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Gender Analysis of the Pigeon Pea Value Chain: Case Study of Malawi

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ACRONYMS

| | |
|----------|--|
| AGRA | Alliance for Green Revolution in Africa |
| ASSMAG | Association of Smallholder Seed Marketing Action Group |
| CARD | Center for Agricultural Research and Development |
| EPA | Extension Planning Areas |
| ETG | Export Trading Group |
| FGDs | Focus Group Discussions |
| FHH | Female-headed households |
| FTF | Feed the Future |
| GBCs | Gender-based constraints |
| GBOs | Gender-based opportunities |
| GCFSI | Global Center for Food Systems Innovation |
| GDF | Gender Dimensions Framework |
| GOM | Government of Malawi |
| HH | Household head |
| ICRAF | International Center for Research in Agroforestry |
| INGIA-VC | Integrating Gender in Agricultural Value Chains |
| kg | Kilogram |
| LUANAR | Lilongwe University of Agriculture and Natural Resources |
| MHH | Male-headed household |
| MK | Malawian Kwacha |
| NASFAM | National Smallholder Farmers Association of Malawi |
| NGO | Non-governmental organization |
| U.K. | United Kingdom |
| U.S. | United States |
| USAID | United States Agency for International Development |

EXECUTIVE SUMMARY

The purpose of this study was to investigate gender relations and intra-household dynamics in Malawi, how these are manifested at different nodes of the value chain, and the implications of these gender-based factors for adoption and scaling of multipurpose legumes. The study is part of a comprehensive research effort of the Global Center for Food Systems Innovation (GCFSI) to answer the question of “Where and how can multipurpose legumes be scaled for sustainable intensification of maize systems and what would the potential impacts be, in the medium term, across the food system in Malawi?” A gender analysis of this value chain was based on our recognition that, from production to processing, gendered patterns of behavior and resource allocation condition the activities of male and female value chain actors, the distribution of resources and benefits (incentives) derived from value chain activities, and the efficiency and competitiveness of the value chain. In order to be successful, efforts to scale multipurpose legumes must isolate the gender-based constraints from general barriers in order to address gendered implications for adoption and expansion of the pigeon pea at the farm level and beyond. Gendered incentives to participate at post-production levels of the value chain are also needed. The design and targeting of innovative solutions to address constraints along the value chain must take into account the sociocultural and gender diversity that exists amongst smallholder farmers and actors.

We analyzed the pigeon pea value chain using a rapid assessment approach and the Integrating Gender into Agricultural Value Chains (INGIA-VC) analytical framework (Rubin and Barrett, 2009). The INGIA-VC consists of five phases—this research focuses on the first three—which examine value chain participation, the identification of gender-based constraints and opportunities, and the impact of these constraints and opportunities for project outcomes and economic empowerment. Secondly, we utilized the Gender Dimension Framework to collect and organize quantitative and qualitative data necessary to understand gender relations and roles at each node of the value chain. Fieldwork was conducted in the North, Central, and South regions of Malawi. The research team consisted of three faculty members and three graduate students from the Lilongwe University of Agriculture and Natural Resources (LUANAR)¹ in Malawi, and a faculty member and a graduate student with GCFSI.

We undertook a gender mapping of the value chain to understand the participation of men and women at each node, the motivation for their involvement, and the critical resource requirements therein. Further, we identify the general and gender specific constraints and opportunities for each actor group that may have implications for the participation, performance, and sharing of benefits. The tables below summarize our main findings for the various nodes of the value chain.

Overall, our findings reveal that the potential gains of legume-intensified maize systems (nutrition, income and food security) are closely tied to promoting gender equitable access to resources, participation in markets, and in decision-making on the allocation of resources and benefits from value chain participation. In communities where men and women share rights and responsibilities, and women are given access to resources, the likelihood for success of food systems innovations is increased. Empowering women economically is essential for harvesting the potential food security and poverty reduction benefits of legume expansion and commercialization. Efforts in Malawi must address intra-household dynamics and gender relations that give men the privilege to control income

¹ We extend a special thanks to Judith Kamoto, Catherine Mthinda, Zione Mbewe, Franklin Chilomba, Frank Musa and Vinjeru Nyirenda (LUANAR); and Danielle Ami-narh (MSU) for participating in this fieldwork.

from pigeon pea sales, which significantly impacts whether or not expansion in pigeon pea production could contribute to improved food security and poverty reduction.

General Challenges in the Pigeon Pea Seed System

| Constraint | Recommendations | Rationale |
|---|--|--|
| <ul style="list-style-type: none"> Limited availability of improved pigeon pea varieties and commonly grown varieties are of long maturity duration (8-9 months), thereby discouraging adoption, particularly in the Central region where livestock damage is an important threat to the legume. | <ul style="list-style-type: none"> Need for investments in research to identify high yielding, pest resistant, and shorter duration pigeon pea seed varieties. Support local seed production/ multiplication in all regions. | <ul style="list-style-type: none"> To encourage adoption, improved seed varieties of preferred quality or characteristics must be readily available to farmers. Identifying shorter duration varieties has potential to increase adoption, particularly in the Central region where livestock damage remains an important challenge to pigeon pea adoption. NASFAM's model of involving farmers in seed multiplication could be tested in the Central and North regions. This will increase seed availability and generate additional revenue for farmers involved in seed multiplication. |
| <ul style="list-style-type: none"> Low incentives amongst farmers to purchase improved seeds due to low demand for legume (absence of buyers), low output prices, and frequent price fluctuations. | <ul style="list-style-type: none"> Organize farmers in groups for collective marketing of the legume. Identify potential pigeon pea buyers (export or domestic market channels), facilitate linkages between farmers and potential buyers of the legume, and invest in the collection and dissemination of price and other market information to all actors along the value chain. | <ul style="list-style-type: none"> The common practice of recycling seeds is detrimental to crop productivity. The practice of selling individually limits/weakens farmers' bargaining position with buyers. Further, without markets or buyers, farmers (particularly in the North) do not have any incentives to invest in improved seeds or expand production beyond household consumption demands. Farmers across all regions will invest in improved seeds if there is a profitable market for the legume. In the South region, where land is limited, expanding the area cultivated to pigeon pea necessitates that the legume is at least as profitable as competing crops. Collective marketing could increase the volume available for sale in one location, improve farmers' bargaining power with buyers, and potentially result in better prices than they would receive if selling individually. With attractive prices, farmers will be incentivized to demand improved seeds. In the North, where land is plentiful but there are no buyers, linking farmers to potential buyers will increase incentives to invest in improved seeds. This also could result in increased reliability of supply for buyers, thereby improving the market. |

General Constraints to Pigeon Pea Cultivation and Marketing: Farm Level

| Constraint | Recommendation | Rationale |
|--|---|---|
| <ul style="list-style-type: none"> – Insufficient seeds in quantity or quality (short duration, pest resistant) needed. | <ul style="list-style-type: none"> – Investments in research to identify high yielding, short duration pigeon pea seed varieties. – Innovations that stimulate/encourage local production/multiplication of certified seeds. | <ul style="list-style-type: none"> – High yielding seeds are required to increase yields in the South where land is limited. Shorter duration seed varieties are required to stimulate adoption, particularly in the Central region where livestock damage is a serious threat to the legume. High yielding seeds are also required to stimulate adoption in the North region where land is not a limiting factor. Across all regions, access to markets and attractive output prices are necessary to create incentives to purchase improved seeds. |
| <ul style="list-style-type: none"> – Access to land limits expansion in the Central and South regions. | <ul style="list-style-type: none"> – Supporting maize diversification systems would allow for increased inter-cropping methods. | <ul style="list-style-type: none"> – Expansion can only take place by expanding access to land or by providing training to farmers on best farm agronomic practices as well as the nutrition benefits of intercropping maize with legumes. |
| <ul style="list-style-type: none"> – Farmers lack knowledge of best farm management practices to maximize legumes and main crop yields; appropriate fertilizer and pesticides, and seed varieties. | <ul style="list-style-type: none"> – Strengthen the role of agricultural extension to train or build farmer's capacity in crop management, best production practices and input usage/utilization. | <ul style="list-style-type: none"> – Given competition with other crops for limited resources and the important role of maize as a food security crop, promoting adoption or expansion of legumes must incorporate capacity building for farmers on best farm management practices, pesticide application techniques for good yields, and high profits. |
| <ul style="list-style-type: none"> – Access to markets (North and Central regions). Poor transportation infrastructure; buyers do not come to the location of farmers. | <ul style="list-style-type: none"> – Investments in transport infrastructure-roads. – Strengthen the role of agricultural extension in organizing farmers for profitable exchanges with potential buyers and in improving farmers' access to market (especially price) information. | <ul style="list-style-type: none"> – To stimulate expansion of the legume to satisfy household consumption needs and beyond, it is necessary to improve farmer's market access. In the North, investments in roads could encourage buyers to travel closer to farmers. However, buyers must be guaranteed a steady supply in large volume. To achieve this, there is a need to organize farmers in groups for the marketing of the legume. Farmers need access to market information to improve their bargaining power with buyers. |
| <ul style="list-style-type: none"> – Lack of access to reliable output price information, plus frequent fluctuations in prices, coupled with perceptions of being cheated by vendors. – Low output prices limits farmers' demand for pigeon pea inputs (seeds and pesticides). | <ul style="list-style-type: none"> – Investments to support the collection of price information along the value chain, and the dissemination of the information to farmers for informed marketing decisions. – Design workable models of collective action and encourage farmers to join groups to access output/input markets. | <ul style="list-style-type: none"> – Improving the flow of price information along the value chain will promote competition amongst value chain actors. Coupled with collective marketing, information on prices at different nodes of the value chain will enhance farmers' bargaining power, thereby fetching them better prices than when selling individually with no knowledge of prices. As profits increase, farmers will be more likely to invest in pigeon pea specific inputs such as pesticides. |

Gender-Based Constraints in Pigeon Pea Cultivation and Marketing: Farm Level

| Constraint/Opportunity | Recommendation | Rationale |
|--|---|--|
| <ul style="list-style-type: none"> – Across all regions, women play a very limited role in farm management and investment decisions (what combination of crops to grow, area to allocate to each crop, how to plant, inputs to use) due to cultural norms that designate men as household heads, and therefore responsible for most important decisions within the household. | <ul style="list-style-type: none"> – Invite women (a quota for women) and men to participate in training on farm management/agronomic practices; incorporate in the training activities that will support joint participation in household and farm management decision making. – Support women’s direct access to and participation in markets. | <ul style="list-style-type: none"> – Conflict of interests and gender differences in preferences for different types of legumes and in motives for growing different legumes suggest that decisions made by men do not necessarily reflect the needs of women. Interventions that encourage joint decision-making could assert women’s needs and preferences in overall household cultivation decisions. Linking female farmers to markets will increase their direct access to pigeon pea revenue, improving their role in decision-making within their household. |
| <ul style="list-style-type: none"> – Women’s access to markets is limited due to cultural restrictions on their mobility and limited access to transportation assets (e.g., bicycles and carts). – These mobility restrictions also affect their bargaining/negotiation power and consequently the price they receive for their legume. | <ul style="list-style-type: none"> – Organize female farmers in groups for the collective bargaining/marketing of their produce. – Link village-level pigeon pea marketing groups to buyers by fostering communication and enabling relationships. – Train group members on aspects of group functioning and management to achieve best outcomes. – Train group leadership on business management and marketing skills (e.g., negotiation, weighing of grains, etc.). | <ul style="list-style-type: none"> – Collective marketing will increase the volume of pigeon pea available for sale. Larger volumes will encourage buyers to meet women in the villages. Group marketing can also be helpful in fetching better prices for the legume. – Organized in groups, female farmers can jointly undertake some value-added activities, such as drying, winnowing, sorting and bagging, thereby reducing the time and workload associated with conducting these activities as individuals. Higher quality can be advantageous in terms of helping women fetch better prices. |

| Constraint/Opportunity | Recommendation | Rationale |
|--|--|--|
| <ul style="list-style-type: none"> – Across all regions, women play a very limited role in farm management and investment decisions (what combination of crops to grow, area to allocate to each crop, how to plant, inputs to use) due to cultural norms that designate men as household heads, and therefore responsible for most important decisions within the household. | <ul style="list-style-type: none"> – Invite women (a quota for women) and men to participate in training on farm management/agronomic practices; incorporate in the training activities that will support joint participation in household and farm management decision making. – Support women’s direct access to and participation in markets. | <ul style="list-style-type: none"> – Conflict of interests and gender differences in preferences for different types of legumes and in motives for growing different legumes suggest that decisions made by men do not necessarily reflect the needs of women. Interventions that encourage joint decision-making could assert women’s needs and preferences in overall household cultivation decisions. Linking female farmers to markets will increase their direct access to pigeon pea revenue, improving their role in decision-making within their household. |
| <ul style="list-style-type: none"> – Female farmers’ greater knowledge about pigeon peas, and the important role they play in activities such as seed selection and storage, coupled with their heavy involvement in pigeon pea production activities, makes them suitable targets for local pigeon pea seed production and multiplication. | <ul style="list-style-type: none"> – Build capacity for female farmers and support their involvement in pigeon pea seed production and multiplication for commercialization to other farmers. | <ul style="list-style-type: none"> – By involving female farmers in seed production and multiplication, women would have a direct source of income of their own. If they can control this income it could make significant contributions to the food security and nutrition status of their households. Bringing women into local seed production and multiplication will also reduce some of the poverty risk to women who could arise as a result of men appropriating the value chain when marketing opportunities for the legume increase. |

General Constraints in Pigeon Pea Retailing and Local Processing

| Constraint | Recommendation | Rationale |
|---|---|--|
| <ul style="list-style-type: none"> Limited access to market information, especially price information, plus frequent price fluctuations. | <ul style="list-style-type: none"> Investments to understand the price determination process for pigeon pea, the collection of price information at various stages of the value chain, and the dissemination of price information to all actors along the value chain. | <p>Limited access to price information and frequently fluctuating prices are likely to affect efficiency along the value chain negatively. By promoting the flow of information along the value chain, price information asymmetries are reduced and value chain efficiency and performance is improved. This will create incentives for different actors to continue to participate in the value chain.</p> |

Gender-Based Constraints in Pigeon Pea Retailing and Local Processing

| Constraint | Recommendation | Rationale |
|---|---|--|
| <ul style="list-style-type: none"> Women have limited access to cash-earning opportunities, which impacts the size of their business and their ability to make any business related investments/expenditures, such as hiring transportation. | <ul style="list-style-type: none"> Invest in innovative approaches that will enhance women's access to credit; for example, using approaches that are based on group membership, and providing women with literacy training to build their capacity in loan application processes. In conjunction with access to credit, train women on business management practices to increase loan repayment rates. | <ul style="list-style-type: none"> Improving women's access to cash resources will allow them to make bulk purchases at a discount and hire transportation, hopefully enabling them to break even and/or be profitable. Overall, access to credit will improve the performance of women's businesses. |
| <ul style="list-style-type: none"> Culturally prescribed roles (household/domestic chores) for women and the restrictions on their mobility limits market travel opportunities and the time they may invest in their businesses. | <ul style="list-style-type: none"> Investments in technologies that will limit time spent on household chores (maize millers). Organize female retailers in groups, build trust amongst group members, and promote group transportation of merchandise from point of purchase to markets. | <ul style="list-style-type: none"> Technologies that make household chores more time efficient could increase women's ability to invest time in business pursuits. Promoting group transportation of merchandise could reduce costs/increase profits. |

General Constraints in Pigeon Pea Buying and Trading

| Constraint | Recommendation | Rationale |
|--|---|---|
| <ul style="list-style-type: none"> Limited access to market information, especially price information, and frequent price fluctuations. | <ul style="list-style-type: none"> Investments to understand the price determination process for pigeon pea, the collection of price information at various stages of the value chain, and the dissemination of price information to all actors along the value chain. | <ul style="list-style-type: none"> Limited access to price information and frequently fluctuating prices are likely to affect efficiency along the value chain negatively. By promoting the flow of information along the value chain, price information asymmetries are reduced and value chain efficiency and performance is improved. This will create incentives for different actors to continue to participate in the value chain. |

Gender-Based Constraints in Pigeon Pea Buying and Trading

| Constraint | Recommendation | Rationale |
|--|---|--|
| <ul style="list-style-type: none"> Women have limited access to cash-earning opportunities, which impacts the size of their business, and their overall ability to make any business related investments/expenditures, such as hiring transportation and building storage facilities. | <ul style="list-style-type: none"> Invest in innovative approaches that will enhance women's access to credit; for example, using approaches that are based on group membership, and providing women with literacy training to build their capacity in loan application processes. In conjunction with access to credit, train women on business management practices to increase loan repayment rates. | <ul style="list-style-type: none"> Improving women's access to cash resources will allow them to make bulk purchases at a discount, hire transportation and labor. Hopefully this will enable them to breakeven and/or be profitable. Overall, access to credit will improve the performance of women's businesses. |
| <ul style="list-style-type: none"> Women's poor negotiation skills (linked to their need to do business as quickly as possible to return to their families) puts them at a risk of selling at lower prices. | <ul style="list-style-type: none"> Along with the literacy training mentioned above, women need access to training on business related skills. Further, collective efforts may be necessary to counteract domestic/cultural mobility constraints. | <ul style="list-style-type: none"> Business related training can help women to negotiate effectively and could be useful especially for collective/group efforts. Promoting group transportation of merchandise could reduce costs/increase profits/address cultural mobility constraints. |

1. INTRODUCTION

As part of its Year 2 effort in Eastern and Southern Africa, the Michigan State University (MSU) Global Center for Food Systems Innovation (GCFSI) funded nine research projects. Each was to generate knowledge useful to answering the question, “Where and how can multipurpose legumes be scaled for sustainable intensification of maize systems and what would the potential impacts be, in the medium term, across the food system in Malawi?” Specifically, in the summer of 2014, each project conducted research to aid in the process of identifying and designing innovative solutions to address the challenges associated with scaling multipurpose legumes in Malawi to improve food security and reduce poverty or take advantage of existing opportunities for scaling. This report documents the findings from one of the nine GCFSI research projects in Malawi, titled “Gender Analysis of the Pigeon Pea Value Chain: Case Study of Malawi.”

1.1 Legume-Intensified Systems in Malawi

Smallholder agriculture remains an important source of livelihoods for a majority of the rural population of Malawi (Chirwa and Matita 2012). Most smallholder households cultivate small farm plots (1–2 hectares per household), placing them at the margins of subsistence (Snapp et al. 2002). Poverty and food insecurity remain major challenges in Malawi. These challenges are further exacerbated by changing climates, rising population densities, and increasing pressure on land. As in most of Southern Africa, maize is the dominant cropping system in Malawi, with 97% of farmers relying on this plant for their main food source. Maize accounts for 60-80 percent of the area cultivated, the remainder of arable land is sown in tobacco, groundnuts, pigeon pea, and other crops (Snapp et al. 2002).

Concerns about the food security implications of declining soil fertility have sparked great interest in legume-intensified maize systems as an alternative soil fertility technology. Soil fertility has been diminished by continuous cropping with cereals and minimal use of costly fertilizers (Mafongoya et al. 2006; Snapp et al. 2002).

Research conducted in recent decades has shown that legume-intensified systems can enhance soil productivity through biological nitrogen fixation, carbon inputs, and conservation of nutrients (for example, Snapp et al. 2002; 1998). Added to the soil fertility gains, legume-intensified maize systems also are promoted for their nutritional value (Makoka 2009).

Concerns about malnutrition in Malawi (FAO) and poverty have spurred interest in legumes as a potential solution to malnutrition for low-income households. In comparison to the dominant maize crop, the protein-rich grains of legumes prevent malnutrition commonly associated with cereal-based diets (Prasanna et al. 2001). Pigeon pea has a high protein content ranging from 21 to 25 percent (Simtowe et al. 2009), making it a valuable source of protein for many poor families that cannot afford other sources of protein, such as dairy and meat.

Legumes are thought to have the potential to improve food security and reduce poverty rates among vulnerable farmers. Mhango et al. (2012) note that “Legume diversification of maize-based systems is a core example of sustainable intensification, with the food security of millions of farm families at stake.” Legumes can provide market possibilities, providing farmers with the opportunity to

improve their income and livelihoods (Giller et al. 2011; Kamanga et al. 2010), which, along with an increase in total food production, is needed to combat hunger and malnutrition (Bie 2008; De Schutter 2010).

Pigeon pea is an important multipurpose shrub legume in Malawi, attractive to smallholders for its multipurpose characteristics: dried seed, pods, and immature seeds used as green vegetables; leaves and stems used for fodder; dry stems as fuel (Simtowe et al. 2009); and its soil fertility benefits (Snapp et al. 2002). The legume is also highly drought tolerant (compared to maize, tobacco and cotton), and their long taproot is advantageous in accessing nutrients in deeper soil profiles (Snapp et al. 2003). Malawi ranks first in terms of pigeon pea production in Africa, and it is the third largest pigeon pea producer in the world, behind India and Burma (FAOSTAT 2012).

1.2 Existing Evidence of Factors Limiting Legume Adoption and Expansion

In spite of the potential benefits of legume intensified maize systems as a whole, adoption levels remain low (Kanyama-Phiri et al. 2000). Existing literature identifies several factors limiting legume adoption and expansion. As mentioned by Snapp et al. (2002), food security in Malawi is commonly equated with maize harvest. Poor farmers prefer to avoid having to purchase part of their maize requirement in the market. Kerr et al. (2013) observes that Malawian farmers define the boundaries within which legumes can expand on their farm by food security and income. The cultural dependency on maize is reflected in the priority of the crop in terms of labor and allotment of cultivated area—which can diminish the potential that legumes will be added to crop rotations throughout Malawi (Simtowe et al. 2009; Alwang and Siegel 1999). Snapp et al. (2002) observe that most farmers would be interested in expanding legumes when domestic maize production is sufficient to satisfy household demand.²

A household's resource endowment also influences the decision to adopt or expand legumes. Snapp et al. (2002) found, in highly populated areas, that legumes were most likely to be grown by farmers owning and planting a larger land area. Kerr et al. (2013) found that low resource endowed households, which are generally less food secure, are further constrained in their ability to expand legume production due to lack of land or cash for seeds and labor. Growing population densities and increasing pressure on land are trends that are likely to further reduce the size of smallholder arable land, thereby limiting future legume intensification.

Lack of reliable access to seeds constrains legume adoption and expansion. According to Simtowe et al. (2009), the seed market in Malawi is characterized as informal, with most smallholders recycling their seeds or trading with other producers. Almost no private sector exists and availability in the public sector fluctuates. Snapp et al. (2002) found that even with very small land sizes, farmers still were unable to plant all the land, given the lack of seeds and farm labor.

Limited access to markets, government institutions, and other sources of agricultural supports, exacerbated by remoteness in the location of farmers, act as disincentives for legume adoption and expansion (Mhango et al. 2012). Further, farm-gate prices for legumes are not always competitive, hindering the expansion of legumes. A three-fold difference between farm-gate and retail prices is not uncommon (Phiri et al. 1999). As observed by Mhango et al. (2012), legumes compete with other crops for cultivated area, labor, and cash resources. As a result, unless the relative profitability

² At least 50 percent of the cropped area, and over 70 percent of cropped land where farmers sow relatively smaller quantities of land (Snapp et al. 2002).

of legumes improves, the probability of a significant expansion of legumes appears limited. Not only are farm-gate prices low, but farmers also have limited access to commodity price information and to more commercially desirable grade and cultivar seeds (higher premium). These factors also discourage adoption and expansion (Makoka 2009).

Damage caused by insects/pests and livestock are other commonly cited disincentives to the adoption of legumes. For pigeon peas, insect/pest damage is a problem when the grain is on the field, and has been identified as an important cause of post-harvest losses (Snapp et al. 2002; Kanyama-Phiri et al. 1998; Snapp and Silim 1999). Snapp et al. (2002) observe that the introduction of pigeon pea in Mangochi (South) was most threatened by the common practice of open grazing of livestock after the maize harvest.

Figure 1. Extension Worker Showing GCFSI Team a Pigeon Pea Farm



1.3 Rationale for a Gender Analysis of the Pigeon Pea Value Chain

Value chains are not gender neutral, but exist and operate within a given social context. Gender relations describe the specific social relationships that exist between men and women in a given context (Rubin et al. 2009)—including who is responsible for what activities and who has access to what resources. Gender relations are quite often unequal. In each specific social context, cultural norms prescribe roles and responsibilities on the basis of gender. The society also defines access to resources on the basis of gender³. Sebstad and Manfre (2011) observe that gender-defined roles and responsibilities in value chains and within households affect access to financial services, control over income, access to and use of new technologies, inputs, and social services. Access to resources (physical, financial, human, time, information, and skills) is critical to value chain participation. Gendered patterns of resource allocation quite often imply gender differences in participation. Gender patterns of resource allocation influence participation along the value chain, and gender relations are affected by the ways in which value chains function (Matua et al. 2014). Who controls resource allocation has important implications for intra-household bargaining power and decision making, as well as the utilization of resources and the distribution of benefits derived there from.

Gender differences amongst smallholder farmers and other value chain actors suggest that efforts geared towards scaling legume should begin with the identification of gender-based constraints and

³ For example, in patrilineal cultures, women are excluded from inheriting land, an important asset in food production.

opportunities to legume adoption. As observed by Makoka (2009), a unique characteristic of the pigeon pea value chain in Malawi is that small-scale pigeon pea production is dominated by females. As in most Sub-Saharan African countries, women also play an important role in informal food distribution and processing. In Malawi, Kerr et al. (2013) observe that women's agency and access to agricultural resources are very limited. Malawian women have less access to education, land, credit, seeds, and other agricultural resources in comparison to men. Women are constrained by highly unequal workloads, including agricultural labor, household tasks, and childcare responsibilities.

Gender relations, the specific social relationships (quite often unequal) that exist between men and women (Rubin et al. 2009), affect and are affected by the ways in which value chains function (Matua, et al. 2014). While value chains offer tremendous opportunities for men and women through better market linkages and employment opportunities, at the same time, the way these value chains operate can affect some groups negatively (Matua et al. 2014).

Very few studies systematically investigate gender issues along legume value chains in Sub-Saharan Africa for implications on adoption and expansion. The few studies that exist have mostly focused on farm-level production. For example, Snapp et al. (2002) found that larger plot sizes in male-headed households (MHH) in Chisepo (Central Malawi) than in the female-headed households (FHH) in Mangochi (Southern Malawi) explained the greater likelihood to grow legumes among MHH. Further, labor constraints were frequently cited by FHH, whereas MHH were likely to attribute fallow fields to problems of fertilizer access. Additionally, more MHH than FHH used seeds that were purchased in the market (versus recycled seeds, perceived as being inferior) and received agricultural credit.

The main objective of this study is to analyze the pigeon pea value chain in Malawi using a gendered approach. The study examines each node along the pigeon pea value chain, noting gender issues that may have implications for the scaling of this multipurpose legume and/or the contribution of pigeon peas to household food security and income. We map existing gender relations along the pigeon pea value chain; analyze gender roles and relations to identify gender-based constraints⁴ (GBCs) or gender-based opportunities (GBOs) and their implications for participation at the different nodes of the pigeon pea value chain; and, finally, how this influences the sharing of benefits derived from participation. Overall, the study will provide critical input for the design of innovations targeting food security and poverty reduction in low-income farm households in Malawi through scaling pigeon pea production and commercialization.

The rest of the document is structured as follows: research methodology, findings and analysis, conclusions and implications, and next steps.

2. RESEARCH METHODOLOGY

2.1 Site Selection

Fieldwork for this research was conducted in the North, Central, and South regions of Malawi. Production statistics from Malawi's IHC 2010/2011 data revealed that total annual pigeon pea production is highest in the South (361,885,741 kilograms), followed by the Central (7,802,141 kilograms), and then the North (392,044 kilograms) (Tschirley 2014). Within each region, the

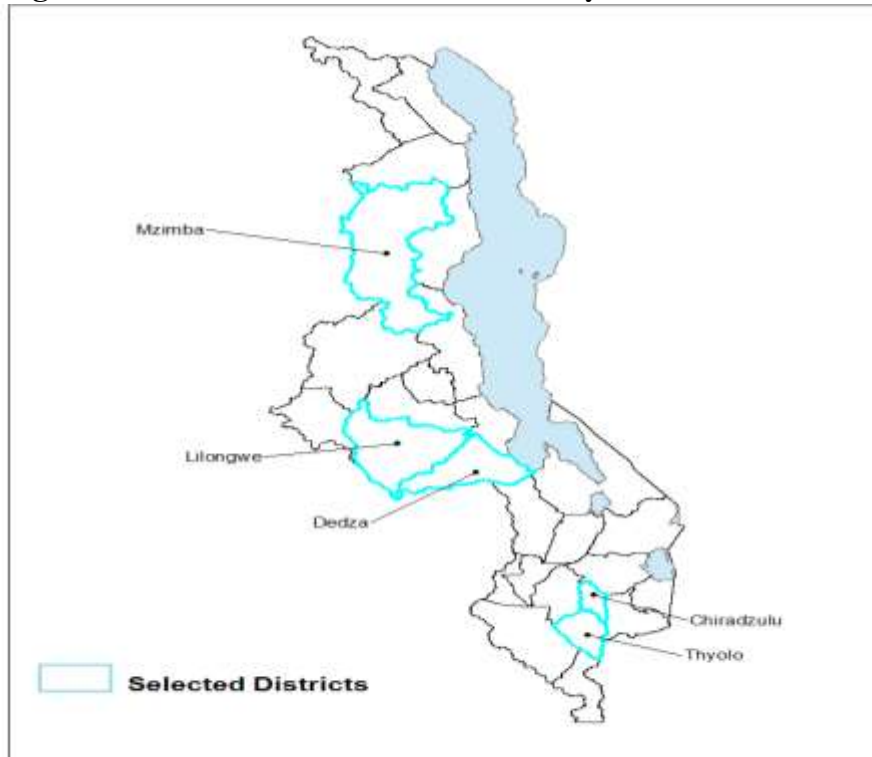
⁴ These are restrictions on men's and women's access to resources or opportunities that are based on their gender roles or responsibilities (Rubin et al. 2009).

selection of districts was based on district-level total annual production statistics from the IHC 2010/2011 data, and stakeholders' input. The goal was to identify major pigeon pea producing districts and emerging pigeon pea producing districts, particularly in the Central and North regions. Figure 2 is a map of Malawi showing the five districts selected for this research. Within each district, one or two Extension Planning Areas (EPA) were selected. In the North, we picked the district of Nzimba North; total annual pigeon pea production in this district was 298,000 kilograms (Tschirley 2014), which was highest in the region.⁵ The two EPAs selected in Nzimba North were Ensizini and Zombwe. In the Central, the two districts selected were Dedza and Ntcheu. Based on the IHC 2010/2011 data, pigeon pea production for these districts was estimated to be close to zero. However, stakeholder consultations revealed that some of the pigeon pea consumed in the Lilongwe district came from Dedza and Ntcheu. Discussions with export market buyers in the South revealed they outsourced pigeon pea from Dedza.

Furthermore, the presence of several NGOs, research projects, and organizations [e.g., Africa RISING, the International Center for Research in Agroforestry (ICRAF)], which promote legume production, are located in Dedza and Ntcheu, and are believed to have led to increased pigeon pea cultivation over time. In Dedza, we selected Golomoti and Mtakataka; in Ntcheu, we selected Nsipe and Kandeu. In the South of Malawi, the two districts selected were Thyolo and Chiradzulu. In Thyolo, the EPAs identified were Masabanjati and Khonjeni. In Chiradzulu, we selected Namitambo.

⁵ During our interactions with stakeholders, it was revealed that more recent production statistics show higher levels of production in Karonga district than in Mzimba North. In the absence of any formal statistics on this, we decided to maintain Mzimba North as our focus area.

Figure 2. Districts Selected for GCFSI Study in Malawi



2.2 Conceptual Framework

To analyze the pigeon pea value chain, we use a rapid assessment approach and the Integrating Gender into Agricultural Value Chains (INGIA-VC) analytical framework developed by Rubin et al. (2009). Rapid assessment tools look at the roles of men and women in value chains, what markets men and women access, and which gender-based constraints and opportunities exist. The information gathered is used to give direction on possible interventions for existing problems and/or gaps requiring further research (Matua, et al. 2011). Rapid assessments make use of qualitative and/or quantitative investigative tools.

The INGIA-VC process consists of five phases.⁶ As explained by Rubin et al. (2009), phase one involves a mapping of gender relations and roles along the value chain—(1) mapping men’s and women’s participation and benefits along the chain, and (2) identifying the factors that shape the gender patterns in value chain operations. Phase two involves identifying GBCs. Phase three involves assessing the consequences of the GBCs for the achievement of project outcomes, and on women’s economic empowerment. Phase four involves acting to remove GBCs, and phase five involves measuring success. This research will achieve the first three phases of the INGIA-VC analytical framework, and then determine the implications of the findings for the scaling of multipurpose legumes in Malawi.

⁶ See the handbook for a detailed description of the INGIA-VC and the five phases.

Specifically, the Gender Dimensions Framework (GDF) was used to collect and organize qualitative data necessary to understand gender relations and roles along the pigeon pea value chain. According to Mayoux and Mackie (2009), qualitative analysis is essential for establishing existing inequalities and their causes, power dynamics at play along the value chain, and points of convergence and divergence of interests among actors. The GDF contemplates four dimensions: (1) access to and control over key productive assets (tangible and intangible), (2) beliefs and perceptions, (3) practices and participation, and (4) legal frameworks. Power is a crosscutting component in each of these four dimensions (Rubin et al. 2009). The GDF is a rigorous analytical tool because it facilitates data collection and describes key gender relationships and social interactions, thereby making clear the importance of GBCs or GBOs for development outcomes.

In the GDF, “access to assets” describes the social relationships that shape the allocation of resources that are necessary to be a fully active and productive (socially, economically, and politically) participant in society. Resources include land, labor, capital, natural resources, education, employment, and information (Rubin and Barrett 2009). Empirical evidence supports that household assets are not always pooled. On the contrary, they may be held individually by men, women, and children (Haddad et al. 1997). Men and women own different types of assets, accumulate these assets in different ways, have disparate access to the same set of resources, and distribution between men and women is often unequal (Meinzen-Dick et al. 2011; Rubin et al. 2009). Who within a household has access to which resources and for what purposes is conditioned by the broader sociocultural context and by intra-household allocation rules (Meinzen-Dick et al. 2011). Further, the distribution of assets within the household is critical to household and individual well-being, as measured by outcomes such as food security, nutrition, and education. Variable assets enable different livelihoods and may influence the bargaining power or well-being of members within the household (Meinzen-Dick et al. 2011).

The gendered nature of asset distribution has implications for participation at different nodes of the value chain, and the control over the benefits derived from participation. Specifically, under the access to assets dimension of the GDF we examine questions such as, “What are the resources needed to participate in this value chain? Do men and women differ in their ability to mobilize those resources? And, if so, how?” The goal is to identify any gender disparities with respect to these resources and their implications for participating at the various levels of the value chain.

The second dimension of the GDF framework, beliefs and perception, covers who knows what and how they know it, describing how these domains of knowledge differ by gender category. What areas of agricultural work and enterprise development are most likely to be learned by boys and men? Are men expected to grow certain crops and not others? Are some crops solely the province of women? Different cultures have belief systems about gender that shape gender identities and behavior, defining what roles are considered appropriate for men and women, boys or girls, and how they go about their daily lives (Rubin et al. 2009).

The third dimension, referred to as practices and participation, examines how gender influences what people do, and the way they engage in development activities (Rubin et al. 2009). This dimension examines the questions, “Who does what, or who is involved in what activities? Why?” Specifically, it seeks to understand the productive, reproductive, community development roles, and responsibilities of men and women, and to determine the implications and rewards for value chain participation.

The fourth dimension, which includes laws, policies, and regulations, is based on the fact that gender can influence the way people are regarded by and treated within the judicial system—including customary law and formal legal codes. Gender may affect rights to legal documents, ownership and inheritance, reproductive choice, personal safety, representation, and due process.

2.3 Implementation

Surveys were designed for actors at each node of the pigeon pea value chain, including seed actors, farmers, farmers' cooperatives, retailers/local processors, independent traders/buyers, and large-scale export buyers/processors (Table 1). A total of 23 group interviews (GIs) were conducted with male and female pigeon pea farmers in the selected EPAs. In most cases, separate GIs were held with male or female farmers. Mixed GIs were conducted in some EPAs to clarify responses obtained in the separate GIs. The survey designed for pigeon pea farmers was meant to collect data on sources of seeds, cultivation practices, decision-making, gender division of roles in production and marketing, resources critical to production and marketing, access to and control over resources, control over revenue from pigeon pea sales, and relationships downstream the value chain. A GI was also held with representative members of a farmer-owned pigeon pea marketing cooperative in the District of Chiradzulu. Specifically, we asked questions to understand the motivations for forming a marketing cooperative, the organization of the group, leadership and decision-making, eligibility for membership in the cooperatives, resources required in the running of the cooperatives, and how the resources are accessed. (See Appendix A for the interview guide used in each stage of the value chain.)

With pigeon pea retailers, local processors, buyers, and traders, we collected quantitative data to understand men's and women's participation—i.e., the proportion of men and women at these levels of the chain.

Qualitative data were also collected to identify resources that are critical to operate at these levels of the chain. This includes access to the resources for men and women, social and demographic characteristics of the actor's households, activities involved in the operation of the business, who does what and why, sources of the grain legumes, relationships with upstream and downstream actors, motivation for involvement in the value chain, beliefs and perceptions that affect the participation of men and women at specific levels of the chain, and finally any laws and policies that affect the operation of their business.

With large-scale export buyers/processors, qualitative data were collected to understand how they obtain supplies of pigeon peas, existing networks with upstream and downstream actors, and beliefs, perceptions, laws, and policies that may affect their operations.

Table 1. Data Collection

| Value Chain Node | Data Collection Mode (n) | Female | Male | Total Respondents |
|----------------------------------|-------------------------------|------------|------------|-------------------|
| Seed Actors | Key Informant Interviews (6) | unreported | unreported | 6 |
| Producers | Group (23) | 152 | 108 | 260 |
| Producer Cooperative | Group (1) | 21 | 9 | 30 |
| Retailers and Local Processors | Key Informant Interviews (19) | 14 | 5 | 19 |
| Local Buyers and Traders | Key Informant Interviews (10) | 2 | 8 | 10 |
| Export Market Buyers and Traders | Key Informant Interviews (4) | unreported | unreported | 4 |

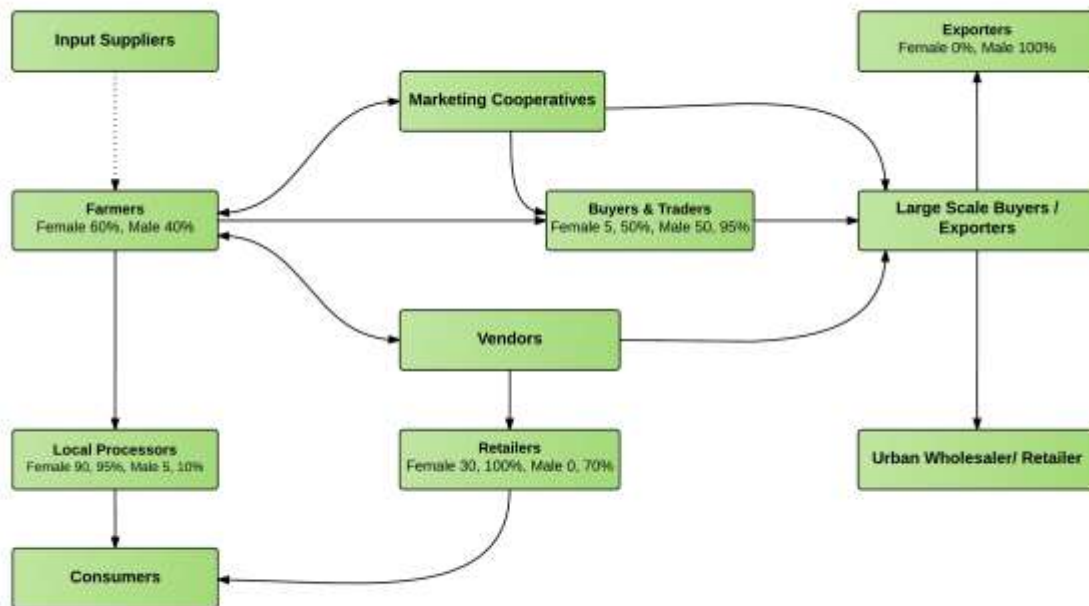
Figure 3. Producers of Pigeon Peas, Mzimba North District



3. FINDINGS AND DISCUSSION

Figure 4 is a simple sketch of the pigeon pea value chain, which details points of access and nodes of activity for men and women in Malawi. We identified the following actors along the pigeon pea value chain: seed actors, farmers, farmers' cooperatives, retailers/local processors, independent traders/buyers, and large-scale export buyers/processors. Given the regional variation of production and marketing activities (i.e., more activity in the South than North or Central), we have included the upper and lower limits of value chain involvement for men and women as reported by respondents. Along with regional differences, our qualitative data suggests that participation rates may vary by season (e.g., greater involvement during harvest season).

Figure 4. Map of the Pigeon Pea Value Chain in Malawi



In the case of pigeon peas, seeds are a major input; however, the seed system in Malawi is not well developed. We could not find any input distributors or suppliers carrying pigeon pea seeds during our fieldwork. Almost all producers used grains recycled from previous harvest as seeds. Producers occasionally obtained improved seeds (often free of charge) from research organizations or projects, such as Africa RISING and ICRAF. Buyers and traders occasionally functioned as seed distributors, selecting the highest quality grains from farmers, which they later sell as seeds during planting.

Smallholder farmers cultivate, harvest, dry, and sell the legumes to either vendors (middlemen), traders/buyers in the villages (or rural assemblers), or to agents buying for large scale buyers/processors. This role is dominated by women, and throughout all three regions, pigeon pea is considered a women’s crop. However, while our interviews reveal that women are heavily involved in all farming activities for pigeon peas, men may be perceived to “participate” in the value chain as farmers during the harvest season when they are seen taking legumes to the market. Thus, based on our data, women comprise 60% of farmers, and men, 40%. It should be noted that the majority of group interview participants at this stage came from the South region where there is greater pigeon pea activity, and men increasingly are becoming involved with this crop as its cash value increases. Therefore, it is likely that their visibility is greater.

Smallholder farmers who are members of cooperatives (few) sell their legumes through the marketing cooperative. Some smallholder farmers are also local processors—they cook the fresh legume from their own production and sell for consumption as a snack in the market during harvest season. Retailers purchase processed grains (dried, hulled and split) from urban wholesalers/retailers or large processors, which they sell to consumers in villages or peri-urban areas. Retailers and local processors of pigeon peas were identified in the Central (Dedza Central market) and South (Namitambo, Yasini, and Kanje markets) regions of Malawi. With the exception of one local

processor who sold biscuits/flitters (commonly known as Cheula) made from processed pigeon pea flour, the majority of local processors cooked fresh pigeon pea pods obtained from their own fields to sell to consumers on market days. Retailers sell dried grains or processed pigeon peas obtained from processors. Women are more likely to be involved in this node as local processors—a role that is heavily associated with cooking. The participation rate of men as local processors was estimated to be only 5-10% across the three regions, whereas their rate of participation as retailers ranged from 0-70% depending on the district.

Buyers and traders source dry pigeon pea grains from farmers and vendors/middlemen to sell to the large exporters/processors located in Blantyre or Limbe. All buyers/traders interviewed were located in the South (Thyolo and Chiradzulu districts) due to the aforementioned activity in this region. Buyers/traders have informal relationships with vendors/middlemen who aggregate pigeon peas from farmers. However, they also may buy legumes from farmers, vendors and farmers' groups and sell to the large scale buyers/processors. The main activities of this node include buying pigeon pea from sellers, lifting grain bags, storage, weighing, sacking grain, treatment, and sorting. Most of these tasks are performed by paid laborers, and there is a preference for male laborers who are perceived to be physically stronger. While we find that in some areas women are estimated to comprise 50% of local buyers, men are much more likely to be engaged at this node (50-95%).

Large scale, privately owned grain exporting/processing companies interviewed in Limbe and Blantyre include AGORA, Export Trading Group (ETG), Rab Processors, and Transglobe, Inc. The companies buy and export pigeon peas and other commodities (cowpeas, gram beans, groundnuts, soybeans, sunflower, and even maize); and are spread throughout the country in major pigeon pea producing areas where farmers take their grain to sell. There are no women who act as large scale buyer/exporters, and very few of the employees in these branches were women. The main activities associated with buying of the grain at this level include lifting, weighing, bagging, and transporting of the grain from the branches to the warehouse. These activities were believed to be difficult for women to undertake, since women were perceived to be physically weaker than men.

In the following sections, we discuss the specific gender-based constraints and opportunities for each node of the value chain.

3.1 Seed System Actors

During fieldwork, the research team visited several private farm input supply shops in the Central and South regions (e.g., Kulima Gold, AGORA). However, with the exception of an independent grain buyer/trader who sold good quality pigeon pea grains selected from his stocks to farmers to use as seeds, none of the shops stocked pigeon pea specific inputs (seeds and pesticides). This supports the early findings of Makoka (2009) that seed systems are fairly informal—farmers make heavy use of recycled grain. Data collected during fieldwork was limited in providing information on any gender differences in involvement in the informal seed system. However, our discussions with farmers revealed some differences in the involvement of men and women within the household in seed related activities. Women's role in food provisioning within the household is also shown to influence their preference for different pigeon pea varieties (see the following section on farmers/producers).

Due to the difficulty encountered in identifying seed systems actors for pigeon pea, the team resorted to conducting interviews with various stakeholders (government, donor projects and private) in the seed system for a better understanding of the factors limiting the effective functioning of this system in Malawi. Specifically, the team met with representatives from the Field Crops

Department at the Ministry of Agriculture; the Association of Smallholder Seed Marketing Action Group (ASSMAG); the Alliance for Green Revolution in Africa (AGRA); the National Smallholder Farmers Association of Malawi (NASFAM); the International Center for Research in Agroforestry (ICRAF); and the Center for Agricultural Research and Development (CARD). Table 2 highlights some of the general issues in Malawi's pigeon pea seed system.

Discussions with the key informants revealed that the government of Malawi (GOM) has a pigeon pea national program that works in partnership with ICRISAT on pigeon peas and other legumes. Several varieties of pigeon pea have been released under this partnership. Between 2009 and 2013, three medium-term varieties (approximately six months to maturity) were released. Prior to this, the GOM had released two long-duration varieties, and two short-duration varieties (matures in approximately 120 days). The local variety of pigeon pea takes about 8-9 months to mature. These varieties are not without tradeoffs—for instance, the short-duration varieties take longer to cook than the medium- and long-duration varieties. *Mthawajuni* is another variety of pigeon pea found in Malawi. The source of this variety is unknown, and unlike the other varieties, this variety is very pest resistant. As observed by Kananji, research to incorporate the pest resistant trait from *mthawajuni* into the medium-term variety released in 2013 is ongoing.

Low excludability⁷ of pigeon pea seeds and farmers' frequent use of recycled seeds were identified as major disincentives to local seed production—there is currently little potential for profits. It was reported that in spite of the higher seed multiplication ratio⁸ (compared to other legumes), farmers lacked the incentives to purchase pigeon pea seeds. This lack of incentives to purchase better quality and high-yielding seeds and the correspondingly low demand for pigeon pea seeds was revealed to be due to the prices offered to farmers by buyers. Added to low output prices, it was observed that the common practice of “hold ups” (whereby export buyers promise to buy legumes at a certain price during planting season but default on this agreement after farmers have harvested the legume) discourage investments in legume seeds. Consequently, when farmers say “there is no market,” it is likely that they are referring to the fact that the price is not attractive and the activity is not profitable.

The discussions with the representatives of the seed system also reveal potential variation across regions in the incentives to purchase pigeon seeds. Specifically, it was observed that small land parcels in the South region and the practice of intercropping pigeon pea with other crops reduces farmers' incentives to buy certified seeds in this region. In contrast, the incentives to purchase pigeon pea seeds for larger scale pigeon pea production for commercial and household uses are likely to be higher in the North region where land is not a limiting factor. In spite of greater land availability, market access and attractive output prices were identified as key considerations in the decision to adopt improved seed varieties for cultivation of the legume.

Furthermore, it was reported that the GOM had previously attempted to engage farmers in community seed production. However, the attempt was not successful because of the challenges associated with bringing farmers to work as a group (collectively), the lack of trust among farmers being a critical factor. The GOM continues in its effort to identify ways of enticing local seed companies to get involved in the production and distribution of legume seeds.

⁷ The cost of excluding others from getting involved in seed production is too high because of the open pollinated nature of the seed.

⁸ Only about 10kg of seeds is required to plant 1 hectare of land, as opposed to a legume like common bean, which requires about 80kg to plant a hectare.

According to the president of ASSMAG, the association has the capacity to produce pigeon pea seeds in large amounts; however, ASSMAG is not currently involved in the multiplication of pigeon pea seeds because the demand is too low due to low output prices offered to farmers. He observed that poverty, the lack of an alternative source of income, and lack of grain storage compel farmers to sell at very low prices. Additionally, limited access to (knowledge of) price information also makes farmers susceptible to low output prices.

NASFAM is one of the biggest Feed the Future (FTF) partners in Malawi, covering over 100,000 households. NASFAM works with farmers, organized in clubs, who grow different commodities, including legumes. For legume crops, there are more female members in the club. NASFAM's involvement in pigeon pea seed multiplication is mostly in the South region of Malawi, where NASFAM supplies pigeon pea and other legume seeds (mostly groundnuts and soybeans) to support the double-up legume technology. Specifically, NASFAM clubs nominate farmers to participate in seed multiplication, and after signing a memorandum of understanding stating that they will not sell the seeds to anyone other than NASFAM, selected farmers are given basic pigeon pea seeds (from research supplies) for multiplication. The seeds produced from the basic seeds are described as "certified seeds." These seeds are sold to NASFAM, which then loans them to members who wish to grow pigeon peas. Farmers are required to "pay back" NASFAM double the amount of certified seeds received upon crop harvest. However, these seeds are not quality assured, as farmers are not supervised in their production. In the Central region, livestock damage was identified as a factor that discourages NASFAM's involvement in seed multiplication efforts.

International research organizations play an important role in the distribution of improved pigeon pea seeds. ICRAF distributes small quantities of pigeon pea seeds obtained from ICRISAT free of charge to farmers based on ICRAF's interest in pigeon pea as a soil fertility management crop. According to the representative from ICRAF, not only have past efforts to get farmers to purchase their own seeds been unsuccessful, but also farmers sometimes eat the seeds given to them due to hunger. This finding reveals that access to seeds is much more complicated for poor, vulnerable households. For these households to save seeds for production, there must be an alternative source of food for the farmers and their families.

Table 2. General Challenges in the Pigeon Pea Seed System in Malawi

| Constraints | Recommendations | Rationale for Recommendation |
|--|---|---|
| <p>Limited availability of improved pigeon pea varieties and commonly grown varieties are of long-maturity duration (8-9 months), thereby discouraging adoption, particularly in the Central region where livestock damage is an important threat to the legume.</p> | <p>Need for investments in research to identify high-yielding, pest-resistant and shorter-duration pigeon pea seed varieties.</p> <p>Support local seed production/multiplication in all regions.</p> | <p>To encourage adoption, improved seed varieties of preferred quality or characteristics must be readily available to farmers. Identifying shorter duration varieties has the potential to increase adoption, particularly in the Central region where livestock damage remains an important challenge to pigeon pea adoption. NASFAM's model of involving farmers in seed multiplication could be tested in the Central and North regions. This will increase seed availability and generate additional revenue for farmers involved in seed multiplication.</p> |
| <p>Limited incentives amongst farmers to purchase improved seeds due to low demand for legume (absence of buyers), low output prices, and frequent price fluctuations.</p> | <p>Organize farmers in groups for collective marketing of the legume.</p> <p>Identify potential pigeon pea buyers (export or domestic market channels), facilitate linkages between farmers and potential buyers of the legume, and invest in the collection and dissemination of price and other market information to all actors along the value chain.</p> | <p>The common practice of recycling seeds is detrimental to crop productivity. The practice of selling individually limits/weakens farmers' bargaining position with buyers. Further, without markets or buyers, farmers (particularly in the North) do not have any incentives to invest in improved seeds or expand production beyond household consumption demands. Farmers across all regions will invest in improved seeds if there is a profitable market for the legume. In the South region where land is limited, expanding the area cultivated to pigeon pea necessitates that the legume is at least as profitable as competing crops.</p> <p>Collective marketing could increase the volume available for sale in one location, improve farmers' bargaining power with buyers, and potentially result in better prices than they would receive if selling individually. With attractive prices, farmers will be incentivized to demand improved seeds.</p> <p>In the North, where land is plentiful but there are no buyers, linking farmers to potential buyers will increase incentives to invest in improved seeds. This also could result in increased reliability of supply for buyers thereby improving the market.</p> |

3.2 Farmers/Producers

Data collected during the fieldwork supported variations in the level of pigeon pea production and marketing across the three regions of Malawi. Not surprisingly, farmers in the South region continue to dominate in terms of production and marketing of this legume, given the long tradition of pigeon pea cultivation and consumption. Moreover, the concentration of multinational companies trading in pigeon pea and other grain legumes in the South creates a high demand for pigeon peas in the export market, thus providing an incentive for farmers to expand production. Farmers in the South reported recent increases in the value of the legume as a cash crop. They attribute this change to a period spanning the last five years, during which the crop transformed from being solely a staple food source to a source of income for many farm households. The growing demand for the legume was also credited with creating changes in cultivation practices. While farmers reported a mix of cropping methods, they indicated that increasingly field space is being allocated to pigeon peas over other traditional crops.

Compared to the South region, pigeon pea production is relatively new in the Central and North regions of Malawi. For example, in the Nsipe EPA (District of Ntcheu, Central region), the farmers in the GIs reported that they had only grown pigeon pea for two seasons, and had lost almost all of the first harvests to pest and disease. The farmers were expecting their second crop when the GIs were conducted. In both the Central and North regions, farmers characterized pigeon pea as largely a crop for the poor, and one that serves primarily as food. The farmers mentioned that, compared to cowpeas, there is low demand for pigeon peas—few buyers are present at the farm-gate or in the local markets. This low demand for pigeon pea creates a disincentive for farmers to scale-up production of this crop, despite farmers' awareness of potential soil fertility gains associated with growing the legume. Further, consumer demand for the legume in these two regions is mostly from the population of immigrants from the South, and as a result not as high as in the South where pigeon pea consumption is a daily part of the food culture.

3.2.1. Gender Division of Roles in Pigeon Pea Cultivation and Marketing

Family labor remains the major source of effort in pigeon pea cultivation across all three regions. Data on the division of agricultural roles/labor associated with pigeon pea cultivation reveal that, in all three regions, women provide much of the required labor. Table 3 summarizes the gender division of activities in pigeon pea production and marketing at the farm level. Women were more likely to be in charge of seed selection, seed storage, harvesting, transport to home, and cooking (where pigeon pea was used for household consumption). Women reported that seed planting and winnowing were left to them as the small size of seeds and the intricate nature of winnowing could only be performed by women. Further, women in the Central and South regions indicated a concerted effort to control seed selection and seed storage to ensure that men do not sell these scant resources for alcohol. The pigeon pea harvest occurs several months after the maize crop. As a result, the task is left to women while men participate in off-farm activities. Further, the scope of the pigeon pea harvest was considered less important than maize, and consequently, possible for women to accomplish on their own.

Table 3. Gender Division of Labor in Pigeon Pea Production and Marketing at Farm Level

| Task | Who is Involved? | Why? |
|---|-------------------------------------|--|
| Decision to allocate land to pigeon pea | Mostly men | <p>North (Patrilineal culture)</p> <ul style="list-style-type: none"> – Land belongs to the man. He is the head of the household and therefore responsible for major decisions. <p>Central and South (Matrilineal culture)</p> <ul style="list-style-type: none"> – As the head of the household, the husband is responsible for major decision-making. |
| Seed selection and storage | Mostly women | <p>Central and South</p> <ul style="list-style-type: none"> – To ensure that men do not sell the seeds in exchange for money to purchase alcohol. <p>South</p> <ul style="list-style-type: none"> – The perception that women are more skilled and knowledgeable than men in the activity. – Women spend more time at home than men do, so they do this during their “free” time. |
| Field preparation | Mostly joint/or all family involved | <ul style="list-style-type: none"> – Pigeon pea is commonly intercropped with maize and other cash crops, making it common to find the whole family involved in these activities. – Need to finish the task quickly before the rains begin. |
| Weeding and residue incorporation | Mostly joint | <ul style="list-style-type: none"> – Because of the importance of activity in determining crop yields. – Activity is labor intensive and needs to be done as quickly as possible before the weeds start destroying the crops. |
| Planting | Mostly women | <ul style="list-style-type: none"> – Women are perceived to be more careful than men and hence capable of handling seeds of very small sizes during planting. |
| Pesticide application | Mostly men | <ul style="list-style-type: none"> – Sprayer is heavy for women to lift. However, women fetch the water used in mixing the chemicals. – Men are more skilled/trained at this task. – Men also control funds and decide on purchase of pesticide. |
| Harvesting | Mostly women | <ul style="list-style-type: none"> – Pigeon pea is harvested after maize when men are busy with paid off-farm activities. |
| Transport to home | Mostly women | <ul style="list-style-type: none"> – They are also involved in harvesting. |
| Winnowing | Always women | <ul style="list-style-type: none"> – Cultural norms forbid men from engaging in such an activity, perceived to be appropriate for women who like to sit and work and are more careful than men. |
| Cooking | Women | <ul style="list-style-type: none"> – Cooking is considered a women’s role—culturally, women are expected to cook food for their families. |
| Marketing | Mostly men | <ul style="list-style-type: none"> – Men are more likely to own transportation assets (across all regions); and the fact that men’s mobility is not restricted by cultural norms makes them more likely to participate in distant or off-farm markets (especially in the North and |

Central where market access is a challenge).

Some activities were identified as jointly performed by the whole family. These include field preparation, weeding, residue incorporation, and pest application. This was attributed to the common practice of intercropping pigeon pea with maize and other cash crops, such that activities like field preparation are carried out once by the whole family. According to some farmers, cash crops get priority in terms of labor and other resource allocations, occasionally resulting in the late planting of pigeon pea or other crops that are of a lower cash value. In the South region, men are increasingly involving themselves in marketing activities. In the North and Central regions, limited access to markets (and hence the potential to generate income) was frequently cited as a disincentive to men's involvement in pigeon pea production.

3.2.2. General Constraints to Pigeon Pea Production and Marketing Activities

The data revealed several factors that influence the adoption and expansion of pigeon pea across all three regions in the country. These factors are either general—experienced by most farmers irrespective of gender—or gender specific, as a result of culturally defined gender roles and intra-household gender relations. General constraints to adoption and expansion at the farm level are discussed in this subsection. These include seed quantity and quality; access to land; and pest, disease, and livestock damage. Table 4 summarizes these constraints and provides recommendations for dealing with each of them, and the rationale for the recommendations.

Seed Quantity and Quality

Access to the desired quantities and quality of pigeon pea seeds was identified as a major barrier to expanding pigeon pea cultivation by farmers across all three regions. Unlike other legume seeds (e.g., groundnuts, soybeans) pigeon pea seeds were not readily available in the market or in retail shops specializing in the sales of other legume seeds.

In the North and Central regions, farmers sometimes receive free seeds from local NGOs and research organizations that are promoting maize-legume technology or pigeon pea adoption for agro-forestry reasons. Although the seeds are usually free, farmers have to choose one type of seed from the portfolio of seeds presented to them by the organization, and often the quantity received is not sufficient to cultivate the desired area. Other sources of seeds identified in the GIs in North and Central regions include buying from other farmers or receiving seeds as a gift from friends. However, farmers in the North and Central regions indicated a low incentive to invest in seeds because of few pigeon pea buyers in these regions compared to the South. Use of purchased seeds in these regions was limited as farmers are yet to perceive the legume as a potential income generator. Some farmers mentioned that even when they would like to purchase seeds, it was difficult to identify other farmers to buy seeds from, given that most were unable to recycle seed from the first harvest due to pest damage, or that they had to eat all that was produced because of food shortage. Pigeon pea cultivation in the North and Central is mostly for household consumption as relish. Farmers in the GIs in the North revealed that access to seed is a major motivation for joining farmers or producer groups, and these farmers groups are organized around local NGOs (e.g., Total Land Care).

Even in the South region where pigeon pea activity is greater, access to seeds still was identified as a major challenge to expansion in production. Most farmers continued to rely on recycled seeds for their production—saving the best pigeon pea grains from previous harvest to use as seeds in the next planting period. However, they observed that the quantity saved is not sufficient to plant the total area that they would like to cultivate for pigeon peas. Limited seed availability is especially

problematic for the poorest of households that are unable to recycle grains for seeds, given their immediate consumption needs. Not surprisingly, across all three regions, farmers' perception of household wealth indicators revealed that poor households were those who ate pigeon pea seeds rather than save them for the next year's planting. Compared to the North and Central regions, farmers acknowledged that, in addition to receiving seeds from research organizations, they could also purchase dried grains for seeds from other farmers or legume traders in the local markets. Overall, there appears to be an opportunity to expand production of the legume, particularly in the North region where land is not a limiting factor; however, investments in seeds are not likely if output prices remain unattractive. As Snapp et al. (2002) points out, farmers privileged cash receipts over soil fertility when making cultivation decisions. Thus, improving seed access is a necessary but not a sufficient condition—there must be a profitable market for the legumes for farmers to adopt or expand production beyond household consumption needs.

Access to Land

Access to land is crucial to pigeon pea adoption and expansion. However, differences were found across regions in farmers' perception of whether or not they had sufficient land to expand production activities. In the North region, farmers did not report any concerns related to farm size and crop expansion. Instead, to these farmers, access to seeds and markets were the major challenges associated with pigeon pea adoption and expansion. Contrary to the situation in the North region, male and female farmers in the South and Central regions expressed concerns about their small farm plot sizes being a deterrent to pigeon pea expansion. They specifically reported intercropping with maize—not as a soil enhancement method, but rather as a means to maximize use of space.

Pest, Disease, and Livestock Damage

In all three regions, farmers mentioned pest and disease damage as a challenge in pigeon pea cultivation. However, as observed by the farmers, limited access to cash makes it difficult to buy the appropriate type and quantity of pesticides. Most farmers relied on pesticides manufactured for maize—the primary cash crop for most smallholders—as there are not sufficient cash resources to buy chemicals for both commodities. Across all regions, knowledge/information about and investments in pigeon pea specific inputs were generally limited.

All farmers indicated concerns about damages to the pigeon pea plant caused by livestock. Pigeon peas are planted primarily as an intercrop with maize and other legumes. Unlike groundnuts, pigeon peas were a source of food for goats. Current pigeon pea cultivars require that the farmers keep their goats restrained for 4-5 months after maize and other short duration legumes have been harvested. Farmers indicated that this is a disincentive for growing the legume. This finding supports the need for a short duration variety identified earlier.

Poor Agronomic Practices Among Farmers

Key informant interviews revealed that farmers are not knowledgeable of the correct planting interval or crop spacing for effective pesticide application. This has implications for crop yields and profitability.

Limited Access to Markets

Access to markets is particularly limited in the North and Central regions, compared to the South region where there are many buyers. Poor roads (or the absence of roads) discourages buyers from travelling to the production zones or villages.

Lack of Access to Reliable Output Price Information

Even when farmers have the opportunity to sell to vendors, they often do not have the same information about the buying price as other levels of the chain (e.g., buyers/traders or export market buyers). This limits farmers' bargaining power, especially given the common practice of selling individually. Pigeon pea prices frequently fluctuate, putting farmers at risk of being offered low prices by vendors.

Table 4. General Constraints in Pigeon Pea Production and Marketing at Farm Level

| Constraint | Recommendation | Rationale |
|--|---|--|
| <ul style="list-style-type: none"> - Insufficient seeds in quantity or quality (short duration, pest resistant) needed. | <ul style="list-style-type: none"> - Investment in research to identify high-yielding, short-duration pigeon pea seed varieties. - Innovations that stimulate/encourage local production/multiplication of certified seeds. | <ul style="list-style-type: none"> - High yielding seeds are required to increase yields in the South where land is limited. Shorter duration seed varieties are required to stimulate adoption, particularly in the Central region where livestock damage is a serious threat to the legume. High yielding seeds are also required to stimulate adoption in the North region where land is not a limiting factor. Across all regions, access to markets and attractive output prices are a must to create incentives to purchase improved seeds. |
| <ul style="list-style-type: none"> - Access to land limits expansion in the Central and South regions. | <ul style="list-style-type: none"> - Supporting maize diversification systems would allow for increased inter-cropping methods. | <ul style="list-style-type: none"> - Expansion can only take place by expanding access to land or by providing training to farmers on best farm agronomic practices as well as the nutrition benefits of intercropping maize with legumes. |
| <ul style="list-style-type: none"> - Farmers lack knowledge of best farm management practices to maximize legumes and main crop yields; appropriate fertilizer and pesticides; and seed varieties. | <ul style="list-style-type: none"> - Strengthen the role of agricultural extension to train or build farmers' capacity in crop management, best production practices, and input usage/utilization. | <ul style="list-style-type: none"> - Given competition with other crops for limited resources and the important role of maize as a food security crop, promoting adoption or expansion of legumes must incorporate capacity building for farmers on best farm management practices, and pesticide application techniques for good yields and high profits. |
| <ul style="list-style-type: none"> - Access to markets (North and Central regions). Poor transportation infrastructure; buyers do not come to the location of farmers. | <ul style="list-style-type: none"> - Investments in transportation infrastructure (roads). - Strengthen the role of agricultural extension in organizing farmers for profitable exchanges with potential buyers; and in improving farmers' access to market information (especially price). | <ul style="list-style-type: none"> - To stimulate expansion of the legume to satisfy household consumption needs and beyond, it is necessary that farmer's market access is improved. In the North, investments in roads could encourage buyers to travel closer to farmers. However, buyers must be guaranteed of steady supply in large volume. To achieve this, there is a need to organize farmers in groups for the marketing of the legume. Farmers need access to market information to improve their bargaining power with buyers. |
| <ul style="list-style-type: none"> - Lack of access to reliable output price information, plus frequent fluctuations in prices, coupled with perceptions of being cheated by vendors. - Low output prices limits farmers' effective demand for pigeon pea inputs (seeds and pesticides). | <ul style="list-style-type: none"> - Investments to support the collection of price information along the value chain, and the dissemination of the information to farmers for informed marketing decisions. - Design workable models of collective action and encourage farmers to join groups to access output/input markets. | <ul style="list-style-type: none"> - Improving the flow of price information along the value chain will promote competition amongst value chain actors. Coupled with collective marketing, information on prices at different nodes of the value chain will enhance farmers' bargaining power, thereby fetching them better prices than when selling individually with no knowledge of prices. As profits increase, farmers will be more likely to invest in pigeon pea specific inputs such as pesticides. |

3.2.3 Gender-Based Constraints and Opportunities at the Farm Level

Constraints originating from culturally defined roles, responsibilities, and patterns of resource allocation also influence adoption decisions at the farm level, access to markets, and the benefits derived from participating in the value chain as farmers. The following section discusses some of the areas where gender specific factors either constrained or presented an opportunity for male and female pigeon pea farmers. Table 5 summarizes some of these factors.

Control over Land and Cultivation Decision-making

Intra-household access to and control over land as an asset in crop production varies across regions. Total size of land available for cultivation is critical to the expansion of the legume, as is who has access to land within the household, who makes decisions about what is cultivated on the land, and who decides how much of the available land is devoted to a particular crop or what crops receive priority on the farm land. Collectively, the factors that influence these decision-making processes are crucial in determining legume adoption and expansion.

Land inheritance patterns differ across the communities in Malawi. In the North region (district of Mzimba North), land inheritance is through the male line (patrilineal) and a woman leaves her village to join her husband in his village. Conversely, in the Central region (district of Dedza) and in the South region, land is inherited through the female line (matrilineal); therefore, a man would leave his family to join his wife in her village after marriage. Notwithstanding these differences in inheritance patterns, we observed a culture of patriarchy across all the communities we visited, whereby husbands or other male members of the household wield great decision-making power and authority in most spheres.

As heads of households, men (husbands) were responsible for cultivation decisions in the South. Cultivation decisions range from decision to plant a crop, how much of each cash crop (maize, bananas, and pigeon peas) to plant based on yearly income needs, and specific investments to make for each crop. In limited instances, respondents stated that there would be family meetings related to cultivation choices that incorporated the consumption needs of the household (the purview of women). However, even in households where these meetings were held, men and women agreed that men held ultimate authority. Given the increased economic importance of pigeon peas in this region, men were especially emphatic about overseeing the inputs and management of this crop. This included varietal selection—men preferred seeds with high yields, whereas women preferred varieties suited to consumption.

Similar to findings in the South, men are the household heads in the North and Central regions, and they have important decision-making authority with respect to farm cultivation. While the matrilineal culture improved women's bargaining power within the household, it did not necessarily translate to greater control over land as an asset, or in the allocation of household revenues. The limited cash generating potential of the legume in the North and Central regions has made the pigeon pea secondary to other cash crops, in terms of land and other production resource allocations (e.g., labor). Most women indicated that the crop is usually planted after the main cash crop.

Women's limited role in cultivation decision-making in the North region was attributed to the dowry system. This practice puts women in a subordinate position, with little to no power within the family. When asked of women's role in household and cultivation decision-making, one respondent stated, "If a man says no, there is nothing a woman can do to compel him to change his mind."

Thus, access to, or ownership of, assets is a necessary (but not a sufficient) condition for women's empowerment. Our findings support findings from previous research (Osmani Sen 2003; Hillenbrand 2010) that social norms in Malawi favor men as decision-makers, whereas women are charged with childcare, provisioning, and domestic tasks.

Within the household, men and women differ in their motivation for cultivating different types of legumes. Women from the Central and North regions observed that men are interested in the marketability of legumes—the lack of financial benefits acts as a disincentive for men to be involved in the production of pigeon pea. Conversely, women are interested in the legume as a food crop, and may use plant material for household fuel needs. Given women's culturally defined responsibility to provision food for their families, women's motivation for growing pigeon peas is first as a consumption resource to feed their families. In the North, for example, in spite of limited cash-generating potential of the legume, women still cultivate some amount of pigeon pea, which is prepared as relish and eaten with *nsima* (a maize-based staple food). According to these women, if pigeon pea expansion were to occur with better access to markets, and if greater cash sales resulted, men would likely appropriate the crop (and its revenue). Gendered power relations and gender differences in priorities/preferences within the household indicate that the decision to adopt or expand legume cultivation on the family farm quite often reflects the power of the male head of household.

Access to and Participation in Markets

Gender differences exist in market participation and access across all three regions. However, in the South, the presence of independent buyers and sellers, large scale exporters/processors of pigeon pea, and greater demand of the legume for consumption made physical access to market less challenging compared to the North and Central regions. The high demand for legume for household consumption and export market were reported to have increased men's interest in the legume as an income generator.

Compared to the South, fewer buyers of pigeon peas are present in the North. Small quantities of the legume are usually sold at the farm-gate to other farmers. Some farmers produce large enough quantities to sell in distant markets. As observed by women in the GIs, few women participate in the marketing of legumes when large quantities are involved and when the market is far away. Cultural restrictions on women's mobility limits their participation in markets that are away from home. The home is considered the appropriate space for women—most of their activities are expected to be in or around their domicile—allowing them to perform other responsibilities that are prescribed for them, such as childcare and domestic chores. Men and women in the North agreed that the markets were simply too far for women to travel to, given their household duties and security/safety concerns. As a result, women's income activity is restricted to what products may be sold at the farm-gate.

Second, reduced access to transportation limits women's participation in markets. Women in the South region frequently reported that they were responsible for transportation of dry pigeon pea grain to the markets for sale. However, unlike men, women did not own bicycles or carts, and would often transport the pigeon pea grain by headload from the farm to the markets or point of exchange. This process was described as physically demanding and time consuming. Female farmers reported that they would like assistance from their husbands who own bicycles that could be used to transport larger quantities to the markets or point of sale. However, they observed that involving their husbands in the transportation and marketing of pigeon peas often would result in their

husbands using the revenue generated from sales to buy alcohol and/or hire prostitutes, rather than spending the money on important household needs like food. According to these women, this practice of husbands “wasting money” was a major source of household conflict, and could result in their family going without food or being forced to find alternative food provisioning resources. Diminished opportunity for women to participate in off-farm income generation prevents their use of hired transportation.

Female farmers in the Central region echoed the same concern about involving their husbands in legume marketing, reiterating that their husbands would use the revenue from sales for their individual wants (alcohol) rather than for the common good of the household. This practice was common to pigeon pea and other legumes, such as cowpeas and groundnut. The use of sales revenue by men for alcohol was not mentioned in the GIs in the North region.

Further, in the North and Central regions, few men/husbands had any interest in pigeon pea activity, given the poor market. The responsibility for the production of this crop was left to the women in their communities. Notwithstanding, there was agreement that men would take interest in pigeon pea marketing activities, including training on new technologies, if marketing opportunities for the legume increase.

Overall, our findings support earlier research that found that women in Malawi do not have access to transportation, nor are they able to travel the several days required for market sales given their childcare responsibilities (Kerr et al., 2013). Thus, if pigeon pea intensification is going to benefit female farmers and their families, women’s access to markets and transportation must be addressed.

Unfavorable Prices Due to Limited Access to Markets and Information

While low pigeon pea prices were identified as a disincentive to all farmers (general constraint), the GIs in the Southern region revealed that compared to men, women were at greater risk of receiving lower prices and were also more likely to be subject to unfair practices of vendors. Farmers’ lack of access to reliable price information often results in them selling below market value during the harvest season (Makoka 2009)⁹. Profits are further constrained by farmers not being aware of the quality of pigeon pea demanded by the export market, with few actually cultivating the type of that earns a premium in the export market (Makoka 2009). Frequent price fluctuations and price information asymmetries have implications for the performance of the value chain and the benefits derived from participation. This research identifies common sources of information for actors at different stages of this value chain. However, it falls short of identifying any gender differences in utilization of these different information channels. A potential action for further research would be to investigate any gendered differences in the use of different information channels; the findings would be critical in the design and targeting of potential innovations. Further, innovations to develop this value chain must identify gender-sensitive approaches for improving reliable access to price and other market information along the value chain.

In the South and Central regions, it was reported that vendors offer lower prices to women than to men because they are aware that women cannot travel far away from their homes to find better prices. Mobility restrictions also affect women’s negotiation/bargaining skills. Women are more likely to accept lower prices from export buyers because the cost to them of staying one more day to search for better prices is too high. Vendors quite often will use faulty scales when selling to women. Women in the South reported a practice of weighing their grain with more than one vendor before

⁹ Approximately 46% of producers surveyed in this study were unaware of retail prices.

selling. Across all three regions, women reported difficulties in relationships with buyers at markets that were not reported by men. This finding is important given the recent research by Makoka (2009) that indicates that at regional commercial centers, and when interacting with intermediate buyers, smallholders were often victim to usurious lending schemes or faulty scales. Makoka (2009) did not specifically isolate for the differential experiences of women and men.

Control over Income/Revenue

Decision-making regarding the allocation of legume harvests to different purposes—household consumption and markets—and the allocation of crop revenue is also gendered. Across all regions, and especially in the South and Central region where greater commercialization is occurring, men have greater decision-making power over the allocation of crop income. Men's control over income was often fueled by the advantage they have in terms of market access and participation. Even when women participate in markets, it is customary for them to return all generated revenue to the male head of household, who will then disperse the funds across the household's needs. Gender power relations influence how crop income is shared or invested on the farm and within the household. For example, female farmers in the Central region (Nsipe) reported that income was partitioned in the ratio 40:60 percent between the wife and her husband. Generally, funds allocated to women by their husbands were expected to be directed towards the purchase of household items such as clothes, food, and soap. Men received the larger share of crop revenue because they were expected to purchase agricultural inputs, such as fertilizer and pesticides. However, such farm investments were usually made towards cash crops produced by the household, and usually controlled by the head of household. For example, revenue generated from pigeon pea sales are often used by men/husbands to purchase fertilizer or pesticides for the maize crop, or other generalized agricultural implements. During the GIs with farmers, there were no reports of using pigeon pea revenue explicitly for the benefit of the following year's legume crop—i.e., in the purchase of seeds or appropriate pesticide for the legume. Women are limited in their ability to purchase inputs that could improve pigeon pea yields.

The co-optation of women's labor, their lack of control over cash resources, and exclusion from resource decision-making all evince continuing unequal gender relations in Malawi. Kerr (2005) found that intra-household dynamics vary greatly by region in Malawi, with some families practicing more egalitarian income sharing. Generally, women in the North had less access to cash resources and/or control over household provisioning Kerr (2005). While we found some instances of income sharing, the role of men as the authoritative household head was undisputed in our findings. Men's control over resources and decision-making (even when funds are gained solely through women's work) has implications beyond the immediate concerns of seed access, land cultivation decisions, and investments in pigeon pea specific inputs. It has great implications for food security and poverty reduction within the household—especially in the Central and South regions where women respondents reported the use of pigeon pea funds for alcohol and/or prostitutes. Given the primacy of food provisioning to women's daily lives (Snapp et al. 2002), this tendency can discourage women's participation in the market. Further, gender inequality has been shown to impact the success of nutrition enrichment programs throughout Sub-Saharan Africa (Kerr 2005). Given the potential for pigeon peas to address food security concerns in Malawi, recommendations for increasing pigeon pea cultivation in this region will need to address unequal gender relations.

Knowledge about Pigeon Pea and Participation in Training

Knowledge of different pigeon pea hybrids and their performance, as well as farming techniques, was generally low amongst farmers across all regions. This general lack of knowledge of new farming techniques was attributed to the difficulty in accessing agricultural extension services in the area, and the practice of local NGOs that distribute seed packets without accompanying information on variety. Notwithstanding, women were reported to have greater knowledge about pigeon pea due to the dominant role they play from seed selection to post-harvest. Women were also described as more likely to participate in training on pigeon pea production practices. Men's interest in agricultural training varied across regions and was associated with the economic value of the crop. In the South, men indicated interest in joining a farmer's club in which they could learn new technologies related to pigeon pea cultivation. In the Central and North regions, where pigeon pea holds little economic value, men indicated that participation in agricultural training would be a waste of time.

Table 5. Gender-Based Constraints/Opportunities in Pigeon Pea Production and Marketing at Farm Level

| Constraint/Opportunity | Recommendation | Rationale |
|--|---|---|
| <ul style="list-style-type: none"> - Across all regions, women play a very limited role in farm management and investment decisions (what combination of crops to grow, area to allocate to each crop, how to plant, inputs to use) due to cultural norms that designate men as household heads, and are therefore responsible for most important decisions within the household. | <ul style="list-style-type: none"> - Invite women (a quota for women) and men to participate in training on farm management/agronomic practices; incorporate in the training activities that will support joint participation in household and farm management decision-making. - Support women's direct access to and participation in markets. | <ul style="list-style-type: none"> - Conflict of interests and gender differences in preferences for different types of legumes and in motives for growing different legumes suggest that decisions made by men do not necessarily reflect the needs of women. Interventions that encourage joint decision making could assert women's needs and preferences in overall household cultivation decisions. Linking female farmers to markets will increase their direct access to pigeon pea revenue, improving their role in decision making within their household. |
| <ul style="list-style-type: none"> - Women's access to markets is limited due to cultural restrictions on their mobility and limited access to transportation assets (e.g., bicycles and carts). - These mobility restrictions also affect their bargaining/negotiation power and consequently the price they receive for their legume. | <ul style="list-style-type: none"> - Organize female farmers in groups for the collective bargaining/marketing of their produce. - Link village-level pigeon pea marketing groups to buyers by fostering communication and enabling relationships. - Train group members on aspects of group functioning and management to achieve best outcomes. - Train group leadership on business management and marketing skills (e.g., negotiation, weighing of grains, etc.). | <ul style="list-style-type: none"> - Collective marketing will increase the volume of pigeon pea available for sale. Larger volumes will encourage buyers to meet women in the villages. Group marketing can also be helpful in fetching better prices for the legume. - Organized in groups, female farmers can jointly undertake some value-added activities such as drying, winnowing, sorting and bagging, thereby reducing the time and workload associated with conducting these activities as individuals. Higher quality can be advantageous in terms of helping women fetch better prices. |

| Constraint/Opportunity | Recommendation | Rationale |
|--|--|---|
| <ul style="list-style-type: none"> – Women have limited control over crop revenue, even for the crops they grow because decision-making over the allocation of crop revenue is the domain of men in their role as heads of household. | <ul style="list-style-type: none"> – Identify mechanisms to foster more gender equitable decision-making authority in the allocation of crop revenue or in control over crop revenue. | <ul style="list-style-type: none"> – Increasing women’s control over crop income is likely to support investments in crops that are a priority to them in terms of their roles within the household, and also those crops that are more likely to directly increase their incomes. |
| <ul style="list-style-type: none"> – Female farmers’ greater knowledge about pigeon peas, and the important role they play in activities (such as seed selection and storage), coupled with their heavy involvement in pigeon pea production activities, makes them suitable targets for local pigeon pea seed production and multiplication. | <ul style="list-style-type: none"> – Build capacity for female farmers and support their involvement in pigeon pea seed production and multiplication for commercialization to other farmers. | <ul style="list-style-type: none"> – By involving female farmers in seed production and multiplication, women would have a direct source of income of their own. If they can control this income, it could make significant contributions to the food security and nutrition status of their households. Bringing women into local seed production and multiplication will also reduce some of the poverty risk to women that could arise as a result of men appropriating the value chain when marketing opportunities for the legume increase. |

3.3 Pigeon Pea Marketing Cooperative

Generally, group activity was observed to be very low in Malawi compared to other countries in Sub-Saharan Africa. In particular, in the North and Central regions, it was hard to identify any type of group activity around pigeon pea. In the South region, the research team identified a farmer-owned marketing cooperative that was organized around pigeon pea. The cooperative is called Nguludi Pigeon Peas/Maize Cooperative¹⁰ and had existed only for about seven months prior to the time fieldwork for this research was conducted.

Membership in the cooperative is closed and annual membership fee is at 500MK. Members are required to buy shares (a share costs 500MK), which serves as capital for the cooperative. Members also pay other mandatory fees. Cooperative funds are kept in the bank and released only with appropriate signature from leadership. The co-op executives include five different subcommittees: marketing, research, loans, audit, and discipline; and five leadership positions, including a secretary. Women hold three out of the five leadership positions. Discussions with co-op representatives did not reveal any factors that could prevent women from leadership positions. The following were cited as requirements to assume a leadership position: a strong work ethic, regular meeting attendance (meetings take place once a week for one and a half hours), respect for the rules of the cooperative, and work with others in an egalitarian manner. Current membership of the co-op (nine men and 21 women) confirmed findings from the GIs with farmers in the other regions that women were more likely than men to join farmers' a group—not only to learn new techniques, but also to gain access to seed and marketing opportunities.

The primary purpose of the co-op is to scale up pigeon pea marketing activities. From the farmers' perspective (as noted during the GIs with producers), gaining access to seeds was a major motivation for joining co-ops. Other membership benefits identified include marketing of their pigeon peas directly to large-scale buyers or exporters (under some type of informal contract), access to better prices (since vendors cheat them when they sell small quantities individually), and access to loans from the co-op funds. However, during the GIs, co-op members revealed that seeds are sometimes shared even with non-members with the hope that they would be encouraged to join the co-op, thereby increasing the volume of the legume available to satisfy the demand of the buyers (mostly in the export market). According to the respondents, buyers from Blantyre usually demand that they supply a certain quantity for a predetermined price. When the co-op cannot put together the amount required from within, it means they have to buy from non-members to meet the volume. They note further that it is easier to find a market or a buyer when the volume to sell is large. To ensure that they get the best price for their grains, the cooperative engages in a price and buyer search. At the time of this interview, these members had not yet completed a sale, as there was not sufficient harvest in the previous season (and the current season had not been completed). Furthermore, the respondents reveal that membership in the co-op was particularly beneficial to female producers who have less mobility than men do. Though men travel to town for paid work and market opportunities, women are restricted in their time and physical distance away from home. As one female respondent commented, "Being in [a] cooperative allows us to easily mobilize and to do work even in the absence of men." It was observed that "unlike in the past when men were dominant on everything and women relied on them for everything, nowadays things have changed and women can easily work as men." The respondents also implied that women wielding leadership positions in the cooperative did not appear to generate any family conflict. The women stated that attending the meeting was not a problem because they informed their spouses that they were taking

¹⁰ Primary focus is on pigeon peas.

responsibilities at the cooperatives and, additionally, they plan their domestic activities accordingly. Female members with children are able to arrange for alternative care for their kids while they attend the meetings.

3.4 Retailers and Local Processors

A total of 19 key informant interviews were conducted with retailers and local processors of pigeon peas in the Central and South regions of Malawi. Specifically, in the Central region, the team visited the Dedza Central market, and in the South, the Namitambo, Yasini, and Kanje markets. Key informants were identified during market visits.

3.4.1 Motivation, Participation, and Business Ownership

Our data did not reveal any significant differences between male and female retailers in terms of motivation for involvement in the business. In most cases, where there was another source of income for the family, both male and female retailers pointed to the need to provide food, clothing, housing, and education for their families—income from pigeon pea was a contribution to these different expenditure categories. However, in about a fifth of the cases (all female retailers), the income from the pigeon pea business was the sole source of livelihood for their households. These women were FHH, and their husbands were either absent or unable to provide for their households. One of the female respondents indicated that the revenue generated from the business was explicitly used to send her daughters to school, as her husband did not approve of education for girls. Gender differences were found in participation at this node in the pigeon pea value chain. Respondents reported that women were the majority of retailers/local processors of pigeon pea. It is important here to make the distinction between retailers and local processors. Retailers were mostly individuals who sold dried or processed grains (hulled and split) to consumers. In addition the selling of pigeon pea, most of the retailers mentioned their involvement in the selling of other legumes—such as groundnuts, common beans, soybeans, and cowpeas, depending on their seasonal availability. Local processors are those involved in the selling of cooked pigeon pea pods, which is predominately performed by women. This is likely due to the fact that it involves cooking (i.e., a women's activity) and because it requires minimal resources.

Thirteen of the 14 female retailers interviewed reported that they owned the business while their husbands were employed elsewhere. All 14 women indicated that they were the primary decision-makers for their businesses, responsible for supply and pricing based on their interpretation of market indicators. However, these women frequently reported joint decision-making responsibilities with their husbands or other adult men in their households on the use of revenue generated from the business. This was attributed to the customary position of men as the head of the household. For female retailers, ownership of the business did not necessarily translate to greater decision-making power or greater control over income. Most male retailers reported they made joint decisions with their wives with respect to the operation of their businesses. However, further probing revealed that their wives' involvement in the business was mostly as a source of labor and not as a decision-maker. Thus, interventions to promote entrepreneurship for women must take into account intra-household dynamics and gender relations that restrict their financial investments and mobility.

3.4.2. General Requirements to Participate as Retailers

Several factors limit participation and performance at this stage of the value chain. Access to market information was essential for effective performance by all actors (men and women) at this node of the value chain. Other factors, such as access to cash/credit, and labor/time appear to have important gender dimensions.

Market Information

As in other nodes of the value chain, price and market information were identified as critical resources. Similar to complaints of pigeon pea farmers, retailers and local processors reported variable market demands and spurious interactions with vendors as profit constraints. To counteract this, the majority of respondents mentioned that they attempt to gain information related to market trends and pricing through multiple sources. These include physical market surveys, radio bulletins, and retailer social networks. Several respondents mentioned using market information in combination with other input costs to determine pricing of dry pigeon pea grain; retailers who sold fresh pigeon pea pods would set prices at the beginning of each market day. There were no differences between male and female respondents regarding information sourcing; both male and female respondents indicated that they accessed information through radios, phones, and other retailers. Female respondents also mentioned their friends as an important source of information. However, it remained unclear if there were any differences in the extent of use of these different information channels by male and female retailers.

3.4.3. Gender-Based Constraints Affecting Retailers and Local Processors

Access to Credit/Finance

Capital was identified as a major requirement for starting up the business as well as for offsetting profit losses due to price fluctuations. Men and women expressed difficulties accessing personal credit/loans from the banks, which they attribute to very high interest rates. However, the findings reveal gender disparities with respect to access to income-generating opportunities. Unlike men, female retailers indicated they were less likely to work as wage laborers to generate additional capital for their business, either because most of the jobs requiring wage laborers are considered too physically demanding and therefore difficult for women to undertake, or they simply do not have enough time to commit to their household duties, the business, and other work. Moreover, working as a wage laborer sometimes requires travelling far away from their homes, which is difficult for them to do given their household responsibilities. Most married women were more likely to report borrowing capital from their husbands to start the business, or when additional funds are required to sustain the business. Notwithstanding, women were more likely than men to be involved in group/cooperative loan agreements. A woman reported forming a group of 11 members (one man and 10 women) to obtain a loan from FINCA, a cooperative bank.

For retailers in particular, money is needed to purchase the hulled and split pigeon pea to sell to consumers. In the absence of available capital, they purchase the grain from suppliers on credit and often have a hard time paying their debt. Processed pigeon pea obtained from the urban wholesalers/retailers in Limbe or Blantyre is more expensive than the dried whole grain or fresh grain, but takes a shorter time to cook. It also earns a higher premium in the market. The cost of processed grain is a major line item in the retailer's budget. Access to cheaper and small-scale pigeon pea processing facilities could help reduce this cost to the retailer, thereby improving the profitability of their business. However, it was not clear during the interviews if there were any opportunities for local and small-scale processing of the legumes. The respondents revealed that processed grains

were sourced from the city (Limbe/Blantyre), and it was not clear who performed the processing. Cost is amplified by the need to transport grain from city centers to rural areas. Even when the retailers did not directly obtain their inventory from Limbe/Blantyre, the final price that they paid for the grain reflected the transport cost. Involving farmers in local processing can help save time and money; and likely result in higher profits. As shown by Phiri et al. (1999), the sale price of pigeon peas on the retail market is three times that received at the farm-gate.

Labor and Time Constraints

Labor was identified as another important resource required in the retailing or local processing of pigeon peas. The family was the most common source of labor, with approximately 85% of respondents (n=16) reporting assistance from family during the busy season. The use of hired labor was more common among men retailers than women. Most women reported that they were unable to hire labor due to the small size of their businesses.

Further, the analysis revealed a sex-segregated pattern of employment at this node of the value chain. Male and female retailers preferred hired male laborers. The tasks involved in the business were described as physically demanding, and therefore difficult for women to perform. Some of the tasks include lifting and loading/offloading heavy bags of dried legumes upon the heads into trucks or warehouses. Male and female retailers indicated that the activities of buying and grading were their principal responsibilities, as these tasks could not be trusted to hired laborers. One woman indicated that hired laborers were likely to cheat her. The only activity that appeared exclusive to female retailers was winnowing pigeon peas.

Female retailers reported having to close their businesses a couple of times during the day or close early in the absence of help, to carry out culturally prescribed domestic responsibilities such as cleaning, childcare, and cooking. Some of the female retailers relied on labor supplied by neighbors or female relatives (e.g., their mothers) to take care of their households. Most women had their businesses within the home or close to their homes in order to combine their roles as business and household managers. In contrast, male pigeon pea retailers reported that the business was their primary focus, and because they could rely on their wives to handle domestic chores, they did not have to limit store hours.

Table 6. General Constraints in Pigeon Pea Retailing and Local Processing

| Constraint | Recommendation | Rationale |
|--|---|---|
| <ul style="list-style-type: none"> – Limited access to market information, especially price information, and frequent price fluctuations. | <ul style="list-style-type: none"> – Investments to understand the price determination process for pigeon pea, the collection of price information at various stages of the value chain, and the dissemination of price information to all actors along the value chain. | <ul style="list-style-type: none"> – Limited access to price information and frequently fluctuating prices are likely to affect efficiency along the value chain negatively. By promoting the flow of information along the value chain, price information asymmetries are reduced and value chain efficiency and performance is improved. This will create incentives for different actors to continue to participate in the value chain. |

Table 7: Gender-Based Constraints in Pigeon Pea Retailing and Local Processing

| Constraint | Recommendation | Rationale |
|--|---|--|
| <ul style="list-style-type: none"> – Women have limited access to cash-earning opportunities, which impacts the size of their business, and their overall ability to make any business-related investments/expenditures, such as hiring transportation. | <ul style="list-style-type: none"> – Invest in innovative approaches that will enhance women’s access to credit—for example, using approaches that are based on group membership and providing women with literacy training to build their capacity in loan application processes. – In conjunction with access to credit, train women on business management practices to increase loan repayment rates. | <ul style="list-style-type: none"> – Improving women’s access to cash resources will allow them to make bulk purchases at a discount and hire transportation, hopefully enabling them to break even and/or be profitable. Overall, access to credit will improve the performance of women’s businesses. |
| <ul style="list-style-type: none"> – Culturally prescribed roles (household/domestic chores) for women and the restrictions on their mobility limit market travel opportunities and the time they may invest in their businesses. | <ul style="list-style-type: none"> – Investments in technologies that will limit time spent on household chores (maize millers). – Organize female retailers in groups, build trust amongst group members, and promote group transportation of merchandise from point of purchase to markets. | <ul style="list-style-type: none"> – Technologies that make household chores more time efficient could increase women’s ability to invest time in business pursuits. Promoting group transportation of merchandise could reduce costs/increase profits. |

3.5 Buyers and Traders

Buyers and traders are individuals who buy dry pigeon pea grain from farmers and vendors to sell to the large export buyers located in Blantyre or Limbe. As expected, all of the buyers/traders interviewed were located in the South region (districts of Thyolo and Chiradzulu), due to high pigeon pea activity there.

Most of the buyers/traders have business relationships with vendors in high pigeon pea production locations that include informal agreements related to quantity and price. Among the 10 buyers/traders interviewed, eight were men and two were women. Table 9 includes descriptions of our findings related to the barriers women face at this node of the value chain. Vendors are most often men, who are able to supply larger quantities than farmers. Farmers who do sell directly to buyers/traders are commonly women, and they sell smaller quantities due to transportation constraints and household food security needs.

Female farmers tend to bring better quality (e.g., well sorted, free of stones, metals and grass) than men do. The respondents explained that this was because women sort and winnow the grain prior to selling, activities considered inappropriate for men. Some traders observed that men were more likely to sell grain without their wives' consent, and this required that they sneak the grain out before it is sorted and winnowed.

3.5.1 Participation and Business Ownership

All the men interviewed reported owning their businesses. The two female respondents indicated that they jointly owned the business with their spouses. However, one of them explained, "I am the one who is more involved in the management of the business because my husband has a job as an electrician." Gender differentials, with respect to access to capital, were identified as a major reason for the difference in the level of men and women's participation at this level of the value chain. A male trader explained, "Men usually have more business capital, which is essential in this business. Women are not brave enough to withstand the pressure that the business exerts (particularly demands for mobility in transporting and selling produce)."

3.5.2 General and Gender-based Factors at the Buyer/Trader Node

While most of the factors limiting participation and performance at this node of the value chain appear common to men and women, the extent of the challenges are differentiated by gender. Female actors face greater constraints due to cultural norms that restrict their mobility, define their roles and responsibilities, and limit the access to other productive resources. Thus, in the following section we discuss each factor/constraint, highlighting the gender dimensions of each.

Access to Market Information

Frequent price fluctuations and price information asymmetries were identified as major challenges to performance at this node of the value chain. Buyers/traders either travelled to or called the export market buyers in Limbe/Blantyre to verify pigeon pea prices. However, these prices change rapidly. Thus, one method for mitigating the high risk associated with frequent price fluctuations is to offer farmers bottom floor prices; reducing/avoiding losses when selling to the large scale exporters or processors. According to the buyers/traders, large scale export market buyers set prices each season and then communicate this to other actors along the value chain. Independent buyers/traders with storage facilities are able to deal with such fluctuations by storing the legume. Conversely, farmers with limited storage and a desperate need to gain income from the sales of the legume are the most

vulnerable to fluctuations. Investments to improve the reliability and flow of price information along the value chain are therefore more likely to have implications for farmer's income and, consequently, for the food security and nutrition status of their households. We found no differences between male and female farmers' access to price information.

Access to Capital/Finance

Access to credit is a very important requirement to participate as a buyer/trader and to improve business performance. Male and female traders reported difficulty accessing formal credit for their businesses; and like other nodes, they have different channels for generating additional income. Men were more likely to be involved in other businesses, including transportation, wholesale shops, and mobile network distribution. According to men, start-up capital was often generated from employment as paid laborer or from the sale of assets (e.g., livestock). Women in the GIs reported that they were less likely to be hired as laborers due to the perception that they are "less energetic" (physically capable) than men and also because of restrictions on their mobility. Women were more likely to mention farming or small trading as major sources of finance, but this was insufficient for business needs. Women relied on their husbands for additional financial support, using revenue generated from his business.

Storage

Storage is an important asset to buyers/traders. Storage facilities are required to maintain grain quality—quality determines prices. As mentioned earlier, pests are a significant threat to stored pigeon peas. Further, access to storage allows buyers/traders to delay sales when prices are low and to negotiate or bargain for higher prices with large scale exporters. Generally, men (who have more capital on hand) had larger storage facilities. Women often stored grain in their homes or in rented spaces.

Transportation

Transportation is needed when purchasing the grains from farmers in dispersed markets and when collecting harvests to sell to large export buyers. There appears to be some positive correlation between the size of the business and ownership of transportation. Men at this stage were more likely to own their own vehicles or have the financial means to rent transport. Four of the eight men interviewed reported owning their own vehicles for transportation. With the exception of one man who owned a bicycle that he uses to transport grain to export buyers, the other men reported hiring/renting a vehicle or bicycles to transport grains when needed. The female buyer/trader who referred to herself as the major decision maker for her business did not own her own transportation. She used minibuses or public transport to take the grain to Blantyre to sell when she has fewer than five bags to sell, and hires a vehicle to transport the grain when she has more than five bags to sell. The other woman who managed the business with her husband indicated that they owned their own vehicle for transportation.

Labor

The use of hired labor was very popular among buyers/traders of pigeon peas, ranging from 3-10 persons per business. Again, we find a sex-segregated pattern of employment at this node of the value chain. Male employees were preferred given a perception of their greater physical strength and suitability for manual tasks such as weighing and offloading trucks. For example, one woman explained her preference, "First of all, the bags are very heavy for women to be able to carry about 40 in a day; second, most of the women in the community are married and can therefore not work overnight as the job demands." Very few buyers and traders employed women, and those who did

hire them used them for activities that reinforced their culturally defined roles such as cleaning, sewing of bags, or sorting and winnowing. Women were perceived to be more patient and careful and, therefore, more suitable than men for these roles.

Business Knowledge, Bargaining, and Negotiation Skills

Knowledge of the quality of the grain desired by the export buyers/processors, bargaining and negotiation skills, computing profit margins, and maintaining good relationships with suppliers were all stated as essential requirements for success at this node of the value chain. Only one trader had received any formal business training. The two women interviewed had as much formal education as the men interviewed; however, men, on average, had more than 10 years of experience as a business owner, whereas the women had approximately three. Male buyers/traders commonly reported that women lacked business knowledge, such as not knowing the required grain quality (e.g., moisture content, free of stones and pests) and not understanding markets (e.g., appropriate quantities to release and when). Such statements were inconsistent with our findings that women were more likely to be hired to perform grain quality enhancing activities (value addition) such as sorting and winnowing, as these activities were considered culturally appropriate for women, since the activities require sitting down for several hours (which men consider boring) and patience (which women are expected to exhibit more than men). It is unknown whether men's description of women as lacking knowledge of grain quality is a display of power relations to keep them from participating at this node of the chain.

Men also explained that the lack of women at this node was due to their poor negotiating and bargaining skills. They argued that frequent price fluctuations, high competition, women's lack of transportation and storage facilities, and mobility restrictions on women limited their ability to negotiate better prices with large scale buyers and processors. Male traders/buyers described the business as too risky for women. One woman spoke about difficult interactions in the marketplace, stating that she needed her husband or brother-in-law to go with her to Blantyre to negotiate better prices for her legume; otherwise, she would be cheated. Female and male respondents agreed that women were at greater risk for theft or vandalism, and more likely to be robbed of bags of legumes or sums of cash common in this role.

Interpersonal, communication and relationship management skills were also identified as essential for this business activity. As stated by one respondent, "You must be able to maintain a good relationship with farmers and vendors [or] else they would not sell to you. You must understand farmers' problems. For instance, when farmers come to him saying they do not have money for seeds, he gives them seeds on credits or loans seeds to them and the farmers pay for the seeds when they harvest. This way, farmers are encouraged to sell to you when they harvest."

Table 8. General Constraints in Pigeon Pea Buying and Trading

| Constraint | Recommendation | Rationale |
|--|---|---|
| Limited access to market information, especially price information, and frequent price fluctuations. | Investments to understand the price determination process for pigeon pea, the collection of price information at various stages of the value chain, and the dissemination of price information to all actors along the value chain. | Limited access to price information and frequently fluctuating prices are likely to negatively affect efficiency along the value chain. By promoting the flow of information along the value chain, price information asymmetries are reduced and value chain efficiency and performance is improved. This will create incentives for different actors to continue to participate in the value chain. |

Table 9: Gender-Based Constraints in Pigeon Pea Buying and Trading

| Constraint | Recommendation | Rationale |
|--|--|---|
| <ul style="list-style-type: none"> - Women have limited access to cash-earning opportunities, which impacts the size of their business, and their overall ability to make any business related investments/expenditures, such as hiring transportation and building storage facilities. | <ul style="list-style-type: none"> - Invest in innovative approaches that will enhance women's access to credit. For example, using approaches that are based on group membership and providing women with literacy training to build their capacity in loan application processes. - In conjunction with access to credit, train women on business management practices to increase loan repayment rates. | <ul style="list-style-type: none"> - Improving women's access to cash resources will allow them to make bulk purchases at a discount and hire/buy transportation and labor. Hopefully this will enable them to breakeven and/or be profitable. Overall, access to credit will improve the performance of women's businesses. |
| <ul style="list-style-type: none"> - Women's poor negotiation skills (linked to their need to do business as quickly as possible to return to their families) puts them at a risk of selling at lower prices. | <ul style="list-style-type: none"> - Along with the literacy training mentioned above, women need access to training on business-related skills. Further, collective efforts may be necessary to counteract domestic/cultural mobility constraints. | <ul style="list-style-type: none"> - Business-related training can help women to negotiate effectively and could be especially useful for collective/group efforts. Promoting group transportation of merchandise could reduce costs, increase profits, and address cultural mobility constraints. |

Figure 5. Female Producers of Pigeon Peas in Ndilema Village, Dedza District, Central Malawi



3.6 LARGE-SCALE BUYERS AND PROCESSORS

3.6.1 Practices and Participation

Key informant interviews were conducted with representatives of large-scale export market buyers and processors of pigeon pea in Blantyre to understand their role in the pigeon value chain, identify general and specific challenges associated with participation at this level, and to better understand their relationships with men and women at other nodes of the value chain. Specifically, we conducted interviews with AGORA, Export Trading Group (ETG), Rab Processors, and Transglobe, Inc., all of which are privately owned. All the companies are involved in the buying, processing¹¹ and exporting of pigeon peas (dried grain and processed grain *dbal*) and other commodities (cowpeas, grams beans, groundnuts, soybeans, sunflower, and even maize). Most of these companies also sell farm inputs (e.g., fertilizers) and building/construction materials (e.g., iron and zinc sheets) to farmers.

Pigeon pea processing and exporting companies buy most of their supplies directly from independent traders who aggregate grain legumes from vendors and farmers in the rural production zones. In addition to buying directly from independent buyers/traders, each legume exporting company¹² has several branches or buying locations in high pigeon pea production zones. Farmers and vendors transport their legumes to these locations for sale. The respondents reported that only about 30 percent of their total supplies were purchased directly from farmers. The companies recruit and train¹³ individuals who assist in the buying of grains from farmers and vendors in the production zones. The majority of these buyers are men, approximately 70%. According to the respondent from AGORA, women often make up about 50% of the individuals recruited to work as buyers; however, they find it difficult to stay in the villages to which they are assigned and often quit. The tasks associated with working as a buyer were described as physically demanding and therefore difficult for women, who are perceived to be weaker than men. Women were also perceived as lacking the acumen required for effective functioning as legume buyers. Men were stated to be aggressive negotiators, for example, running towards the seller (usually farmers who bring to the

¹¹ With the exception of AGORA.

¹² The exception is TransGlobe, which has only two branches: Limbe/Blantyre and Lilongwe.

¹³ Training on product knowledge, grain quality, and basic math skills.

market), dispossessing them of their grain, and then rushing the grain to the vehicle before beginning to discuss price. According to one respondent, “Women cannot do this faster than men.”

3.6.2 Opportunities and Challenges for Pigeon Pea in Malawi

According to the export buying companies, the current pigeon pea production level in Malawi is insufficient to meet the export market¹⁴ demand. In addition to the opportunities for pigeon pea in the export market, local demand for the legume was described as increasing in regions where it was not previously a part of traditional diets. The consumption of this legume in non-traditional areas was explained by migration and changing production patterns. High demand for pigeon pea in the export market and local consumption present an opportunity to expand pigeon pea production in Malawi. Most of the companies interviewed are operating at very large scales, creating increased need for the legume.

Notwithstanding these opportunities, the discussions revealed several challenges for the development of the pigeon pea value chain at the local and export levels. Limited availability of seeds and low use certified seed varieties (i.e., heavy use of recycled seeds) was identified as a major obstacle to expanding legumes in Malawi. The companies unanimously agreed on the necessity to develop the seeds system for pigeon pea—in particular, improving the availability of improved seed varieties.

Poor grain quality was also identified as a major problem. Export market buyers partly attribute the poor grain quality to the lack of good storage facilities amongst traders. The companies buy everything that looks like pigeon pea but sometimes offer a premium for better quality grains—free of impurities (dusts, stones, and metals) and the grain must be dry. To obtain the premium, independent buyers/traders undertake some value addition (sorting and winnowing), as well engage in the practice of checking the grains sold to them by farmers and vendors for moisture content (visual inspection and by using the teeth to break the pigeon pea grain). Unfortunately, the price premium for better quality does not trickle down to farmers who receive the same price irrespective of the quality. As discussed above, buyers/traders reported that the quality of dried grain sold to them by female farmers was generally superior to that sold to them by men because women would sort and winnow the grain before selling. Therefore, female farmers are not rewarded for providing better quality, as only the independent buyers/traders benefit from price premiums associated with better grain quality. It was also noted that vendors would often cheat by putting stones in the pigeon pea bags.

Further, we find that knowledge of the official names of different pigeon pea varieties was generally low amongst all actors on the value chain. Respondents at all nodes of the value chain frequently differentiated between pigeon pea varieties by their red or white color. Preference for different varieties also seems to differ depending on the use. While processors purchased all varieties, they offered lower prices for the red variety because, according to them, the red variety has a harder external coat, and therefore costs more to process than the white variety. According to retailers and local processors in the South, consumers in the region generally preferred the red variety because it tastes better than the white variety.

Lack of irrigation was identified as another important challenge in pigeon pea production in the country. Other challenges identified include high transportation costs to export markets due to the

¹⁴ Export markets include India and other locations with high Indian populations, such as South Africa, Singapore, Malaysia, the UK, Canary Islands, the US, and Canada.

landlocked nature of the country; low education of farmers (having a subsistence mentality and not seeing agriculture as a business); and high competition among export market buyers.

4. CONCLUSIONS AND IMPLICATIONS FOR FOOD SYSTEMS INNOVATIONS

The findings reveal that women are concentrated at points along the value chain that have minimal resource requirements and are flexible in terms of allowing them to perform their culturally defined duties as homemakers. Scaling pigeon pea would necessitate identifying innovative ways of enhancing women's access to the resources required for their businesses to be profitable (e.g., finance, business and literacy training); and improve their role in decision-making and control over resources. Without this, despite increases in legume harvests, it is not likely that there will be improvement in food security at the household level. To increase women's role in farm management and decision-making, we recommend quota-based training and ensuring direct access to and participation in markets.

Efforts to support retailing and promote greater participation of women in the value chain should identify micro-lending schemes that support women's access to loans. However, for microfinance schemes and other capital investments to succeed, attention must be paid to the competing cultural demands on women's time and labor, as well as address these through innovations and support of collective activity and other time-saving labor practices (e.g., technologies that reduce time spent on chores). Further, literacy and numeracy training is needed to increase women's financial capacity and their ability to negotiate loan repayment schedules.

Our findings indicate that frequent price fluctuations and information asymmetries have implications for the performance of the entire value chain and the benefits derived from participation. We identified common sources of information for actors at different stages of this value chain; however, we did not locate any gender differences in utilization of these channels. Future research should investigate gendered differences in the acquisition and utilization of information in order to improve the design and targeting of gender-sensitive innovations for improving reliable access to price and other market information. Given that women are less likely to have access to large storage facilities, they are particularly vulnerable short sales. We recommend that efforts be taken at the village level to link pigeon pea marketing groups directly to buyers to foster accurate communication and build relationships.

Cultural restrictions on women's mobility limit their access and performance in markets at each node in the chain. Innovations to promote market access must consider the implications of the gender-based disparities demonstrated in this report, and identify gender sensitive approaches of enhancing market participation, especially for women. For example, collective action¹⁵ amongst farmers, if properly designed, has the potential to increase bargaining power, saleable volumes, and access to capital. Group action could be particularly beneficial to women who face mobility constraints—providing an incentive for buyers to travel to them given the increased quantity of pigeon pea available. If successful, this additional income could enable investments in storage infrastructure, business training, and other resources necessary to improve the performance and profitability of women's activities. However, for these potential benefits to be harnessed, the design of collective groups must facilitate gender equitable participation and benefit sharing mechanisms amongst members.

¹⁵ Compared to other countries in Sub-Saharan Africa, group action amongst farmers is very limited in Malawi; this was explained by a lack of trust among smallholder farmers.

Innovations to scale multipurpose legumes in Malawi must take into consideration gender specific factors that have implications for adoption and expansion at the farm level and business performance at post-farm stages of the value chain. The link between legume adoption/expansion, food security, and poverty reduction is mediated by intra-household dynamics and gender relations. Furthermore, to improve food security and reduce poverty, innovations must identify ways of increasing women's direct access to and control over revenue derived from other value chain activities. For example, given female farmers' knowledge and role in seed selection and storage, involving women in local seed production could create a source of income. This may require advocating for land to be allocated to women solely for commercial production or multiplication of pigeon pea seeds, improving women's access to other inputs like pesticides, and building women's capacity in seed production and storage. This has the potential to improve the food security and poverty status of their household, and if performed within the collective structure described above, may simultaneously reduce the risk of appropriation by men.

Existing evidence supports the linkages between increased income for women and better food security and nutritional outcomes (Kerr, 2007). Moreover, innovations that support female farmers to participate in downstream activities such as small-scale processing of pigeon pea are likely to increase returns, given that the retail price of pigeon pea is about three times the farm-gate price. Efforts to involve women in seed multiplication and other commercialization activities should also be fostered. Empowering women economically is essential for the harvesting of the potential food security and poverty reduction benefits of legume expansion and commercialization.

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APPENDIX A: QUESTIONNAIRES

GUIDING QUESTIONS FOR INPUT SUPPLIERS

A. TYPE OF BUSINESS OWNERSHIP

- Who owns this business?
Man Woman Joint group
- Which inputs do you sell/distribute?
Fertilizers Seeds others
- Do you sell legume seeds?
Yes No
- If yes, which legumes seeds do you sell?
Groundnuts soybeans common beans compeas pigeon peas others
- If no, please explain why you do not sell pigeon pea seeds

B. ACCESS TO FACTORS OF PRODUCTION

- How did you get start-up capital for your business?
Personal savings Bank loans informal credit other
- How did you obtain the legume seeds that you sell? (response by specific legume seeds sold)
Self-produced large-scale producers seed producer association farmers'
Agricultural research institutions other
- For which legumes do you carry improved or hybrid seeds?
Groundnuts soybeans common beans compeas pigeon peas others
- Reason (s) for stocking improved varieties for each legume type identified in (3)
- Specifically for pigeon peas, what varieties of seeds do you carry in your inventory?
- Where do you get information and training on business related topics? For instance, information/ training on seed quality, seed storage practices.

C. PRACTICES AND PARTICIPATION

- Do you have employees?
Yes No
- How many of your employers are:
Women men
- Please list all activities associated with the operation of this business and specify who does what?

| Activities | Who does what? | | Why? |
|------------|----------------|-------|------|
| | Men | Women | |
| | | | |
| | | | |
| | | | |

- Who are your main customers for different types of seeds?
Farmers micro seed retailers others
- For each type of seeds in your inventory, which group of farmers do you mostly sell to and why?

| Seed type | Producers | | Explain |
|-------------|-----------|-------|---------|
| | Men | Women | |
| Maize | | | |
| Groundnuts | | | |
| Pigeon peas | | | |

| | | | |
|---------------------|--|--|--|
| <i>Soybeans</i> | | | |
| <i>Common beans</i> | | | |
| <i>Compeas</i> | | | |
| <i>Others</i> | | | |

6. *Are there differences in the purchases (quantity and quality) of seeds demanded by women and men producers?*
7. *Please explain*
8. *What in your opinion is the reason for such differences?*
9. *What other differences in seed demand behavior do you observe between men and women seed customers?*
10. *How do you package your seeds to satisfy the needs of men and women producers?*
11. *What other adjustments do you have to make to accommodate the needs of men and women seed customers?*
12. *What additional services do you offer to your seed customers?*
Loans training on seed/input use information on seed planting information on seed storage
13. *Do you sell seeds on credit?*
14. *What differences exists between men and women in the method of seed purchase?*

| Seed method of payment | Producers | |
|-------------------------------|------------------|--------------|
| | Men | Women |
| <i>Cash</i> | | |
| <i>On credit</i> | | |
| <i>Subsidies</i> | | |
| <i>Other (specify)</i> | | |

15. *What are the major challenges/ difficulties you experience in running your business? Please explain.*

D. KNOWLEDGE AND BELIEFS

1. *Who has more knowledge when it comes to seed quality/ seed characteristics and other seed related information?*
Men women
2. *Explain the reason (s) for your answer to the question above.*
3. *Are there differences in men’s and women’s preferences in purchasing legume seeds (in particular pigeon peas seeds), e.g., timing, pricing, and size?*
4. *Do you believe there is a difference in how men and women use seeds in their legume (emphasize on pigeon peas) enterprises?*
5. *Do you believe women or men are better suited for particular jobs in this business?*
6. *What in your opinion could be done to promote seed consumption by pigeon peas and other legume producers?*

E. LAWS AND POLICIES

1. *Are there any laws/policies/regulations that you have to comply with in the running of your business?*
2. *Are there any regulations that make it hard for you to run your business?*

QUESTIONS FOR PRODUCERS

A. ACCESS TO FACTORS OF PRODUCTION

1 How the main farmland is usually acquired in this region?

Inheritance Buying Lease Clan Village allocation other (specify)

2 Who typically owns the land within the household or under whose name is the land and what type of rights do they have and what

| Land rights | Who owns | | | |
|-------------------------|---------------------|--------------------|--------------|-------------------------|
| | Men/husbands | Women/wives | Joint | Others (specify) |
| <i>Title deeds</i> | | | | |
| <i>Customary rights</i> | | | | |
| <i>User rights</i> | | | | |
| <i>Other(specify)</i> | | | | |

3 Which crops are grown on the main farming land of the household? List them

Maize tobacco groundnuts

4 If pigeon pea is grown on the main farmland, who makes decision on how much land is allocated to pigeon peas?

Husband/ man wife/ woman joint other(specify)

5 If pigeon pea is not grown on the main farming land, how is the land on which pigeon peas is grown usually acquired?

6 What resources other than land are important in the production of pigeon peas?(check all that apply)

Labor/ time Fertilizers Seeds Knowledge/ skills/ information others (specify)

7 What major sources of labor are used in the production of pigeon peas?

Family Hired labor both

8 How do men/women farmers usually raise cash when needed?

| Major Source of Cash | Men(yes/no) | Women(yes/no) |
|--|--------------------|----------------------|
| <i>Sell labor</i> | | |
| <i>Sell crops and crop products</i> | | |
| <i>Sell livestock and livestock products</i> | | |
| <i>Credit/ loans</i> | | |
| <i>Others (specify)</i> | | |

9 Where do men/women producers usually obtain the pigeon pea seeds that they plant?

Own/ recycled seeds purchase gifts

10 If purchased, from who did you buy them (identify them)?

Agrodealers/ retail shops seed producer association farmers' association others

11 How do men/women farmers usually pay for the seeds?

| Payment Method | Men | Women |
|------------------------|------------|--------------|
| <i>Cash</i> | | |
| <i>Loan/ credit</i> | | |
| <i>Labor</i> | | |
| <i>Other (specify)</i> | | |

12 What are your major concerns about pigeon pea seeds, for instance, seed availability (quantity and quality), seed cost, etc.?

13 How do men and women farmers usually obtain farm business related information (e.g., information on farming practices and market prices, etc.)?

| Source of Information | Men | Women |
|------------------------------|------------|--------------|
| Radios | | |
| Cell phones | | |
| Friends | | |
| Producer organizations | | |
| Demonstration plots | | |
| Input suppliers | | |
| Agric. Extension | | |
| Social groups | | |
| Farmer field schools | | |
| Other (specify) | | |

14 What factors influence farmers' decisions to be part of a producer/farmer association?

15 How are these factors different for men and women farmers?

B. PRACTICES AND PARTICIPATION

Legume Production

1 Which legumes do most households grow in this district and why?

| Legume type | Grown (Yes or No) | Reason for growing them (check all that apply) |
|---------------------|--------------------------|---|
| <i>Groundnuts</i> | | <i>a. Eat them/ our culture</i> <i>b. Sell them</i> <i>c. Soil fertility</i> <i>d. Other reasons</i> |
| <i>Pigeon Peas</i> | | <i>a. Eat them/ our culture</i> <i>b. Sell them</i> <i>c. Soil fertility</i> <i>d. Other reasons</i> |
| <i>Soybeans</i> | | <i>a. Eat them/ our culture</i> <i>b. Sell them</i> <i>c. Soil fertility</i> <i>d. Other reasons</i> |
| <i>Conpeas</i> | | <i>a. Eat them/ our culture</i> <i>b. Sell them</i> <i>c. Soil fertility</i> <i>d. Other reasons</i> |
| <i>Common beans</i> | | <i>a. Eat them/ our culture</i> <i>b. Sell them</i> <i>c. Soil fertility</i> <i>d. Other reasons</i> |
| <i>Others</i> | | |

2 Within the household, do women and men grow separate plots?

3 If yes, please explain

4 In male headed households who typically makes decisions on which legumes are grown and why? Note: understand how access to inputs and gender roles influence decision to grow specific legumes.

| Legume Type | Decision Maker | | | | Explain why. |
|------------------------|-----------------------|----------------|--------------|------------------------|---------------------|
| | <i>Husband/AM</i> | <i>Wife/AF</i> | <i>Joint</i> | <i>Other (specify)</i> | |
| <i>groundnut</i> | | | | | |
| <i>Pigeon peas</i> | | | | | |
| <i>Soybeans</i> | | | | | |
| <i>Conpeas</i> | | | | | |
| <i>Common beans</i> | | | | | |
| <i>Other (specify)</i> | | | | | |

AM=Adult Male AF=Adult Female

5 Which pigeon peas varieties are common in this community? List them and find local names) and why?

6 Who makes decisions or selects what specific pigeon pea variety to plant and why?

Note: looking to understand how gender roles and gender disparities in assets influence adoption of different legume varieties.

| Who makes decision | Explain why. |
|---------------------------|---------------------|
| <i>Husband/other male</i> | |
| <i>Wife/other female</i> | |
| <i>Joint</i> | |
| <i>Other (specify)</i> | |

7 Who typically carries out specific activities in the production of pigeon peas and why? Note. To understand gender division of labor in pigeon pea production.

| Activity | Performed by | | | | | | Explain why |
|-------------------------|---------------------|----------------|--------------|-------------------|---------------------|------------------------|--------------------|
| | <i>Husband/AM</i> | <i>Wife/AF</i> | <i>Child</i> | <i>Hired Male</i> | <i>Hired Female</i> | <i>Other (specify)</i> | |
| <i>Seed production</i> | | | | | | | |
| <i>Seed storage</i> | | | | | | | |
| <i>Land preparation</i> | | | | | | | |
| <i>planting</i> | | | | | | | |

| | | | | | | | |
|-----------------------------------|--|--|--|--|--|--|--|
| <i>Disease & pest control</i> | | | | | | | |
| <i>weeding</i> | | | | | | | |
| <i>residue incorporation</i> | | | | | | | |
| <i>harvesting</i> | | | | | | | |
| <i>Storage</i> | | | | | | | |
| <i>transport</i> | | | | | | | |
| <i>Cooking</i> | | | | | | | |
| <i>Marketing</i> | | | | | | | |

8 *Pigeon pea cultivation practices. Note: to understand how gender roles and gender disparities in resources influence pigeon pea cultivation practices*

| Who is? | Most likely to cultivate pigeon peas from | | Explain why |
|----------------|--|----------------|--------------------|
| | <i>Seeds</i> | <i>Ratoons</i> | |
| <i>men</i> | | | |
| <i>women</i> | | | |

9 *Are there additional labor and other resource requirements associated with growing Pigeon peas*

10 *How do men and women farmers satisfy these?*

11 *What challenges in pigeon pea production are specific to women farmers? Please explain*

12 *How do women farmers overcome/ deal with the challenges? Please explain*

13 *Other than the general challenges women farmers face in pigeon pea production, are there other challenges specific to women in female headed households producing pigeon peas? Please Explain.*

14 *What challenges in pigeon pea production are specific to men farmers?*

15 *How do men farmers overcome/ deal with the challenges? Please explain*

Pigeon Pea Marketing

16 *What factors influence the decision to sell pigeon peas? Explain why.*

17 *Who within the household often makes the decision to sell pigeon peas?*

Husband/ other male wife/ other female joint

18 *Why? Please explain*

19 *Who decides how much pigeon pea is sold?*

20 *Who negotiates on the pigeon peas sales price*

21 *In what form is pigeon pea mostly sold?*

Dry grains pods leaves

22 *Where do you mostly sell your products*

Farm gate local market others (specify)

23 *Please, explain why.*

- 24 *What form of payment do you usually receive?*
 Cash In kind (specify)
- 25 *Who are the major pigeon pea buyers from this community?*
 Local consumers Rural intermediate buyers (middlemen) rural assemblers Urban retailers
 urban wholesale assemblers farmers association others (specify)
- 26 *How is the pigeon pea often transported/ to the market or point of sale?*
- 27 *Who takes the pigeon peas to the market to sell?*
 Men women other (specify)
- 28 *What factors influence the decision to sell to consumers or other types of buyers?*

Control Over Income/Revenue From Pigeon Peas

29 *Who decides on how revenue/ income from pigeon peas sales is spent*

| Who | Explain why. |
|------------------------|---------------------|
| Husband/ other male | |
| Wife/other female | |
| Joint | |
| Other (specify) | |

- 30 *How is the revenue from pigeon peas sales usually spent*
 Food education health clothing rents/housing transportation
 others (specify)
- 31 *Are there any specific factors that limits women farmers' access to and participation in markets?*
- 32 *Please explain.*
- 33 *What in your opinion can be done to address these challenges?*
- 34 *Are there any specific factors that limit men farmers' access to and participation in markets?*
- 35 *Please explain.*
- 36 *What in your opinion can be done to address these challenges?*
- 37 *Are there any legume projects in this community? Please list them.*
- 38 *Are any of these legume projects specifically involved with pigeon peas? Please list.*
- 39 *What specific activities are carried out by the legume project?*
- 40 *In what ways have you benefited from the legume project (benefit related to pigeon pea production and marketing)*
- 41 *Explain how*

C. KNOWLEDGE AND BELIEFS

- 42 *Who, between men and women is more knowledgeable, and about what specific aspects of pigeon pea production?*
- 43 *Explain your reasoning.*
- 44 *Are there activities/ roles in pigeon pea production and/or marketing that are difficult to undertake because you are a man or woman?*
- 45 *Are there activities in pigeon pea production that men or women are discouraged from doing? Please explain.*
- 46 *Who is more likely to attend training and technical meetings on legumes, men or women? Explain the reason for your answer*

D. LAWS AND POLICIES

- 47 *If the landowner dies are there laws that make it difficult for the spouse to inherit the land or property?*
- 48 *Are you aware of other law/ policies and regulations that are likely to affect you as a pigeon pea producer?*
- 49 *Please explain*

QUESTIONS FOR BUYER/ TRADERS

Background characteristics

- District or village name where buyer is based
- Man or woman
- In which age bracket do you belong? Below 18
 18-25 25-40 40-50 above 50
- What is your marital status? Married Single Widow(er) other(specify)
- What is the highest level of schooling you have attained? No
 school Primary Secondary post-secondary High School college *Adult literacy*
 education post college
- How many persons are there in your household?

A. ACCESS TO FACTORS OF PRODUCTION

- 1 Do you own this business? Yes/No
- 2 If you are not the owner, what is your relationship with the business owner?
- 3 How many employees does this business have?
- 4 How many women and men are your employees?
- 5 Who is more involved in buying pigeon peas? Men or Women
- 6 Why? Please explain.
- 7 What makes it hard for women or men to become buyers or traders?
- 8 How do you identify the people you buy from?
- 9 Do you own your own transportation?
- 10 If not, how do you transport the grains from point of purchase to the point of sale?
- 11 Have you received any training on grain grades or quality requirements?
- 12 If yes, where did you receive the training, who trained you? List them
- 13 How did you obtain the initial startup capital for your business?
- 14 How do you generate additional capital for your business?
- 15 What other resources and skills are essential for the day-to day-operation of your business? Please list them and explain how?

B. PRACTICES AND PARTICIPATION

- 16 How long have you been trading legumes?
- 17 What activities are involved in the running of your business and who does what?

| Activity | Who Does what | | | | Explain why |
|-----------------|----------------------|---------------------|-------------|--------------|--------------------|
| | <i>Adult Male</i> | <i>Adult Female</i> | <i>Both</i> | <i>Other</i> | |
| | | | | | |
| | | | | | |

- 18 Which legumes do you buy or trade? Why?

| Legumes | Yes/No | Explain why |
|---------------------|---------------|--------------------|
| <i>Pigeon peas</i> | | |
| <i>Groundnuts</i> | | |
| <i>Common beans</i> | | |
| <i>Soybeans</i> | | |

| | | |
|-------------------------|--|--|
| <i>Cowpeas</i> | | |
| <i>Others (specify)</i> | | |

19 *Where do you buy your products? List the names of the markets and villages.*

| <i>Legume</i> | <i>Market/village</i> | <i>Explain why</i> |
|-------------------------|------------------------------|---------------------------|
| <i>Pigeon peas</i> | | |
| <i>Groundnuts</i> | | |
| <i>Common beans</i> | | |
| <i>Soybeans</i> | | |
| <i>Cowpeas</i> | | |
| <i>Others (specify)</i> | | |

20 *What factors influence your decision to buy pigeon peas from a particular vendor?*

1) *Nearness to roads* 2) *quantity available for purchase* 3) *quality of grain* 4) *Price requested*

21 *What factors influence the price you offer the seller for their grain?*

22 *How do you differentiate grains of different qualities?*

23 *Who do you often source your products from? Men women or both*

24 *Have you noticed any difference in buying from men and women? Please explain.*

25 *Who is more likely to meet both the quality and the quantity of grain that you desire?*

Men Women

26 *Please explain why*

27 *Please describe your business relationship with your suppliers. One time exchange/ spot market contracts*

28 *Please explain*

29 *What forms of payment do you offer*

Cash in kind (specify)

30 *Who do you sell the grains to?*

Urban Retailers Large-scale processors/ millers Wholesalers

Others (specify)

31 *How would you describe your relationship with them?*

32 *Do you undertake any value addition or conditioning for your products?*

Yes No

33 *Please Explain.*

34 *what specific challenges do you encounter as a man/woman running this business*

C. KNOWLEDGE AND BELIEFS

35 *What are the characteristics that make a successful buyer/ trader?*

36 *How does being a woman/ man positively/ negatively affect business practices and profitability? In other words, are there aspects of buying and trading that are believed to be easier or more difficult for men or women?*

D. LAWS/POLICIES

37 *Are there any laws or regulations that make it hard for you to carry out your business?*

Do these laws affect you differently because you are a man or a woman?

QUESTIONS FOR RETAILERS/ LOCAL PROCESSORS

Background information

- *Location—market/ village/ district/ region*
- *Ask if they are a retailer or local processor*

A. ACCESS TO FACTORS OF PRODUCTION

1 *Are you the owner of this business?*

Note: if yes, make a note of their sex and proceed to question 5

2 *If you answered no to question (1), is the business owner a man or woman*

3 *If you answered no to question (1) what is your relationship with the owner of business?*

4 *If you answered no to question (1) what is your role in the day-to-day operation of this business?*

5 *Who is the main person involved in making decisions about the business?*

Adult male Adult female joint other (specify)

6 *What resources are critical to the running of your business?*

Time skills/ knowledge capita/ money labor others (specify)

7 *How did you obtain the startup capital required for this business*

8 *When you need additional cash for your business where do you get it from?*

9 *How do you obtain the labor required in running your business*

Family hired friends/ neighbor other (specify)

10 *How many men or women employees do you have working for you?*

11 *How do you obtain prices (inputs) and other market related information?*

12 *Have you received any training to help you better run your business, for example training on business practices, training on grain quality and standards training on hygiene financial management others (specify)*

13 *Please explain*

14 *In which age bracket do you belong*

18 18-25 25-40 40-50 above 50

Below

15 *What is your marital status (of person who owns/ makes business decisions)*

Widow(er) other(specify)

Married Single

16 *How many persons in each of following age bracket are in your household?*

0-5 5-10 10-20 20-50 50 and above

17 *What is the highest level of education you have attained?*

No school Primary secondary post-secondary High School college post college Adult literacy education other (specify)

18 *Can you describe your decision to be a pigeon pea retailer or small-scale processor? What factors influenced this decision?*

B. PRACTICES AND PARTICIPATION

19 What activities are involved in the day-to-day operation of your business and who does what and why?

| ACTIVITY | WHO DOES WHAT | | | | WHY. |
|----------|---------------|----|-------|-------|------|
| | AM | AF | Joint | Other | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

AM=Adult Male

AF=Adult Female

20 Which legumes do you retail or process?

| LEGUME | YES | NO |
|------------------|-----|----|
| Pigeon peas | | |
| Groundnuts | | |
| Soybeans | | |
| Common beans | | |
| Cowpeas | | |
| Others (specify) | | |

21 Do you sell more than one pigeon pea variety? (If answer to 20 was yes.)

22 Please list the varieties that you sell.

23 Explain why you sell these varieties.

24 How do you decide which grain variety to stock/sell/process?

25 How do you decide where to buy the grain from? Please explain

26 From whom do you buy the pigeon pea grain?

Local farmers (rural) intermediate buyers (rural) urban retailers urban wholesalers others
(specify)

27 Please describe the business relationship between you with your suppliers.

28 Who are your pigeon pea customers?

29 How many of your customers are men or women? (estimated proportion)

30 What differences are there in the use of your services by men and women?

31 Do you always have supplies (quantity and quality) that meet their demands?

32 What are the hours of operation?

33 How do you combine your role as a retailer and your other roles(e.g., mother/father

34 Who decides on how the revenue you obtain from your business is spent?

35 How do you use/spend the profit you get from your business?

Food housing education clothing health transportation other household
expenditure others (specify)

C. KNOWLEDGE AND BELIEFS

36 Are there any activities in your business that are difficult for a man or a woman to carry out? List activities and explain

37 What are the major challenges you face in the running of your business? Explain

38 Do you think these challenges would be different if you were a man or a woman? Please explain.

D. LAWS AND POLICIES

39 *Are there any laws/policies that make it hard to operate your business? Please explain*

40 *Would these laws affect you differently if you were a man/woman?*

GUIDING QUESTIONS FOR PROCESSORS

A. ACCESS TO FACTORS OF PRODUCTION

1. *Who owns this business?* *Single male owner* *single female owner* *other types of ownership (specify)*
2. *Do you obtain supplies directly from farmers or through intermediate buyers?*
3. *How do you find pigeon peas suppliers (farmers/intermediate buyers)*
4. *Are you aware of men/women who own the farm businesses from which you buy?*
5. *Are you aware of men or women intermediate buyers of pigeon peas supplying to you?*
6. *Do you find there is any difference in the quality/quantity of product that you receive from men or women's farms?*

B. PRACTICES AND PARTICIPATION

7. *What are the hours of operation of your business?*
8. *How many employees (men/women?)*
9. *How do you support women employees in their roles as childcare providers?*
10. *How do you/your employees get to and from work?*
11. *What kind of jobs/activities are involved in the operation of this business, what skills are necessary for each activity, and who does what?*

| Activities | Required Skills | Who does | | Why |
|-------------------|------------------------|-----------------|--------------|------------|
| | | What | | |
| | | <i>Men</i> | <i>Women</i> | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

12. *To whom do you sell the finished products?* *Local consumers* *exporters* *others (specify)*
13. *Do you provide any training to your employees?*
14. *What types of training? List them and explain*
15. *When is the training held?*
16. *Who is more likely to participate in the training?* *Men* *or Women?*
17. *Do you have more men or women as customers?*

C. KNOWLEDGE AND BELIEFS

18. *Are there aspects of processing that are believed to be more difficult for men women/ men?*
19. *What is an example of such a task?*
20. *Are there types of jobs that men/women are discouraged from doing?*
21. *What is an example of such a task?*
22. *In your opinion, what are the major challenges associated with having a female employee? Explain*
23. *Do you believe that there are differences in the supply or quality of the product that you receive from men or women?*

D. LAWS AND POLICIES

24. *Are there laws or policies that make it hard for you to run your business*



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