Field Scientific Report

Gendered Food Mapping on Boiled Sweetpotato

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Ethics: The activities, which led to the production of this manual, were assessed and approved by the CIRAD Ethics Committee (H2020 ethics self-assessment procedure). When relevant, samples were prepared according to good hygiene and manufacturing practices. When external participants were involved in an activity, they were priorly informed about the objective of the activity and explained that their participation was entirely voluntary, that they could stop the interview at any point and that their responses would be anonymous and securely stored by the research team for research purposes. Written consent (signature) was systematically sought from sensory panelists and from consumers participating in activities.

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Acronyms

CIP – International Potato Center

NARO – National Agricultural Research Organization

MAAIF – Ministry of Agriculture, Animal Industry and Fisheries

1. INTRODUCTION

This report is part of the RTBfoods project, Work Package (WP) 1. The main objective of RTBfoods is to deploy RTB varieties that meet user-preferred quality traits to increase the adoption and impact of improved RTB varieties in sub-Saharan Africa (SSA). To do so, the project is working to (1) Define what are the key user-preferred quality traits for a range of RTB food products (cassava, yam, potato, sweetpotato, banana) through surveys with end-users (product profiles); (2) Link these product profiles with biophysical and functional properties of RTB food products, and develop laboratory-based methods to assess these properties in a quantitative manner; (3) Develop high-throughput phenotyping protocols (HTPP) for rapid screening of user-preferred quality traits in new RTB varieties; (4) Integrate key user traits into breeding and variety deployment programs.

WP1 provides the evidence base for user's preferred characteristics for the selected products that are the focus of the RTBfoods project. Varietal preferences start with the demand from a range of users, such as producers, processors, retailers and consumers along the food chain. User's varietal choices are informed by the preferences they have for certain characteristics of the crop (characteristics preferred) that can be linked to traits. Preferences for characteristics, are in turn, influenced by the products, and their variations, that users make (e.g. matoke in Uganda, gari, fufu or pounded yam in Nigeria), and for what purpose (e.g. urban or rural markets, household consumption). Users often have several specific characteristics that they prefer and/or have 'non-negotiable' sets of characteristics, such as, for producers, that the crop is high yielding or disease resistant. These different interests culminate into trait packages that can help explain the drivers of varietal acceptance.

Sometimes there are clear differences in the characteristics preferred by user groups that follow product/consumption profiles, but other times it is more complex. Different users of a crop may live in the same household, have different interests with how the crop is used and what products are made. This can result in multiple and, perhaps, contrasting preferences that vary according to the user's role in the food chain, meaning that the input and decision-making roles of different users is of primary importance in RTB crop breeding.

Preferences for certain product characteristics stem from broader socio-economic and gender dynamics, which are in turn an integral part of understanding crop choice and use. Men, women, boys and girls play different roles in RTB food chains, and differ in their access to, perceptions of risk for, and ability to decide on use of improved varieties. For example, gender roles regarding household food security and marketing can mean that one gender may prioritise crop or product storability characteristics (in ground or after harvest) over yield characteristics. In addition, in locations with shared farming systems between men and women, such as in Uganda, one household member may have more decision-making authority on cropping decisions than others. Different varietal characteristics can also influence the level of labour and exertion involved in processing. In addition, consumers have their own sets of sensory preferences linked to different varieties, and consumers may have different preferences based on their background, gender, location or food culture. Therefore, characteristics that respond to multiple-use and multiple-user groups (such as yield and disease resistance), or differentiating segments of use, including men and women in all their diversity, are an important factor in breeding initiatives.

However, there is a gap in knowledge of preferences for RTB crops among different user groups, particularly food processors, retailers and consumers, and diversity within user groups (e.g. producers can have different size of landholding, access to extension etc.), as breeding programmes have historically focused on production related characteristics at the expense of post-harvest and consumer preferences. In addition, information on characteristics is often overly-simplified by not including information on the optimal range or description that would help breeders be able to meet user needs. Furthermore, there is little known about how gender relations and norms influence and result in preferred characteristics, along with varietal uses. WP1 aims address these gaps in knowledge under the RTBfoods project, which will contribute to shaping crop breeding to be more responsive to user needs along the food chain.

The WP1 approach uses interdisciplinary methods and lines of inquiry (food science, gender and economics) to collect evidence on the preferences of RTB product characteristics for different user

groups in the product chain and identify the factors that influence these preferences for men, women and other social segments, and how they may be prioritised differently (e.g. labour requirements and storability may be prioritised more for women, over yield characteristics). The delivery of the information is expected to support the capacity of RTB breeding programmes to be more demand-led. The approach has the following activities:

- Activity 1: State of Knowledge review
- Activity 2: Capacity strengthening and sharing
- **Activity 3: Gendered product mapping**
- Activity 4: Community-based RTB Food processing/preparation diagnosis
- Activity 5: Consumer taste tests in rural and urban market segments

This report presents the findings for Activity 3, Gendered product mapping.

Brief description of Activity 3

The objectives of activity 3, were to:

- Understand who is producing, processing, selling and consuming the crop and product, from a gendered perspective.
- Understand the multiple uses and products of the crop and possible trade-offs between uses
- Identify the quality characteristics and descriptors by stakeholder group (e.g. producers, processors) and demand segment (e.g. rural consumers).
- Understand how gender influences preferences and prioritisation for characteristics.

This activity focused on both the sweetpotato crop and boiled sweetpotato, with an aim of identifying the quality characteristics preferred by various stakeholders along the food chain (production, post-harvest and market). The activity also sought to verify the multiple uses and trade-offs between uses of both the crop and product, which could reflect different interests of men and women.

2. METHODOLOGY

The activity was conducted in Lira and Kamwenge districts in Uganda. Lira district is located in northern Uganda (02 20N, 33 06E) and was carved out of the former Lango district. Kamwenge is located in Western Uganda (00 11N, 30 27E; Toro sub region (Fig 1). The two districts are major producers of sweetpotato and the crop is mostly produced for food and increasingly for income. Four communities where CIP research activities were ongoing were purposively selected in each district for the study. Farmers in the communities grew, process and consumed sweetpotato.

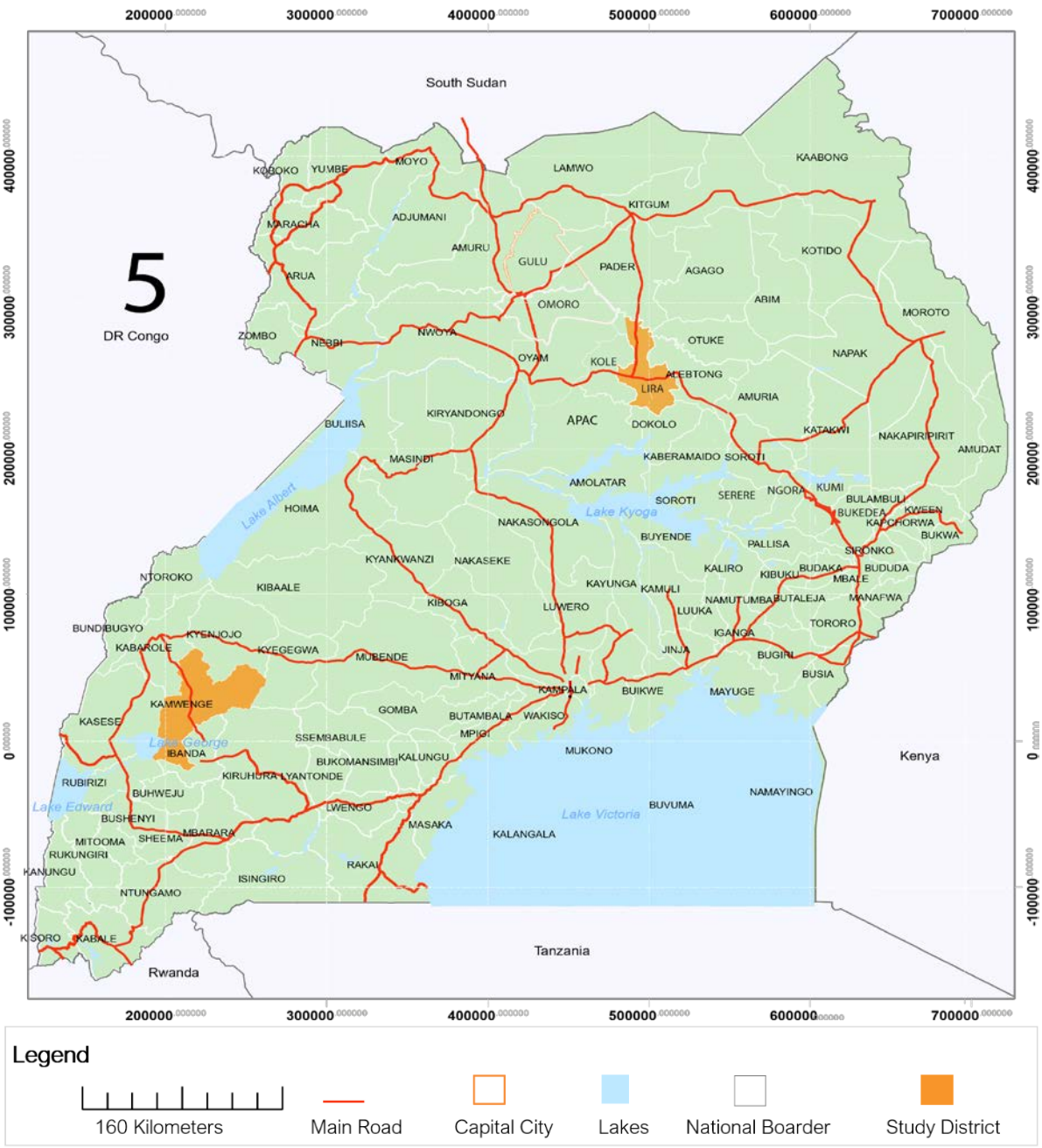


Figure 1: Map showing the study districts

A mixed method approach was undertaken leaning mostly towards qualitative approach. A research team comprising of a Food Scientist (NARO), Social Economist (NARO) and Gender scientist (CIP) was constituted to undertake the study. Four tools were developed, piloted and finalized for data capture with the assistance of the WP1 PI. Four activities were under taken as detailed below:

- Eight (4F, 4M) Key informant group interviews (KII) with community leadership (four in each district).
- 16 Sex-disaggregated Focus Group Discussions (FGD) with 128 respondents (64F, 64M) who produced, processed and consumed boiled sweetpotato. The FGDs specifically provided information on products, gender roles and social segments, processing steps and equipment, characteristics and descriptors that were further probed in further in the Individual Interviews.
- 72 Individual interviews (II) (60F, 12M) with community members who processed boiled sweetpotato wo in many cases also produced the crop. The IIs provided individual/household level descriptions of preferred characteristics and priorities at

different stages of preparing boiled sweetpotato, household decision making, and trade-offs.

- Seven Market Interviews (MI) (all women) with key individuals or groups involved in marketing and trading activities.

Data were cleaned, coded and analysed using content analysis and Excel Microsoft office program.

3. FINDINGS: SOCIO-ECONOMIC CONTEXT AND PRODUCT PREFERENCES

3.1. Social segmentation and livelihoods

Key Informants (KI) were requested to assess the social segments within their communities using ethnicity and social status as major criterion. In Lira district, there was only one ethnic group (Langi). In Kamwenge district, there were varied ethnicities dominated by Bakiga and Bafumbira who migrated from South Western Uganda. Other tribes included Batooro, and Banyankore. In one community, the Bakiga were considered to in the 'very poor' class.

With regards to wealth segmentation, KII revealed three to four wealth classes ranging from very rich to very poor. Among the indicators of households that were well to do was permanent houses roofed with iron sheets, land ownership (at least 5 acres), ability to send children to good schools and ownership of livestock. These indicators were very similar for both Kamwenge and Lira. In one community in Lira, land was considered to be the major criterion for wealth status ranking, as elaborated below:

> *"In the past we used to gauge a rich home by the number of cows and mabaati house, but now we gauge the rich homes by the amount land of 5 hectares and above where you can graze your animals, at least 10 cows and more than 10 goats, you can afford to hire labor, paying school fees for your children, you can afford medical bills, have a decent home, well planned with mabaati, a V.I. P. toilet, feeding should be good (you should have food at home and have surplus for sale or have surplus income to cater for eventualities, transport means at least a pickup." KI, Apanyi, Acel Village, Lira III*

Middle income households were noted to have nearly all the assets owned by the rich and very rich, albeit in moderation; as explained below:

> *"The middle-income earners usually have smaller houses with iron sheets, with at least 3 goats and 5 chicken and they can take their children to school with lower school dues." KI, Lira I*

Other criteria used to segment the wealth status of a community was access to food. Poor households were noted to have challenges with consistently accessing food throughout the year. Very poor householders were considered to have no land, food and no children. The perception of the social segments is outlined in Table 1.

Table 1: Social segments

Community name	Social segments (%)
Byabasambu village, Kamwenge I	Wealth: very poor (10%), poor (60-70%), rich (10%), very rich (20%)
Byabasambu village, Kamwenge II	Wealth: very rich (15 %), rich (10 %), poor (55 %), very poor (20%). *"We have four categories of people. The very rich are about 15%. The rich are about 10%. The poor are mainly Bakiiga and majority about 55%. The very poor 20%."*
Mabaale 1 Village, Kamwenge III	Ethnicity: Bafumbira (40 %), Bakiga (20 %), Batooro (20 %), Banyankole (15 %), Others (5 %)
Kamwenge town council, Kamwenge IV	Ethnicity: Most of them are Bakiga.
Lira I	Wealth: rich (20 %), middle (30 %), poor (50 %)
Lira II	Ethnicity: Langi (100 %) Wealth: rich (30 %), middle (30%) poor (40 %)
Apanyi Acel village, Lira III	Ethnicity: Langi (100 %) Wealth: rich (30 %), middle (40 %), poor (30 %)
Aweo village, Lira IV	Wealth: rich (30 %), middle income earners (50 %), poor (20 %) Ethnicity: Langi (100%)

From the FGDs, similar information was obtained about the perceived wealth categories in the various communities (Table 2). However, in four of the eight communities there were difference between the number of wealth segments perceived by men and women. In Kamwenge I for example, men segmented the four wealth categories (wealthy, moderate, poor and very poor) but revealed only two of these categories (moderate and poor) existed in their village. Women in the same community perceived three wealth categories: rich, moderate and poor, and all the three were existent in the community.

Aside from the number of wealth segments, the nomenclature also varied between men and women in the same community. Women in Lira II for example had a category of homeless which the men did not mention. On the other hand, the men in this same community perceived a category of 'moderate income' which the women did not mention.

One similarity across regions and sex was that all respondents perceived >60% of the households in the study area to be poor or very poor. Also, just like in the KII, description of wealthy households was very similar and hinged on the asset base such as land, type of roofing, food security and children's education. Women in Lira II mentioned 'light shines in their houses' and 'eat whatever they want' as indicators for wealth; while women in Kamwenge I noted that men and women worked together in wealthy homes. Cohesion amongst spouses could thus be an important dimension in improving livelihoods. This is further elaborated by the remarks made about very poor people in Lira:

> *"In this category (poor), this is where you find most drunkards. The men will 'drink' all the money they make from offering labour to the rich people in the village. That is why their families are very vulnerable because the women are left on her own to fend for the family." Participant, Women FGD, Lira II*

Education and quality of schools was another indicator mentioned in wealth segmentation. Children in well to do families attended private boarding schools, while those from moderate families attended private day schools. Children from poor families attended Universal Primary Education (UPE) schools where education was free, while children from very poor families did not attend school.

In Lira, women respondents revealed that all households in the various wealth categories grow sweetpotato on varying acreages of land, except for the very poor or landless. The wealthy were noted to cultivate two acres or more because they could afford to hire labour.

Table 2: Wealth categories

FGD + Community name	Wealth categories mentioned in FGDs	
	Women's FGD	**Men's FGD**
FGD I, Kamwenge	Wealthy/rich (20%): A very nice house of a permanent structure with good iron sheets. Owns about 20 acres of land. Has plots of land in town. Have a farm of cross-bred cows. Has a vehicle. Children are in very good schools. Man and wife work together Moderate (30%): Semi-permanent house. 3 to 4 acres of land. 1 to 3 cows. Have a motor cycle. Children are in any primary school around the village; or UPE. Poor (50%): Have no land completely hence they are squatters on other peoples' land. Family not food secure. The men over drink while women go to work. Children don't go to school.	Wealthy (0%): Owns houses in town. Owns land ≥10 acres. Uses tractor to plough. Owns coffee and banana plantations. Owns more than 10 exotic cows. Owns cars/lorries. The whole family is educated. Moderate (30%): Owns land ≥5 acres. Owns coffee and banana plantations. Uses oxen to plough. Owns livestock – 5 local breed cows. Family is educated. Poor (70%): Owns a temporary house – grass thatched or Iron sheet with mud and wattle walls. Owns land (≤1 acre). Has peace of mind – e.g no worries about loans, etc. Has food for home consumption and usually does not sell. Very poor (0%): Lives in a rented house. Does not own land. Work as casual labourers. Family is not educated.
FGD II, Kamwenge	Wealthy (10%): A very good house. Own about 14 to 20 acres of land. Have a farm of about 10 to 50 cows of very good breeds. The household s food secure. Children are in very good schools. Moderate (30%): Fair house. Own 5 acres of land. Own 2 to 3 cows. Children go to not very good schools. They have food. Poor (20%): Semi-permanent house with no windows. One and half acres of land. Have no cows but about 2 goats. Family food insecure. Children drop out of school. Very poor (40%): Have grass thatched houses. Have no land. Children don't go to school. They drink alcohol. Men are lazy and don't want to go to work	Wealthy/rich (5%): Owns a permanent house. Owns >30 acres of land. Owns >70 head of cattle. Medium rich (15%): Has a brick house. Owns 5-8 acres of land. Poor (70%): Has an iron sheet roofed house with mud and wattle walls. Owns 2 acres of land. Very poor (10%): Has a grass thatched house with mud and wattle walls. Owns <1 acre of land.

FGD + Community name	Wealth categories mentioned in FGDs	
	Women's FGD	**Men's FGD**
FGD 1V, Kamwenge	Very rich (10%): They have big permanent houses more than 30 acres of land and 30- 50 cross bred cow. Children who have attend university education and are grade 3 teachers. The rich (30%): Have 5 -10 acres. 3 cross bred cows and 10 goats. They have some banana and coffee fields. Educated children up to diploma and certificate level. Poor (50%): Have grass thatched houses. Own small plots of less than an acre. no educated children because they have no money to send children to school and they provide labor for food.	Wealthy/rich (10%): Owns a 3-bedroom permanent house. Owns more than 20acres of land. Owns car(s) Moderately rich (30%): Owns a brick house. Owns 10-20 acres of land. Has a car. Poor (50%): Owns a mud and wattle house with iron sheet roof. Owns 1-5 acres of land. Owns a bicycle. Very poor (10%): Does not have a house – lives with friends and relatives Does not own land. Is a casual labourer.
FGD I, Lira	Wealthy/rich (30%): They have about ten acres of land. They have cows. They grow sweetpotato. Have other livelihood activities apart from farming Rich (20%): Have about 5 acres of land. Grow about sweetpotato on about two acres. Keep livestock. Have a lot of laughter, six-inch mattresses, eat nice things, light shines in their homes, sofa sets and are fat Poor (i)(33%): Houses have old iron sheets. They grow small plots of sweetpotato. Make money by digging and making bricks. Poor (ii) (15%): Grass thatched houses. Offer labour for food. Very poor (7%): Grass thatched house. Also offer labour for food	Wealthy/rich (4%): Own a motorcycle, permanent house and 2-3 head of cattle Moderately (53%): Owns a bicycle, 1 goat, two cows, has land for agriculture (this may be personally owned or rented land). Poor (25%): Owns some chicken, has a small piece of land for agriculture Very poor (18%): Grass thatched house, works on other people's gardens for pay or food
FGD II, Lira	Wealthy/rich (14%): They have between 6-10 acres of land. Can grow up to 2 acres of Sweetpotato because they have money to hire labour. They also own cows, shops and motorcycles. Poor (36%): Mud wattle house with old iron sheets. They have 2-3 acres and grow SP on half an acre coz they have to grow many other crops. Have one goat, pig, chicken. Very poor (40%): Mud house with scanty thatch. They have some small land where they grow food, and grow SP. They don't even have a hen. They provide labor "dig for money". They are not clean because there is no money for soap. Homeless people (10%): They live on people's verandas. Sleep on shop verandas in the center. They make a living by providing labour	Wealthy (5%): Owns a permanent home and vehicle Moderate (10%): semi-permanent shelter. Owns some land, a bicycle, motorcycle, 2 head of cattle, 3 goats. Poor (75%): grass thatched house. Owns small land for agriculture, 2 goats, 2 chicken. Very poor (10%): Does not own a house. No land. Earns a living by providing labour/working on other people's farm land. Stays with friends and relatives

FGD + Community name	Wealth categories mentioned in FGDs	
	Women's FGD	**Men's FGD**
FGD III, Lira	Very rich (19%): Good big houses. Have 4 – 10 acres of land. Grow at least 1 acre of SP. They have cows and pigs. Rich (21%): Have good houses. Have 2-4 acres of land Grow Sweetpotato. Poor (21%): Have slopped houses (i.e. the roof is slopped). Have 1 acre of land. Grow Sweetpotato, and sorghum. Very poor (39%): Grass thatched houses. Rent land. Grow a lot of crops in a small piece of land to maximize.	Wealthy (20%): Owns and (5-10 acres), a shop, motorcycle, planted trees Moderate (20%): Semi permanent house. Owns 2-3 acres of land. Owns bicycle and/or motorcycle. Children are in school Poor (40%): 2 grass thatched houses. Own land (0.5 acre). Has 2 chickens, 1 goat Very poor (20%): Grass thatched house. No land. No animal. Provides labour on other people's farms to earn a living
FGD IV, Lira	Rich (7%): Own new mabati houses. Have about 4-6 gardens. They grow Sweetpotato and we provide them labour. Moderate rich (17%): Their houses have old mabati. They own 4 gardens and grow Sweetpotato. Poor (60%): They have a home with a thatched roof and own about 1-3 gardens. They also rent land. They grow Sweetpotato. Very poor (16%): They are homeless. They move from home to home asking for food. They wear scanty dirty clothes.	Wealthy (2%): Owns a permanent house – iron sheets roof and brick wall. Has at least 10 acres of land. Has 20 heads of cattle Moderate (20%): Owns a semi-permanent house with iron sheet roof and mud wall. Has a motorcycle. Has 5 head of cattle. Has 5 acres of land. Poor (70%): House is grass thatched. Owns 2 acres of land. Owns 1 goat, 2 chickens, 1 pig. Does not have a wife and children. Very poor (8%): Owns a rickety grass thatched house. May own some land – 0.5 acre. Does not own any animals.

3.1.1. Livelihood activities

With regards to livelihood activities, men and women FGD respondents in Lira and Kamwenge indicated that their most important activity was crop farming (Table 3). Women in Kamwenge indicated that men were mostly engaged in cash crops while women devoted time to food crops, as elaborated below:

> *"Men mainly grow water melon, tomatoes, maize, coffee and cabbage because they are mainly for sale. While women grow sweetpotato, millet, beans which are culturally known to be food crops." Participant, Women FGD III, Kamwenge.*

Other activities mentioned to be important for both men and women included rearing animals. Women mentioned keeping small domesticated animals such as goats and hens, while larger animals and apiculture were seen to be under the realm of men. Off farm activities were also noted to be of importance to women and men. In this category, women mentioned baking, petty trade in agricultural produce, making hand crafts and brewing beer. Men mentioned engagement in transport business using mostly motorcycles also commonly known as 'boda-boda' as well as brick laying, charcoal burning and carpentry.

Men in Lira also noted that some activities required a lot of energy, and hence these were mostly done by men such as sand mining. However, activities like stone quarrying were done by both men and women of all ages for as long as they were 'able bodied'.

Generally; farming was declared to be the most important livelihood activity in both areas, which is in agreement to existing literature on rural livelihoods in Uganda (MAAIF, 2011).

Table 3: Livelihood activities

FGD + Community name	Livelihood activities and people they are important for	
	Women's FGD	**Men's FGD**
FGD I, Kamwenge	Crop farming (women), animal rearing (women), business-such as wholesale (*okusubuula*), baking, restaurants- (men), fishing and bricklaying (men and women), baking (youths)	Crop farming –such as OFSP, millet, maize, peanuts, beans, rice, coffee- (men and women), animal rearing –pigs, cattle, poultry- (men and women), trading –dealing in produce and retail shops (men and women), sand mining (men)
FGD II, Kamwenge	Crop farming (women), animal rearing (men), business-such as selling sweetpotatoes and beans- (women)	Crop farming –SP, maize, beans, coffee- (men and women), animal testing –cattle, goats, pigs, poultry (men and women)
FGD III, Kamwenge	Crop farming (women), animal rearing, small businesses –such as baking- (women), saving cooperatives (women), casual labor (men), selling maize (men)	Crop farming –maize, coffee- (men and women), animal rearing –cattle, pigs- (men and women), trading –coffee, *waragi* (local gin)- (men and women), brewing *waragi* from sugar cane (men and women)
FGD IV, Kamwenge	Food crop farming (women), cash crop farming (men), animal rearing, business –such as shops, buying produce, *bodaboda*, bricklaying-	Crop farming –maize, beans, SP, peanuts, cassava, coffee, watermelon- (men and women), animal rearing –cattle, pigs, goats, chicken- (men and women), trading (men and women), *bodaboda* (men)
FGD I, Lira	Crop farming –soya, beans, maize, cassava, peanuts, millet, sorghum, simsim-, animal rearing –goats, pigs, poultry, cattle, sheep-, business –processing and selling shea butter, processing and selling maize, beans, snacks-, quarrying *"But farming is the most important for us."*	Crop farming –such as cassava, beans, SP- (men and women), animal rearing –cattle, goat- (men and women), piggery (women), stone quarrying (men and women), bricklaying (men, young men), carpentry (men), making crafts –mats- (women), sand mining (men and young men)
FGD II, Lira	Crop farming –such as sweetpotato, cassava, beans-, petty trading –oranges, sweetpotato, maize, local brew-	Crop farming (men and women), animal rearing –pigs, poultry- (men and women), bricklaying (men), stone quarrying (men)

FGD + Community name	Livelihood activities and people they are important for	
	Women's FGD	**Men's FGD**
FGD III, Lira	Crop farming, animal rearing, petty trading –cooking oil, beans, sweetpotato, maize, meat, millet flour-	Crop farming, animal rearing –pigs, cattle, poultry, goats, sheep- (men and women), apiculture (men and women), bricklaying (men), sand mining (men) "*Brick making – done by men because it requires more energy and women have many responsibilities at home"*
FGD IV, Lira	Farming, brewing, trading –bananas-, baking –bread-	Farming –plants and animals- (men and women), bricklaying (men), charcoal burning (men), carpentry (men), metal work (men), making crafts –mats- (women) *"The male dominated activities are deemed laborious and requiring a lot of energy thus excluding women."*

3.2. Farming practices and social segmentation

Farming practices which were mentioned in both study areas included monocropping, intercropping, making mounds, planting, spraying and harvesting (Table 4). Monocropping was mostly seen to be done wealthier households given their land endowment. Intercropping was said to be done by households with limited access to land, but also by women – because they were responsible for ensuring food availability in the home. In Lira, men mentioned that some crops like sweetpotato were never intercropped. Planting and weeding were also mostly identified as culturally a woman activity in both areas, as explained below:

> *"It's a cultural norm and considered a woman's job. In the Rukiga culture if a man's found planting or weeding he can be laughed at or worse still beaten up". Participant, Men FGD III, Kamwenge.*

Amongst activities tagged for men were spraying, ox ploughing and land preparation. Men mentioned that the spray pump was quite heavy and hence women would find it hard to undertake this activity. Ox ploughing was only done in Lira.

Some activities were undertaken jointly by men and women depending on the crop e.g. for sweetpotato, as men prepared the mounds, women would immediately plant the vines. Other activities such as harvesting were mentioned to be done by all members of the family. In Kamwenge, men shared that harvesting depends on the purpose of the crop, as elaborated below:

> *"This depends on the purpose/need e.g. either for home consumption or for sale. Usually women harvest crops meant for food while men handle crops for the market". Participant, Men FGD III, Kamwenge.*

Table 4: Farming practices (FGD Q3)

FGD + Community name	Farming practice	People who practice	People who practice
		Women's FGD	**Men's FGD**
FGD I, Kamwenge	Mono-cropping	Men (*"Practiced by those who are trained and have land"*)	women
	intercropping	Women (*"Women intercrop more because they are responsible for food preparation"*)	
	planting		women
	weeding		Men, women and children
	spraying		Men (*"the spray pump is heavy and only men can handle it"*)
	Harvesting		all
FGD II, Kamwenge	Intercropping	Women (*"This is done by those who have limited land for farming"*)	All household members
	Making mounds		women
	planting		women
	weeding		women
	harvesting		women
	spraying		Men ("the spray pump is heavy and only men can carry it")
FGD III, Kamwenge	Intercropping ("sweetpotatoes are intercropped with cassava")	Women ("Women intercrop more because its them who take care of the family")	
	Planting in rows		
	monocropping		all
	Making mounds		women
	planting		Women
	weeding		women
	tilling		Men and women
	spraying		Men ("the spray pump is heavy for women ")
	harvesting		Men and women
FGD IV, Kamwenge	Clearing land, ploughing, making mounds, mono-cropping	Rich and poor ("All the household in this area grow some potato but especially the rich and the poor.")	
	Mono-cropping		All household members
	Making mounds, tilling		Men and women ("Men and women but more especially women")
	Weeding and harvesting		Women ("Women are home most of the time")

FGD + Community name	Farming practice	People who practice	People who practice
		Women's FGD	**Men's FGD**
FGD I, Lira	Mono-cropping	The rich ("The rich of people coz they have a lot of land")	All ages, men and women ("sweetpotatoes are not intercropped")
	intercropping	Husband and wife ("the man digs and the wife plants")	
	Planting in mounds		All ages, men and women
	Use of hand hoes		All ages, men and women
	mulching		Men and women ("This is done mostly by women and a few men")
	Seasonal planting		all
	Piecemeal harvesting		women
FGD II, Lira	Mono-cropping,	Women plant ("men will only come in if you are going to pay them to dig")	
	Clearing land		
	weeding		
	Planting in mounds		
	Mono cropping		All family members
	mulching		women
FGD III, Lira	Use oxen ploughs, plant in lines, Monocropping ("One crop per garden"),	Men, women ("The men help in planting, but women are responsible for weeding")	
	Planting in rows		
	Planting in mounds		Men, women and children ("Men mostly prepare the heaps/mounds while women do the planting")
	Mono cropping		
	weeding		women
	mulching		women
FGD IV, Lira	Intercropping maize and cassava	Women, men ("have their specific roles, and men also have theirs")	
	Mono-cropping		All family members
	Planting in mounds		All family members
	weeding		Women
	mulching		women

3.2.1. Nature of plot ownership and gender roles in farming

FGD responds were requested to elaborate on whether men and women farmed on separate or shared plots. In Kamwenge, the general perception was that men and women mostly had separate plots. When further tasked to estimate the proportion of households that had separate plots, there were divergent views in some communities (Table 5). For example, in Kamwenge II, while women perceived that 80% of the households had separate plots and 20% shared plots; the men mentioned the reverse (i.e. 20% separate; 80% sharing). In Kamwenge I, women shared that 70% of the households farmed on separate plots; but men on the contrary mentioned that all households had

shared plots. Men further noted separate plots featured in homes where men had 'bad manners' i.e. drunkards.

In instances where men and women farmed on shared plots, men FGD respondents in Kamwenge shared that tasks to be conducted were agreed upon between members of the family. For sweetpotato cultivation, men were responsible for land preparation while women undertook the tasks of making mounds, planting and weeding. Men also were noted to be responsible for spraying, pest and disease control. Women observed that there were distinct differences between men and women owned plots, with the former being 'shabby' and mostly monocrop. Women managed plots were noted to be clean and intercropped.

In Lira, all the communities save for Lira II mentioned that farming was done on shared plots. Women in Lira II noted that men do not grow sweetpotato. When asked to explain why families had shared plots, women in Lira III shared as below:

> *"When you get married, you come to a man's home and from then you have to listen and obey to what he says. You can't decide on your own, you can't farm on your own, so you have to do everything jointly" Participant, Women FGD III, Lira*

Interestingly, after mentioning that farming was done on shared plots and also discussing the roles men and women undertook in cultivating sweetpotato, one participant in Lira I mentioned:

> "But the men here don't dig [lots of laughter]. If the man has another job, he will leave you and the children to do all the farm work." "There are categories of men: there are men who wake up and just go to town. The second category – the man goes to offer labour for cash" Participant, Women FGD I, Lira.

With regards to sharing of roles in sweetpotato production, men mentioned that shared tasks included making mounds and planting; while women only tasks were weeding, mulching and harvesting. Women acceded to this division of tasks but indicated that they had no option but to undertake the weeding since men never participated in doing so:

> *"Some people here don't weed." "Who are these?" "The men" (laughter) "Their waists get tired quickly" Participants, Women FGD III, Lira*

Women also shared that men do not know how to do piecemeal harvesting. They noted that when they attempted to do so they would harvest the whole mound and would thus need to be 'supervised'.

Table 5: Differences in men and women's plots

FGD + Community name *	Women's FGD		Men's FGD	
	Women's plots	Men's plots	Women's plots	Men's plots
FGD I, Kamwenge	Separate plots 70%; Shared plots 30% Women's plot characteristics: neat Shared work on shared plots (*"Men and women agree on work tasks and work together"*)	Separate plots 70%; Shared plots 30% men's plot characteristics: shabby Shared work on shared plots (*"Men and women agree on work tasks and work together"*)	Shared plots (*"however, if in a polygamous home, each wife will have a separate plot"*) Women's work: making mounds, planting	Shared plots men's work: spraying for pest and disease control
FGD II, Kamwenge	Separate plots 80%; Shared plots 20% (*"Most women grow crops individually"*) Women's plot characteristics: intercropping, neat	Separate plots 80%; Shared plots 20% Men's plot characteristics: mono-cropping, shabby	Separate plots 20%; Shared plots 80% (*"More than 80% farm on shared plots"*) Women's work: making mounds, planting, weeding, harvesting	Separate plots 20%; Shared plots 80% (*"More than 80% farm on shared plots"*) men's work: spraying for pest and disease control
FGD III, Kamwenge	Separate plots 90%; Shared plots 10% Women's plot characteristics: neat	Separate plots 90%; Shared plots 10% Men's plot characteristics: shabby	Separate plots 10%; Shared plots 90% Women's work: making mounds, planting, weeding	Separate plots 10%; Shared plots 90% Men's work: spraying for pest and disease control
FGD IV, Kamwenge	NR	NR	Separate plot 30%; Shared plots 70% (*"Majority (70%) of men and women farm on shared plots while 30% do it separately."*) Women's work: weeding, harvesting	Separate 30%; Shared plots 70% (*"Majority (70%) of men and women farm on shared plots while 30% do it separately."*) men's work: land preparation, tilling
FGD I, Lira	Shared plots Shared work: making mounds, planting Women's work: weeding, mulching, harvesting	Shared plots Shared work: making mounds, planting	Shared plots Shared work: making mounds, planting Women's work: weeding, mulching, harvesting	Shared plots Shared work: making mounds, planting
FGD II, Lira	Separate plots	NA	Shared plots Shared work: making mounds, planting Women's work: weeding, mulching, harvesting	Shared plots Shared work: making mounds, planting
FGD III, Lira	Shared plots	Shared plots Men's work: other activities except weeding	Shared plots Work: weeding, mulching, harvesting	Shared plots Work: making mounds

FGD + Community name *	Women's FGD		Men's FGD	
	Women's plots	Men's plots	Women's plots	Men's plots
FGD IV, Lira	Shared plots Shared work: (entire) harvest Women's work: weeding (*"Children plant."* "piece meal harvesting	Shared plots Shared work: (entire) harvest - regarding piecemeal harvesting- (*"men don't do so unless you go with him. If you are sick, he has to be supervised, otherwise he will remove all the roots*") men's work: clearing field	Shared plots Shared work: making mounds, planting Women's work: weeding, mulching, harvesting	Shared plots Shared work: making mounds, planting

3.2.2. Important crops in the community

FGD respondents were asked to mention important crops in their community and to prioritize them in descending order. The priority crops were weighted i.e. by 3 for the crop ranked first, by 2 for the second best and by 1 for the third. The crops that the respondents perceived to be most important are presented in Table 6. Overall, six crops that were perceived to be most important including: beans, sweetpotato, cassava, maize, peanuts and coffee.

Table 6: Important crops in rural communities

Crop importance	Women	Men	Kamwenge	Lira
1st	Beans	Beans	Maize	Beans
2nd	Sweetpotato	Sweetpotato	Sweetpotato	Cassava
3rd	Cassava	Cassava & Maize	Beans	Sweetpotato
4th	Maize		Cassava & Coffee	Maize
5th	Coffee	Groundnuts		

There was not much variation in the crops mentioned by region. However, there were differences by ranking. For example, while people in Kamwenge ranked maize first (weighted score =17), in Lira, beans were ranked first (weighted score =19). Also, sweetpotato was ranked the second ranking most important crop in Kamwenge (weighted score=11) but the third top ranking for Lira (weighted score=11) implying that it was perceived to be less important for respondents in Lira. In addition, groundnuts and coffee were only mentioned in Kamwenge.

From the gender perspective, the top three ranking crops for both men and women were beans, sweetpotato, and cassava, in descending order. Although the weighted score of maize was the same for both genders (=9), its rank varied among the genders. While maize tied in the third place with cassava among men, it had lower perceived priority i.e. fourth position among the women. In both genders there were five crops mentioned among the priority crops. While men included groundnuts, women mentioned coffee as being priority crops.

The reasons as to why these priority crops were perceived to be important and the population groups for whom they are important are provided in Table 7. The reasons provided can be largely grouped into: food and nutrition related, economic, agronomic, and sociological. Of all the reasons provided food and nutrition related were the most predominant (mentioned 16 times). All crops, except coffee,

were prioritized for their value as food. Respondents indicated that the crops are important for food security (combating hunger/ hunger crops), nutritive value, the variety of dishes made from them and their taste. For example, with regards to sweetpotato, a male respondent from FGD I, Lira mentioned that sweetpotato was 'delicious and much better than cassava since some cassava varieties are hard to cook", while another one from FGD II, Lira said '"Its sweetness means that it can sometimes be eaten without sauce and this is important for the children".

Economic reasons were the second most predominant reasons provided for prioritizing crops. All priority crops, except sweetpotato were indicated for their economic value. The economic reasons included: income, school fees, and loan security. All these crops were said to provide a source of income. Maize was particularly prioritized because of its role as loan security among the women of Kamwenge in FGD III. Beans were also said to be important for school fees as demonstrated by the responses below:

> *"Children take beans to school as a requirement" Female respondent, FGD III, Kamwenge*
>
> *"They (children) take beans to school and the school management reduces on the school dues" (Female respondent, FGD IV, Kamwenge)*

Agronomic characteristics were not commonly mentioned by the respondents. Only maize, coffee and peanuts were prioritized, in part, for their agronomic characteristics. Coffee is a perennial crop while maize and peanuts were said to be easy to grow.

Maize, beans and cassava were valued for their social roles. Women in FGD III, Kamwenge said that beans played a role in making the wife stay in a marriage. While men in FGD III, Kamwenge stated the same reason for maize – "*if there's no food in the home the wife will leave".* The men in FGD II, Lira noted that cassava is important for fostering peace in the home as elaborated below:

> *"There's a saying that there's no peace in home which does not have cassava" Male respondent, FGD II, Lira)*

Table 7: Importance of priority crops

Crop	Reasons why the crop is important	People for who the crop is important
Sweetpotato	Food security[1,2,3,7,8,13,14] Home consumption/food/staple[9,10,13] Nutritive value[1,2,13,15] Tasty[13,14,15] Income[9,13] Product raw material[3,4,11,12] ([3]- *"Tasty porridge is got from Vita and Kabode; it also has a good orange colour"* *"Flour is used for making mandazi"*- [11] – *"we dry the chips (oteere)"*) Animal feed[3]	Men, women and children[5,8,11,14,16] Children[9,13,14] Men and women[2,6] Men[3] Women[1] All social groups[10] ([10] – *"It is important for all of us at home. Even rich people eat SP When you take it to the market, they are actually the ones who buy it"*)

Crop	Reasons why the crop is important	People for who the crop is important
Cassava	Food security[2,9,10,13,14,15,16] Food[2,9,10,11,12,16] Nutritive value[10,11,14] Income[2,16] Product raw material[2,10,13,16] Peace in the home[14] ([14] – *"there's a saying that there's no peace in home which does not have cassava"*)	Men and elderly men[13,] ([1]- *"It is important for adults (elderly - male) who do not like sweet food. Men like it more than women because it gives them energy including manpower to perform marital duties (all burst out into laughter!)"*-) All household members[9,14,15] All social groups[10,16]([16]- "*Even for the rich people If they haven't planted, they will even go and buy it"*) The rich and large families[11] ([11] – *"The rich make flour, and they grow it the most. Large families also grow and sell cassava"*)
Beans	Food security[6,8] Food/staple/home consumption[3,5,8,9,11,12,13,15] Nutritive value/satisfying[9,10,13,15,16] Income[3,4,5,6,7,8,14,15] School fees[3,4] ([3] – *"Children take beans to school as a requirement"* and [4] – "they *take beans to schools to reduce on the school dues"*) 'Marriage security'[3] ([3] – *"(if there's no food in the home the wife will leave"*)	All community/ household members[5,9,11,12,13,14] Children[13,14] Men, women and children[8] Women and children[4,8,10] ([10] – *"It is good for women, it makes them get pregnant It gives energy")* Men[3]
Maize	Food security[2,6,8] Food[1,2,3,4,7] Easy to cultivate[6,7] Income[1,2,3,4,5,6,7,8,] Product raw material[2,3] Loan security[3] 'Marriage security'[7] (7– *"(if there's no food in the home the wife will leave"*)	All -men, women and children[5,7,8] Men and women[2,6] Men[1] Women[3] Children[4]
Coffee	Income[1] Perennial crop[1]	Men[1]
Groundnuts	Food security, Food, income, easy to cultivate, marriage security[7]	Men, women and children[7]

Superscripts indicate source of response as such:1-4Kamwenge women's FGD 1-4; 5-8Kamwenge men's FGD 1-4; 9-12Lira women's FGD 1-4; 13-16Lira men's FGD 1-4

Food and nutrition related reasons were important for all regions and gender categories. The economic reasons were also important for respondents in all regions and gender groups. However, beans and maize were the most cited (50% of the FGDs) for their source of income. Beans were said to be important for income by men and women in both Kamwenge and Lira (i.e. two men and one women's FGDs in Kamwenge and three women's and one men's FGD in Lira). Maize on the other hand, was seen as a priority crop in all eight FGDs in Kamwenge. However, economic importance with regards as loan security and proxy for school fees was only mentioned by women in Kamwenge, particularly in FGD III, and IV, respectively.

Agronomic reasons were important for respondents in Kamwenge. However, ease of cultivation was only mentioned in men's FGDs, specifically FGD II and FGD III. Women of Kamwenge in FGD I thought that being a perennial crop made coffee important. Sociological aspects were important for men and women in FGD III Kamwenge and men's FGD II in Lira. Generally, most respondents considered sex and age group an important criterion for deciding for whom a crop is important. More often, men, women, and children were mentioned singularly, paired or grouped altogether. Nonetheless some respondents in Lira considered the perspective of wealth categories as demonstrated by the remarks below:

"It is important for all of us at home. Even rich people eat sweetpotato. When you take it to the market, they are actually the ones who buy it" Female respondent, FGD II, Lira

"The rich make flour, and they grow it the most. Large families also grow and sell cassava" Female respondent, FGD III, Lira

There was a high disparity among men and women in Kamwenge as to the age and sex groups for which some prioritized crops are important. While the women note single specific groups for which the crop is important, men stated that it was important for all groups. For example, women in FGD I, FGD III, and FGD IV, Kamwenge said that maize is important for men, women, and children, respectively. In contrast, the corresponding male respondent FGDs revealed that men believed that maize was important for all groups: men, women and children. This trend was similar to that observed for sweetpotato. Men in FGD I, Kamwenge mentioned that sweetpotato was important for men, women and children, while the women said it was most important for women. Nonetheless, in FGD II, Kamwenge, both men and women agreed that sweetpotato and maize, are important for both men and women.

3.2.3. Sweetpotato Production

In Kamwenge, most of the KIs mentioned that sweetpotato is cultivated as a monocrop twice a year. The crop was reported to be planted on mounds and occasionally on ridges. For local varieties, planting materials were sourced from fellow farmers and from farmer groups while improved and newly released varieties were obtained from multipliers. The KI from Kamwenge III stressed that it was mostly men who bought planting materials from multipliers. Two respondents also indicated that the most common varieties in their communities were improved varieties such as Naspot 8, 12 and 13 as well as *Kabode* (Naspot 10 O). With regards to area planted, the average acreage was noted to be between a quarter and a half acre; while yields were estimated at 6 – 8 MT per acre – which is higher than the estimated country average (4.5. MT/acre).

Lira also had two sweetpotato production seasons each year, and like in Kamwenge, the crop was planted on mounds with a seed rate of three vines per mound. Sweetpotato was also grown as a monocrop, and the most common varieties grown were local i.e. *Okonyneddo and Awietwongweno.* Weeding was reported to be done three weeks after planting, while piecemeal harvesting commenced at three to three months after planting. Piece meal harvesting was noted to be done for about two months after which entire harvesting would be done.

Both areas reported that sweetpotato was mostly grown by women. However, the KIs from Kamwenge I, II and IV and Lira II indicated that all households in their communities grew the crop.

Table 8: Sweetpotato production and household use

Community	Description of how the crop is grown	Proportion (%) of people in the community who grow the crop	Proportion (%) of the crop that the average household uses for making the product
Byabasambu village, Kamwenge	*Seasonality*: 2 seasons per year *Acreage:* 1/4-1/2 acre *Common varieties:* New e.g. Naspot 8, Naspot12, Naspot 13, Kabode *Source of planting material:* multiplier *Yield:* 40 bags from 3-4 bags planted	100%	15/40 used for food at household level Naspot 8 is used for flour processing

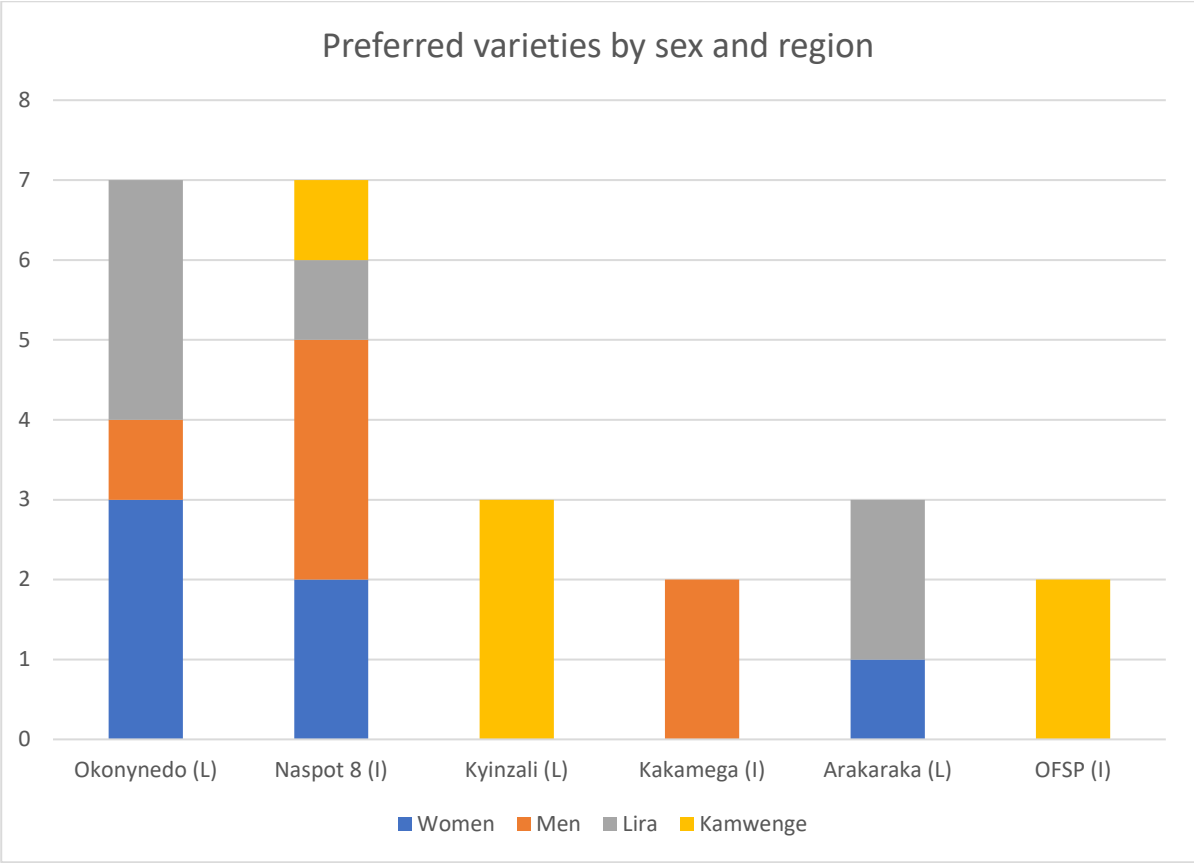
Community	Description of how the crop is grown	Proportion (%) of people in the community who grow the crop	Proportion (%) of the crop that the average household uses for making the product
Byabasambu village, Kamwenge	**Common varieties: new e.g. Naspot 8** **Source of planting material: farmer groups, fellow farmers**	**100%**	**50% is eaten at home** **50 % is sold** **Products: raw potato, flour, mandazi, daddies** **Processors are mostly women**
Mabaale 1 village, Kamwenge	*Common varieties:* New e.g. Naspot 8, Naspot 13 *Source of planting material*: multiplier (mostly men) *Planting pattern:* mounds, ridges, green house; *Cropping system:* no intercropping *Pest and disease control:* using chemicals *Yield:* 60-80 bags per acre	¾ SP farmers are women	Processors (snacks) mostly, children, youth and women
Kamwenge town council, Kamwenge	*Seasonality:* 2 seasons per year *Cropping system:* monocropping *Planting pattern:* mounds	100%	Processors (snacks) mostly, children, youth and women
Lira 1, Lira	*Seasonality:* 2 seasons per year *Land preparation;* start by clearing land *Cropping system:* monocropping *Planting pattern:* in mounds *Weeding time:* 3 weeks after planting *First harvest:* 3 months *Piece meal harvesting*: for 4-6 months	Mostly women	50% home consumption, 50% for sale Excess is dried 'omukeeke' Dietary significance: 4 times a week
Lira II, Lira	*Seasonality:* 2 seasons per year *Planting pattern:* mounds- three vines per mound *Cropping system:* monocropping *Weeding time:* 4 weeks after planting *Pest control:* protect garden from rats *First harvest:* 3 months after weeding *Piece meal harvesting:* 4-6 months	100%	50% for home consumption, 50% for sale Dietary significance: 3 times a week
Apanyi-Acel, Lira	*Land preparation:* clear field, collect or burn grass *Common varieties:* local e.g. Okonyonero, Awietwongweno *Vine preparation:* wilting for 2-3 days to make *kiwoko* *Planting pattern:* in mounds *Cropping system*: monocropping *Weeding time:* 1 month after planting *First harvesting:* 2-4 months after weeding *Piecemeal harvest duration*: 6 months		40% home consumption, 60% for sale 99% consumed fresh, 1% consumed dried into 'oteere'
Aweo village, Lira district	*Seasonality:* 2 seasons per year *Land preparation:* clear the land, make heaps *Cropping system:* no intercropping *Planting pattern:* in mounds, 3 vines per mound *Weeding time:* 3 weeks after planting *First harvest:* 3 months after weeding *Piece meal harvest duration:*4-6 months		60% for consumption, 40% for sale Mostly consumed as fresh boiled Diet significance: 3-4 times a week

With regards to the proportion of the crop that was used for preparing boiled sweetpotato, there was not a lot of variation amongst the regions. In Kamwenge, the estimate was 38-50%, while in Lira it was 40-60%. In Kamwenge it was noted that most of Naspot 8 was processed into flour which was then used for making snacks for sale. In Lira, part of the roots reserved for home consumption were consumed in fresh form while the rest was dried into 'oteere' or chips which were reserved for the lean food period. On average, a household would consume freshly boiled sweetpotato three to four times a week in Lira. About 50% of the roots produced were sold in the fresh form in Lira.

3.2.4. Varieties of sweetpotato and planting material

Respondents who participated in the Individual interviews were asked to mention their preferred sweetpotato varieties and to rank them in descending order. Results in Figure 1 indicate that there were variations among preferences for men and women, as well as across regions. Women mostly preferred local varieties and these took the first and third position (Okonynedo and Araka araka respectively). Both these varieties were mostly grown in Lira. For men, the best two varieties were improved i.e. Naspot 8 and Kakamega respectively. Naspot 8 was also ranked to be the second-best variety by women, while Okonynedo was ranked to be the third most preferred variety by men.

Figure 2: Varieties grown in order of importance by sex and region (from IDIs)



**** Local (L), New variety, recently released (N), Improved variety (I)***

In Kamwenge, the most preferred variety was 'Kyinzali' which some respondents mentioned was an orange fleshed species but a local land race. Some respondents also use the same name to refer to any orange fleshed variety – both improved and local. The second most preferred variety (OFSP) had similar clarity issues to 'Kyinzali' given that respondents categorized all orange-fleshed clones as 'OFSP'.

Results from the FGDs correspond to those from IIs with respect to what men, women and respondents from Lira indicated as their most preferred varieties i.e. Naspot 8 for men and Okonynedo for women and Lira respondent. For Kamwenge, Naspot 8 which was rated third in the IIs was the most preferred variety while Kyinzali, the most preferred variety in the IIs did not feature

at all in the six ranked popular varieties. Other similarities in preference were the second most preferred variety for women (Naspot 8) and the third most preferred variety for men.

Table 9: Varieties grown in the community and ranking in order of preference

Men's FGD	Women's FGD	Kamwenge	Lira
1.Naspot 8 (N)	1.Okonyonedo (L)	1.Naspot 8 (N)	1.Okonyonedo (L)
2.Kiribamukwe (L)	2.Naspot 8 (N)	2.Vitta (I)	2. Araka araka (L)
3.Okonyonero (L)	3. Araka araka (L)	2.Kiribamukwe (L)	3.Naspot 8 (N)
3.Naspot 13 (N)	4.Apakapaka (L)	2.Naspot 13 (N)	4.Apakapaka (L)
5. Awientwonggnero (L)	4.OFSP (N)	5.Kabode (L)	5.Liralira/ Otada(L)
5.Kabode (L)	4.Vitta (I)	6.OFSP	6.Awietwonggnero (L)
5.OFSP (N)			6.OFSP
5.Vitta (I)			

Across regions, Lira respondents mostly preferred local varieties (5 out of 7) while respondents from Kamwenge mostly preferred improved and new varieties (5 out of 6). From the gender perspective, both men and women selected almost numbers of local and improved/new varieties (3 each for women and 4 each for men). The results may indicate greater diffusion of new/improved varieties in Kamwenge as compared to Lira.

3.2.5. Why the Preferred Varieties are grown

Various reasons were advanced as to why preferred varieties were grown by the respondents. For the local variety Okonynedo, women preferred the variety because it was high yielding (50%), early maturity (30%) and good taste (20%). All the men FGD groups cited high yield and early maturity as major reasons for preferring this variety. Men also preferred Okonynedo because it was sweet, and also because it did not rot easily. This variety was only grown in Lira.

Naspot 8 was mostly liked by of its high yield as cited by women (60%), men (80%), 75% of respondents in Kamwenge and 58% in Lira. The variety was also noted to be nutritious mostly by respondents in Lira. Men also preferred it because of its early maturity and big size roots. Women on the other hand additionally preferred its good taste.

In Lira, the local variety Arak arak was preferred mostly because of its early maturity, high yield and ease to peel. In Kamwenge, Kiribamukwe – a local variety was preferred because of its sweetness; and was mentioned to be sweeter than OFSP varieties.

Table 10: Reasons why the variety is grown from Individual Interviews in the two regions

Variety* ** and products	Reasons why preferred	% of women citing	% of men citing	% of citing in Kamwenge	% of citing in Lira
Okonynedo (L) Fresh roots, boiled, roasted, dried chips, roasted, flour, bread	High yielding	50	100		56.5
	Fast maturing	30	100		39.1
	Sweet	10	66.7		17.4
	Doesn't rot easily	5	33.3		4.3
	Easy to cook	10			8.7
	Good taste	20			17.4
	Big size	5			4.3
	Long storage	5			4.3
	Mealy	5			4.3
	Hard	5			4.3

Variety* ** and products	Reasons why preferred	% of women citing	% of men citing	% of citing in Kamwenge	% of citing in Lira
Naspot 8 (N) Fresh roots, boiled, dried chips, flour, mandazi, pancakes, 'daddies', bushera,	High yielding	60	80	75	58.3
	Fast maturing		60		25
	Sweet	20	20	25	16.7
	Big size	6.7	40	25	8.3
	Low water content		20		8.3
	Nutritious	46.7	40	25	58.3
	Product raw material	6.7		12.5	
	Children like it	6.7		12.5	12.5
	Good taste	26.7	20	12.5	8.3
	Attractive	6.7	20	12.5	8.3
	Marketable	13.3			16.7
Araka Arak (L) Boiled, dried 'oteere', roasted	fast maturing	12.5	25		37.5
	Marketable		12.5		12.5
	high yield	12.5	12.5		25
	sweet taste		12.5		12.5
	Hard		12.5		12.5
	easy to peel "does not break on peeling"	12.5	12.5		25
	"doesn't grow as big as the others"	12.5			12.5
	smooth skin	12.5			12.5
	"has both yellow and white"	12.5			12.5
OFSP boiled, dried 'oteere', flour, local brew, pancakes, mandazi	high yielding		12.5	12.5	
	early maturity	12.5	12.5	12.5	12.5
	« many products can be made »		12.5	12.5	
	Nutritious	12.5	12.5	12.5	12.5
	liked by children		12.5	12.5	
	big in size	12.5			12.5
Vitta Flour, mandazi, pancake, chapati	very sweet/good taste	12.5	12.5	25	
	high yielding	12.5	12.5	25	
	Marketable		12.5	12.5	
Kiribamukwe (L) Boiled	« big sized root about 1kg »		12.5	12.5	
	hard flesh		12.5	12.5	
	sweet taste « sweeter than OFSP »	12.5	25	37.5	
	high demand		25	25	
	good yield		12.5	12.5	
	low yield	12.5		12.5	
	Satisfying		12.5	12.5	
	« Not sensitive to soils and can grow anywhere »		12.5	12.5	
	Mealy		12.5	12.5	
	good appearance		12.5	12.5	
	stays long in soil	12.5		12.5	
Naspot 13 (N) Porridge, flour, baked product, pastries – chapati, mandazi-	weather tolerant	12.5	12.5	25	
	disease resistant		12.5	12.5	
	high yielding	12.5	12.5	25	
	Sweet		12.5	12.5	
	Nutritious		12.5	12.5	
	Marketable	12.5	25	37.5	
	high vine yield		12.5	12.5	
	does not rot		25	25	
	Hard	12.5		12.5	
	not fibrous	12.5		12.5	

**** Local (L), New variety, recently released (N), Improved variety (I)***

***** Use scientific names where possible***

All varieties of sweetpotato were mostly consumed in the boiled form. In Lira, women respondents also mentioned making 'oteere' (dried chips) which were important for food security as they were stored and eaten during times of food scarcity. In Kamwenge, OFSP varieties such as Naspot 8 and 13 were used to make snacks which were sold and were quite popularly.

Varieties Which Respondent's Spouses Grow and Or Prefer

Table 11 below shows the proportions of respondents whose spouses grow the same varieties as they do and those whose spouses prefer or grow other varieties besides those grown or preferred by the respondents by gender and region. The spouses who prefer or grow other varieties may grow or prefer them in addition to the varieties they grow or prefer in common with the respondents. Generally, most respondents regardless of gender or region grow and prefer the same varieties as their spouses.

Table 11 a: Does your spouse grow the same varieties as you do?

Variable	Gender		Region	
	Women (n=60)	**Men (n=12)**	**Kamwenge (n=32)**	**Lira (n=40)**
Does spouse grow same varieties ?				
	n (%)			
Yes	31 (51.7)	12 (100)	18 (56.3)	25 (62.5)
No	13 (21.7)		8 (25)	5 (12.5)
NA	15 (25)		6 (18.8)	9 (22.5)
NR	1 (1.7)			1 (2.5)

Table 11 b. Does spouse grow/prefer other varieties?

	Gender		Region	
	Women (n=60)	**Men (n=12)**	**Kamwenge (n=32)**	**Lira (n=40)**
	n (%)			
Yes	6 (10)	2 (16.7)	1 (3.1)	7 (17.5)
No	38 (63.3)	10 (83.3)	25 (78.1)	23 (57.5)
NA	16 (26.7)		6 (18.8)	10 (25)
NA= not applicable; NR= no response				

With regards to gender, all male respondents grow the same varieties as their spouses while only about half of the female respondents grow the same varieties as their spouses. In some instances, spouses of female respondents are interested in crops other than sweetpotato. For example, respondent 31 reported that her husband had no interest in sweetpotato and only grows coffee. In other cases, husband and wife grow different kinds of sweetpotato varieties. Such was the case with respondent 70 who grows some orange fleshed sweetpotato varieties along with Okonyonedo and Alira lira while her husband grows and only prefers a local variety, Acil Acil. However, in contrast to this trend a bigger proportion of male respondents (16.7%) than female respondents (10%) reported that their spouses grew or preferred varieties besides those that they (respondents) grew or preferred. It should be noted that since all the men said they also grew the same varieties as their spouses, these other varieties were in addition to those that they grew in common with their spouses. On the other hand, it is only a few cases of women who noted that their husband prefer/grow varieties different to theirs, but also grow varieties in common. For example, respondent 67 said she and her husband commonly grow local varieties while her husband separately grows orange fleshed sweetpotatoes.

In respect to region, a higher percentage of respondents from Lira (62.5%) than Kamwenge (56.3%) grow the same varieties as their spouses. Further, only 3.1% of respondents from Kamwenge reported that their spouses grew or preferred varieties besides the ones which they (respondents) grew or preferred. A higher percentage (17.5%) of respondents from Lira reported that their spouses grew or preferred varieties different from those which the respondents grew or preferred.

Less preferred Sweetpotato Varieties

Generally, the less preferred varieties varied from community to community and by gender. However, most of the characteristics that these varieties are recognised by are appearance and sensory characteristics, and a few agronomic and physiological attributes. In several instances, the respondents did not state distinguishing physical attributes of the variety, but rather bad or poor characteristics associated with the variety.

In Kamwenge, yellow and orange fleshed sweetpotatoes were the less preferred varieties. Vita, an improved variety and Kabode were mentioned several times in both the male and female FGDs conducted in the area. The recognisable characteristics were mostly agronomic such as late maturing, and low yield, or sensory or physiological such as the morphology of the roots and structure of the leaves. On the other hand, in Lira, local varieties were mentioned more frequently including Anamoit, Agoba, and even Okonyonedo which was earlier seen to be amongst the preferred varieties. Similar to Kamwenge, undesirable agronomic and sensory attributes were associated with less preferred varieties. Nonetheless, respondents in Kamwenge, unlike those in Lira were concerned with inground storage.

In Kamwenge, less preferred varieties were still grown in spite of their undesirable characteristics given that they possess additional positive attributes. This implies that the positive factors associated with these varieties overrode the significance of the negative factors for the community in regard to these varieties. Rushema mahamba and Rwamityana were the only less preferred varieties in Kamwenge that farmers no longer grow despite their good sensory attributes. To the contrary, in Lira, with the exception of Agoba, all the less preferred varieties were not grown anymore. In fact, the only reason Agoba was still grown was because it's features could easily be confused for a good variety.

The heterogeneity between male and female respondents varied by region. In Kamwenge, there was more heterogeneity between men and women. Regardless of yellow and orange fleshed sweetpotato varieties (especially Kabode and Vita) being the most cited less preferred variety according to both men and women, there were differences amongst men and women from the same community on less preferred varieties. In FGD II, for example, women expressed that Kabode and Kakazimalyo were their less preferred varieties, while men mentioned Vita.

Women in Lira did not specify less preferred variety but rather gave a description of varieties they did not like. Nonetheless, there were similarities among male and female respondents regarding the characteristics associated with these varieties. Particularly in FGD I, both men and women expressed that they associated attributes like fibrousness, softness, low sweetness, and rotting quickly in the garden with less preferred varieties. Also, in FGD IV, even though the less preferred varieties varied by gender, hardness of the vines was mentioned in both male and female FGDs as a distinguishing characteristic for less preferred varieties. Additionally, both men and women no longer grew the less preferred varieties.

Table 12: Less preferred varieties, characteristics and reasons for growing them by gender and region

FGD Community name *	Less preferred varieties, their recognisable characteristics and reasons for growing them	
	Women's FGD	Men's FGD
FGD I, Kamwenge	*Less preferred variety*: Nderera 'has no market and was nice before OFSP came', Kiribamukwe 'has no market for vines even though tubers are bought', Kahogo 'has no market for vines' *Recognisable characteristics*: dark red skin colour, hard skin, rough skin, skin peels off easily, low market, susceptible to diseases *Reason(s) for growing it*: lack of awareness on orange fleshed sweetpotato, efforts to conserve local varieties, long in-ground storage	*Less preferred variety:* Kabode 'roots don't stay long in the soil i.e they sprout after 4 months. Also requires the use of fertiliser', Vita 'has relatively low demand, vines do not stay long in the field (less than 3 months) the leaves change colour, dry and fall off. It is a relatively new variety in the area and not popular' *Recognisable characteristics*: Kabode- red peel, long roots, broad leaves; Vita- red peel, small long roots, narrow leaves *Reason(s) for growing it:* home consumption, making up order deficits 'a big order may be placed and one does not have enough of one variety so these varieties can be used to top up to meet this demand'
FGD II, Kamwenge	*Less preferred variety*: Kabode, Jumula *Recognisable characteristics:* Kabode- very soft, sprouts quickly, watery; Jumula- not disease resistant, low yield *Reason(s) for growing it*: NR	*Less preferred variety:* Kakazikamalayo 'Low yielding, produces long and slender roots, susceptible to rot' *Recognisable characteristics:* long narrow roots, red peel, yellow flesh, trifoliate leaf with long middle part *Reason(s) for growing it:* tasty, crumbly, good odor, yellow color
FGD III, Kamwenge	*Less preferred variety*: Kabode, Kakazikamalayo *Recognisable characteristics*: Kabode- watery, no sap, soft; Kakazikamalayo- fibrous, low yields *Reason(s) for growing it*: Kabode- limited options	*Less preferred variety:* OFSP like Vita 'they are less sweet' 'they are susceptible to weevils' *Recognisable characteristics:* less sweet, soft (not hard enough) *Reason(s) for growing it:* high yielding, marketable vines
FGD IV, Kamwenge	*Less preferred variety:* Vita *Recognisable characteristics*: bad smell, fibrous, soft peel, pale color, deep orange *Reason(s) for growing it*: NR	*Less preferred variety:* Rushenya mahamba, Rwamityana *Recognisable characteristics:* Late maturing, good sensory attributes 'Otherwise the varieties are ok in terms of sweetness, hardness and are delicious' *Reason(s) for growing it:* Not grown anymore
FGD I, Lira	*Less preferred variety*: Not specified 'There are some varieties that don't form roots, they just form long thin roots. Others are not sweet' *Recognisable characteristics*: too soft, not sweet, easily rots in garden, fibrous *Reason(s) for growing it*: Not grown anymore	*Less preferred varieties:* Anamoit, Oleke *Recognisable characteristics:* soft, fibrous, not sweet, rots quickly in garden *Reason for growing it:* Not grown anymore
FGD II, Lira	*Less preferred variety*: Not specified 'we don't like it because it is soggy, even if you put little water in it when cooking it will still be soggy' *Recognisable characteristics*: red skin, red terminal vines, dark leaf, white flesh color *Reason(s) for growing it*: NR	*Less preferred variety:* Agoba (translates as liar) 'does not produce good roots, only long, narrow and small roots' *Recognisable characteristics:* low yield, fibrous, no flesh on root *Reason(s) for growing it:* vines are similar to other good varieties 'The variety looks like other good varieties so, many times it is mistakenly/accidentally planted' , animal feed

FGD Community name *	Less preferred varieties, their recognisable characteristics and reasons for growing them	
	Women's FGD	Men's FGD
FGD III, Lira	*Less preferred variety:* Not specified *Recognisable characteristics:* easily damaged 'As soon as it starts getting big, the roots crack and look like the pests have attacked it' *Reason(s) for growing it:* Not grown anymore	*Less preferred variety:* Peninah *Recognisable characteristics:* fibrous, too much canopy *Reason(s) for growing it:* Not grown anymore
FGD IV, Lira	*Less preferred variety:* Dwe acel, Okonyonedo- 'not good for oteere' *Recognisable characteristics:* skin color, taste, vines are hard to pluck with hard veins *Reason(s) for growing it:* NR	*Less preferred variety:* Otede *Recognisable characteristics:* fibrous, hard vines, hairy thin stems *Reason(s) for growing it*: Not grown anymore

3.2.6. Planting material

Women mostly sourced their sweetpotato planting materials from neighbors (50%) followed by NGOs (30%) and multipliers (20%). On the other hand, the primary source of planting materials for men was NGOs (50%) followed by neighbors (33%). Studies have shown that men are usually more mobile than women hence their ability to source vines from outside the community. In Kamwenge, the primary source of planting materials was Multipliers while in Lira neighbors were the major source of planting material. This could further point to higher diffusion of improved materials in Kamwenge.

Table 13: Source of planting material (II Q15.3)

Source of planting material	% of women citing N=60	% of men citing N=12	% of Kamwenge farmers citing N=32	% of Lira farmers citing N=40
Own farm	11.7		18.8	2.5
NGO	36.7	50	15.6	57.5
Multiplier	23.3	8.3	43.8	2.5
Neighbours[1]	51.7	33.3	31.3	62.5
Government	3.3	8.3	3.1	5.0
Buy from farmers	3.3		3.1	2.5
Farmer groups	5.0		6.3	2.5
Local leaders	1.7			2.5
Family	1.7			2.5
[1]includes fellow farmers, friends				

In Kamwenge, men in FGDs noted that it was men who mostly bought vines from multipliers. This is not reflected in this table and can be attributed to the low number of men Individual respondents. However, the implication is that women may not be able to access improved varieties at the same rate as men; hence the need of protracted strategies to disseminate improved varieties to women.

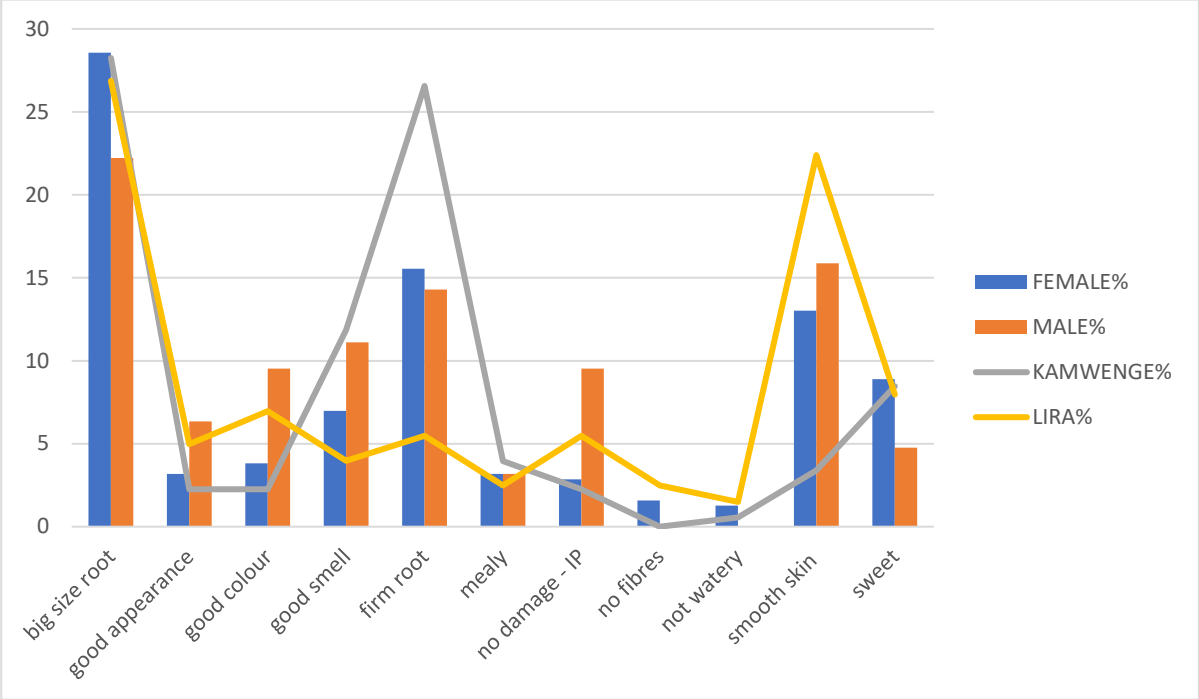
3.2.7. Important Characteristics of Sweetpotato

General crop characteristics as preferred by the male and female respondents in Kamwenge and Lira region are summarized in Tables 13 (individual interviews) and 14 (FGD). According to Table 13, preference was inclined towards post-harvest (big size roots), sensory (sweet taste) and agronomic (high yield) characteristics amongst the genders and regions assessed.

Overall, the most preferred characteristic was a big size sweetpotato root followed by sweet taste in both Kamwenge and Lira region, representing the only similarity between the two regions. The third preferred characteristic was containing Vitamin A and high yield for Kamwenge and Lira respectively.

Other notable characteristics in descending priority were smoothness of the skin and good appearance for Lira whereas in Kamwenge it was skin colour and good texture.

Figure 2: General characteristics of a good raw sweetpotato root (Individual Interviews)



In terms of gender, women preferred big size sweetpotato root followed by sweet taste with the men preferring the same top two characteristics however, in reverse order. Interestingly, both men and women identified high yield as their third priority preferred characteristic. Other notable characteristics in descending order were good appearance for both men and women; smoothness of the skin for women and hardness/firmness of the root for men. Therefore, men and women generally had the same preferred characteristics except hardness/firmness of the root and smoothness of skin for men and women respectively.

Data from the FGDs (Table 14) showed preference among gender groups and regions was similar to the II with slight variation. Between the gender groups and regions, overall preference was mainly associated with agronomic (early maturity, high yield), post-harvest (big size roots) and sensory (sweet taste, hardness/firmness of the root) characteristics.

The men's FGD sited early maturity, sweet taste and big size roots as their top three priority characteristics in descending order whereas the women had big size roots, hardness/firmness of the root and high yield. The men further identified high yield and disease resistance whereas the women had sweet taste, sappy root and smoothness of the skin as other important characteristics. Generally, men and women FGDs were in agreement regarding selection of big size roots, sweet taste, and high yield albeit in different order. Unique to the men were early maturity and disease resistance whereas the women had hardness/firmness of the root, sappy root and smoothness of the skin.

There was incongruence between the regions regarding the top three priority characteristics with Kamwenge FGDs selecting sweet taste, hardness/firmness of the root and high yield whereas Lira had big size roots, early maturity and vitamin A content respectively. Kamwenge further cited disease resistance, early maturity and sappy root whereas Lira had sweet taste and high yield. Nevertheless, both regions had sweet taste, high yield and early maturity in common albeit in different order. Kamwenge uniquely identified disease resistance (associated with the male FGD), hardness/firmness of root and sappy root (associated with women FGD) whereas Lira had vitamin A content and big size roots as exceptions.

Table 14: Most important crop characteristics in order of preference (FGD)

Importance	Men's focus groups	Women's focus groups	Kamwenge	Lira
1	Early maturity	Big size roots	Sweet taste	Big size roots
2	Sweet taste	Hardness	Hardness	Early maturity
3	Big size roots	High yield	High yield	Vitamin A
4	High yield	Sweet taste	Disease resistance	Sweet taste
5	Disease resistance	sappy	Early maturity	High yield
6		Smoothness	sappy	

The majority of women (50%) and men (92%) indicated that their preferred characteristics would not be different from their spouses. A similar trend was observed in the two regions of Kamwenge (56%) and Lira (58%). Following the old adage that what is good for the goose is good for the gander one respondent aptly summarized her reason *"when harvesting, we always look at the same features in a good sweetpotato*" and another added *"since we work together, we always plant the same varieties of sweetpotatoes and aim at the same features".*

3.2.8. Uses of the Crop

The major products from sweetpotato as identified in both male and female FDGs in Kamwenge and Lira were fresh roots, boiled/steamed sweetpotato, fried sweetpotato, roasted sweetpotato, flour, peels and vines (**Table 15**). Dried sweetpotatoes were specifically mentioned in both male and female FDGs in Lira only and were therefore not produced in Kamwenge. There was one mention of sweetpotato being used to make local beer in a male FDG in Kamwenge. Sweetpotato was predominantly steamed in Kamwenge whereas it was boiled in Lira and infact, there was no mention of steamed sweetpotato in Lira. Flour and fried sweetpotato were cited more in Kamwenge than in Lira. However, dried sweetpotato in Lira was usually milled into flour before consumption.

Regarding gender, male FDGs had more mentions of roasted/baked, fried sweetpotatoes and peels than the women FDGs.

Table 15: Summary table of products and important characteristics

Product	Men's FGD	Women's FGD	Kamwenge	Lira
boiled	5	4	2	7
dried slices	3	4	0	7
Flour	6	6	8	4
Fresh roots	7	6	5	8
Fried	7	3	7	3
local beer	1	0	1	0
Peels	8	4	7	5
roasted	6	1	4	3
steamed	4	3	7	0
Vines	8	7	8	7

From the individual interviews (II's) the important products were similar to those mentioned in the FDGs that is; fresh roots, boiled sweetpotato, dried sweetpotato, flour, peels and vines. Overall, fresh roots were the most cited product followed by vines and boiled sweetpotato (Table 16).

There was no mention of boiled, dried sweetpotato and peels among respondents from Kamwenge indicating that these products are perhaps not very important there. This observation in Kamwenge is similar to the FDG response. Fresh roots and vines were cited more in Kamwenge than in Lira.

Table 16: Frequency of citations by Individual Interviews for important products by sex and region

Product	Men citing%	Women citing%	Kamwenge%	Lira%
Boiled	16.7	18.3	0	32.5
Dried	0	8.3	0	12.5
Flour	8.3	1.7	3.125	2.5
fresh roots	66.7	45	87.5	17.5
Peels	33.3	6.7	0	20
Vine	33.3	45	53.125	35

Vines, boiled and dried roots were cited most by women as being important compared to men whereas fresh roots, peels and flour were mentioned more by male respondents.

3.2.9. Fresh Roots

Overall, the most frequently cited characteristics for fresh sweetpotato by women and men were big size roots, sweet taste and smooth skin (Table 16a). Furthermore, important for the women were good texture and vitamin A content, none of which were identified by the men. The men in contrast further cited hardness/firmness and a sweetpotato root without any damage.

Table 16 a: Percentage of citations of important characteristics for fresh roots by sex and region (during Individual Interviews)

Characteristic	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
big size	35	33.3	75	2.5
disease free	5	0	9.4	0
easy to peel	3.3	0	0	5
no damage	3.3	16.7	6.3	5
smooth skin	13.3	25	18.8	12.5
sweet taste	21.7	25	50	0
vitamin A	11.7	0	21.9	0
good colour	5	8.3	12.5	0
good smell	3.3	0	6.3	0
good texture	13.3	0	21.9	0
not fibrous	5	8.3	12.5	0
yellow colour of the flesh	3.3	0	6.25	0
good appearance	1.7	0	3.1	0
Hard root	1.7	16.7	9.4	0
not rotten	3.3	0	3.1	2.5

The most important characteristics of fresh sweetpotato cited in Kamwenge were big size roots, sweet taste, good texture and vitamin A content. Furthermore, smooth skin, good colour and no fibrousness were mentioned in Kamwenge. The important characteristics in Lira were smooth skin, big size roots and roots which are not rotten.

3.2.10. Boiled Roots

Regarding boiled root, the women preferred sweet taste, mealiness and firmness as top characteristics whereas the men had good smell, not watery, sweet taste and soft-boiled sweetpotato. Therefore, only sweet taste was commonly prioritized by men and women (Table 16b).

Table 16 b: Percentage of citations of important characteristics for boiled roots by sex and region (from Individual Interview)

Characteristic	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
cooks well	1.7	0	0	2.5
good smell	3.3	8.3	0	7.5
hard	5	0	0	7.5
not watery	3.3	8.3	0	7.5
sweet taste	13.3	8.3	0	22.5
Mealy	6.7	0	6.3	5
good appearance	1.7	0	0	2.5
Soft	0	8.3	0	2.5
yellow or white colour	3.3	0	0	5

In terms of region, Lira preferred a boiled sweetpotato which has a sweet taste, good smell, is hard/firm and not watery. In Kamwenge, mealiness was the only preferred characteristic cited.

Vines

Green colour and disease free were the standout characteristics mentioned by both women and men. In addition, women cited not damaged and big sized vines as preferred characteristics. For the men, soft, high yielding and big sized vines were also mentioned.

Table 16 c: Frequency of important characteristics for vines by sex and region

Characteristic	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
good appearance	1.7	0	3.1	0
Fresh	1.7	0	0	2.5
green colour	23.3	25	50	2.5
no damage	13.3	0	9.4	12.5
Nutritious	3.3	0	0	5
Soft	1.7	8.3	0	5
high yield	3.3	8.3	0	7.5
early maturing	1.7	0	0	2.5
not dry	1.7	0	0	2.5
big size	6.7	8.3	12.5	2.5
disease free	16.7	16.7	37.5	0
hard stem	1.7	0	3.1	0

In the regions, green colour, disease free and big sized vines were most desirable in Kamwenge while in Lira it was vines which are not damaged, are high yielding, soft and nutritious as priority.

3.2.11. Labour

Preparation and Sale of Boiled Sweetpotato

From the focus groups, across regions and sex, it was obtained that women were majorly involved in the entire preparation and processing of the boiled sweetpotato (Table 17a). In one community in Lira, this was accounted to food preparation being a women's responsibility, as elaborated below:

"Women do the entire process. This is because it is their responsibility and they know how to do it better. In the absence of women, then men or older girl children can also prepare it." Men FGD, Abalalai, Lira III

Apart from women, it was noted that other members of the family were involved in processing; especially the girl children. Males in two communities in Lira reported that women and small children were involved in processing while the minority recounted that children across gender are involved.

Concerning selling of the processed product; most male respondents across all regions reported that processed product is not sold in their community, while most female respondents agreed that boiled sweetpotatoes are sold in their community by women. These women sell in restaurants, schools; including boarding schools and health centres in the community.

Table 17a: Responsibility for production and selling of boiled sweetpotato

FGD Community name *	MALE		FEMALE	
	Persons responsible for processing labour	Persons responsible for selling	Persons responsible for processing labour	Persons responsible for selling
FGD I, Lira	Women are majorly involved in this preparation. This is because the men go away from home to work and children go to school thus leaving only women at home	Not sold in this community	Women. If children are at home, the mother peels and the children cook	Women
FGD II, Lira	"Women mostly prepare boiled sweetpotato because it is their responsibility and they know how to do it well. In the absence of women, men and children can also help."	Women sell in restaurants, schools and health centres in the community	It is the women and girls. Men only cook if the wife is not around, or for bachelors	Women
FGD III, Lira	"Women do the entire process. This is because it is their responsibility and they know how to do it better. In the absence of women, the men or older girl children can also prepare it."	Not sold in this community	Women	Not sold in this community
FGD IV, Lira	"Women and girls mainly prepare the boiled sweetpotato. This is their responsibility However, in their absence the men may prepare."	Women sell at the boarding school nearby	It is the women and girls.	Not sold in this community
FGD I, Kamwenge	"Women and female children The men indicated that people would laugh at them if they were seen doing this since it is not their job/responsibility. "Other men will not take me seriously or they will say the woman has bewitched me". This is a woman's responsibility."	Not sold in this community	Woman and girls in the household	Steamed sweetpotato is not sold locally, but is sold in restaurants (especially by women).
FGD II, Kamwenge	"Women. Why (All laugh). Women can manage this responsibility and do it well. This is not a man's responsibility."	Not sold in this community	Woman and girls in the household	Sold in restaurants (women)
FGD III, Kamwenge	"Women are mostly involved, however some men especially those in the food business are involved in this preparation. According to culture, women go to the kitchen."	Not sold in this community	Women and girls in the household	Sold in restaurants and hotels (especially by women)

FGD IV, Kamwenge	"Women are mostly involved, it is their responsibility. According to culture, women do the cooking."	Not sold in this community	All activities are done by women and children	Not sold in this community

Sale of Vines

There were varied responses from the focus groups concerning the persons responsible for selling vines. These varied between men, women, both men and women selling vines or the vines not being sold at all. However, from half of the male FGDs, it was obtained that women sell the vines. The male respondents accounted this to women being responsible for the home and the income being used to cater for household requirements. Respondents from one focus group in Kamwenge said that:

> *"Woman (she is charged with most domestic operations so she can sell and keep the money for herself since it is very little)." Men FGD, Kyakanyemera I, Kamwenge III*

The men argued that they don't have time to sell vines since they have too much other work to do. Besides that, some of the respondents said that men and women that share the responsibility do so because they want to raise or supplement on the family income. Men from Lira III reported that vines are not sold and that they are used for animal feeds and manure.

Table 17b: Who is responsible for selling vines

FGD Community name *	MALE	FEMALE
FGD I, Lira	Men. Men sell vines sometimes.	Women. women sell the vines and give the men some money to go and 'relax'
FGD II, Lira	Women sell the vines because men do not have time to do this	Do not sell vines. They are for own seed or give to other people to plant
FGD III, Lira	Vines are not sold. They are used for animal feeds and manure.	NA
FGD IV, Lira	Women do the selling because men have too much other work to do	Vines are not sold
FGD I, Kamwenge	Both men and women. It is a shared responsibility to raise family income	Men and women. Sold by both men and women because there's good money
FGD II, Kamwenge	Both men and women. To supplement family income	Men and women. Sold by both men and women because there's good money
FGD III, Kamwenge	Woman (she is charged with most domestic operations so she can sell and keep the money for herself since it is very little)	Vines are not sold
FGD IV, Kamwenge	Women are responsible for the home and income is used to cater for household requirements	Vines are not sold

On the contrary to the men, a half of the female respondents across regions concluded that vines are not sold. This is further emphasized below:

"We do not sell vines. They are for own seed or give to other people to plant." Women FGD, Obato, Lira II

Similar to men in Kamwenge I and II, women from the same revealed that both men and women sell vines because there's good money.

Sale of fresh roots

Similar information from the FGDs was obtained about persons responsible for selling fresh roots. All respondents across regions and sex revealed women as the primary sellers of sweetpotato as explained below:

"Women sell fresh roots whenever there is surplus. This is because women handle the family budget." Men FGD, Obato, Lira II

"Women are responsible for the home and are in best position to gauge when/how much to sell and when/how much to retain roots for home consumption." Women FGD, Kyakanyemera II, Kamwenge III

However, men from Lira community reported that women sell surplus sweetpotato. They mentioned, "*men do not have time and patience to wait for customers all day unlike the women*" and "*men are busy with other work*" as the reasons why men are not involved in selling sweetpotato. The women from Lira I and II revealed that it is the poor people who sell fresh roots. 'The rich do not sell because there's no money in sweetpotato," they further explained. Women from Lira II said that even though women sell fresh roots, men sell fresh roots when volumes are big.

Processing and Sale of Dried Chips

As mentioned earlier, dried chips were only produced in Lira. From the FGDs, it was obtained that women are responsible for processing and selling of dried sweetpotato chips. With regards to this, a male respondent from Lira I mentioned as below:

"Women sell this whenever there's need for money in the homestead. Men are shy."

Table 17 c: Responsibility for production and sale of sweetpotato dried chips

FGD Community name *	MALE		FEMALE	
	Persons responsible for processing labour	Persons responsible for selling	Persons responsible for processing labour	Persons responsible for selling
FGD I, Lira	W	Women. Women sell this whenever there's need for money in the homestead. Men are shy	W	Women. Sell it during the dry season Sell faster so it does not rot
FGD II, Lira	W	Women	W	Women
FGD III, Lira	W	Women	W	Women sell it by the heap (each goes for 500/)
FGD IV, Lira	W	Women	W	Women

Besides that, a female respondent from the same region revealed that; "*women sell it during the dry season, and the rate at which they sell it depends on its likelihood to rot.*"

Peels

It was noted that both men and women were involved in the sale of peels. This was revealed by a male respondent from Byabasambu, Kamwenge II who said that the peels are sold dry and that the responsibility is shared for family income.

Flour

Similar information from the FGDs was obtained about persons responsible for processing labour and selling Sweetpotato flour. All respondents across regions and sex revealed women as the primary processors and sellers of sweetpotato flour. A male respondent from Barkwoyo, Lira II revealed that they sold flour after drying and milling sweetpotato. "*I dry oteere, make flour and sell to people who make bread or mandazi*," a female respondent from Obato, Lira II said. One of the reasons as to why women are more involved in the whole process is stated below:

> *"This is because the women are mainly involved in making the products from flour such as porridge, pancakes both for home consumption and for sale" Male FGD Byabasambu I, Kamwenge I*

Table 17 d: Responsibility for processing and sale of sweetpotato flour

FGD Community name *	MALE		FEMALE	
	Persons responsible for processing labour	Persons responsible for selling	Persons responsible for processing labour	Persons responsible for selling
FGD I, Lira	Mostly women fry sweetpotato because this is their 'office'. However, some men can also fry.	Women fry and sell immediately in the trading centre	Do not process fried sweetpotato	Do not sell fried sweetpotato
FGD II, Lira	Both men and women fry sweetpotato. Fried sweetpotato is sold for income so both do it	Women sell in restaurants, schools and health centres in the community	Do not process fried sweetpotato	Do not sell fried sweetpotato
FGD III, Lira	Do not process fried sweetpotato	Do not sell fried sweetpotato	Do not process fried sweetpotato	Do not sell fried sweetpotato
FGD IV, Lira	Women fry the sweetpotato for home consumption	Do not sell fried sweetpotato	Do not process fried sweetpotato	Do not sell fried sweetpotato
FGD I, Kamwenge	Both men and women "This is mainly for businessmen/women and is important for income so both are involved. Even at household level, men can also fry the SP since it enhances household income."	Both men and women sell in the nearby town	Women and youth	Sold mainly by youths
FGD II, Kamwenge	"All (men, women and older children) Important to generate income for the household."	Men, women and older children sell in the nearby town	Women	Sold by women

FGD Community name *	MALE		FEMALE	
	Persons responsible for processing labour	Persons responsible for selling	Persons responsible for processing labour	Persons responsible for selling
FGD III, Kamwenge	"Men and women Usually done as a business for income generation for the household."	Both men and women sell in the nearby town	Women	Sold by women in centre
FGD IV, Kamwenge	NR	NR	All activities are done by women and children	Women. It is fried and sold by women

Apart from women, it was noted that youths were also involved in selling flour as elaborated below:

> *"Women make flour and make mandazi, cakes mainly sold by women and youth." Women FGD, Kyakanyemera II, Kamwenge IV.*

Roasted/Baked

There were notable differences between responses from the different clusters of the population. For example, 50% of the Lira male FGDS revealed men and boys as the persons responsible for processing roasted/ baked sweetpotato. "*Men and boys prepare Abuk (baked sweetpotato), women do not have experience in making it and it is not their responsibility. More so, men prepare it as a quick snack as they head off to graze the animals,"* male respondents from Aweo, Lira IV explained.

In Kamwenge region, however, majority (75%) of the male FGDs revealed processing roasted sweetpotatoes as a collective responsibility for both men and women. Additionally, from Kamwenge I and II male FGDs, children also take part in the processing process. The following statement was captured from male FGD 4, Kyakanyemera II, Kamwenge II:

> *"Men, women and children. This is done in the garden during farming and sometimes sold for income generation. Preferred by people on long journeys such as pilgrims to Namugongo Martyrs Shrine (can be kept for 1 week)."*

Concerning who sells the product, only 25% Lira male FGDs and half of Kamwenge FGDs talked about the possibility of women selling the finished product after it has been processed by the men. The rest indicated that roasted/ baked sweetpotatoes are not. .

Similar to the male FGDs across regions, the female FGDs also revealed men as the predominant processors of the roasted/ baked product. However, it was noted from female FGD, Kamwenge IV that, it is roasted and sold by men at entertainment centres with meat

Table 18: Processing and sale of baked sweetpotato

FGD Community name *	MALE		FEMALE	
	Persons responsible for processing labour	Persons responsible for selling	Persons responsible for processing labour	Persons responsible for selling
FGD III, Lira	Men and boys make Abuk (baked sweetpotato). It is embedded in the culture as men's responsibility.	Women may be given the finished product to sell after the men have processed	Mostly men but women can also do this	Women. These roasted roots can stay for 1 week
FGD IV, Lira	Men and boys prepare Abuk (baked sweetpotato) Women do not have experience in making it and it is not their responsibility. More so, men prepare it as a quick snack as they head off to graze the animals	Do not sell		
FGD I, Kamwenge	Men This is because it is quick and easy to do, requiring less time	Do not sell		
FGD II, Kamwenge	All (Men and women) This is easy to do and takes a short time. Also, it is done whilst in the garden where everyone's participating	Do not sell		
FGD III, Kamwenge	Men, women and children prepare Ekikome (baked sweetpotato) This is done in the garden during farming and sometimes sold for income generation	Women		
FGD IV, Kamwenge	Men, women and children This is done in the garden during farming and sometimes sold for income generation. Preferred by people on long journeys such as pilgrims to Namugongo Martyrs Shrine (can be kept for 1 week)	Women	Men	Men. It is roasted and sold by men at entertainment centres with meat,

3.3. Decision making and trade-offs between the different uses of the crop

Regarding independence in decision making, women generally tended towards a mean score of above 3 for all categories of decisions made i.e.; variety of crop to plant, use of crop, marketing, use of profits from sale of sweetpotato and alternative products (Table 19). This implied that though women perceived a degree of independence in making these decisions, they nonetheless needed to consult their spouses before making any decision. Men also averaged above 3 in terms of decisions linked to variety of crop to plant and marketing (see legend). However, more revealing was the fact that many of them scored towards 4 in use of the crop and profits from sale of sweetpotato and alternative products (hence a mean score tending towards 4). This shows that they were almost completely independent of their spouses when making such decisions.

Table 2: Mean score of independence in decision making by sex and region

Decision	Mean score of independence 1-4*			
	Women	Men	Kamwenge	Lira
Variety of crop to plant	**3.4**	**3.4**	**3.3**	**3.4**
Use of crop	**3.3**	**3.6**	**3.5**	**3.3**
Marketing	**3.3**	**3.3**	**3.5**	**3.1**
Use of profits from sale of [sweetpotato]	**3.2**	**3.5**	**3.6**	**2.9**
Use of profits from sale of alternative product	**3.3**	**3.6**	**3.4**	**3.3**

**Legend*
1=no independence the decision is made by someone else,
2=a little independence to suggest ideas but decision is taken by someone
3=most independent but need to consult someone
4 = complete independence.

At a regional level, respondents in Kamwenge scored above 3 in the categories of decisions about variety of crop to plant and use of profits from sale of alternative products. At this level they were independent but needed to consult a spouse before making a decision. However, decisions about use of crop, marketing and use of profit from sale of sweetpotato tended towards 4 and thus were made with complete independence.

Respondents in Lira tended towards a mean score of 3 in all categories of decision making except Use of profits from sweetpotato. In this latter decision category, this implied that a lesser degree of independence and the decision on use of profits had to be taken by someone else in the family.

Decision making on boiled Sweetpotato

There was a paucity of response received on this subject in general from individual interviews (Table 20a). We triangulated this information with FGDs and the general trend was that decisions on boiled sweetpotato were made by women. However, men and women also made decisions jointly but to a lesser extent. Respondents in Lira also cited women as the main decision makers with others mentioning both men and women. Clearly, boiled sweetpotato is more important to the women than the men, this is perhaps due to the fact that women are the ones who are mostly involved in food preparations in the households.

People who make decisions on the product	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
Men	*0*	*0*	*0*	*0*
Women	*11.7*	*0*	*0*	*17.5*
Men and Women	*6.7*	*0*	*0*	*10*

Decision making on dried Sweetpotato chips

According to Table 20b, women were cited as the sole decision makers regarding dried sweetpotato by female respondents associated with Lira region. This augments the earlier observations that sweetpotato is a women's crop and therefore they are responsible for the processing or preparation of dried sweetpotato. More so, dried sweetpotato is common in Lira and not Kamwenge.

Table 20b: Decision making on dried sweetpotato chips

% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
0	**0**	**0**	**0**
8.3	**0**	**0**	**12.5**
0	**0**	**0**	**0**

Decision Making on Fresh Sweetpotato Roots

Regarding fresh roots, female respondents mentioned women as the main decision makers followed by both genders together and lastly men (Table 20c). However, the men cited parity in decision making either by women, men or both jointly.

Table 20c: Decision making on fresh sweetpotato roots

People who make decisions on the product	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
Men	5	8.3	9.4	2.5
Women	28.3	8.3	59.4	0
Men and Women	6.7	8.3	15.6	0

At regional level, respondents in Kamwenge cited women as the main decision makers followed by men and women together with a few indicating men. Lira in contrast cited men as the main decision makers on fresh roots however, the citations were low. Therefore, again it is clear to see that fresh sweetpotato roots are more important to the women than the men.

Sweetpotato Vines

Generally, decisions on sweetpotato vines were mainly made by women according to most respondents (Table 20d). Most female respondents cited women as the lead decision makers, followed by joint decisions (men and women together) and lastly men. On the contrary, male respondents indicated that men were the lead decision makers regarding vines followed by women and joint decisions (men and women) in equal measure.

Table 20d: Decision making on sweetpotato vines

People who make decisions on the product	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
Men	1.7	16.7	0	7.5
Women	31.7	8.3	43.8	15
Men and Women	8.3	8.3	9.4	7.5

Respondents in Kamwenge and Lira clearly cited women as the main decision makers regarding sweetpotato vines. More so in Kamwenge, men only participate in decision making together with women and not by themselves. In Lira, men and joint decision making were cited as being at par**.**

From the study, there was limited information on trade-offs amongst the use of sweetpotato products both in the FGDs and II.

3.3.1. Household food budgeting

Household Sweetpotato Consumption

The main consumption form of sweetpotato is boiled according to both female (97%) and male (92%) respondents. The women also reported consuming fried, dried and roasted sweetpotato. In terms of region, boiled sweetpotato was the main consumption form in Kamwenge (94%) and Lira (95%). In both regions, sweetpotato is consumed in the fried form to a lesser extent while in Lira consumption of dried sweetpotato was cited.

According to Table 21, of the sweetpotato harvested, female and male respondents indicated that they consumed 47% and 49%. This would imply that they consumed a little less than they sold.

Table 3: Quantity of harvest used for home consumption by sex and region

					Land size category (indicate ha or ac)		
	Women	Men	Kamwenge	Lira	-2	2-5	5+
Range (kg)	4,499	6,997	4,499	6,997			
Mean (kg)	356	1872	648	590			
% of harvest	47	49	46	50.3			

At regional level, respondents in Kamwenge indicated that they consumed 465 of the harvest while those in Lira consumed 50% of it. Therefore, in Kamwenge less was consumed at home than was sold whereas in Lira consumption and sale are equally balanced.

Sweetpotato sold

Overall, most of the sweetpotato harvested by both women and men was sold (Table 22). In terms of region analysis, Kamwenge also had more sweetpotato being sold than consumed whereas in Lira 50% of the total production was sold.

Table 4: Quantity of harvest sold by sex and region (II Q33.2)

Product (fresh or processed)						Land size category (ha or ac)		
		Women	Men	Kamwenge	Lira	-2	2-5	5+
Fresh	Range (kg)	4500	9000	9000	6000			
	Mean (kg)	403	1938	771	583			
	% of harvest	53	51	54	49.7			

Majority of female respondents (58%) sold their harvest in rural markets while the males sold theirs in the urban markets (42%). Proportion of the harvest sold to both traders and urban markets by women stood at a measly 3%. For the men, 33% of their harvest was sold in the rural markets. It goes to show that men may have more access to urban markets than the women.

At regional level, sweetpotato harvest was mainly sold in the rural markets for both Kamwenge (72%) and Lira (40%). Some respondents in Kamwenge cited selling their harvest to traders (6%) and urban markets (6%). Only 12.5% of respondents in Lira reported selling sweetpotato to urban markets.

Have changes in the production, processing or sale of the product affected you/your spouse/children?

Most of the respondents did not perceive that the changes in production, processing or marketing had affected their families (Table 22a). Only 8% of the men and 13% of the women perceived a change in this respect.

Table 22.a Perception on whether changes in production and sales have affected the family

Have changes in the production, processing or sale of the product affected you/your spouse/children	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
Yes	13	8	19	25
No	62	92	63	70
No response	24	0	18	

At regional level, 25% of the respondents in Lira and 19% in Kamwenge perceived that the changes in production and sales had affected them as well as their families.

Have there been any changes in the market or mechanization in your community?

Over 30% of the men and women perceived a change in the market within their communities (Table 22b). At regional level, 50% of the respondents in Kamwenge perceived a change in the market, as compared to 25% in Lira.

Table 22b: Perception on whether there have been changes in the market

Have there been any changes in the market or mechanization in your community	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
Yes	37	33	50	25
No	63	67	50	75

Unfortunately, due to paucity of data, we were not able to discern the reasons as to why these changes were perceived to be so.

3.4. Preparation and processing the product

The processing and preparation steps for boiled sweetpotato are elaborated in Table 23. In Lira, the preparation steps for boiling sweetpotato mentioned by men and women were very similar, although the men were surprising very elaborate. There were limited variations reported in the preparation method as reported by men in FGDS IV. The variations focused on the way the sweetpotato was covered prior to boiling. While the common practice was using another saucepan to cover the pot, the variation was use of a banana leaf where available, or a plastic sheet (kaveera).

In Kamwenge, sweetpotato was mostly prepared by steaming. The variation reported was some household did not peel the sweetpotato. Another variation reported was mixing sweetpotato with beans during boiling (commonly known as *Katogo)*. Again, there was minimal differences between what men and women reported.

Table 23: Processing steps, resources required and division of roles in preparing boiled sweetpotato

FGD Community name *	MALE		FEMALE	
	Processing and preparation steps for boiled/steamed sweetpotato	Variations of the product and variations of the processing of the [product] in your community	Processing and preparation steps for boiled/steamed sweetpotato	Variations of the product and variations of the processing of the [product] in your community
FGD I, Lira	1. Peel 2. Wash 3. Place washed roots in saucepan and add water just enough to partially submerge the roots 4. Cover with banana leaves followed by another saucepan or saucepan lid 5. Boil – takes 30 – 60 mins depending on the variety 6. Consumption when ready (readiness determined by piercing through a cooked root using a clean stick – should go through easily; sweet smell and decrease in water in the pan to near dryness	None	Peel, wash twice, put in saucepan, boil, remove If you have banana, cover on top	None
FGD II, Lira	1. Peel 2. Wash 3. Place washed roots in saucepan and add water to cover 1/3 of the pan 4. Cover with banana leaf and another saucepan (this helps to preserve the sweetpotato odor) 5. Boil – takes 15 – 30 mins 6. Consumption (ready to eat when water level decreases and a sweet smell is produced)	No	Peel, wash twice, put in saucepan, cover with banana leaves or kavera, place another saucepan and when it is ready put on plates on the table	No
FGD III, Lira	1. Wash 2. Peel 3. Wash 4. Put in saucepan and add water. (added water depends on size of saucepan – if big add 1 jug, medium add 2 cups, small add 1 cup) 5. Cover with banana leaf and another saucepan 6. Boil 30-45 mins (it is ready to eat when water gets finished in the pan and produces a sweet smell)	No variation	Peel, wash twice, put in saucepan, cover with a banana leaf if available, boil, remove	No variation

FGD Community name *	MALE		FEMALE	
	Processing and preparation steps for boiled/steamed sweetpotato	Variations of the product and variations of the processing of the [product] in your community	Processing and preparation steps for boiled/steamed sweetpotato	Variations of the product and variations of the processing of the [product] in your community
FGD IV, Lira	1. Wash 2. Peel 3. Wash 4. Put in a clean saucepan and add water. Amount of water depends on size of sauce pan. Add 1 cup to small saucepan, 2 cups to medium saucepan and 1 jug of water if a big saucepan. 5. Cover with banana leaf and another saucepan 6. Boil (30-40 mins). Sweetpotato is ready when the sound of boiling water subsides and a sweet smell of cooked potato is produced	Yes. Some households cover sweetpotato with banana leaves while others simply cover with another saucepan or may use both in tandem Others cover with polythene bags (kaveera)	Peel, wash twice, put in saucepan, cover with banana leaves or kavera, place another saucepan and when it is ready put on plates on the table	No
FGD I, Kamwenge	Steamed (peeled) – common practice 1. Harvest 2. Peel 3. Wash (2 times) 4. Wrap in banana leaves and little water covering the base of the pan. This is important to obtain a crumbly/mealy (kusanuka) SP after steaming 5. Steam for 1 hour 6. Allow to cool for 5 minutes. The SP becomes sweeter and firmer as they cool (lose vapor/steam)	Yes. e.g. Sweetpotato may be peeled or unpeeled prior to steaming. Others include Katogo (boiled sweetpotato mixed with beans), baked sweetpotato	• Peel the potatoes • Wash the potatoes • Put banana stalks in the saucepan • Wrap in banana leaves • Put on fire	No. Most families steam
FGD II, Kamwenge	Steamed (peeled) – common practice 1. Harvest 2. Peel 3. Wash 4. Wrap in banana leaves and tie with banana fibre 5. Add just enough water 6. Steam for 40 mins – 1.5 hour (longer steaming is done at relatively low heat and this develops a better SP flavour) 7. Allow to cool for 5 minutes. The SP becomes sweeter and firmer as they cool (lose vapour/steam)	Yes. Steaming (peeled and unpeeled), boiling (peeled and unpeeled)	1. Peel the potatoes 2. Wash the potatoes 3. Put banana stalks in the saucepan 4. Wrap in banana leaves 5. Put on fire	NR

FGD Community name *	MALE		FEMALE	
	Processing and preparation steps for boiled/steamed sweetpotato	Variations of the product and variations of the processing of the [product] in your community	Processing and preparation steps for boiled/steamed sweetpotato	Variations of the product and variations of the processing of the [product] in your community
FGD III, Kamwenge	Steamed (peeled) – this is the most common preparation method 1. Harvest 2. Peel 3. Wash 4. Wrap in banana leaves 5. Steam for 30mins – 1 hour	Yes e.g. steamed (peeled and unpeeled), boiled – peeled, baked	• Wash the potatoes • Put banana stalks in the saucepan • Wrap in banana leaves	• Although most families steam, other people put directly in water • Steamed food tastes better than boiled food
FGD IV, Kamwenge	Steamed (peeled) – this is the most common preparation method 1. Harvest 2. Peel 3. Wash 4. Wrap in banana leaves 5. Steam for 30mins - 1 hour	Sweetpotatoes can be steamed whilst peeled or unpeeled	Wash potato, boils with peels, boils for about an hour OR wash potato, peels and places in banana leaves puts banana stems and steams for an hour	NR

Who typically is involved in conducting this step? Probe: social segments and hired or household labour etc. e.g. female hired labourers; women and girls in the household FGD Q12.2

All respondents in Kamwenge and Lira acquiesced to the fact that women and girls were responsible for preparing boiled sweetpotato (Table 24). Men indicated that they would only participate in preparation if the wife was away, or when one was still a bachelor. When asked to explain why they seldom participated; men in Lira responded that women knew how to do it 'best', while men in Kamwenge feared to be ridiculed should they engage in food preparation.

Table 24: Who in the household is responsible for preparing boiled sweetpotato

FGD Community name *	Who typically is involved in conducting this step	
	MALE	FEMALE
FGD I Lira	Women are majorly involved in this preparation. This is because the men go away from home to work and children go to school thus leaving only women at home	Women if children are at home, the mother peels and the children cook
FGD II Lira	Women mostly prepare boiled sweetpotato because it is their responsibility and they know how to do it well. In the absence of women, men and children can also help	It is the women and girls Men only cook if the wife is not around, or for bachelors
FGD III Lira	Women do the entire process. This is because it is their responsibility and they know how to do it better. In the absence of women, the men or older girl children can also prepare it.	Women

FGD Community name *	Who typically is involved in conducting this step	
	MALE	FEMALE
FGD IV Lira	Women and girls mainly prepare the boiled sweetpotato. This is their responsibility However, in their absence the men may prepare.	It is the women and girls.
FGD I Kamwenge	Women and female children The men indicated that people would laugh at them if they were seen doing this since it is not their job/responsibility. "Other men will not take me seriously or they will say the woman has bewitched me". This is a woman's responsibility	Woman and girls in the household
FGD II Kamwenge	Women. Why (All laugh). Women can manage this responsibility and do it well. This is not a man's responsibility	Woman and girls in the household
FGD III, Kamwenge	Women are mostly involved, however some men especially those in the food business are involved in this preparation According to culture, women go to the kitchen	Women and girls in the household
FGD IV, Kamwenge	Women are mostly involved, however some men especially those in the food business are involved in this preparation According to culture, women go to the kitchen	All activities are done by women and children

However, in Kamwenge it was revealed that men who are in the food business do engage in preparation of boiled sweetpotato.

***What are the most important processing steps or parameters you need to control very well to obtain of high quality [product under study]? II Q22.**

The main processing steps were washing (before and or after peeling), peeling, wrapping (particularly for steaming) and boiling or steaming (Table 25). Washing before peeling was not commonly done and had fewer citations than washing after peeling. Washing before peeling was cited more by women than men especially in Lira region.

Table 55: The most important processing steps to obtain a higher quality of boiled sweetpotato cited by sex and region (II Q22)

Boiled/Steamed Sweetpotato

Most important processing steps	% of women citing N=60	% of men citing N=12	% of Kamwenge citing N=32	% Lira citing N=40
Washing	20	8.3	6.3	27.5
Peeling	95	83.3	93.8	97.5
Washing	88.3	83.3	84.4	90
Boiling	55	58.3	6.3	95
Wrapping	41.7	25	84.4	2.5
Steaming	41.7	25	84.4	2.5

Peeling and washing after peeling were heavily cited by both women and men in Kamwenge and Lira implying that these are common practices.

Boiling and steaming were cited by both men and women as important processing steps. However, boiling was more common in Lira while steaming was cited as the preferred method in Kamwenge district. In addition, wrapping is strongly associated with steaming therefore it was also cited strongly in Kamwenge.

3.4.1. Processing resources and access

***What are the resources required for processing the [product]?(e.g. gari fryer, mixing bowls, note if they are community or household based) FGD Q12.3**

Generally; all utensils and basic tools required for processing boiled or steamed sweetpotato such as knives, basin and saucepan were easy to access and were owned outrightly by the respondents both men and women as well as region – Kamwenge and Lira (Table 26).
However; firewood or charcoal as energy resource was the exception. Women indicated that they used firewood/charcoal but wouldn't take it with them in case of a divorce. The men mentioned that they rent firewood/charcoal for use in preparation of boiled/steamed sweetpotato. Therefore, it is the resource with the least access.

Table 26: Mean score of access (1-4*) to equipment or utensils required for processing the crop into the product by sex and region

Equipment or utensils required for processing the crop into the product	Mean score of access 1-4*					
	Women	Men	Kamwenge	Lira		
Knives	1.12	1.09	1.1	1.13		
Basin/Sufuria	1.05	1.09	1	1.10		
Banana Leaves	1.03	1.40	1	1.26		
Firewood/Charcoal	2.45	3.25	1	3.12		

*Legend
1-own outright, 2-use but wouldn't take in a divorce, 3-rent, 4-borrow from husband, 5-other

In Kamwenge, respondents indicated that they owned outright the firewood/charcoal used for preparation while those in Lira borrowed it. Therefore, firewood in Kamwenge was easily accessible unlike in Lira.

Processing Challenges (ranked in order of importance) II Q26.

The most cited challenge was associated with access to firewood as the main source of energy. Only women cited scarcity and high cost of firewood, while long distance to collect firewood was cited by both men and women (**Table 27**). Other challenges were: not having enough saucepans and banana leaves. The former was cited only women. This is perhaps linked to the primary responsibility of women to process or prepare food in the households.

Table 67: Processing challenges (II Q26)

Importance	Women	Men	Kamwenge	Lira
1. Scarcity of firewood	11	0	2	9
2. Long distance to collect firewood	4	3	5	2
3. Firewood is expensive	3	0	0	3
4. Do not have enough saucepans	2	0	0	2
5. Do not have enough banana leaves		1	0	1

Region wise, the main challenge in Kamwenge was long distance to collect firewood whereas in Lira the main problem was scarcity of firewood.

3.5. Consumption of the product

What is Boiled Sweetpotato consumed with? (FGD Q16.2)

Women in Lira most mentioned that they consumed boiled sweetpotato with relish/sauces such as bean, vegetables and simsim. Mena mentioned similar sauces but also added groundnut and simsim paste, fish and honey.

Table 28: What boiled sweetpotato is consumed with

FGD Community name *	What is the boiled/steamed sweetpotato consumed with?	
	FEMALE	MALE
FGD I Lira	With beans, veggies, peas, simsim, tea	Beans, fish, vegetables, groundnuts paste (milled raw)
FGD II Lira	Veggies	Ground nuts paste (milled raw), malakwang, beans, peas, fresh fish, meat, odii
FGD III Lira	With veggies such as alayor, bo, malakwang with beans, peas, meat, fish, grounded lapena with moya (shea nut butter)	Consumed with; beans, meat (beef), fresh fish, vegetables
FGD IV Lira	Beans , meat	Beans, vegetables, meat (beef), odii (roasted groundnut and simsim paste), tea, honey
FGD I Kamwenge	Beans	Steamed SP is consumed with; • with sauce - beans, beef, greens • with tea (milk or dry) - i.e leftover SP from previous day eaten for breakfast
FGD II Kamwenge	Bean sauce	Groundnuts, cabbage, dodo (greens), beans
FGD III Kamwenge	Beans	Beans, groundnuts, pork, greens, cabbage
FGD IV Kamwenge	NR	Beans, dodo (greens), cabbage, groundnuts

With the exception of FGD III in Lira, women mentioned a narrower variety of foods compared to the men. Additionally, with the exception of FGD II and IV in Lira, women did not mention any animal products among the relishes they consume sweetpotato with. Men mention animal product accompaniments including fish, beef, pork and milk in more cases than women do. In general, men were more expansive in explaining what boiled sweetpotato was consumed with. This could imply the wide applications boiled sweetpotato could be put to.

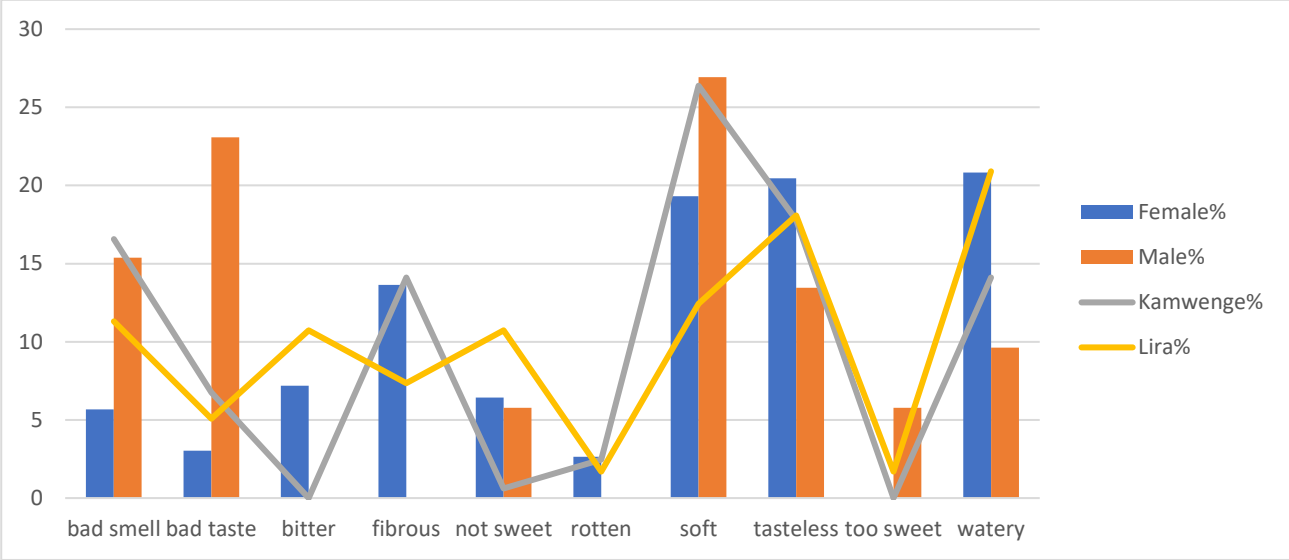
Despite the importance of green leafy vegetables as an accompanying sauce with sweetpotato in both regions, the specific types of vegetables differed by region. While respondents from Kamwenge mentioned dodo (amaranth) and cabbage, those from Lira mentioned a wider variety of vegetables including malakwang, bo, and alayor. Respondents from Lira also mentioned sim-sim and shea butter nut, honey, fish and a wider range of legumes such as peas, pigeon pea, which were not mentioned in Kamwenge. In contrast, milk, a dairy product, was only mentioned among people from Kamwenge.

***When a person (you or a member of your family) says that the quality of the [product under study] is not good when they eat it, what are the general reasons for this? II Q29.**

By sex of the respondent, there are clear differences in the important characteristics of bad products among men and women (Figure 3). Although, softness and tastelessness are important

characteristics for both men and women, they were ranked differently by the two categories. Tastelessness ranked first for women but fourth for men, while softness ranked first for men but third for the women. Additionally, women only mention characteristics related to taste and texture only while men also include bad smell, a characteristic related to aroma, on top of other characteristics related to taste and texture.

Figure 3: Characteristics of poor quality boiled sweetpotato



According to region, there were some similarities among the characteristics considered important in the determination of a bad quality product. In both Lira and Kamwenge, softness, watery and tastelessness were among the prioritised indicators of poor quality. Moreover, tastelessness was ranked second in both Kamwenge and Lira. Despite being a priority characteristic in both regions, the rank of softness and watery varied by region. Softness ranked first in Kamwenge but third in Lira. On the other hand, watery ranked first in Lira, but fourth in Kamwenge. In addition to these three characteristics, respondents in Lira perceived other taste related characteristics like bitterness and not sweet as being important in determining whether a product is of poor quality. On the contrary, respondents in Kamwenge additionally included bad smell, an aroma related characteristic, and another texture related characteristic, fibrousness instead to round up their top five.

Thinking of people in your community, how often is the product consumed. Is this the same for everyone in the community? Probe on social segmentation. How has this changed in the last five years? KII Q9.

According to the Key Informants Lira, while nearly all the farmers in the study communities grew sweetpotato, frequency of consumption varied from three to four times a week because farmers also grew other types of food which they included in their diets. In Kamwenge, the frequency of consumption for boiled sweetpotato was not mentioned. However, KIs noted that sweetpotato based processed products like chapatti and mandazi were growing in popularity, with all categories of people noted to consume chapatti at least once a week.

Do you think people are buying more or less compared to five years ago? Why? Probe on social segmentation. How has this changed in the last five years? KII Q10.

In Kamwenge, the major change has been the introduction and promotion of orange fleshed sweetpotato which each of the key informants talks about (Table 29). Initially, the orange fleshed sweetpotato faced criticism for their sensory attributes (bad smell), lack of planting material and lack of promotion. However, its popularity increased as people got familiar with the peculiar sensory attributes, became aware of its nutritional benefits and their access to the vines increased. As a result, sweetpotato prices increased on the market. However, with increased popularity, the market is now flooded with sweetpotatoes and the price decreased by up to 50%. Different varieties of orange fleshed sweetpotato have been introduced and tried on market, with Vita being preferred over Kabode according to the key informant in Byabasambu village. Women were the main actors

in production and sale of sweetpotato. However, as noted by the second key informant from Byabasambu village, men were increasing becoming involved as it is a source of income. In addition, the physical markets where sweetpotato is sold have increased in number and also been formalised.

Table 29: Trends in sweetpotato trade

Community name	Has this changed in the last five years?
Byabasambu village, Kamwenge	In the last 5 years we used not to have these products but when we received trainings in 2014, people are buying more potato than before due to trainings in SP. Most women in this area are lead mothers for expecting mothers and children and they tell them how nutritious OFSP is. For me I also monitor my fellow members to confirm if they have applied what they learn. I also attend refresher courses. These days everybody east KINZAALI because they know it is a source of vitamins. At first kabode was not good, it was tasteless but vita was good
Byabasambu village, Kamwenge	In the last five years, didn't like OFSP due to the bad smell but now they like it , we used to grow rice promoted by vice president then Samaritan parse joined us. Most women are involve in SP but men are getting more involved due to money. In the last 2 years we used to sell a bag for 50,000-100,000 but now there is lot of SP which goes for Ushs. 20,000-30,000 per bag because there is a lot of food. We have weekly markets in Kahunge (Sunday), Byakanyamera (Tuesday), Bukungu (Monday), Mpanga on Wednesday. We have a monthly market at Lukunyu in 1st and 3rd week.
Mabaale 1 Village, Kamwenge	We have more SP marketing in 2017, when tubers sold like hot cake due to increased yields. But now the market is so flooded. The price for local SP and OFSP fell from Ushs 75,000 to Ushs. 25,000. So OFSP has to sell at the same price because most people don't know the benefits of OFSP. women engage more in SP production and marketing as food providers.
Kamwenge town council, Kamwenge district	In 2012, when we had just started the project, OFSP had market because people wanted to taste but they didn't know how it is grown. But the trend decreased since 2016. Then in 2017 it started increasing because we supplied new vines at no cost. Commercial farmers are affected due to reduced demand. The market determines how much to plant. The project are affected as well because if you go to the community and then they praise your product you gain the morale. Generally, there is lack of awareness about OFSP. Kahunge, Kamwenge, Nkoma, Busimba, Kabambiro, Bizi and Biguli are aware of OFSP. The rest like Nyabari, Kanala, Ntala, Ruhanda, Ishongoro just received intervention in 2016.
Lira 1	Currently farmers peel, cut dry and sell sweetpotato in dry form as chips. Mukeeke is boiled and mingled as posho. Normally. Rich people produce in large quantities of sweetpotato and they sell their produce to schools and large traders while the poor mainly women sell in basins and basins and sell in small quantities to local and roadside markets.
Lira II	Before farmers were selling small quantities of sweetpotato. But now they sell to hotels, schools, they bulk and sell within lira town. The problem is we don't have project yet we are near town, sometimes we don't get the messages. We only have groups for saving but not those for crops; every body works as an individual.
Apanyi Acel village, Lira	In the last five-year, sweetpotato production was low compared to these current years. Production is usually high during rainy season and low during dry season and the demand is higher during dry season so the prices are higher
Aweo village, Lira	Those days there was no market for sweetpotato, but these days the market is there and everyone likes amach market where traders from Kampala come and collect and take to Kampala, other farmers sell in trading centres and small markets in than area among the communities. It is mostly women who like small businesses, men engage in shop keeping, bodaboda, chicken sellers, and animal trader and produce buyers

In Lira, in contrast to Kamwenge, orange fleshed sweetpotato was not a major crop in the last five years and respondents actually continued to prefer the local varieties. Instead, product diversification and the change in market structure were more important issues. With regards to product diversification, sweetpotato was currently processed into products such as dry chips which were sold

in that form. The market had changed with large scale producers now being able to sell directly to other businesses like schools and hotels in bulk. Additionally, there were special market infrastructure for sweetpotato for example Amach market where traders from other urban areas went to buy sweetpotato; indicating the growth of the market. The production of sweetpotato in Lira, similar to that in Kamwenge, had increased, although it was affected by seasonality making price fluctuation an issue. In terms of key actors in the production and sale of sweetpotato, rich farmers usually sold in bulk while women only sold in small quantities.

Are there any taboos or restrictions of people in growing, processing or consuming the crop or its products? Probe differences in social segments. KII Q11.

In Lira, no taboos or restrictions were identified that could bar farmers from growing or consuming sweetpotato and its related products. Infact, sweetpotato was considered to be a nutritious income generating crop and was noted to be good especially for pregnant women. In one community in Kamwenge town, people believed that OFSP affects men's virility, while one tribe considered the crop to be a food for Bakiga (who are usually noted to be hard working). Yet in another community in rural Kamwenge, men had perception that sweetpotato lower's their sexual potency because it is sweet; while in another the belief was that vines could not be sold. These beliefs are likely to affect introduction and adoption of improved varieties especially OFSP.

3.6. Product characteristics

In this section, we present in Annex 1 the first iteration of the boiled sweetpotato product profile by sex and region. The findings for the product profile are further elaborated below.

Raw Material (Sweetpotato roots for boiled sweetpotato)

***In your opinion, what varieties give the highest quality boiled sweetpotato? Why?**

From the individual interviews, women's most preferred variety was Naspot 8 followed by OFSP while Vita (an orange fleshed improved variety) and Okonyneddo tied in the third position (Figure 4). Similarly, men's most preferred variety for boiled sweetpotato was Naspot 8 followed by Okonyneddo and Kakamega (OFSP). However, it is important to note that respondents were drawn from areas that had interfaced with OFSP, hence a likelihood for bias towards these varieties.

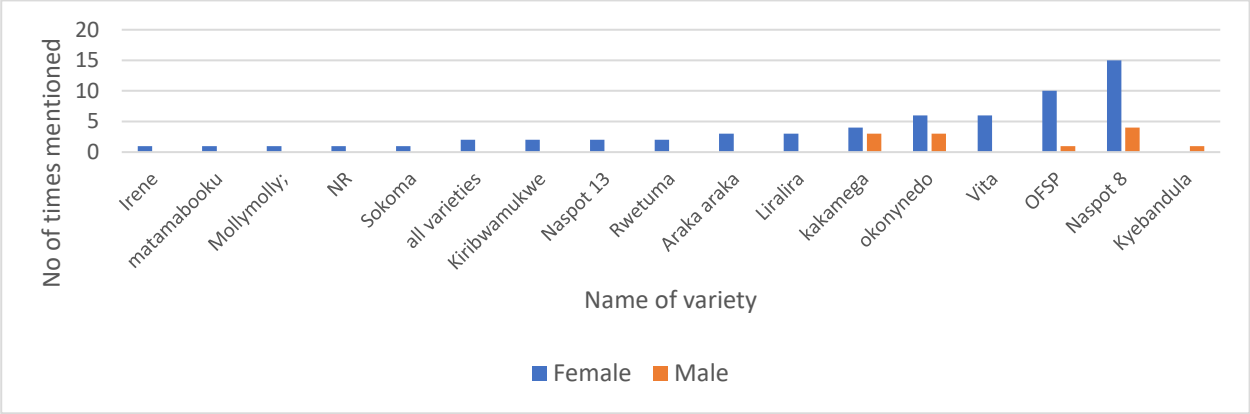


Figure 4: Preferred varieties for boiled sweetpotato

By region, the preference did not alter much with Naspot 8, Okonyneddo and Kakamega being the top three preferred varieties in Lira. In Kamwenge; OFSP, Naspot 8 and Vita were the top three varieties. Among the reasons advanced for preference were mealiness (okusanuka), crumbly or nice texture like an egg yolk, sweetness and color.

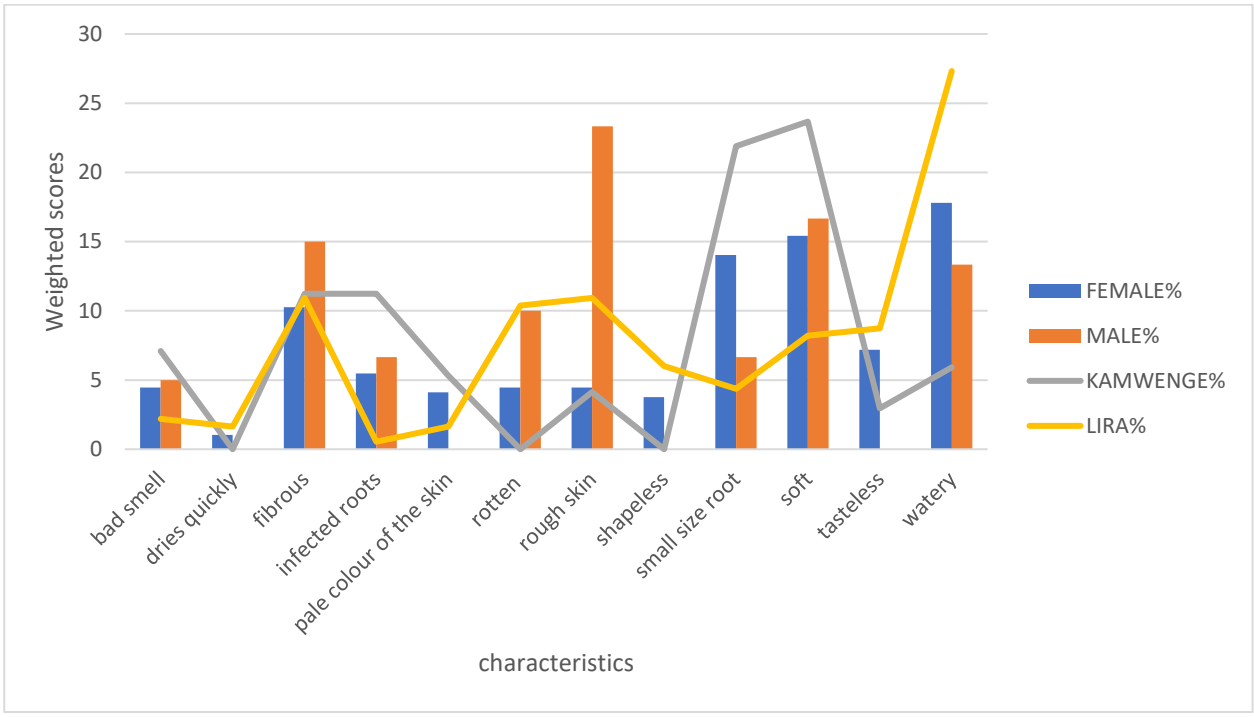
***If you were to purchase sweetpotato on the market to make the product, how do you recognise and perceive a good crop variety for making a high-quality boiled sweetpotato?**

Amongst the descriptors that respondents highlighted for consideration purchasing quality sweetpotato were: (i) size: big sized roots were considered to be a good characteristic that would be discerned by looking; (ii)

What are characteristics of a variety of the crop that give a poor quality boiled sweetpotato so that you would not use or buy it?

The raw material poor quality characteristics are presented in Figure 5 below. For women, the worst characteristic was watery followed by softness, small size, fibrous and tastelessness. Men on the other hand considered their worst attribute to be rough skin followed by small size, fibrous and watery. Aside from the worst characteristic, men and women had similar perceptions about the second and third worst prioritized attributes.

Figure 5: Poor quality characteristics of sweetpotato



In Kamwenge, the worst attribute was softness, followed by small size; while fibrousness and infected roots tied in the same position. In Lira on the other hand, watery was the worst attribute (just like women) followed by rough skin and fibrous (tied in one position) and rotten. Lira was the only category of respondents that did not prioritise softness amongst its top three worst characteristics/attributes.

Thinking about when you harvest the crop or purchase the crop on the market to make the product, how do you recognise when the crop will make a good, high quality boiled sweetpotato.

The results from individual interviews indicated that there were some similarities as well as differences between men and women with regards to the prioritised characteristics for product raw material, processing characteristics and product characteristics. Regarding good raw material characteristics, the top three characteristics for women were big size, hard, and smooth skin, in descending order (Table 30). Whereas for men, they were big size, smooth skin and good smell. The poor characteristics of highest priority were not simply in negation of the good characteristics in all cases. The highest-ranking poor characteristics for women were watery, soft, and small size and rough skin, soft and fibrous among the men. Neither not watery for women nor not fibrous for men was among the highest-ranking good characteristics. Nonetheless, in both cases the other two characteristics were in opposition to the good characteristics.

According to the women, sweetpotato with good processing characteristics was sweet, with a good smell and hard but not of small size, bad appearance or rough. Similar to the women, the men also perceived good smell to be among characteristics of priority as they rank it first. However, they added that it should also be sappy (second) and easy to peel (third) to complete their top ranking three characteristics. In this way, the good characteristics of importance to men were different from those of the women. The men, also similar to women, ranked small size and bad appearance in first and third place for the bad processing characteristics, respectively.

Good boiled sweetpotato was described as sweet, mealy and with a good smell by both men and women, albeit with differences in the order of ranking by gender. Mealy was ranked second among women but third among men. Women described a bad product as one that was tasteless, watery and soft. Men also include soft among the poor characteristics of boiled sweetpotato product. However, unlike women, soft was ranked first among men. Men additionally included bad taste and bad smell among the top three important bad product characteristics.

Table 30: Summary of good and bad raw material, processing and final product characteristics by sex and region from FGDs

GOOD RAW MATERIAL CHARACTERISTICS				
Importance	Men's focus groups	Women's focus groups	Kamwenge	Lira
1	Big size root	Big size root, hard peel	Sappy	Big size root
2	No pest damage, sappy, smooth skin/surface, yellow-orange color		Hard peel	Smooth skin/surface
3		Sappy	Big size root	Easy to peel
POOR RAW MATERIAL CHARACTERISTICS				
Importance	Men's focus groups	Women's focus groups	Kamwenge	Lira
1	Fibrous	Soft	Red peel	Soft
2	Small (No flesh)	Watery	Small (No flesh)	Fibrous
3	Not sweet, red peel, soft	Fibrous	Fibrous, soft	Not sweet
GOOD PROCESSING CHARACTERISTICS				
Importance	Men	Women	Kamwenge	Lira
1	Sweet smell/good aroma/ sweetpotato smell/	Sappy	Sappy	Sweet smell/ good aroma/sweetpotato aroma
2	Sappy	Sweet smell/good aroma/sweetpotato smell	Hard when peeling	Easy to peel
3	Easy to peel	Hard when peeling	Hard peel	Big size root
GOOD PRODUCT CHARACTERISTICS				
Importance	Men	Women	Kamwenge	Lira
1	Mealy	Mealy	mealy	Sweet taste
2	Dries easily, splits easily, sweet taste	Sweet taste	hard	Mealy, nice smell/sweet smell/sweetpotato aroma/ caramel aroma
3		Hard, nice smell/sweet smell/sweetpotato aroma/ caramel aroma	Splits easily	

The data from the FGDs was mostly consistent with that from the individual interviews especially the top-ranking characteristics in each case, although the ranking may vary slightly. Among women, big

size and hard peel (tied in first place) are ranked among the most important good raw material characteristics, and soft and watery are among the most important bad quality raw material characteristics. Good smell and hardness are also important as processing characteristics while sweet taste and good smell are important good product characteristics. Moreover; the results are more consistent with results from men for processing characteristics as all three characteristics ranked highest for the individual interviews, were ranked in the same way using data from the FGDs.

However, the expressions used in the focus group discussions were different from those from the individual interviews. For example, while in the individual interviews there were only a few descriptors used for the smell (these were later combined into good smell), specific descriptors such as sweetpotato smell, sweet smell and caramel smell (described as burnt) were prominent from the FGDs. Also, certain characteristics such as 'dries easily and splits easily were uniquely found in FGD data.

The data from individual interviews showed more heterogeneity by region than gender. In several cases only one characteristic was common between respondents from Lira and Kamwenge with regards to poor or good raw material, processing and product characteristics. Respondents from Kamwenge regarded big size, hardness, and good smell of sweetpotatoes to be of highest priority as good raw material characteristics. Similarly, in Lira the highest ranking good raw material characteristics was big size. However, unlike respondents in Kamwenge, those in Lira considered smooth skin and sweet smell as the second and third top ranking good raw material characteristics. While respondents from Kamwenge considered sweetpotatoes that were soft, small in size, and infected as having bad raw material characteristics, those in Lira considered roots that were watery, with a rough skin or fibrous. Sweetness became an important characteristic of sweetpotatoes during processing among the respondents from Kamwenge. While these characteristics ranked first among respondents from Kamwenge, it ranked second for Lira. The poor characteristics of raw material for Kamwenge were the same as those for processing, albeit with differences in ranking.

Overall, the most important characteristics in regards to sweetpotato at the stages of raw material, processing, and final product were related to size, appearance, texture, aroma/flavor and taste. The importance of these at each stage in some instances varied with gender or region. The size of the sweetpotato was important for raw material and during processing. Men and women, respondents from Kamwenge and Lira similarly highlighted it in their priority ranking as reflected in both individual interviews and focus group discussions. In fact there were some instances where big size is ranked among the good characteristics and small size was ranked among the bad characteristics which further emphasized its importance such as women and Kamwenge (individual interviews). Appearance was also mostly important as a raw material and processing characteristic. Respondents included characteristics about the colour, smoothness of the root, presence or absence of physical or pest damage among the top ranking good or poor characteristics. Attributes related to texture are important in characterising sweetpotato as raw material, during processing and the final product. In particular, the intensity of hardness and mealiness were among the top ranking characteristics of sweetpotato for end users. In several cases for men and women (individual interviews), and Kamwenge respondents, hardness was important for raw material and processing, and mealiness important at the stage of final product. On the flip side; fibrousness and watery were included among poor characteristics of both raw material and product. Aroma and flavour are also listed as important especially during processing and as a final product. Sweetness is considered especially as a product characteristic. In addition to these categories, ease of peeling and intensity of sappiness are also considered as priority characteristics particularly during processing.

The relative importance of the sweetpotato characteristics varied by gender. As a raw material the priority ranking of sweetness, size, and smoothness as good attributes of sweetpotato varied among men and women, even though they were the top-ranking characteristics for both groups. The combination of taste, texture and aroma were important for women starting at processing, while among men, this combination become important at the point of final product. Only men include ease of peeling and intensity of sappiness among their priority characteristics during processing. As a final product, similar to raw material, the highest priority characteristics were the same among men and women, albeit with varying ranks. Nonetheless, sweetness is ranked first by both gender groups.

There was more heterogeneity among regions than gender in regards to prioritised product characteristics. For example, sweetness was consistently ranked among the top priority

characteristics at all stages among respondents in Lira, whereas it was only considered important for processing by respondents in Kamwenge. On the other hand, hardness was considered to be important during processing for Lira, while it was consistently important in all the three stages in Kamwenge.

3.7. Conclusion

Although not obvious, given the fairly diverse set of descriptors given for raw, processing and product characteristics, these results demonstrate an association between characteristics of sweetpotato at all three stages of production. Hardness, a characteristic associated with good raw material and processing characteristics is related to mealiness in the final product. This explains why this attribute appears among the raw material and processing characteristics but not the final product. On the other hand, a watery or soft raw material will yield soft or watery product. Additionally, smooth skin is indicative of a root with no damage, including pest damage, which usually is a source of foul pungent or undesirable smell in the product.

Overall there was consistency in the ranking of priority characteristics from raw product to final product. For example, in a lot of cases where hardness was an important characteristic as a raw material or during processing, mealiness or hardness was important in the final product as well. Also, as in the case of Kamwenge, infected roots were a high ranking bad raw material and processing characteristic and so was bad smell as a final product characteristic. Infection within the root may cause off flavors that persist even after cooking. Big size of the root also indicates maturity and is associated with presence of fewer threads in the root which explains why fibrousness is cited as a bad characteristic in some instances.

The data from focus group discussions corroborates the data from the individual interviews only in part. In some instances, there were common observed priority characteristics for certain gender or ethnic groups among the two data sources. However, more often than not the ranking was different with the exception of big size of root which is the first ranking good raw material characteristic for all ethnic groups in both focus group discussions and individual interviews. Additionally, the intensity of sappiness was more commonly cited in focus group discussions than individual interviews. It was the first ranking processing characteristic among women and also among people from Kamwenge. Characteristics such as ‘splits easily’ were also only cited in focus group discussions indicating a wider range of expressions. It should be noted that these two characteristics are associated with mealiness in final product. A wider range of aroma descriptors is captured in focus group discussions such as caramel (burnt) aroma, sweetpotato, and sweet smell.

The number of ranked characteristics was limited to three. This may be a reason for the observed heterogeneity between results from the two datasets. Probably, there would be more common top-ranking characteristics had more characteristics been ranked for the comparison. The differences in the questions could have been another reason. For example, regarding poor raw material characteristics during individual interviews the question asks for characteristics of sweetpotato that would give bad quality product while in the focus group discussion, the question asks for the characteristics by which less preferred varieties can be recognised. Certain recognisable characteristics of less preferred varieties may have nothing to do with the quality of their product. Additionally, the uneven distribution within the sample surveyed during individual interviews in regards to the social segments of interest particularly gender may have introduced a bias in the data thus the observed deviations from data from focus group discussions. Nonetheless, both data sets demonstrate the importance of the same types of characteristics of interest to the end user specifically; size, appearance, texture, aroma/flavour and taste for the raw material, during processing and final product.

Going forward, we summarise findings from the FGDs and IIs as below:

Most preferred varieties

Least preferred varieties

- Okonyneddo
- Naspot 8

- Vita

Preferred raw material characteristics

- Big sized roots
- Smooth skin

Least Preferred raw material characteristics

- soft
- small roots
- fibrous

Preferred processing characteristics

- sweet smell/sweetpotato aroma
- sappy
- hard when peeling

Preferred boiled sweetpotato characteristics (final product)

- mealy
- sweet taste
- sweet/nice/sweetpotato smell

4. FINDINGS: MARKET STUDY

4.1. Sample information

Background information on sample MI Q1-7

In the study area, seven traders accepted to be interviewed, four from Lira and three from Kamwenge. All the traders interviewed were female (Table 30). All the traders were mature in age ranging from 32 to 47. Their average family size ranged from five to eleven, while the highest level of education attained was primary six, with three traders not having attained any education. None of the traders owned means of transport, but the respondents from Kamwenge revealed that they hired bodas (bicycles) at shs3,000 to 4,000. Concerning ownership of means of communication, 4 out 7 respondents said they have a phone while the rest had none and in addition to that, a farmer and trader from Kamwenge, Kigolo village said she has no phone but uses one from her husband. Six out of the seven traders dealt in sweetpotato.

Table 30: Background information on sample (MI Q1-7/1-14)

Respondent	001	002	003	004	005	006	007
Gender	Female	Female	Female	Female	Female	Female	Female
Age (profile)	42	32	37	38	44	47	41
Ethnicity	Mukiga	Mukiga	Mukiga	NR	Langi	Langi	Langi
Household size	7	6	7	5	11	7	8
Level of education	Primary 4	No Education	No Education	Primary 3	Primary 5	No Education	Primary 6

Respondent	001	002	003	004	005	006	007
Ownership of means transportation (If yes, type)	No, but hires a boda at Ushs4000	No, but hires a boda at 4000 to town	No, but hires a boda at Ushs3000	No	No	No	No
Ownership of means of communication (If yes, type)	Yes, uses a phone	No, she gets a phone from the husband	Yes, uses a phone	No	No	Yes	Yes
Road to nearest town is good (Y/N)	Yes, road is marram but in good condition	there's access road, but not tarmacked, during rainy season, the road is bad.	Yes, road is marram but in good condition	Y	NR	NR	NR
Distance to market from the home (in km)	2km	3 miles	2km	2km	NR	NR	NR
Marketing experience (years)	1	1 year	5	1	10	NR	18
Main occupation (Specify)	Farming	Farmer	Local trader	Farmer	Trader	NR	Trader
Crops person is dealing with (indicate main crops or products)	Orange sweetpotato	Fresh sweetpotato	Fresh sweetpotato, matooke, onions, sweet banana)	NR	Sweetpotatoes	Sweetpotatoes	Sweetpotatoes

Although it was obtained that the road to the nearest town is a murram road (not tarmacked) in a good condition, a farmer and trader from Kamwenge, Kigolo village revealed that her access road is bad during the rainy season. Majority of the respondents reported the distance to market from the home to be 2km. Regarding main occupation of the respondents, it was noted that the respondents were majorly farmers and traders, with the farmers also participating in trade and their main products being sweetpotatoes. Their marketing experience ranged from 1 to 18 years.

4.2. The value chain

***What are the major locations where sweetpotato is grown and marketed? (MI Q8 original questionnaire)**

Sweetpotato is grown in all regions of Uganda on 55% of root and tuber arable land (MAAIF, 2015). Total production of sweetpotato stood at 1.8million MT with the leading Eastern region accounting for 47%. The major producing districts by region, in descending order include; Iganga (Eastern), Nakasongola (Central), Gulu (Northern) and Kyenjojo (Western). Farmers mostly produce white,

yellow and orange fleshed sweetpotatoes with the first two being most dominant. Sweetpotato in grown by most farmers on acreages ranging from 0.25 to 2.0 where the former acreage is mostly for food and the later for the market. Sweetpotato is mostly traded informally where rural aggregators play a major role in bulking the crop for sale in peri-urban markets. According to Bashaasha et al (1995); trading is mostly done by women producers who sell small volumes to women in rural markets, though urban trading is becoming increasingly significant. Recent findings show that men are increasingly becoming involved in wholesale trade, but retail is still dominated by women (Kyalo et al, 2014; Mayanja et al, 2016). Sweetpotatoes in Uganda are marketed principally as fresh roots and consumed in steamed, boiled, fried or roasted form (Ingabire and Vasanthakaalam, 2011; Odora et al., 2000). Most households in Uganda consume sweetpotato at least once a week, especially in rural areas. In urban and peri-urban areas, the crop is mostly purchased by women, just like in other East African countries. The general perception is that demand for sweetpotato is increasing in the country (Ewell, 2010). Processing of the crop is in it nascent stages and not well defined in the value chain.

From the study, respondents from Kamwenge revealed that the sweetpotato was grown locally and marketed in Kamwenge town. Respondents from Lira also mentioned that they only traded within the precincts of Lira Town (Table 31).

Table 31: Level of marketing, source of the crop and where it is marketed

Occupation of respondent /Market	Level of marketing	Major locations where the crop is grown	Major locations where the crop is marketed
Trader, Kamwenge	NR	Kyabyoma village at dry land	Kamwenge central market
Female trader, Kamwenge; Kigolo village	Retailer	Kigolo village	Kamwenge town.
Local trader, Kamwenge; kyabyoma village	Community, retail level, local and urban level.	Kyabyoma village	Local and urban level.
Farmer /trader, Lira town	Urban market	NR	Bar, Byala and Amach
Trader, Lira town/ Otuke district	Ngetta, Bar, Lira town	NR	Ngetta, Bar, Lira town
Trader, Lira town/ Agwetagwet village	Urban market	NR	Byala, Agwetagwet, Adekokwok, Ngetta, Lira town, Oxam
Trader, Lira town/ Boroboro sub-county, Boroboro village	Local urban market (road side sellers)	NR	Boroboro, Bar, Byala, Lira town

MI Q10 What is the proportion (percentage) of the crop consumed in urban areas around the market you are situated; in: Fresh form, Processed form: [what product], Processed form: alternative products from the crop.

From the market study, across regions, a higher percentage (67-80%) of the crop was sold in fresh form than was used for home consumption (25-33%) by farmers at both rural, town level and urban level (Table 32). A low percentage of crop sold in processed form of the product or other products was also noted at rural and urban level respectively.

Table 32: Proportion (%) of crop used in fresh and processed forms (MI Q9 or Q16)

	Crop use (home consumption vs sales)	Kamwenge Percentage (%)	Lira Percentage (%)
Rural level	Home consumption	25 - 33	NR
	Sold in fresh form	67 – 75	70
	Sold in processed form [product]	NR	30
	Sold in processed form [other products]	NR	NR
Town level	Home consumption	NR	25
	Sold in fresh form	NR	75
	Sold in processed form [product]	NR	NR
	Sold in processed form [other products]	NR	NR
Urban level	Home consumption	NR	NR
	Sold in fresh form	NR	80
	Sold in processed form [product]	NR	NR
	Sold in processed form [other products] e.g. chips.	NR	20

***What are these customers demanding (e.g. what crop characteristics are they interested in?) MI Q23 (first),**

Across regions, similar information was obtained from the market study regarding the main buyers of the product at community level and retail market. These included; hotels and restaurants, schools, rural consumers, food vendors and local level consumers. Regarding gender, Kamwenge market study, revealed that the main customers are women, both youths and adults including restaurant women. A local trader from Kamwenge, Kyabyoma village revealed that, "*the product is majorly taken up by the female customers because they buy food for cooking at home*." Contrary to that, majority (75%) of the traders from Lira region revealed that, both men and women purchased the crop at community level.

A female respondent from Kamwenge further explained that even though the crop is purchased by both middle rich and poor consumers, the middle rich are the predominant buyers.

However, the farmers and traders interviewed had no experience for processing sites and whole sale markets.

Table 32: Customer groups buying the product

Level and/or demand segment	Demographics of the customer groups / buyers of [product]	Description of what are these customers demanding
Community level:	Hotels and restaurants	Hotels and restaurants prefer white fleshed varieties because it's hard yet Orange Flesh Sweetpotato is soft, mainly Rwetema and Rwekwa are mealy and hard compared to OFSP.
	Rural consumers/Final consumers	Rural consumers prefer white fleshed sweetpotatoes. They only sell OSP if there's no white fleshed sweetpotato
	Food vendors / local food vendors	NR
	The main customers are women, both youths and adults including restaurant women. Product majorly taken up by the female customers (women) because they buy food for cooking at home. These are mainly married between 20 to 60 years.	NR
	Both poor and middle class but mostly middle class	NR
Processing site:	NA	NR
Wholesale market:	No respondents interviewed	NR
Retail market:	High end restaurants, institutions, hotels and restaurants, food vendors, local level consumers. Both male and female customers.	NR

4.3. Characteristics for a high-quality crop

Ranking of characteristics for a high-quality sweetpotato per demand segment (MI Q24 original questionnaire)

High-quality crop characteristics as ranked by the female traders in Kamwenge and Lira region are summarised in Tables 33 A and B respectively. In Kamwenge region, priority was inclined towards sensory (hardness), and post-harvest (big roots, not damaged and smooth skin) characteristics, while priority in Lira region was given to agronomic (big size), sensory (sweetness), and post-harvest (no rottenness) characteristics.

There were various high-quality crop characteristics cited by traders from both regions with big size, smooth skin and sweetness being common to both groups. However, there was no similarity in priority of characteristics in the two regions. Other notable characteristics for Kamwenge region were: not pest and disease infested and unsoiled sweetpotato, while no fibrousness, softness, sweet smell, ease of peeling, low water content and orange fleshed were noted in descending order for Lira region.

Table 33a: Characteristics of a high-quality sweetpotato root – Kamwenge region

Rank	Characteristic	Indicators used for ranking crop characteristics and demand segment they are important for
1	Hardness	By breaking
1	Not damaged	
3	Big size	By looking at the product
4	Smooth skin	By looking at the outer surface

Rank	Characteristic	Indicators used for ranking crop characteristics and demand segment they are important for
5	Sweetness	Customers don't like OSP because it's too sweet, yet they like sweet, but not too sweet like OSP
6	Not pest and disease infested	
7	Soiled sweetpotato	

A female trader from Lira I said they preferred taste for sweetness because sweetpotatoes that are not sweet have low market value, while a female trader from Kamwenge, Kyabyoma village revealed that, *"Customers don't like OSP because it's too sweet, yet they like sweet, but not too sweet like OFSP".* It was also obtained from a female trader at Kamwenge whose customers were mainly women that people prefer local varieties like *matama book* and *lwentuuma* because; they are hard and are not sweet like sugar. She also added that Kinzaali (OFSP) is too sweet and people don't like that. Indicators for the characteristics included; looking at the product to assess size, smoothness, fibrousness and rottenness; breaking to assess hardness and tasting the product to assess sweetness and sweet smell.

Table 33b: Characteristics of a high-quality sweetpotato root – Lira region

Rank	Characteristic	Indicators used for ranking crop characteristics and demand segment they are important for
1	Big size	By looking at the product
2	Sweetness	Taste through bites for sweetness
3	Not rotten	Check whether it is not rotten or rotten
4	No fibrousness	By looking at the outer surface
5	Softness	
6	Sweet smell	Sweet smell on tasting
7	Smooth skin	By looking at the outer surface
8	Ease of peeling	
8	Low water content	
10	Orange fleshed	

4.4. Proportion of the sweetpotato consumed and sold

***Proportion of the crop consumed by farmers and sold to different customer groups (in percentages) (MI Q13 original questionnaire)**

From the market study, it was obtained that traders sold a high proportion of the crop to household consumers for both Kamwenge and Lira region. This was followed by rural consumers purchasing the crop for home consumption in Kamwenge region, while for Lira region it was followed by, restaurants, institutions and rural consumers purchasing crop for home consumption. The proportion of the crop sold to rural consumers purchasing for own consumption in Lira region was lower than that in Kamwenge region. It is noteworthy that restaurants and food vendors were combined by the respondents i.e. 25% Restaurants and food vendors.

Table 34: Proportion (%) of the crop consumed and sold by farmers

Customer groups	Kamwenge Percentage (%)		Lira Percentage (%)	
	Consumed	Sold	Consumed	Sold
Rural consumers – farmers keeping the crop for home consumption				
Rural consumers – purchasing the crop for home consumption		20		5
Household consumers in urban areas / cities		40		50 – 70
Institutions such as hospitals or schools				5 – 20
Restaurants				25 – 30
Food vendors				
Others (specify)		40		

4.5. Consumption patterns of different consumer groups

Consumption patterns of different consumer groups (Q21 Nigeria) This question may not be in each questionnaire.

From the market study, information regarding consumption patterns of the different consumer groups varied across regions (Table 35). In Lira region for example, all traders revealed that consumption patterns were different as urban consumers consumed more sweetpotatoes than rural consumers. From the responses, patterns were the same for both boiled and fried form. Traders from Kamwenge region attributed this to the fact that urban consumers do not grow their own sweetpotato. This is further elaborated below:

> *"Urban consumers take more than people in rural areas especially in processed and boiled forms." Female Trader, Lira town/ Otuke district*

Table 35 Consumption patterns of different consumer groups

Occupation of respondent /Market	Consumption patterns
Trader, Kamwenge	The restaurants have the same consumption pattern, but they keep changing suppliers since this trader can't sell daily. Final consumers do not buy consistently e.g. in November and December, consumption is low because there is plenty of food Rural people don't buy sweetpotato unless there is hunger, she sells only to urban areas She sells only to urban areas
Female trader, Kamwenge; Kigolo village	Mainly consumed in Urban areas because they don't grow sweetpotato. In rural areas, farmers have their own sweetpotato
Local trader, Kamwenge; Kyabyoma village	In case there's scarcity of food, the demand goes high. This usually happens in the month of June to September when demand goes high due to scarcity.

Occupation of respondent /Market	Consumption patterns
Farmer /trader, Lira town	Urban people consume more of potatoes than rural
Trader, Lira town/ Otuke district	Urban consumers take more than people in rural areas especially in processed and boiled forms.
Trader, Lira town/ Agwetagwet village	Urban customers/consumers eat sweetpotatoes more than rural consumers both in boiled and fried form.
Trader, Lira town/ Boroboro sub-county, Boroboro village	Urban consumers eat more of sweetpotatoes than rural consumers

Similar information was obtained from female farmers and traders in Kamwenge region. A trader from Kamwenge I said that *rural people don't buy sweetpotato unless there is hunger, so she sells only to urban areas.* Besides that, a trader from Kamwenge region reported similar consumption patterns for restaurants. More to that, it was noted from Kamwenge region market interviews that some variations in consumption patterns were related to availability and scarcity of sweetpotato, as explained below:

"Yes, but in case there's scarcity of food, the demand goes high. This usually happens in the month of June to September when demand goes high due to scarcity." Local trader, Kamwenge; Kyabyoma village.

4.6. Variations of the product

What are the different varieties/types of the crop demanded?
Varieties of the crop demanded and their order of importance have been summarised in table 32 above. All information concerning varieties demanded was obtained from female respondents. There were notable differences in varieties demanded and their priority to people from Kamwenge and Lira regions. Lira-Lira was of high priority in Lira region, while *Matama book* was ranked first in Kamwenge region. *Lwentuuma*, Naspot 13 and Naspot 8 were equally important in Kamwenge region.

Table 76: Varieties/types of crop demanded

Variety / types of the crop demanded	Order of importance		Reasons why this variety is demanded
	Kamwenge	**Lira**	
Lira-Lira (Otada)		1	NR
Kabode			For selling vines (Female, Kamwenge II)
Matama book	2		white flesh and mealy (Female, Kamwenge I)
Okonyonedo		2	NR
Kakamega		4	NR
Kinzaali	1		Kinzaali is liked by processors who make flour for Mandazi, (Female, Kamwenge III)
Lwentuuma	3		a little but yellow (Female, Kamwenge I)
Naspot 13	3		NR
Naspot 8	3	3	NR
Vita		5	NR
Naspot 10		6	NR

A trader from Kamwenge region made the comments : « *These varieties are good for steamed sweetpotato » and » are easy to peel*'' concerning *Matama book* and *Lwentuuma* : 'A trader from Kamwenge, Kigolo village mentioned that Kabode resembles *Lwentuma* in terms of skin colour. They said that they sell vines though people delay to pay. One respondent added that *she grows the sweetpotato because she normally sells vines.* All respondents from Lira region were in agreement that; *« there is no difference in using a certain variety related to processing or something else. »*

4.7. Quantities of the crop and product traded

Quantities of the crop and product traded (during a year; specify from when to when) (MI Q15 original questionnaire)

The quantities of fresh sweetpotato traded by the female respondents in Lira region ranged from 0.24 tonnes to 5 tonnes per week. The four traders in this region reported 0.24, 0.36, 0.96, and 5 tonnes as the quantities of sweetpotatoes traded per week. This represents some variation among traders in the same region regarding quantities of sweetpotato traded. Apart from the fresh product, no information was obtained concerning the processed products. The traders from Kamwenge were not responsive in this regard. Abong et al (2016) mention that in Uganda, farmers generally sell about 17% (300 MT) of their total harvest mostly in fresh form and at farmgate level. By region, the eastern region is the highest producer followed by the west, central and north. The authors further state that sweetpotato is marketed on an individual basis rendering the farmers to high losses.

What is the daily throughput/amount traded daily in market of the product (in kg or tonnes), taking seasonality into account? This can only be done for market where the trader(s) are based. (MI Q16 original questionnaire, Q24 revised Nigeria)

There were notable variations in quantities traded daily by farmers during different seasons. In Kamwenge region, daily throughput of the product was generally higher in the dry seasons due to scarcity and limited supply of other crops. In regards to this, a trader in Kamwenge made the following comment:

> *"2 bags (0.24 tonne of sweetpotatoes due to scarcity sold at shs.50000- 60000 each bag. People buy sweetpotatoes because the supply for other foods is limited."*

Similarly, sales were as well higher in dry seasons than other seasons in Lira region. in justification of this, a female farmer and trader from Lira town said, "*1 bag (0.12 tonnes) is sold in one day, and for a short time (form morning to noon,) the customers are many and a bag is sold at shs60000."* Across regions, sales and corresponding prices were lower during the wet season which a female trader from Kamwenge, Kyabyoma village accounted to the fact that customers had many other foods to choose from.

Table 87: Daily throughput/amount traded daily (tonnes) in various markets in Lira and Kamwenge

KAMWENGE			LIRA		
Occupation of respondent /Market	**Part of the year**	**Quantities of crop (tonnes) (tonnes)**	**Occupation of respondent /Market**	**Part of the year**	**Quantities of crop (tonnes)**
Trader, Kamwenge	Wet season	0.03	Farmer and trader, Lira town	Wet season	0.12
	Dry season	0.02		Dry season	0.24
	Planting time	0.06		Planting time	0.06
	Festive periods	0.06		Festive periods	0.06
	Time of school fees	NR		Time of school fees	0.06
Local trader, Kamwenge; Kigolo village	Wet season	0.06	Trader, Lira town/ Otuke district	Wet season	0.12
	Dry season	0.02		Dry season	0.18
	Planting time	0.12		Planting time	0.06
	Festive periods	NR		Festive periods	High sales
	Time of school fees	NR		Time of school fees	NR
Local trader, Kamwenge; Kyabyoma village	Wet season	0.06	Trader, Lira town/ Agwetagwet village	Wet season	0.06
	Dry season	0.12		Dry season	0.24
	Planting time	0.12		Planting time	0.24
	Festive periods	0.05		Festive periods	0.24
	Time of school fees	0.12		Time of school fees	NR
			Trader, Lira town/ Boroboro sub-county, Boroboro village	Wet season	NR
				Dry season	NR
				Planting time	NR
				Festive periods	NR
				Time of school fees	NR

In Kamwenge region, daily throughput of the product was low during planting time because sweetpotatoes were scarce, while during festive seasons lower sales were made because customers didn't usually buy. To further explain this, a female trader from Kamwenge, Kyabyoma village said; *"customers don't like sweetpotatoes since they are in Christmas mood and a bag is sold at shs30000"* This means sweetpotatoes selling prices were lower during the festive seasons.

In Lira region, it was noted that sales were generally lower during the wet and planting season; while they were similar or generally higher during festive seasons. However, differing from Kamwenge region, majority of the traders in Lira reported higher sweetpotato prices were during festive seasons. It was obtained that sales didn't change during school fees time, yet the prices were lower. This may be attributed to a decrease in demand for the crop, due to a reduced income status of the potential buyers who are spending money on school fees.

4.8. Transport, storage, and means of selling the crop

Transport, storage, and means of selling the crop (MI Q17 original questionnaire)

***What are the important characteristics of the crop associated with product transportation, storage and sale?**

Overall, there were no differences in opinion between respondents in the same region regarding transportation of fresh sweetpotato. However, responses were different for Lira and Kamwenge regions. Regarding gender, all traders interviewed in the two regions were female. All traders in Kamwenge region revealed men as the main carriers of the fresh product. A trader in Kamwenge termed this as head transport. Traders from Lira region said that transportation of fresh sweetpotato was done using trucks, bicycles, motorcycles and small vehicles. However much it was obtained from the female traders in Lira that transportation is mainly done by men of all races and religions using the listed means, one trader in Lira town revealed the truck drivers to be mostly moslem. Across regions, it was obtained that the product was transported and stored in fresh form.

Concerning storage, it was obtained from a trader in Lira region that fresh sweetpotatoes are put in stalls and covered with tauplin. Besides that, other traders in the same region revealed stores/ sheds and sacs as means of storage with both men and women being involved in the storage of the fresh sweetpotato roots.

Majority of traders in both regions stated that freshsweetpotatoes are sold majorly by women in markets. However, a trader from Kamwenge district revealed that wholesalers are men as elaborated below:

> *"Wholesalers are men because most women have no capital to start the wholesale business. Men can also afford going to villages to look for the crop for some days which can't be done by women" Female trader, Kamwenge district, Kyabyoma village.*

Table 98: Means of transportation, storage and form of sale in Lira and Kamwenge markets

Occupation, Name of town/community	Means			Important characteristics that might affect the end-product
	Transportation	Storage	Means and forms of sales	
Trader, Kamwenge	head transport by male carriers in fresh form	fresh form	mainly by women who are aged between 30 and 50 years.	Breaking. It becomes hard to peel when it is broken into small pieces. In case it is stored in dry or hot place, the quality lowers. The taste changes a bit and the appearance also changes
Farmer, Kamwenge; Kigolo village	NR	NR	NR	NR

Occupation, Name of town/community	Means			Important characteristics that might affect the end-product
	Transportation	Storage	Means and forms of sales	
Local trader, Kamwenge; kyabyoma village	transported by men in fresh form	fresh form	in fresh form; mainly by women; however, those who sell in wholesale are men.	Breaking. If you leave it under the sun for a long time, (ashishikara), it will get spoilt and the skin shrinks and becomes hard to peel. Sometimes it changes colour after peeling
Farmer and trader, Lira town	Diana/fuso, bicycle, drivers are mostly muslims and transportation done by men in fresh form	put in stalls and covered with tauplin in fresh form by both men and women.	fresh form sold majorly and most commonly by women	• breakage • Bruises on the skin • Cut ones • Rodent eat-ups
Trader, Lira town/ Otuke district	trucks , bicycles,fuso and transported in fresh form by men.	fresh form by both men and women.	fresh form by women	• bruises • rough surface • breakage • cuts in the sweetpotatoes • rodents • dust particles
Trader, Lira town/ Agwetagwet village	truck and small vehicles, transportation is done by men of all religions.	Placed in stores in sacks and both men and women do the storage.	In fresh form and in the markets majorly and the selling is done by women.	• Breakage of the final products • splitting of the final product • Damages/ eaten by rodents (rats). • Poor storage facilities • Poor packaging materials
Trader, Lira town/ Boroboro sub-county, Boroboro village	transportation is by men and using bicycles, motorcycles, small vehicles and men of all races and religions.	sheds or stores when packed in a bag/sack.storage is most especially done by women but some men also get involved in the process of storage.	Sweetpotatoes are sold in the market and the selling is done mostly by women.	o Damage by rodents e.g. rats o Fungal attack o Breakage during transportation o rots of the flesh o contaminated packaging materials o spilling when touched

Important characteristics during transportation and storage that might affect the end-product were similar across regions. These included breakages, changes in taste and appearance, dust particles, bruises, fungal attacks, rough surface, rodents eat ups, and splitting of the root. From the responses, it was noted these characteristics may be due to poor handling of roots during transportation,

contaminated packaging materials, and poor storage facilities that expose fresh roots to dry and hot conditions. This is further explained in a comment below:

> *"During transportation, the crop should be handled with care not to break it since this affects the quality of the boiled sweetpotato. It becomes hard to peel when it is broken into small pieces. In case it is stored in dry or hot place, the quality lowers. The taste changes a bit and the appearance also changes" Female farmer and trader, Kamwenge region.*

4.9. Drivers of change

Drivers of change in terms of demand for crop and final product (MI Q20 original questionnaire)

From the market study, there were varied responses concerning demand for the product across regions. Information obtained from Kamwenge region traders reveals that the demand for the crop goes low when production is high and vice versa. This is further elaborated below:

> *"Last year, the crop sales were better, but this year, the prices are low due to high production. They give to pigs since have no skills in processing sweetpotatoes." (Female farmer, Kamwenge; Kigolo village)*

It was noted from Kamwenge region that the demand decreased with decreasing income of the consumers such as *during school fees time* as said by a female local trader from Kamwenge, Kyabyoma village. A different trend was noticed in Lira region as demand was affected by; diet/ nutritive value concerns, starch content, availability of sauce needed to accompany the sweetpotatoes such as odii, fish, ground nuts, and other crop characteristics including sensory, agronomic and post- harvest qualities of the crop and product as a whole. All responses in the table above were obtained from female traders and farmers.

Table 39: Drivers of Change

Demand in general	If production is high, the demand goes low since everybody has sweetpotato. If people have no money, they don't buy. Climate change leading to disease outbreaks (Female trader, Kamwenge)
	Last year, the crop sales were better, but this year, the prices are low due to high production. They give to pigs They have no skills in processing sweetpotatoes. (Female farmer, Kamwenge; Kigolo village)
	Income status of people; if people have no money, they tend not to buy. During school fees time, they buy little When the production is high, the demand also goes down. (Local trader, Kamwenge, Kyabyoma village)
	Demand is affected by; diet concerns, starch content, sauce needed odii, fish etc (Farmer and trader, Lira town)
	Sweetpotatoes are needed according to sauces e.g. fish, having high content of starch, needed for diet, sweetness concerns, nutritive value concerns. (Female trader, Lira town/ Otuke district)

	Characteristics of the potatoes that are demanded include; big size of sweetpotatoes, High sap content, Smooth surface of the peels. Diet concerns also affect demand for sweetpotato. (Female trader, Lira town/ Agwetagwet village)
	It depends on diet concerns and sauces it requires e.g. pasted fish Potatoes with smooth surface peels and big size are preferred. (female trader, Lira town/ Boroboro sub-county, Boroboro village)
Changes as far as major characteristics of the crop or end-product are concerned	If more of the yellow or red, orange color is in the market. (Farmer and Trader, Lira town)
	Big size of sweetpotatoes, orange fleshed color, color variations in peels/outer coverings. (Female trader, Lira town/ Otuke district)
	Orange and yellow fleshed color, Soft peels, No rots, No ridges and contours. (Female trader, Lira town/ Agwetagwet village)
	Long storage ability, no rots experienced, color of the flesh of the sweetpotatoes e.g orange fleshed and yellow fleshed. (female trader, Lira town/ Boroboro sub-county, Boroboro village)

From the market study, changes as far as major characteristics of the crop or end- product are concerned encompassed sensory characteristics (orange and yellow fleshed colour and variations in peel colour), agronomic characteristics (big size sweetpotatoes), post-harvest characteristics (soft peels, no rots, no ridges and contours, long storage ability) and diet concerns.

4.10. Trend lines for consumption

Trend lines for consumption trends per main demand/customer segment (**MI Q21 original questionnaire)**

Information obtained from a female local trader in Kamwenge, Kyabyoma village showed that there were medium sales in 2014, high sales during 2015 and 2016 due to more demand, and low sales in 2017 and 2018. This question was not responded to adequately and thus trend lines were not constructed.

4.11. Economics of the product

Economics of the product, in terms of (MI Q19 original questionnaire, Q27 revised Nigeria)
Overall, there was increase in consumption of sweetpotatoes in Lira region at both rural and town level (Table 40). Similarly, prices increased depending on the variety, as well as during low production.

Table 40: Economics of sweetpotato in Lira

	Economics of the product	Kamwenge	Lira
Rural level	Trends over the last 10 years	NR	There was increase in consumption of sweetpotatoes
	Prices	NR	Prices increased depending on a suitable variety
	Profitability of the crop (monthly)	NR	Shs900,000 – shs10,000,0000
Town level	Trends over the last 10 years	NR	There was increase in consumption of sweetpotatoes
	Prices	NR	Prices increase as production lowers
	Profitability of the crop (monthly)	NR	Shs135,000 – shs2,400,000

4.12. Conclusion

From the findings, traders in Lira preferred local varieties i.e. Otada, Okonyneddo and Naspot 8 (in descending order). Traders in Kamwenge preferred Kyinzali (local, but orange fleshed) followed by Matama book, Lwentuuma and Naspot 8. While the order of preference differs with varieties mentioned by farmers and processors, there were similarities between the three chain actors.

The preferred raw root characteristics included big size, hard, smooth skin (not damaged), sweet (but not sweet like sugar) and roots which are not rotten. These characteristics do not differ much from the farmer and processor preferred characteristics, and should be the characteristics of focus for WP2.

Sweetpotatoes were mostly bought by middle income families in urban and peri-urban areas, and the demand was highest when other types of food were scarce. Restaurants were the second largest consumers, which could imply a growing demand for the crop.

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