes	No
Ekibirizi	Yes	Yes	No	No	Yes	Yes	No	Yes	No
Kyalihano	Yes	No	No	No	Yes	Yes	Yes	Yes	No
Omukyolo	Yes	No	No	No	Yes	Yes	Yes	Yes	No
Omubiribiri	Yes	No	Yes	No	No	No	Yes	No	Yes
Omulondo	Yes	No	Yes	No	No	No	Yes	No	Yes

Appendix III: Five-cell analysis tables for production diversity

Area and use	Cowpea and pigeon pea varieties
Many households and grown in large areas of the farm	
Many households but grown in small areas of the farm	Spotted variety, white variety, short variety Binayisa pea, brown pigeon pea
Few households but grown in large areas of the farm	Pigeon pea Brown cowpea
Few households and grown in small areas of the farm	None
Varieties no longer available	None

Area and use	Groundnut varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	None
Few households but grown in large areas of the farm	Nyabiri
Few households and grown in small areas of the farm	Ebinyobwa white
Varieties no longer available	Ebinyobwa byomuti Ebinyobwa (tree) Empande

Area and use	Yam varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	Ebihuna ebinyoro
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Bwaise, baluku , Nyalendo Mabeeregensa, Amakingyo Endiga
Varieties no longer available	None

Area and use	Sorghum varieties
Many households and grown in large areas of the farm	
Many households but grown in small areas of the farm	Red sorghum
Few households but grown in large areas of the farm	
Few households and grown in small areas of the farm	White sorghum
Varieties no longer available	Empwera Kajwenge Nyinabalongo

Area and use	Finger millet varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	None
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Kibani Sibantalo Kabiriti Kanyerebalye Kanyunyuzi Ihendamshiho Kibobo Simbantalo Mugali
Varieties no longer available	Makerere

Area and use	Mango varieties
Many households and grown in large areas of the farm	Kayembehuzi kasaija
Many households but grown in small areas of the farm	Biyembedodo entayito Kayembe sweet
Few households but grown in large areas of the farm	Endiga
Few households and grown in small areas of the farm	Biyembedodo enkoto Nyamusongola Munyama
Varieties no longer available	None

Area and use	Pawpaw/Papaya varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	None
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Erinyoro red
Varieties no longer available	None

Area and use	Avocado varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	Obunyoro obukoto
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Obunyoro obutiito
Varieties no longer available	None



Area and use	African eggplant varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	Katunkuma
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Masununu Obwekore small Obwa green small
Varieties no longer available	None
Area and use	Amaranth varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	Bamya
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Teke
Varieties no longer available	Dodo eyamahwa Dodo eyamasagama
Area and use	Black nightshade varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	None
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Enswiga white Enswiga dark green
Varieties no longer available	None
Area and use	Spider plant varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	Bamya
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Eyabwo
Varieties no longer available	None
Area and use	Medicinal plants varieties
Many households and grown in large areas of the farm	None
Many households but grown in small areas of the farm	Ekigagi, Omulondo
Few households but grown in large areas of the farm	None
Few households and grown in small areas of the farm	Omubiribiri, Endelema Ekibirizi, Kyalihano Omukyolo, Omuka
Varieties no longer available	None

Appendix IV: Diet diversity and consumption analysis

Consumption pattern	Pea and cowpea varieties
Rarely consumed by many households	Green variety Spotted variety (pigeon)
Frequently consumed by many households	Short variety (pigeon) Green variety (pigeon) Brown variety (pigeon) Brown cowpea Binayisa
Rarely consumed by few households	None
Frequently consumed by few households	None
Consumption pattern	Millet varieties
Rarely consumed by many households	None
Frequently consumed by many households	Kibani
Rarely consumed by few households	Makerere Ihendamahiko Kabiriti Rwabaluli Kanyerebalye Mukidi Simbentalo Mugali
Frequently consumed by few households	None
Consumption pattern	Sorghum varieties
Rarely consumed by many households	None
Frequently consumed by many households	Kajwenge
Rarely consumed by few households	Empwera White sorghum Nyina barongo
Frequently consumed by few households	None
Consumption pattern	Groundnut varieties
Rarely consumed by many households	None
Frequently consumed by many households	Nyabiri Ebinyobwa (white)
Rarely consumed by few households	Ebinyobwabwomuti Ebinyobwa (tree) Empande
Frequently consumed by few households	None
Consumption pattern	Yam varieties
Rarely consumed by many households	None
Frequently consumed by many households	Ebihuna ebinyoro Bwaise Nyalendo
Rarely consumed by few households	Maruku Endiga
Frequently consumed by few households	None



Consumption pattern	Mango varieties
Rarely consumed by many households	None
Frequently consumed by many households	Biyembedodo enkoto Biyembedodo entaito Kayembehuzi kaija
Rarely consumed by few households	Munyama, Kayembe sweet
Frequently consumed by few households	Nyamusongola
Consumption pattern	Avocado varieties
Rarely consumed by many households	None
Frequently consumed by many households	Avocado enkoto Avocado entayito
Rarely consumed by few households	None
Frequently consumed by few households	None
Consumption pattern	Pawpaw varieties
Rarely consumed by many households	None
Frequently consumed by many households	None
Rarely consumed by few households	None
Frequently consumed by few households	Erinyoro red
Consumption pattern	Amaranth varieties
Rarely consumed by many households	None
Frequently consumed by many households	Dodo eyamahwa Teke
Rarely consumed by few households	None
Frequently consumed by few households	Dodo eyensagama Sukumawiki enyoro
Consumption pattern	African eggplant varieties
Rarely consumed by many households	None
Frequently consumed by many households	Katunkuma Masununa Obwekera (small) Obwa green
Rarely consumed by few households	None
Frequently consumed by few households	None

Consumption pattern	Spider plant varieties
Rarely consumed by many households	None
Frequently consumed by many households	Eyobwo
Rarely consumed by few households	None
Frequently consumed by few households	None
Consumption pattern	Nightshade varieties
Rarely consumed by many households	None
Frequently consumed by many households	None
Rarely consumed by few households	Enswiga (white) Enswiga (dark green)
Frequently consumed by few households	None
Consumption pattern	Herbs and spices
Rarely consumed by many households	None
Frequently consumed by many households	Kalifuwa Omuja
Rarely consumed by few households	Mint sauce Budalasinini Ebinzali Ehahwa
Frequently consumed by few households	None
Consumption pattern	Wild fruits
Rarely consumed by many households	Obukanjakanja
Frequently consumed by many households	Ebihomozi Obusekera Obutoyima Omukoge
Rarely consumed by few households	Enseke Amasasa Jambulawo Ekituga
Frequently consumed by few households	Entuntu
Consumption pattern	Medicinal plants
Rarely consumed by many households	None
Frequently consumed by many households	Ekigagi Ekibirizi Omulondo
Rarely consumed by few households	Endelema Kyalihaho Omukyola Embiri
Frequently consumed by few households	Omuka



Appendix V: Seasonal calendar of production and use

Species/ variety name	Cultivated=C Wild=W Market=M (Combinations possible)	Which part is used?	State of use Fresh=F Dried=D Cooked=C (Combinations possible)	Harvested by? Women=W Man=M Both=B	Month(s) of harvest	Consumption month(s)
Cowpea						
Green variety	C, M	Seeds	F, D	B	May	May–Dec
Brown variety	C, M	Seeds	F, D	B	May	May–Dec
Pigeon pea						
Binayisa peas	C, M	Seeds	F, D	B	Nov, Dec, Jan	Nov, Dec, Jan
Brown variety	C, M	Seeds	F, D	B	Nov, Dec, Jan	Nov, Dec, Jan
Spotted variety	C, M	Seeds	F, D	B	Nov, Dec, Jan	Nov, Dec, Jan
White variety	C, M	Seeds	F, D	B	Nov, Dec, Jan	Nov, Dec, Jan
Short variety	C, M	Seeds	F, D	B	Oct	Sept, Oct, Nov
Groundnut						
Ebinyobwabwomuti	C, M	Seeds	D	B	Jan–Dec	Jan–Dec
Nyabiri	C, M	Seeds	F, D, C	B	July, Aug	July, Aug, Sept
Ebinyobwa (tree)	C, M	Fruit, seeds	F, D, C	B	July, Aug	July, Aug, Sept
Empande	C, M	Seeds	F, D, C	B	June, July	June, July, Aug
Ebinyobwa white	C, M	Seeds	F, D, C	B	June, July	June, July
Yam						
Endali	C, M	Root	F, C	B	Jan–Dec	Jan–Dec
Barugu	C, M	Root	F, C	B	Jan–Dec	Jan–Dec
Amakingyo	C, M	Root	F, C	B	Jan–Dec	Jan–Dec
Endiga	W	Root	F, C	B	Jan–Dec	Jan–Dec
Ebihuna ebinyoro	C, M	Root	F, C	B	Jan–Dec	Jan–Dec
Bwaise	C, M	Stem	F, C	B	June, July	June, July
Nyalendo	C, M	Root	F, C	B	Jan–Dec	Jan–Dec

Species/ variety name	Cultivated=C Wild=W Market=M (Combinations possible)	Which part is used?	State of use Fresh=F Dried=D Cooked=C (Combinations possible)	Harvested by? Women=W Man=M Both=B	Month(s) of harvest	Consumption month(s)
Mango						
Biyembedodo enkoto	C, M	Fruit	F	B	June, July	Dec, Jan
Biyembedodo entayito	C, M	Fruit	F	B	June, July	Dec, Jan
Nyamusongola	C, M	Fruit	F	B	June, July	Dec, Jan
Kayembehuzi kasaija	C, M	Fruit	F	B	June, July	Dec, Jan
Munyama	C, M	Fruit	F	B	June, July	Dec, Jan
Kayembe sweet	C, M	Fruit	F	B	June, July	Dec, Jan
Millet						
Makerere	C, M	Seeds	D, C	B	June, July	June, July
Kibani	C, M	Seeds	D, C	B	June, July	June, July
Kanyunyuzi	C, M	Seeds	D, C	B	June, July	June, July
Ihendamuhiko	C, M	Seeds	D, C	B	June, July	June, July
Mukidi	C, M	Seeds	D, C	B	June, July	June, July
Kabiriti	C, M	Seeds	D, C	B	June, July	June, July
Rwahabalu	C, M	Seeds	D, C	B	June, July	June, July
Simbantalo	C, M	Seeds	D, C	B	June, July	June, July
Mugali	C, M	Seeds	D, C	B	June, July	June, July
Sorghum						
Empwera	C, M	Seeds	D, C	B	June, July	June, July
Kajwenge	C, M	Seeds	D, C	B	June, July	June, July
White sorghum	C, M	Seeds	D, C	B	June, July	June, July
Nyinabalongo	C, M	Seeds	D, C	B	June, July	June, July
Avocado						
Obunyoro obukoto	C, M	Fruits	F	B	June–July, Nov–Dec	June–July, Nov–Dec
Obunyoro obutayito	C, M	Fruits	F	B	June–July, Nov–Dec	June–July, Nov–Dec

Species/ variety name	Cultivated=C Wild=W Market=M (Combinations possible)	Which part is used?	State of use Fresh=F Dried=D Cooked=C (Combinations possible)	Harvested by? Women=W Man=M Both=B	Month(s) of harvest	Consumption month(s)
Pawpaw						
Erinyoro red	C, M	Fruit	F	B	Jan–Dec	Jan–Dec
African eggplant						
Katunkuma	C, M	Fruits	C	B	June, July	June, July
Masununu	C, M	Fruits	C	B	June, July	June, July
Obwekera small	C, M	Fruits	C	B	June, July	June, July
Obwa green	C, M	Fruits	C	B	June, July	June, July
Nightshade						
Enswiga white	M, W	Leaves	C	B	Jan–Dec	Jan–Dec
Enswiga dark green	M, W	Leaves	C	B	Jan–Dec	Jan–Dec
Spider plant						
Eyobwo	C, M	Leaves	C	B	Jan–Dec	Jan–Dec
Herbs and spices						
Mint source	C, M	Leaves	F, D	B	Jan–Dec	Jan–Dec
Kalifuwa	C, M	Leaves	F, D	B	Jan–Dec	Jan–Dec
Omuja	C, W	Leaves, stem	C, F	B	Jan–Dec	Jan–Dec
Budalasi	C, W, M	Leaves, stem	D, F, C	B	Jan–Dec	Jan–Dec
Ebinzali	C, M	Tubers	C, D	B	Jan–Dec	Jan–Dec
Ehahwa	C, M	Leaves, stem	C, D	B	Jan–Dec	Jan–Dec
Amaranthus						
Dodo eyamahwa	W	Leaves, stem	C	B	Jan–Dec	Jan–Dec
Dodo eyansagama	C, M, W	Leaves	C, D	B	April, May, Oct, Nov, Dec	April, May, Oct, Nov, Dec
Teke	W	Leaves	F, C	B	April, May, Oct, Nov, Dec	April, May, Oct, Nov, Dec
Sukumawiki enyoro	C	Leaves	F, C	B	April, May, Oct, Nov, Dec	April, May, Oct, Nov, Dec

Species/ variety name	Cultivated=C Wild=W Market=M (Combinations possible)	Which part is used?	State of use Fresh=F Dried=D Cooked=C (Combinations possible)	Harvested by? Women=W Man=M Both=B	Month(s) of harvest	Consumption month(s)
Wild fruits						
Enseke	W	Fruits	F	B	March, April, May	March, April, May
Amasasa	W	Fruits	F	B	Jan, Feb	Jan, Feb
Obukanjakanja	W	Fruits	F	B	March, April, -May	March, April, May
Ebihomozi	W	Fruits	F	B	Dec, Jan, Feb	Dec, Jan, Feb
Obusekera	W	Fruits	F	B	Dec-Jan	Dec-Jan
Obutotoyima	W	Fruits, leaves	F	B	Dec-Jan	Dec-Jan
Entutu	W, C	Fruits	F	B	Dec-Jan	Dec-Jan
Jambalawo	W, C, M	Fruits	F	B	May	May
Mukonge	C, M, W	Fruits	F	B	Dec-Jan	Dec-Jan
Ekitugo	W	Fruits	F	B	Dec-Jan	Dec-Jan
Medicinal plants						
Ekigagi	W, C, M	Leaves	F, C	B	Dec-Jan	Dec-Jan
Endelema	W	Leaves	C	B	Jan-Dec	Jan-Dec
Omuka	C	Roots	C	B	Jan-Dec	Jan-Dec
Ekibirizi	W	Leaves, roots	F	B	Jan-Dec	Jan-Dec
Kyalihaho	W	Leaves	F	B	Jan-Dec	Jan-Dec
Omukyolo	C, W	Leaves	C, F	B	Jan-Dec	Jan-Dec
Embiribiri	W	Leaves	C	B	Jan-Dec	Jan-Dec
Omulondo	W	Roots	F	B	Jan-Dec	Jan-Dec

Appendix VI: Crops cultivation, climate change, and stress factors

Species/ variety name	Too much water	Prolonged drought	Heat spells/ higher temps	Cold spells/ lower temperature	Pest and disease incidences	Low soil fertility
Soya bean						
Soya bean entayito	High	High	Medium	High	High	High
Soya bean endaira	High	High	Medium	High	High	High
Cowpea						
Green variety	Low	Low	Medium	Medium	Low	Low
Brown variety	Low	Low	Medium	Medium	Low	Low
Pigeon pea						
Binayisa variety	High	High	High	High	High	High
Brown variety	High	High	High	High	Medium	High
Spotted variety	High	High	High	High	Medium	High
White variety	High	High	High	High	Medium	High
Short variety	High	High	High	High	Medium	High
Groundnut						
Ebinyobwa bwomuti	High	High	High	High	High	High
Nyabiri	Medium	Medium	Medium	High	High	Medium
Ebinyobwa (tree)	High	High	High	High	High	High
Empande	High	Low	Low	Medium	High	High
Ebinyobwa (white)	High	Low	Low	Medium	Low	Low
Yam						
Endali-nyalendo	High	High	High	High	High	High
Amakigyo	High	High	High	High	High	High
Endiga	High	High	High	High	High	High
Ebihuna ebinyoro	High	High	High	High	High	High
Bwaise	High	Low	Low	Medium	High	Low
Mango						
Biyembedodo enkoto	High	High	High	High	Medium	High
Biyembedodo entayito	High	High	High	High	Medium	High
Nyamusongola	High	High	High	High	Low	High
Kyembehuzi kasaija	High	High	High	High	High	High
Munyama	High	High	High	High	High	High
Kayembe sweet	High	High	High	High	High	High

Species/ variety name	Too much water	Prolonged drought	Heat spells/ higher temps	Cold spells/ lower temperature	Pest and disease incidences	Low soil fertility
Millet						
Makerere	Medium	Low	Medium	High	High	Medium
Kibani	Medium	Low	Medium	High	High	Medium
Kanyunyuzi	Medium	Low	Medium	High	High	Medium
Ihendamuhiko	Medium	Low	Medium	High	High	Medium
Kasojo	Medium	Low	Medium	High	High	Medium
Kabiriti	Medium	Low	Medium	High	High	Medium
Kibobo	Medium	Low	Medium	High	High	Medium
Simbantalo	Medium	Low	Medium	High	High	Medium
Mugali	Medium	Low	Medium	High	High	Medium
Sorghum						
Empwera	Medium	Medium	Medium	High	High	Medium
Kajwenge	High	Medium	High	High	High	Low
White sorghum	High	High	High	High	High	Low
Nyinabalongo	High	High	High	High	High	High
Avocado						
Obunyoro obukoto	High	High	High	High	Low	High
Obunyoro obutayito	High	High	High	High	Low	High
Pawpaw						
Erinyoro red	High	High	High	High	Low	Medium
African eggplant						
Katunkuma	High	High	High	High	High	High
Masununu	High	High	High	High	Low	High
Obwekera small obwa green	High	High	High	High	Low	High
Nightshade						
Enswiga white	High	High	High	High	High	High
Enswiga dark green	High	High	High	High	High	High
Spider plant						
Eyobwo	High	High	High	High	High	High



Species/ variety name	Too much water	Prolonged drought	Heat spells/ higher temps	Cold spells/ lower temperature	Pest and disease incidences	Low soil fertility
Herbs and spices						
Mint sauce	High	Medium	High	High	High	High
Kalifuwa	High	High	High	High	High	High
Omuja	High	High	High	High	High	High
Budalasi	High	High	High	High	High	High
Ebinzali	High	Low	Medium	High	High	Medium
Ehahwa	High	High	High	High	High	High
Amaranth						
Dodo eyamahwa	High	High	High	High	High	High
Dodo eyensagama	High	High	High	High	High	High
Teke	High	Low	Medium	High	High	High
Sukumawiki enyoro	High	Low	Medium	High	High	High
Wild fruits						
Enseka	High	High	High	High	High	High
Amasasa	High	High	High	High	High	High
Obukanjakanja	High	High	High	High	High	High
Ebihomozi	High	High	High	High	High	High
Obusekera	High	High	High	High	High	High
Obutotoyima	High	High	High	High	High	High
Entutu	High	Medium	High	High	High	High
Jambalawo	High	High	High	High	High	High
Mukoge	High	High	High	High	High	High
Ekitugo	High	High	High	High	High	High
Medicinal plants						
Egigagi	High	High	High	High	High	High
Omuka	High	High	High	High	High	High
Endelema	High	Low	Medium	Medium	High	High
Ekibirizi	High	High	High	High	High	High
Kyalihaho	High	Low	Medium	Medium	High	High
Omukyola	High	High	High	High	High	High
Embiribiri	High	Low	Medium	High	High	High
Omulondo	High	High	High	High	High	High

Appendix VII: NUS priority setting

Crops/varieties	Healthy diet		Additional value generation		Adoption conservation		Local food culture		Empowerment		Total score	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Cowpea												
Green variety	10	7	10	7	10	7	10	7	10	7	50	35
Brown variety	10	10	10	10	10	10	10	10	10	10	50	50
Pigeon pea												
Binayisa variety	10	10	3	10	10	10	10	10	10	10	43	50
Brown variety	10	10	3	10	10	10	10	10	10	10	43	50
Spotted variety	10	10	3	10	10	10	10	10	10	10	43	50
White variety	10	10	3	10	10	10	10	10	10	10	43	50
Short variety	10	10	3	10	10	10	10	10	10	10	43	50
Groundnut												
Ebinyobwa bwomuti	10	10	7	10	7	10	10	10	7	10	41	50
Nyaibiri	10	10	10	10	10	3	10	10	10	3	50	36
Ebinyobwa (tree)	10	10	7	10	3	3	10	10	3	3	33	36
Empande	10	10	7	10	7	10	10	10	3	10	37	50
Ebonyobwa (white)	10	7	10	7	10	7	10	7	10	7	50	35

Crops/varieties	Healthy diet		Additional value generation		Adoption conservation		Local food culture		Empowerment		Total score	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Yam												
Endali	10	3	3	3	7	3	10	10	10	3	40	22
Amakigyo	10	3	3	3	3	3	10	10	3	3	29	22
Endiga	7	10	3	10	3	7	10	10	3	3	26	40
Ebihuna ebinyoro	10	10	3	10	7	10	10	10	7	10	37	50
Bwaise	10	7	3	7	10	7	7	7	10	7	40	35
Nyalendo	10	10	3	10	3	7	7	10	7	10	30	47
Mango												
Biyembedodo enkoto	10	10	10	10	10	7	10	10	10	10	50	47
Biyembedodo entayito	10	10	10	10	10	7	10	10	7	10	47	47
Nyamusongola	10	10	10	10	7	10	10	10	7	10	44	50
Kiyembehuzi kasaija	10	10	10	10	7	10	10	10	7	10	44	50
Munyama	10	10	10	10	7	10	10	10	7	10	44	50
Kayembe sweet	10	10	10	10	10	7	10	10	10	10	50	47

Crops/varieties	Healthy diet		Additional value generation		Adoption conservation		Local food culture		Empowerment		Total score	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Millet												
Makerere	10	7	10	7	10	7	10	7	10	7	50	35
Kibani	10	10	10	10	10	7	10	10	10	10	50	47
Kanyunyuzi	10	10	10	10	10	10	10	10	10	10	50	50
Rwabaluli	7	10	7	10	7	3	7	10	7	10	35	43
Ihendamuhiko	10	10	10	10	10	7	10	10	10	10	50	47
Kanyerebalye	7	10	7	10	7	7	7	10	7	10	35	47
Kasojo	10	10	10	7	10	3	10	10	10	3	50	33
Kabiriti	10	3	10	7	10	7	10	7	10	7	50	31
Kibobo	10	10	10	10	10	10	10	10	10	10	50	50
Mukidi	7	3	7	3	7	3	7	10	7	3	35	22
Simbantalo	10	10	10	10	10	7	10	10	10	10	50	47
Mugali	10	10	10	10	10	3	10	10	10	3	50	36
Sorghum												
Empwera	10	10	10	10	10	3	10	10	10	3	50	36
Kajwenge	10	3	10	7	10	7	10	7	10	7	50	31
White sorghum	10	10	10	10	10	10	10	10	10	10	50	50
Nyinabalongo	10	7	10	7	10	7	10	7	10	7	50	35

Crops/varieties	Healthy diet		Additional value generation		Adoption conservation		Local food culture		Empowerment		Total score	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Avocado												
Obunyoro obukoto	10	7	7	7	7	7	10	7	10	7	44	35
Obunyoro obutayito	10	10	7	10	7	7	10	10	3	10	37	47
Pawpaw												
Erinyoro red	10	10	3	10	7	7	10	10	3	10	33	47
African eggplant												
Katunkuma	10	10	3	10	3	10	10	10	7	10	33	50
Masununu	10	10	3	10	3	7	10	10	7	7	33	44
Obwekera small	10	7	3	7	3	7	10	7	7	7	33	35
Obwa green	10	10	3	10	3	7	10	10	7	10	33	47
Nightshade												
Enswiga white	10	7	3	7	3	7	10	7	7	7	33	35
Enswiga darkgreen	10	10	3	10	3	7	10	10	7	10	33	47
Spider plant												
Eyobwo	10	7	3	7	3	3	10	10	7	7	33	34

Crops/varieties	Healthy diet		Additional value generation		Adoption conservation		Local food culture		Empowerment		Total score	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Herbs and spices												
Mint sauce	3	7	3	7	7	10	10	10	3	7	26	41
Kalifuwa	3	7	7	7	7	3	10	10	3	10	30	37
Omuja	3	7	3	7	3	3	10	10	3	10	22	37
Budalasini	3	7	3	7	7	7	10	10	10	7	33	38
Ehahwa	3	7	3	7	3	7	10	7	3	7	22	35
Amaranth												
Dodo eyamahwa	3	10	3	10	3	7	10	10	3	7	22	44
Dodo eyensagama	10	7	7	7	7	3	10	10	3	3	37	30
Teke	10	7	3	7	3	3	10	10	3	7	29	34
Sukumawiki enyoro	10	7	3	7	3	7	10	7	3	7	29	35

Crops/varieties	Healthy diet		Additional value generation		Adoption conservation		Local food culture		Empowerment		Total score	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Wild fruits												
Enseka	7	10	3	10	3	3	10	3	3	3	26	29
Amasasa	7	3	3	3	3	3	10	10	3	3	26	22
Obukanjakanja	7	7	3	7	3	7	10	10	3	3	26	34
Ebihomozi	7	7	3	7	3	7	10	10	3	3	26	34
Obusekera	7	10	3	10	3	10	10	10	3	3	26	43
Obutotoyima	7	10	3	10	3	7	10	10	3	10	26	47
Entutu	7	7	3	7	3	3	10	10	7	3	30	30
Jambalawo	7	10	7	10	3	7	10	10	3	10	30	47
Mukoge	7	7	7	7	3	3	10	10	3	10	30	37
Ekitugo	3	7	7	7	3	7	10	7	7	7	30	35
Medicinal plants												
Ekgagi	3	7	7	7	7	3	7	10	10	7	34	34
Omuka	3	10	7	10	3	3	10	10	3	3	26	36
Endelema	3	7	7	7	3	10	10	10	3	3	26	37
Ekibiriizi	3	3	7	3	3	7	10	10	7	3	30	26
Kyalihaho	3	7	7	7	3	7	10	10	3	3	23	34
Omukyola	3	7	7	7	3	7	10	10	3	3	23	34
Embribiri	3	10	7	10	3	10	10	10	3	10	23	50
Omulondo	3	10	10	10	3	10	10	10	10	10	36	50

Alliance



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