



RESEARCH PROGRAM ON
Roots, Tubers
and Bananas



Technical Report

Gender Situational Analysis of the Sweetpotato Value Chain in Central and Eastern Uganda and Strategies for Gender Equity in Postharvest Innovations

Expanding Utilization of Roots, Tubers and Bananas and Reducing Their Postharvest Losses



October 2016



A broad alliance of research-for-development stakeholders & partners



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Expanding Utilization of Roots, Tubers and Bananas and Reducing Their Postharvest Losses (RTB-ENDURE) is a 3 year project (2014-2016) implemented by the CGIAR Research Program on Roots, Tubers and Bananas (RTB) with funding by the European Union and technical support of IFAD. <http://www.rtb.cgiar.org/endure>

The research contained in this report was also supported by the CGIAR Research Program on Policies, Institutions and Markets (PIM).

The CGIAR Research Program on Roots, Tubers and Bananas (RTB) is a broad alliance led by the International Potato Center (CIP) jointly with Bioversity International, the International Center for Tropical Agriculture (CIAT), the International Institute for Tropical Agriculture (IITA), and CIRAD in collaboration with research and development partners. Our shared purpose is to tap the underutilized potential of root, tuber and banana crops for improving nutrition and food security, increasing incomes and fostering greater gender equity, especially among the world's poorest and most vulnerable populations.



Table of Contents

| | |
|--|----|
| Executive Summary | 2 |
| 1. Introduction | 6 |
| BACKGROUND | 7 |
| 2. Methodology | 7 |
| THEORETICAL UNDERPINNINGS | 8 |
| STUDY PARTICIPANTS RECRUITMENT | 9 |
| 3. Results | 10 |
| GENDER BASED CONSTRAINTS IN PRODUCTION PROCESSES | 10 |
| GENDER BASED CONSTRAINTS IN HARVEST AND POSTHARVEST OPERATIONS | 16 |
| GENDER BASED CONSTRAINTS IN MARKETING | 19 |
| GENDER BASED CONSTRAINTS IN PIG REARING AND SILAGE MAKING | 25 |
| PRIORITIZING THREE MAJOR CONSTRAINTS FOR PIG FARMING AND SILAGE MAKING AND FARMER SUGGESTED SOLUTIONS | 34 |
| EXPLORING GENDER BASED CONSTRAINTS TO SILAGE ENTREPRENEURSHIP | 38 |
| 4. Women and men’s empowerment in sweetpotato production and marketing | 46 |
| INPUT INTO PRODUCTION DECISIONS | 46 |
| ACCESS TO PRODUCTIVE RESOURCES | 50 |
| CONTROL OVER USE OF INCOME | 55 |
| COMMUNITY LEADERSHIP | 56 |
| TIME ALLOCATION | 58 |
| COMPREHENSIVE SCORE ON EMPOWERMENT PERCEPTION BY MEN AND WOMEN FARMERS | 59 |
| 5. Discussion | 60 |
| Gender strategy and plan Gender Strategy and Plan | 64 |
| References | 76 |
| Annex 1: Gender strategy for future work on Sweetpotato production and marketing | 78 |



Executive Summary

This report provides a strategy for gender mainstreaming into the 'Improving the Utilization of Sweetpotato and other Root and Tuber Crops Residues for Pig Feeds' one of the four sub-projects of the 'Expanding Utilization of RTB and Reducing Their Postharvest Losses' project (RTB-ENDURE) implemented in Uganda. The main purpose of this strategy is to ensure that both men and women benefit from interventions for reducing postharvest losses, promoting production of sweetpotato based silage and marketing innovations in the sweetpotato and pig value chains.

The report is structured as follows: Section I provides a background of the sub-project's research activities and implementation area while Section II outlines the methodology of the study. Section III analyzes gender constraints that may deter male and female farmers and silage entrepreneurs from adopting postharvest innovations as well as taking advantage of the emerging marketing opportunities. Section IV analyzes the perceived level of empowerment which farmers have across five selected domains. Finally, in Section V, the paper suggests evidence-based mechanisms and a gender strategy to enhance the uptake and utilization of recommended improved technologies and practices along the value chain. The report also provides strategic direction to enable value chain actors to engage effectively, competitively and sustainably in the identified market opportunities. The report may be of interest to researchers and policy makers working on postharvest issues in Uganda and other countries in Sub Saharan Africa.

Constraints and opportunities in sweetpotato production, processing and marketing

The link between gender relations and the division of roles in sweetpotato production, postharvest utilization and livestock rearing may influence the ability of men and women to adopt and utilize certain technologies. This division of labour and ownership may also impact the ability of men and women to benefit from the production and marketing of dual-purpose sweetpotato. Although there are activities that men and women regarded as labour intensive and strenuous, women were involved in the majority of production activities, including the most labour-intensive ones. Ploughing and making ridges for farming were regarded as strenuous activities and, sometimes, harvesting after long dry spells was not easy necessitating women to hire labour which was expensive and not easily available. There is thus need for targeted interventions at different stages of sweetpotato production. For example, mechanization of ridge making may reduce labour demands on men or make women rely less on men and expensive hired labour. Moreover, machines that assist women with postharvest processing activities of sweetpotato roots can go a long way to reducing labour demands. There is need to invest in sweetpotato value addition activities such as drying. For instance, women farmers mentioned that they dried their sweetpotato and often suffered losses due to the vagaries of weather. Investment in drying technologies, such as solar driers, could help reduce the time women spend drying sweetpotato chips and contribute to reduce the losses which were noted to occur at this stage.

Health implications

Women farmers engaged in pig farming mentioned lack of protective clothing as a risk which exposes them to zoonotic diseases such as brucellosis. Because women were mostly involved in cleaning the pigsties they were worried about exposure to zoonotic diseases, jiggers and other infections such as brucellosis due to lack of protective clothing. Those engaging in production of sweetpotato often mentioned repetitive stress injury causing backache and other



joint pains, risk of injury from farm equipment like hoes as well as risk of snakebites in sweetpotato fields. Lack of protective gear during weeding and farming resulted in snake bites, skin allergies, being cut by sharp objects and injured by thorns, sticks and stumps. Women were also concerned about and affected by health and safety issues related to use of motorized choppers. In terms of sweetpotato root production, silage making and pig production there should be concerted campaigns to minimize the negative health and safety related repercussions. This would be beneficial for women who are involved in most production activities such as weeding and ridge making.

Women sometimes mentioned that high humidity can prevent proper drying of sweetpotato resulting in losses. Also it is not very clear what the health implications of sun-drying sweetpotato on ground smeared by cow dung to avoid soil contamination are. There is need for more research into the implications of current drying technologies and methods on health and safety.

Trusted marketing and supply chains

Since women dominate the production and marketing of sweetpotato, they are also the ones who mostly highlighted lack of sweetpotato markets and low prices as a constraint in sweetpotato production. Marketing related constraints are often a result of lack of marketing intelligence among women, limited knowledge on how to produce quality sweetpotato as demanded by the market, and infrastructure related constraints such as poor roads and transportation networks. Accordingly women mostly relied on middlemen or traders to sell their sweetpotato. For example, women farmers often mentioned that middlemen depressed prices for their benefit at expense of the farmer. From this study we do not have evidence to prove or disprove this perception. What is clear however, is that farmers often had low bargaining powers when selling their produce but there is no evidence that traders were benefiting much more than farmers. There is thus need for further studies to assess and compare the profit margins attained by actors at each node of the chain. Furthermore, farmers should be trained on gross margin analysis because they often did not keep track of their production costs and therefore were not be able to compute their profit and price their products. The same applies to entrepreneurs, most of whom did not have the capacity to calculate costs and benefits related to silage production and marketing.

There is also need to build trusted supply chains relationships for the pig industry right from the input node particularly relating to access to quality materials from hardware shops and other suppliers. Thus liaising with hardware shops on proper handling of polythene bags for silage production or identifying suppliers of quality construction material for the pigsties can contribute to tackle the problem of low quality or counterfeit products. Farmers also need to be trained on how to identify good quality materials. The need to organize pig farmers to be able to gain skills and knowledge on pig breeds and husbandry as well as to enhance their access to market and finance cannot be overemphasized. Because of individual marketing, pig farmers could not get better prices which they would if they were organized. However, there is also need to focus on collaborative decision making within the households to ensure that both men and women benefit from pig and silage income.

Access to finance

Lack of money to invest or reinvest in agriculture in the community illustrates the need for linking agricultural development initiatives to appropriate financing mechanisms and employment opportunities for the improvement of rural economies. Reliance on seasonal agriculture income from crop and animal sales meant that women did not have enough cash to hire labour because



of limited access to off-farm employment and other income generating opportunities. For example, when pigs were sold off during the dry season due to limited access to feed, it was often difficult for farmers to replenish the stock. Female farmers also mentioned purchasing poor quality breeds of pigs because of lack of capital which, in turns, affected their ability to get higher prices for their pigs. Pig husbandry can be capital intensive, in terms of constructing good shelters, buying quality breeds and feed, and accessing veterinary services. This points to the need for appropriate financial products including for savings which can allow farmers to plan and save for agricultural production purposes. Even for more commercial enterprises, affordable financial products and drought insurances suitable for small businesses would go a long way to creating employment and income generating opportunities in rural economies. In addition, women may also need access to appropriate off-farm and on-farm employment towards which commercial production of silage could contribute. However, even when employment opportunities in the rural non-farm sector increase it does not necessarily mean that women will benefit. As a result of gender norms that restrict women's movement, gender awareness raising promotions and campaigns involving men could be helpful in opening up opportunities for women to work and earn an income both on- and off-farm.

Gender responsive mechanization

Technology dissemination and adoption especially that related to infrastructure has to take cognizance of the resources women may need to access the technology in terms of knowledge, finance and time; among others; if they are a target recipient. In Uganda the silage chopper was introduced in order to make ensiling more efficient and to reduce drudgery associated with chopping vines using pangas. However, what this research shows is that mechanization which is not friendly or well adapted to local conditions may deter adoption or limit usage and usefulness of technology. For example, women were afraid to use the chopper because of safety concerns. This limited their ability to venture into silage making on their own since they had to depend on men to operate the machine. Men pointed to the lack of durability as a major limitation to effective use of the chopper. Thus there is need to ensure that choppers are safe to use and that farmers and local artisans are trained to repair the choppers. If safety of use of the choppers is improved, this could promote women's adoption since they often expressed fear to operate them. Training a cohort of people based in the community to service the choppers also provides an opportunity to link agriculture and other rural economies and provide off-farm employment.

Limits to commercialization of silage

It is going to be difficult to scale silage making up depending exclusively on vines produced by small holder farmers. For examples, vines could be affected by dry weather and since small holders produced sweetpotato on very small plots and did not have irrigation technologies, the available amount of vines would not be enough to smoothly and profitably run the business. There is therefore need for a multi-pronged approach: first partnering with larger, more commercially oriented, farmers to promote economies of scale in vine collection, and second investing in water harvesting and irrigation technologies to ensure access to vines when there are long dry spells as well as promoting drought tolerant sweetpotato varieties with good balance between root and vines biomass production (dual-purpose).

In Uganda some farmers may not be aware of the advantages of using silage and other forms of feed. Tethering is also still a widely used method to rear pigs and the efficacy of using silage under such management is not documented. There is need to improve pig rearing practices among farmers, especially promoting modern methods which will improve pig quality and, in turns, create a market-pull for silage. However, the promotion of modern methods of pig rearing



should not be driven only by the need to boost silage production and marketing but evidence that such methods are more profitable should be provided. This directly links to the idea that innovations can be successfully adopted only if they contribute to job creation, increased incomes and general improvement of rural livelihoods.



1. Introduction

The importance of sweetpotato in Uganda as a food crop can hardly be overemphasized. Uganda is Africa's leading sweetpotato producer and globally is second to China (Mwanga and Ssemakula, 2011). Sweet potato is a primary staple in Uganda (Thiele et al., 2009). There has been a drive to promote Orange Fleshed Sweetpotato (OFSP) in many countries including Uganda as a way to address hidden hunger among vulnerable groups such as women and children (Biol et al., 2015). Promotion of OFSP in countries such as Uganda has often taken a nutrition approach to address vitamin A deficiencies (Mwanga and Ssemakula, 2011; Biol et al., 2015). However, in addition to the health and consumption focus, a lot of recent work in sweetpotato is now focusing on value chain development. Fuglie (2007) stated that there is a need to prioritize postharvest utilization and marketing of sweetpotato to promote rural employment and also improve rural economies. Similarly Bovell-Benjamin (2007) suggests that value addition in sweetpotato will increase its utilization and its importance in food systems.

Value chain analyses of sweetpotato in Uganda and other counties have looked at different issues including losses linked to postharvest handling during packing and transporting to the market (Hall et al., 1998); pricing (Bashaasha and Mwanga, 1992; SARRNET, 2003), access to markets but there has been limited focus on gender aspects along the sweetpotato value chain. Women and children are often referred to in relation to benefits they accrue in relation to Vitamin A deficiency (Mwanga and Ssemakula, 2011). However, studies that have focused on gender show that it has a role to play in one's ability to be involved in marketing and other postharvest activities. In Malawi, for example, a study noted limited participation of women headed households in sweetpotato marketing (Sindi et al., 2013). While Chang and Be'Soer (2011:1) note that in Papua New Guinea 'gender-specific marketing issues facing women farmers are: poor facilities at the open markets; heavy workloads and lack of support from the family; uneven distribution of income within the household; and intimidation and sexual harassment along the supply chain'. In East Africa however Gibson et al. (2009) observe that while sweetpotato production is dominated by women, there is no specific study on gender in sweetpotato seed systems. This is replicated in many studies on sweetpotato marketing and value chain development. For example, referring to Eastern and Central Uganda, Mwanga and Ssemakula (2011) state that farmers' incomes increased as a result of selling sweetpotato with little attempt to understand what benefits accrued to farmers and farm households from a gender angle.

As a result of increased options for utilizing sweetpotato there has been several assessments on dual-purpose sweetpotato to increase the ability to integrate sweetpotato into crop-livestock systems where sweetpotato roots and vines can be consumed as food or livestock feed (Lestari and Haspari, 2015; Nyireba et al., 2013; Lukuyu et al., 2014; Andrade et al., 2015). For example, Claessens et al. (2009) state that in East Africa small farmers in mixed crop-livestock systems could benefit economically from cultivating dual-purpose sweetpotato varieties since the crop provides feed with high nutritional content at minimum cost. For examples, it has been noted that pigs and even cows can benefit from sweetpotato silage. In this respect in Uganda dual-purpose sweetpotato varieties can play a central role in farmer livelihoods. Although pigs are not prioritized under the Ugandan Agriculture Sector Development Strategy and Investment Plan (DSIP) for 2010-11 to 2014- 15 in Kamuli and Masaka districts, pigs are highly ranked as a source of income for farming households (Ouma et al., 2015). In Uganda pigs are also important for women since they are owners and are also involved in pig husbandry. While studies abound on the role and importance of dual-purpose sweetpotato in mixed crop-livestock systems, not



many studies have reviewed men and women's ability to adopt associated technologies and also their ability to benefit. This gender analysis will seek to discuss the ability of men and women to adopt, use and benefit from postharvest innovations and utilization of dual-purpose sweetpotato.

BACKGROUND

'Improving the Utilization of Sweetpotato and other Root and Tuber Crops Residues for Pig Feeds' is one of the four sub-projects under the EU/IFAD funded project 'Expanding Utilization of RTB and Reducing Their Postharvest Losses' (RTB-ENDURE). The sweetpotato subcomponent of RTB-ENDURE is implemented by the CIP-led CGIAR Research Program on Roots, Tubers and Bananas (RTB) in collaboration with the International Livestock Research Institute (ILRI), NARO, VEDCO, CHAIN-Uganda, Makerere University, Uganda Martyrs University, Iowa State University and Pig Production and Marketing Ltd (PPM). The sweetpotato sub-project seeks to:

- i) Investigate options for sweetpotato silage making and supplementation;
- ii) Identify models for proper organization of value chain actors for production, conservation and marketing of sweetpotato-based feeds;
- iii) Strengthen the existing linkages between pig farmers and sweetpotato traders; and
- iv) Build business capacity for profitable silage making and pig raising.

This paper will address all objectives in order to ensure that both men and women benefit from marketing opportunities availed by the introduction and utilization of dual-purpose varieties and sweetpotato silage. The paper will first seek to understand the following:

- Factors that can constrain men and women farmers in the production of dual-purpose sweetpotato
- Factors that can constrain men and women farmers from involvement in harvest and postharvest operations, including marketing
- Constraints that men and women farmers face in pig rearing and silage making
- How can silage making as a business opportunity be harnessed?

This study suggests evidence-based mechanisms and a gender strategy to enhance the uptake and utilization of recommended practices along the value chain. The strategy provides evidence based and validated strategic direction to enable value chain actors to engage effectively, competitively and sustainably in the identified market opportunities.

2. Methodology

This study is based on a qualitative gender analysis of sweetpotato production, silage making and pig production and marketing in Kamuli (Bugulumbya and Butansi parishes) and Masaka districts (Buwunga and Ssenyange parishes) in Uganda. Research was conducted to identify gender based constraints and opportunities along the sweetpotato value chain. Bugulumbya,



Butansi, Buwunga and Ssenyange parishes were selected because the International Potato Center (CIP) and the International Livestock Research Institute (ILRI) are piloting dual-purpose sweetpotato for root consumption and silage making. The study used sex disaggregated Focus Group Discussions (FGDs) with farmers. As a result of time limitations all FGDs with entrepreneurs except one were not sex disaggregated. However, facilitators were trained to ensure that both men and women participated and shared their views. In total 8 FGDs were conducted with farmers (4 with men and 4 with women) who cultivated sweetpotato and reared pigs and 4 FGDs with potential silage entrepreneurs. A total of 59 farmers (31 women and 28 men) and 28 potential silage entrepreneurs (17 men and 11 women) participated in FGDs. The study adopted qualitative tools to develop the strategy because qualitative tools allow researchers to go deeper into people's experiences as well as into household and community dynamics (Slater, 2010) which also affect ability of men and women to adopt and benefit from new technologies.

THEORETICAL UNDERPINNINGS

This study uses a Social Relations Approach to understand the ability of women to adopt technologies as well as to engage in marketing. A social relations approach investigates the context in which postharvest technologies are introduced and scaled-up. Deji (2012) suggests that to promote farmer adoption of postharvest technologies, the technologies need to be gender responsive and appropriate. This means that technologies have to address women's role in postharvest processes and also that the technologies should be socially, culturally and economically appropriate for users. In order to understand whether a technology is gender responsive and appropriate it is important to understand the roles of men and women in agricultural related processes and the gender relations that shape what men and women can do in order to ascertain whether they will be able to take advantage of new technologies. Therefore, the study adopted tools that allowed researchers to look at who does what, who has access to what resources, what are the rules and power differences between men and women and how these can affect adoption of postharvest technologies as well as ability to benefit from resulting market opportunities. Kroma (2002) suggests that it is critical to understand the relationship between men and women and how this relationship is shaped by gender ideologies operating with certain cultural, social and economic contexts in order to develop technologies that can benefit women. 'Through gender analyses, it becomes possible to show that men and women may have separate, yet interdependent spheres of activities that shape and determine women's access to agricultural technologies and other services to support their productive as well as reproductive activities'.

The study used two tools: 1) the Gender Constraints Analysis tool (Terrillon et al., 2012); and 2) 'Comparison of the five dimensions of men's and women's empowerment' tool (hereafter, referred to as the Comparison Tool) loosely based on the Women Empowerment in Agriculture Index (WEAI) of Feed the Future (Agri Pro Focus, 2013).

The Gender Constraints Analysis tool allowed farmers and traders to discuss gender division of roles and responsibilities along the potato value chain and identify gender related and other constraints. Farmers and traders were then asked to prioritize three key constraints, their causes, consequences and potential actions that can be taken to address these constraints.

The Comparison Tool asks participants to give a score of their perception about their own empowerment as well as the perception in general of the empowerment of others in their community. The original version of the WEAI is in line with Social Relations approaches in the



sense that it measures women's empowerment relative to men within their household across five domains including production, resources, income, leadership and time. It also measures gender parity in empowerment within the household. IFPRI (2012:3) defines the dimensions as follows:

- Agricultural production: sole or joint decision-making over food and cash-crop farming, livestock and fisheries as well as autonomy in agricultural production.
- Resources: ownership, access to and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables and credit.
- Income: sole or joint control over income and expenditures.
- Leadership: membership in economic or social groups and comfort in speaking in public.
- Time: Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities'.

While using the original domains as espoused by the WEAI approach, the Comparison Tool takes a simpler approach, and is subjected to participants from the same farmer groups, trader associations or communities in single sex groups; as opposed to the household approach. This study adapted and modified a set of indicators and attributes developed by Agri Pro Focus and identified a weight for each domain. Participants were then asked to score each attribute on a scale of 0 to 5 where zero would mean the participants have no power to make decisions or be engaged in a particular attribute; and five the reverse.

A two phased approach was used. Participants were first asked to vote in private for each attribute. The score for a single domain was obtained by calculating the average of the scores given to all attributes of the given domain. An empowerment score is then obtained by calculating the weighted average of the scores given to all domains. Once individuals cast their vote, they would then discuss with the rest of the group agree on a community score (reflecting the status for men or women in the community) and give reasons for that score. Focus group facilitators captured the votes as well as the reasons raised for the level of empowerment in each domain. While the empowerment score is calculated as the weighted average of the scores for the domains, the Comparison Tool also gives researchers and program implementers the ability to dig into each domain to understand the dynamics in those domains so to develop relevant strategies. The Comparison tool was critical because it allowed researchers to analyze whether farmer suggested strategies and solutions in the Constraint Analysis tool also took into account the different resources and services that farmers had access to. We adopted qualitative tools for developing elements of the gender strategy because they allowed for deeper analysis as to how gender relations interact and influence adoption and benefit thereof of the technologies.

After the strategy was developed a validation workshop was held in Kampala using evidence from this research with representatives of male and female farmers and entrepreneurs as well as CIP and partner institutions including, VEDCO and CHAIN-Uganda.

STUDY PARTICIPANTS RECRUITMENT

Recruitment was done through farmer groups/ associations. Targeted sweetpotato farmers and silage producers were recruited from groups that CIP, ILRI and their partners were working with to introduce dual-purpose sweetpotato and silage making. Chairpersons of farmer associations helped the research team to identify and recruit an equal number of male and female



participants. Both farmers and entrepreneurs were informed that participation was voluntary and refusing to participate in the study would not result in any penalization.

3. Results

The first part of the results section will discuss gender based constraints in sweetpotato production, harvesting and postharvest, including marketing. These constraints will be prioritized and solutions suggested by traders and farmers discussed. The second part will discuss gender based constraints in pig rearing and silage making and also discuss what opportunities exist for taking the silage making as a business. The third part will discuss the perceived levels of decision making and participation by men and women in the five domains critical to development of gender strategies for the project. This analysis will help us to validate the strategies suggested by farmers and traders as well as interrogate how the social, economic and political context that men and women farmers and traders find themselves in may promote or deter use of the proposed technologies.

GENDER BASED CONSTRAINTS IN PRODUCTION PROCESSES

Selection and identification of land

In many of the villages where research was conducted farmers did not mention selection of land for cultivating sweetpotato as an issue, except women in Buwunga Masaka and men in Bugulumbya Kamuli. In Buwunga women stated that they were more heavily involved in selection of land to cultivate sweetpotato than men. They preferred to use fertile land or land where they had not cultivated sweetpotato before. Women stated that in Buwunga, men often migrated to look for work giving women more leeway in deciding on land allocation to crops including sweetpotato.

Constraints related to selection of land

Women mentioned shortage of land in the village as a limiting factor to acquiring and using the most preferred land for sweetpotato production. Since land was in short supply it was also expensive to rent further limiting their ability to have the best quality land for agricultural production. In Bugulumbya men mentioned that since they had to hire land, unscrupulous land owners could steal their crops or throw them off the land before harvesting.

Land preparation

Many activities were listed under land preparation. These included slashing the bush with pangas, clearing the land and cultivating the land. In Butansi, Bugulumbya and among the Bavubuka Twekambe Youth Group members, there was general agreement that men were more involved in land preparation activities for planting sweetpotato than women. In Ssenyange however there was no agreement between men and women regarding involvement in these activities with both sides overestimating their own involvement and underestimating the involvement of members of the opposite sex. Mentioning that they took care of all activities related to sweetpotato by themselves women in Ssenyange said:

Even those who have husbands like us, they do not help much. We do everything



ourselves and we get most of the help from our children.

Some of us, we do not have husbands so we do everything ourselves. (Women FGD Participants, Ssenyange).

However it is possible that selection bias could explain these divergent views between men and women. Compared to other women FGDs, most women who participated in the Ssenyange FGD were widowed and mentioned that they relied more on their children or hired labour. For example, out of the six women who participated in the Ssenyange FGD only one was married whilst four were widowed and one was an unmarried young woman still in school. In comparison, out of 17 participants in Kamuli district only four were single (unmarried or widowed) while in Buwunga village in Masaka out of eight participants, three were either divorced or widowed.

In Butansi whilst clearing the land and slashing the bush with pangas was usually regarded as men's responsibility, cultivating the land in preparation for planting sweetpotato was often done by women.

Most men think that sweetpotato is a woman's business because it is the food we consume at home and we do not normally sell. (Women FGD participant, Butansi Kamuli).

We have to do everything ourselves and clearing the land everyday by ourselves makes us tired. (Women FGD participant, Ssenyange).

Thus where sweetpotato was regarded as a woman's crop (i.e. food crop) men left the majority of activities related to the crop to women. Also where men migrate or are not around women have to shoulder the burden of land preparation by themselves.

Constraints related to land preparation

Lack of draught power and hoes was also mentioned by both men and women as an obstacle during ploughing. Farmers sometimes lacked money to hire cattle and, in some cases, there were few cattle for hire in the village which delayed ploughing after the season had started.

Women in all FGDs raised key health and safety concerns associated with the lack of protective clothing such as gumboots and gloves during land preparation. This was stated to lead to injuries and slowing down of work during land preparation.

We also get injured by stones. We often have no money to buy gumboots and gloves to make the work easier. (Women FGD participant, Ssenyange).

Men in Bugulumbya and Butansi, and both men and women members of the Bavubuka Twekambe Youth Group silage entrepreneurs also mentioned the lack of gumboots as a key obstacle and a cause of injury and snake bites during this time. In addition to lack of protective clothing women also mentioned lack of appropriate equipment such as rakes and hoes as obstacles for women during this period. Lack of equipment not only slowed down work during land clearing but also caused injuries. It was stated that women were prone to injuries during this time since they would use hands if they did not have rakes to break the soil mounds after men have ploughed the land using ox drawn ploughs.

Farmers in Ssenyange and Buwunga in Masaka stated that they use herbicides to clear bush and weeds during land preparation in order to reduce labour demands. However, limited



access, high cost and counterfeit herbicides were listed as key constraints during land preparation.

Making ridges

In terms of making ridges in Buwunga and Ssenyange it was stated that men were more involved than women. In these parishes women mentioned that they hired men and male youth to make ridges if they had money to pay because this activity needed a lot of energy and power. However, in Butansi men and women's perceptions were incongruent with each sex underestimating the involvement of the other in making ridges. On the one hand, men mentioned that women were not involved at all while youth men and women had moderate involvement. On the other hand, women mentioned that they were more involved than men and youth. The entrepreneur youth group stated that male youth in the group are the ones who were responsible for making ridges. It is clear though that the preference in many communities was that men make ridges as this was regarded as hard work and needing a lot of energy.

Constraints related to making of ridges

Women often mentioned needing men's help to make ridges which was a constraint if they do not have money to pay for the service. In three women FGDs in Bugulumbya, Butansi and Ssenyange women mentioned that lack of money to hire male labourers to make ridges was a major constraint. It was also mentioned that labour was often expensive. In some cases, women hired strong male youth but they lacked the experience to make proper ridges. Lack of knowledge by labourers on ridge making was a key constraint. Describing the process of making ridges and how hired labourers did it women in an FGD in Ssenyange said:

When making the ridges you have first to dig a hole and then put grass in the hole and then cover the grass with a lot of soil to make the ridge. But the labourers do it differently. They just bring the grass and cover it with soil without actually digging a hole to put the grass first.

When the ridges are made badly by the labourers planting becomes hard.

When the labourers make the ridges you have to plant immediately because when it rains it becomes hard to plant because the soil becomes compact. (Women FGD participants, Ssenyange).

Women in Ssenyange mentioned that digging a hole before making the ridge made the soil soft, easy to plant as well as to harvest while the added grass was used as manure as well as to keep the soil soft. Thus because of lack of experience and/or negligence, ridges made by hired labour were often of poor quality.

Bugulumbya men stated that men women and youth were all involved in making ridges and were all exposed to snake bites because of lack of gumboots.

The lack of interest and lack of involvement of youth in agriculture was mentioned by women as causing the costs of production to increase. For example, they could not negotiate for lower labour costs because labourers were often migrants from other districts:

Our boys who are supposed to help us no longer have an interest in agriculture and digging.



The labourers just come to look for money to be able to look after their families. Most of the labourers come from Kabale. They incur high transportation costs so when they come they charge a lot to cover for that. (Women FGD participants, Ssenyange).

Labour costs were a key constraint women mentioned. Men mentioned constraints related to lack of enough implements such as hoes. In addition, they also stated that when rains delay or there is not enough rain the soil is usually hard to dig and thus it will take a lot of time to make ridges.

Sourcing vines

There was unanimous agreement across all groups and districts that women and girls are the ones responsible for looking for vines as well as selecting varieties and preparing the vines for planting. Men regarded this as women's work so did not get involved. Women often sourced vines from their own gardens and sometimes from neighbours.

Women also had more nuanced knowledge about how to prepare vines before planting. For example, they mentioned that after cutting the vines they cover them with grass for two days before planting. It was stated that vines that go through this process were more likely to establish when planted. Furthermore, women in Kamuli mentioned that they carefully separated the different varieties when planting because some varieties matured earlier than others so separating them would make the harvesting easier.

While for other tasks women depended on their children for support when it came to vine selection women groups mentioned that they were responsible for selecting vines and also for cutting vines before planting. They did not involve children in this activity because they feared that children did not have knowledge on selecting the right quality and properly cutting the vines that would be eventually planted.

Constraints related to sourcing vines

Women mentioned scarcity of vines as a problem. In Masaka and Kamuli women stated that during the dry season vines dry up which make it hard for them to access sufficient planting material. In many cases women mentioned that they could buy vines from those with swampland who could conserve vines throughout the dry season but that these vines were often expensive and in high demand. For instance, members of a youth group of silage entrepreneurs mentioned that they tried to secure vines from NACRRI several times before they succeeded because vines were in high demand and NACRRI could not cope. Pests and diseases affecting sweetpotato vines were mentioned in all FGDs as a problem as these also affected availability. Damage by caterpillars was mentioned as a contributor to vine scarcity. Sometimes vines just rotted and wilted. Availability of quality planting material was therefore a key constraint. Another related problem raised in one men and one women's group was the lack of high yielding varieties of sweetpotato.

In addition to availability, affordability was also mentioned. In two groups (Ssenyange women and Twekambe Youth group) women mentioned that vines were very expensive and sometimes not affordable. Ssenyange women mentioned that the price of UGX 15,000 per sack of vines was often too expensive for them to afford. Women also mentioned the lack of means to transport the vines from where they buy them to their garden. Men and women regarded the



transportation of vines as tedious since women often had to carry the vines on their heads for long distances.

Women raised related health and safety concerns such as snake bites which they said are also quite common during this time as snakes hide under the sweetpotato foliage.

Planting sweetpotato vines

There was general agreement that women were highly involved in planting than other groups. Except in Bugulumbya in all groups it was mentioned that men were not involved at all in sweetpotato planting. In Masaka district, while female youth were involved in planting, male youth were not involved at all. In Bugulumbya both male and female youth were moderately involved while in Butansi male and female youth were perceived in FGDs as having low involvement in sweetpotato planting. In Butansi, Kamuli district, women perceived that planting sweetpotato was a woman's job to the extent that if a man planted sweetpotato he was regarded to be helping the women since men are not expected to participate. In all groups it was mentioned that men regarded planting as a woman's job. This division of labour is also passed from generation to generation as women mentioned that they mostly teach their daughters how to plant sweetpotato since this will be their duty when they are married and living in their own homes. Men, particularly men youth, are only engaged in this activity when there are not enough women in the household.

Constraints related to planting

Most of the constraints related to sweetpotato planting were mentioned by women or largely affected women since they were the ones heavily involved in this activity.

Women mentioned that if ridges are not well made it becomes hard to plant vines. Furthermore, the Twekambe youth group members mentioned lack of funds to hire labourers to plant the vines and also, sometimes, delays in transportation which can cause the vines to wilt and dry up before they are planted as major constraints.

Health and safety issues were also mentioned as constraining the planting of sweetpotato. Women in all groups mentioned injuries which they sustained during this period such as cuts on hands from stones and other sharp objects in the ground as well as roots and tree stumps piercing their legs and feet. Men's groups also mentioned that hand injuries were common among women during this period. Women regarded planting of sweetpotato as tiresome and back breaking. They often mentioned backache as a common problem during this time. Women also mentioned sickness in the household as something that could prevent them from planting sweetpotato.

In some cases, planted vines could be eaten by domestic animals such as pigs necessitating replanting.

Spraying

While in Masaka women groups mentioned that they sprayed herbicides in their gardens to clear the bush, in Kamuli none of the women's groups mentioned using herbicides. Women in Kamuli stated that they encourage their men to spray sweetpotato, for example when the vines were not of good quality, were folding or turning yellow. Men were regarded as more heavily involved in spraying than women.



Some of the women spray but to a small extent.

What kind of women spray?

Those who do it themselves are widows and others whose husbands stay very far from home.

Men are energetic because they can carry the sprayer on their back. The children fetch water to be used for spraying. (Women FGD participants, Buwunga Masaka Women).

This activity was mostly done by men although women and children participated in fetching water for spraying. Only when there were no men to take over this activity would women be involved.

Constraints related to spraying

In Ssenyange and Buwunga, in Masaka district, women mentioned lack of money to hire labour, lack of knapsack sprayer, chemicals, gumboots and masks as major constraints. Women also regarded this activity as tiring.

Weeding and earthing up

In all FGDs women and girls' involvement in weeding was regarded as higher than that of men and boys. In Bugulumbya though men were perceived to participate more (described as moderate participation) as compared to men in other perishes whose participation was regarded as low or none at all. Women stated that they trained girls to weed since this was their expected role when they married and started their own homes. In Ssenyange women mentioned that girls were really helpful during this period and mothers put in a lot of effort to teach their girls how to weed sweetpotato. Thus weeding is mostly regarded as a woman's activity.

During weeding time women also mentioned that they usually removed excess vines (de-topping) but for this activity they did not involve children/girls because of fear that they would not do it properly and spoil the plant. Women stated that de-topping had to be done carefully by an experienced person. The excess vines were removed usually during the rainy season, where foliage was lush, and used for animal feed.

Women mentioned that removing the excess vines acted as a rodent control mechanism. Women stated that, when sweetpotato foliage was lush, rodents, rats, moles, snakes hide under the foliage and eat the sweetpotato. Rodents were a big problem as women mentioned that during weeding they may identify vines that have been eaten by moles and sometimes it is not easy to get vines to replace them. Caterpillars were also regarded as a major problem by Ssenyange women since they attack vines. Caterpillar infestation is usually discovered during weeding.

In Ssenyange and Buwunga women mentioned earthing up as an important activity to avoid injuries to roots which would affect the yield. After weeding women keep on monitoring their sweetpotato. When they discover cracks in the ridges they cover the cracks with soil to protect the sweetpotato roots from pest attacks.

Constraints related to weeding and earthing up



In all FGDs with women farmers (including women from the Bavubuka Twekambe youth group) injuries sustained during weeding were mentioned. For example, FGD participants reported injuries from thorns during weeding, skin allergies and burning sensations caused by contact with caterpillars. Female members of the Bavubuka Twekambe youth group and Bugulumbya men stated that, because women lacked gumboots, some of them are bitten by snakes.

In some cases where women hired labourers they mentioned that they could sometimes uproot the roots during weeding due to carelessness. Furthermore, women often lack money to hire labourers, whom they regarded as expensive, resulting in being overworked and experiencing back pain.

In Ssenyange and Buwunga women regarded earthing up tiresome especially when the soil is hard after a long dry spell. Snake bites were also mentioned as a cause for concern.

GENDER BASED CONSTRAINTS IN HARVEST AND POSTHARVEST OPERATIONS

Harvesting

In all groups women and girls were the ones who were mostly involved and sometimes male youth helped. However, involvement during harvesting sometimes depended on the destination of the harvested root. As shown in Table 1 below, whenever harvesting was for food consumption women dominated but when sweetpotato was marketed men had some level of involvement in harvesting.

Table 1: Gender division of labour for sweetpotato harvesting

| | Women | Men |
|--|-------|-----|
| First harvest (Mostly for family consumption) | XXX | |
| Second harvest (For food and market) | XXX | XX |

Emphasizing that harvesting was mostly done by women, in an FGD in Ssenyange women said:

I have never seen a man harvest sweetpotato in my entire life.

In other communities men may be involved but here in our village men do not participate in sweetpotato harvesting at all (Women Farmer FGD participants, Ssenyange)

In Ssenyange men mentioned that because women cultivated sweetpotato on small plots of land, harvesting sweetpotato for food and vines for animal feeding was usually done by women because there was not much in terms of area to harvest.

The first harvest takes place during the rainy season when the soil is soft so women can easily pull out sweetpotato roots. Women use hands and sticks to harvest the roots because they only remove the bigger roots and leave the rest of the roots still attached to the plant. In Bugulumbya the metallic stick used during the first harvest was referred to as *oluma*. They do not use hoes at this time because the sweet potatoes are not yet mature and can be easily damaged.



However, during the second harvest when the sweetpotato roots are fully mature, hoes are used and it is at this stage that men get involved because sweetpotato can be sold to the market. Male and female youth could also be engaged in harvesting at this stage because there is no risk of damaging the plants and also more energy may be needed to dig out the roots especially when the soil is not moist.

During harvesting women are careful to keep some roots in the soil to ensure availability of vines at the beginning of the rainy season as the left over roots would sprout and develop vines.

Constraints related to harvesting

Ssenyange men were not involved in the first harvest therefore did not have any constraints related to harvesting. The key issue raised in men's groups was damage by rodents which reduced the yield. Women also mentioned low yield and bad quality sweetpotato caused by long dry spells, excessive rain, rodent damage and rot which are discovered at harvest time.

Women mentioned health related concerns particularly snake bites:

We can find snakes that bite our legs and hands.

Are the snakes poisonous? Yes.

What do you do when you are bitten?

We use some stones to drain the poison and also tie the area. (Women FGD participants, Bugulumbya, Kamuli).

Snake bites were a common constraint mentioned in all groups except in FGDs with male and female members of the Bavubuka Twekambe youth group. In Bugulumbya men mentioned that women lacked gumboots and gloves. As a result women would sometimes accidentally cut themselves or were bitten by snakes during harvesting.

Also mentioned in all four women's groups was the lack of money to hire labour to assist in harvesting especially when the soil is hard after a dry spell. Women stated that in many cases they depend on their husbands who may not be willing to give them money to hire labourers for harvesting. Even when they hire labourers, some are regarded as inexperienced or careless and could damage the roots or steal them. The first round of harvesting was usually the most problematic since it was easy to mistakenly uproot young sweetpotato roots.

Women also mentioned lack of transport to carry the harvested roots from the field to home. This was regarded as a major constraint since women found it tiresome to carry the roots in baskets on their heads especially where the fields were far from their homes.

Grading, peeling and sun-drying

None of the male groups mentioned postharvest processes such as grading, peeling, sun-drying, storing and milling sweetpotato into flour. Resulting peels are also used as pig feed. Women and youth dominate this work as illustrated in Table 2 although in some women FGDs it was clear that men have a role to play especially in packing the dried chips and milling.



Table 2: Gender division of labour during grading peeling and sun-drying

| | Men | Women | Male youth | Female youth |
|---|-----|-------|------------|--------------|
| Grading (Only mention by Butansi women) | | XXX | X | XX |
| Peeling | X | XXX | XX | XXX |
| Cutting into pieces | | XXX | XX | XXX |
| Sun drying (Only mentioned in Bugulumbya) | XX | XXX | XXX | XXX |
| Drying (Only mentioned in Butansi) | | XXX | X | XX |
| Pack in polythene | XXX | XXX | XX | XX |
| Make flour | XXX | XX | XXX | X |

In Butansi women mentioned that men are not involved in grading and sorting because during this time they go out to look for other jobs to generate income. Some men engage in rearing cattle or even just hanging out with their friends. Grading and sorting is regarded as a woman's job. Men are also not heavily engaged in peeling of sweetpotato in preparation for drying since there is a belief that this work is for women. However, in Bugulumbya women mentioned that they are increasingly involving their male children in peeling as well as doing other household tasks such as cooking:

What if I gave birth to only boys and I gave birth to only one girl? Should I break her bones to do all the work? No, I should also teach my son to do it. (Bugulumbya women)

This may be an indicator of norms changing although at a small scale.

Women are also more involved in drying sweetpotato than men are. They spread polythene on the ground and put the sweetpotato on top of the black polythene in the sun to dry. However, when they do not have black polythene they smear cow-dung at a selected place in the courtyard and, once the dung is dry, spread the sweetpotato to dry. Women stated that the cow-dung helps prevent soil contaminating the sweetpotato chips. The dried sweetpotato is used to make food called *omugoye* as well as milled into flour for making bread. However, health and safety implications of drying peeled sweetpotato on cow dung are not known.

When it comes to packing sweetpotato into polythene bags all family members, including men, are involved. Women mentioned that men are interested in this because dried sweetpotato can be sold to bakeries. However dried sweetpotato fetched less money than selling the fresh roots. Men and male youth are more engaged in taking the sweetpotato to the mill than women and female youths. Women said they lacked mobility since they had to stay home to look after the children and also perform other domestic duties.

The sweetpotato flour is also mixed with bran and used to feed pigs. Female farmers in Kamuli mentioned that this reduces the cost of pig rearing since less bran has to be purchased.

Constraints related to grading, peeling and sun-drying

Women mentioned the following constraints:



- Injuries from knives during peeling
- Excess rain makes it hard to sun-dry the sweetpotato resulting in losses
- Lack of black polythene sheets to spread the chipped potato for drying
- Lack of transport to take dried chipped sweetpotato to the market.

GENDER BASED CONSTRAINTS IN MARKETING

Sweetpotato is mainly cultivated for food but excess sweetpotato could be sold. In Bugulumbya, women mentioned that nine out of ten households grow and sell sweetpotato. Sweetpotato clients included surrounding schools, buyers from local markets or other big town buyers who came with lorries to purchase at the farm gate. Money from sweetpotato sales is used to meet household needs like paying for children’s school fees. As illustrated in Table 3 both men and women are engaged in sweetpotato marketing.

Table 3: Gender and sweetpotato marketing

| | Men | Women |
|----------------------|-----|-------|
| Selling (Buwunga) | XXX | XX |
| Selling (Bugulumbya) | XXX | XXX |
| Selling (Butansi) | XXX | XX |
| Selling (Ssenyange) | | XX |

In Ssenyange men stated that they were not involved in sweetpotato marketing because of the small quantities involved and also because sweetpotato is mainly cultivated for food and animal feed. Women would only sell sweetpotato when there was excess. Although Ssenyange women agreed that they were the ones who sell sweetpotato they mentioned that men always wanted to have access to the money from sales:

After the man knows that you have sold [sweetpotato] he will come and ask you ‘where is the money?’

Sometimes they even beat us or slap us when they demand the money and we refuse to give it to them. (Women FGD participants, Ssenyange).

Thus although in Ssenyange women were the ones responsible for selling, it did not necessarily mean that they had control of the proceeds. Involvement in marketing could also increase domestic violence. In Bugulumbya men mentioned that women carried roots from the garden on their heads, a process which the men regarded as tedious. Once the roots were delivered home it was the role of the husband to sell. In the communities where both men and women were engaged in selling sweetpotato, women mentioned that they often sit down and discuss with



their husbands although in a few households, men may sell all the sweetpotato without consulting the wife. In all communities, youth did not participate in sweetpotato marketing. In one women FGD when asked about youth involvement in marketing, women simply said ‘we do not allow them’.

In other communities such as Buwunga in Masaka although men were not heavily engaged in sweetpotato production activities, they were perceived to be more involved in marketing than women. To explain this, women said:

It is even the men who brings the buyer (lots of laughing in group).

The men minimize our role because they own the land. The men like the money so much that they cannot allow us to sell. Maybe in some areas women are equal to men in the selling but not in all areas.

The land is not ours so we have no say. (Women FGD participants, Buwunga Masaka).

Thus women indicated gender related constraints such as lack of ownership of land which meant that they had less say in marketing. Two women in the Buwunga FGD mentioned that they could sell on their own. They were different from the rest of the group participants in that they had college education and worked as teachers compared to the rest with low education. This could explain the difference and may also show that levels of empowerment are changing for young educated women compared to older women or those with low education levels.

Constraints related to marketing

- Long dry spells reduce yield and reduces the ability of farmers to sell sweetpotato
- Lack good markets
- Competition from other farmers because of glut which lowers the price
- Lack of transport to take sweetpotato to higher paying markets
- Lack of ownership of resources limit women’s ability to market
- Buyers sometimes take produce on credit and delay payment which make it difficult to plan.

PRIORITIZING THREE MAJOR CONSTRAINTS AND SUGGESTED SOLUTIONS (FARMERS)

FGD participants were asked to review the constraints they had identified and prioritize the three most important to be addressed to improve sweetpotato production and exploit potential market opportunities, including selling vines for making silage. They were also tasked to suggest potential solutions to the prioritized constraints. Figure 1 summarizes the ranking of constraints by male and female farmers in the various locations.

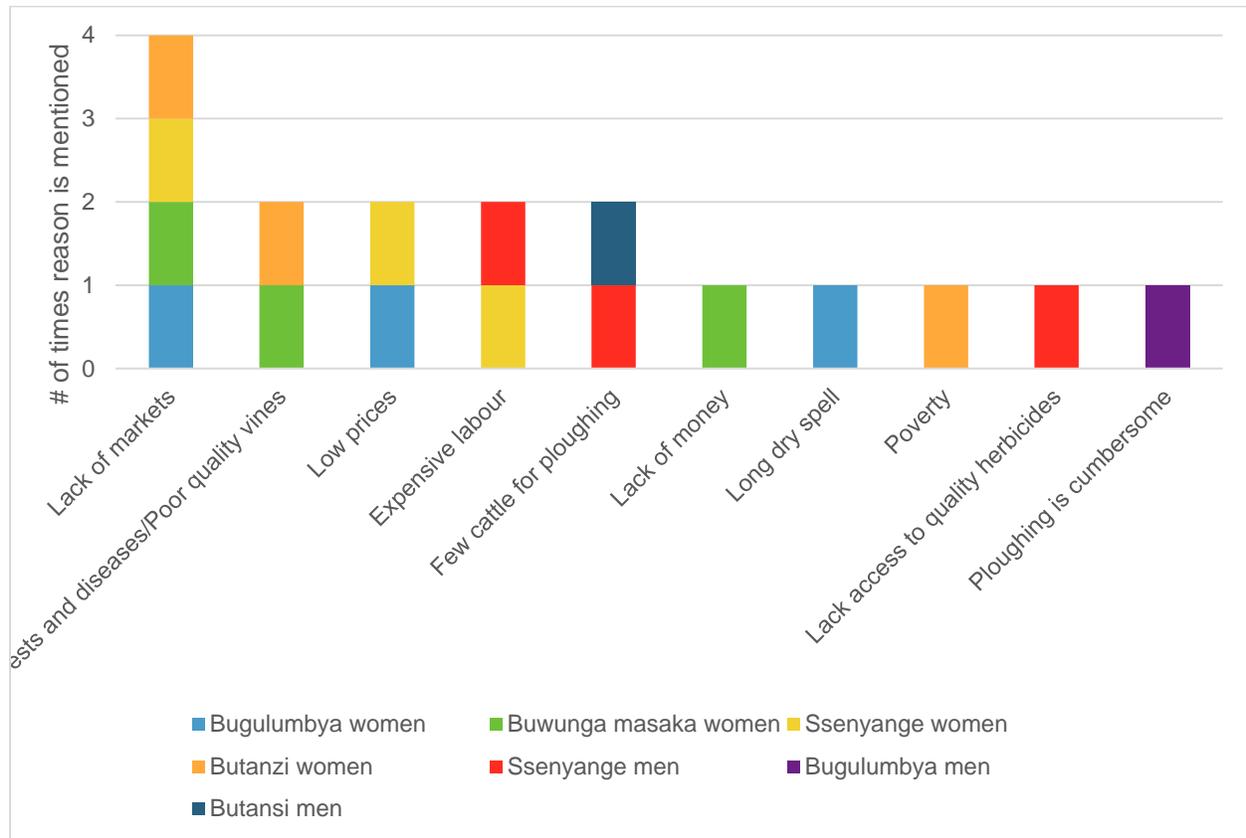


Figure 1: Men and men farmers' prioritized constraints to sweetpotato production and marketing

Farmers prioritized market related constraints, followed by labour constraints, lack of equipment for ploughing and pests and diseases which contributed to poor returns and poor quality vines.

Market related constraints

Lack of markets

When there is ample rain sweetpotato yields increase but women farmers mentioned that they lack markets. This results in postharvest losses due to sweetpotato rotting both before and after harvest. When there is too much rain, women are not able to peel and sundry the sweetpotato to reduce losses. Bugulumbya women stated that, because of this problem, they have not been able to fully benefit from sweetpotato farming. In Buwunga and Butansi women also mentioned sweetpotato glut in good seasons as a reason for lack of markets. Additional reasons from Buwunga for why marketing was a challenge included:

- Some people may just dig the sweetpotato without targeting a market
- Poor quality of sweetpotato makes it difficult to sell
- Lack of transportation to the market



Women stated that low access to markets reduced their ability to benefit from sweetpotato farming and demoralized them. In Butansi women stated that because of lack of markets they often delayed harvesting which increased spoilage in the ground.

Another issue mentioned by women in Ssenyange was related to lack of organization among sweetpotato farmers which limited their ability to take advantage of marketing opportunities including price negotiations. For example, while farmers in Ssenyange had to bring the sweetpotato to a more central place, more organized coffee farmers sell to a cooperative that collects coffee from farmer's doorsteps.

Farmer suggested solutions to constraints

Women suggested several things to help them find markets for their sweetpotato:

- Help from NGOs and research organizations like CIP as well as political leaders to identify markets. The ministry of agriculture and commerce should help develop suitable markets (Bugulumbya women; Ssenyange women, Butansi)
- Receive training on value addition to reduce postharvest losses (Ssenyange, Masaka women and Butansi women)
- Accessing good quality vines which improves the quality of sweetpotato (Ssenyange, Masaka women)
- The government should improve infrastructures particularly roads to ease transportation (Buwunga, Masaka women and Butansi, Kamuli women)
- Group marketing to improve prices and market access (Ssenyange women).

Low market prices

Ssenyange and Bugulumbya women mentioned low prices as a key constraint in sweetpotato production. In Bugulumbya women mentioned that glut in sweetpotato resulted in depressed prices and competition for markets:

What is the difference in prices between when there is a glut and when sweetpotato is scarce in the market?

When sweetpotato are in large quantities basins sell at UGX 5,000 when sweetpotato are scarce we sell at UGX 10,000.

When the potatoes are in large quantities the basin is filled up to the top compared to when they are only a few. As a result I give out a lot of sweetpotato and get low returns. (Women FGD participants, Bugulumbya).

Prices could vary by as much as 50% or more between periods of scarcity and oversupply.

Additional causes of low prices mentioned included:

- Middlemen artificially depressing prices for farmers
'Buyers want abnormal profits for themselves and give very little to farmers' (Ssenyange women).



- Limited access to quality sweetpotato varieties. In Ssenyange they mentioned that *kipapari* (OFSP) was the preferred variety but the vines were scarce
- High competition among farmers for few marketing opportunities leads to low prices (Bugulumba).

Women mentioned inability to pay for children's fees as a direct consequence of low sweetpotato prices.

Farmer suggested solutions

- Price fixing by government (Ssenyange women)
- Assistance from government and NGOs to access better paying markets.

Poor quality and diseased vines

Buwunga women mentioned problems with accessing good quality vines blaming poor quality soils and lack of money to purchase fertilizers. In addition, long dry spells also disrupted vine production and availability of quality sweetpotato vines for planting. Pests also contributed to the problem of low quality vines. Butansi women also mentioned the lack of new clean planting material as they had been planting the same material for more than ten years and it was now prone to pest and disease attack. They mentioned needing help to access clean planting material and improved varieties.

Farmer suggested solutions

- Avail varieties that are disease tolerant
- NGOs and research organizations should supply good quality vines to farmers
- Farmers should practice good agronomic practices such as spraying vines
- Radio programs should be developed to educate farmers on good agronomic practice
- Farmers can learn from each other how to keep the vines
- Availability of quality chemicals from agro dealers
- Training on pests and disease control and management.

Expensive labour and lack of money

As mentioned before lack of local male youth labour and reliance of short term migrant labour made sweetpotato farming expensive for women in Ssenyange. Women in Buwunga, Masaka, mentioned that they did not have access to finance to invest in sweetpotato farming activities. Women mentioned that they lacked finance because they did not have access to off farm income generation activities like men did. Men did not allow their wives to engage in alternative income generating activities. In cases where men allowed their wives to start small businesses they often did not have start-up capital to implement their ideas. In a discussion about lack of money this is what women in Buwunga said:



We do not have other jobs where we can get the money so that is why we do not have money as women.

We have a lot of responsibilities. We end up using the money earmarked for farming for children's school fees, buying clothes, health care etc.

Some men refuse their wives to work so women do not have income.

Most men think that when women get money they will not respect them. They will not listen to them. That why they do not allow us to work. The little we have we spend it on the family. (Women FGD participants, Buwunga).

Being denied opportunity to work and generate an income and also being saddled with domestic responsibilities are gender specific obstacles that women in Buwunga experienced. Women mentioned that lack of money had far reaching impacts beyond just failing to invest in agriculture. For example, faced with extreme poverty, couples could separate and divorce and, in some cases men, just abandon their homes and families.

Farmer suggested solutions

- Sensitize men to allow their women to work
- Introduce SACCOs in the community
- NGOs should improve women's access to low cost loans

Long dry spell

In Bugulumbya women mentioned the long dry spell as a problem for sweetpotato cultivation. It resulted in sweetpotato rotting as well as wilting and drying of vines. Where there was a long dry spell it was also difficult to make sweetpotato ridges. Women blamed the long dry spells on deforestation and mentioned that as a community they have started some tree planting groups to tackle deforestation. However, for an immediate solution women stated that they needed a source of water to irrigate their sweetpotato vines during dry spells.

Cumbersome ploughing and few cattle for ploughing

In Butansi and Bugulumbya men mentioned that lack of drought power like oxen was a key obstacle during ploughing and preparing the land. Because the process of ploughing and making ridges was not mechanized farmers cultivated smaller plots which lead to low production and hunger in the home since there is never enough food. Men suggested that mechanization could help solve this. Men farmers stated that, if cheap mechanization tools were introduced, they could get money to purchase these from their SACCOs and other savings groups.

Lack of access to quality herbicides

Men farmers in Ssenyange mentioned lack of timely access to quality herbicides and pesticides as a constraint. Men mentioned that farmers also may fail to identify quality products and also lack knowledge about proper dosage. Lack of access to quality herbicides and pesticides results in low yields because farmers are not able to timely deal with pests and weeds. Men mentioned



that low yields increased poverty as farmers will have to divert the little money they have to food purchases leading to increased disagreements in the home between husbands and wives and even divorce.

Farmer suggested solutions:

- Training in identification and proper use of quality crop protection products (Ssenyange men).

GENDER BASED CONSTRAINTS IN PIG REARING AND SILAGE MAKING

Allocating space for pigsty

In Buwunga and Ssenyange it was mentioned that when farmers make the decision to rear pigs, they need to find a location on which to construct the pigsty. Men were perceived by women to be more involved in this activity. Several constraints were noted at this stage:

- Shortage of land to construct the pigsties limits the amount of pigs that farmers can rear
- Religious considerations limit placement of pigsties for those with Moslem neighbors

Because of religious considerations and also lack of land, women farmers stated that they sometimes found land in insecure places far from homes where the pigs can be stolen resulting in heavy losses.

Constructing the shelter

Participation of women on searching for building material is ranked higher than that of men while men participated more than women in construction activities. In Bugulumbya women mentioned that, while men construct the pigsties, women carry timber for building and pass it on to men. Male youth were however more highly engaged than women youth in activities related to construction of pigsties as illustrated in Table 4.

Men and women are both engaged in construction of pigsties while men dominate actual construction.

Lack of timber and money to purchase building equipment were mentioned by both men and women as obstacles. In Bugulumbya, deforestation has resulted in scarcity of timber for construction while in Buwunga and Ssenyange, Masaka, women mentioned that labour was expensive, labourers lacked experience and thefts. Another key constraint was related to counterfeit nails and building materials. This is what women in Buwunga said to describe the situation:

Counterfeit building material is a big problem. When we buy from the hardware, particularly for nails, sometimes you hit a nail and it just bends.

Others mix ash in the cement so the cement is not good. (Women FGD participants, Buwunga).



The cement sometimes is not original and the nails are weak, when you hit them they bend. (Women FGD Participants, Ssenyange).

Counterfeit building material also resulted in substandard pigsties. Lack of money to purchase building material as well as to transport materials from the shop to the farm was also a key consideration.

Table 4: Gender division of labour during construction of pigsty

| | Men | Women | Women youth | Men youth |
|---|-----|-------|-------------|-----------|
| Look for building material | | | | |
| Buwunga | XX | XXX | XX | XX |
| Ssenyange | X | XXX | | |
| Look for labour to building the pigsty | | | | |
| Buwunga | X | XXX | | |
| Ssenyange | XXX | XXX | | |
| Construct pigsty | | | | |
| Buwunga | XXX | XX | | XX |
| Bugulumbya | XXX | XX | XX | XXX |
| Ssenyange | XXX | XX | | XX |
| Butansi | XXX | X | X | XX |

Sourcing good breeds

In Buwunga men were less involved than women in identifying pig breeds and transporting piglets home after purchase while in other parishes both men and women were actively involved. However, in all other parishes youth were not involved in identifying breeds although male youth were involved in transportation (Table 5).

Table 5: Gender division of labour in identifying good breeds

| | Men | Women | Men youth | Women youth |
|---|-----|-------|-----------|-------------|
| Look for good breeds and book | | | | |
| Butansi | XXX | XXX | | |
| Bugulumbya | XXX | XX | | |
| Ssenyange | XX | XXX | | |
| Buwunga | X | XXX | | |
| Transport pigs from purchase to pigsty | | | | |
| Bugulumbya | XXX | XX | XXX | |
| Buwunga | X | XXX | XX | |
| Ssenyange | XXX | X | XX | |



Women mentioned several ways for identifying good quality breeds which included the following pig physical characteristics:

- Long snout
- Big ears
- Long and fat pig
- Wide back
- Flat ears
- Many tits
- Black color was regarded as a good breed while white was considered to be inferior.
Black color is a good breed but the white one not so good because it needs a lot of care. (Buwunga women).
- A pig that has farrowed before. Farmers noted that they had no way to ascertain this and trust the pig seller.

Constraints to procuring good breeds included lack of specific knowledge and experience as well as the fact the preferred breeds were often expensive.

Good breeds are expensive. A piglet can sell for UGX 80,000 and others for 150,000.

You can buy the low quality breeds for between UGX 40,000 to 50,000. (Women FGD participants, Ssenyange).

Because of lack of money some farmers mentioned purchasing low quality breeds.

It was mentioned that transport was expensive and sometimes not easily available. Women sometimes transported piglets in tied sacks. This was not the best way to transport as the pigs could die or escape resulting in substantial losses.

Feeding pigs

In Ssenyange, Buwunga and Bugulumbya men, women and youth were involved in feeding. However, in Ssenyange both sexes overestimated their involvement and underestimated the involvement of the other sex. As mentioned before, this may have been a result of selection bias with most of the women in the Ssenyange group being single or widowed. Table 6 illustrates men and women involvement in feeding:



Table 6: Men, women and youth involvement in pig feeding

| | Men | Women | Men youth | Women youth |
|-------------------|-----------|-----------|-----------|-------------|
| Butansi | X | XXX | XX | XX |
| Bugulumbya | XXX | XXX | XX | XX |
| Ssenyange | X XXX* | XXX X* | XX | XX |
| Buwunga | XX | XXX | XX | XX |

* Denotes men's perception where there are differences in perception between men and women.

Pigs were mostly fed on maize bran, sweetpotato vines, cassava leaves and water. In all FGDs, regardless of sex, farmers mentioned that pig feed particularly bran was expensive and farmers did not always have money to purchase it. It was also mentioned that feed supplements such as silver fish are also scarce and sometimes difficult to get. Young piglets were often fed on kitchen waste as it was regarded as easy for them to digest.

During the dry months (January and February and June and July) water and feed are scarce and farmers experience problems with pig feed. Farmers in Ssenyange mentioned using 'swill' for pig feed but stressed that it had the potential of spreading diseases if it contained pork. However, because of shortage of feed farmers sometimes felt they had no option. In Ssenyange, women mentioned that they have to buy water for the pigs but they often did not have the money to pay.

In Ssenyange men and women had different views on who was responsible for procuring the feed and feeding the pigs. Ssenyange men stated that women usually contribute to sourcing feed if they have a pig in the herd.

If the wife has a pig in the herd, she also contributes to purchase of the feeds.

Some husbands give one pig in the herd to the wife to encourage her to look after the entire herd.

When she has ownership of at least one [pig], you are certain she will do her best. (Men FGD participants, Ssenyange).

Thus women were more actively engaged when they saw that they could benefit.

Cleaning pigsties

In Ssenyange there were differences in opinions on which sex was more involved in cleaning the pigsties. On the other hand, women were perceived as more involved in this activity than men in Buwunga, Masaka. Youth were also engaged although in Bugulumbya their involvement was perceived as low (Table 7).



Table 7: Men, women and youth involvement in cleaning pigsties

| | Men | Women | Men youth | Women youth |
|-------------------|-----------|------------|-----------|-------------|
| Butansi** | XXX | X | XX | XX |
| Bugulumbya | XXX | XX | X | X |
| Buwunga | X | XXX | XXX | XXX |
| Ssenyange | X XXX* | XXX XX* | XX | XX |

*Denotes men's perception where there are differences in perception between men and women

**Data available only from Men FGDs

Major constraints raised related to health and safety issues. Women mentioned lack of gumboots and other protective clothing which exposed them to jiggers and other illnesses

We fear entering because the place is always dirty...we also get jiggers from the pigs.

How do you treat the jiggers when you get them?

We call the doctors to spray the pigs.

We remove them [jiggers] with safety pins if we are the ones affected. (Bugulumbya women FGD participants).

Thus jigger infection was a key risk of cleaning pigsties without proper protection.

In Buwunga, Masaka, women mentioned that they sometimes got diseases from the pigs although they were not sure what the diseases were called. Some mentioned brucellosis and elephantiasis as illnesses that affect women who clean the sty without proper protection.

My child does not take milk but she suffered from brucellosis. I think that it was because of caring for the pigs. (Woman FGD participant, Buwunga Masaka).

In Ssenyange and Bugulumbya women and men mentioned that they also lacked equipment such as spades, brushes, hoes, wheelbarrows, gumboots, water-cans and gloves to use for cleaning. Without gloves and gumboots farmers said they could get sick making women fear to go into the pigsty. In some cases there was not enough water for cleaning especially in Ssenyange where farmers mentioned having to buy water to clean the pigsties. Cleaning pigsties was regarded as tedious work.

Treating pigs

In Ssenyange men and women underestimated each other's involvement in terms of monitoring the health of pigs and seeking treatment when necessary, while in Buwunga and Bugulumbya women highly rated their involvement in treating sick pigs. In Buwunga and Bugulumbya deworming pigs, giving them vitamin A and also seeking expert treatment was regarded mostly



as work that women did. Women mentioned that since they are the ones who are always at home they are able to monitor the pigs and seek help from veterinarians when there is need.

Both men and women farmers mentioned that veterinary doctors are expensive. Furthermore, when pigs were ill in many cases the entire herd including the ones that were not exhibiting signs and symptoms of illness had to be treated which made treatment costly.

The veterinarians are too expensive. Also sometimes when you are treating you should not treat one so you have to treat all the pigs which makes it expensive.

We can be charged UGX 30,000 to treat three pigs. (Women Farmer FGD Participants, Bugulumbya).

In Ssenyange women mentioned that veterinarians also needed payment upfront which made it hard to treat sick pigs in the event that they did not have cash on them.

Both men and women farmers also mentioned the dangers of counterfeit drugs as well as lack of trust on some veterinarians:

When we need to deworm vet doctors are expensive, others use fake medicine. Because we do not know the good medicine they can cheat us. (Woman FGD participant, Buwunga Masaka).

Some veterinarians are not well qualified.

They use counterfeit drugs or dilute the drugs and the pigs never get better. (Men FGD participant, Ssenyange).

Furthermore, in Bugulumbya men mentioned that the District Veterinary Officer is overwhelmed and not always available when they need him. Some diseases were also regarded as hard to treat. In spite of the concern that farmers had about disease outbreaks and cost of treatment, it emerged in Ssenyange that farmers were not utilizing any bio-control measures to limit the spread of diseases.

Selling pigs

There was unanimous agreement in the two districts that youth were not involved at all in selling pigs. In Ssenyange, while women perceived themselves as participating in selling of pigs, men stated that women were not involved at all. There was no agreement regarding who in the family was responsible for selling. In some cases, women mentioned that they were responsible for selling since their husbands were not good at negotiating a better price while in other cases women said:

Men just tell their women that they will go to look for the buyer. After discussing with the buyer the men will be paid. The buyer will just come home to pick the pig.

The woman is at home waiting for the buyer to come with the money but he only comes to pick the pig. (Women FGD participants, Buwunga).

Thus women may not have control over the proceeds from pigs. Table 8 shows men and women perceptions about their involvement in pig marketing:



Table 8: Men and women involvement in pig marketing

| | Men | Women |
|------------|------------|-----------|
| Butansi | XXX | XX |
| Bugulumbya | XX | XXX |
| Ssenyange | XX XXX* | XXX -* |
| Buwunga | XXX | XX |

* Denotes men's perception where there are differences in perception between men and women

Thus while women could be consulted or had some level of participation, men had more control over this process.

Farmers mentioned the problem of low prices, because they did not have scales and buyers 'weigh using their eyes'. Farmers felt that some of their pigs were paid below their market value. Buyers paid between UGX 300,000 and 400,000 for the 'big nice looking pigs' whilst piglets can go for UGX 30,000 to 40,000. Others mentioned that those who did not look after their pigs well received lower prices for their pigs:

The farmers that are able to feed their pigs well are able to get good prices between UGX 300,000 and 500,000. But those who do not feed and manage the pigs well get low prices. (Man FGD participant, Bugulumbya).

Ssenyange men also stated that many farmers sell at a loss because they do not do a cost benefit analysis so do not know the break-even price. In some cases farmers sell their pigs because they have an emergency so they cannot wait for a better price.

Searching for vines

Women sourced vines in their garden or collective gardens while men also looked for vines in the market and also from other farmers. However, both men and women farmers mentioned that lack of finance limited their access to vines. The Bavubuka Twekambe Youth Group male silage entrepreneurs stated that if they had access to finance they would be able to access the vines they need for their silage making business.

Women mentioned the following constraints in accessing vines:

- Injuries from knives and pangas whilst cutting the vines
- Lack of transport to take the vines home
- Being bitten by snakes hiding under the vines.



Sun drying, wilting and sorting the vines

After cutting the vines, farmers wilted and sorted them in preparation for making silage. Except in Buwunga men were not involved in wilting the vines. This activity was dominated by women and youth (Table 9)

Table 9: Men, women and youth's perception about their involvement in wilting and sorting vines

| | Men | Women | Men Youth | Women Youth |
|--|-----|-------|-----------|-------------|
| Butansi | | XXX | XX | XX |
| Bugulumbya | XX | XXX | XX | XX |
| Buwunga | | XXX | XX | XX |
| Bavubuka Twekambe Youth group (wilting and drying) | | | XXX | X |
| Sorting (Bavubuka Twekambe Youth group) | | | XX | XX |

Identified constraints included:

- Lack of tarpaulin
- Rain which disrupts the drying process and rots the vines
- The vines are mixed with rubbish and require time to sort
- Sorting is labour intensive. Small metals are hard to remove and they affect the chopper.

Chopping vines manually

In Buwunga and Ssenyange women mentioned that they chopped the vines manually using pangas. Sometimes men were involved in this activity but only a few as the task was usually left for women. Women mentioned the following constraints:

- Injuries from pangas
- The work is tedious and not easy

It was mentioned that in Ssenyange a villager had chopped off her finger accidentally whilst manually chopping the vines for silage.

Chopping vines using motorized machines

There was general agreement across all groups that when motorized machines/ choppers are used to chop wilted vines for silage men are responsible. Women had not learned how to use the motorized choppers and were also afraid to use it because of fear of injury. In Bugulumbya for example women said:

We are afraid to use the machine but we are trying to learn.



Why are you afraid? It needs a lot of power and one day it cut someone's finger, that's why we are scared a lot about using the machine (Women FGD participants, Bugulumbya).

In the Twekambe youth group women members also expressed the same fears:

We lack the skills to operate the chopper. Also one member lost a finger.

We leave men to use the chopping machine because it is very technical. The technology is not women friendly and the machine is 'frightening' (Women FGD, Bavubuka Twekambe Youth Group silage entrepreneurs).

In all communities, fear of injury was mentioned as a limiting factor for women to use the chopper. However, a farmer in Bugulumbya who had lost a finger stated that it had just been an accident which he did not anticipate would happen again since he has devised a method to stabilize the machine. Also the fact that the machine needed a lot of power and energy to operate was regarded by women as a disincentive for using the machine. It was also mentioned that using the chopper was very labour intensive and tiresome.

The Bavubuka Twekambe Youth Group male silage entrepreneurs mentioned that the fuel needed to operate the chopper is expensive and it would be unaffordable without their patron's support.

Moving chopped silage to ensiling area was a chore done by men because they were regarded to be faster and more interested in this activity than women. However, the women in Bavubuka Twekambe Youth Group mentioned that, while men carried the silage, women took the weight and records. Wet weather could sometimes disrupt the ensiling process.

Ensiling and packaging

Farmers mentioned mixing vines with molasses, honey silver fish and maize bran. While molasses was cheaper than bran, the Bavubuka Twekambe Youth group mentioned that molasses made the silage more perishable compared to bran. They also mixed with soybean (roasted) and snails. Snails provided calcium and soybean protein. In Ssenyange and Buwunga women regarded this activity as tiresome.

Both men and women were involved in packing. It was mentioned however that men were more involved in this activity because it needed a lot of energy to be able to pack and seal the polythene bags tightly to prevent air from getting inside. After the silage has been packed both men and women were responsible for monitoring the silage for maggots and rodent attack and, if necessary, to control rodents.

Constraints related to packing include:

- It is tiresome and need a lot of energy that women said they did not have (Buwunga women; Bugulumbya women)
- Lack of money, packing material is expensive (Bavubuka Twekambe men youth FGD participants)



- Lack of appropriate storage place where there is no moisture or sunlight (Bugulumbya women, Bavubuka Twekambe Youth Group men silage entrepreneurs). Currently farmers keep the silage on their verandas (Ssenyange women)
- Rats and other rodents can attack the packed silage and children can damage the polythene bags leading to loss of silage (Bugulumbya women)
- Silage bags may burst during packing necessitating purchase of new bags.

Selling silage

In all villages, farmers had not yet sold silage but prepared only enough to feed their own pigs. They had however been taught that those without pigs could make silage for sale. The only group that was selling silage was the Bavubuka Twekambe Youth Group. However, they were assisted by their patron to find markets. They also gave some of the silage to the patron to cover cost of electricity, equipment and meals. It was mentioned that most potential users of silage were not aware of its usefulness and needed a lot of effort to convince them (Bavubuka Twekambe women youth FGD participants).

PRIORITIZING THREE MAJOR CONSTRAINTS FOR PIG FARMING AND SILAGE MAKING AND FARMER SUGGESTED SOLUTIONS

FGD participants were asked to review the constraints they had identified and prioritize the three most important ones that had to be addressed to improve pig rearing and silage making in order to engage in potential market opportunities including selling silage and pigs. Some groups did not mention any and others mentioned less than 3. They were also tasked to suggest potential solutions to the prioritized constraints. Figure 2 summarizes the main constraints identified by male and female farmers in the various locations.

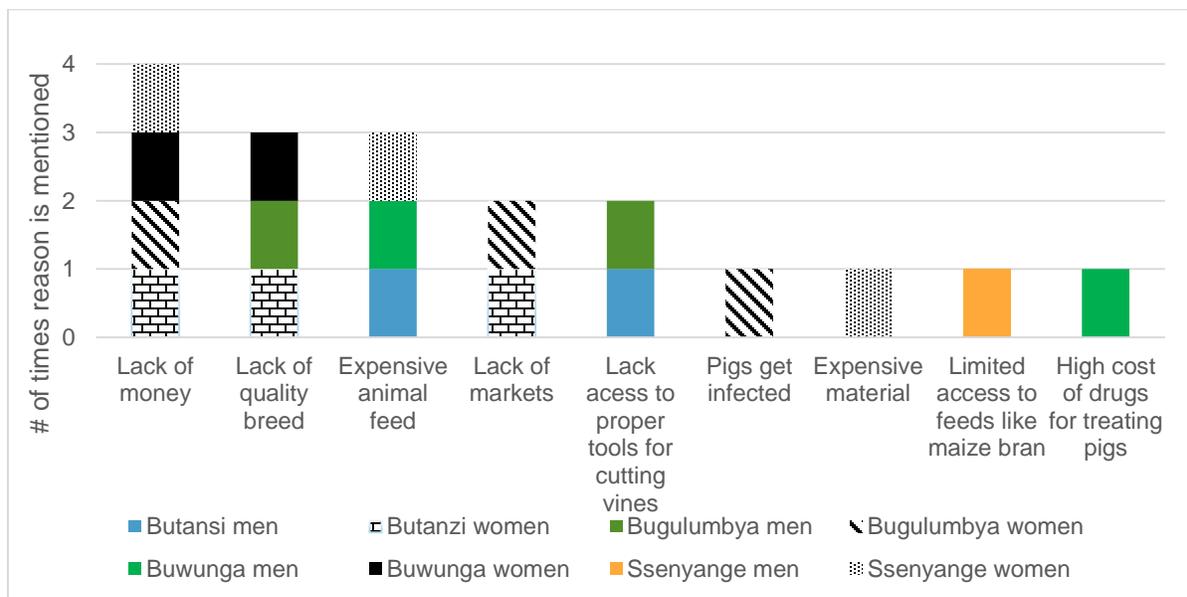


Figure 2: Pig rearing and silage making constraints as identified by men and women farmers



It is clear that women regarded lack of money as a key constraint more than men did. All women groups mentioned this while none of the male groups did. Women also emphasized lack of quality breeds and lack of markets while men prioritized limited access to proper tools for cutting vines.

Lack of money

In Bugulumbya and Buwunga women blamed their lack of money on lack of off farms jobs that women could engage in. Since pig sales and crop sales were often seasonal and because they had no other income sources, when it came time to buy pigs they would not have money to purchase preferred breeds. Purchasing poor quality breeds often put the farmers at risk because the pigs could be more prone to diseases and the farmer would not have money to treat them.

In addition to lack of off farm jobs women in Buwunga mentioned that life is expensive so they are not able to re-invest in piggery. Women also mentioned that they lacked knowledge on how to access loans to improve farming. Women needed access to finance since sometimes they had to rent land for constructing pigsties. In Ssenyange women mentioned that as a result of financial demands in the home farmers did not reinvest in pig farming.

Sometimes we have a lot of things to buy and problems in the home that need a lot of money. So we use most of the money to meet those needs and we have problems investing.

The pigs are of poor quality because we do not have enough money to buy feed to improve their quality.

We cannot get the vet doctor on time so we can suffer losses because of delayed treatment which also leads to loss of income. Here the security we use are dogs so if we do not have money you cannot get dog feed to make sure that the pigs are secured against theft. (Women FGD participants, Ssenyange).

Another major cause of lack of money was the fact that youth were reluctant to invest money which they get from other off farm activities in agriculture including pig rearing. Women mentioned that, because youth do not want to be engaged in agriculture anymore, they had to buy everything especially bran from outside their villages which made it very expensive.

Hot weather and high incidence of diseases during that time was also blamed for low prices which had a vicious circle effect where farmers were not able to make sufficient money to improve pig husbandry. Some farmers sell their pigs without consulting other farmers and therefore they lack up to date price information and may end up selling their pigs for a much lower price leading to limited funds for re-investment.

Farmer suggested solutions

- Organizing farmers could help them to gain skills and knowledge from each other and also could enable them to have access to finance (Bugulumbya women)
- Create off farm job opportunities for women (Buwunga women)
- Access to appropriate loan products (Buwunga women)



- Sensitize youth on pig rearing and entrepreneurship so that they can invest some of their off farm income into pig rearing
- Encourage youth to engage in agricultural activities such as growing maize which would make bran locally available and cheaper (Ssenyange women)
- Improve access to market to sell pigs and access to good pig breeds that grow faster (Butansi women)
- Training on silage making as well as other pig feed (Butansi women).

Lack of markets

In Bugulumbya, women mentioned that it was difficult for pig farmers in their village to have access to markets because there were very few pig farmers in their village. This affected the economies of scale for potential buyers who preferred to go to villages where many farmers rear pigs since they will be assured of getting enough pigs in one trip. In other cases, it was noted that poor quality pigs were a barrier to accessing good markets. Some farmers did not look after their pigs well while others simply did not have knowledge on how to do it properly. Disease outbreaks were also mentioned as reason why farmers would lack access to markets. Buyers would not buy sick pigs since diseases and bad feeding lowered the quality and consequently the price attained.

In Butansi women mentioned lack of buyers from afar as a problem. Local buyers always pay low prices and take advantage of farmers in desperate times for example when they have to pay school fees.

Farmer suggested solutions

- Access to quality construction material to have good shelter for pigs and improve their quality (Bugulumbya, women)
- Easy and cheaper access to veterinary doctors (Bugulumbya women)
- Training on pig feeding (Buwunga, Masaka)
- Knowledge on identifying appropriate breeds of pigs (Buwunga, Masaka)
- Access to price information for better negotiation with buyers (Buwunga, Masaka)

Pig morbidity

It was mentioned in several FGDs that when there is too much heat pigs get sick. Sometimes it was not easy to get the veterinary officer so pigs could die. When the pigs are sick the prices also go down since buyers do not wish to buy infected pigs. Also, when pigs were left to roam they are easily attacked by diseases.

Farmer suggested solutions

- Cheap and affordable veterinary officer
- Construct proper shelter for pigs to protect them against diseases.



Lack of good breeds

Farmers mentioned that they needed breeds that grew fast and could be quickly sold. Poor quality breeds were a result of:

- Inexperienced farmers who just buy any pigs without knowledge of good breeds
- Not treating pigs when they are sick, not de-worming
- Not treating 'olukuku' a skin rash that also results in poor quality

Farmers mentioned that this worsened their poverty because if one had poor quality pigs buyers would offer very low prices.

Farmer suggested solutions

- Farmers need to be trained in selection of good breeds and their management.

Expensive construction materials

Material to construct pigsties are expensive:

When the materials are expensive we are not able to acquire them to construct the pigsty. We end up tying the pigs to trees (tethering) or make poor quality shelters. (Woman FGD Participant, Ssenyange).

Women blamed over-taxation of these materials by government as this makes them more expensive.

Farmer suggested Solutions

- Establish cooperative societies to help farmers to access cheaper materials
- The Ministry of Agriculture should step in to control the prices.

Expensive animal feed

Feed was regarded as scarce and expensive during the dry season. However, it was also noted that sellers of pig feed were over-taxed and passed on the cost to farmers. Farmers suggested that expensive animal feed resulted in poor quality pigs since farmers were not able to have access to good quality feeds. Consequently, they often received low prices for their pigs. Both men and women farmers mentioned additional work for them as they have to move around their village looking for cheaper feed alternatives like grass.

In addition to expensive animal feed male farmers also talked about shortage of feed which also leads to price fluctuations. During periods of scarcity Ssenyange male farmers mentioned that they reduced feed rations, resulting in animals dying of hunger or growing thinner which also led to lower prices. Low prices and loss of pigs demotivated farmers.

Farmer suggested solutions

- Farmers should establish groups to hire land and cultivate soy and maize for pig feed



- Access to better paying pig markets to have enough money to invest in quality pig feed
- Make silage. It was noted that those who are making silage find it easy to feed their pigs except that pigs fed on silage drink much more water:

For those who have tried making silage they are finding it good and easy to get feed

Those with silage are finding it easy because the pigs eat small quantities but get satiated faster because after that they take a lot of water

Those pigs that take silage also take a lot of water

You said you buy water so when you use silage isn't this a problem? We still save because with silage the pigs grow at a very fast rate so we are able to sell quickly. (Women FGD participants, Ssenyange).

Thus although silage feed increased demand for water, this was offset by the less labour to look for feed as well as the fast rate at which the pigs grew enabling the farmers to sell their pigs faster and at a better price.

EXPLORING GENDER BASED CONSTRAINTS TO SILAGE ENTREPRENEURSHIP

Entrepreneurs and would be entrepreneurs in Ssenyange, Kampala and Kamuli were asked whether silage making made good business sense, what the obstacles to silage making were and how they could harness business opportunity. Due to time limitations a combined FGD was held for male and female entrepreneurs in Kamuli and Ssenyange. In Kamuli the entrepreneur group included men and women from Butansi and Bugulumbya. Only Bavubuka Twekambe Youth Group was split into men and women groups in the FGDs. Apart from the youth group and one male farmer in Bugulumbya, other entrepreneurs targeted had not yet started making silage for sale.

Silage making as a business

Potential entrepreneurs generally agreed that silage making made good business sense for the following reasons:

- There is a huge challenge of accessing feed in the communities so farmers are likely to buy silage
- Silage making will reduce spoilage of vines in the rainy season which are currently high
- There is scarcity of feed during the dry season so silage will directly respond to farmer's needs. In Kamuli it was noted that during the dry season some farmers sold their pigs and temporarily suspended operations because of lack of feed. Thus this denotes a potential market for silage
- Silage is not as expensive as bran so if silage is available farmers will purchase it
- Silage can be sold to people rearing cattle who have also started expressing interest in purchasing it



- There is limited land so farmers are rearing only a few animals. Entrepreneurs thought that silage could enable farmers to increase the number of reared since they will not be limited by feeding options (Bugulumbya entrepreneurs).

OBSTACLES TO SILAGE MAKING

Faulty machines and lack of access to suitable choppers

A key obstacle to making silage for sale were the machines which were regarded to be faulty and not suitable for the scale of operations. In both Ssenyange (Masaka) and Kamuli entrepreneurs stated that the machines were not reliable, because they often broke down and farmers did not always have money to make the repairs immediately.

The machines have faults. Sometimes the pulley gets off or the tank gets off. So when you plan to chop vines you may just be able to cut half of what you planned before the machine develops a fault. It needs someone who is very innovative who can be able to find a solution otherwise it can be a problem (Man participant in entrepreneurs FGD, Ssenyange).

When I wanted to make the silage the machine was not there. The vines dried up and I lost 206 kilograms of material (Man participant in entrepreneurs FGD, Kamuli).

The quality of the available machines limited their use, while in some areas access to choppers was a challenge. In Ssenyange entrepreneurs stated that they had money to buy machines in groups but they needed better machines. Women participants emphasized that the available machines were not enough for all farmers and therefore accessing them was difficult.

Other concerns expressed by all entrepreneurs related to health and safety issues related to using the chopper similar to those raised by farmer groups. Cutting vines using pangas was regarded as slow and tedious and not suitable for commercialization. The chopper was regarded to be able to address these challenges to some extent. However, safety issues limited chopper utilization especially by the women.

Proposed solutions

- Adapting the choppers to make them safer to use
- Research organizations and NGOs should train farmers and entrepreneurs on trouble shooting or train artisans within the communities to handle mechanical repairs
- Farmer groups and association can pay a user fee to cater for any maintenance needed.

Dry weather and lack of consistent access to vines

Dry weather was also mentioned as an obstacle for entrepreneurs to start the silage making business. Farmers in Ssenyange stated that because of dry weather they had not been able to access enough vines to make enough silage for sale.

I have made 1000 kilos of silage but only for myself. I have not engaged in commercial silage because I have a shortage of vines. I grow an acre of potato and sweetpotato but I do not have enough to sell. I have made silage three times. This time I do not have any



silage because of the drought and the sweetpotato varieties that I have are not drought tolerant so I lost a lot of vines.

For you to get 2,000 kilos of vines you have to harvest an acre of land. If you look at the general acreage around here it is difficult to find a person with one acre of sweetpotato. (Woman entrepreneur FGD participants, Ssenyange).

Thus shortage of vines due to long dry spells and shortage of land to grow vines, prevented farmers from producing enough silage for sale and even sometimes for their own use. Female entrepreneurs from Bavubuka Twekambe Youth Group mentioned lack of consistent access to vines as a key constraint. This was a result of limited access to land given the small size of their collective sweetpotato garden coupled with seasonality of vine production. The youth group also mentioned that the market value of vines is increasing as reflected by the price increments thus threatening the profitability of silage making.

Furthermore, it was noted that suppliers to the Bavubuka group were usually smallholder farmers with low acreage under sweetpotato (on average 0.5 acres). Furthermore, they are scattered which increased transport, communication and mobilization costs and hence the cost of vines and silage making. Bavubuka female youth entrepreneurs also noted that some farmers are not willing to sell vines as they believe that this will affect their sweetpotato yield, therefore the group had to hire land to produce vines which also makes it slightly more expensive.

Entrepreneur suggested solutions

- Entering in new forms of agreements with farmers (e.g. hiring labour to harvest SP in exchange of free/cheaper vines)
- Partnering with large farmers to ensure economies of scale in vine collection
- Establish a larger collective garden
- Introducing dual purpose varieties (more vines)
- Grow own maize for bran to use in silage making (Bavubuka Twekambe Youth Group Female silage entrepreneurs)
- Promote staggered planting to ensure consistent availability of vines
- Invest in irrigation and water harvesting technologies to water the vines
- Promote varieties with high foliage production and drought tolerance.

Lack of quality inputs and equipment

In Kamuli women silage entrepreneurs mentioned that they lacked access to tarpaulin and silage storage. They mentioned that the initial costs of buying the plastic was high and could deter one from starting the business. A woman farmer in Kamuli mentioned that most farmers have one tarpaulin which is not enough for silage making. If farmers organized themselves into silage making groups then they will be able to use each other's tarpaulin. In addition to this, male participants in Kamuli mentioned lack of access to good quality plastic tubes which they said were often mishandled and damaged by the agro-dealers and led to spoilage and loss when used by farmers:



I bought about 9m of the plastic which was already spoiled from the shop. In many of these hardware shops there is poor storage and handling. You buy the plastic and you discover that it is damaged and you cannot use it only when you get home. If you take it back to the shop they will not take it back, so you lose out.

We need to find a good place where we can get this plastic. These hardware shops do not store this plastic properly. (Kamuli male entrepreneurs).

Thus liaising with hardware shops on proper handling or identifying quality suppliers of the plastic material were regarded as important measures.

Lack of finance

In Ssenyange, entrepreneurs mentioned lack of finance as an obstacle to commercial silage production. If vines are available and entrepreneurs do not have funds to purchase them the growers may be demotivated and move to other crops worsening the shortage of vines. In Kamuli, entrepreneurs mentioned that some of the inputs for silage are bought from outside the village which necessitates the entrepreneurs to have cash to pay up front. Furthermore, farmers were also increasing the price of vines when in the past they were cheap or completely free. While in the past farmers harvested vines and transported them by head, because of the large quantities needed in commercial silage production, they now need to invest in transport, hence, access to finance. Men members of the Bavubuka Twekambe Youth Group expressed uncertainty about sustainability of business if they did not have access to finance to buy their own chopper. Currently they were depending on using their patrons' chopper. The patron allowed them to use her premises and equipment in exchange for feeding her cows. Sometimes they also provided other in kind support to the host by giving her some silage or help on the farm.

Suggested solutions:

- Increase group savings to buy a chopper
- Farmers could save earnings from sale of beans and maize and invest in silage if the business is deemed profitable
- Access to low cost loans and drought insurances suitable for small producers.
- Increase own sweetpotato acreage because if they fail to procure enough vines or these become too expensive, silage making may not be profitable.

Lack of knowledge about costing

In all groups men and women mentioned lack of knowledge about costing as a major limitation which could result in farmers selling at a loss. For example, some entrepreneurs mentioned that they did not even know how much vines they used and did not keep records of input costs. One entrepreneur who had costed his silage stated that the silage was not profitable:

I have been costing each activity but I find out that we cannot get profit. It took 58 days to make the silage. I hired a motorcycle to carry material from the garden because it has greater capacity than a bicycle. There was a loss. It was the first time I made silage so I



think that maybe when I do it again things will improve. My silage is also expensive because I do not only rely on sweetpotato vines but I also add calliandra, amaranths and moringa. (Male entrepreneur, Kamuli).

Both male and female entrepreneurs need to get more knowledge and information about costing.

Limited access to markets for silage

Female youth entrepreneurs mentioned that there was limited awareness of silage among farmers so they were not willing to pay a premium. Farmers complained that silage was expensive which forced youth entrepreneurs who had started making silage to sell at low prices with low returns. Profit margins were low. Female youth however mentioned that those who had been sensitized about silage were willing to buy at a good price with higher profit margins for entrepreneurs.

A female entrepreneur in Ssenyange also mentioned seasonality in demand for feed as a potentially limiting marketing of silage:

The anticipated constraint is that there will be months when there is limited market for silage. In the past I have been trading in brewery waste for animal feed. Sometimes it moves very fast but sometimes I stay with it for a long time and no one is buying. The silage may also face a similar problem. (Ssenyange entrepreneur).

Thus when there is enough forage farmers may not be willing to buy supplementary feeds limiting the ability of entrepreneurs to invest consistently into silage making.

Suggested solutions

- Sensitize farmers about silage
- Promotion through various channels such as media and training of farmers
- Collaboration with other organizations e.g. CIP, ILRI, NALIRRI, Bavubuka Twekambe Youth Group Female silage entrepreneurs who are able to promote silage to farmers
- Need to organize producers into silage making groups to ensure that silage is always available when buyers come.

Lack of land

The Twekambe youth group mentioned limited individual and collective land (for both sweetpotato cultivation and processing into silage) as a key obstacle. Because of lack of collateral, as well as uncertainties due to the infancy of the business, financial institutions were not willing to take risks to fund the youth. The youth were also uncertain about future business location if the patron terminated her support.

In Bugulumbya, the biggest constraint is land due to competition with sugarcane plantations supplying a processing factory that makes sugar and molasses on the road to Kamuli. Those that plant sugarcane are able to rent land at very high prices pushing land rent up. Since most farmers in Bugulumbya cultivate sweetpotato for home consumption they are not able to



compete. If silage business takes off and is able to bring large returns, silage entrepreneurs may be able to compete for land with the sugarcane producers.

Entrepreneur suggested solutions

- Increase savings to buy land (long term plan)
- Apply for grants from the youth program
- Diversify business portfolio

Rodents

All groups also mentioned problems with rodents and other animals like dogs, cattle and even children being attracted by the nice aroma of the silage hence damaging the plastic tubes in an attempt to get to the silage which results in losses for the entrepreneurs.

Entrepreneur suggested solutions

- Appropriate storage spaces
- Erecting a barrier around the silage to ensure that rodents, other animals and children do not tamper with it.

HARNESSING THE SILAGE MAKING BUSINESS OPPORTUNITY

Develop pig markets

A strategy identified to create a market for silage is to ensure that there is a market for pigs. If farmers buy silage and they do not have good markets for their pigs they may be discouraged and may cease purchasing silage. In Ssenyange, entrepreneurs suggested that farmers should be organized to sell their pigs:

People in the village should be encouraged to join groups so that it is easy for them to sell. It becomes easier for buyers to come if they know they will get 50 pigs at a go rather than just three pigs. (Ssenyange entrepreneurs).

In Ssenyange, the Pig Farmers Cooperative Union for Masaka was identified as a possible buyer that organized farmers could sell to. The Union was also in the process of constructing an abattoir with the support of the European Union and ILRI which could provide a potential market opportunity for organized farmers. Ssenyange farmers stated that being organized would help them fulfil demand from clients. For example, a male entrepreneurs stated that:

Right now we have an order for 1,800 pigs. We are trying to fulfil this order but we have not been able to get the required number of pigs.

I am not a member of a cooperative (yet). I started with 10 pigs and now I have 35 pigs. My worry is that very soon I will not have space: I need a market to offload those pigs (Youth pig farmer Ssenyange entrepreneurs)



The pig union was failing to fulfil orders for pigs and yet youth farmers struggle to sell their pigs, which indicates a need for closer integration within the pig value chain.

Sensitization on silage usage

All entrepreneur groups mentioned that sensitization of pig farmers about silage is a way that will enable silage entrepreneurs to benefit from market opportunities. In Kamuli, some suggested making announcements after church services, packing silage in smaller jars, exhibiting silage to potential buyers and providing free samples as possible ways of promotion. In addition, promotion will also spread knowledge on proper silage storage and usage as mentioned by farmers in Ssenyange:

You, as a person who makes silage, may make it and keep it well. Then you sell to another person about 500kgs. This person may not know how to use and keep it so it will get spoilt. It can even cause diseases in the pigs when it is bad. Anybody buying silage should be sensitized on how to store and use it. (Ssenyange entrepreneurs).

Sensitization may be costly since it will require farmers being trained on how to use the silage. In Kamuli, this was already happening at local scale where entrepreneurs gave training to farmers and, in some cases, people from other counties were also welcome to attend. For example, entrepreneurs in Kamuli mentioned having offered training to people from Namasagali, Iganga and Jinja. Twekambe youth also mentioned the need to have a demonstration where buyers can see how pigs and other animals fed on silage are doing in terms of weight gain and milk production. In addition, it was suggested that in the beginning entrepreneurs should follow up on the performance of animals fed on silage.

If we just supply silage like we are supplying sugar and we don't follow up we will not know what is happening. We need to follow up so that we can know what is happening and also learn (Kamuli entrepreneurs).

Follow-up would also ensure that farmers use and store the silage properly.

Silage sensitization training should also strengthen farmers' capacities in pig farming. In Kamuli it was mentioned that some farmers still tether their pigs so for them silage may not be suitable.

We need again to know more about how we can improve our farming systems. Most farmers here tether their pigs. If we take our product (silage) to such farmers they can't buy because of the potential losses.

Why will it be a loss? There are farmers that tether their animals or take them to grasslands to feed. If they attempt to feed them with silage the animal may prefer the grass to silage. The silage may get wasted and the farmer incurs a loss. The housed animals do not have options: what you bring is what they eat. (Kamuli entrepreneurs).

Thus improving farming systems or modernizing them could also increase the silage market as well as the ability of farmers to benefit from the silage.

Sensitization and promotions can also be done through mass media campaigns such as announcements on local radio stations. Announcing on local radio stations was also regarded to be effective since farmers would get to know where to buy silage when they needed it. While entrepreneurs were not sure about the cost, they stated that if you paid for three advertisements



the radio would give you a discount and you also had a chance of reaching more people with your message that having just one advertisement placed. However, as entrepreneurs groups, they would need to raise money to pay for this service.

Twekambe youth group suggested producing leaflets and policy briefs. They had also developed a documentary on silage which was unfortunately aired at off-peak period because they did not have the money to pay to for prime viewing time. Therefore they suggested the need to work more closely with journalists so that their silage can be showcased at the appropriate time to increase outreach. Women farmers mentioned that the silage sensitization messages should stress the reduction in drudgery women benefit when using silage.

Packaging, promotion and branding

Farmers suggested packing silage in small bags as these were easier to sell than large bags. Furthermore, farmers suggested using mobile phones to spread market information and communicate with each other whenever silage is available. Entrepreneurs also suggested taking pictures of pigs fed on silage and using them in their promotional efforts to show other farmers that silage was good for pigs.

Proper packaging was regarded as key:

It is good to understand the kind of market we are going to sell to. If people can only buy 5 kilos you should package in 5 kilograms. What I want is when a person buys they will buy an entire pack because I know that, if I keep opening it, my silage will get spoilt quickly and I will make losses (Female farmer, Kamuli).

Entrepreneurs suggested the need for a mini market study in order to identify appropriate packaging. The need for standardization such as use of weighing scales was mentioned and entrepreneurs reported that 'weighing by eyes' as was the practice could result in cheating the client or losses for the entrepreneur.

As far as branding is concerned, there was no consensus among farmers about it. Women entrepreneurs were of view that this was necessary but male farmers thought that it was going to be difficult to brand silage. Below we give reasons given for both positions:

Those who supported branding stated that it could be done similar to how chicken feed is branded in Uganda as this would further promote awareness about silage:

My challenge is about branding and positioning our product. For example, for chicken feed there are brands like UgaChick which are well known. If you mention it everyone in Uganda knows it and people know the different types of feed and what is good. My worry is how we are going to brand our feed and present it so that it becomes well known so people can associate with it and buy. (Female entrepreneur, Masaka).

However, those against branding stated that it was not easy to brand silage at the moment because farmers are using different vines with varying quality and nutrition levels. Furthermore, although they have been trained on supplementation, the quality of silage differs from farmer to farmer. This lack of standardization would make branding difficult. The entrepreneurs suggested that, before they start branding, there should be research to inform farmers about the most suitable varieties for silage so as to make silage quality more homogeneous among producers.



Women specific barriers

Women mentioned that collecting vines was very tedious and tiring which deters them from participating in silage making. Some women were not allowed by their husbands to participate in groups and learn about silage and other development activities.

Some men rule their women with an iron hand. Their husbands do not allow them to go to groups, training and to participate in development activities. Others may not see the benefit of silage. They will say 'even before the silage came I was rearing animals; so what benefit is it going to give to me?' (Female entrepreneur, Kamuli).

Women suggested that there was need to sensitize husbands about the benefit of silage in a bid to convince them to allow their wives participate in silage making groups and training. Women also needed to be sensitized about the benefits of silage especially in terms of availability of feed during the dry season.

4. Women and men's empowerment in sweetpotato production and marketing

Empowerment levels of women and men across different domains, may impact the applicability of certain suggested strategies for ensuring that both men and women adopt silage and profit from potential marketing opportunities. Below we look at different domains which include 1) input into production decisions; 2) access to productive resources; 3) control over income; 4) participation in leadership position in the community; and 5) control over time allocation within households.

INPUT INTO PRODUCTION DECISIONS

Ability to make production related decisions

The Comparison Tool group scores on input into decision making (figure 3) indicates that in all districts men and women perceived almost similar decision making power on many production related decisions (Figure 3).

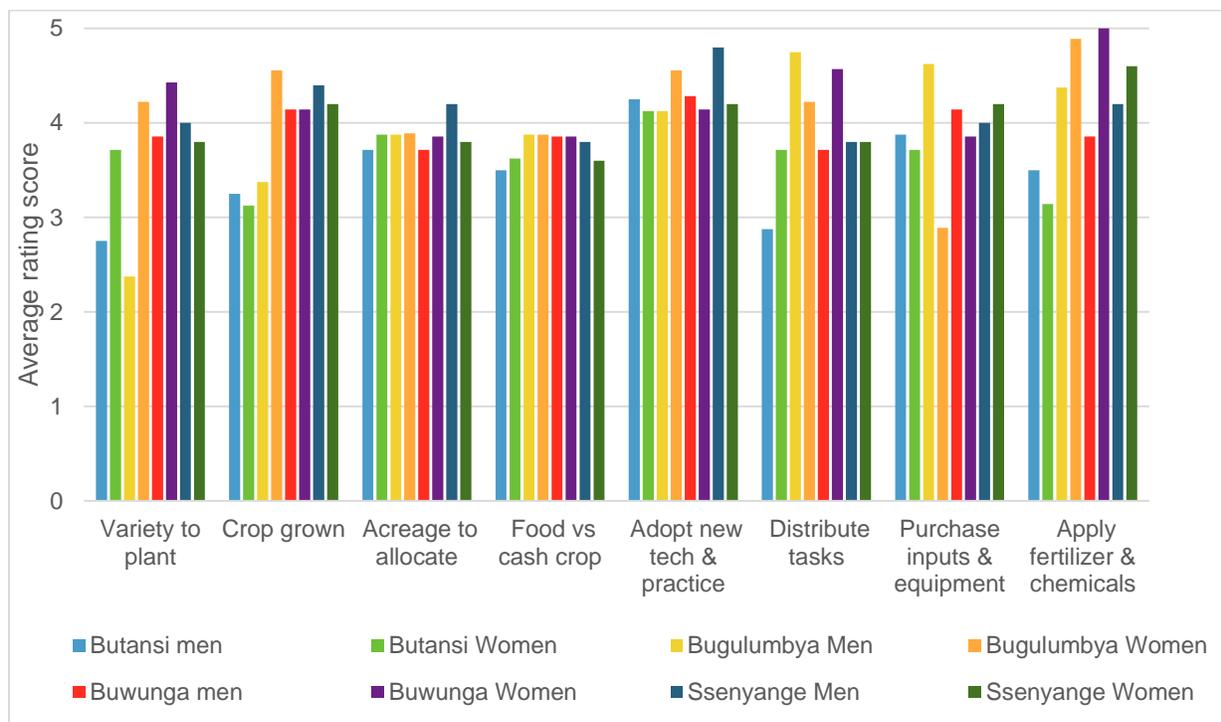


Figure 3: Men and women's perceptions about their ability to make production related decisions

In all communities, except in Ssenyange, women perceived they had greater ability to decide what variety of sweetpotato to plant compared to men. In Ssenyange while women's perception of their ability to decide what variety to plant was slightly less than that of men, in discussions women said that they are the ones who decide because men are not involved in digging and other activities related to sweetpotato production so women had the power to decide what variety to plant. In Bugulumbya men said:

We know nothing about this. We just see the sweetpotato on the plate and only ask our wives about the source of the ones that taste really nice. (Bugulumbya men).

In Butansi men also mentioned that women were the ones who knew which sweetpotato variety to plant. This seems to confirm the view that sweetpotato was regarded as a woman's crop.

While Bugulumbya women had a slightly more positive perception than men about their ability to decide which crops to grow, women stated that men have the power to decide what to grow since they control the money to purchase inputs and equipment. Men in all communities stated that they consulted their wives but have the final decision. In Ssenyange men simply mentioned that 'the man has the right to decide, he is the one with the plan'.

On allocation of land to different crops and allocation of land to food crops versus cash crops, women and men in all communities had similar perception about their power to make decisions. Women mentioned that they also have money to hire land so they can control what they want to plant on land that they hire. In Bugulumbya women stated that some women own pigs and use money from pig sales to hire land for agricultural purposes. This shows a clear link between access to income through pig ownership and women's ability to decide and control means of



production. However, men had a strong opinion on their ability to decide on allocation of land to different crops. In Butansi men said:

In terms of allocation for food vs cash crops and application of fertilizer men know best. We are very mobile. We visit various places and get to know which crop would be likely to generate more income. So we have to decide. (Butansi men).

Men also mentioned that since they are the ones who do everything they are also the ones who have to decide on new technologies. While women did not control the labour of their husbands' plots, they stated that since men are not involved in agriculture and leave most things to women, they are the ones who control the distribution of labour in the household.

With regards to purchase of equipment in Ssenyange women were of the opinion that, since they had other problems to deal with at home, they did not invest much in purchasing agricultural inputs relying instead on their adult children. This in itself is significant since, even though parents maintained that youth were not involved in agriculture, they still invested some of their money in helping their parents. Divorced, single or widowed women with no adult children often had to use their own savings to purchase farming equipment.

While in general both men and women positively viewed their ability to adopt new technologies and practices, in Ssenyange some men stated that they have more power than women:

Some technologies are a waste of time especially if the woman suggests the technology. If it is the man who has learnt about it he will quickly decide and adopt if he thinks that it is useful (Ssenyange men)

Men did not trust their wives opinions on technology uptake and adoption.

Autonomy in production: marketing related decisions

In Ssenyange women stated that since they were in charge of all farming activities they also decided where to sell (Figure 4). In Bugulumbya men stated that they were the ones responsible for deciding where to sell and wondered whether a woman could look for a market. In Butansi and Ssenyange men stated that they were the ones responsible for deciding where to sell since they are highly mobile and have more information about marketing options than women.

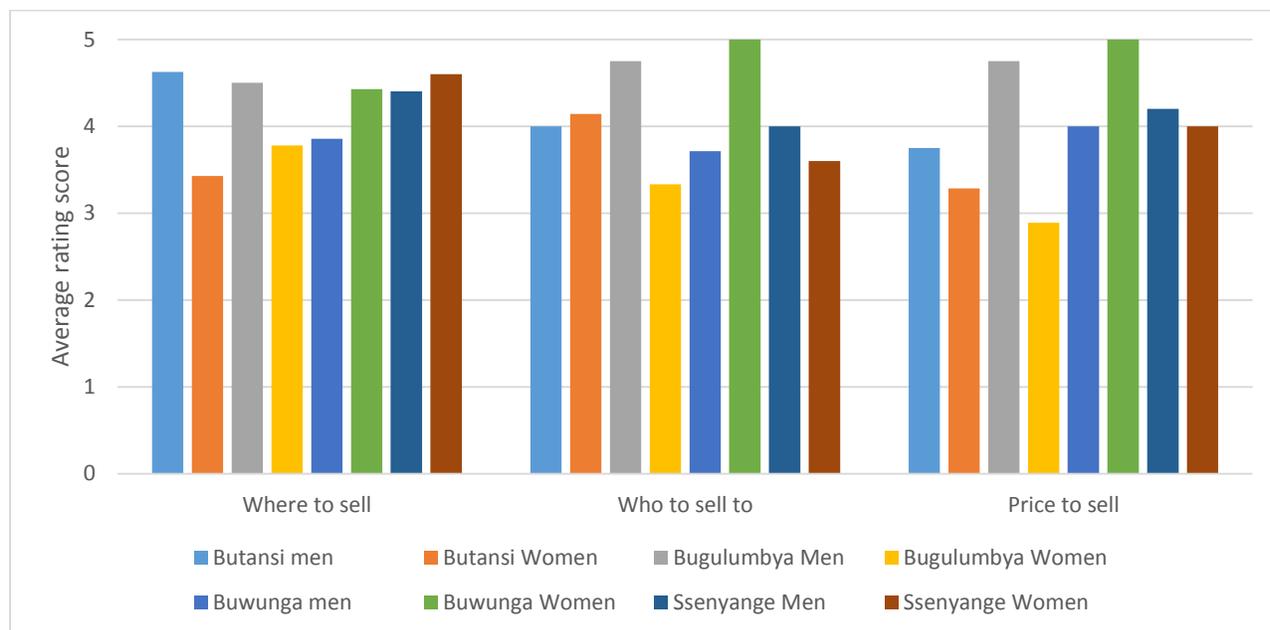


Figure 4: Men and women's perceptions about their ability to make marketing related decisions

Regarding decisions on who to sell to, although men stated that they usually consulted their wives because they often provided good advice; they took the ultimate decision.

While women stated that they discussed with their husbands on what price to sell; men stated that they sometimes consult their wives but sometimes they just sell without consulting anyone and the wife would only find out when the sale is completed. Summing this up a man from Ssenyange stated:

A man remains as a man. If he says something, he can't be disputed. A woman would just have to agree. (Ssenyange men).

Buwunga was different though with women consistently scoring higher than men in terms of perceived ability to make marketing related decisions. When asked why they were more empowered in this regard than women in other localities, they stated that they are the ones who cultivate and do everything:

Men feel ashamed, they cannot come and take over when we are the ones who have been doing everything.

Most men have other jobs where they earn money so they don't try to control things. So we have control to make decisions on most things. (Buwunga women).

In Buwunga women also mentioned that men are afraid of laws set up by government which can land them in prison for mistreating women and taking their earnings from crop sales. Men fear being reported and thus leave women to make decisions about their crops.



ACCESS TO PRODUCTIVE RESOURCES

Ownership of assets – farmers

Overall women had slightly less control over assets than men although this difference was more pronounced in Bugulumbya than in other parishes. In particular, women perceived less access to and control over land and means of transport such as bicycles than men did (Figure 5).

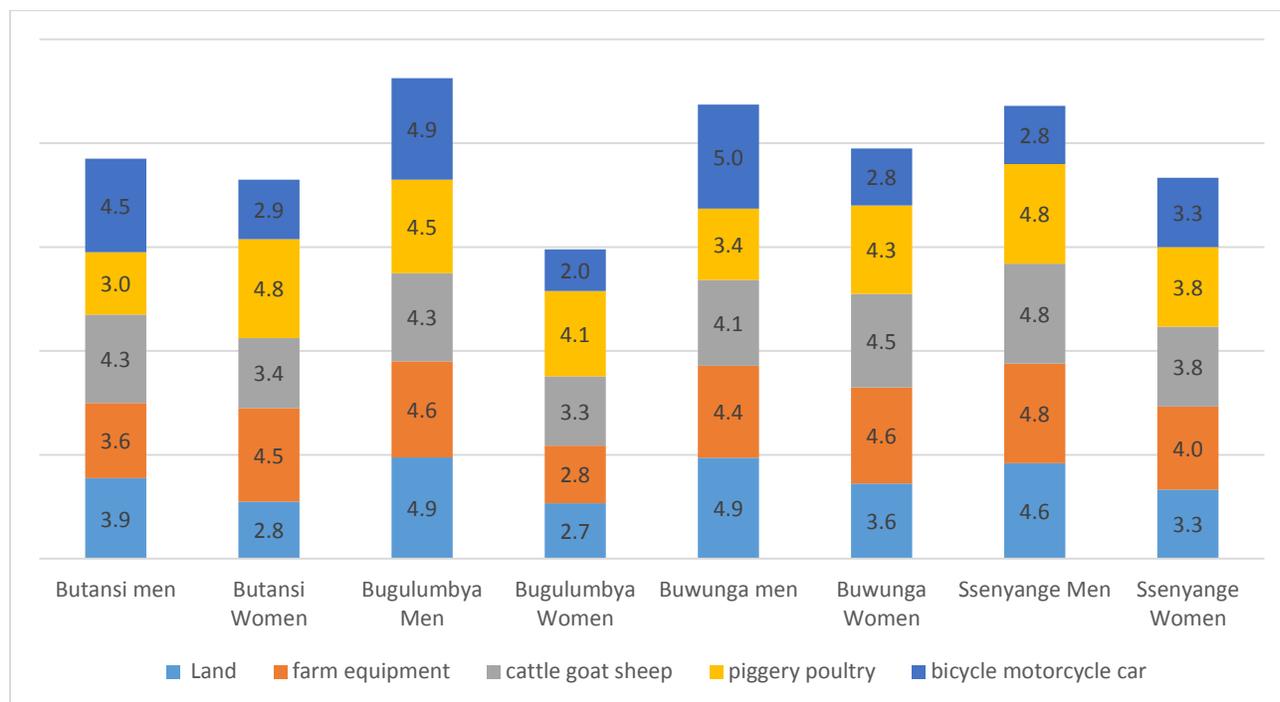


Figure 5: Men and women perceptions of access to and control of assets

To explain why they perceived lower ownership of certain assets, women referred to cultural and gender norms that deterred them from owning certain assets. For example, in Buwunga, women stated that very few women own land. Married women indicated that land belongs to the husband and his family. However, where the woman married a man with no land and they worked together to purchase it; a woman would have some power to make decisions over it. In all communities it was mentioned that where land was titled most land titles belonged to men. There was reluctance among some men to allow women buy land as expressed by these men in Bugulumbya:

Men own the land. In the event that a woman buys her own, the title has to be in my names.

Why? Because she would have made that money while under my household. That means I have in one way or another made a contribution to the purchase. (Bugulumbya men).



In several discussions men mentioned that they are the ones who buy land and therefore have decision making power over it since it belongs to them.

Farm equipment

With regards to ownership and control of farm equipment in Buwunga women said they purchased farm equipment because men have other off farm jobs to do so are not always up to date about what was needed at the farm. Where women bought equipment they perceived themselves as having high levels of control and ownership. However, women in other study sites stated that although the men bought the equipment women are the ones who use and control it but they do not have the right to sell. In Bugulumbya women perceived much lower levels of ownership of and control over farming equipment.

Cattle

Except in Buwunga, women generally had lower perceptions about their ability to own cattle. In Buwunga women mentioned that since they are the ones who raise money to buy goats, cattle and sheep they also have power over the animals and can even make decisions to sell. Women said:

These days we are educated and cannot buy anything without an agreement of sale. Even if the men does not want to sell we just pull out the agreement and sell.

The president gave us the authority (women laughing). (Buwunga women).

Supportive policies have increased women's ability to own cattle and decide over them. In Ssenyange, women mentioned that in their community only divorced and widowed women had ownership of cattle, goats and sheep and could make decisions over these. While in Bugulumbya men said they owned cattle but they discussed with their wives before selling.

Pigs and Poultry

A limitation of this data set is that it combined pigs and poultry which do not have comparable market value. Butansi men and Ssenyange women clarified that pigs are usually owned by men and poultry by women. This could explain the high scores for women. However, in Ssenyange, women stated that, although they are the ones who looked after pigs and poultry, their husbands had control over decisions to sell them:

Men love being the owners. Men like the ownership of the property and feeling that they are the head of everything in the family. So they will want to make all the decisions regarding those animals even if they are not the ones that are looking after them. (Ssenyange women).

In Ssenyange, some women had to get permission from their husbands to keep chicken.

In general, in all FGDs except in Ssenyange, men perceived more control over the means of transport. However, when asked about the community in general even in Ssenyange women stated that they had very little control over the means of transport. The results for Ssenyange women (Figure 5) may show a selection bias of non-typical respondents. However, in discussions about ownership and control over means of transport in their community women in Ssenyange were of the opinion that men were in control:



Men take control of everything at home especially the bicycles and motorcycles. Women end up having no power at all over these.

A man can allow us to use transport means for a short time, for example going to pick the pigs or vines but after you bring it back home. The man will allow you to use it but you don't have the ownership. (Women FGD Participants, Ssenyange).

Ssenyange men stated that they are usually the ones who use motorcycle and other transportation means. In Butansi men simply mentioned that women had no money to own expensive items:

Hmmmm where would a woman get the money to buy a bicycle if she even has to beg me to buy her a gomess (traditional wear) for the big day?

Can she even be able to buy a cow then? Women don't have money (Butansi men).

Thus women had very little control over the means of transport.

Decision to purchase, sale or transfer assets

In general women across all districts perceived less ability to dispose of assets than men but more decision making powers to buy them (Figure 6).

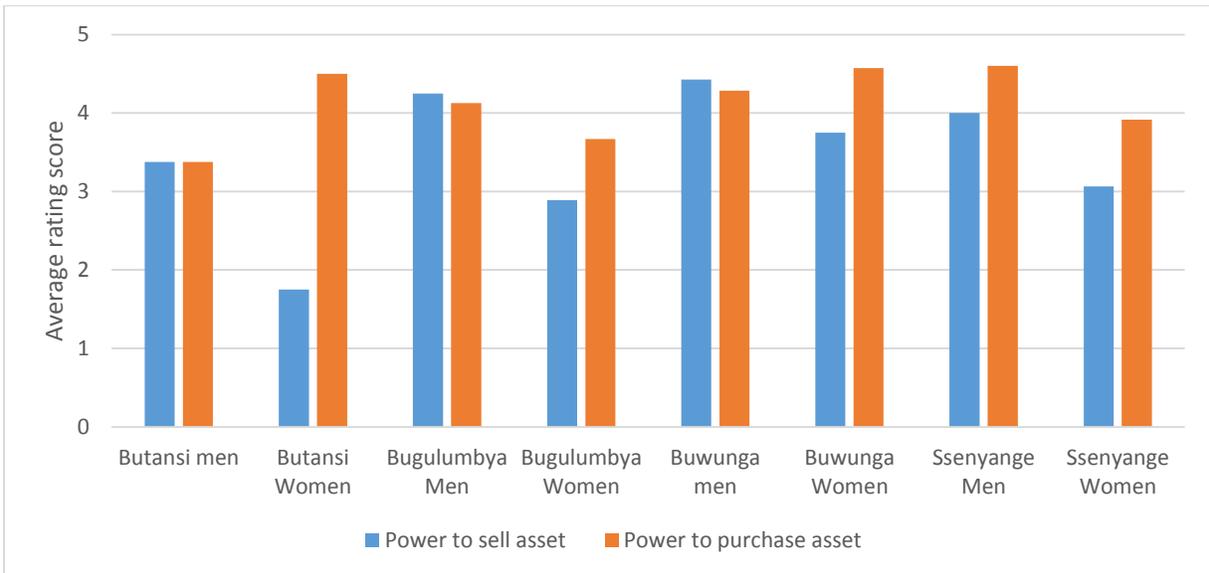


Figure 6: Men and women's perceptions about their involvement in decisions to purchase, sell or transfer property

Butansi women perceived the least ability to sell assets but much higher decision making power to buy assets.

In Bugulumbya women stated that men are the ones who own and often use household assets like bicycles and boda (motorcycles) so have more ability to dispose of these assets than women. However, they perceived men's power as limited in the disposal of some assets like land since land could not be sold if the woman did not sign the agreement of sale.



In the past, a man would just make a unilateral decision if he wished to sell land. Now these days of gender balance, how do you even start?

The other day, a man in this village hanged himself because he badly wanted to sell his land and his wife refused to consent to his request.

This gender balance thing can be dangerous. (Butansi men).

In Buwunga women stated that although there are laws to protect women against men selling household assets without their consent, some women are not aware of these laws and their husbands take advantage of them. Widows in all communities were regarded as having power to dispose of property.

Regarding purchases, although the women can purchase assets like land, in Bugulumbya men insisted that the title should be in the men's name. Additionally, it was noted that women are always at home and therefore know what is needed in the home therefore should be involved in decision about these purchases.

Access to services

Financial services

In all communities, except Bugulumbya, women perceived higher levels of access to SACCOs than men did (Figure 7). Group lending was also perceived as highly accessible by all women, except in Bugulumbya.

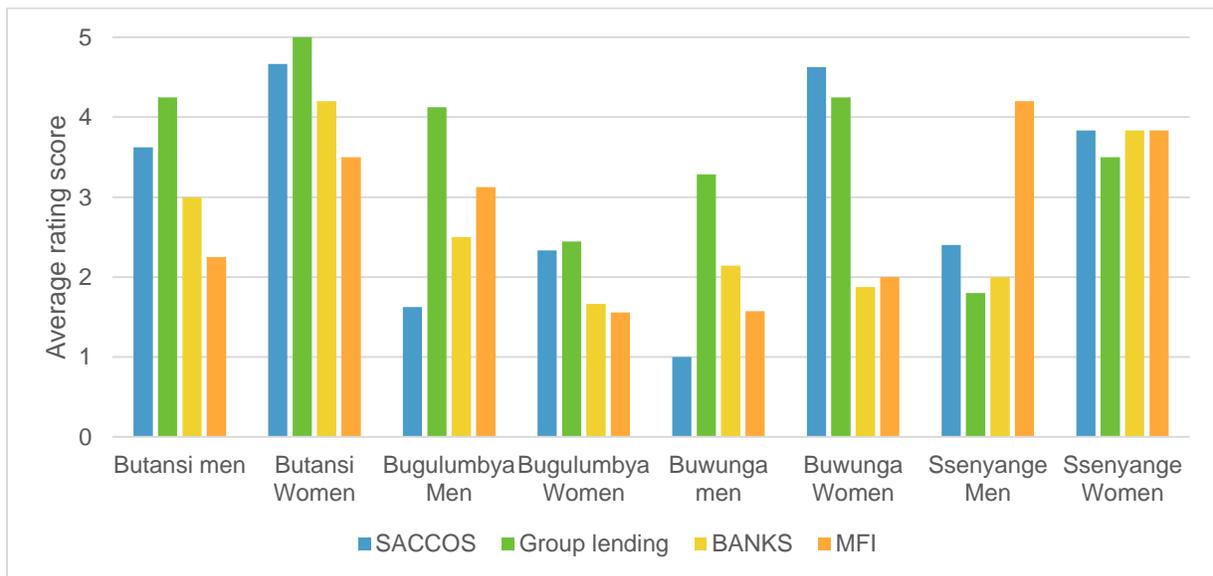


Figure 7: Men and women's perception about their ability to access financial services

Ssenyange men and women, Butansi women and Bugulumbya men perceived themselves as having a high ability to access banks and micro-finance institutions (MFI) services.



In the discussion women explained their limited access to some financial services because of lack of assets to use as collateral. For example, women in Buwunga mentioned that they did not have land titles since these are registered in men’s names which limited access to bank loans. Furthermore, women only needed small sums of money which they said they could easily get from SACCOS and MFIs so did not need to access bank loans.

Group lending was regarded as the most common source of credit. In Bugulumbya women mentioned that they did not have access to banks and MFIs but instead had access to local savings and credit groups which they felt were able to meet their needs. Even men in Bugulumbya alluded to a fear of accessing bank loans

In Ssenyange men had less access to credit than women but mentioned that they preferred SACCOS since they could easily access credit with better repayment terms. They also mentioned that it was easy to access a loan from a SACCO, for example two days after the day of application whereas bank’s procedures were too long and time consuming.

Training and extension services

Figure 8 below shows that Ssenyange and Buwunga men have the lowest access to training and extension services for sweetpotato compared to women and men in other districts. In Bugulumbya women perceived lower access to training and farmer field schools than men. Women in Bugulumbya mentioned training in leadership and record keeping as something that they would like to have but had not yet been offered. In Bugulumbya on the other hand men mentioned that they had received training on record keeping, business planning and leadership from various organizations including NARO and NGOs such as VEDCO, SASAKAWA, and One Acre Fund.

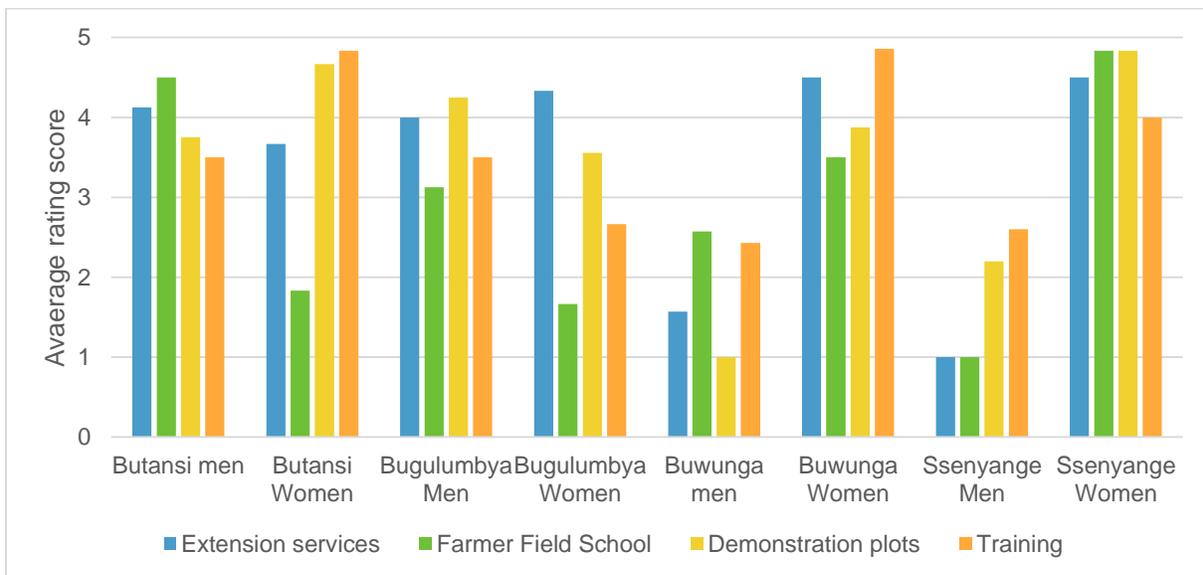


Figure 8: Men and women perceived access to training and extension services



This may show that there is need for gender sensitive recruitment for training by different organizations to ensure that women are not left out. It is interesting to note that in many communities although women said they were responsible for a number of agricultural activities they perceived lower access to extension services and farmer field schools than men except in Ssenyange. In Ssenyange men mentioned that they were very busy and did not have time to attend trainings.

CONTROL OVER USE OF INCOME

When it comes to food, fees and clothing, men and women generally perceived same levels of control over income for these expenditures (Figure 9). Women said they are always in the garden cultivating food therefore that was their contribution to food, and they also used their money from selling crops such as sweetpotato to pay school fees. In Bugulumbya men had negative perception about women's ability to manage food budgets saying that women preferred to buy expensive food like 'matooke' and rice instead of maize which was cheaper and could tide them over lean seasons. They also added:

A man has the money. If he desires to eat meat, he will buy meat and no matter what the wife has cooked that day, the meat has to be cooked regardless of the time it is brought home. (Bugulumbya men).

It seems that in Bugulumbya men perceived that they had more power to decide and control food expenditure.

In Ssenyange women mentioned that they are responsible for paying school fees for girls because men do not care and boys are not interested in going to school since they engage in more off farm and petty income generating opportunities than girls. In Bugulumbya, however, men said that they have control over school fees.

We men have to take care of the school fees – you know most of us in this areas (70%) have children out of wedlock who we must take care of. If you allow the woman to make a decision over this, she will not give the step children anything. She will say: why do I have to work for other people's children?

Secondly, sometimes it is better not to let your wife know that you have these children otherwise there will never be harmony in the home. So it is best a man decides on school fees (Men FGD Participants Bugulumbya).

In Butansi, Bugulumbya and Ssenyange men mentioned that women are responsible for clothing since they are the ones who want to make sure that children are well dressed. Men did not regard buying clothes for the family as their responsibility.

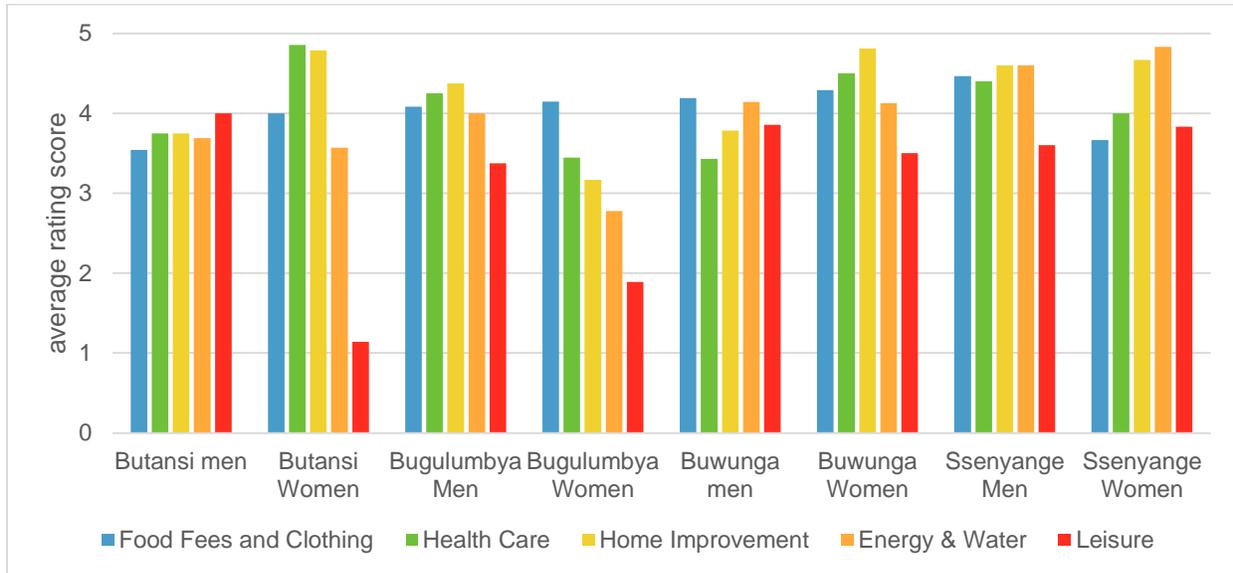


Figure 9: Men and women’s perception about control over use of income

Except in Bugulumbya, women perceived higher levels of control to use income for home improvement. Farmers defined home improvement as buying kitchen utensils.

While men and women said they controlled income for leisure they mostly regarded spending money on leisure activities as being wasteful. Women preferred to spend their leisure money on food like meat if they were celebrating something. Any leisure expenditure outside of the home was not viewed in a positive light.

COMMUNITY LEADERSHIP

Figure 10 illustrates that Butansi and Bugulumbya women perceived their involvement in multi-stakeholder platforms and at district level as limited.

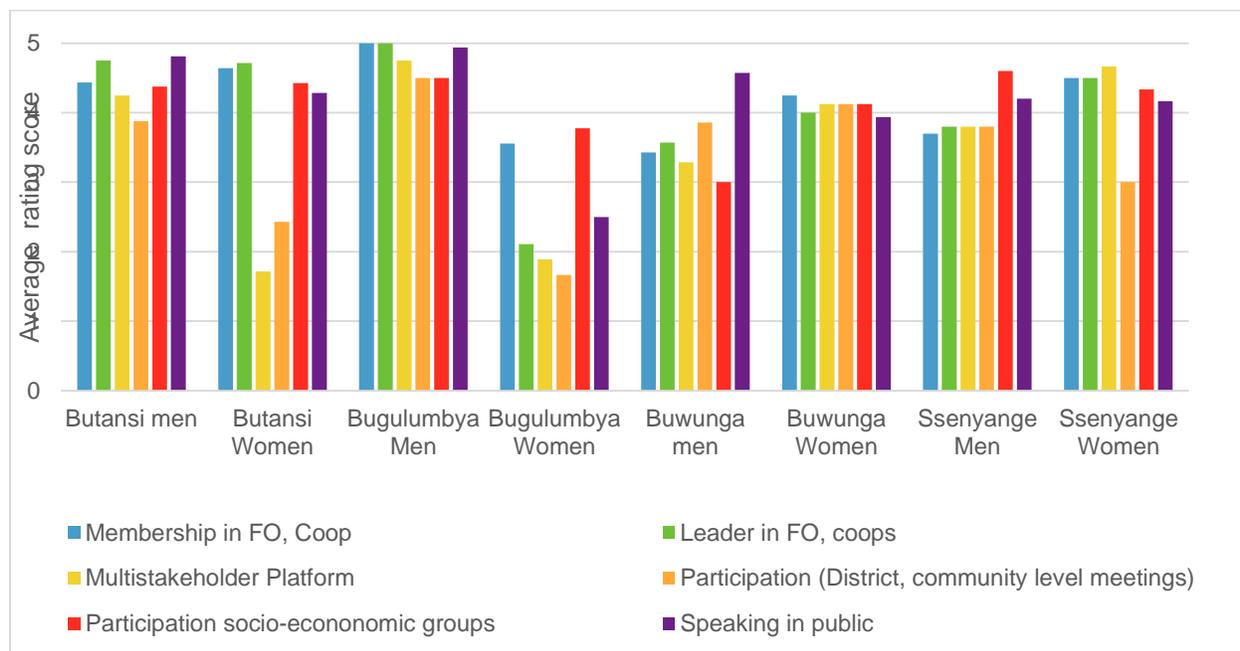


Figure 10: Men and women’s perceptions about their participation in community leadership and decision making

Ssenyange and Buwunga women perceived their participation in multi-stakeholder platforms quite highly, although Ssenyange women perceived their participation in district and community level meetings as low.

In Bugulumbya and Butansi women mentioned that a major barrier for them to participate in community leadership positions was lack of support from men and husbands. They mentioned that sometimes men were not supportive of them participating in groups or taking leadership positions and preferred them to stay at home. In some cases women were afraid of involving themselves because of low education levels. Men in Bugulumbya said:

Men are not shy. They will agree to take up leadership positions – I think it is because they are more educated than women.

When women are nominated for such positions, they may refuse outright or at times may say they will have to first consult the husband. So how can you lead when you are shy and can’t even express yourself in public? (Men FGD Participants, Bugulumbya Kamuli).

Women regarded themselves as afraid to speak in public as well as lacking confidence to express themselves and share their opinion in public. Thus women were structurally positioned in ways that made it difficult to take up leadership positions: for example, needing permission from men as well as not having the necessary human capital such as education and confidence to take up leadership roles. Women also mentioned that because of heavy domestic chores and other care responsibilities they could not participate in community activities that needed more time to engage.

Men in Ssenyange also mentioned that when they participated in groups women gave them positions to encourage them to keep participating in group activities. Women thought men could



be enticed to stay in groups if they had positions in leadership. Additionally, men participated at sub-county and district level meetings in order to learn and get innovative ideas.

TIME ALLOCATION

In all groups, only Ssenyange men had a high (above 4) perception of allocating time towards leisure activities. All women groups scored their ability to engage in leisure activities lower than men.

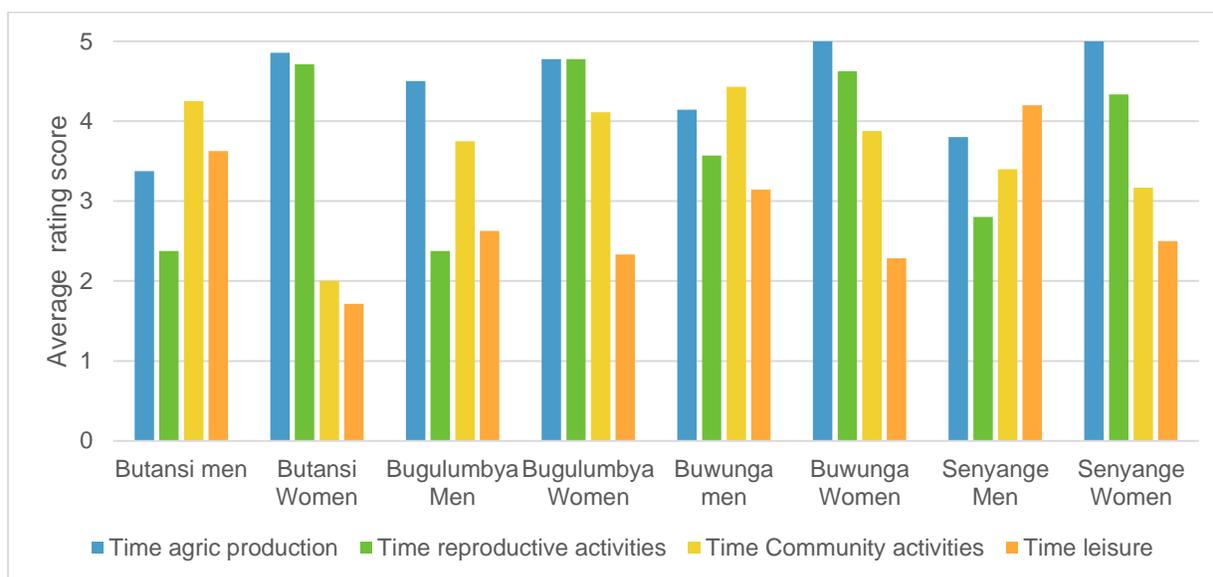


Figure 11: Men and women's perceptions about their ability to decide on time use

On the other hand women consistently perceived they allocated more time than men on reproductive activities which included care duties. They also perceived that they allocated more time to agriculture production than men.

In Bugulumbya younger female FGD participants (aged less than 30) mentioned that they were young and had time for leisure activities while older women stated that they did not have time for leisure since they have to focus on developing their homes and families. On the other hand men engaged mostly in off farm business away from home - once finished they had time for leisure activities.

Most men engage in other activities like trade, masonry and other types of business. On a normal day, they go to the garden up to mid-day and would then go home to refresh and go to their other businesses.

(Laughter) Say the truth – when did you last do any household chore? I personally have not touched a broom in the last 12 months (Men FGD participant, Bugulumbya)

Butansi women had the lowest perception among all groups about their ability to have time for leisure activities. Below is what they said:



I say I have no time to rest. I have no time for leisure activities.

Midnight is when I have time to rest when I go to sleep. I am a teacher and I have no time to rest. I have no daughters, I only have a boy and they do not do anything to help in the house.

We do not have time for leisure activities. The work in the field and looking after children and homes take most of our time.

Even if we are invited to a wedding party we feel it's a burden to go there because we have so many things to do. (Women FGD participants, Butansi).

Heavy domestic chores and responsibilities limited women's ability to engage in leisure activities. This means that technologies that lessen demands on women's labour in agricultural tasks and domestic activities have the potential of increasing time available to them for leisure activities.

COMPREHENSIVE SCORE ON EMPOWERMENT PERCEPTION BY MEN AND WOMEN FARMERS

From Figure 12 below, we can deduce that men from Bugulumbya and Ssenyange as well as women from Buwunga perceive themselves to be empowered. Borrowing from the WEAI scale, a person is considered to be empowered if they score 0.8 and above. Male farmers from Bugulumbya were the most empowered followed by female farmers from Buwunga. Male farmers from Ssenyange just barely made the grade. Amongst female farmers, the largest contributors to disempowerment were leadership in Bugulumbya and time in the other three study sites. The low scores in leadership in Bugulumbya indicate the need to address women's engagement in leadership as it can contribute to their empowerment. The greatest contributors to women's empowerment on the other hand was ability to make decisions on production related decisions. In all parishes, for the male farmers, leadership and the ability to make decision related to production and use of income were the greatest contributors to their empowerment; while time and control over resources were the most disempowering domains.

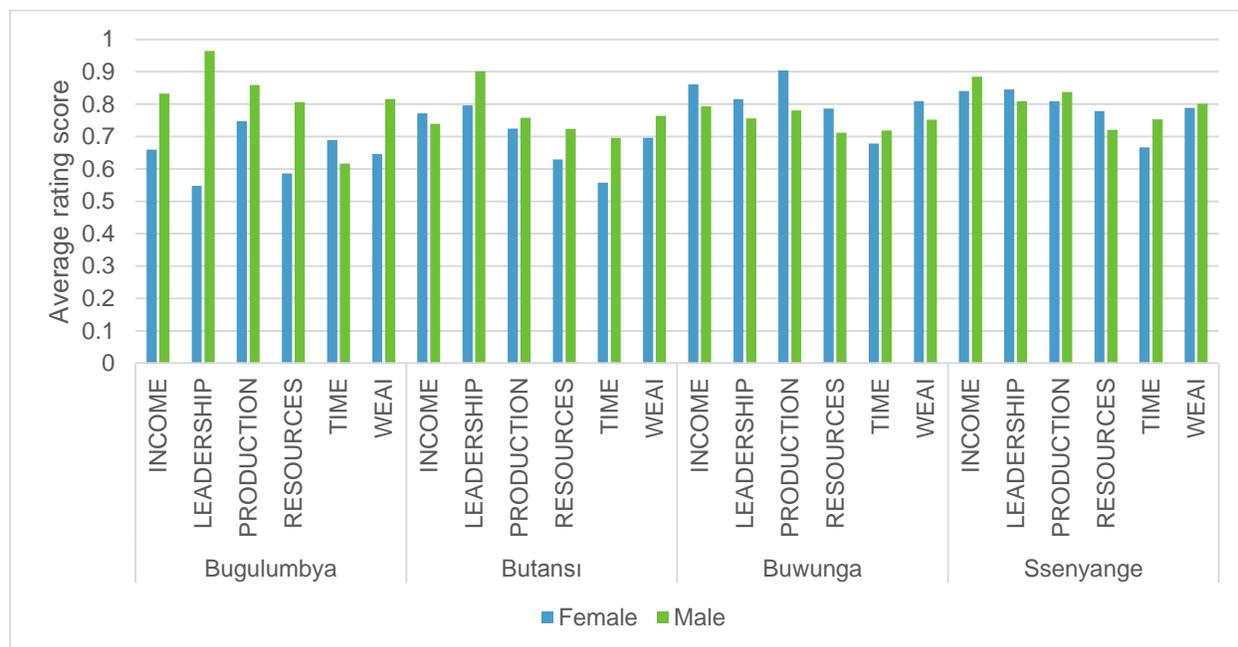


Fig 12: Overall perceived empowerment scores by sex and location

Implied in the analysis of the comprehensive score is that strategies must be designed to assist men and women farmers to access labour saving technologies for their production and postharvest activities. For women, this matches earlier findings where they expressed drudgery being a limiting factor in most of the sweetpotato and piggery management activities they engaged in. Such strategies would have to be differentiated by sex to meet the roles, responsibilities and varying needs of women and men.

5. Discussion

Key issues raised by both men and women address practical gender interests and not strategic gender interests. Molyneux (1985, 233) defines practical gender interests as arising 'from the concrete conditions of women's position within the gender division of labour... are usually a response to an immediate perceived need and do not generally entail a strategic goal such as women's emancipation or gender equality'. On the other hand Molyneux (1985, 232-233) defines strategic gender interests as those that 'women (or men) may develop by virtue of their social position through gender attributes... strategic interests are developed... from the analysis of women's subordinate position and from the formulation of an alternative more satisfactory set of arrangements to those that exist'. Approaches that address women's strategic interests seek to overcome women's subordination and to reduce difference in power and the asset gap between women and men to contribute to agricultural productivity and rural development. This strategy therefore seeks to address both practical gender needs and strategic gender interests.

Constraints and opportunities in sweetpotato production, processing and marketing

This study has demonstrated that the link between gender relations and the division of roles in sweetpotato production, postharvest utilization and livestock rearing may influence the ability of men and women to adopt and utilize certain technologies. This division of labour and ownership may also impact the ability of men and women to benefit from the production and marketing of



dual-purpose sweetpotato. With regards to division of labour, women were involved in the majority of production activities, including the most labour-intensive ones. While some authors suggest that sweetpotato has low labour demands (Onwueme, 1994) this is not reflected by women farmer perceptions in Uganda. It seems that there are activities in sweetpotato farming that both men and women found labour intensive and strenuous. Ploughing and making ridges were regarded as strenuous activities and, sometimes, harvesting after long dry spells was not easy necessitating women to hire labour which was expensive and not easily available. Other studies in Uganda also demonstrated that lack of labour was a major cause for delayed planting of sweetpotato (Bashaasha et al., 1995). Peters (1997:4) notes that sweetpotato processing such as peeling is labour intensive and she suggests that this can easily take '24-29 man days to process one acre of mass harvest'. There is thus need for targeted interventions at different stages of sweetpotato production. For example, mechanization of ridge making may reduce labour demands on men or make women rely less on men and expensive hired labour. Moreover, machines that assist women with postharvest processing activities of sweetpotato roots can go a long way to reducing labour demands.

There is need to invest in sweetpotato value addition activities such as drying. For instance, women farmers mentioned that they dried their sweetpotato and often suffered losses due to the vagaries of weather. Investment in drying technologies, such as solar driers, could help reduce the time women spend drying sweetpotato chips and contribute to reduce the losses which were noted to occur at this stage.

Health implications

A lot that has been published about the health benefits of consuming sweetpotato (Low et al., 2007; Birol et al., 2014), however there has been little published on health implications related to cultivation, handling and processing of sweetpotato. In terms of sweetpotato root production, silage making and pig production there should be consented campaigns to minimize the negative health and safety related repercussions. This would be beneficial for women who are involved in most production activities such as weeding and ridge making. Lack of protective gear during weeding and farming resulted in snake bites, skin allergies, being cut by sharp objects and injured by thorns, sticks and stumps. Technologies that reduce the drudgery of some sweetpotato production activities such as ridge making or harvesting would reduce the strain and stress women go through during sweetpotato farming and may promote adoption and use of dual purpose sweetpotato.

Research has also demonstrated colonies of fungal species that can potentially produce mycotoxin on sun-dried sweetpotato (Okungbowa and Osagie, 2009). Women sometimes mentioned that high humidity can prevent proper drying of sweetpotato resulting in losses. Also it is not very clear what the health implications of sun-drying sweetpotato on ground smeared by cow dung to avoid soil contamination are. There is need for more research into the implications of current drying technologies and methods on health and safety.

Women were concerned about and affected by health and safety issues related to use of motorized choppers. Furthermore, because women were mostly involved in cleaning the pigsties they were worried about exposure to zoonotic diseases, jiggers and other infections such as brucellosis due to lack of protective clothing.

Trusted marketing and supply chains

Since women dominate the production and marketing of sweetpotato, they are also the ones who mostly highlighted lack of sweetpotato markets and low prices as a constraint in



sweetpotato production. Marketing related constraints are often a result of lack of marketing intelligence among women, limited knowledge on how to produce quality sweetpotato as demanded by the market, and infrastructure related constraints such as poor roads and transportation networks. Accordingly women mostly relied on middlemen or traders to sell their sweetpotato. Eskola (2005) suggests that middlemen have an important role to play since they lower transaction costs. However, Uganda farmers did not trust them. For example, women farmers often mentioned that middlemen depressed prices for their benefit at expense of the farmer. From this study we do not have evidence to prove or disprove this perception. What is clear however, is that farmers often had low bargaining powers when selling their produce but there is no evidence that traders were benefiting much more than farmers. There is thus need for further studies to assess and compare the profit margins attained by actors at each node of the chain. Furthermore, farmers should be trained on gross margin analysis because they often did not keep track of their production costs and therefore were not be able to compute their profit and price their products. The same applies to entrepreneurs, most of whom did not have the capacity to calculate costs related to silage production and marketing.

There is also need to build trusted supply chains relationships for the pig industry right from the input node particularly relating to access to quality materials from hardware shops and other suppliers. Thus liaising with hardware shops on proper handling of polythene bags for silage or identifying suppliers of quality construction material for the pigsties can contribute to tackling the problem of low quality or counterfeit products. Farmers also need to be trained on how to identify good quality materials. The need to organize pig farmers to be able to gain skills and knowledge on pig breeds and husbandry as well as to enhance their access to market and finance cannot be overemphasized. Because of individual marketing, pig farmers could not get better prices which they would if they were organized. However, there is also need to focus on collaborative decision making within the households to ensure that both men and women benefit from pig and silage income.

Access to finance

Lack of money to invest or reinvest in agriculture in the community illustrates the need for linking agricultural development initiatives to appropriate financing mechanisms and employment opportunities for the improvement of rural economies. For example, on one hand, women did not have enough cash to hire labour because of limited access to off-farm employment and other income generating opportunities. On the other hand, men who had some access to off-farm employment pointed to the seasonality of income from the farm as a constraining factor in investing in agriculture. For example, when pigs were sold off during the dry season due to limited access to feed, it was often difficult for farmers to replenish the stock. Female farmers also mentioned purchasing poor quality breeds of pigs because of lack of capital which, in turns, affected their ability to get higher prices for their pigs. Pig husbandry can be capital intensive, in terms of constructing good shelters, buying quality breeds and feed, and accessing veterinary services. This points to the need for appropriate financial products including saving mechanisms which can allow farmers to plan and save for agricultural production purposes. Even for more commercial enterprises, affordable financial products and drought insurances suitable for small businesses would go a long way to creating employment and income generating opportunities in rural economies. In addition, women may also need access to appropriate off-farm and on-farm employment towards which commercial production of silage could contribute. Anríquez and Stamoulis (2007) note that increasing the income generated by non-farm rural economy (rural non-farm employment) can boost rural economies and help reduce rural poverty. While this cannot be addressed at project level, governments should develop policies to better link the agricultural and the rural non-farm sectors in economically productive ways. However, even



when employment opportunities in the rural non-farm sector increase it does not necessarily mean that women will benefit. As a result of gender norms that restrict women's movement, gender awareness raising promotions and campaigns involving men could be helpful in opening up opportunities for women to work and earn an income both on- and off-farm.

Gender responsive mechanization

Technology dissemination and adoption especially that related to infrastructure has to take cognizance of the resources women may need to access the technology in terms of knowledge, finance and time; among others; if they are a target recipient. As noted by Meinzen Dick et al. (2011), technology adoption by women is more constrained by limited finances, time, information and physical access to services. In Uganda the silage chopper was introduced in order to make ensiling more efficient and to reduce drudgery associated with chopping vines using pangas. However, what this research shows is that mechanization which is not friendly or well adapted to local conditions may deter adoption or limit usage and usefulness of technology. For example, women were afraid to use the chopper because of safety concerns. This limited their ability to venture into silage making on their own since they had to depend on men to operate the machine. Men pointed to the lack of durability as a major limitation to effective use of the chopper. Thus there is need to ensure that choppers are safe to use and that farmers and local artisans are trained to repair the choppers. If safety of use of the choppers is improved, this could promote women's adoption since they often expressed fear to operate them. Training a cohort of people based in the community to service the choppers also provides an opportunity to link agriculture and other rural economies and provide off-farm employment.

Limits to commercialization of silage

It is going to be difficult to scale-up silage making depending exclusively on vines produced by small holder farmers. For examples, vines could be affected by dry weather and since small holders produced sweetpotato on very small plots and did not have irrigation technologies, the available amount of vines would not be enough to smoothly and profitably run the business. There is therefore need for a multi-pronged approach: first partnering with larger, more commercially oriented, farmers to promote economies of scale in vine collection, and second investing in water harvesting and irrigation technologies to ensure access to vines when there are long dry spells as well as promoting drought tolerant sweetpotato varieties with good balance between root and vines biomass production (dual-purpose).

In Uganda some farmers may not be aware of the advantages of using silage and other forms of feed. Tethering is also still a widely used method to rear pigs and the efficacy of using silage under such management is not documented. There is need to improve pig rearing practices among farmers, especially promoting modern methods which will improve pig quality and, in turns, create a market-pull for silage. However, the promotion of modern methods of pig rearing should not be driven only by the need to boost silage production and marketing but evidence that such methods are more profitable should be provided. This directly links to the idea that innovations can be successfully adopted only if they contribute to job creation, increased incomes and general improvement of rural livelihoods.



2. Gender strategy and plan Gender Strategy and Plan

Gender strategy and plan

Below are suggested activities and plan to address constraints identified during the study. Here the paper outlines only those activities and strategies related to post harvest utilization. Where proposed time line and responsibility columns are greyed out it means that collaborators and partners felt that while important and relevant the activities and strategies are not feasible to implement in the time frame of the ENDURE project. ANNEX 1 lists other activities and strategies for pre-harvest issues that can affect the quantity of sweetpotato vines and roots for use is pig rearing and silage making. However these will not be adopted under the ENDURE project because of the limited mandate (focus only on postharvest processing) and time frame of the project but that future projects on sweetpotato production and post-harvest utilization could consider.

PIG REARING AND SILAGE MAKING

| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|--|--|--|--------------------|----------------|
| Production | | | | |
| Poor quality pigs | | | | |
| Together with other development partners, promote recruitment and participation of women farmers training on pig rearing | <ul style="list-style-type: none"> Gender sensitive farmer selection and recruitment protocols developed and shared with extension officers and lead farmers and other local partners involved in farmer selection and recruitment for training Women taking part in seed multiplication training offered by | <ul style="list-style-type: none"> Encouraging women and youth to venture into pig production Involving strong women land youth leaders to help with mobilizing women and youth in the community Integrating gender modules in farmer training initiatives Involving female farmers in farmer field visits | | |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|--|--|---|--|---|
| | extension officers and partners | | | |
| Lack of feed/pig feed is expensive | | | | |
| Silage production training | <ul style="list-style-type: none"> · Training on silage production targeting women · Confer with the women to agree on best time to hold training. · Phase training to ensure women's participation | <ul style="list-style-type: none"> · Encouraging women to start silage making business · Participatory planning with groups involving women · Encourage women to grow soy and maize as business to sell to pig farmers | <ul style="list-style-type: none"> · June-November 2016 | <ul style="list-style-type: none"> · VEDCO and CHAIN |
| | <ul style="list-style-type: none"> · Use visuals and practical sessions and material translated into local languages to cater for low literacy | <ul style="list-style-type: none"> · Involving women in research for development | | |
| Making silage | | | | |
| Faulty machines and limited access to suitable choppers | | | | |
| Adapting chopper to make it safe to use | <ul style="list-style-type: none"> · Involve both men and women in extensive evaluation of suitability of current choppers | <ul style="list-style-type: none"> · Introduce a chopper that is women friend, not energy intensive, easy to use and that address health and safety concerns | | |
| Training farmers on | <ul style="list-style-type: none"> · Train men and women on proper use of | <ul style="list-style-type: none"> · Address health and safety concerns that women and | <ul style="list-style-type: none"> · July 2016 | <ul style="list-style-type: none"> · VEDCO/ CHAIN |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|---|--|--|----------------------|----------------|
| repairs | machine to avoid the machine developing faults | men farmers have | | |
| Farmer groups charge a user fee to enable chopper repairs | | | · July 2016 | · VEDCO/ CHAIN |
| Increased group savings to buy a chopper | | | | |
| Vine scarcity | | | | |
| Scarcity of vines and lack of consistent access to vines (entrepreneurs) | | | | |
| Partner with large farmers to ensure economies of scale during vine collection | · Encourage women groups to produce vines for sale | | AUGUST-NOVEMBER 2016 | VEDCO/ CHAIN |
| Establish a larger collective garden for vine production | · Involve men and women in collective garden as well as benefits | · Ensure that women are actively engaged in management collective gardens and distribution of benefits | AUGUST-NOVEMBER 2016 | VEDCO/ CHAIN |
| | · | · Document and share gender | | |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|---|---|---|--|---|
| | | based best practices on women involvement in leadership and management of group gardens | | |
| Invest in irrigation and water harvesting technologies | <ul style="list-style-type: none"> Identify cheap irrigation equipment (for example drip irrigation) to ensure women's participation | <ul style="list-style-type: none"> Organize both men and women farmers in groups for better access to irrigation | | |
| Promote high foliage drought tolerant sweetpotato varieties | <ul style="list-style-type: none"> Involve men and women in identifying and testing dual purpose varieties | | | <ul style="list-style-type: none"> CIP |
| Lack of quality inputs and equipment | | | | |
| Identifying quality suppliers | <ul style="list-style-type: none"> Liaise with hardware shops to handle equipment such as tarpaulin better to avoid spoilage | <ul style="list-style-type: none"> Link men and women to finance to be able to invest in appropriate equipment | <ul style="list-style-type: none"> JUNE, 2016 | <ul style="list-style-type: none"> VEDCO/CHAIN implemented |
| Pig Keeping | | | | |
| Lack of good breed | | | | |
| Train farmers on identifying good quality | <ul style="list-style-type: none"> Training men and women farmers and other inexperienced farmers such as the | | <ul style="list-style-type: none"> JULY 2016 | <ul style="list-style-type: none"> VEDCO/CHAIN |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|-------------------------------|--|-----------------------|---|---|
| pigs | youth in identifying good quality pigs | | | |
| | <ul style="list-style-type: none"> · Training on proper pig handling for example deworming and treating skin rash | | <ul style="list-style-type: none"> · JULY 2016 | <ul style="list-style-type: none"> · VEDCO/CHAIN |
| | <ul style="list-style-type: none"> · Training on appropriate feeding to maintain pig quality | | <ul style="list-style-type: none"> · JUNE-SEPTEMBER 2016 | |
| | <ul style="list-style-type: none"> · Provide quality breeds that grow fast | | | |
| Lack of proper shelter | | | | |
| Construction of pigsties | <ul style="list-style-type: none"> · Adapt modern pigsties to locally available materials to reduce costs of construction · Both men and women are trained on pig keeping to avoid spread of diseases · Discussion with agro dealers and hardware shops to provide appropriate and quality material | | JULY 2016 | VEDCO/ CHAIN |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|--|--|---|--|---|
| Material to construct pigsties is expensive | | | | |
| Formulate cooperative societies to help farmers access cheaper materials | <ul style="list-style-type: none"> Involve women in such associations | <ul style="list-style-type: none"> Work with men to allow their wives to participate | JUNE 2016 | CHAIN |
| Lack of money or capital to invest in pig farming | | | | |
| Income generating activities for women | <ul style="list-style-type: none"> Encourage women active engagement silage making and other as an income generating activity for investment in [pig farming] | <ul style="list-style-type: none"> Work with men to allowing women to work outside the home Off-farm job Opportunities for women | <ul style="list-style-type: none"> JUNE-NOVEMBER 2016 | <ul style="list-style-type: none"> VEDCO , CHAIN |
| | | <ul style="list-style-type: none"> Gender module on household cooperation and decision making developed and incorporated into farmer savings and loans training initiative | | |
| Lack knowledge on how to access loans | | | | |
| Link farmers to finance | <ul style="list-style-type: none"> Training of men and women farmers in savings and credit management in order to benefit from SACCOs | <ul style="list-style-type: none"> Women friendly loans and credit facilities Organizing farmers into groups for easy access to finance | JULY 2016 | VEDCO/CHAIN |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|---|--|---|---|---|
| | <ul style="list-style-type: none"> Linking farmers to Micro Finance Institutions and other credit providers | | | |
| Encourage youth involvement | <ul style="list-style-type: none"> Sensitize youth on pig rearing farming and marketing Encourage youth involvement in pig farming | | | CHAIN/VEDCO |
| Low cost loan products and drought insurance | | | | |
| Market access | | | | |
| Poor market access | | | | |
| Organize farmers into marketing groups | | | | |
| Lack of knowledge about costing | | | | |
| Training of farmers on business skills including marketing and profit | <ul style="list-style-type: none"> Involving both male and females farmers and entrepreneurs in business training courses | <ul style="list-style-type: none"> Gender module on household cooperation and decision making developed and incorporated into farmer marketing training events | <ul style="list-style-type: none"> JULY 2016 | <ul style="list-style-type: none"> VEDCO/CHAIN |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|--|---|---|--------------------|----------------|
| calculation | <ul style="list-style-type: none"> · Practical trainings in marketing including hands-on rapid market assessment, farmer-trader clinics · Include men and women farmers in training on development of tools, pretesting, market survey, simple analyses & marketing decisions · Develop gender responsive marketing strategy · Establish a platform to identify and exploit opportunity · Working with and encouraging women sweetpotato farmer groups and targeting them with market training | <ul style="list-style-type: none"> · Training women on marketing skills and negotiation · Linking men and women farmers to private buyers | | |
| Lack of knowledge about markets | | | | |
| Dissemination of market information | <ul style="list-style-type: none"> · Dissemination of market related information such as sweetpotato prices in | | | |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|---|---|---|--------------------|------------------------------|
| through mobile phones to enable farmers to negotiate with buyers | <ul style="list-style-type: none"> Kampala to ensure that male and female farmers negotiate from an informed position · Clear channels about market information and making information easily available to both men and women farmers | | | |
| Assessing the feasibility of use of ICT in marketing and business and dissemination of sweetpotato information in general | <ul style="list-style-type: none"> · Future projects could consider the use of mobile phones and other ICT technologies for disseminating market and technical information to men and women in the communities | | | |
| Limited access to silage markets | | | | |
| Promote women's participation in silage training | <ul style="list-style-type: none"> · Sensitize men about benefit of silage so that they can allow women to participate | Encourage men to allow women to participate in training including business development training | JUNE | · VEDCO/CHAIN, entrepreneurs |
| Market promotion | <ul style="list-style-type: none"> · Sensitize farmers about silage · Promotion of silage through | Organize men and women farmers into silage making groups to ensure availability | · JUNE | · VEDCO/CHAIN, entrepreneurs |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|--|--|-----------------------|--------------------|----------------|
| | <p>various channels: like media, training of men and women pig farmers about the benefits of silage</p> <ul style="list-style-type: none"> · Collaboration with other organizations (e.g. CIP, ILRI, NARO, IRRI) to promote silage in gender responsive ways (using appropriate channels and mediums) | and consistency | | |
| Develop pig markets | <ul style="list-style-type: none"> · Equip women with skills to sell their pigs to pig cooperatives that pay more but require good quality pigs | | | |
| | <ul style="list-style-type: none"> · Include women in farmer organizations to sell pigs to abattoirs | | | |
| | <ul style="list-style-type: none"> · Provide men and women youth with information on pig markets | | | |
| Promote modern methods of pig farming (keeping in pigsty instead of tethering) | <ul style="list-style-type: none"> · Produce leaflets in local languages that women can access | | | |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|--|---|--|--------------------|----------------|
| Lack of branding | | | | |
| A market study to propose proper and appropriate packaging sizes | | | | |
| Improve silage quality to facilitate branding | | | | · CIP |
| Research to identify appropriate vines for silage making in order to standardize the process | | | | · CIP/ILRI |
| Lack of land (Youth entrepreneurs) | | | | |
| Train youth on proposal and grant writing to target the youth program | · Involve both men and women youth in writing the proposals | Train both men and women youth on proposal and grant writing and business management skills | | |
| Health concerns | | | | |
| Snake bite, cuts and injures, diseases | · Promote use of protective clothing among women · Promote first aid | · Promote use of protective clothing among men and encourage them to invest in protective gear | | |



| Activity | Gender responsive | Gender transformative | Proposed time line | Responsibility |
|---|---|---|--------------------|----------------|
| | practices | | | |
| Services | | | | |
| Linking farmers to extension services | | | | |
| Link farmers to finance | <ul style="list-style-type: none"> · Training of men and women farmers in savings and credit management in order to benefit from SACCOs · Linking farmers to Micro Finance Institutions and other credit providers | <ul style="list-style-type: none"> · Women friendly loans and credit facilities · Gender module on household cooperation and decision making developed and incorporated into farmer savings and loans training initiative | | |
| Promote gender responsive organization and delivery of training | <ul style="list-style-type: none"> · Train women lead farmers and women group leaders on technical aspects of seed production · Women lead farmers as well as other men leaders trained on effective dissemination methods to women farmers | <ul style="list-style-type: none"> · Build capacity of CIP/ILRI researchers and partners implementing the project in Uganda to integrate gender into project implementation · Revise some modules and training materials to ensure that gender is well integrated | | |



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Annex 1: Gender strategy for future work on Sweetpotato production and marketing

| Activity | Gender responsive | Gender transformative |
|---|--|---|
| Lack of herbicides and lack of knowledge about application | | |
| Lack of access to herbicides | | |
| Availability of quality herbicides from agro-dealers | <ul style="list-style-type: none"> Improve farmer extension linkages and also use knowledgeable male and female farmers as community extension | <ul style="list-style-type: none"> Establish linkages with selected agro-input dealers Invite agro input dealers to a farmers meeting to discuss issues related with piracy and low efficacy If possible, women farmers could have their own session with the dealers. Dealer would be requested to 'demystify' when and how to use crop protection products Ensure that both men and women equally participate in the training s |
| Lack of knowledge of application of herbicide | | |
| Training on safe and of proper use of herbicides | <ul style="list-style-type: none"> Male and female farmers and association members should equally participate in training on proper and safe used of herbicides and protective clothing Learning should be well structured to provide for practical take away learning tips for both men and women | |
| Pest and diseases and poor quality vines | | |
| Lack of knowledge about pests and diseases | | |
| Together with other development partners, promote | <ul style="list-style-type: none"> Gender sensitive farmer selection and recruitment protocols developed and shared with extension officers and lead farmers and other local partners | <ul style="list-style-type: none"> Integrating gender modules in farmer training initiatives |

| Activity | Gender responsive | Gender transformative |
|---|--|--|
| recruitment and participation of women farmers agronomic training on pests and disease management | involved in farmer selection and recruitment for training | |
| Lack of access to quality vines | | |
| | <ul style="list-style-type: none"> · Women and men taking part in agronomic training offered by extension officers and partners · Training men and women on pests and disease control and management · Farmers can learn from each other on how to keep the vines. · Gender responsive radio programs should be developed to educate farmers on good agronomic practice time frame | <ul style="list-style-type: none"> · Involving female farmers in farmer field visits to learn about crop management |
| Availability of quality chemicals from agro dealers | <ul style="list-style-type: none"> · Training men and women on identifying quality chemicals and on use | <ul style="list-style-type: none"> · Establish linkages with selected agro-input dealers · Invite agro input dealers to a farmers meeting to discuss issues related with piracy and low efficacy |
| Introduction of disease tolerant varieties | <ul style="list-style-type: none"> · Involve both men and women in varietal trials and in evaluating material for disease tolerance before it is released | |
| Expensive labour and lack of money | | |
| Lack of access to income generating opportunities for women in local communities | | |
| Income generating opportunities for women | | <ul style="list-style-type: none"> · Support dialogue between men and women to facilitate women being to generate income or off farm activities · Encourage women to start |

| Activity | Gender responsive | Gender transformative |
|--|---|--|
| | | silage business |
| Link farmers to finance | <ul style="list-style-type: none"> · Training of men and women farmers in savings and credit management in order to benefit from SACCOs · Linking farmers to Micro Finance Institutions and other credit providers · Access to affordable loans | <ul style="list-style-type: none"> · Women friendly loans and credit facilities · Gender module on household cooperation and decision making developed and incorporated into farmer savings and loans training initiative |
| Market access | | |
| Lack of access to markets | | |
| Training of farmers on business skills including marketing and profit calculation To enable them to negotiate for better prices for their products | <ul style="list-style-type: none"> · tools, pretesting, market survey, simple analyses & marketing decisions · Develop gender responsive marketing strategy · Establish a platform to identify and exploit opportunity · Working with and encouraging women sweet potato farmers and targeting them with market training | <ul style="list-style-type: none"> · Gender module on household cooperation and decision making developed and incorporated into farmer marketing training events · Training women on marketing skills and negotiation · Linking men and women farmers to private buyers |
| Train farmers on proper agronomic practices to improve quality of sweetpotato for better access to markets | <ul style="list-style-type: none"> · Together with other development partners, promote recruitment and participation of women farmers in such training · Confer with the women and women to agree on best time to hold training. · Phase training to ensure women's participation · Use visuals and practical sessions and material translated into local languages to cater for low literacy | |
| Organize farmers for group | <ul style="list-style-type: none"> · Involving both male and females farmers and entrepreneurs in | <ul style="list-style-type: none"> · Ensure that women are actively engaged in management of marketing |

| Activity | Gender responsive | Gender transformative |
|---|--|--|
| marketing | <ul style="list-style-type: none"> business training courses · Working with and encouraging women sweetpotato farmer groups and targeting them with market training | <ul style="list-style-type: none"> groups and have access to knowledge required to manage stores successfully · Document and share gender based best practices on women involvement in group marketing · Gender module on household cooperation and decision making developed and incorporated into farmer marketing training events · Training women on marketing skills and negotiation · Linking men and women farmers to private buyers |
| Market identification | <ul style="list-style-type: none"> · Practical trainings in marketing targeted to groups including hands-on rapid market assessment, farmer-trader clinics · Include men and women farmers in training on development of tools, pretesting, market survey, simple analyses & marketing decisions · Develop gender responsive marketing strategy | |
| Low prices | | |
| Lack of timely access to information about prices | | |
| Dissemination of timely information about prices to men and women farmers | <ul style="list-style-type: none"> · Dissemination of market price information to male and women farmers through local radio and dissemination board | <ul style="list-style-type: none"> · Future projects could consider the use of mobile phones and other ICT technologies for disseminating market and technical information to men and women in the communities |

| Activity | Gender responsive | Gender transformative |
|---|--|---|
| Identifying better paying markets and more markets to reduce competition among farmers for limited buyers | <ul style="list-style-type: none"> · Practical trainings in marketing targeted to groups including hands-on rapid market assessment, farmer-trader clinics · Include men and women farmers in training on development of tools, pretesting, market survey, simple analyses & marketing decisions · Develop gender responsive marketing strategy | |
| Introduction of improved sweetpotato varieties with end user prefers traits | <ul style="list-style-type: none"> · Involve both men and women in end user preference testing for sweetpotato roots | |
| Lack of draught power | | |
| Introducing mechanization | <ul style="list-style-type: none"> · Introduce simple women friendly tools to lesson drudgery during production of sweet potato (Making ridges and harvesting) | |
| | <ul style="list-style-type: none"> · Offer training on value addition to reduce postharvest losses · Involve women in post-harvest utilization training | <ul style="list-style-type: none"> · Introduce women friendly machinery (e.g. solar driers) |
| Services | | |
| Linking farmers to extension services | | |
| Promote recruitment, training, participation of women farmers in silage making and pig farming | <ul style="list-style-type: none"> · Link farmers to UNADA and other service providers in input marketing for training · Improve farmer extension linkages · Learning visits should be well structured to provide for practical take away learning tips for both men and women | <ul style="list-style-type: none"> · Extension officers and project staff trained on gender sensitive project design and implementation · Extension officers adopt and implement gender sensitive farmer training and recruitment practices |
| Promote | <ul style="list-style-type: none"> · Train women lead farmers and | <ul style="list-style-type: none"> · Build capacity of CIP |

| Activity | Gender responsive | Gender transformative |
|---|---|--|
| gender responsive organization and delivery of training | <p>women group leaders on technical aspects of sweetpotato production, silage making and marketing</p> <ul style="list-style-type: none"> · Women lead farmers as well as other men leaders trained on effective dissemination methods to women farmers · Training material should be designed in a gender sensitive manner (ensuring that images and language used takes into account men and women's roles in agriculture and in sweetpotato production in general) | <p>researchers and partners implementing the project in Uganda to integrate gender into project implementation</p> <ul style="list-style-type: none"> · Revise some modules and training materials to ensure that gender is well integrated |