



Gender-differentiated trait preference for sweetpotato varieties in Mozambique

A Focus Group Discussion Report

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Chalmers K. Mulwa¹, Joao Mudema², Gonzaga Madroba²,
Naico Abdul³, Godwill Makunde³, Maria Andrade³

¹ International potato centre, Kenya

² Mozambique Institute of Agricultural Research

³ International potato centre, Mozambique



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International Potato Center:

P. O. Box 1558, Lima 12, Peru

cip@cgiar.org • www.cipotato.org

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Executive Summary

This report is an update of information on gender-differentiated producer and consumer preferred traits of sweetpotato conducted in Mozambique. It is intended to inform gender-responsive breeding strategies, recommend breeding priorities and expand the potential impact of improved sweetpotato varieties. Information in the report was obtained by interviewing sweetpotato farmers (producers) and consumers through focus group discussions (FGDs) conducted in five districts selected for the study, including Nhamatanda, Buzi, Macate, Mussorize and Massinga districts. The FGDs comprised of about eight to twelve participants and were conducted separately for men and women. For the consumer FGDs, urban and rural consumers were targeted to capture the dynamics in the preferences between these two market segments.

Results revealed heterogeneous producer-preferred varieties across the study areas, with only Amelia variety being preferred by producers in more than one district, i.e., preferred by both women and men in Mussorize district, as well as women in Macate district. Other dominant varieties mentioned by producers included Secae, Gina, Julia, Khabhalire Tsogolo, Chibaya Chengwe, Meno a Guebuza, Buadara, Esther and Sumaia, which were grown in varying intensities across the districts represented in the study. Producers in the FGDs held in Mussorize and Macate districts reported that sweetpotato vines are available in the community as CIP is distributing planting material to farmers in a bid to strengthen the sweetpotato seed chain. They also reported that the production of sweetpotato has been increasing in the community over the years and farmers are increasing the acreage under sweetpotato production.

Results also indicate that sweetpotato producers across all study sites, both women and men, selected varieties based on various traits. Traits mostly preferred by female producers were varieties rich in vitamins and those that were tasty and marketable. Male producers on the other hand mostly preferred agronomic traits such as disease and drought tolerance. For the consumers, while most common preferred traits differed by gender across the study sites, the most preferred traits by both male and female consumers were high dry matter content, good taste and varieties high in vitamin content. This is also in line with traits preferred by female producers. In addition, female consumers also preferred traits that were easy to process and cook. Traits that were unpreferred by producers across the gender divide were low yields, unpleasant taste, susceptibility to pests and diseases, long maturity period, low dry matter content, drought intolerance and long thin roots.

Comparison between sweetpotato varieties grown by producers and those purchased by consumers within the study districts reveals a congruence between producer and consumer preferred varieties. Such varieties include Chibaya Chengwe, Cor, Secae, Meno a Guebuza, Phaeque, Buadara and Mudzipaheka. Only Secai variety was preferred by consumers across various study districts, including both male and female consumers in Macate and Chimoio districts and female consumers in Nhamatanda district. Study participants reported that Orange Fleshed Sweetpotato (OFSP) varieties like Cenoura are preferred by consumers but are not easily available in the local market. This is especially so after cyclone Idai which hit in 2019 destroying many crops. During data collection, it was observed that there are few improved sweet potato varieties being produced and consumed in the study areas.

The study recommends that gender-disaggregated sweetpotato variety preferences need to be considered in breeding systems, across various market segments including producer and consumer segments. While agronomic and market-related traits are critical in improving impacts at the household level, quality-related traits are equally important, as these were shown to be preferred not only by female producers, but also by both female and male consumers in the study areas. These traits include taste, vitamins, color and texture of skin, as well as

market-related traits such as shape and size of the root. Also important for acceptability of new varieties for women producers and consumers are traits associated with easiness of processing, as well as cooking time.

1 Introduction

Mozambique's economic growth rate has been slower in rural areas compared to the urban areas where food insecurity remains a significant challenge. According to USAID (2021) at least 25% of the rural population constantly suffer from food insecurity, 43% of children under the age of five suffer from chronic malnutrition, and more than 65% of children under five suffer from micronutrient deficiencies including vitamin A deficiency. Sweetpotato is recognized as a food security crop in sub-Saharan Africa where improved low-cost value addition technologies are becoming more prevalent (Dery et al., 2020). Biofortified improved sweetpotato varieties have also been shown to have a high potential of reducing malnutrition by increasing Vitamin A intake among vulnerable households (Low et al., 2017). Africa accounts for 21% of the more than 105 million tons of sweetpotato produced annually on a global scale (Gasura et al., 2021). However, adoption of improved sweetpotato varieties is still very low in the region (Low & Thiele, 2020). In Mozambique, improved sweetpotato germplasm has also been lost due to prolonged dry spells (Mukunde et al., 2018), with extended drought conditions in many parts of the country coupled with an increase in the frequency of cyclones hindering conservation of vines, which in-turn affects the availability of planting material at the onset of rains. These combined challenges contribute to hinder the potential of high sweetpotato production and consumption within the country.

This study was undertaken to guide breeding activities in the Genetic Advances and Innovative Seed Systems for Sweetpotato (SweetGAINS) project, a flagship initiative led by the International Potato Center (CIP) which aims to modernize sweetpotato breeding programs in sub-Saharan Africa (SSA). Historically, breeding programs have largely prioritized agro-nomic varietal traits such as yields, drought, disease and pest tolerance, that impact a large population of farmers. An emerging school of thought is that responding to more nuanced and contextual trait preferences, some of which may have a low breeding priority, can enhance the low adoption rates of improved varieties in the region. For example, studies have shown that trait preferences for farmers and consumers in SSA conform to gender divisions of labor and market access (Teeken *et al.*, 2018). Against this background, this study aimed to understand gender-differentiated preferences on preferred and non-preferred sweetpotato traits and varieties, across producer and market segments. Further, to enable gender-responsive breeding, the potential effects of these trait preferences on the roles of men and women in the household were also investigated, to caution against unintended consequences of prioritized traits in released varieties.

2 Methodology

2.1 Sampling, data and protocols

The study adopted a qualitative research approach where focus group discussions (FGDs) with both sweetpotato producers and consumers were conducted. The consumer FGDs were conducted with both urban and rural consumers to capture the dynamics in the preferences between these two market segments. All the FGDs were organized into male and female groups to understand differences in variety preferences and to allow for candid discussions. The FGD facilitators were recruited and trained in data collection by a lead scientist from CIP. The facilitators were trained on how to conduct the FGDs using a checklist in a manner that elicited robust discussions. The checklist was pretested and feedback from the pretest was used to revise the data collection tool. Pretesting also ensured familiarity of the tool by the facilitators. Data were transcribed and analyzed using content analysis approach.

2.1.1 Sweetpotato producer FGDs

In sampling, three provinces, Sofala, Manica and Inhambane were purposively selected for the study, based on sweetpotato production and commercialization potential. For the producer FGDs, two districts were selected from Sofala (Nhamatanda and Buzi) and Manica (Mussorize and Macate) provinces to represent the diverse heterogeneous production and consumption patterns within these two regions, and one from Inhambane (Massinga) province. From the selected districts, sweetpotato producing wards and villages were randomly selected for the study to make up 5 villages spread across the study areas (Table 1).

Table 1: Provinces, districts and wards where FGDs were held

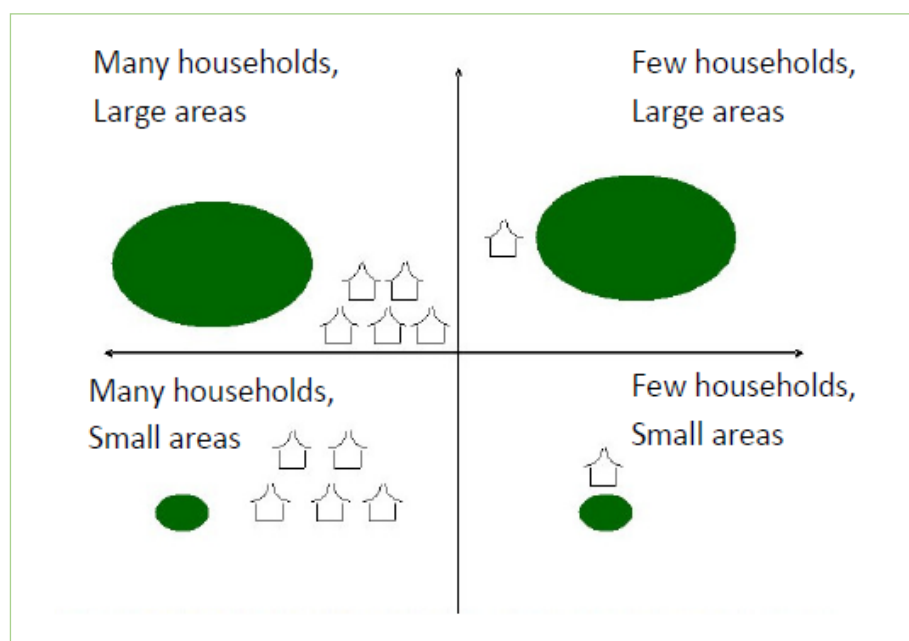
Province	District	Ward	Administrative post
Sofala	Nhamatanda	Ndeja	Lamego
	Buzi	Bandire	Buzi Sede
Manica	Mussorize	Dibi/Zomba	Espungabera
	Macate	Matamira	Macate
Inhambane	Massinga	Rovane_Chilacua	Massinga-Sede

Protocols followed during data collection included explaining the purpose of the study to sub-village leaders who were convened by the village government. Each sub-village leader was asked to submit a list of 20-25 names of men and women farmers involved in sweetpotato root/vine production from which three to four men and women farmers from each sub-village were then randomly selected. Two FGD sessions were then carried out in each village, one with men and the other with women participants, to attain a total of 10 FGDs held with 93 farmers (Table 2).

Table 2: Sweetpotato producers

FGD/Participants	District					Total
	Buzi	Macate	Massinga	Mussorize	Nhamatanda	
Number of FGDs held	2	2	2	2	2	10
Total number of participants in the FGDs	23	17	16	23	14	93
Women	11	9	8	12	7	47
Men	12	8	8	11	7	46

A briefing was held with the selected sweetpotato farmers, who were informed about the objective of the FGDs and requested to participate in sessions scheduled the following day. As a guide, FGDs sessions utilized the Four-Cell Approach (FCA) to assess the abundance and distribution of sweetpotato varieties in farming communities in terms of the number of farmers growing the preferred and non-preferred varieties (many/few households) and the area under cultivation (large /small areas) (Figure 1).

**Figure 1:** Example of FCA approach (Sthapit et al., 2014)

The Four-Cell Approach (FCA) approach derives its name from the formation of the four cells that are created by two axes, labelled for relative number of households (many vs. few) and area of cultivation (large vs. small) and is a rapid assessment approach used to assess the amount and distribution of crop diversity within farming communities.

2.1.2 Sweetpotato consumer FGDs

To select participants for the consumer FGDs, the study employed two approaches: In the first approach, retailers and food vendors in the markets were requested to provide contacts of their regular customers, who were not primarily producers of sweet potato roots. Participants for the FGDs were then randomly selected from the provided list. To compliment this approach and get more numbers of consumers, a second approach included observing clients purchasing or consuming sweetpotato roots from retailers and food vendors and requesting them to participate in the FGD sessions the following day. This was the more promising approach since most

retailers did not have contacts of regular sweetpotato customers. Consumer FGD participants were sampled from urban (representing modern markets) and peri-urban towns in rural areas (representing traditional markets) to increase diversity of the responses or views on sweetpotato varietal preferences. In this regard, participants for the consumer FGDs were selected from rural township markets of Buzi, Macate, Massinga Mussorize and Nhamatanda districts while the urban consumers were drawn from Chimoio and Nhamatanda urban markets in Manica and Sofala provinces, respectively (Table 3).

Table 3: Geographic scope of study for sweet potato consumers

Rural/Urban	Province	District	Ward	Administrative post	Predominant market
Rural	Sofala	Buzi	Macurungo	Buzi-Sede	Ndzero
Rural	Sofala	Nhamatanda	Lamego	Tica	Feira
Rural	Manica	Macate	Marera	Macate	Nhachoco
Rural	Manica	Mussorize	Djameia	Espungabera	2000
Rural	Inhambane	Massinga		Rovene	Rio das Pedras
Urban	Manica	Chimoio	Chimoio	Chimoio	Chimoio
Urban	Sofala	Nhamatanda	Lamego	Nhamatanda	Ndzero

Two FGD sessions were conducted in each market, one with women and the other with men. In total, 14 FGDs were conducted comprising of 117 participants, 57 of whom were men and 60, women (Table 4).

Table 4: Composition of FGDs

Participants	District						Total
	Buzi	Chimoio	Macate	Massinga	Mussorize	Nhamatanda	
Number of FGDs conducted in rural and urban areas							14
Rural	2	0	2	2	2	2	10
Urban	0	2	0	0	0	2	4
Number of participants in the FGDs							
Total number	8	9	24	20	22	34	117
Number of female participants	4	4	12	12	11	14	60
Number of male participants	4	5	12	8	11	20	57

Nhamatanda district had both rural and urban representation of participants, while Chimoio district only had urban representation. There were slightly more female FGD participants compared to male participants.

3 Results and discussion

In this section, the socioeconomic characteristics of sweetpotato producers and consumers are presented first followed by results on producer sweetpotato varieties and traits preferences. Next, results on consumer sweetpotato preferences are presented and lastly, results on the effects of trait preferences on household gender roles are reported.

3.1 Demographic and socioeconomic characteristics

3.1.1 Sweetpotato producers

The average age of both men and women participants was 45. Overall, male sweetpotato producers were older than female producers (Table 5). The oldest sweetpotato producers were men and women FGD participants from Massinga and Nhamatanda districts respectively, both with an average age of 54 years. The youngest producers were women FGD participants from Mussorize district with an average age of 37 years. In terms of education attainment, most of the study participants had attained primary level of education, with Massinga district having 74% of participants with primary education. Very few participants had attained secondary level of education, with Macate district having the highest percentage of participants (35%) with secondary level of education. Nhamatanda district had the highest level of illiterate participants (43%), while no participants in Macate district were categorized as illiterate.

Table 5: Age, level of education and area of land under sweetpotato production

	District					
	Buzi	Macate	Massinga	Mussorize	Nhamatanda	Average
Age of sweetpotato producers (years)						
Average age	40	44	53	42	50	45
Women	40	39	52	37	54	43
Men	39	49	54	46	46	46
Level of education (Average)						
Secondary	18	35	13	22	21	22
Primary	52	65	74	56	36	47
Illiterate	30	0	13	22	43	18
Area of land under sweetpotato production (Ha)/district						
Average Area	0.4	2.1	0.5	1.2	0.7	0.98
Women	0.4	1.9	0.3	0.7	0.9	0.82
Men	0.5	2.3	0.8	1.8	0.4	1.2
Experience growing sweetpotato (Years)/district						
Average	17	15	6	17	21	15
Women	21	19	8	18	27	19
Men	13	10	4	13	16	12

The average area of land under sweetpotato production across the five districts was 0.98 hectares. Macate district had the highest area of land under sweetpotato production (2.1Ha), followed by Mussorize district (1.2Ha) while Buzi district had the least area allocated to sweetpotato production (0.4Ha). Overall, male producers had higher land allocation to sweetpotato production (1.2Ha) compared to their female counterparts (0.82), with the trend replicated across the study districts except in Nhamatanda, where female producers had higher land allocation (0.9Ha) to sweetpotato production compared to male producers (0.4Ha). Women across

all the study sites had higher experience in sweetpotato farming, perhaps indicating the importance of the crop to women, reinforcing the perception that sweetpotato is a woman's crop.

3.1.2 Sweetpotato consumers

The average age of consumers across the districts represented in the study was 47 years with rural consumers being older than urban consumers. The oldest consumers were from Buzi district, while the youngest, from Chimoio district (Table 6). In terms of education attainment, majority (59%) of the consumers across the districts represented in the study had primary level education, with Chimoio being the district with most consumers who had attained university level education at 33 percent. The district also had no participant falling under the "illiterate" category.

Table 6: Age and level of education of participants per district

	District							
	Rural (%)				Urban (%)			
	Buzi	Macate	Massinga	Mussorize	Nhamatanda	Nhamatanda	Chimoio	Overall
Age (years)								
Average age	58	55	43	47	44	38	39	47
Age (Female)	52	47	39	46	46	47	38	45
Age (male)	64	63	46	47	41	25	41	49
Level of education (Average)								
Illiterate	12.5	12.5	10.0	22.7	38.1	26.5	0.0	13.4
Primary	50.0	79.2	70.0	50.0	33.3	38.2	55.6	58.9
Secondary	37.5	8.3	20.0	27.3	28.6	35.3	11.1	25.0
Degree	0.0	0.0	0.0	0.0	0	0.0	33.3	2.7

Further disaggregation of data for level for education in urban and rural areas showed mixed results, with consumers from some rural districts (e.g., Buzi, Macate and Massinga) having higher levels of education than their urban counterpart, Nhamatanda. Urban consumers from Chimoio district had higher levels of education than urban consumers from Nhamatanda district. From a gender perspective, consumers who were men were more educated than women consumers, with 93% of male consumers having attained primary level of education and above (Figure 2).

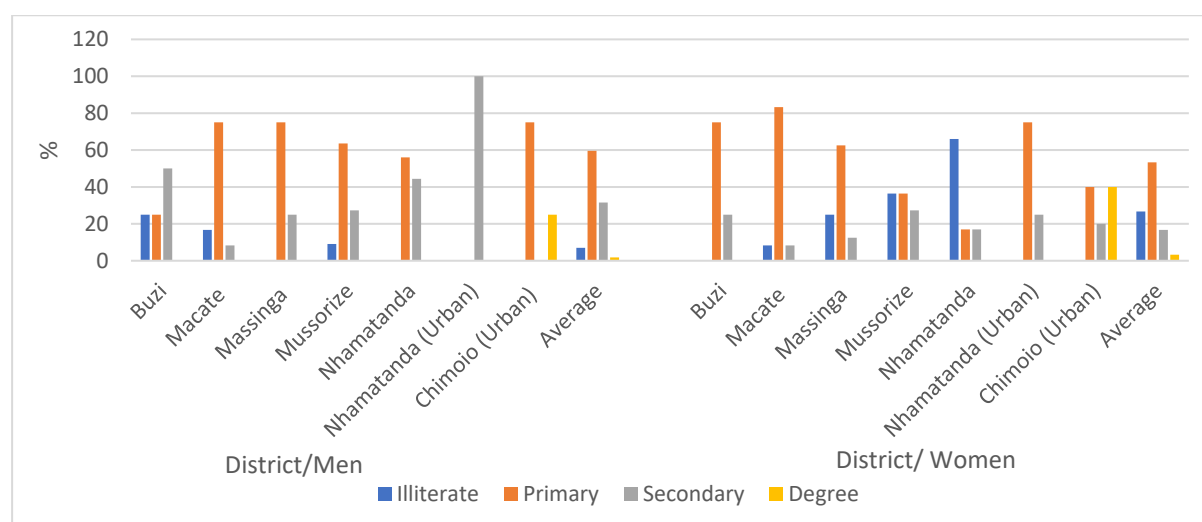


Figure 2: Level of education for consumers by gender

More than 50% of participants in the FGDs held with urban consumers reportedly produced their own sweetpotato (Table 7). Probed on why they grew sweetpotato, a female participant from the FGD held in Chimoio responded *“This was a process passed from generation to generation. Here we know that very few people join this activity by their own initiative now we are producing sweetpotato as a crop for household food security.”* This implies the failure of separability of production and consumption preferences among the consumers, which the distinction between urban and rural consumers sought to have. The results should therefore be interpreted with this in mind.

Table 7: Proportion of sweetpotato consumed from own production and purchased

District	Own production (%)	Purchased (%)
Buzi	51.25	48.75
Macate	82.08	17.92
Massinga	53.75	46.25
Mussorize	90.22	9.80
Nhamatanda (Rural)	80.48	19.52
Chimoio (Urban)	55.55	44.45
Nhamatanda (Urban)	59.23	40.77

Consumers in the FGDs were also indicated that they had changed their sweetpotato consumption over the last five years, with most of them citing an increase in consumption. In terms of frequency of purchase, majority of consumers reportedly purchased sweetpotato on a longer-term basis, with 25% purchasing monthly and a further 39% for more than a month (Table 8). A significant proportion of consumers also purchased sweetpotato on less than a month basis. For example, 14% of the consumers reportedly purchased sweetpotato for consumption on a weekly basis and a further 22% on a bi-weekly basis.

Table 8: Frequency of purchasing sweetpotato

Frequency	Gender (n=77)	Buzi	Chimoio	Macate	Massinga	Mussorize	Nhamatanda	Total	Overall/ frequency
Weekly	Male	50.0% (3)	22.0% (2)	0%	0%	0%	4.0% (1)	7.79%	14.29
	Female	0%	22.0% (2)	0%	15% (3)	0%	0%	6.49%	
Biweekly	Male	0%	22.0% (2)	0%	5% (1)	0%	8.0% (2)	6.49%	22.08
	Female	33.3% (2)	11.1% (1)	0%	10% (2)	11.0% (1)	24.0% (6)	15.58%	
Monthly	Male	0%	0%	0%	20% (4)	22.0% (2)	16.0% (4)	12.99%	24.68
	Female	0%	0%	38% (3)	5% (1)	0%	20.0% (5)	11.69%	
More than month	Male	17% (1)	0%	38% (3)	35% (7)	44.0% (4)	16.0% (4)	24.68	38.96
	Female	0.0	22.0% (2)	25 (2)	10.0% (2)	22.0% (2)	12.0% (3)	14.29%	

Overall, less than ten percent of men and women FGD participants reported to purchase sweetpotato on a weekly basis. The lowest frequency of sweetpotato purchase was observed with men (25%) who reported to make purchases after a period of more than a month.

3.2 Producer preferred sweetpotato varieties and traits

3.2.1 Key reference sweet potato varieties in the study area

This section reports on results obtained from the four-cell assessment process adopted in the methodology. Across the study districts, dominant varieties were grown by many households in small areas, by both women and men. These include Gina and Mudzipaheka varieties in Nhamatanda district, and Amelia and Chibaya Chengwe varieties in Mussorize district (Table 9). In, Massinga, Sumaia and Esther were the dominant varieties with women indicating that these were grown by many households in small areas while men indicated that the same were grown by many households in large areas. Meanwhile, women in Macate district mostly preferred Secae and Amelia varieties, while men preferred Secae and Buadara, all grown by many households in small areas. Lastly, dominant varieties for women in Buzi district were Meno a Guebuza and Derunde and Phaeque and Xinhadja Koro for men, all grown by many households in small areas within the district.

Table 9: Dominant sweet potato varieties grown by producers

District	Women (n=47)				Men (n=46)			
	Variety	% participants growing	Rank	Abundance	Variety	% participants growing	Rank	Abundance
1. Nhamatanda	Gina	100	1	2	Mudzipaheka	100	1	2
	Julia	100	2	2	Khabhalire Tsogolo e	100	2	2
	Pedro	86	3	2	Julia	29	3	2
2. Mussorize	Chibaya Chengwe	100	1	2	Chibaya Chengwe	91	1	2
	Amelia (Margarine)	58	2	2	Amelia	91	2	2
	Chidumbedumbe	42	3	2	Cor	45	3	2
3. Massinga	Sumaia	88	1	2	Esther	88	1	3
	Esther	63	2	2	Delvia	88	2	3
	Gaba-Gaba	38	3	2	Sumaia	88	3	3
4. Macate	Secae	100	1	2	Secae	100	1	2
	Amélia	78	2	2	Buadara	88	2	2
	Irene	44	3	2	Glória	63	3	2
5. Buzi	Meno a Guebuza	100	1	2	Phaeque	100	1	2
	Derunde	64	2	2	Meno a Guebuza	58	2	2
	Muforça	55	3	2	Xinhadja Koro	75	3	2

Key: Abundance 1=Many households large areas 2=Many households small areas 3=Few households large areas 4= few households small areas

Amelia was the only variety grown in more than one district (by women in Mussorize and Macate districts) in the study area. Some of the reasons for its preference were summed up by a female participant in the FGD held in Macate district:

“Here in the village, many farmers grow Amelia generally with dual sales purposes, for vines and roots, . . . This variety has attractive traits such as smooth skin, high yield, vitamin A content, greater demand and high price ... on the market compared to other varieties . . . its roots can be consumed in different ways, juice, puree, biscuits.”

Producers in the Focus Group Discussions held in Mussorize and Macate districts reported that sweetpotato vines are available in the community as CIP is distributing planting material for farmers in a bid to strengthen the sweetpotato seed chain. They also reported that farmers are increasing the acreage under sweetpotato production over the years resulting in an increase in the production of sweetpotato in the community.

3.2.2 Producer preferred traits in key preferred sweetpotato varieties

The FGD participants were also requested to list and rank the traits they liked most in the preferred varieties (see Table 10). While the results indicate heterogeneous producer trait preferences across the study sites and sex, agronomic traits like high yielding varieties were preferred by most of the producers. Traits specifically preferred by women producers are those rich in vitamins, are tasty, and marketable. Male producers on the other hand mostly preferred traits such as disease resistance and drought tolerance. It should be noted that mentioned marketable traits include root shape, size, while weight of the root is associated with yields. An FGD participant from Massinga district stated that:

“When we talk about high yield this can be seen in terms of weight of root and vines, as our association also operate as DVM [Decentralized Vine Multiplier] in the district. Usually, we produce both roots and vines with good weight for selling to other people.”

Producer-preferred traits in the dominant sweetpotato varieties were disaggregated by district and gender. Pairwise ranking revealed that both male and female producers in Nhamatanda district preferred pest and disease tolerance, perhaps indicating high sweetpotato pest and disease prevalence in the region. In addition, female producers in the district also preferred marketable sweetpotato with a long shelf life with male producers’ preferring drought tolerant varieties that were also high yielding.

Table 10: Producer preferred traits in dominant varieties

District	Women			Men		
	Variety	Preferred traits	Pairwise ranking	Variety	Preferred traits	Pairwise ranking
Nhamatanda	Gina	1. Marketable 2. Long shelf life 3. Pest and disease tolerance	1. Marketable 2. Pest and disease tolerance 3. Long shelf life	Mudzipaheka	1. Drought resistant 2. Pest & Disease Tolerance 3. High yields	1. Pest and disease tolerance 2. Drought resistance 3. High yields
	Julia	1. High yield 2. High dry matter content		Khabhalire Tsogolo		
	Pedro	1. High yields		Julia		
Mussorize	Chibaya Chengwe	1. Vitamins 2. Dry matter 3. Tasty	1. Vitamins 2. High yield 3. Tasty	Chibaya Chengwe	1. Resistance to sweet potato virus disease 2. Dry matter 3. Tasty	1. Resistance to sweet potato virus disease 2. Drought tolerance 3. Long shelf life
	Amelia (Margarine)	1. Vitamins 2. Tasty 3. High yield		Amelia	1. Resistance to sweet potato virus disease 2. Drought tolerance 3. Tasty	
	Chidumbe-dumbe	1. Vitamins 2. Tasty 3. High yield		Cor	1. Dry matter 2. Tasty 3. Long shelf life	
Massinga	Sumaia	1. Vitamins 2. High yields 3. Tasty roots	1. Vitamins 2. Tasty roots 3. High yields	Esther	1. Marketable 2. High yields 3. Dry matter	1. Marketable 2. High yields 3. Dry matter
	Esther	1. Vitamins, 2. High yields		Delvia	1. Marketable 2. High yields	

District	Women			Men		
	Variety	Preferred traits	Pairwise ranking	Variety	Preferred traits	Pairwise ranking
		3. Tasty roots			3. Dry matter	
	Gaba-Gaba	1. High yields		Sumaia	None	
Macate	Secae	1. High yield 2. Marketable 3. Early maturing	1. High yield 2. Marketable 3. Early maturing	Secae	1. Tasty 2. Marketable, 3. Medium root size	N/A
	Amélia	1. High yield 2. Marketable 3. Vitamin		Buadara	1. Medium root size 2. High yield	
	Irene	1. Vitamin 2. Processing		Glória	1. Tasty 2. Marketable 3. Medium root size	
Buzi	Meno a Guebuza	1. Tasty 2. High yields 3. Easy to grind	1. Vitamins 2. High yields 3. Easy to grind	Phaeque	1. Drought tolerant 2. Resistance to sweet potato virus disease, 3. High yields	1. Drought tolerance 2. Resistance to sweet potato virus disease 3. High yields
	Derunde	1. Tasty 2. Dry matter 3. High yield		Meno a Guebuza	1. Drought tolerant 2. Resistance to sweet potato virus disease, 3. High yields	
	Muforça	1. High yield 2. Vitamins		Xinhadja Koro	1. Drought tolerant 2. Resistance to sweet potato virus disease, 3. High yields	

In Mussorize district, pairwise ranking revealed that female producers preferred varieties that were high in vitamins, have sweet taste, and are high yielding, while male producers preferred varieties that were resistant to sweet potato virus disease (SPVD), are drought tolerant and have a long shelf life. On the other hand, high yielding varieties were most preferred by both male and female producers in Massinga district, with male producers also preferring varieties that were marketable and had high dry matter content, while their female counterparts preferred varieties that were tasty and rich in vitamins. Meanwhile, high yields, early maturing varieties and market-related traits were highly ranked across the gender divide in Macate district. Lastly, women preferred traits in Buzi district were high yields, Vitamins and easy to process, while the male counterparts mostly preferred agronomic traits such drought tolerance, resistance to sweetpotato virus disease, and high yields.

Missing traits for producer preferred varieties

Focus Group Discussion participants were requested to list traits they found missing in their preferred sweetpotato varieties (Table 11). In Nhamatanda, the missing traits mentioned by women producers were vitamins and tolerance to damage by weevils during storage. They recommended that breeders enhance the dominant sweet potato varieties with tolerance to weevils and fortify the varieties with vitamins. In Mussorize

district women producers stated that the missing traits in the dominant varieties were long shelf life, while men mentioned drought tolerance as a key missing trait. They therefore recommended that breeders develop varieties with longer shelf life and drought tolerance. In Macate district women producers stated that the missing traits in their preferred varieties were vitamins for Secae, short growth cycle in Amelia, and high dry matter content and sweet aroma in Irene. They recommended the fortification of the sweetpotatoes with vitamins, reduction of the growth cycle and increase in the dry matter content of the respective varieties mentioned. On the other, hand a missing trait identified by men in Buadara variety was low dry matter content. They also mentioned that the roots of Secae variety cracks during the rainy season.

Table 11: Most mentioned missing traits by FGD participants across study districts

Missing traits			
Women	%	Men	%
High dry matter content	25	Cracked roots during dry season	20
Resistance to sweetpotato weevils	25	Drought tolerance	20
Vitamins	12.5	Early maturity	20
Long shelf life	12.5	High yields	20
Short growth cycle	12.5	Low dry matter content	20
Sweet aroma	12.5		

In Massinga, dry matter content was mentioned as a missing trait by women producers, while their male counterparts mentioned early maturity and high yields. Lastly, in Buzi district the missing traits mentioned by women producers included resistance to sweetpotato weevils in Meno a Guebuza, Derunde and Muforca. Men did not mention any missing traits. Women producers recommended that breeders improve the sweetpotato ability to resist sweetpotato weevils.

Reasons for producer trait preferences

FGD participants were also requested to give reasons for their trait preference, as elicited above. High yielding roots were preferred because they ensured food security and profitability at the household level, while vitamin-rich sweetpotato were preferred by women producers since they provided households with healthy and nutritious food. On the other hand, men who participated in the FGDs indicated that they preferred varieties that are pest and disease resistant given the prevalence of sweetpotato weevils and viruses in most of the sweetpotato producing areas that reduced yields and affected quality of the roots. Men who participated in the FGD held in Massinga district stated that:

Our local varieties are drought tolerant and more adaptable to local growing conditions compared to improved varieties, which are more demanding on water and soil fertility. In lowlands, we have more damage from Miryapods compared to highlands where we have weevils damage. In general, the damage is not more significant however, some pests and diseases such as root-knot nematodes and viral diseases such as leaf spots . . . occur but not frequently

Producers who indicated preference for agronomic traits like drought tolerance and early maturing varieties mentioned that they can withstand the recurrent drought incidences which are becoming more frequent due to climate change, while the latter are preferred for guaranteeing food availability for the household when other crops are not yet ready for harvesting and consumption. Early maturing varieties were also said to require less labor inputs as weeding cycles are reduced and generate higher incomes by fetching higher prices since they are sold when the demand for sweetpotato is high and supply low. On the other hand, organoleptic traits like tasty roots and high dry matter content, were said to increase the consumption of sweetpotato at the household level.

High dry matter content was said to be desirable to producers, consumers and traders who wished to add value to sweetpotato by processing products such as flour and crisps for home consumption and sale in the market. Lastly, varieties with a long storage shelf-life enabled consumers to produce and/or buy sweetpotato in bulk and store them for a long period of time to mitigate production and market risks.

3.2.3 Least preferred varieties and traits by producers

Producers were also asked to mention less preferred sweetpotato varieties, as well as corresponding unpreferred traits in these varieties. The least preferred varieties listed by female participants in Nhamatanda district were Nhamaculier, Kabalire Tsogolo and Ndacuata Bandja. Male producers in this district did not list any unpreferred varieties. In Mussorize district, Chimarata and Chibirewaendze were mentioned as the least preferred varieties by female producers while men in the district mentioned Chinhahe Chimarata and Chidumbedumbe as the least preferred varieties. In Massinga district, the less preferred varieties mentioned by both men and women were Safarão, Chipone and Gaba-Gaba. On the other hand, female producers in Macate district Mudzipaeka and Buadara were listed by women producers as the least preferred varieties, while those in Buzi district listed Gende la Muforça and Xiquieri as the least preferred varieties. Gende la Muforça was the only variety listed by male producers as the least preferred variety in Buzi district.

Common unpreferred traits in the least preferred varieties included low yields, unpleasant taste and susceptibility to pests and diseases. Women producers specifically mentioned watery roots and unpleasant taste as key traits that made some of the varieties least preferred, while men listed traits such as long maturity period, low marketability, low dry matter content, drought intolerance and long thin roots as key unpreferred traits in the least preferred varieties. Low yields and susceptibility to pests and diseases were mentioned as unpreferred traits by FGD participants because they impact negatively on food security and nutrition, while watery roots and unpleasant taste, as mentioned by women, were said to reduce the palatability of sweetpotato to members of the household.

3.3 Consumer preferred sweetpotato varieties and traits

3.3.1 Key consumer preferred varieties and traits

Focus Group Discussions were held with consumers in rural (traditional markets) townships of Buzi, Macate, Massinga, Mussorize, and Nhamatanda districts, as well as in urban township markets of Nhamatanda and Chimoio. Similar to participants in the producer FGDs, sweetpotato, consumers were asked to list their most preferred varieties, and the traits that made these varieties preferable. Results show that the most preferred sweetpotato variety across the study districts was Secai, which was preferred by both men and women consumers in Macate and Chimoio districts, as well as women consumers in Nhamatanda district (Table 12). A male participant in the FGD held in Chimoio provided some reasons as to why this variety was a favorite *“Secai is the foremost preferred variety. It has good dry matter content, easy cooking when cooking takes a few minutes, sweetness, roots are sweet, that is all about what we like about Secai variety.”* On the other hand, Cenoura was preferred by women consumers in Nhamatanda and Chimoio districts as well as by male consumers in Chimoio district, while Gloria was the most preferred variety by men and women consumers in Macate district, as well as female consumers in Massinga district. Lastly, Cor was the most preferred variety by men in Mussorize district as well as women consumers in Chimoio district. During FGD, it was reported that Orange Fleshed Sweetpotato (OFSP) varieties like Cenoura, are preferred by consumers, but these varieties are not easily available in the local market.

Further analysis shows that even though male and female participants in the same district preferred similar varieties, they ranked them differently. For example, in Macate district, Gloria was ranked as the most preferred

variety by all men, but it was ranked as second most preferred by their female counterparts. In Chiomoio district, Secai which was consumed by all male FGD participants was ranked first, but the same variety was ranked third by women in the same district. However, Meno a Guebuza, Força and Phaeque varieties were ranked similarly by both men and women in Buzi district.

Table 12: Key consumer preferred varieties and traits after pairwise ranking

Rural /Urban	Gender	District	Variety	(%) Purchasing	Preferred characteristics	Preferred characteristics (from pairwise ranking)
Rural	Men	Buzi	Meno a Guebuza	100	1. Dry matter content 2. Tasty 3. Easy to cook	1. Tasty 2. Ease of cooking 3. Dry matter
			Força	100	1. Dry matter content 2. Tasty 3. Easy to cook	
			Phaeque	50%	1. Dry matter content 2. Tasty 3. Root size	
	Women	Buzi	Meno a Guebuza	100	1. Dry matter content 2. Tasty 3. Ease of cooking	1. Tasty 2. Easy of cooking 3. Dry matter
			Força	100	1. Dry matter content 2. Tasty 3. Ease of cooking	
			Phaeque	50%	1. Dry matter content 2. Tasty 3. Root size	
	Men	Macate	Gloria	100	1. Tasty 2. High dry matter	1. Vitamin 2. High dry matter 3. Easy cooking
			Tio Joe	83	1. Tasty 2. Vitamin	
			Secai	100	1. High dry matter 2. Easy cooking 3. Vitamin	
	Women	Macate	Secai	100	1. High dry matter 2. Easy to process	1. Vitamin 2. Easy to process 3. High dry matter content
			Gloria	75	1. Vitamin 2. High dry matter, 3. Orange fleshed	
			Buadara	42	1. Red skin color 2. White fleshed	
	Men	Massing a	Alisha	100	1. Vitamins 2. Tasty 3. Easy to cook	1. Vitamins 2. Easy to cook 3. Tasty
			Chipone	83	1. Dry matter 2. Tasty 3. Easy to cook	
			Chimoio	25	1. Dry matter 2. Tasty 3. Easy to cook	
	Women	Massing a	Gloria	100	1. Vitamins 2. Tasty	1. Vitamins 2. Tasty
			Namanga	63	1. Vitamins 2. Tasty	
			Local Unknown)	50	1. Tasty	
	Men	Mussori ze	Chibaya Chengwe	100	1. Dry matter content 2. Tasty 3. Ease of cooking	1. Dry matter content 2. Tasty 3. Ease of cooking
			Cor	100	1. Dry matter content 2. Tasty 3. Ease of cooking	
			Chimarata	73	1. Dry matter content	

Rural /Urban	Gender	District	Variety	(%) Purchasing	Preferred characteristics	Preferred characteristics (from pairwise ranking)
					2. Ease of cooking, 3. Sweet potato odor	
	Women	Mussorize	Chibaya Chengwe	64	1. Dry matter 2. Vitamins 3. Softness after cooking	1. Ease of cooking 2. Vitamins 3. Softness after cooking
			Madjarine	64	1. Dry matter 2. Vitamins, 3. Ease of cooking	
			Chidumbedumbe	9	1. Dry matter 2. Vitamins 3. Ease of cooking	
	Women	Nhamatanda	Cenoura/ Amelia	100	1. Long shelf life 2. Tasty roots 3. Easy cooking	1. Easy to process 2. Vitamins 3. Tasty roots and leaves
			Secae	83	1. Tasty roots 2. Easy cooking 3. Tasty leaves	
			Ndakwata Bhandja	67	1. Tasty roots and leaves 2. Easy cooking 3. Vitamin	
	Men	Nhamatanda	Mudzipaheka	100	1. Long shelf life 2. Easy cooking 3. High dry matter content	1. Vitamins 2. Long shelf life 3. High dry matter content
			Kabhalire Tsogolo	56	1. Tasty roots 2. Easy cooking 3. Tasty leaves	
			Irene	11	1. Easy cooking 2. High dry matter content 3. Vitamin	
Urban	Men	Nhamatanda	Khabhalire Tsogolo	100	1. Tasty roots 2. Root size	1. Long shelf life 2. Tasty roots 3. High dry matter content
			White-Fleshed	60	1. Tasty roots 2. High dry matter content 3. Long shelf life	
			Orange-Fleshed	20	1. Tasty leaves 2. Vitamins 3. Tasty roots	
	Women	Nhamatanda	Two Month	89	1. Easily cooked 2. Good aroma 3. Easily processed	1. Vitamins 2. Easy processing 3. High dry matter content
			Cenoura	44	1. High dry matter 2. Vitamins 3. Easy to process	
			Júlia	11	1. Easily cooked	
	Men	Chimoio	Secai	100	1. High dry matter 2. Easy cooking, 3. Good root taste	1. Tasty 2. High dry matter content 3. Easy cooking
			Two Month	100	1. High dry matter 2. Easy cooking, 3. Good root taste	
			Cenoura/polpa	25	1. Easy cooking 2. Good root taste	
	Women	Chimoio	Secai	40	1. Tasty 2. Easy to process 3. High dry matter	1. Vitamin 2. Easy to process and high dry matter 3. tasty roots
			Cenoura	60	1. Tasty 2. Vitamin 3. Easy to process	
			Cor de Vinho	40	1. Tasty	

Trait preference among the consumers were largely homogenous across the study sites and gender divide, with the most common of these being high dry matter content, good taste and high vitamin content. In addition to these, women particularly preferred varieties that are easy to process, a pointer to gender roles in the household relating to meal preparation. A female participant from an FGD held in Chimoio stated that *“We like to process the sweetpotato roots because we can turn the roots into different forms of preparations such soup, puree, biscuits, cakes and fried chips using sweetpotato varieties such as Secai and cenoura.”*

Comparison between sweetpotato varieties grown by producers and those purchased by consumers reveals within the study areas show some correlation, with some producer-preferred varieties being also consumer-preferred. These varieties include, Chibaya Chengwe, Cor, Secae, Meno a Guebuza, Phaeque, Buadara and Mudzipaheka.

Missing traits for key consumer preferred varieties and recommendations

Consumers were also asked to state the missing attributes in the varieties they preferred and give recommendations for improvement. The most common missing attributes mentioned across the study districts were vitamins and high dry matter content. These attributes were mostly mentioned by women consumers. This finding further supports the finding that women consumers recognize the importance of vitamins for improved health of members of their households (Table 13).

Table 13: Missing traits and recommendation for improvement on preferred varieties

Rural/Urban	District	Gender	Variety	Missing traits	Recommendations for improvement
Rural	Macate	Male	Tio Joe	Dry matter content	Increase the dry matter content
		Female	Secai	Vitamins	Incorporate vitamins
			Buadara	Dry matter, Vitamin,	Incorporate vitamins, Increase dry matter content
	Massinga	Male	Alisha	Dry matter content	Increase dry matter content
			Chipone	Vitamins	Increase vitamin content
	Mussorize		Cor	Good Sweet potato aroma	Improve the sweet potato odor
		Female	Chibaya Chengwe	Long cooking time	Reduce cooking time
	Nhamatanda	Female	Cenoura/ Amelia	Dry matter content	Improve dry matter content
			Secae	Absence of vitamins, short shelf life	Incorporate vitamins Increase shelf life
			Ndakwa Bhandja	Absence of vitamins	Incorporate vitamins
		Male	Mudzipaheka	Absence of vitamin, dry matter content	Incorporate vitamin and improve dry matter
Urban	Nhamatanda	Female	Two Month	Absence of vitamins, long storage in the field	Incorporate vitamin
			Júlia	Absence of vitamins, sweetness, dry	Incorporate vitamins, improve dry matter content, sweetness and aroma

Rural/Urban	District	Gender	Variety	Missing traits	Recommendations for improvement
				matter, good aroma	
	Chimoio	Male	Two Month	Fibrous, sweetness	Improve the fibrous content, and the taste of the roots
		Female	Cenoura	High dry matter, strong aroma	Improve dry matter content, improve the strong aroma
			Cor de Vinho	High dry matter, sweetness	Improve dry matter content, improve sweetness

Both male and female consumers preferred sweetpotatoes with organoleptic attributes such as sweet taste and aroma, dry matter content, and non-fibrous roots. Quality traits such as Vitamin fortification was also highly recommended across the varieties.

3.3.2 Less preferred sweet potato varieties and traits by consumers

Consumers were also requested to list their least preferred varieties, and the traits that made these varieties less preferable. Interestingly, all interviewed consumers continued to purchase varieties they indicated were least preferred such as Gende la Muforça and Cenoura. This could be due to some positive inherent attributes in these varieties as mentioned earlier, such as being tasty, having high dry matter content, rich in vitamins and easy to cook and process. Some other reasons given for continued purchase of these was the unavailability of preferred varieties. For instance, a woman participant posited that *“we continue to purchase these varieties due to difficulties in identifying these roots also the unavailability of the preferred sweetpotato roots in the markets, as we lost everything during the IDAI cyclone.”*

Table 14: Less preferred sweet potato varieties and characteristics by consumers

Rural /Urban	District	Gender	Less preferred dominant variety	Participants Purchasing (%)	Less preferred characteristics	List of unpreferred characteristics (after pairwise)
Rural	Buzi	Male	Gende la Muforça	100	1. Fibrous	1. Fibrous, 2. Bad taste, 3. Small size of the root
			Cenoura	100	1. Bad taste, 2. Small size of the root	
		Female	Gende la Muforça	100	None provided	1. Fibrous, 2. Bad taste, 3. Small size of the root
			Cenoura	100	1. Bad taste, 2. Small size of the root 3. Fibrous	
	Macate	Male	Melinda	42	1. Watery roots 2. Fibrous, 3. A lot of sap	1. Unpleasant root taste 2. A lot of sap 3. Fibrous
			Cor de Vinho	25	1. Fibrous 2. A lot of sap 3. Unpleasant root taste	
			Buadara	8	1. Watery roots 2. Fibrous 3. Unpleasant root taste	
		Female	Cor de Vinho	58	1. Absence of Vitamin 2. Unpleasant root taste	1. Fibrous 2. Absence of vitamins

Rural /Urban	District	Gender	Less preferred dominant variety	Participants Purchasing (%)	Less preferred characteristics	List of unpreferred characteristics (after pairwise)
					3. Fibrous	3. Unpleasant root taste
			Ininda	33	1.Unpleasant root taste 2.Watery roots 3. Fibrous	
			Two Month	42	1. Absence of Vitamin, 2. Unpleasant root taste 3. watery roots	
	Massinga	Male	Gaba-Gaba	58	1. High water content 2. Bad taste 3. not tasty leaves	1. High water content 2. Bad taste 3. not tasty leaves
		Female	Gaba-Gaba	87.5	1. High water content 2. Bad taste 3. not tasty leaves	1. High water content, 2. Bad taste 3. not tasty leaves
	Mussorize	Male	Mutenga Uku	91	1. Fibrous 2. Long and thin roots	1.Long and thin root 2. Fibrous 3. Short shelf life
			Chidumbedumbe	55	1. Fibrous 2. Long and thin roots 3. Short shelf life	
			Boding	28	1. Fibrous 2. Not tasty leaves	
		Female	Chinhanhe	64	1. Not tasty root 2. Bad smell 3. High water content	1.Fibrous 2. Bad smell 3. High water content
			Chipuno	36	1. Bad smell 2. High water content 3. Fibrous	
			Kudamundho	45	1. Not tasty root 2. Bad smell 3. High water content	
	Nhamatanda	Female	Maculier	8	1. Absence of vitamins 2. Fibrous 3. Unpleasant taste	1. Fibrous 2. Unpleasant root taste 3. Watery
			Nhamachaina	25	1. Absence of vitamins 2. Watery 3. Unpleasant taste	
			Nhandlhera Pa mesa	33	1. Absence of vitamins 2. Fibrous	
		Male	Tio Joe	22	1.Watery 2. Fibrous roots	1. Fibrous 2. Low yield 3. Watery
			Xicomeni	33	None	
			Roupa	44	1. Big root size	
Urban	Nhamatanda	Female	Khabhalire Tsogolo	44	1.Watery 2. Unpleasant roots and leaves taste	1.Fibrous 2. unpleasant leaves taste 3. unpleasant root taste
			Maculier	11	1.Watery 2. fibrous	

Rural /Urban	District	Gender	Less preferred dominant variety	Participants Purchasing (%)	Less preferred characteristics	List of unpreferred characteristics (after pairwise)
					3. unpleasant roots and leaves taste	
			Ximbatata	33	1. Watery 2. Fibrous 3. unpleasant roots and leaves taste	
	Chimoio	Male	White flesh	25	1. Watery root 2. Unpleasant root taste	1. Watery root 2. Unpleasant root taste
		Female	Buada-Buada (Buadara)	40	1. Unpleasant root taste 2. Fibrous 3. Watery	1. Fibrous 2. unpleasant root taste 3. Watery roots
			Two Month	60	1. Unpleasant root taste 2. Fibrous 3. Watery	

A male FGD participant from Massinga district summarized why they continue to cultivate unpreferred varieties with negative traits such as Melinda, Two Month, Gaba-Gaba as *“when we talk about bad varieties, we first name Gaba-Gaba characterized by high water content, unpleasant root taste and very bad smelling leaves. However, we still cultivate this variety due to its high yield and different consumer preferences. Consumers still purchase for different purposes, school lunch, mashed potatoes, medical advice for patients, especially as it contains vitamin A.”*

3.4 Effect of sweetpotato trait preference on household gender roles

Preferred sweetpotato traits by both producers and consumers may have varied effects on the roles played by men and women in the household. This may in turn affect these two groups differently, either positively or negatively. In prioritizing breeding objectives given preferred traits by different market segments, it is important to understand the effects such traits may have on either men and women, given the roles and power dynamics within the household. This will inform on whether certain preferred traits should be prioritized or not, or whether certain precautions need be taken in prioritizing these, for a gender-responsive breeding strategy. This section presents results from analyses of how FGD participants perceived preferred traits to affect gender roles within the household.

3.4.1 Effect of producer preferred traits on household gender roles

Results presented in Table 15 show that many of the preferred sweetpotato traits have similar effects on the roles of both men and women in the households. However, traits involving higher or lower labor requirements affect women more than men, as these can either increase or decrease the workload associated with the production and marketing of sweetpotato, given that sweetpotato is considered a woman’s crop in these regions and women are more involved in the production activities.

Table 15. Effect of producer preferred sweetpotato traits on the role of men and women

Preferred traits	Positive or negative effects on men/women
High root yields	Increases production of sweetpotato roots hence more income and food secure households. However, high yields mean more labour required for harvesting. Indeed, a male participant in the FGD held in Mossurize stated that <i>“growing preferred sweetpotato varieties increases the women workload as instead of performing other household activities, women have to spend long time performing farming activities such as land preparation, weeding and harvesting of sweetpotato.”</i>
Good aroma and taste	These traits make this variety a favorite by children. Parents will spend less time feeding their children. The traits also increase its demand in the market therefore increasing household incomes
Rich in vitamins	Sweetpotatoes with this trait reduce women’s workload in looking for nutritious foods rich in vitamin A for their families

3.4.2 Effect of producer non-preferred traits on gender roles

The effects of non-preferred variety traits on the roles of men and women were stated in general terms by both men and women with no distinct differences in the stated effects between the two groups. These are presented in Table 16.

Table 16. Effect of producer non-preferred sweetpotato traits on the role of men and women

Traits not Preferred	Positive or negative effects on men/women
Low root yield	Reduces food security and income to the households affecting both men and women. A female participant from the FGD held in Nhamatanda stated that <i>“Production of unpreferred sweetpotato varieties is performed in order to deal with food insecurity in our community, however it causes drudgery and its time consuming for both women and men, as even if we spent time growing these varieties the yields are very low and reduce the opportunity for income generation through sweetpotato production and selling”</i>
Susceptible to pests and disease	More vines are needed for gap filling therefore increasing the costs of production. Incomes and yields are reduced, putting at risk household food security
Short storage shelf life	Market demand for these varieties is lower than for varieties with long shelf life. This results in less income to the producers. Furthermore, producers are forced to harvest the tubers in small quantities for home consumption, increasing women’s workload
Low dry matter content Watery	These traits are not preferred by both men and women producers because they cause the sweetpotato to become soft, watery and tasteless when cooked, hence reducing their marketability and palatability. This leads to reduced consumption and household income
Unpleasant taste	Varieties with this trait have a low market demand which reduces household income for both men and women
Low market demand	Varieties with low market demand fetch low prices leading to less income from sales. This affects both men and women.
Fibrous roots	Consumers do not like varieties with fibrous roots. This trait leads to low market demand hence less income from sales. This affects both men and women
Latex	This trait is observed during peeling of the sweetpotato variety. It makes the peeling process difficult, increasing the workload for women
Rots easily	This reduces the shelf life of the sweetpotato and reduces yields when rotting occurs in the field. This leads to less income from sales and increases food insecurity.

3.4.3 Effect of consumer preferred sweet potato traits on household gender roles

Like producer preferred traits, consumer preferred traits also had both positive and negative effects on the roles of women and men in the household. Organoleptic traits such as high dry matter content, good taste, good aroma, and rich in vitamins had a positive effect on both women and men as they resulted in more consumption of sweetpotato and better health of the members of the household. Varieties that cooked easily had a positive effect on women as the trait led to less time spent on cooking sweetpotato by women. This trait also saves women labor used for cooking as well as money spent on cooking fuel. On the other hand, varieties with a long shelf-life were said to result in less post-harvest losses.

3.4.4 Effect of consumer non-preferred traits on gender roles

The study found that negative traits affect male and female consumers differently. These are presented in Table 17 below.

Table 17: Effect of consumer non-preferred traits on gender roles

Unpreferred traits	Positive or negative effects on role of women/men
Fibrous roots	Results in less consumption of sweet potato at the household affecting food security and nutrition
Unpleasant root taste	Results in less consumption of sweet potato at the household affecting food security and nutrition. Wastage of sweetpotato roots that are not sweet is also likely to occur, leading to wasted resource that were used to purchase and cook the variety
High water content	Cooks faster reducing cooking time and fuel by women. However, leads to less consumption of sweetpotato at household affecting food security and nutrition. Wastage of sweetpotato because they become too soft and watery when cooked. This leads to wasted resources that were used to purchase and cook the varieties with this trait.
Small root size	The trait increases the time taken by women to peel the roots before cooking, inducing drudgery
Short shelf life	Varieties with this trait increase the frequency of purchasing sweetpotato by both women and men. Additionally, wastage is likely to occur if the varieties with this trait are not consumed within a short time
Produces a lot of sap	Increases the time taken to peel the sweetpotatoes by women. It makes the peeling process difficult, increasing the workload for women

4 Conclusions and recommendations

The study set out to examine gendered trait preferences in Mozambique, to provide insights on breeding priorities for gender-responsive breeding and enhanced uptake of new released varieties. Results from the study show various varieties are preferred across the study regions, with only a few preferred in more than one district, including Amelia and Secae. These are therefore shown to be the most dominant varieties across the study areas. Trait preferences are also shown to be consistent across study areas, but heterogeneous between men and women. The most preferred traits are agronomic in nature, top of these being high yields, disease and pest tolerance, and drought tolerance. This would point to the drought and disease prone sweetpotato growing areas in the country, and therefore indicates these traits “must-have” in breeding profiles for the country. However, other traits are equally important for the acceptability of new varieties, including vitamins, sweet taste, sweet aroma, and dry matter content. Incidentally, these are also the traits most preferred by female producers and both female and male consumers. These being key market segments for spurring adoption at scale of released varieties, mentioned traits should therefore be considered as priority in breeding programs. Analyses of the preferred traits in terms of gendered household roles show traits with potential to reduce women drudgery, especially processing and meal preparation. Such traits as easy to process (associated with big and shapely roots) and easy to cook (associated with less time to cook) should also be considered as important in breeding priorities, for gender-responsive breeding strategies.

Use of improved varieties among the surveyed communities is low. Only Amelia was the dominant preferred variety that was improved, across the study sites. While mismatch between traits preference by the end-users and those in released varieties is a key impediment to variety acceptance and use, accessibility of improved seed material and marketed roots is shown to be an important barrier to improved seed use. For instance, some FGD participants indicated that while there was market demand for the improved Orange-Fleshed Sweetpotato, the planting material for this was difficult to access. This calls for seed systems interventions aimed at increasing access of improved vines to producers, as well as market-oriented interventions to enhance availability of roots from such material in the market. Insights from the study therefore show three interrelated avenues for tackling the low adoption problem of improved sweetpotato. challenge of low adoption of improved material is there three-fold: first, breeding priorities should not only focus on genetic gains of new varieties, but also nuanced market-demanded traits that are key to acceptability of the released varieties. Secondly, pursuing seed systems approaches that enhance accessibility of the released material, in a way that reduces costs, for competitiveness with landraces. Third, market interventions that aim to enable access of markets to producers, and availability of demanded roots by consumers, for the double dividend of increasing farming household’s incomes, and nutritional outcomes by urban and peri-urban consumers through access to nutritious sweetpotato roots.

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☎ 5-11-3496017 ✉ cip-cpad@cgiar.org 🌐 www.cipotato.org | 📘 @cipotato 🐦 @Cipotato 📷 @cip_cipotato

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