



RESEARCH PROGRAM ON
Roots, Tubers
and Bananas



Technical Report

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

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



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



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Executive summary

This report provides a strategy for gender mainstreaming into the 'Postharvest Innovations for Better Access to Specialized Ware Potato Markets' project, 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 is to ensure that both men and women benefit from the introduction of ambient potato stores and other postharvest innovations in Mt Elgon region, Eastern Uganda. The report commences by analyzing gender constraints that may prevent farmers from utilizing ambient stores as well as taking advantage of arising marketing opportunities. After understanding these factors the paper will suggest evidence based mechanism and a gender strategy to enhance the uptake and utilization of recommended ware-potato storage facilities and practices along the value chain. The report will also provide strategic direction to enable value chain actors to engage effectively, competitively and sustainably in the identified market opportunities. The report is of interest to researchers and policy makers working on postharvest issues in Uganda and other countries in Sub Saharan Africa.

Potato farmers in Uganda often get poor prices for their ware potato when there is high supply of ware potato on the market. Farmers do not have access to proper storage facilities which would allow them to store and sell ware potato when market prices are higher. As such the postharvest project is testing and validating storage technologies which will enable farmers to store potato. This will help farmers to get better market prices, improve incomes as well as improve food security through reducing potato postharvest losses due to perishability. However, farmers may face obstacles that may prevent them from using ambient stores as well as benefitting from resultant markets. Some of these obstacles are related to gender inequalities, while others are related to poor infrastructure and availability of services.

Key constraints mentioned by farmers include:

Seed related: constraints included lack of poor quality seed resulting in poor quality potato as well as lack of affordable seed. Women expressed more concern than men because they mentioned that they were responsible for producing and storing seed within households yet they were rarely if ever targeted by training on good agronomic practices. Using poor quality seed also meant that ware potato was of poor quality and often diseased. This makes it difficult to store the ware potato due to high perishability.

Women were heavily involved in seed production but did not have the requisite knowledge. Thus there is need for development partners to promote recruitment and training of women in farmers agronomic training including have women host demonstration trials where applicable. This may entail for example, development of gender sensitive farmer selection and recruitment protocols and sharing them with extension officers and lead farmers and other local partners involved in farmer selection and recruitment for training. Gender modules that emphasize collaborative decision making in households may need to be integrated in farmer training initiatives.

Chemicals and fertilizers: Both men and women farmers mentioned lack of knowledge on safe and proper use of fertilizers, pesticides, herbicide and other chemicals. Women in Wanale mentioned lack of spray pumps, pesticides, funds to hire casual laborers and the long distance to buy the pesticides and fertilizers as major constraints. Another key problem raised was that agro dealers sometimes sold counterfeit inputs such as fertilizer, herbicides and tools because farmers lacked knowledge on how to select quality inputs. There were no reliable stockists in the area which led to high prices and increased production costs for farmers. This reduced



farmer productivity and ability to store potato.

To address this, men and women farmers and association members should equally participate in learning visits and training on use of chemicals and fertilizer. These learning visits should be well structured to provide for practical take away learning tips for both men and women. There is also need to establish links with selected agro-dealers who will also be trained on appropriate chemicals for potato. These agro input dealers should also be invited to farmers meeting to discuss issues related with piracy and low efficacy.

Markets: Both men and women mentioned that they had limited access to markets and to timely information on potato market prices. This made it difficult to negotiate with middle men. They regarded this as a potential obstacle that could prevent them from benefiting from selling stored ware potato. Currently lack of storage for ware potato was a key obstacle since farmers could not store potato for long and consequently received low prices during the glut period. Women also suggested that because of unequal relationships within households, men often decided on who to sell to, how much potato to sell and where to sell as well as deciding on use of potato income without necessarily consulting women. In addition it was clear that the market itself was structured in ways that did not favor women's participation. Gender norms that designated potato as a men's crop meant that women who tried to sell potato on their own without their husbands were viewed with suspicion while husbands could sell crops on their own without their wives. In some cases traders raised prices of seed potato and lowered price of ware potato if women farmers were the ones buying or selling respectively. Women mentioned that the unequal relations between them and men could prevent them from benefiting from higher sales and income from stored potato. Lack of mobility for women, poor transportation system and infrastructure, selling potato in large bags that women could not handle, distance to markets were all mentioned by women as barriers to participating in potato marketing.

Both men and women farmers should be trained on business skills including marketing and profit and loss calculation. Training should be hands-on and include rapid market assessment, simple analysis and decision making tools. Because women mentioned lacking negotiating skills they could be targeted with training on marketing skills and negotiation. Gender modules on household cooperation and decision making should be developed and incorporated into farmer marketing training events. Men and women farmers could also be linked to private buyers and associations (potato producers and MPODA) and seed producers in Zombo. Mechanisms for disseminating market related information such as potato prices in Kampala could be developed to ensure that farmers negotiate from an informed position. For example, information could be written and posted on community boards or announced on community radio stations.

Access to money finance and credit: Limited access to financial services was mentioned as a key hindrance to potato production. As a result it was difficult for farmers to access inputs like fertilizers, pesticides and herbicides on time leading to low yields and postharvest losses. Lack of money to pay for various services during the production process was mentioned in almost all the Focus Group Discussions (FGDs). Women mentioned that because they did not have access to money from potato sales or to financial services, they could not afford the purchase of modern tools like garden rakes which they needed to improve production techniques.

Both men and women farmers mentioned the need for training in savings and credit management in order to benefit from SACCOs as well as being linked to Micro Finance Institutions and other credit providers. They however stressed the need of agricultural friendly loan products. Women also mentioned that their access to finance could also improve if they were involved in marketing and had control over income from marketed products. Training on finance should also include a module on household cooperation and decision making as far as



financial management is concerned.

Access to tools and implements: Women mentioned lack of quality tools such as hoes, rakes which they could use in their farming endeavors. Lack of tools and implements as well as money to hire labor were also mentioned as causes for delayed planting. In Kapchesombe and Bennet women mentioned lack of money to hire bulls/oxen for ploughing as a major hindrance. Women in Wanale mentioned that lack of tools was directly related to their lack of involvement in marketing. Women had limited mobility to sell ware potato in distant and more profitable markets therefore depended on their husbands to sell off their potatoes. This also meant that once the buyers paid the men they had control over the money since they also had physical custody of the money. Solutions to this linked to participation of men and women in marketing and promotion of joint decision making within households. Farmers may also need to be linked to agro-dealers that sell genuine equipment such as proper, genuine and durable spray pumps.

Traders

Traders mentioned lack of storage as a key barrier to expanding their businesses. They stored potato in verandahs covered with Tarpaulin during the rainy season. During the dry season stored potato turned green and traders could not sell that potato and during the rainy season potato stored on verandas and using other inappropriate technics just rots. Limited access to finance was another problem faced by traders. Traders mentioned that because of lack of support services they were often under-capitalized and this affected their ability to buy and sell quality potato. For instance MPODA women traders mentioned that sometimes they buy poor quality potato so that they can have enough quantities since quality potato is expensive. However poor quality potato rots easily during storage which also resulted in higher losses if they could not find buyers in time. This means that financial products that are responsive to traders needs may need to be availed. Traders further mentioned that availability of proper storage may also help them to secure bank loans as proper storage will reduce losses.

Women mentioned the large volumes per bag which made it difficult for them to carry the bag. On the other hand the large volumes per bag were regarded as a health hazard for men as it was mentioned that some men suffered poor health or died as a result of injuries sustained from carrying the heavy bags and loading and unloading them onto trucks. There may be need for introducing regulation on the appropriate weight for potato bags to reduce the risk of injury.

Women traders also mentioned lack of safety on highways and poor road networks as a key constraint for them in terms of participating in the potato trade.

Traders also mentioned poor quality seed and potato from farmers as a major obstacle. They mentioned that most of the losses they suffered were due to poor postharvest handling by farmers. Traders advocated that farmers should be trained on good harvesting and handling practices. Traders suggested that they should also be part of the meeting so they can explain to farmers the challenges they face when they buy poorly handled potatoes. Traders also suggested the need for a facilitated process for farmers and traders to co-produce and mainstream quality requirements and development of a system that will ensure that the agreed improved practices are adhered to.

Store management

While most female FGD participants had expressed the will to be active in store management, personnel from Self Help Africa (SHA) who facilitated the process of electing store management committees revealed that most women refused to stand for these positions. While most of the



female nominees did not give reasons as to why they would not accept the position, some of the reasons advanced included lack of time to commit for such duties. Women were thus underrepresented in farmer and trader association's store management committees which may result in inability to fully use and benefit from the store. They may also have limited opportunities to learn about storage and leadership. In this respect the project should collaborate with farmers and partners to explore why women declined these positions, and seek strategies to address these issues. Association management rules may also need to be reviewed for gender inclusiveness (affirmative action to ensure that women are represented on management committee, holding a non-passive position, e.g., represented on both the executive and technical committees). There is also need to ensure that women are represented in dialogues between buyers and association members. Women will need to be included in training on store management to ensure that they are knowledgeable and actively involved. In future before stores are constructed women should be involved in decisions regarding store construction for example location of the store. Women should also be involved in the evaluation of stores performance. Smaller ambient stores that individual men and women can afford should also be encouraged.



1. Introduction

Uganda is among the top ten African countries with the 'largest area of cropped potato' (Gildemacher et al., 2009). In Eastern Uganda particularly in areas like Mbale, Kapchorwa and Kween, potato is a key food security as well as a cash crop for farmers (Sikuku and Ogemah, 2005). It has been suggested that because of the food and cash returns associated with potato, increased productivity may lead to improved farmer's livelihoods and incomes (Gildemacher et al. 2009). However, a key issue curtailing farmer investment in commercial potato production is low returns from sales due to extreme price fluctuations between periods of glut and scarcity. As noted by Sikuku and Ogemah (2005:89), 'small holder farmers seem always trapped in the "good season, poor market" dilemma'. This acts as a disincentive for investments into potato activities. When it comes to potato marketing many farmers in Uganda are price takers (Okoboi et al., 2001) and their position is made precarious due to high perishability and unstable prices.

The lack of proper storage which allows farmers to stabilize prices, by storing potatoes when there is glut and marketing them during the period of scarcity has been suggested as one of the limiting factors towards improving productivity and farmer investment into potato. Since farmers cannot store potato for long, the majority of ware potatoes in Uganda are sold at the farm gate giving 'field-level brokers leverage to offer low farm-gate prices to increase their own profit margin at the expense of farmer efforts' (Gildemacher, et al., 2009). Since farmers do not have on farm storage they are not able to hedge sales in anticipation of better prices.

Rugumamu (2009) stated that increasing crop production without directly addressing postharvest operations will not benefit farmers. In addition to adequate supply of food, postharvest storage is also key to achieving food security (Adeyemi, 2010: 14). Losses occur mainly as result of pests and disease attack, rotting and weight losses due to desiccation during storage, processes which are accelerated by poor storage. In Uganda poor postharvest practices and poor storage facilities result in crop losses of between 25-40% (Sikuku and Ogemah, 2005). Kapchorwa and Mbale are also located far from the higher paying ware potato markets in Kampala which further compounds the problem (Sikuku and Ogemah, 2005).

GENDER AND ACCESS TO TECHNOLOGY

It has been noted in research elsewhere that investment in postharvest technologies will benefit women. However, most work on postharvest technologies has focused on technologies to reduce women's labor demands during postharvest processing (Klawitter, et al., 2009; Tirune, et al., 2001). While studies abound on farmers' access to technology, not many studies have been published on women ability to access and utilize postharvest technologies. Gender roles and relations may limit access to technology. According to March, Smyth, and Mukhopadhyay (1990, 18) 'Gender relations are concerned with how power is distributed between the sexes. They create and reproduce systemic differences in men's and women's positions in a given society'. These systematic differences may influence men and women's ability not only to access technology but also to adopt and use it.

Furthermore, men and women play different roles within agricultural systems occupying different socio-economic positions linked to these roles, and may suffer from different vulnerabilities (Carr, 2008). These differences and vulnerabilities need to be taken into account during the development of new technologies. Kingiri (2010) noted that generally in farming systems research and innovation, unequal relationships between men and women in households are taken for granted. As a result development of new technologies may end up benefiting men more than women because social relations of gender are not understood. In some cases as



noted by Quisumbing and Pandolfelli, (2010), new technologies may even harm women if they are not properly thought through. Gender relations and household dynamics related to who makes decisions on which crops to plant and who makes management decisions related to the family farm or a particular crop may determine technology adoption as well as access to benefits from farming. Ognulana (2004) also suggests that women farmers can easily adopt innovations that can enhance their economic status if constraints pertaining to access of the technology (e.g. information and ease of utilization) are taken into consideration.

Inequalities related to access to resources also impact on men and women’s ability to adopt technologies and benefit from resultant marketing opportunities. For example it has been noted that land tenure inequalities prevent women from being highly productive as well as from adopting modern varieties and technologies (Klawiter, et al., 2009; Doss and Morris, 2001). Additionally, lack of access to cash and credit for women is a major barrier to adopting new technologies (Bardasi et al., 2007 cited in Kingiri, 2010). According to Arias et al. (2013), limited access to marketing infrastructure such as stores and feeder roads further limits women’s access to remunerative commodity markets. This lack of access to good markets and marketing infrastructure, negatively affects women’s empowerment as women will not be well placed to adopt new technologies, increase production and subsequently their livelihood.

BACKGROUND

Postharvest Innovations for Better Access to Specialized Ware Potato Markets is one of the four sub-projects of Expanding Utilization of RTB and Reducing Their Postharvest Losses project (RTB-ENDURE) implemented by the CIP-led CGIAR Research Programme on Roots, Tubers and Bananas (RTB) in Uganda and funded by the EU through IFAD. The project seeks to address potato marketing constraints through piloting and testing potato ambient stores to ensure that farmers and traders can take advantage of higher prices during the offseason. It is assumed that when adopted, ambient store technology will help stabilize farmer incomes since they will be able to extend the potato marketing period:

Table 1: Projected cropping, storage and marketing calendar using ambient stores

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cropping												
Storage			**							**	**	
Marketing	Current selling period		**			Current selling period				**	**	

Brown cells: potential extended selling period due to improved storage ** Not clear if potato can be stored for such a long time (more than 3 months).

The potato sub-project seeks to accomplish the following:

1. Assess effect of variety, local climatic conditions, pre-harvest and harvest practices on storability of ware potatoes;



2. Exploit varietal differences in maturity and dormancy to prolong harvest and marketing periods;
3. Strengthen business skills and collective marketing; and
4. Identify gender-sensitive approaches to ensure gender equity in exploiting new market opportunities.

This strategy paper will focus on objective 3 and 4 and partly on objective 1 in order to ensure that both men and women benefit from marketing opportunities availed by the introduction of storage technologies. The strategy paper will first seek to understand the following:

1. What factors can constrain male and female farmers and traders from fully utilizing the ambient stores
2. What factors can prevent them from taking advantage of marketing opportunities during times of scarcity if stores are successfully introduced.

After understanding these factors the strategy paper will suggest evidence based mechanism and a gender strategy to enhance the uptake and utilization of recommended ware-potato storage facilities and practices along the value chain. The strategy will provide strategic direction to enable value chain actors to engage effectively, competitively and sustainably in the identified market opportunities.

CONTEXT

Historically, inhabitants of Kapchorwa and Kween were pastoralists until the 1980s when massive cattle raids from the neighboring Karamoja exposed them to poverty prompting a change from pastoralism to crop production. The current major activity is subsistence farming, with commercial farming now taking root in Kapchorwa. Potato is one of the major crops grown for food and income. Due to the mountainous terrain that is exhibited in the entire region, land is fragmented while population densities are quite low. Access to socio-economic services such as education and agricultural extension services is low (UPPAP, 2000). Female Genital Mutilation (FGM) is still practiced in the two districts. Owing to proximity with Kenya border, Kenya is a major trading partner for agricultural commodities and other essential items. As such, while Kapchorwa is the second largest potato producing district in Uganda (UBOS, 2014), it is possible that volumes traded across the border are not accounted for in national statistics.

Mbale district is also located on the slopes of Mountain Elgon in Eastern Uganda, and lies adjacent to Kapchorwa. The major economic activity is farming and the area is well known for coffee and potato production. The terrain is very similar to that in Kapchorwa but given the proximity to Mbale town, most of the commodities are sold to traders from Mbale town who may then take them to markets in the centre of the country or across the borders. Education, health and agricultural extension services are not easily accessible especially for communities that live high up in the mountains (Mbale Local Government). Illiteracy is high in Mbale estimated at 12% (*ibid*). The area is also prone to natural disasters such as land-slides and floods owing to the terrain and high population densities.

2. Methodology

The gender situational analysis and strategy paper is based on a qualitative gender analysis of ware potato production, postharvest handling, consumption and trade in Eastern Uganda in Kween (Bennet village), Mbale (Wanale Village and Mbale market) and Kapchorwa



(Kapchesombe village) districts in order to identify gender based constraints and opportunities along the potato value chain. Kapchesombe, Mbale and Bennet were selected for this analysis since the RTB-ENDURE project is piloting potato ambient stores in these areas. The study used sex disaggregated FGDs with farmers and traders. In total 10 FGDs were conducted, i.e. 3 with female farmers, 3 with male farmers, 2 with female traders and 2 with male traders. A total of 64 farmers (39 F, 25 M) and 16 traders (8F, 8M) participated in the 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 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 scale-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 postharvest technology should be socially, culturally and economically appropriate for users. In order to understand whether 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 understand 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) the '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, 2012)¹. 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 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 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:

1

http://agriprofocus.com/upload/ToolkitENGgender_in_Value_ChainsJan2014compressed14152032301426607515.pdf



- 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 asked to score each attribute on a scale of zero to five 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 (farmers or traders) 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 and 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 in order 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 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 using evidence from this research with representatives of male and female farmers and traders as well as CIP and partner institutions (e.g. NARO and Self Help Africa) in Kampala.

STUDY PARTICIPANTS RECRUITMENT

Recruitment of FGDs participants was done through farmer groups/ associations. Targeted potato farmer groups were those that the International Potato Center (CIP) and its partners had selected to host individual and association ambient stores. Farmer Association chairpersons helped the research team to identify and recruit an equal number of male and female participants. Traders were recruited through their traders association. Both farmers and traders were informed that participation was voluntary and refusing to participate in the study would not result in any penalization. While participating farmer groups responded to both the Gender Constraint Analysis tool and the comparison tool, because of time limitation among traders, we had two groups of trader FGDs per sex; where each group was subjected to just one tool.



3. Results

The first part of the results section will discuss gender based constraints in production, harvesting and postharvest activities including marketing. These constraints will be prioritized and solutions suggested by traders and farmers discussed. The second part will discuss the perceived levels of decision making and participation by men and women in 5 domains critical to development of gender strategies for the project. These domains 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. This analysis will help us to validate 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 not the use of potato ambient stores.

GENDER BASED CONSTRAINTS IN PRODUCTION PROCESSES AND DECISION MAKING

Seed potato purchase

There was no consensus between men and women and also within women's groups, regarding who in the household was responsible for purchasing seed potato. This may indicate that in general both men and women are involved in seed purchases at some level either as providers of finance; or in actual buying of the seed or in decision making regarding seed purchases. While in Kapchesombe both men and women agreed that men provided money to buy seed, in Wanale and Bennet women mentioned using their own money to purchase seed. For example in Kapchesombe while men mentioned that they were solely responsible for seed purchase, women indicated that although husbands pay for seed women were involved in decisions regarding purchase. Wives could be sent by the husband to buy the seed and also sometimes pressurized their husbands to buy seed. In Wanale, although men mentioned that they were solely responsible for buying seed, women indicated that in most cases men did not buy seed and left this role to women. For example, women mentioned that men thought that when they paid for other things such as children's school fees, women have to use their own money to purchase seed. There was general consensus among the women group participants in Wanale that it was mostly women who bought potato seed.

In Bennet, there was a lot of debate over who purchases the seed with some participants stating men and others women and some saying both equally did so. When participants were asked to vote by show of hands the largest majority of participants indicated that women are the ones who are responsible for buying seed. It was mentioned that women were usually responsible for purchasing seed because compared to men they were good at saving money whilst men drank a lot and sometimes married many wives when they had money so were usually broke when it was time to purchase seed. Women in Bennet frequently mentioned that men were not committed and could misuse family income such that it was left to the wife to ensure that there was enough food in the household. Although in Wanale the general expressed view was that men should buy seed, participants noted that sometimes men cannot do so because of other financial commitments or because of lack of commitment to the home, leaving women to shoulder the burden. This may also suggest that if women have access to money to invest in seed, they may be able to purchase quality seed.

Constraints related to seed purchase

Women in all FDGs mentioned high seed prices and poor quality seed, which lowers productivity. Other seed related constraints related to distance to input markets. In Wanale, for



example, women mentioned that seed was not locally available and had to be purchased in Kampala. Both men and women in Wanale mentioned limited knowledge on identification and selection of quality seed as a major constraint.

We have limited knowledge on identification and selection of quality seed.

Our own farm saved seed is not of good quality, so we depend on seed from Kabale. This seed is sold to us by traders, who sell to us mixed or adulterated seed. For example, one bag can contain mixed quality – one half could be really good, and the other half rotten. (Women FGD participants, Wanale).

Both men and women in FGDs in all districts worried about purchasing bad seed from unscrupulous traders. While knowledge on quality seed was mentioned for both men and women, women also mentioned lack of knowledge in relation to seed storage and appropriate agronomic practices as a major limitation for them to access the required amount of quality seed. Women mentioned seed rot and urgency for cash as major challenges:

Sometimes we can buy seed which rots after we sprout it.

Keeping the potatoes in a squeezed space causes the seed to rot. We do not have enough space for storing the seed. We also do not have enough knowledge on how to plant.

Sometimes we harvest the potatoes before they are mature. When you store them as seed they will rot.

Sometimes you may have urgent need for money. That can force you to harvest the potato before they mature. (Women FGD participants, Bennet).

Thus lack of seed storage space, lack of knowledge as well as other financial limitations were key issues raised in this regard.

While most seed related constraints were not gender specific, in FGDs women also raised some gender specific constraints regarding purchasing seed, especially that prices could vary depending on whether the buyer was a man or a woman. It was mentioned that suppliers increase prices when it is women who are purchasing the seed from them.

In many cases women are oppressed so the suppliers know that whatever price they charge women will buy. They have no option because they cannot travel far to get cheap seed. (Women FGD participants, Bennet).

In the first place men go to purchase because in most cases it is men traders who sell the seedlings so they can understand each other and bargain. If women go to buy the seed the price may be increased. (Woman FGD participant, Kapchesombe)

Markets were therefore gendered in ways that disadvantaged women.

Another gender specific barrier also related to the lack of transportation. In Kapchesombe, the mountainous terrain meant that farmers had to rely on donkey for transportation of inputs such as seed. Women mentioned that they cannot carry the seed up the mountain and men are the ones who use donkey, therefore men usually handled seed purchase.

Sprouting

In both Kapchorwa and Bennet, while women mentioned sprouting as an important activity men did not. In both communities women also mentioned that they were responsible for sprouting.



Reasons given were that women are always at home so men allocated sprouting duties to them. Women mentioned that during sprouting potato needed to be constantly monitored to ensure that it was sprouting well, a role which women could play because of always being at home. This may explain why men also did not mention sprouting as a potato production activity since women were responsible for doing it.

However, in Bennet, women also mentioned that women were responsible for sprouting the seed because men keep all the money after potato sales and refuse to give them any for buying seed, hence having to depend on farm saved seed. Seed sprouting by women was related to the fact that they did not control resources particularly agricultural income which they needed to be able to buy quality seed.

Constraints related to seed sprouting

Women in Kapchorwa mentioned lack of space and appropriate facilities for sprouting:

The store may be small so sprouting is difficult for example if you are sprouting in one room in the house.

You need enough light to allow sprouting, so that if sprouting is done in one room in the house the potatoes may not get enough light.

Because of the heat generated during sprouting, the seed rot. At the end of the day you have a few seed.

After it rots your husband think that you have sold part of the seed and yet seed got rotten. This creates problems for us. (Women FGD participants, Kapchorwa).

Women's lack of access to resources and knowledge to facilitate better sprouting also meant a substantial amount of seed was lost due to rotting during sprouting.

Land preparation and ploughing

While men and women were both involved in land preparation and ploughing, the exact nature of their involvement also depended on levels of mechanization of the specific tasks involved in the activities. In both Kapchesombe and Bennet men were mostly engaged in land preparation, ploughing and cultivation. However, it also emerged that men were engaged in more mechanized aspects for example using ox-drawn ploughs while women used hand held hoes. In Wanale however women mentioned that most of the ploughing was done by hand and women were mostly responsible for this while men looked after livestock. However, when families have money, they could also hire laborers although the use of external labor was very limited.

Constraints related to land preparation

Depending on their roles and duties men and women faced both similar and different constraints. In Wanale women who depended mostly on hand hoes to prepare the land mentioned lack of implements as a major limiting factor. Most frequently mentioned implements included farm tools like hoes, pangas which women mentioned were expensive to purchase.

Lack of tools and implements as well as money to hire labor were also mentioned as causes for delayed planting. In Kapchesombe and Bennet women mentioned lack of money to hire bulls/oxen for ploughing as a major hindrance. Bulls were hired at the cost of Ugx 80,000 per acre in Kapchesombe and Ugx 50,000 per acre in Bennet which women regarded as expensive. In addition women feared that hired laborers did not dig well and sometimes got angry when women try to supervise them closely. Women in Wanale mentioned that lack of tools was directly related to their lack of involvement in marketing



Our husbands take hold of the money. So if we ask for tools they refuse to buy them. They will say, I have paid school fees so the money is finished. If the market can be extended to community level where women can also market and have money we will be able to buy tools. (Women FGD participants, Wanale)

Because of the distance to potato markets and the limited mobility women faced, they depended on the husbands to sell off their potatoes. This also meant that once the buyers paid the men they had control over the revenue since they also had physical custody of the money.

Buying and applying fertilizers

In all communities men and women did not totally agree on who was responsible for purchasing fertilizer although there was general agreement when it came to fertilizer application. Both men and women overestimated their own involvement in fertilizer application and underestimated the involvement of the other sex in the activity. It is not very clear why there was such discrepancy between the men and the women.

Women in Kapchesombe mentioned that they were responsible for buying fertilizers although they received money to purchase the fertilizer from their husbands. In some cases where the husband and wife worked they both contributed but where the wife worked and the husband did not she would give the money to her husband to buy. In contrast, however, Kapchesombe men mentioned that they were the ones solely responsible for purchasing fertilizer. Women were more likely to claim that they buy the fertilizer although men provide the money, while men stated that they were the ones solely responsible for purchasing fertilizers since they provided the money. It is also clear from the discussions that although women bought fertilizer or could provide money when husbands did not have, men had the primary responsibility for physically purchasing fertilizer.

In Wanale however women mentioned that they bought their own fertilizer and applied it with no help from men:

If you are lucky and the men buy seed for you, they will not buy fertilizer or help you to apply it. Whatever happens after they buy the seed the men are not involved. They come back again when it is time for marketing.

Women have cows and they can sell milk and get money to buy fertilizer.

I can work quickly in my garden after that I can go to work on other people's gardens to get money to buy the other things that I need.

Women are given cows by their relatives or friends to look after. After some time they can also get a cow as payment so we can own cows. (Women FGD participants, Wanale).

While men in Bennet, did not talk about purchasing fertilizer for potato, women mentioned that they were the ones responsible for purchasing fertilizer, using money which they saved from previous potato sales or borrowing money from women's groups to purchase fertilizer. In Kapchesombe, the slightly more educated women in Kapchesombe mentioned using their salary to purchase fertilizer, while in Wanale and Bennet, women obtained funds to invest in crop production (including purchase of fertilizer) from alternative income generating activities which they operated using funds obtained through their social networks. Thus women's social networks such as belonging to groups helped them to pool resources and money to invest in production activities.



In terms of fertilizer application, in Kapchesombe women mentioned that wives and women laborers applied fertilizer. This role was relegated to women (wives) since they are always at home monitoring how the potato is doing. However, men and children were also involved in this activity. In Bennet, however, it was mentioned that mostly men were involved in top dressing. Women in Benner suggested that men were engaged in top tracing fertilizer application to ensure a good crop by insuring that fertilizer was properly applied or to monitor the application of fertilizer so that they could sell excess fertilizer and make money.

Women mentioned that sometimes there is scarcity of labor and fertilizer while at times the money to purchase fertilizer is not enough. If the potato plant does not receive enough fertilizer it may wilt and the flowers may fall off resulting in lower yields.

Spraying

Both men and women FGDs participants agreed that men were more heavily engaged in spraying of potato than women. While women and girls could fetch water to be used for spraying, mixing of chemicals and actual spraying was done by men. Women often mentioned that carrying the spray pump was hard work to explain why they did not spray. In addition to spraying being hard work, women also mentioned lack of skills and knowledge regarding mixing chemicals, as well as the fact that they usually had young children that needed to be protected from chemicals as a reason why this task was left for men.

Constraints related to spraying

Women in Wanale mentioned lack of spray pumps, pesticides, funds to hire casual laborers and long distance to buy the pesticides as major constraints. Women mentioned that it was expensive to hire sprayers and they were also in short supply within villages. For example, in a village only one person may own a sprayer which could be borrowed or hired by other villagers, delaying spraying for most farmers. When asked why they did not purchase spray-pumps after selling potato women farmers in Kapchesombe said:

Sometimes when money comes we have to pay school fees. So much of the money will go to pay the fees.

We also have to hire the land for the second season and also purchasing fertilizer for second season so some of the money goes to that and there will be no money left to buy the spray pump. (Women FGD Participants, Kapchorwa).

Potato is a key cash crop for families and most of the cash was used to meet family needs and little for re-investing into potato production.

Women mentioned that they could borrow pumps from their neighbors but this carried with it certain risks since people used the pumps to spray different chemicals some of which were harmful to potato. Women in Bennet mentioned that loss of potato due to use of contaminated spray pumps was a common occurrence. Thus there may be need to train spray-pump owners and farmers on proper use of spray pumps and equipment.

Unscrupulous or uninformed agro-dealers may sell wrong chemicals to farmers or not tell farmers how to correctly mix chemicals which may also result in crop damage and losses if the wrong chemical was sprayed or wrong dosage used.

Sometimes also when purchasing chemicals you can ask for a particular type but they give you a different one. Even for men it is also a problem.



When we buy chemicals in Kapchorwa town they do not even tell you how to measure and mix the chemical. (Women FGD participants, Bennet).

For both men and women the problem related to lack of knowledge related to proper use of chemicals was a key problem that needed to be addressed. This was regarded as a problem affecting both men and women.

Men mentioned that because of lack of education and knowledge they lacked the knowledge and ability to use chemicals properly

We are not educated, so it is hard for us to use the chemicals properly. Especially when a new chemical is brought on the market.

We have limited exposure to other potato farmers, who we would learn from. Our area is far, and sometimes we get 'cut off' e.g. during heavy rains. So it becomes hard for us to get information related to proper use of these chemicals. (Men, FG participants, Bennet).

For men lack of knowledge was a key limiting factor while women mentioned lack of knowledge and equipment. In Wanale men mentioned that sometimes agro-dealers sold counterfeit inputs such as fertilizer, herbicides and tools because farmers lacked knowledge on how to select quality inputs and there were no reliable stockists in the area which led farmers to have increased production costs and financial losses.

Weeding

When it came to weeding there was agreement between both men and women that this task was reserved for women and women labourers. Some men would go to the field to supervise women and children as they weeded. Women in Kapchesombe mentioned that they mostly relied on women laborers because men were not interested in weeding. They also mentioned that while no one enjoyed weeding, women laborers mostly performed weeding duties because they had no other sources of income. Women of low income status with no other source of income were usually hired for weeding tasks. In Bennet women agreed that weeding was mostly done by women although some men 'go to the garden not to weed but to inspect whether the weeding has been done properly'.

The major constraint mentioned for weeding was that laborers may not know how to weed properly and damage the crops. In some cases laborers may want their payment immediately yet the farmer may not have money.

Services

Limited access to financial services was mentioned as a key hindrance to potato production. As a result it was difficult for farmers to access inputs like fertilizers, pesticides and herbicides on time leading to low yields and postharvest losses. Lack of money to pay for various services during the production processes was mentioned in almost all the FGDs. However, Wanale men specifically mentioned lack of access to credit as a limiting factor:

We do not have financial institutions in our area. The financial institutions in Mbale town 'fear' lending to us farmers. They do not have loan products tailored to our needs.

We don't have a savings and credit scheme in our association (WASWAPA) from which we could access credit services. (Men FGD participants, Wanale).



Women mentioned that because they did not have access to money from potato sales or to financial services, they lacked modern tools like garden rakes since they did not have money to buy tools which they needed to improve production techniques.

GENDER BASED CONSTRAINTS IN HARVEST AND POSTHARVEST OPERATIONS

Harvesting

In both Kapchorwa and Bennet women agreed that harvesting was usually done by women laborers. This was so because women laborers did not expect much in terms of payment for example they could ask to be paid in kind (potato) instead of cash. In addition, harvesting was regarded as hard work that women engaged in only because they had no other sources of income. Desire for an income was mentioned by both Kapchorwa and Bennet women as a reason why women were engaged in potato harvesting. Children could also be involved as well as some male laborers. It was noted that the owner of the field (either the husband or the wife) had to be there during harvest as laborers could steal the harvested potatoes. Women also mentioned that since it was costly to hire people they ended up working under strenuous conditions to ensure that potato was harvested which had negative implications on their health.

Constraints related to harvesting

Women mentioned lack of storage as a constraint that delayed harvesting since they could not harvest all their potato at a go if there had no place to keep it. Farmers were not willing to provide labor to harvest potato if there is no market or a place to store. Because markets were not always assured, farmers tried to delay harvests and keep potatoes in the field until markets are found but this was not always the best approach due to heavy losses involved. In Bennet women also mentioned a similar constraint.

We always delay to harvest thinking that the price will increase and the potatoes rot in the garden.

You can lose a whole garden. We buy the seed in big bags of 100kgs. When we plant that we expect to get at least 10 bags of ware potato out of that one bag. But all the crops can be lost and you end up harvesting two basins and that discourages us. (Women FGD participants, Wanale).

Since farmers in Wanale and Bennet do not have storage facilities the women may not feel motivated to harvest their potato crop if the prices are too low which results in a lot of wastage and spoilage.

The topography of the land was mentioned in Kapchorwa and Bennet as a limiting factor for women. For example, it was difficult to use motorized transport to transport their crops from the field because of the rugged mountainous terrain. Donkeys were the most used means of transport. Donkeys were sometimes scarce. In addition women had to rely on male laborers to drive the donkeys and transport the potato which also increased the risk that the male laborers could steal the potatoes during transportation. Women mentioned relying on men's labor to transport harvested produce from the field to the market as a constraining factor for similar reasons.

The problem of theft was also mentioned in relation to female laborers who are engaged in harvesting potato:

Female laborers steal during harvesting.



These laborers leave most of the potato in the garden because they want to come back and get it after to eat in their homes.

Most of them dig holes and pour the potato in. They cover the hole with soil and put a mark so that when they come at night they know exactly where it is. (Women FGD, participants, Kapchesombe).

This meant that women had to be closely involved in monitoring laborers at harvest time to reduce losses to theft at this stage. Suspicions of theft by laborers also made harvest time quite stressful for farmers. In addition to theft, women farmers also mentioned that poor harvesting practices by laborers also meant the potato could not be stored well. For example it was mentioned that hired laborers could damage the potato during harvesting.

Storage

In Kapchesombe, potato storage was regarded as women's task. For example, women farmers mentioned that after harvesting when preparing for storage women would select and remove potatoes that were cut or bruised during harvest before placing the undamaged potatoes in storage. In addition if they harvested during the rain, women were also responsible for spreading the potatoes in the open yard to dry before putting them in storage. Both men and women in Kapchesombe agreed that this is work that women did although in some cases they were also assisted by both their male and female children. Women also sorted potato, selecting smaller potato for seed, bigger potato for sale and the rest for food.

Women in Kapchesombe mentioned several reasons why they store ware potato, among them to ensure that they get a higher price in the market which they stated could range from Ugx 40,000 per 100kilograms during glut to Ugx 80,000 during the off season. However, women mentioned that only those who were in a good financial situation were able to store potato otherwise they would harvest and quickly sell. In Wanale women and men mentioned that they did not store potato as they lacked storage space.

Constraints related to storage

In Bennet men mentioned lack of equipment as a major constraining factor for storage:

We do not plan well at the beginning of the growing season, and many times we do not budget for potato storage (storage area and related costs).

We lack knowledge of how to construct the potato stores. (Men FGD participants, Bennet).

Whilst women mentioned push factors for selling such as not having enough money in the home, or lack of storage space, men mentioned poor planning and lack of knowledge of store construction. While men and women participants in Bennet and Wanale mentioned that they did not store ware potato, it is possible that when storage is introduced, women's labor may increase as most of the tasks needed to store ware potato successfully will be under women's domain. Work such as selecting potato and grading including preparing potato for storage are tasks that women may be expected to do as was the case in Kapchesombe.

GENDER BASED CONSTRAINTS IN MARKETING

We have a challenge. When we reach the time of harvesting we end there. The men take over. Even when they have sold we do not know how much they have sold. They do not even tell us how many kilos they sold. (Women FGD Participants, Wanale).



There was general agreement in both men and women's focus group discussions that men were the ones involved in potato marketing. There were several reasons advanced for this. For example women made reference to oppressive relationships between men and women which meant that men controlled the household income. Therefore because of unequal relationships that favored men, men could decide on who was involved in potato marketing.

In addition it was clear that the market itself was structured in ways that did not favor women's participation. Gender norms that designated potato as a men's crop meant that women who tried to sell potato on their own without their husbands were viewed with suspicion while husbands could sell crops on their own without their wives:

We want to be involved in marketing and looking for buyers. But if the woman looks for the buyer, the buyer will refuse to come because they will assume the woman did not agree with the husband so they will not want to buy. They will not come. They only come when they are invited by the man.

Also if I look for someone to buy the husband will say 'why are you looking for a buyer? Are you the household head?' (Women FGD participants, Bennet).

If you go to sell to the buyers and they see you are not united with your husband the buyer can fear to come and buy from you. However if the buyers know that you and your husband are united they will come to buy even if you are the one who invited them. (Women FGD participants, Kapchorwa, Kapchesombe).

Buyers preferred to buy crops from men because of the belief that they were in charge and were household heads and therefore made decisions about what could be sold and to whom. Women also mentioned that they were sometimes able sell potato if they 'stole it' from their husbands, but these sales were usually of very small quantities.

Underreporting of market proceeds

Women also mentioned that since husbands are in charge of marketing and rarely involved their wives, in some cases women were not even aware of how much nor the value of the potato sold. In Bennet women also mentioned that husbands did not want to engage their wives in marketing because sometimes they want to divert the money for their own personal use. For example, they could tell their wives a selling price lower than they actually sold for. Women were thus not involved in marketing as well as in decisions on income from marketed produce.

Women felt that sometimes they did not benefit much from potato sales. However, women in Bennet were hoping to change this as they had formed a potato woman's groups, where they had contributed money to hire land and were hoping that soon they would be able to farm potato and also engage in potato marketing. Women mentioned that they planned to use the money from group potato sales to purchase household items and other things which they want which men will not buy for them. Although it remains to be seen whether this group will be successful, it shows that collective action by women can increase and improve their ability to engage in potato marketing.

Lack of marketing equipment and infrastructure

Women also mentioned lack of weighing scales and also bulk selling as a limiting factor for them to be engaged in marketing. They did not have weighing scales in the village while men weighed when they went to sell potatoes in town and never told women how much the potato



weighed and how much they sold it for. Some women also expressed reluctance to lift the heavy potato bags for weighing and regarded it as a men's job. Thus if potatoes could be marketed in smaller bags women may be able to participate in marketing. In addition, women mentioned that potato markets were far which limited their involvement in marketing and even accessing market. Women lack of mobility was also a key obstacle towards marketing. Unreliable transport systems, large bags that were sold and transported limited women's participation in marketing.

While women mentioned barriers to participation, men mostly mentioned barriers to efficient marketing. For example, a key constraint mentioned by men was the lack of knowledge on what the market wants especially related to quality potatoes:

We have not been able to link with people in the market or even the final consumers to get to know what type of potatoes they want. All we know is what the traders (middlemen) tell us – they tell us that our potatoes are of low quality, and buyers do not like them. (Men FGD participants, Bennet).

Thus lack of market information was a major constraint for men and women as they relied and depended on what they heard from traders. Furthermore, lack of knowledge on quality potato production was a key hindrance to reaping maximum benefits from potato marketing. Both male and female farmers also complained about the low potato prices. Farmers mentioned that when they sell during period of glut, or because they are desperate for money to pay school fees they often received a lower price for their potato. There was also suspicion that brokers were not honest and often underpaid farmers for their potato.

PRIORITIZING MAJOR CONSTRAINTS AND SUGGESTED SOLUTIONS (FARMERS)

FGD participants were asked to review the constraints they had identified and prioritize the three most important ones that had to be addressed to fully utilize potato ambient stores and engage in potential market opportunities that could arise during the project. 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.

In the analysis however we cluster the issues into six categories:

1. Seed related constraints (mentioned 6 times of which 4 by women groups)
2. Chemicals and fertilizers (mentioned 3 times, twice by men and once by women groups)
3. Markets (mentioned twice by men's group)
4. Access to money finance and credit (mentioned 2 times, once by men and once by women's group)
5. Access to storage (mentioned 4 times, twice by men and twice by women's groups)
6. Access to quality inputs, tools and implements (mentioned once by a women's group)

It is clear from the above that seed and potato storage, markets and access to finance were the most frequently prioritized issues. It is also very clear that women were more likely to prioritize constraints in areas where they were involved in. For example, they prioritized seed related issues (being responsible for or involved in seed purchase) and storage of ware potato. On the other hand, women did not prioritize market related constraints, most likely because they were hardly involved in marketing. However, considering what they mentioned as activities and obstacles before being asked to select three key issues, the lack of access to markets and lack of control of income can be regarded as a key obstacle to women benefiting from potato farming



and marketing. For example, in the discussions women mentioned lack of participation in marketing and decision making on income and expenditure in the household as obstacles to investment in agriculture.

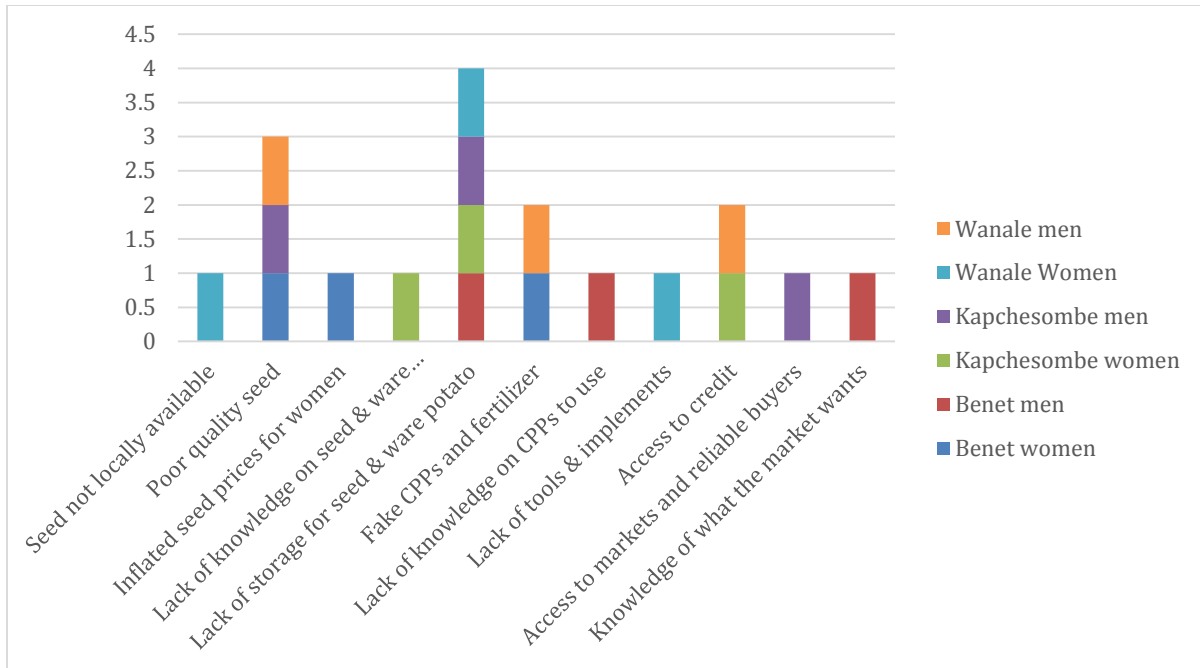


Figure 1: The major constraints to potato production and marketing by sex and location

Suggested solutions to prioritized constraints

Seed related

Bennet and Kapchorwa women proposed that they should be trained on seed selection and management practices, while in Kapchesombe men stated that they needed to consistently access new quality seed from research stations. Farmers mentioned the need to have access to quality seed closer to home as well as training on seed identification and selection. In addition, farmers also mentioned the need to learn how to build potato seed stores so that they could keep their own seed in their community.

Lack of fertilizer, chemicals and spray pumps

Bennet women suggested that agro-dealers should provide them with good agrochemicals in shops. They further advocated for farmer training on chemicals use as well as training of agro-dealers on new chemicals. They also proposed improved market linkages to be able to access markets for inputs.

Men in Bennet mentioned lack of knowledge on chemical use and suggested the following solutions:

- training in proper use of fertilizer, pesticides, herbicides and other chemicals;



- study tour to other potato growing areas to learn from the farmers, e.g. in Kabale;
- improved access to extension services so that when new chemicals come on the market, or when new diseases attack the crops, they are supported on how to deal with them.

Since men were responsible for spraying they needed knowledge on how to spray, chemicals that were best suited for the plants as well as knowing the proper dosage. With regards to access to fertilizer women in Wanale also suggested improving access to agro-input dealers by establishing a shop within the community as a potential solution. This would solve the problem they faced in accessing fertilizers given that agro-dealers were located far away from their village.

Marketing

In relation to markets both men and women farmers suggested that training on certain marketing activities could help. Women wanted training on profit and loss calculation as well as on savings whilst men mentioned training on market research to understand the needs of the market:

As women we have knowledge on how much we sell the produce, we know how to calculate but we need some training on calculation of profit as well as savings when we sell the potato from the store. (Women FGD participants, Kapchesombe).

We want to learn how to do market research. This will help us in the future, if we have the skills to make our own research, and be able to find out what the market wants. (Men FGD participants, Bennet).

Demand for different kinds of training may depict different levels of understanding related to markets and marketing between men and women.

Also mentioned was the need to have access to reliable market information particularly in relation to prices and well as access to reliable buyers:

We need to be linked to a system that can regularly avail us reliable market information (for example the information can be placed at a central place). (Men FGD participants, Kapchesombe).

Knowledge on market prices is key for farmers in order to be able to negotiate with buyers.

Access to finance

Access to financial services was regarded as a solution for many of the bottlenecks to potato production. Both men and women mentioned that if they had access to finance then they could purchase sprayers and farm inputs like seed and fertilizers. Farmers mentioned that if they had a source of money they could buy equipment such as gumboots, raincoats, and the respirators for spraying. Farmers mentioned the need for training in savings and credit management in order to benefit from SACCOs as well as being linked to Micro Finance Institutions and other credit providers. They however stressed the need of agricultural friendly loan products.



Storage facilities

Both men and women mentioned the need for storage space in the community and training on how to build stores with large capacity that can keep potatoes for a longer time.

If they build for us a store so that we can preserve the potato we can sell when prices increase...even if we sold very little and kept the rest of the potato we will still be able to make more. (Woman FGD participant, Kapchesombe).

As we sit waiting for the marketing season we can keep the potato in the store to avoid rotting. Having this store would really enable us to get buyers at home who will come and pay. (Woman FGD participants, Wanale).

Men proposed training in constructing proper potato stores as well as in proper potato handling and storage practices as a solution to address these knowledge gaps. In addition to building the stores, farmers mentioned the need for follow-up extension services to help them to keep the seed. In Wanale women also mentioned that they wanted to be trained on ware potato and seed potato storage. Therefore storage was really regarded as important.

Quality inputs and farm implements

Wanale women regarded the issue of farm implements particularly hoes as important and needed assistance such as access to a SACCO to be able to purchase them. In addition, access to reliable markets was directly linked to the ability to purchase equipment. Women mentioned that they needed easy access to credit to purchase spray pumps and other tools.

EXPLORING GENDER BASED CONSTRAINTS FOR TRADERS

Table 2 below shows the activities that male and female traders members of the Mbale Potato Dealers Association (MPODA) are engaged in as well as some of the identified constraints they face. From the table it is apparent that men and women traders engage in virtually the same activities except for buying potato from farmers - work that is dominated by men traders. Women were also empowered in decision making since they owned their businesses and could make decisions without consulting their husbands.



Table 2: Gender division of roles and assessment of constraints (MPODA market traders)

Activities carried out by chain actor	Roles and responsibilities low=x, medium=xx, high=xxx				Constraints that limit access to and control of resources
	Male	Female	Youth		
			Female	Male	
Mobilization of money	XXX	XXX			Seasonal fluctuation in income, lack of storage, small businesses
Find space for selling	XXX	XXX			Allocated small spaces
Identifying source of quality potato	XXX	XXX			Lack of capital during offseason
Purchase of seed + ware potato	Group XXX	Group XXX			Price fluctuations, theft by highway robbers
Sell seed to farmers (MPODA Men)	XXX	X			
Buy ware potato from Kisoro and Kabale (MPODA men)	XXX	X			
Buy ware potato from farmers (MPODA men)	XXX	X			
Bagging				XXX	Labor shortage and shortage of bagging material
Transport	XXX			XXX	Bad roads during transportation
Storage	Group XXX	Group XXX			Lack of storage space, lack of labor
Sorting		XXX	XXX	XXX	Shortage of labor
Marketing	XXX	XXX			
Bagging				XXX	Lack of labor and gummy bags



Men and women traders engaged mostly male brokers to identify quality potato. MPODA women traders mentioned that 4 out of 10 brokers were women. In some cases traders also use their family and friends to identify a source of quality potato or buy from vehicles that come to their markets selling potatoes in bulk.

ANALYSIS OF TRADE RELATED CONSTRAINTS

Lack of storage

Lack of storage was a problem for both men and women traders. Traders did not have reliable storage techniques and equipment. For example, traders mentioned storing their ware potato on the veranda for periods that ranged from a week to a month. During the rainy season potato stored on the veranda was covered by Tarpaulin to protect it from the weather elements. Rudimentary storage techniques which included use of plastic material or just spreading ware potato on the floor were not effective to meet storage needs of traders. During the dry season stored potato would go bad (it turns green) and traders could not sell that potato and during the rainy season potato stored on verandas and using other inappropriate techniques just rots.

Lack of storage was a key critical issue for traders because it could mean that traders sold at a loss or lost their potato to rot if they could not get buyers on time. Explaining how lack of storage affected pricing and ability to profit from selling potato male Mpoda traders had this to say:

Sometimes the transporter can agree to hold the potatoes on the truck for a day or two until we get a customer. But when it exceeds two days, then you must sell your potatoes at whatever price you can get since the transporter needs his truck. In such instances, we usually sell at a loss. (Men FGD Participants, MPODA Traders, Mbale).

Sometimes they would be forced to sell on credit but payment could be delayed or not effected at all. Traders suggested that constructing stores and learning how to store potatoes appropriately will be key and could help them avoid making losses. Furthermore, storage could also increase their bargaining power and also the ability to get a good price. Lack of storage meant that potato not only fetched low prices when there is a glut, but also that traders were vulnerable to changes in weather conditions.

Access to finance

Limited access to finance was mentioned as a key obstacle. Traders did not have formalized access to credit and loans. Informally they received produce on credit basis from farmers to sell, particularly when farmers were worried that their potato could spoil and rot. However, traders mentioned that it was not always assured that they could sell the potato before it got spoiled especially in periods of glut

Traders also relied on each other to access finance. Traders had their own rotating credit schemes which could assist them access money. However, this was not always enough. Traders mentioned that because of lack of support services they were often under-capitalized and this affected their ability to buy and sell quality potato. For instance, MPODA women traders mentioned that sometimes they buy poor quality potato so that they can have enough quantities since the quality potato is expensive. However, poor quality potato rots easily during storage which also resulted in higher losses if they could not find buyers in time.



Transport

Both men and women traders mentioned transportation of potato from Wanale and Kabale to Mbale as a problem. Women mentioned the large volumes per bag which made it difficult for them to carry the bag. On the other hand the large volumes per bag were regarded as a health hazard for men as it was mentioned that some men suffered poor health or died as a result of injuries sustained from carrying the heavy bags and loading and unloading them onto trucks. Women traders also mentioned lack of safety on highways and poor road networks as a key constraint for them in terms of participating in the potato trade. These particular issues may need state intervention and cannot be solved at project level.

Poor quality seed and poor quality potato

Both men and women traders sold seed. They complained that farmers who supply seed did not sort and select seed properly which meant that traders would end up buying bad seed and suffering losses in the process. For example, when farmers returned poor quality seed traders had to refund or replace.

While farmers had mentioned that their potatoes often fetch low prices because they are told potatoes are of poor quality, traders also mentioned poor quality potatoes as a problem. For example, in Mbale men traders mentioned that farmers from Kapchorwa and Kween did not grade potatoes, mixed big and small potatoes, or mix soil and chaff with the potato or sell immature potatoes that bruise and get spoiled easily. Traders estimated that they could lose 30% of their consignment as a direct result of poor handling by farmers. Women traders also mentioned that they preferred not to buy potatoes from Kapchorwa because they often rot easily during storage.

Traders advocated that farmers should be trained on good harvesting and handling practices. Traders suggested that they should also be part of these meetings so that they can explain to farmers the challenges they face when they buy poorly handled potatoes. Also suggested was a facilitated process for farmers and traders to co-produce and mainstream quality requirements and development of a system that will ensure that the agreed quality practices are adhered to.

4. Levels of empowerment by men and women in different domains and implications of a strategy to ensure shared participation and benefit

Empowerment levels of women and men across different domains may impact the applicability of certain suggested strategies to ensure that both men and women use ambient stores and profit from marketing opportunities. Below we look at different domains which include 1) Input into production decisions and autonomy in marketing; 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

Women revealed that they needed training on a variety of issues including seed storage and selection so as to improve their chances of using potato ambient stores as well as benefiting from market opportunities. However, the Comparison Tool group scores on access to productive resources, indicate that women farmers had less decision making powers compared to men on what varieties to grow, how much acreage to plant (except in Kapcheshombe) on whether to grow cash crops or food crops, labor distribution, purchase of inputs and how much fertilizer to apply. This can be further be visualized in Figure 2 below.

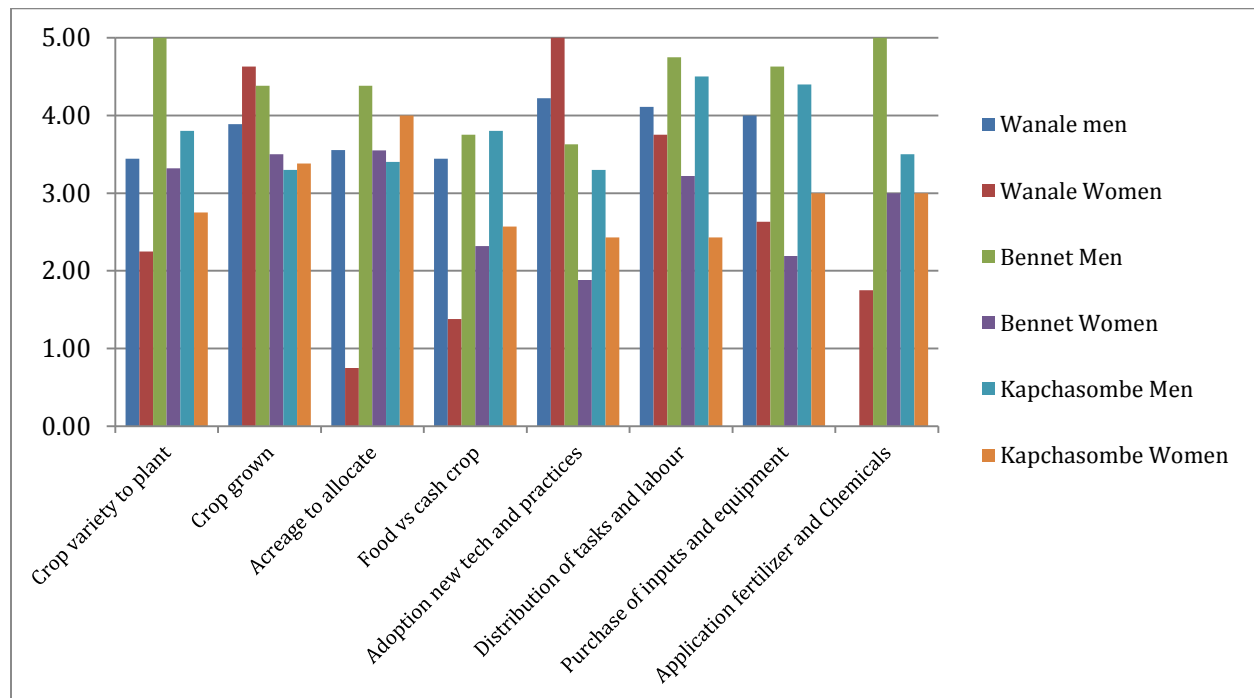


Figure 2: Extent to which men and women perceive ability to make decisions related to agricultural production

The scores further validated the fact that women had limited power to decide on fertilizer application as mentioned earlier on. It is clear that women's lack of decision making power at critical points in production limited their efficiency and productivity. With regards to decision about the crop variety to grow women farmers in Bennet mentioned that while women could make suggestions, men had the final decision. In terms of deciding what acreage to plant in general women mentioned that they had little say since land belonged to husbands who were also the household heads. In this respect, just training women without trying to ensure that they are also involved in household decision making in terms of allocation of resources may not lead to adoption of suggested practices. However, because women accepted these inequalities as the way things have always been; the solutions they suggested focused mostly on addressing their practical gender needs. For example, they advocated for gaining knowledge on seed



storage in order to reduce problems with their husbands in case the stored seed does not sprout well.

Autonomy in production: Marketing related decisions

As mentioned before women had limited decision making power over marketing, and this was further validated by the scores obtained regarding where to sell, who to sell to and what price to sell (Figure 3). All these decisions were dominated by male household heads.

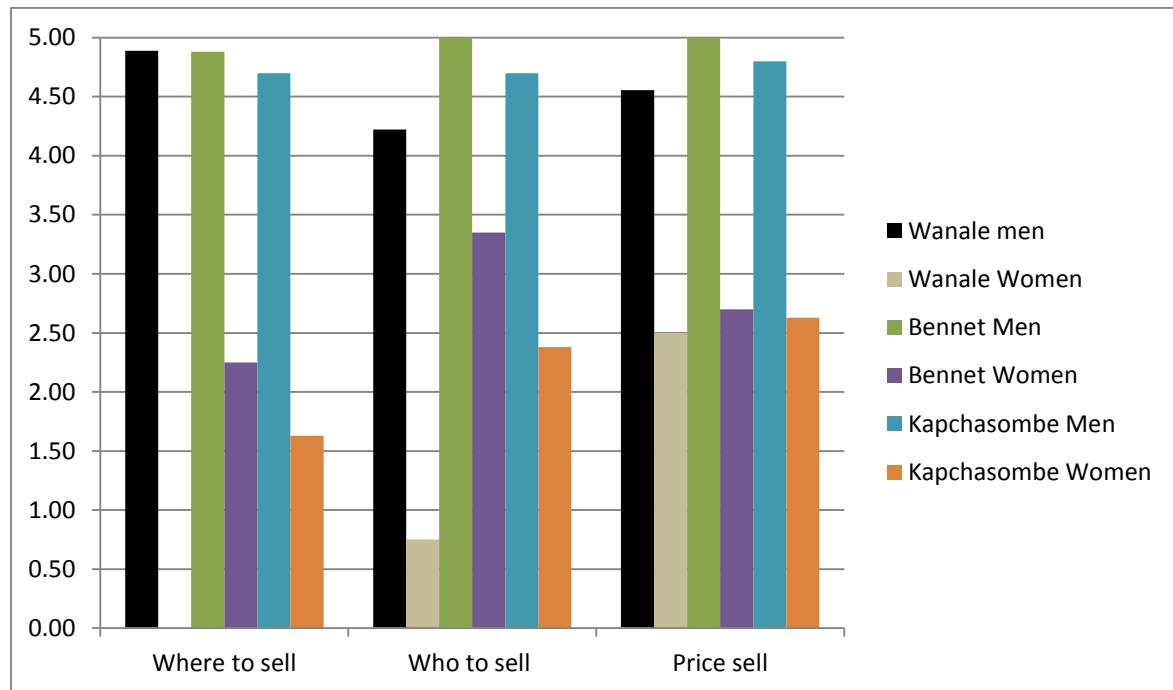


Figure 3: Extent to which women and men perceive ability to make decisions related to marketing

In general across all FGDs locations men were perceived as dominating marketing decisions.

In Wanale, men mentioned that potatoes are usually sold in Mbale town, about an hour's drive away from the village. As such, men are the ones who take the potatoes to the market and they rarely consult their wives. Thus women suggested solutions related to bringing the market closer to the village as well as selling in smaller bags which women can lift; in a bid to increase their ability to participate in marketing. However, it is clear that deep seated gender norms related to men making marketing decisions because they are household heads may need to be challenged. For example, in communities such as Bennet some women have already started forming women's potato clubs to help each other to farm and market potato as a group. It may be possible in future to work with such groups which have the potential to ensure that women participate in marketing of potato.



ACCESS TO PRODUCTIVE RESOURCES

Ownership of assets - farmers

In Wanale men mentioned that they owned most of the land and the farm equipment, while women could only own land if they inherited it from their parents, or are given land by their parents to till. However, women in Wanale mentioned that they owned no land at all and depended on their husbands to access land. In general in all locations women had very limited ownership of capital assets.

However, some women in Kapchesombe mentioned that if land is bought when people are already married then they own it jointly, however decisions on what the land could be used for were usually made by men as household heads.

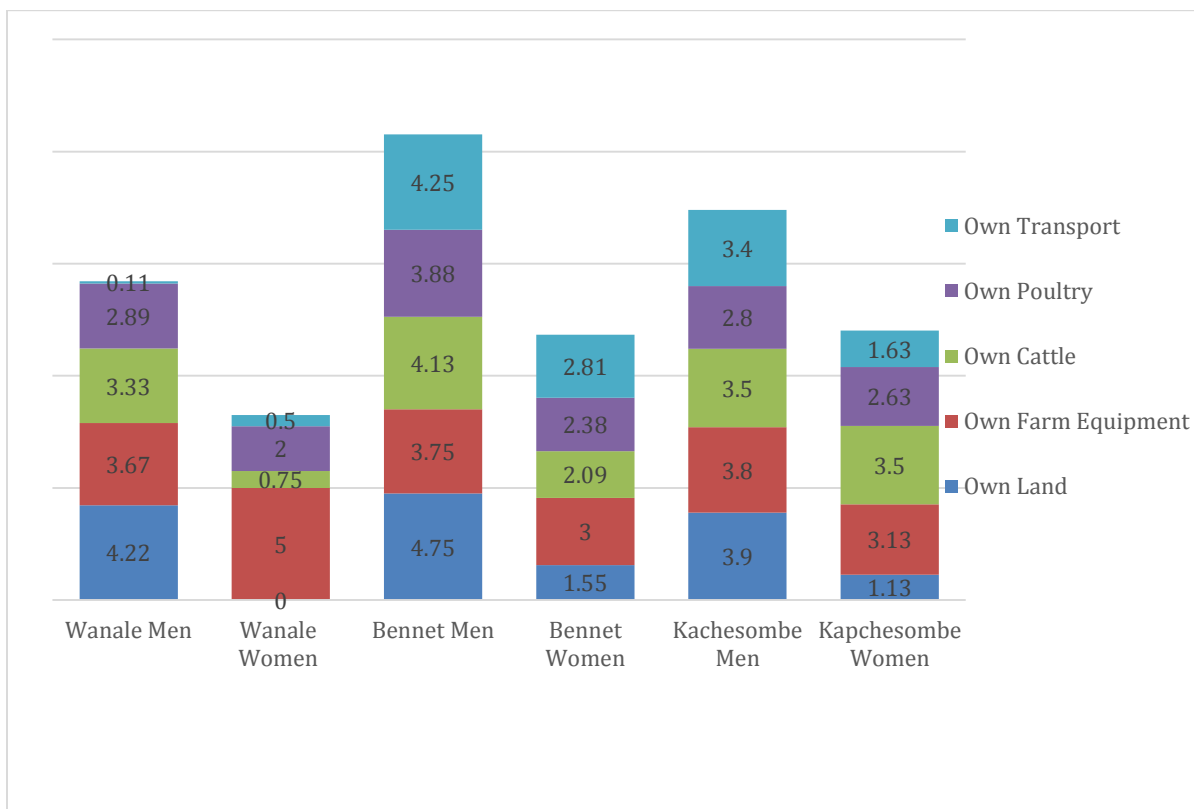


Figure 4: Extent to which men and women perceive ownership of assets

In terms of ownership of large livestock, women farmers perceived less ownership than men although women are more likely to own poultry and pigs because they mentioned that they were cheap to buy and also easy to maintain. Except in Kapchesombe where women perceived higher asset ownership in terms of cattle at the same level as men, in Wanale and Bennet women perceived themselves as not having high levels of ownership of cattle. This also means that it will be harder to address their concerns of lack of draught power for farming potato. In addition, since as mentioned before, men made most decisions regarding selling of potato and how to use the money, women could not invest in the farming implements and tools to make their work easier.



Ownership of assets - traders

Market equipment included access to mobile phones, weighing scales, gummy bags for packing potato etc. While women rated themselves highly compared to men in terms of access to equipment (figure 5), women traders compared to men traders mentioned that they did not have weighing machines. They mentioned that because they were wholesalers they did not need weighing scales as they mostly sold their potato by volume (bags). Women retailers mentioned using other measures like basins and generally mentioning that it was not economical for them to invest in weighing scales since they never used them. This is in contrast to mostly men traders who mentioned selling by weight. From this perspective women may need support to sell by weight as this could be beneficial to them in the long run. Transportation may be a major limiting factor as well as a major cost for women farmers.

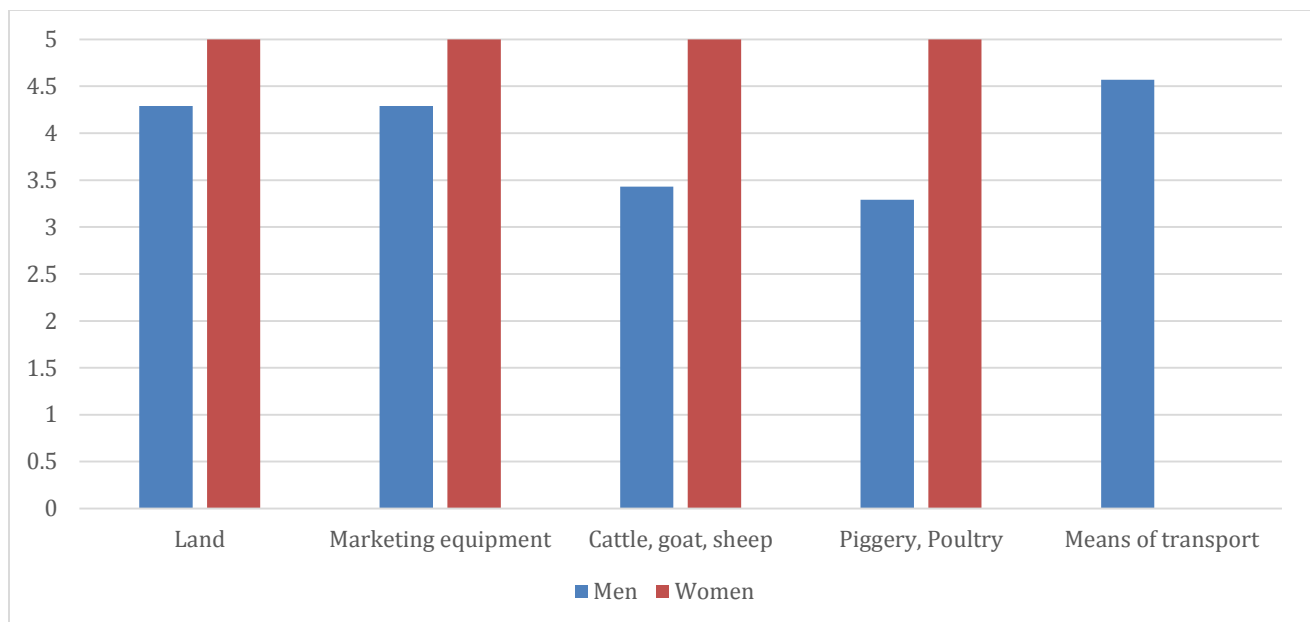


Figure 5: Extent to which men and women traders perceive ownership of resources

Decision to purchase, sale or transfer assets

Wanale women farmers perceived that they had the least power to dispose of assets amongst all farmers. In general, women perceived that they had less ability to dispose of assets than men with the exception of women traders women who perceived that they had the ability to sell assets if they chose to (Figure 6).

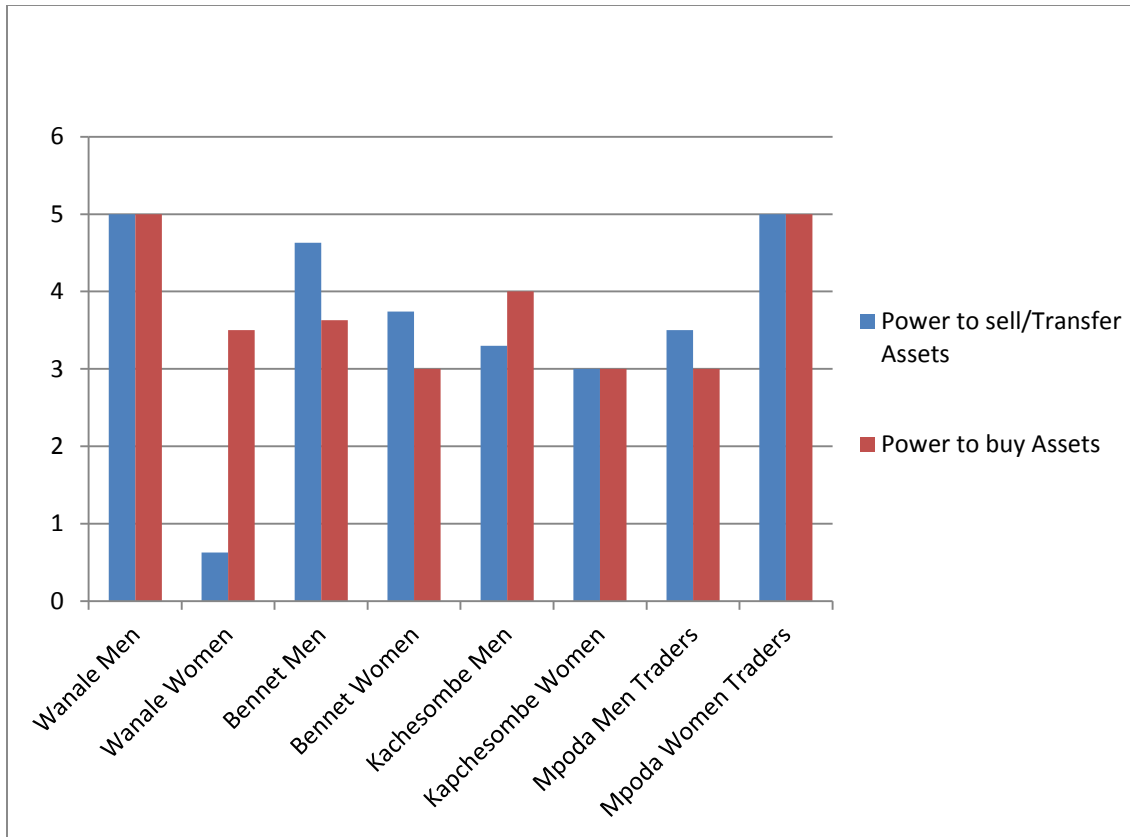


Fig 6: Extent to which female and male farmers and trader perceive power to buy, sell or transfer assets

While Wanale women perceived the most disempowerment in this regard, in Kapchesombe men perceptions about their power and women perceptions about their power were not very different. This is so because men in Kapchesombe revealed that due to changes in legislation they always consulted their wives before selling assets like land. According to them women were consulted and also had to sign the contract approving land sales otherwise the land committee chairperson would not approve the transaction. This was echoed by the women who mentioned that whilst in the past men could sell land without consulting their wives, nowadays laws have been put in place to ensure that women's rights related to access to land are protected and land cannot be sold if the wife does not agree.

In decision making on purchases and sell of land women have power because no one can accept to buy land unless the wife of the seller accepts to sign. (Women FGD Participants, Kapchesombe).

Women mentioned that in theory they could take their husbands and the buyer to court if land was sold without their being consulted and approving. Thus laws at government level are able to provide a conducive environment for women to have land security which can also help them with planning regarding cropping.

There was a feeling among women that families do not own land but take care of the land on behalf of their children. Men noted that while they could unilaterally purchase new assets without informing their wives they could not sell any assets without consulting their wives first. In one FGD with women it was noted that when women were invited to the council to state whether



they agreed to sell land but were afraid to respond and say no, they would just sit and keep quiet without responding to any questions which would be taken as a sign that the woman was not in agreement. This example of land also shows that for some changes to occur they need high level support and cannot be effected at the level of a small intervention project.

Access to services

Financial services

This section focused on access to financial services and well as extension and business development services. Both farmers and traders mentioned the need for financial services in order to have capital for different farming activities such as buying farm implements, fertilizer and even construction of storage facilities. Both men and women mentioned lack of access to financial services since most service providers (SACCOs, banks) are located far from the area. As a result, most of the members have very limited access to loans and other financial products (Figure 7). In addition, some of the products available may not be suitable for their needs.

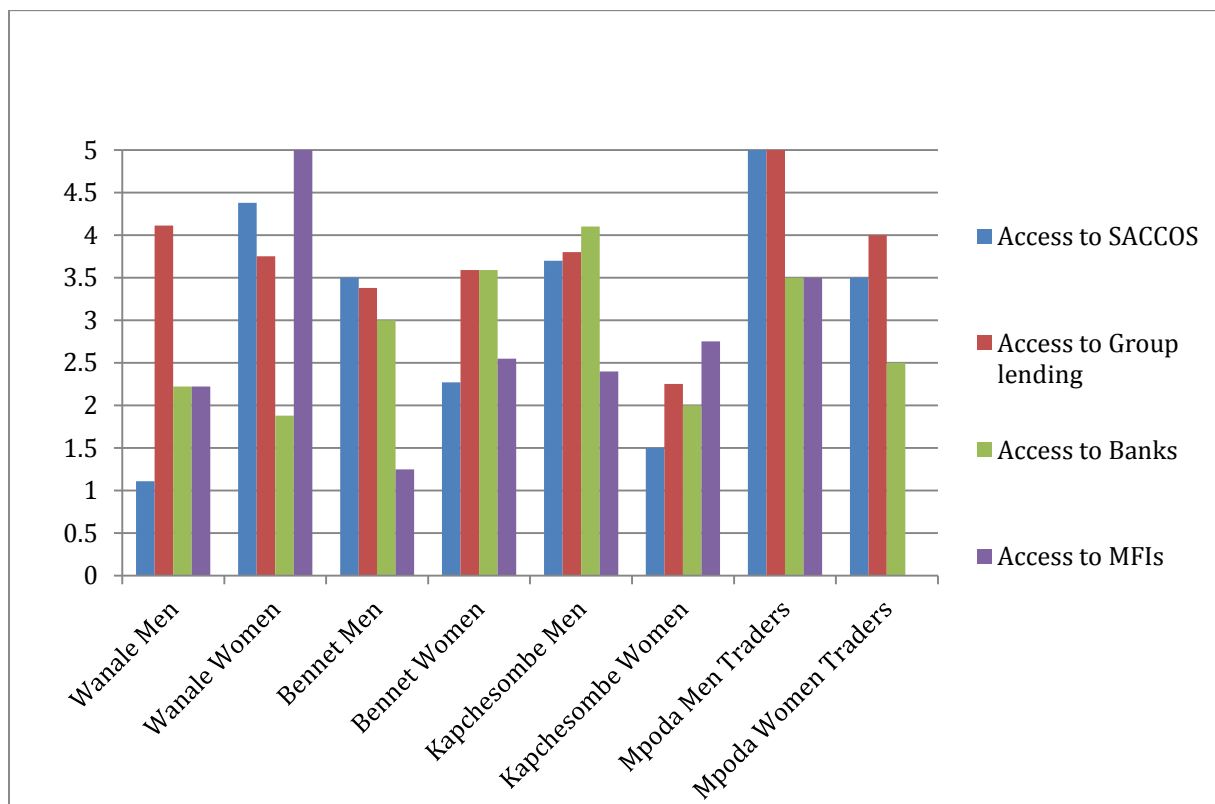


Figure 6: Extent to which women and men farmers and traders perceive they have access to financial services

Most farmers indicated that they depended mostly on internally generated resources including group lending, except for Kapchesombe female farmers. Farmers also recognized the need to



be linked to 'meso' layer financial service providers like SACCOs and Micro Finance Institutions (MFIs). In fact, this is also reflected in the solutions some farmers proposed, as given below:

- Training and technical support to enable the WASAPA members to establish and run a savings and credit scheme
- Link association members to financial service providers that can offer farmers loans e.g. SACCOS and MFIs.

Male farmers from Kapchorwa and Benet indicated that they operate bank accounts and were grateful to the fact that banking services had been brought closer to the community.

I operate a bank account in Centenary Bank. Now when I sell my potatoes, I just deposit the money in the bank in town (Mbale) and I no longer have to fear carrying large sums of money with me. When I need the money, I just go to the branch in Kapchorwa. The banks are now closer and this has really helped us. (Male FGD participant, Kapchesombe).

While most male farmers from Kapchorwa were generally farming at a larger scale and could afford to operate bank accounts, other men and women farmers and traders in other locations mentioned that they did not have bank accounts. However, some expressed much more positive perceptions for banking service during voting and they mentioned that although they did not have accounts, they could open bank accounts if they needed to.

Women traders also mentioned that they have limited access to banks, particularly because of fear of taking loans as well as the unstable returns from the potato business:

Our business is prone to loses since potatoes are highly perishable. This makes us fear to go to the banks.

You can lose the investment made in a whole season so it is hard for us to access these financial services. But we also want to have access to loans from the bank (laughter).

When it rains, the potato goes bad but if we can have storage facilities we would be able curtail this loss. In this way, we could go to the bank to get loans. (FGD Participants, Mbale Women Traders).

Generally, men and women did not have ample access to formal financial services. Limited access to formal credit facilities may also affect utilization of potato storage. Though the immediate effects maybe felt further up in the production node (e.g. at input acquisition), the longer term effects could also result in reduced utilization of the store due to low production and productivity. Hence the need for strategies to enable farmers' access to agricultural friendly loan products, in differing sizes (or loan amounts) to fit the varying capacities of women and men farmers and traders.

Training and extension services

Although in discussions both men and women mentioned lack of access to training and extension services, during voting women farmers perceived that they had more access to these services as compared to men (Figure 8). For farmers, these services focused on extension from local agriculture officers and development organizations and farmer to farmer learning while for traders they included business development services and business to business learning. Both traders and farmers were also asked about training on record keeping, business planning and



leadership. Among traders however men perceived that they had ample access to business related extension services as compared to women.

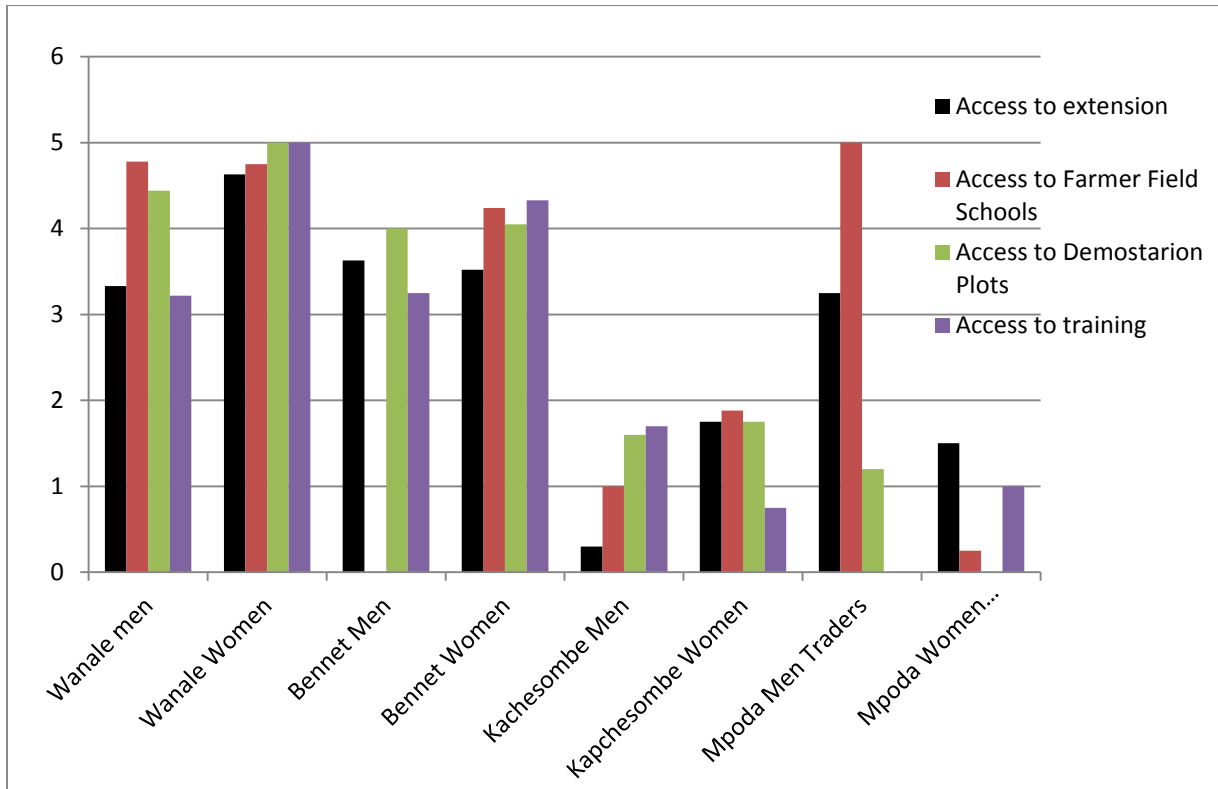


Figure 7: Extent to which men and women farmers and traders perceive they have access to training and extension services

In Kapchesombe both men and women farmers perceived they had limited access to training and extension services compared to men and women in other areas. In addition training in marketing will need to be provided to both men and women in all areas. Women traders also mentioned lack of access to business development services and training:

We have not received training on record-keeping, business planning, leadership; that's why we make financial shortages. We need training. We have little accounting skills. (Women FGD Participants, Mbale Traders).

This also clearly illustrates that women need more access to training than they have hitherto been exposed to.

CONTROL OVER USE OF INCOME

We asked men and women about their perceptions regarding the extent to which men and women have control over income. This was related to expenditure on food, fees, home improvements, health care, clothing, household, energy, water and leisure. For the purposes of this analysis, food, fees and clothing has been categorized under household expenditure and



household utensils combined with home improvements. Women and men in general (except Wanale women) perceived that they had reasonable ability to control household income in terms of deciding in expenditure (figure 9).

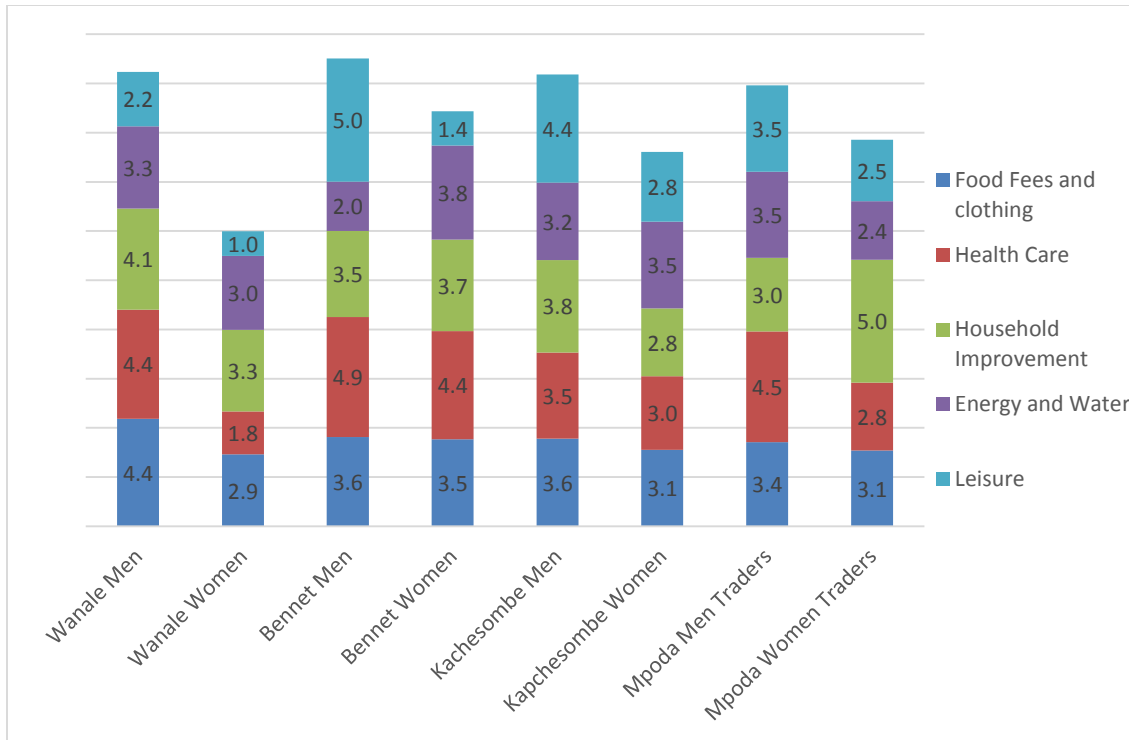


Figure 8: Perceptions on men and women's control over household expenditure decisions

While women in all groups except in Wanale had a more positive perception during discussions on collective scores it emerged that they had less decision making power on incomes as their individual scoring above suggests. For example, in discussions women suggested that they had no power to decide on household income and they have to consult their husbands on everything. However, it was mentioned that when women had jobs and access to their own incomes they had more freedom in making decisions over its use compared to women who did not have job:

Women have no power. You may buy clothes and the husband asks you where you got the money to buy that cloth.

It depends on families. In families where the women also have a job and do some other work the husband will not ask such question. (Women FGD Participants, Kapchorwa, Kapchesombe).

This may also indicate that when women have income generating opportunities this may increase their decision and bargaining power in the home. Thus the postharvest project needs to ensure that women are able to benefit from income generating opportunities. From discussions men, for example, mentioned that they were responsible for making decisions over major expenditure items such as children's education, family's health care (especially where a case needed to be referred to a clinic/hospital) as well as buying clothes for other household members. While women in Kapchesombe mentioned that in the past men were responsible for



deciding all household expenditure, increasingly women can make decisions on buying kitchen utensils which used to also be the responsibility of men. The fact that both men and women in discussions suggested that women do not have a significant say over major expenditure items also indicates that both men and women must be involved in project intervention especially where capital investments have to be made. Targeting women only may result in no household investments being made to facilitate the adoption. This may entail the need to introduce gender modules during training which encourage husbands and wives to work together especially with regards to making joint decisions that both men and women are able to benefit from. Research elsewhere has shown that households that do not cooperate and collaborate often have negative development outcomes (Mudege et al., 2015). Particularly in the case of investments in potato storage while men have the overall decision making on large investments, women are largely responsible for storing potato. Potato ambient stores may thus increase women's labor in terms of sorting, grading and monitoring, but without commensurate economic benefits for them. Women may fail to store potatoes in the stores if they are not motivated to invest in time consuming good harvest and postharvest practices which ensure that only quality potatoes are stored.

Women traders also raised a critical point by mentioning that once men know that a woman has an income they stop providing for the family and leave everything for the woman to take care of, thus stressing them. This may also result in women not having enough of their money to invest as most of their income will go towards meeting household needs. This also supports the need for gender training so as to emphasize the role of cooperation and joint decision making in families.

COMMUNITY LEADERSHIP

While men in all FGDs mentioned that they did not have any problems participating in group activities and leading, women mentioned that they were not well represented in group leadership. Women mentioned that men did not give them information related to groups and group activities to explain why women were not in leadership.

Sometimes invitations for training are sent to household heads who are mostly men, whilst at the same time men had the final say regarding who from the household would attend what training. MPODA traders mentioned that their association had been formed by men and women joined later on to explain why there were no women holding leadership positions. This had implications in that, when organizations recruit group leaders for training it was mostly men that attended such training as they dominated leadership positions in the groups. Figure 10 summarizes perceptions by male and female farmers and traders related to men and women participation in community groups and activities. The category 'Involvement in Farmers Organizations and Cooperatives' also include items on membership as well as occupation of leadership positions in these groups. Benet women farmers scored Speaking in public lowest, which could be related to their ability to express their opinions.

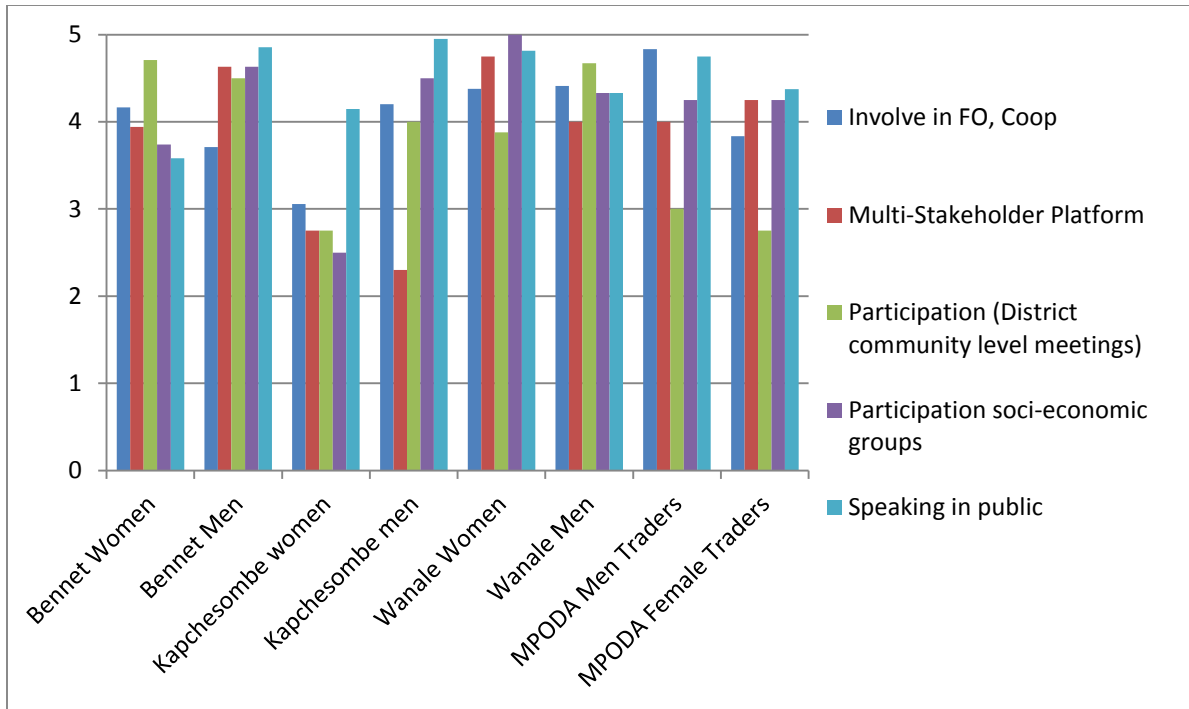


Figure 9: Perceptions of women and men farmers and traders regarding participation in community activities and leadership

In general (except for Wanale) women consistently perceived to be less involved in farmer organizations and cooperatives (including leadership) than men although perceptions for both men and women were generally positive (score above 3). Although in all farmers groups except Kapchesombe men and women perceived their participation in meetings at district and community level much more positively, in all groups it was mentioned that they rarely if ever attended meetings at district level. This may indicate that smallholder farmers and traders have limited ability to influence policy at higher levels as they did not directly relate to district officials. In general both men and women traders were not as active in socio-economic groups as compared to farmers (except for Kapchesombe and Benet women) mentioning that they often did not have time to participate. Generally, both men and women perceived that they had a high to express their views in public as well as to speak in public. Men had more positive perceptions (except in Wanale) than women.

However, while both men and women had generally positive views regarding their participation in community groups and in leadership, composition of the newly established store management committees do not support the notion that women are well represented in managerial positions and would therefore be empowered to participate.

Store management

The potato postharvest project will work through farmer and trader associations. Evidence from associations demonstrates that women are underrepresented in leadership positions. During the study, most female FGD participants had expressed the will to be active in store management. However; personnel from Self Help Africa (SHA) who facilitated the process of electing store management committees revealed that most women refused to stand for these positions. While



most of the female nominees did not give reasons as to why they would not accept the position, some of the reasons advanced included lack of time to commit for such duties. Figure 11 thus shows that while women are underrepresented in most leadership positions, they are almost non-existent in storage management committees of the four associations. In FGDs women expressed concern that if only men hold leadership positions in the management of the

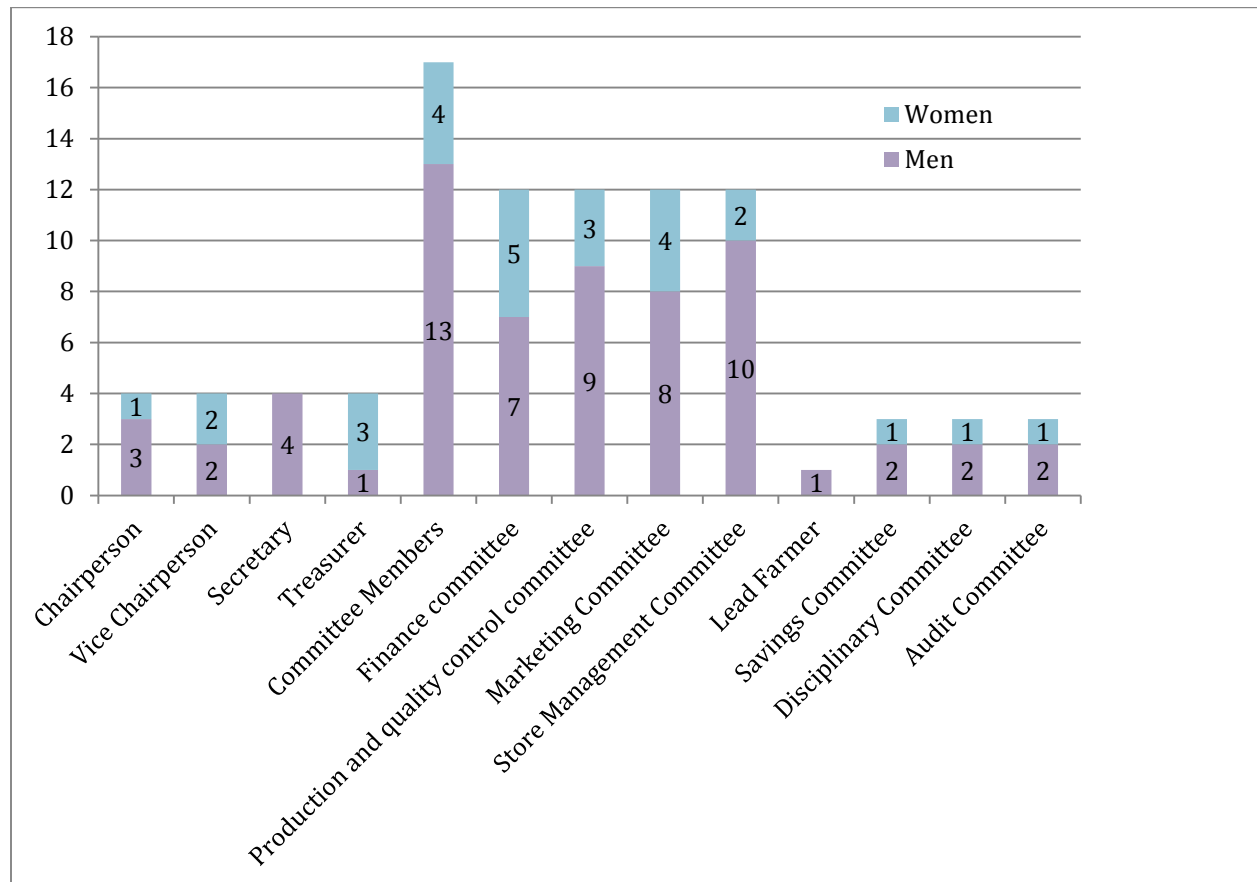


Figure 10: Potato association management by sex and position

Women insisted that for them to benefit from the stores, there should be gender balance in the people selected to manage the store. However, as MPODA women traders observed, the association had been formed by men as a result men dominated leadership positions. Women traders mentioned that they wanted to change this imbalance through voting women members to participate in leadership. They also mentioned the risk of women being given token positions where they are not involved in decision making stating for instance that women could be designated deputy or committee member positions which did not have much influence in terms of decision making. Thus even in terms of group representation it is not enough to see that women are in leadership but to understand what the different leadership roles entail in order to understand whether women are indeed being empowered or are just simply token leaders. As a result it may be better to encourage groups to have women in positions where they can actually be involved in decision making regarding store management. This may necessitate having clear Terms of Reference specifying roles of the various leadership positions so that women are not just in token positions.



Women came up with solutions that would enable them to be involved in group decisions about the stores. These included

- Performance based leadership systems with by- laws which make it possible to remove leaders who were not performing well.
- Trader women also mentioned rules clearly stating how much each association member is allowed to keep in the store. There was fear that some men traders could order high volumes of potatoes for storage and finish up storage space for others.
- By- laws to manage group relations with outsiders to eliminate mistrust about group leaders capturing all resources from outsiders; if these outsiders only meet with the group chairperson.
- Election of women into leadership positions such as chairperson.
- Addressing gender norms to facilitate women to take up leadership positions. Women mentioned that simply electing women to leadership positions may not work since their husbands may not be happy if their wives became too heavily involved in the association work. They suggested a few strategies that could be used to support women who were elected to leadership positions:
 - Working in teams so that husbands are not jealous of women’s group activities as well as coming up with working timetables that are sensitive to women’s needs.
 - Working times should be clear and women friendly so that women can attend committee meetings and dispense their management duties in a timely fashion.
 - Husbands should be sensitized about the roles and duties of women committee members so that they are aware of what the wife is doing.

TIME ALLOCATION

Both men and women farmers mentioned that they spent most of their time on farming activities. Traders also mentioned that they spend some of their time farming as they were both traders and farmers. However reproductive activities such as caring for children and cooking, keeping the house clean was usually regarded as the domain of women and girls. Except in Wanale, men more than women perceived that they spent a lot of their time on community development activities. For example, some men groups mentioned participating in construction of a health clinic and a maternity center and also managed to get support to build a house for the health workers.

Both men and women mentioned limited leisure time except men had more leisure time than women, and in Wanale women scored ‘0’ meaning that they did not have any leisure time at all and had no say over the allocation of leisure time in their home (figure 12).

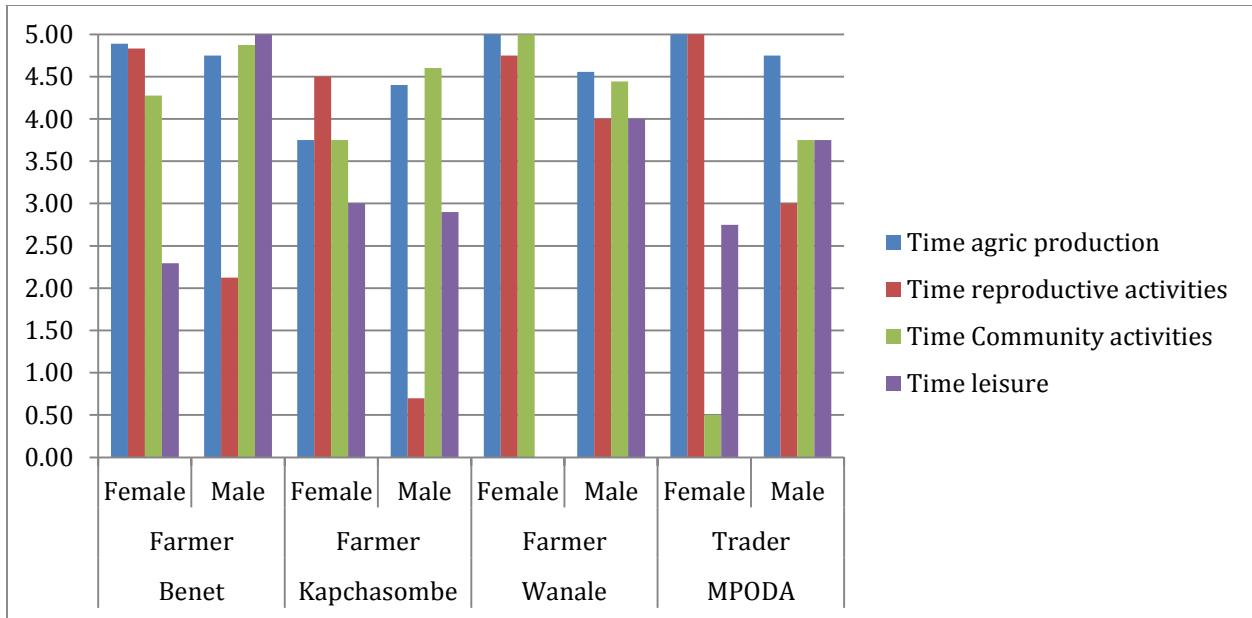


Figure 11: Perceived control over time allocation by sex and location

Men, on the other hand, indicated that they had time for leisure, but this generally depends on the season and the level of intensity of the agricultural activities. During the agricultural season some men mentioned that in the evenings they may sometimes go to share a cup of tea or a beer at the local center with their colleagues but women were always busy and did not have any leisure time at all.

It is me who has to allocate time for leisure. If you don't do so, you may never have time to rest. This work we do hardly allows you to think of leisure, but for your own well-being and good health, you must take time off. (Participant, Male Traders FGD, MPODA).

Sometimes I can take my wife for an outing. But this is very rare. She is always very busy. But then I can also buy her a beer and take it to her at home. Then she will be very happy. (Participant, Male FGD, Kapchesombe).

Limited leisure time for women may actually indicate the need for postharvest technologies that actually reduce labor demands on their time rather than technologies that will increase their labor demands.

COMPREHENSIVE SCORE ON EMPOWERMENT PERCEPTION BY MEN AND WOMEN FARMERS AND TRADERS

Comparison scores of empowerment index (E.I.) indicate that male farmers in Wanale and Bennet had the highest empowerment perception scores (above 0.8). According to the WEAI scale, a person is considered empowered if they score 0.8 and above. This implies that the rest of the other respondents are not empowered including male traders who would be expected to be more empowered than farmers. In all groups men perceived their empowerment levels higher than women.

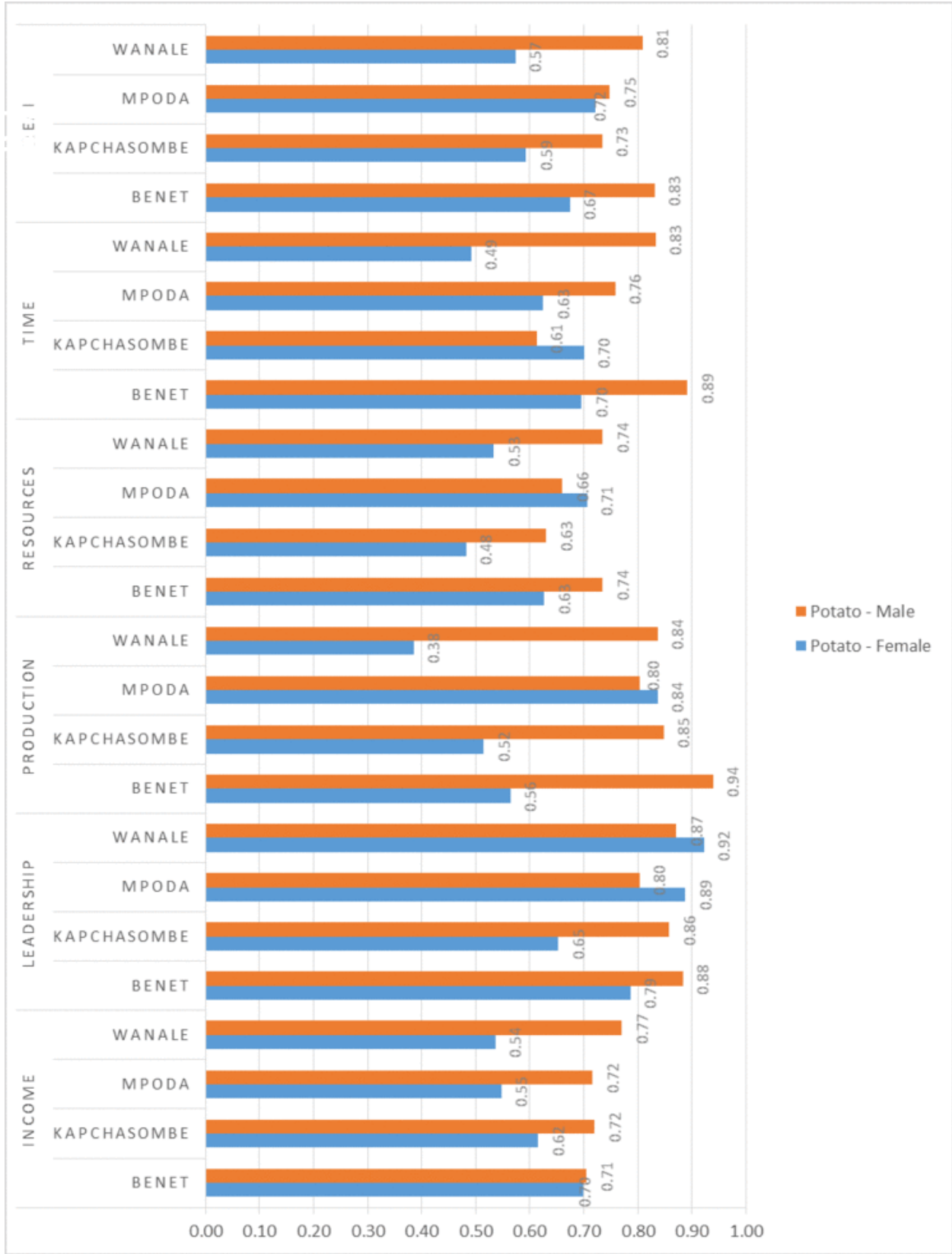


Fig 13: Overall perceived empowerment scores by sex, location and domain for farmers (EI=Empowerment Index)



Among farmers in Wanale, Kapchesombe and Bennet it seems that lack of ability to make decisions on production as well as lack of access to required resources were the major contributors to women's lower perceived levels of empowerment. As far as traders (MPODA) are concerned, the overall levels of perceived empowerment for both men and women were almost similar. Female traders perceived their ability to make business-related decisions and access necessary resources more positively than men although they perceived to have less control over income and household expenditures as well as time. This indicates that strategies to address female farmers' interests and those to address female traders' interests need to be different. Increasing female farmers' ability to make production decision and determine allocation of resources could improve their empowerment score whilst women traders will need strategies that enhance their capacities to have control over the income generated by the business and use of their time. While women, except those in Kapchesombe and Benet, had high perceptions about their participation as leaders in groups, evidence from the occupation of positions in store management committees shows that they often occupied lower positions with less decision making powers.

5. Discussion

This strategy paper has clearly demonstrated the link between gender relations and the division of roles in potato production, postharvest management and marketing as well as the ability to accrue benefits through-out the potato value chain. For example, because men were involved in marketing more than women, key issues they raised related to unequal relations in the market between themselves and traders as well as limited access to market intelligence. On the other hand, women also mentioned issues related to seed production such as sprouting of potatoes or access to quality seed pertaining to activities which they felt they were mostly responsible for and engaged in. 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 labor... 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. For example, it is clear that women are underrepresented in the management of the associations. However, while we advocate that women be engaged in store management and other leadership positions in the associations, simply electing women into leadership positions may not help if these women are just token heads and are not involved in strategic decisions that guide management of the association and the stores in particular. Thus while women can be elected in these positions, to be able to meet their strategic gender interests, women may require training on management and negotiation skills in order to ensure that their voices are heard in the management of associations and the needs of women not ignored.

Slater (2010:640) notes that 'achieving practical gender needs (those needs related to day to day survival) and strategic gender interests (interest related to achievement of long-term goals)



is rarely mutually exclusive, it becomes clear that the different processes of empowerment can be two sides of the same coin'. Thus, the strategy also suggests approaches that will help both men and women to meet their needs in relation to gender division of labor in agricultural production, postharvest management and marketing within households. This has been a strategy used by other researchers to address women's needs. For example, when introducing new varieties of staple crops, since women are involved in cooking, there is a common refrain that varieties that address cooking time and cooking qualities may encourage women to adopt modern variety in different cropping systems (Klawitter et al., 2009; Abdelali-Martini, 2012). 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 the case of stores, it emerged in the analysis that women are more engaged in storage activities than men. However, if stores are expensive women may not be able to contribute to their construction or even utilize them; or if their strategic interests in participation and benefiting from markets are not addressed, women's labour related to storage activities may increase without the commensurate benefits. As a result stores need to be affordable, accessible and user friendly to women farmers. Yet, if their strategic interests related to marketing and benefiting from marketing are not addressed stores may not be successfully adopted.

There are reasons why technologies may be rejected, some of which are not related to technical efficiency of the technology itself. For example, while it is suggested that potato storage could help to stabilize prices, experiments with potato storage in countries such as Venezuela, Colombia and Ecuador and Peru failed because farmers did not want to keep their potatoes in storage and consumers preferred fresh potato to stored potato (Okoboi et al., 2001). Taking this into consideration there is continued need to conduct willingness to pay studies and consumer acceptability of stored potato to ensure that expected price stabilization and increases in profitability do materialize. In addition, other social factors such as gender relations may also lead to a technology being rejected. For instance, Doss (2001) suggests that for technology to benefit women, it should not only reduce women's labor burdens but also '...provide greater control for women over their labor and the outputs of their labor'. There may be need for a quick appraisal once the stores are up and running to understand how labor related to storage is managed within families because if women become over-burdened while at the same time not benefiting from potato incomes the technology may in the end not be successfully adopted.

In addition, 'technologies should take into account the resource base of female farmers; extension services need to be targeted specifically to them; and their decision-making power' (Tirune et al., 2001). Sometimes women may face different constraints from men so there is need to develop technologies that take into account these constraints and suggest solutions that are appropriate for the resources that women have at their disposal (Doss, 2001). For example, instead of focusing on high input costs technologies that women and other poor farmers may not be able to afford, low cost technology could increase women's ability to adopt modern varieties and other modern technologies. Although we did not collect information on the resource base of women, the Comparison tool of the five dimensions of men's and women's empowerment demonstrated that men control most of the household expenditure and the constraint analysis tool showed that women do not have adequate access to basic implements like hoes and rakes that they need because their husbands who control household income and expenditure are not willing to buy them. Accordingly, there may be need to encourage joint decision making in the household. For example, Mudege et al. (2015), demonstrated that in Malawi wherever husband and wife made joint decisions over use of income from potato earnings money, was used to buy seed, fertilizers and other equipment; whereas when male



household heads made decisions on their own, women mentioned that they often did not benefit from potato income. Thus in order to positively influence decisions to reinvest in agriculture, the project need to encourage joint decision making within households.

Men mentioned lack of knowledge on what the market wants and also on price intelligence. Although men participated more in markets than women, both men and women did not have market skills or adequate market information. For example, women in Wanale mentioned not even knowing where exactly their husbands sell the potato, whilst men mentioned that they were often told that their potato was poor quality and also that they were not sure how much their potato would fetch. Poor quality potatoes also affected traders because these spoil easily during storage. Thus strategies to address market constraints need to be developed and implemented. For example, both men and women farmers could be trained on proper harvesting and handling of potato to ensure quality potato for marketing and storage. Traders advocated the need to be invited to such trainings so that they can practically share how poor quality potatoes ruin the market for both farmers and traders, and what measures can be taken to set up a simple quality control system. In addition, methods to improve access to markets and bargaining power (e.g. use of ICT to inform women and men about market prices, whether forecasts etc.) could increase the ability of women and men to adopt potato storage since they will be better informed about markets. In reference to *de facto* female headed cotton farming households, Horrell and Krishnan, (2007) state that 'even without additional resources, greater profitability could be achieved from their existing agricultural output through access to better selling networks and buying consortia for inputs'. The same can also be true for women potato farmers, if social norms that prevent them from marketing potato or deciding on household expenditure are challenged, women may be able to invest more into potato production resulting in better quality crop and better storage.

Doss (2001) states that since men and women face different constraints there may be need for policy changes taking into account these constraints so that both men and women can benefit. However, as suggested by Doss (2001), if the policy change only recognizes that women face certain constraints – e.g. their domestic responsibilities or restricted mobility – and then sets out strategies so that these social realities do not affect their roles in agriculture, only practical interests will be addressed and no transformation of gender relations in agricultural production will take place. For instance, in the study areas, while it is not expected that the project determines any policy changes in a meaningful way, we could ensure that stores are built closer to where women have access, that both women and men receive training on seed storage as well as potato production and harvest and postharvest handling to ensure proper storage. These activities will improve potato storage although not necessarily lead to gender transformation and empowerment of women. However, to move towards empowerment and gender transformation, we could embed in our farmer training gender modules that encourage farming as a business where husbands and wives need to jointly make decisions so that the farming enterprise is successful.

Above all farmers may adopt storage technologies if it makes economic sense to do so. Therefore, the project should also focus on market development. To this end Sikuku and Ogemah, (2005) suggest that strategies to improve markets should address some of the following:

- Reduce farmer transaction costs in the market
- Increase output marketing options and opportunities
- Improve access to market information



- Promote farmer collective actions that will enable them to bulk large volumes of good quality produce for sale
- Build the necessary capacity and empowerment for farmers to handle marketing functions.

Thus in addition to the piloting and introduction of storage facilities, the project should have a strong marketing component which ensures that both men and women farmers acquire skills needed to competitively participate in potato markets.



6. Gender strategy and plan

Activity	Gender responsive	Gender transformative	Responsible
Production			
Poor quality seed and poor quality potato			
Together with other development partners, promote recruitment and participation of women farmers in seed potato and ware potato training (including lead farmer training and hosting of demonstration sites where applicable)	<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 extension officers and partners 	<ul style="list-style-type: none"> Encouraging women participating in groups focusing on potato and seed production Involving strong women leaders to help with mobilizing women in the community Integrating gender modules in farmer training initiatives Involving female farmers in farmer field visits 	<ul style="list-style-type: none"> Farmer Associations Extension staff BugiZARDI
Lack of affordable seed			
Seed production training	<ul style="list-style-type: none"> Training on seed production targeting women BUGIZARDI works hand in hand with the associations to ensure that women are targeted for training Confer with the women to agree on best time to hold training. Phase training to ensure women's participation Use visuals and practical 	<ul style="list-style-type: none"> Encouraging women to start seed business Involving women in research for development Participatory planning with groups involving women 	<ul style="list-style-type: none"> Farmer Associations BugiZARDI CIP Self Help Africa (SHA) Development partner



Activity	Gender responsive	Gender transformative	Responsible
	<p>sessions and material translated into local languages to cater for low literacy</p> <ul style="list-style-type: none"> · Harmonize training activities between BugiZARDI and SHA to limit time demands on farmers 		
Lack of knowledge of fertilizer			
<p>Training on safe and of proper use of fertilizers and other chemicals</p>	<ul style="list-style-type: none"> · BUGIZARDI to organize on-farm trials/demonstrations · Improve farmer extension linkages and also use knowledgeable male and female farmers as community extension · Male and female farmers and association members should equally participate in learning visits · 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"> · 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 · Link association to UNADA and other agencies that support input marketing for training and other technical support · Ensure that both men and women equally participate in the training sessions offered 	<ul style="list-style-type: none"> · BugiZARDI · Operation Wealth Creation (extension service/NAADS)



Activity	Gender responsive	Gender transformative	Responsible
Lack of access to fertilizer because of associated expenses			
Encouraging farmers to form groups for collective purchase to reduce cost	<ul style="list-style-type: none"> Fertilizer purchase groups include both men and women 	<ul style="list-style-type: none"> Availing loan products that are responsive to men and women's needs Linking men and women farmers to appropriate financial services 	<ul style="list-style-type: none"> Farmer Associations MFIs
Harvest and postharvest			
Poor handling and harvesting procedure			
Training farmers on proper potato handling	<ul style="list-style-type: none"> Training men and women farmers on proper dehaulming, harvesting and postharvest handling to ensure less spoilage during storage 		<ul style="list-style-type: none"> BugizARDI
Lack of storage			
Construction of stores	<ul style="list-style-type: none"> Adapt store to locally available materials to reduce costs of construction Promoting community stores to reduce cost of construction Establish linkages between association and consultant (store construction) for future support Promoting smaller ambient stores that men and women 	<ul style="list-style-type: none"> Women are involved in decisions regarding store construction for example where it is going to be located. 	<ul style="list-style-type: none"> CIP BugizARDI



Activity	Gender responsive	Gender transformative	Responsible
	<ul style="list-style-type: none"> · can afford · Men and women are both trained on construction of smaller individual stores using locally available materials to bring down costs · Both men and women are trained on potato storage 		
Store management			
Store management	<ul style="list-style-type: none"> · Ensure that women are actively engaged in store management and have access to knowledge required to manage stores successfully · Document and share gender based best practices for store management 	<ul style="list-style-type: none"> · Women involved in evaluation of stores · As a follow-up to store management training that SHA has done, review association management rules for gender inclusiveness (women on management committee, holding a non-passive position, e.g. represented on both the executive and technical committees) · Support dialogue between buyers and association members – encourage women representation and participation 	<ul style="list-style-type: none"> · SHA · CIP
Market access			



Activity	Gender responsive	Gender transformative	Responsible
Poor market access			
Training of farmers on business skills including marketing and profit calculation	<ul style="list-style-type: none"> · Involving both male and females farmers and entrepreneurs in business training courses · 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 potato farmer groups 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 · Link associations (potato producers and MPODA) and seed producers in Zombo 	<ul style="list-style-type: none"> · SHA · BugiZARDI
Lack of knowledge about markets			
Dissemination of market information through mobile phones	<ul style="list-style-type: none"> · Dissemination of market related information such as potato prices in Kampala to ensure that male and female farmers negotiate from an 		<ul style="list-style-type: none"> · SHA · CIP



Activity	Gender responsive	Gender transformative	Responsible
	informed position <ul style="list-style-type: none"> · 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 potato 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 		<ul style="list-style-type: none"> · CIP
Services			
Linking farmers to extension services			
Promote recruitment, training, participation of women farmers in seed potato and potato training (including lead farmer training and hosting of demonstration fields where applicable)	<ul style="list-style-type: none"> · Link associations 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 	<ul style="list-style-type: none"> · BugiZARDI · UNADA · Extension staff
Link farmers to finance	<ul style="list-style-type: none"> · Training of men and women farmers in savings and credit management in order to 	<ul style="list-style-type: none"> · Women friendly loans and credit facilities 	



Activity	Gender responsive	Gender transformative	Responsible
	<ul style="list-style-type: none"> benefit from SACCOs · Linking farmers to Micro Finance Institutions and other credit providers 	<ul style="list-style-type: none"> · 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 · 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 potato production in general) 	<ul style="list-style-type: none"> · Build capacity of CIP researchers and partners implementing the project in Malawi to integrate gender into project implementation · Revise some modules and training materials to ensure that gender is well integrated 	<ul style="list-style-type: none"> · BugiZARDI · CIP



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