



# Opportunities for Sustainable Food Production in Karamoja and Lango Sub-regions: Case Studies in Abim and Lira

**Cassava, Maize and Millet Value Chains**

**December, 2016**

This Program is Strategic Partnership Convincing and Convening Program.  
This Program is funded by the Ministry of Foreign Affairs - Netherlands.





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# ACRONYMS

ACODE:	Advocates Coalition for Development and the Environment
ADP:	Arid lands Development Program
ADRA:	Adventist Relief Agency
AIDS:	Acquired Immune Deficiency Syndrome
CDO:	Community Development Officer
CEVSI:	Italian Cooperation and Development
CSO:	Civil Society Organization
FAPAD:	Facilitation for Peace and Development
FBO:	Faith-Based Organization
GoU:	Government of Uganda
HIV:	Human Immunodeficiency Virus
ICCO:	Inter-Church Cooperation
IOM:	International Organisation of Migration
NAADS:	National Agricultural Advisory Services
NARO:	National Agricultural Research Organization
NGO:	Non-Governmental Organization
NUDIPU:	National Union of Disabled Persons of Uganda
NUSAF:	Northern Uganda Social Action Fund
OWC:	Operation Wealth Creation
PWD:	Persons with Disabilities
SACCO:	Savings and Credit Cooperative
USAID:	United States Agency for International Development
VSLA:	Village Savings and Loan Association

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# EXECUTIVE SUMMARY

The baseline study conducted in districts of Abim and Lira established that farming was the dominant economic activity and a dominant source of livelihoods. Data was collected through interviews with farmers, district authorities, security agencies and produce buyers in districts of Abim and Lira. Focus Group Discussions were also conducted with members of farmers' associations. Cassava, maize and millet were the three most cultivated crops, with millet cultivated by 24% of small scale farmers, cassava cultivated by 31% and maize cultivated by 29%. These crops were intercropped or rotated with bananas, sim sim, beans, sun flower and sweet potatoes.

Farmers reported declines in farm outputs for all crops grown, attributed to declining soil fertility and climate change. Climate change manifested in form of prolonged droughts and unpredictable rainfall patterns. The small pieces of land owned by farmers, ranging between 1-25 acres with a mean of 6 acres were subjected to frequent cultivation in a bid to meet domestic food needs and this led to soil exhaustion and nutrient depletion. However, many farmers appeared ill-equipped to employ soil and water conservation measures, mainly due to lack of knowledge, skills and resources. The study found that declining food production had affected domestic food supplies with a number of farmers having to rely on local markets to buy food. Farmers with large pieces of land who adopted soil and water conservation measures were able to realise adequate food production for their families with surplus to sell in markets.


The study established that government interventions like NAADS, NUSAF and Operation Wealth Creation had provided technical support, capacity building programs, farm inputs and implements to farmers. However, not every community member benefited from these programs because of lack of information or terms of participation that did not favour many farmers. Discrimination and tendencies of corruption were also reported in government programs. Non-governmental organisations and private business entities were also involved in farmer support and availing farm inputs. It was established that NGOs were freely operating with no government interference, although NGOs were required to register with Community Development Officers at sub-county level and inform local Police about any public meetings they were convening.

Most farmers relied on using simple tools like hoes, machetes and rakes for land clearance and preparations which limited the size of cultivated land. The same tools were used during harvesting. There was no mechanised farming recorded with any of the small-scale farmers that the study reached. Farmers also faced challenges



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of pests, diseases and vermin which attacked crops in the field and even post-harvest. Post-harvest losses were attributed to weevil attacks, rodents, rotting of the harvested crops which were attributed to lack of proper drying surfaces and storage. Marketing of the food products was also a challenge, characterized by fluctuating prices and lack of markets during peak seasons. Value-addition was least understood and rarely practiced by many farmers, largely due to ignorance about the process and lack of capacity for those who wished to add value to their farm produce. A few cases of value-addition reported involved sun drying of cassava, maize and millet and subsequent milling of the foods on electric mills or manual grinding stones.

Improving the production of cassava, maize and millet will require addressing the challenges of declining soil fertility through manure or fertiliser application as well as piloting agro-forestry practices where applicable. Mitigating the negative impact of climate change calls for training and equipping farmers with the necessary tools to practice water harvesting and irrigation. Research will also help farmers access varieties of crops least affected by drought. Training farmers in soil management and crop agronomy of cassava, maize and millet will improve on the practices currently employed in farming. Supporting farmers with sizeable land holding to adopt mechanised farming is a way to boost yields. Encouraging value-addition will go a long way in reducing post-harvest losses and enabling farmers to sell when prices are competitive. Advocating inclusion of cassava, maize and millet value chains into existing government interventions of NUSAF and Operation Wealth Creation would enable small-scale farmers easily access quality seeds, planting materials, farm implements and the much needed value-addition infrastructure.

# 1.0. BACKGROUND

Between 2016 and 2020, the ICCO Consortium will strengthen identified civil society organizations (CSOs) through a program focused on promoting civil society engagement in dialogue with policy makers to lobby for an effective policy environment within the identified thematic areas afore-mentioned. The Convening and Convincing Uganda Country Program is developed in line with the Uganda social and political context, past and current ICCO Consortium members program track record and within the overall Convening and Convincing programmatic framework. From the four programmatic pathways, ICCO Cooperation will focus on the three pathways: i) Political space for CSOs ii) Realizing inclusive and sustainable food systems and iii) Small producers' empowerment and access to markets. The program will seek to reclaim space for civil society. In order to reclaim space for CSOs, organizations will contribute to constructive dialogue concerning pro-poor food security and inclusive markets and implementation. By strengthening civil society organizations to engage in these thematic policy dialogues, ICCO Cooperation will contribute to CSOs' enabling environment and ensuring operational space is assured for independent development actors.

ICCO Cooperation consortium is to support the improvement of access to markets for small scale farmers especially for Women, Youth and Disabled farmers. These farmers are producing various products such as Cassava, Maize and Millet but many farmers focus on their own subsistence. Women in Karamoja, Lango and Teso have relatively constrained access to markets. Most women sell small amounts of produce directly from their gardens or homes to traders who move around the villages instead of transporting their goods to markets with higher purchasing prices. ICCO Cooperation will support CSOs, NGOs, FBOs and CBOs to engage with the small scale farmers especially women, youth and disabled persons to gain greater understanding about realizing knowledge and skills to improve their ability to access market.

## 1.1. Objectives of the Baseline Study

- a) To identify the level of knowledge and skill capacity gaps of small scale farmers in Lango and Abim in Karamoja (Women, Youth and Disabled persons)
- b) To identify how limited knowledge and skill capacity inhibits small scale farmer's capacity to access markets for their produce (Women, Youth and Disabled persons)
- c) To assess how policy formulation has supported small scale farmers to access markets for their produce (Cassava, Maize and Millet)
- d) Identify the strengths and weaknesses of the current skills development system as well as key dependencies and causes for these strengths and weaknesses and how it has failed to meet the needs of small scale farmers

- e) Assess the appropriateness of the institutional and systems design for skills delivery including the manner in which it facilitates access to skills, knowledge and promotes quality, relevance, mobility and adaptability

## 1.2. Methodology

A survey including women, youth and disabled persons who are involved in crop production in the targeted areas was conducted to collect information on capacity building programs, farming practices, agricultural support and livelihoods. A total of 75 small scale farmers were interviewed, including 41 from Abim district and 34 from Lira district during the period October 12-19, 2016. The farmers were selected randomly from lists provided by farmers' associations namely, ADP in Abim and FAPAD in Lira. Efforts were made to cluster the youth, women and the disabled before the random selection to ensure that all categories are included among the respondents. Of the 75 respondents, 28 were youth, 31 were women, 8 were persons with disability and 3 were youth with disability. Of the disabled respondents, 2 suffered hearing impairments, 7 were physically handicapped which included inability to walk, missing hands or limbs or having deformed body parts. Four of the respondents were visually impaired. The sample also included youth who were aged between 18-35 years.

Interviews were conducted using a questionnaire which was completed by the interviewer as they administered questions to respondents. A total of 4 Focus Group Discussions were conducted with farmers' groups in 4 sub-counties of Lotuke, Morulem in Abim district and Adekokwok and Amac in Lira district where general issues affecting farmers were explored. On average, every Focus Group Discussion was attended by at least 15 farmer group committee members and farmers. Key informants (n=19) including local leaders, elders, religious leaders, former National Agricultural Advisory Services (NAADS) coordinators, Operation Wealth Creation coordinators, NUSAF coordinators were interviewed to generate information on farmer support systems and access to information and markets, among other issues. The study also involved local produce buyers (n=9) of cassava, maize and millet to get a sense of the dynamics in the market and the pricing of products.

Government employees involved in the agriculture and business sectors at the districts were interviewed (n=14) and included Chief Administrative Officers (CAO), District Production Officers, District Agricultural Officers, Parish Chiefs and Community Development Officers (CDO) based at sub-counties. Information on government regulation of NGOs' working environment was generated through interviews with law enforcement offices which included staff of Uganda Police Force and security agencies (n=14). These were interviewed using questionnaires and the information they provided was corroborated with responses provided by the general population.

## 2.0. FARMING ACTIVITIES IN ABIM AND LIRA

### 2.1. Crop production

Farmers in the districts of Abim and Lira were involved in cultivation of both food and cash crops for domestic consumption and sale for income generation. Cassava, maize and millet appeared to dominate crops grown by most farmers. However, sim sim, ground nuts, sweet potatoes, bananas, beans, sun flower and in some cases tomatoes (0.5%) were also grown. Under the Agricultural zoning, agro-processing and marketing policy, cassava is among priority commodities selected by government for support in Agriculture Sector Development Strategy and Investment Plan: 2010/11-2014/15 (GoU, 2010). During the zoning process, Lango and Acholi sub-regions fell under four zones where maize is one of the crops being promoted (Agri-ProFocus, 2011 and Action Against Hunger, 2014). It was therefore not surprising that cassava and maize are widely produced in the region.

Food and cash crops grown in Lira and Abim districts

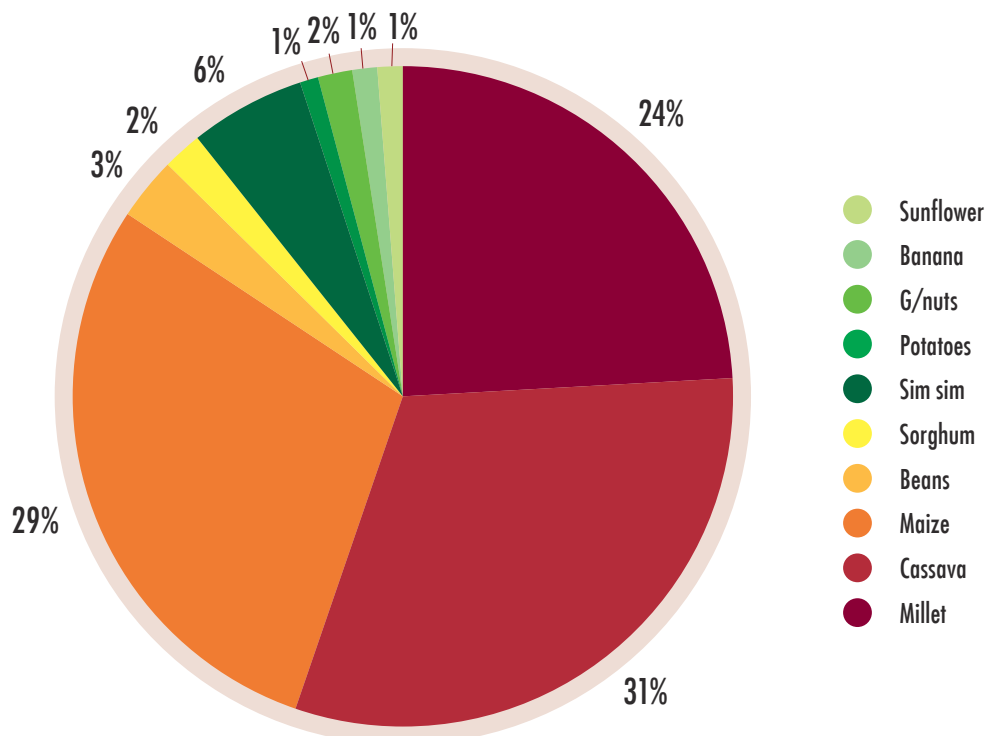
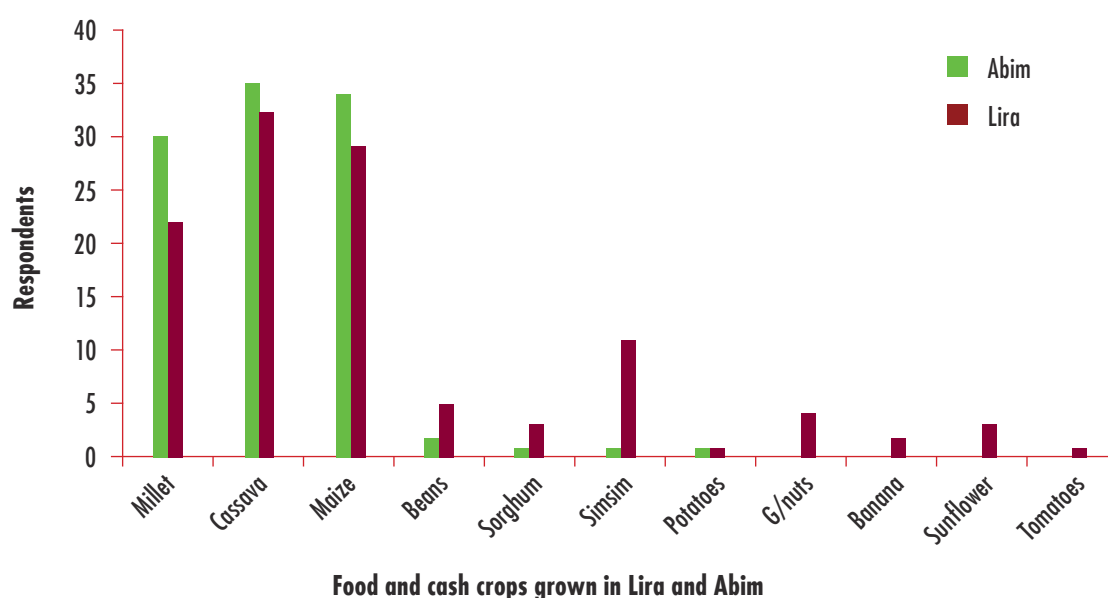


Figure 1: Crops grown by small scale farmers in Abim and Lira

Farmers in Lira district were found to produce ground nuts, bananas, sunflower and tomatoes while also dominating in the production of sim sim, sorghum and beans. Equal numbers of respondents in Abim as well as Lira were involved in production of sweet potatoes. The slightly higher number of respondents in Abim for cassava, maize and millet may not be an exact reflection of actual production capacity but rather corresponds to the number of farmers reached in each district with Abim having 41 respondents while Lira had 34. Most of the food produced was for domestic consumption. CESVI (2013) also found that the quantities produced by farmers in the districts of Lango sub-region were too meager to enter viable markets and they associated this mainly to the prevalent traditional agricultural practices among farmers.



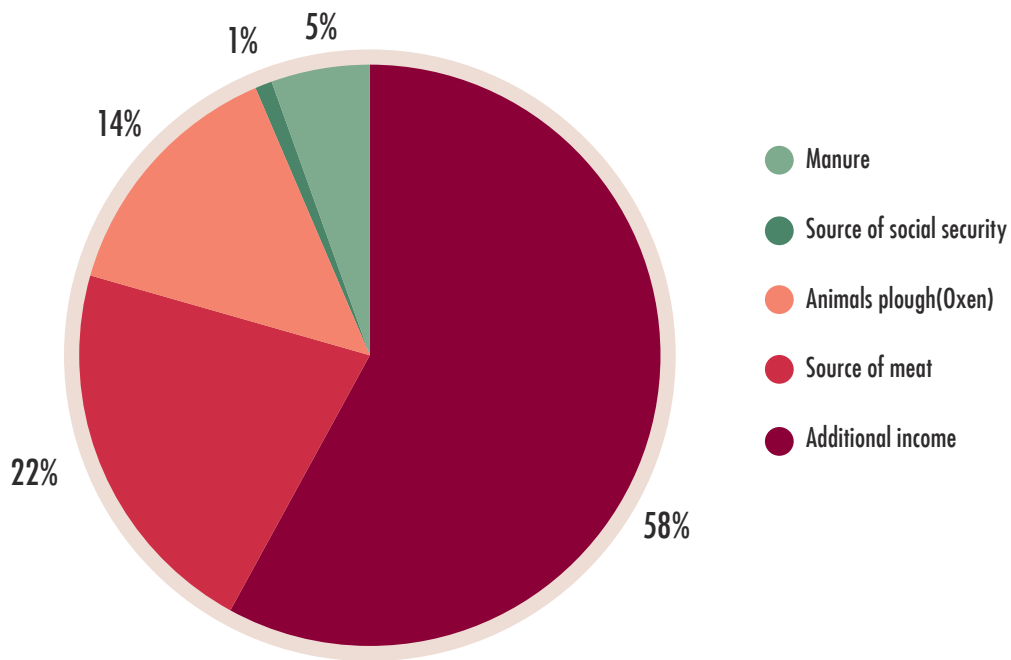
**Figure 2:** Crops grown by small scale farmers per district

## 2.1.1 Farming practices

Most farmers not only employed different strategies to optimize production on available land but also to maintain soil fertility. Over 90% of farmers revealed that they practice crop rotation in their gardens while 10% did not. Cereals like millet, sorghum, maize were being rotated with dicots such as cowpea, beans, soya bean. Other crops in the rotation cycle included cassava, sun flower, sim sim, vegetables (greens), potatoes and cotton. Cassava in many cases was intercropped with beans, groundnuts and millet. Farmers attributed crop rotation practices to indigenous knowledge rather than knowledge acquired through training. However, it should be noted that crop rotation with no adequate fallow cannot replenish the nutrient requirements that are available in productive soils. Over 98% of the farmers knew the advantages of having both animals and crops on farm while 2% did not.



### Advantages of both animals and crops on farm



**Figure 3:** Importance attached to agro-forestry systems

Most farmers valued additional income from animal and crop sales and another large number considered animals as sources of meat products for households. Animals were also valued for ploughing the land especially oxen and as source of manure from cow dung. A small number of farmers looked at animals on farm as providing social security and status in the community, because animals are used to pay bride price. However, very few farmers had animals on their farm, citing land shortage and lack of capital to buy animals. As one farmer argued below:

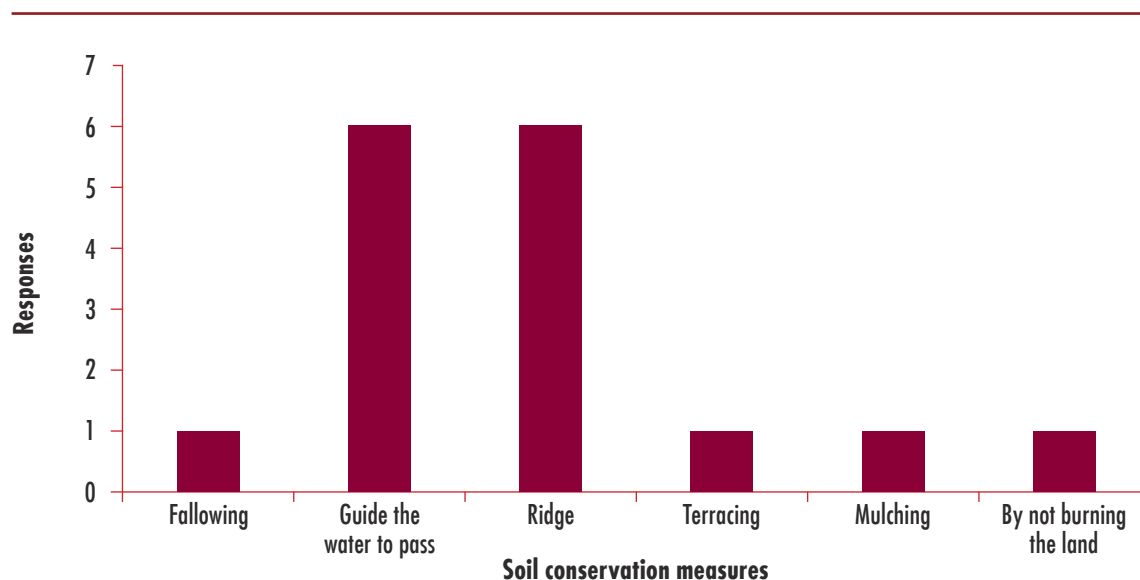
*"I would like to have cattle on my farm for milk production because we don't have milk supplies in this area. But a good cow costs over Uganda Shillings One Million which I cannot afford". Farmer in Lira*

### 2.1.2. Soil Fertility maintenance on farm

Majority of farmers were found to rely on application of vegetation manure on farm (55%) and animal manure (25%) to replenish soil nutrients. Fertilizer application was rare with only 3% of the farmers who had applied fertilisers on their farm, compared with 97% who had never applied fertilizers. The rarity of fertilizer application was echoed by one respondent:

### 2.1.3. Soil conservation practices

Over 80% of the farmers had protected their soil from soil and water erosion while 20% had left their land vulnerable to erosion forces. The methods used to conserve soil varied among farmers but were mainly dominated by water channels in the crop fields and ridges.



*Figure 4: Soil and water conservation measures employed*

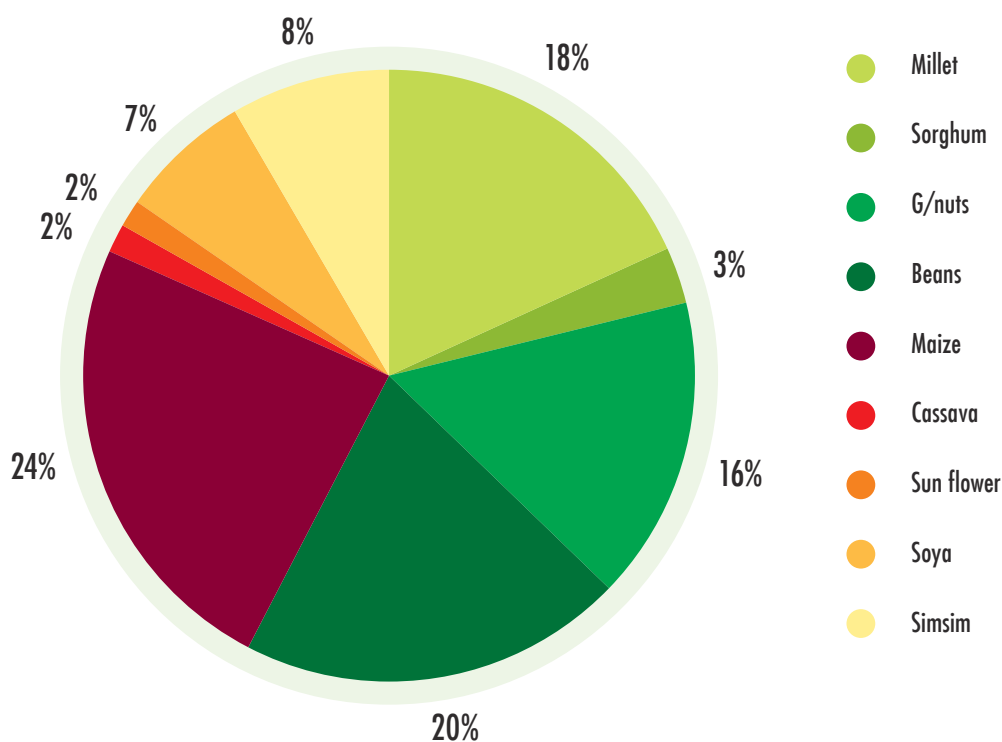
Other farmers adopted practices like following, not burning the vegetation on land, mulching, terracing and following. Despite the soil conservation measures adopted, over 63% of the farmers acknowledged that they often experience water and wind carrying away top soil, suggesting that an improvement on existing soil conservation measures is required.

### 2.1.4. Water conservation

Agriculture in Abim and Lira was found to be mainly rain-fed with almost all farmers fully dependent on natural precipitation for on-farm water supplies. Irrigation was rare with only 7% of the respondents irrigating their crops while 93% did not. Water harvesting on farm was practiced by only 2% of the population while 98% did not despite the fact that 80% of the farmers revealed that they do not get enough rains during the growing seasons. This implied that many farmers are not informed about possibilities of water harvesting or irrigation. It is also possible that even if farmers were interested in supplementing the water needs of plants through water harvesting and irrigation, they may be ill-equipped technologically and financially to meet the requirements. Over 66% of the farmers had no plans to address soil moisture deficits, 27% resorted to early planting of crops, 5% used mulching while 2% hoped that government would offer support. Drought was a major cause of crop losses with 90% of farmers acknowledging that at some point, they had lost all their crops to drought. However, different crops appeared to be affected differently by drought and water shortages. One respondent shared their frustration of relying on rain-fed agriculture:

*“In the last 3 years, we have experienced poor crop harvests especially millet and maize because rains are scarce and our gardens dry up. Even planting early has not helped because sometimes the seeds overstay in the soil before rains appear and they are eaten by insects or they fail to germinate”. Farmer in Abim*

### Effect of drought on crop yields



**Figure 5:** Vulnerability of crops to drought and reduced soil moisture levels

Maize, millet, groundnuts and beans appeared to be the crops most affected by drought while cassava and sim sim were the least affected. Similar findings were revealed during Focus Group Discussions where it was revealed that cassava can withstand drought compared with maize and millet. Other studies in the past have found similar problems affecting farmers in the Northern Uganda region. CESVI (2013) established that although drought and changing weather patterns were found to be affecting the activities of farmers in East Lango region, none of the farmers had adopted irrigation technology in spite of the abundance of fairly large water sources in the sub-region from Lira to Alebtong and Otuke. They also found that most farmers in Lango East do not know and practice soil fertility improvement in their farming activities, demonstrating low level of soil and water conservation knowledge.

### 2.1.5. Crop productivity

Over 98% of farmers revealed that soil fertility decline was the biggest challenge affecting food production, followed by prolonged drought periods. Indeed, 82% of the respondents had



observed decline of their farm produce overtime while only 18% had not observed any decline on farm. Cross tabulations of farm produce declines and land sizes revealed that only people with land exceeding 10 acres had not registered significant crop losses, which was attributed to allowing fallow periods and ability to practice shifting cultivation. Most of the farmers with land holdings measuring 1-5 acres had observed systemic declines in farm produce yearly. As one of the farmers noted:

*“Every time we open up new crop fields, the yields are good but after 5-6 years of use, we begin to realize poor harvests. So much as the rains contribute, fertility is the biggest challenge”. Farmer in Lira*

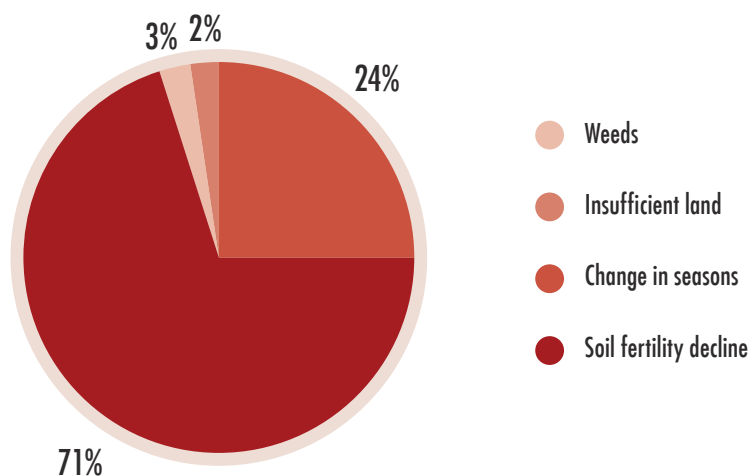
### 2.1.6. Causes of crop productivity declines

Farmers were able to speculate on possible causes of farm productivity declines, dominated by soil fertility declines, followed by climate changes. Climate change was mainly associated with short periods of rainfall followed by prolonged drought. One respondent explained:

*“I have been tilling this land for the last 13 years, growing maize, millet, beans and sorghum. However, production has been declining for the past 6 years, may be because of soil fertility decline. The rains have also not been adequate so possibly both the rains and nutrient losses are responsible for the reduction in produce”. Farmer in Lira*

With specific reference to climate change, GoU (2011) noted that climate change has not received as much attention as it should at policy and implementation levels. Climate change effects such as droughts, floods and landslides have the potential to alter production patterns, bring about pest and diseases that have not been known before and in the process have significant impact on rural populations that are ill-prepared to cope with the impacts on their livelihoods.

**Causes of declines in farm productivity**



**Figure 6:** Perceived causes of crop production decline

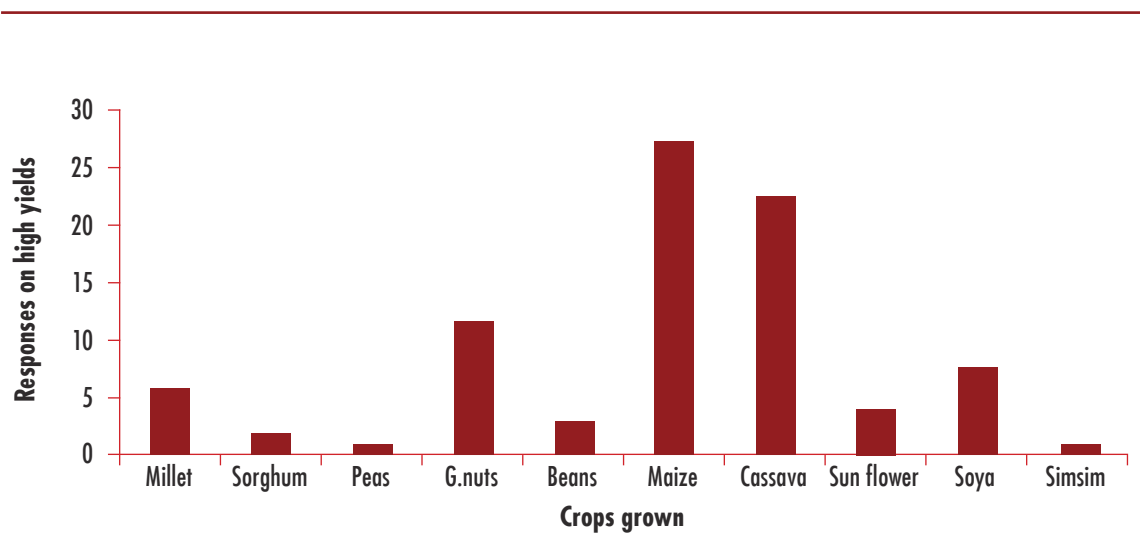


The effect of small pieces of land on declining farm productivity was linked to frequent cultivation and failure to practice agro-forestry and fallow, processes that many farmers did not seem to understand. While assessing the changing landscape of agricultural rural services in Uganda, AfranaaKwapong and Nkonya (2015) found that the current agricultural advisory services which are mainly provided by public extension services and by NGOs and private providers are dogged by lack of skills on modern farming methods, among others. MAFAP (2013) also found that Uganda’s agriculture is characterized by low yields and this is partly a function of low application of modern technology. GoU (2000) found that many communities in the country blamed lack of productivity on lack of information, knowledge and skills concerning better methods of food and income-generation (crop production, animal husbandry, fishing methods and alternatives), soil conservation, pest and disease control and marketing opportunities.

It was established that the practice of grazing animals and growing crops on the same piece of land (agro-forestry) enabled farmers to rely on animal manure like cow dung to maintain fertility. However, farmers with small pieces of land could not afford keeping animals for fear of losing their crops to animal feeding. Besides, farmers with small pieces of land were often very poor with no financial ability to buy domestic animals. Farmers who had not observed declines on farm (n=9) attributed it to crop rotation (33%), use of fertilisers (56%) and availability of high quality and resistant seeds (11%). Below, a respondent narrates their circumstances:

*“I own only 4 acres of land and that’s where I grow maize, cassava, sim sim, beans and groundnuts to feed my family of 6 people. I have to cultivate this annually because I have no option. I cannot afford to rent land because it is very expensive and you are never sure if the crops you grow will pay back the costs. I therefore have to stick to the only land I have for domestic food production. When seasons are good, I even get surplus which I sell to get school fees for my children” Farmer in Lira*

The crops which were yielding highly appeared to be maize, cassava and ground nuts while soya beans and millet also ranked fairly well.

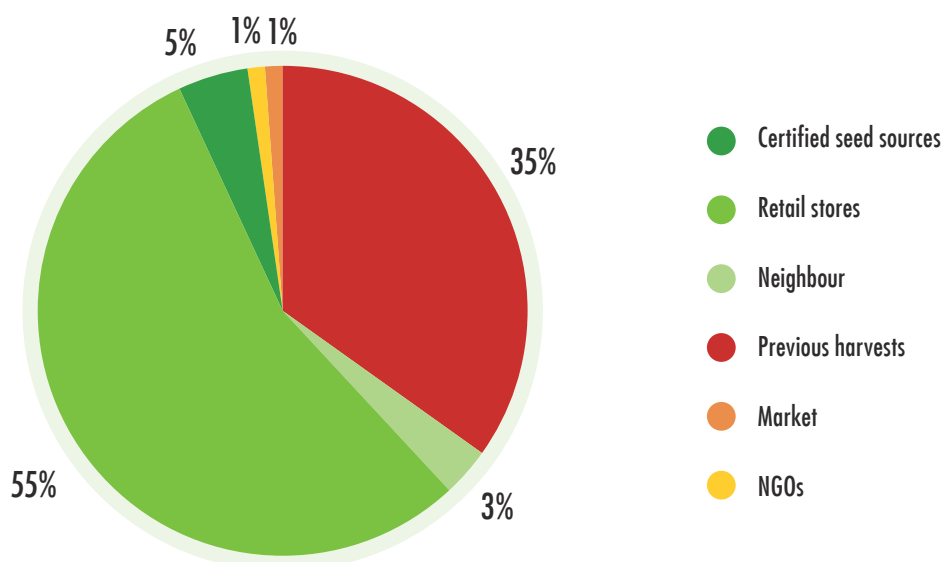


**Figure 7:** Crop performances in Lira and Abim

The overall impression provided by farmers' assessment of crop yields reveals that millet is performing poorly and to boost millet production in the region will require improvement of soil fertility as well as boosting soil moisture deficits.

## 2.1.7. Seed sources

### Seed sources



**Figure 8:** Seed sources for small scale farmers

Majority farmers (55%) depended on local retail stores to procure seeds while the second largest category (35%) utilized previous harvests as seed sources. About 3% obtained seeds from community members while another 1% bought seeds from the market. This implies that over 94% of farmers used non-treated and non-certified seeds with higher chances of such seeds being easily destroyed by insects and other agents in the soil. This explains why a large number of farmers registered low rates of seed germination. Only 6% of farmers obtained seeds from certified seed sources (5%) and NGOs (1%). Of the farmers reached, none had recently benefitted from government aid in form of seeds or other planting materials. One respondent lamented below:

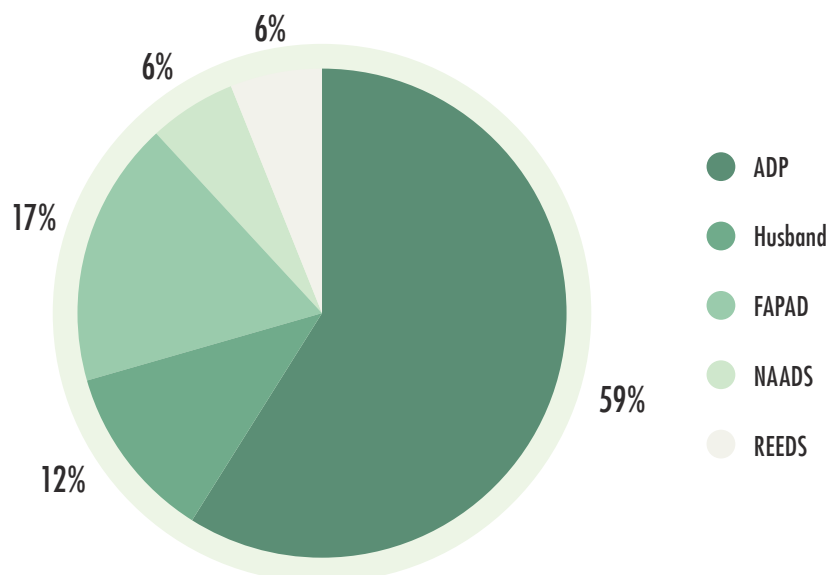
*“Last season, I planted maize which I bought from the market but germination rate was less than 30% of the expected. I had to borrow seeds from my neighbour and repeated the planting”. Farmer in Lira*

Over 64% of the farmers trusted their seed sources while 36% revealed that their seed sources could not be trusted. The reasons behind the distrust varied but included failure of the seeds to germinate (68%), having no other alternative option of where to buy seeds (23%), availability (5%) and the fact that anybody can be allowed to sell seeds (5%). Of the majority who trusted their seed sources, the reasons varied from high germination rate (74%), Seed companies' experience (14%), accessibility and prices (10%), loans from NGOs (2%). Of the farmers who purchased seeds, 90% rated them as too expensive compared with 10% who found them affordable.

## 2.1.8. Seed handling capacity

Over 75% of the farmers had never been trained in handling seeds compared with 25% who had received some form of training in seed handling.

### Seed management trainers



**Figure 9:** Organisations training farmers in seed management

Majority farmers had been trained by NGOs and private seeds sellers such as ADP, FAPAD and REEDS while close to 12% had been trained by their spouses. NAADS, the only government agency cited in training farmers in seed management and technology had trained 6% of the farmers. This implied that capacity building programs for farmers on seed management were dominated by private seed sellers and NGOs while government played a minimal role. One respondent had this to say:

*"I have never seen anybody in this area train us how to handle seeds. We learnt from our parents and grandparents how to keep seeds and this knowledge is helping us. At least every season, I have sim sim and maize seeds and I have never seen them fail to germinate"*  
Farmer in Abim

## 2.2. Technologies used in crop production

The study found that all farmers mainly used hoes, machetes, axes and rakes to clear their land for planting of cassava, maize and millet and other crops. No mechanization was reported in land clearing, sowing, planting, weeding, harvesting and drying of harvests. Sun drying was used by all farmers to reduce moisture in cassava, maize and millet and reduce post-harvest losses. CESVI (2013) also found that in terms of production techniques, equipment and tools, farmers in Northern Uganda generally used rudimentary tools at all levels of their agricultural activity including land clearing, land opening, fine tilling, planting, weeding, harvesting to storage. The majority of farmers, according to the study, used traditional farming knowledge

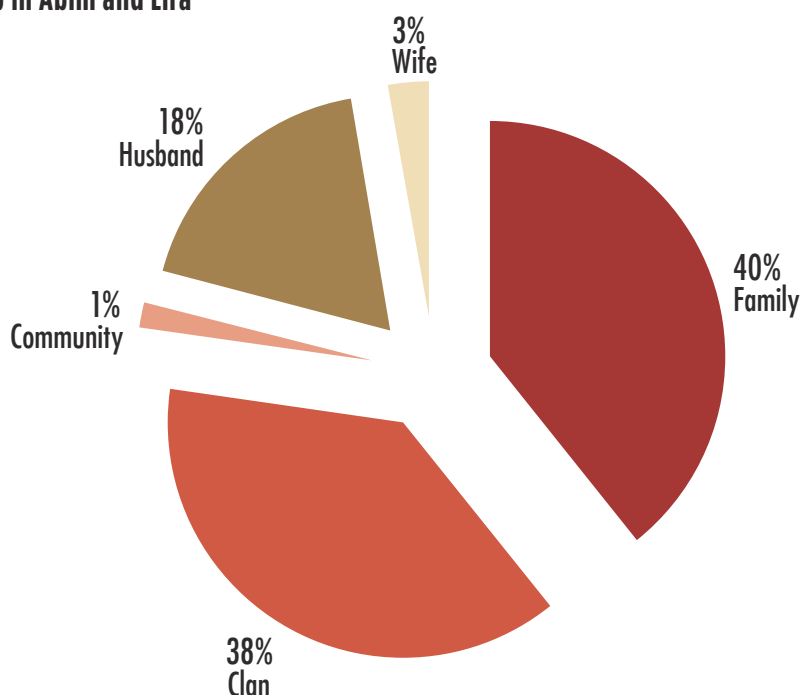
for production, retained local seeds for production and did not practice secondary value-addition besides the basic primary value-addition activities. According to ACF (2011), the lack of tools and animals to till the land in Lira and Otuke districts of Lango sub-region is clearly an obstacle to opening more land and to bring in higher yield and thus income.

### 2.3. Land tenure and size

The size of land used for crop cultivation ranged between 1-25 acres with a mean of 6.5 acres. Majority farmers (35%) had 2 acres of land for cultivation, 15% has one acre, 39% had land ranging between 3-5 acres while close to 7% accessed land ranging between 7-15 acres. The overall impression is that most farmers own or access a small piece of land where they plant a number of food and cash crops. The small acreage risks depriving land of fallow because cultivation must be done annually to ensure domestic food supplies, leading to soil exhaustion through nutrient depletion. Focus Group Discussions also revealed that many farmers have access to small pieces of land which limits fallowing and quantities of foods produced per household.

The type of tenure and ownership of cultivated land varied from farmer to farmer but with most land owned by families or clans. With most of the land owned by families, clans and husbands, the farming aspirations of the youth and women were found to be tightly controlled and monitored by the family heads, who were usually men. Indeed, individual interviews and focus group discussions revealed that whereas the youth and women had many opportunities and the zeal to engage in agricultural production, ownership of land was a limitation especially where clan or family heads exerted tight control on land resources. In some cases, land was hired out or leased out by family heads (husbands) at the expense of household members who included women and youth.

#### Landownership in Abim and Lira



**Figure 10:** Land ownership in Abim and Lira

Women owned about 3% of the land resources while the communities controlled about 1% of the land resources. It was however established that more than 98% of the small-scale farmers accessed land for cultivation at no cost with only 2% hiring the cultivated land.

*"I cultivate land owned by my husband's family. We are many wives in the family and there is competition for good fertile sites. It is also not easy to shift to new sites because permission is granted by elders. I have observed production go down of recent, maybe I will ask for new sites to cultivate" Lira farmer during Focus Group Discussion*

### 2.3.1. Land use practices

Most farmers appeared to continuously cultivate available land with 47% of respondents saying that they had used their land for between 1-10 years, 31% for between 11-20 years, 14% for between 21-30 years while 3% had tilled their land for over 41 years. The long period of time the small pieces of land have been cultivated could lead to exhaustion and nutrient depletion. Over 59% of the respondents had allowed fallow periods but 41% had not practiced any fallow. Of the farmers who allowed fallow periods, the period of time the land was left to rest ranged between 1-36 months with only 33% of the farmers who left their land to rest for a period lasting at least 12-24 month. This implied that majority farmers (over 67%) do not leave their land to naturally regenerate some nutrients between growing seasons. The lack of fallow periods could also lead to erosion by water and wind, since the land barely gets regeneration vegetation to provide soil cover before the next cropping season. One respondent explained:

*"I own about 3 acres of land where I grow cassava, beans, sim sim and bananas. I don't allow the land to rest because we shall end up having no food. But if I could acquire another piece of land, I would consider fallowing." Farmer in Lira*

## 2.4. Social economic factors affecting food production and marketing

### 2.4.1. Effect of culture on production

Over 93% of respondents did not find any linkage between culture and food production, stressing that farming activities are not that much affected by cultural norms. However, 3.5% revealed that some cultural practices associated with ownership and management of land resources can limit women and youth access to land. Another 3.5% revealed that culturally, physically disabled people and the visually impaired are excused from demanding activities such as tilling land, harvesting and carrying produce to markets.

### 2.4.2. Effect of culture on produce marketing

Over 96% of respondents observed that marketing of farm produce is not affected by cultural considerations. However, 4% noted that the physically disabled may not be able to market their

food products because of inability to carry their produce and travel the long distances involved. In some cases, it was revealed that the physically disabled are frowned upon and despised in society, depriving them of their self-esteem and confidence to market their products.

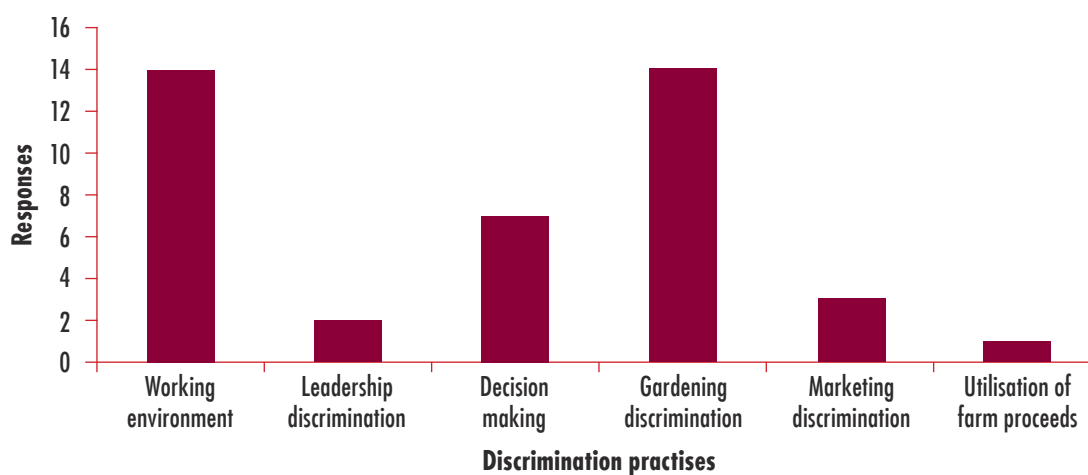
### 2.4.3. Effect of gender on food production

Close to 5% of the respondents revealed that children and the elderly are not involved in food production or marketing. Over 77% of respondents reported no observed effect of gender on farm production and marketing while 13% observed that men have resorted to drinking and are after quick money, which limits their participation in crop production. As a result, crop production was dominated by women. Over 5% of the respondents observed that women are hardworking and patient, attributes that are vital in crop husbandry.

## 2.5. Discrimination in crop production sectors

### 2.5.1. Discrimination of the disabled

About 53% of the respondents had observed discrimination against disabled people in the working environment, gardening, decision making, leadership of farmer groups and associations, marketing of farm produce and in utilisation of farm produce. However, it appeared that the observed discrimination were isolated rather than systemic. In many cases, what respondents viewed as discrimination were instances where community members assigned persons with disabilities tasks that they deemed within their capability to execute. It was reported, for instance that a deaf person could not be appointed the chairperson of an association or a lame person to lead marketing drives. Therefore, in many cases what respondents termed as discrimination could as well pass for a form of capability assessment. However, the large percentage that reported being marginalized on grounds of disability makes it pertinent to conduct specific studies on the prejudice to inform mitigation measures that would enable the disabled enjoy equal opportunities.



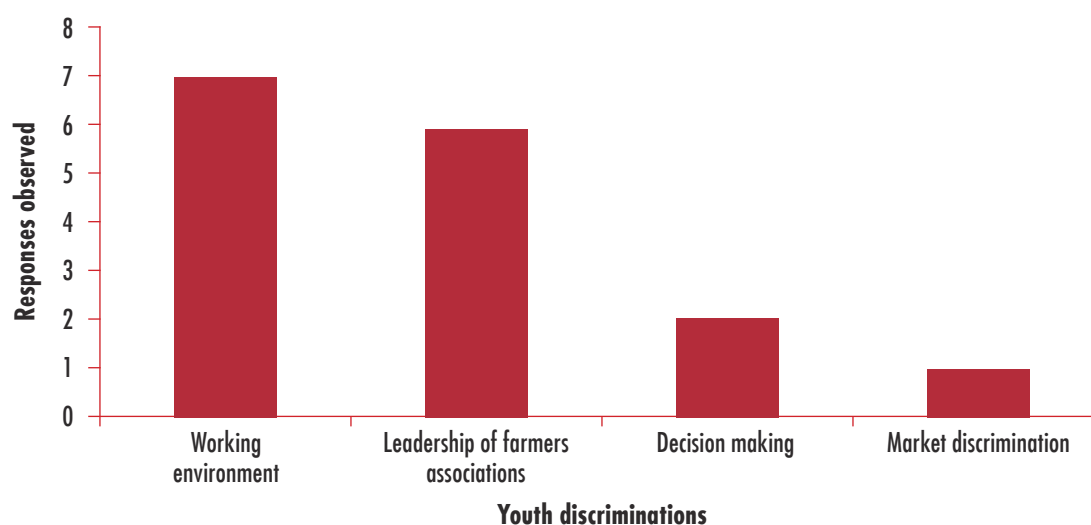
**Figure 11:** Observed discriminations against the disabled

Interviews with disabled persons revealed wide scale discrimination from all sections of society, largely because disabled people are neglected and left at home and are considered to have less to offer to society. Below, a disabled respondent shares her experience of discrimination:

*"I always stay at home. I am like a security person. I have never been to any market to sell or buy items because family members find travelling with me a burden." A physically handicapped farmer in Lira*

## 2.5.2. Discrimination against youth

Discrimination of youth was reported by less than 21% of the farmer respondents. They reported that youth were discriminated against when it comes to the working environment where they are not given an opportunity to lead teams or decision making processes. Discrimination was also pointed out in the leadership of farmers' associations, community decision-making and in marketing. Youth respondents revealed that society does not trust them with money because they are considered less trust worthy. Other respondents considered youth to be careless and unproductive. However, since the majority (79%) did not report discrimination, it can be largely inferred that discrimination of youth comprised isolated cases but which require attention to reduce the vice.



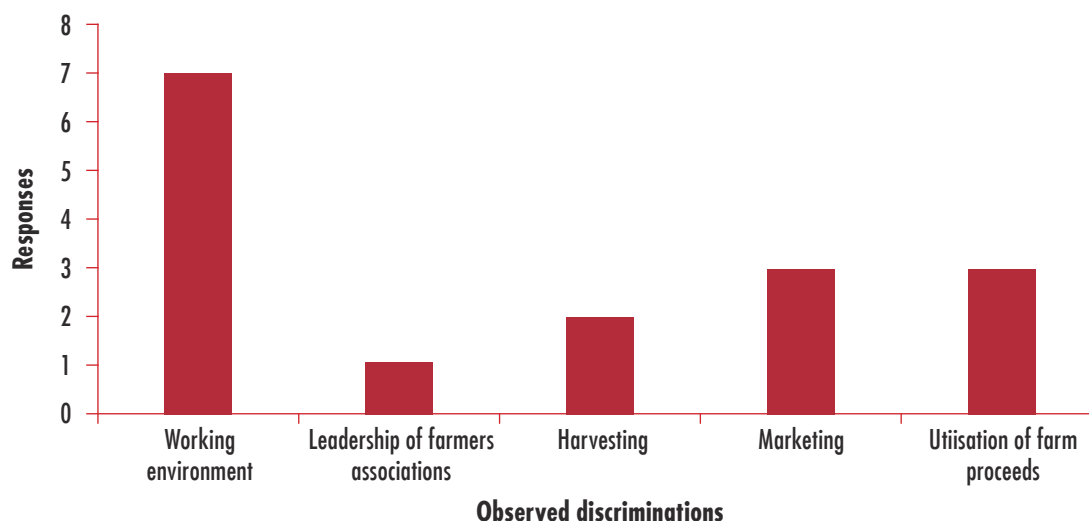
**Figure 12:** Observed discrimination against the youth

## 2.5.3. Discrimination against women

Discrimination against women was observed by 21% of the respondents while 79% of the respondents had not observed the discrimination. Many respondents observed women discriminated against in the working environment such as gardens. Some women were also denied the chance to utilize the proceeds from sale of farm produce, which some husbands utilized for their own needs at the expense of the family. Women were also reported in some cases to be denied a chance to participate in marketing farm produce especially where men



monopolized use of funds from farm sales, claiming that after all the land used for farming belonged to men. Other isolated cases of women discrimination were reported in leadership of farmers association. Women respondents revealed that in many cases, men are considered to be hard working and many men do not trust women with finances. Much as a significant number of respondents (79%) had not observed the discrimination against women, the isolated cases needed to be studied in detail to inform appropriate corrective interventions. One woman's frustration is captured in the quote below:



**Figure 13:** Observed discrimination against women

*“Every time we harvest, my husband calls produce buyers and sells the harvest, leaving very small quantities for the family to feed on. He disappears into the nearby town and drinks all the money, returning when the cash runs out. Since he owns the family land, I have no option but to keep quiet. I have reported these cases to the clan heads but they also fear him. He can be violent and abusive sometimes”. Female farmer in Abim*

## 2.6. Factors affecting food production and marketing

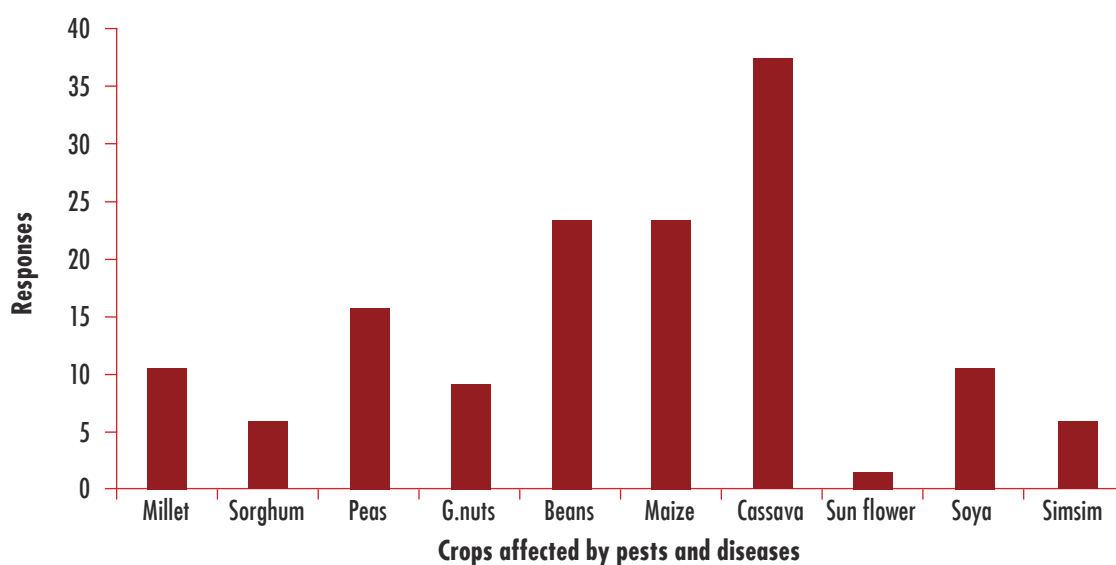
### 2.6.1. Effect of seasons

Most farmers (72%) revealed that there are seasons when marketing of agriculture produce is difficult. Rainy seasons were said to be difficult because roads become impassable and increase transportation costs. It was also revealed that after harvesting, prices are so low due to abundant supplies to the extent that farmers who sell at that time make losses. However, due to lack of proper storage facilities, perishability of some food products and urgent need of income, some farmers dispose their produce cheaply. In fact, 76% of the farmers revealed that if they were provided with good storage facilities, they would delay selling off their harvests until the prices stabilize.

## 2.6.2. The role of pests and diseases

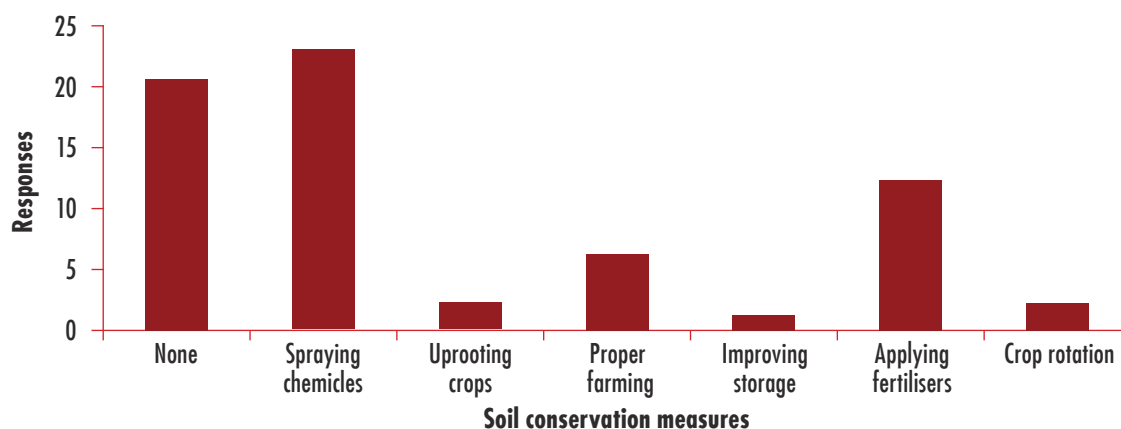
Over 99% of the farmers reported having suffered crop losses to pests and diseases. Cassava appeared to be most affected by the pests and diseases, notably the cassava mosaic disease. Focus Group Discussions also revealed that cassava was most affected by diseases, in some cases leading to total losses to farmers. With the re-emergence of cassava brown streak disease in Northern Uganda in 2005, Kumakech, et al (2013) found that the lack of knowledge on disease recognition and management contributed significantly to rapid spread of the disease in the region. The study found insufficient local capacity in form of a basic functional extension system at the sub-county level noting considerable differences in capacities and institutional structures between sub-counties in Lango sub-region. While government and NGOs were providing advice to farmers, especially under the NAADS program, CESVI (2013) found that farmers' access to technical support and advice was still limited.

Cassava was followed by maize and beans in terms of vulnerability to pests and diseases while millet appeared to be vulnerable but to a smaller extent.



**Figure 14:** Crops most affected by pests and diseases

In most cases, the crops were affected at fruiting, harvesting and post-harvest stages. The farmers, however, had responded with a number of measures to minimize the attacks on their crops.



**Figure 15:** Strategies used by farmers to address crop attacks by pests and diseases

The largest number of farmers applied chemicals to prevent crop losses to diseases and pests while the second large category took no action, mainly due to lack of required resources. The third largest category responded to crop losses to diseases and pests by applying fertiliser, although fertilisers are not known to mitigate pests and diseases. Responding to diseases and pests with fertilisers perhaps explains how farmers lack knowledge and skills in many aspects of agronomy, entomology and pathology. It may be necessary to support these farmers to be able to identify specific measures against specific diseases and pests. A respondent shares their experience with diseases:

*“About 4 years ago, this entire village lost cassava gardens to diseases. The leaves folded and had patches. Almost no farmer harvested anything. At least millet has not had serious disease attacks, except loss due to drought”. Focus Group Discussion in Lira*

Vermin and bird attacks on crops were also reported by over 90% of the farmers and the animals cited include baboons, monkeys, wild pigs and even thieves (people). Termites were also responsible for a number of farm losses in the garden and post-harvest. Aturinde (2012) also observed that absence of the use of post-harvest technologies led to crop losses.

## 2.7. Food security and nutrition

### 2.7.1. Food supplies

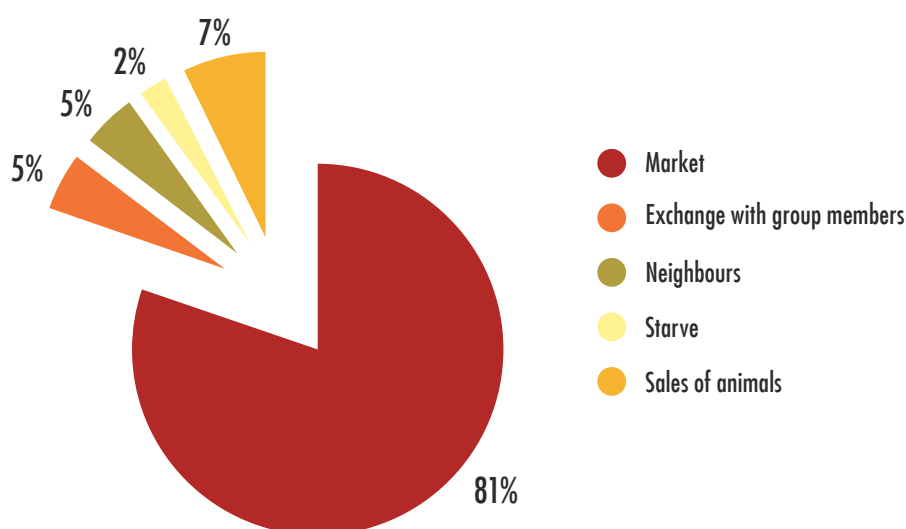
Although many households were involved in food production, incidences of famine were high with many families unable to produce adequate food for their families. Only 37% of the farmers interviewed produced adequate food for their households but also sold the surplus to local retailers. Over 40% of farmers produced less than what was needed for domestic consumption and supplemented the produced food by procuring from markets and retailers. Underlining the extent of market-driven agricultural production in typical agrarian households, the 2016 Karamoja Food Security and Nutrition Assessment found that purchase from markets was the main source of all food commodities across all districts with peaks in Moroto (75%) and Abim

(71.5%). In Abim and Amudat, the assessment found the highest prevalence of own production as the most important source of food at 22% and 21% respectively. Further, gathering wild foods was found to be the main food source for a relatively high proportion of households (around 8%) especially in light of the post-harvest season with a prevalence of 11% in Kotido, Moroto, Nakapiripirit and Napak. As one respondent explains:

*“Because of food scarcity, we only have one meal in a day. Children no longer carry packed lunch to school. Sometimes, we just prepare porridge for supper because it requires less maize flour.” Farmer in Abim*

Food scarcity could be partly attributed to the small size of land owned and cultivated by families, in some cases as small as 2 acres. The size of families also mattered with some families having as many as 12 children, despite the small size of land holdings. The declining soil fertility and yearly cultivations of the land owned could lead to reduced yields. In addition, climate change is a factor that has affected crop harvests in all parts of Uganda.

### Food scarcity solutions



**Figure 16:** Where farmers purchase food to supplement farm output

Over 7% of the farmers sold their animals to be able to buy supplementary foods, 5% exchanged other goods or manual labour with neighbours for food while 2% had no option but to do away with some meals, in some cases having only one meal in 24 hours.

### 2.7.2. Nutritional status of foods

Over 69% of farmers claimed to know the nutritional values of crops grown and consumed while 31% did not. Close to 65% of the farmers said they provided their families with balanced diets while 35% revealed that what matters is food on the plate rather than the nutrition value.



**Figure 17:** Strategies used by small scale farmers to meet balanced diets

The information provided by farmers on nutrition was deficient and not in any way a reflection of recommended feeding habits. Community members also acknowledged that the choice of food consumed was driven by availability and convenience in preparation rather than nutritional value. One of the farmers bluntly reacted to questions about nutrition:

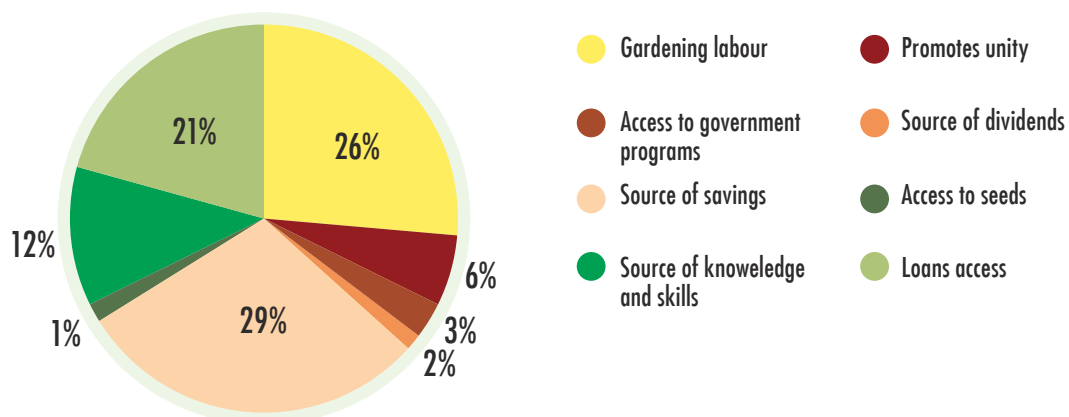
*“All we need is food. Issues of nutrition do not bother us”. Farmer in Abim*

## 2.8. Farmers’ associations

### 2.8.1. Membership to farmers’ groups

Over 88% of the farmers belonged to farmers’ associations while 12% did not. Joining farmers’ associations required one to pay membership fees, which was a deterrent to some farmers. The major benefits of belonging to farmers’ groups included access to government programs like NUSAF and NAADS (36%), access to agriculture credit (34%), access to good quality seeds (20%), accessing better markets and market information (8%).

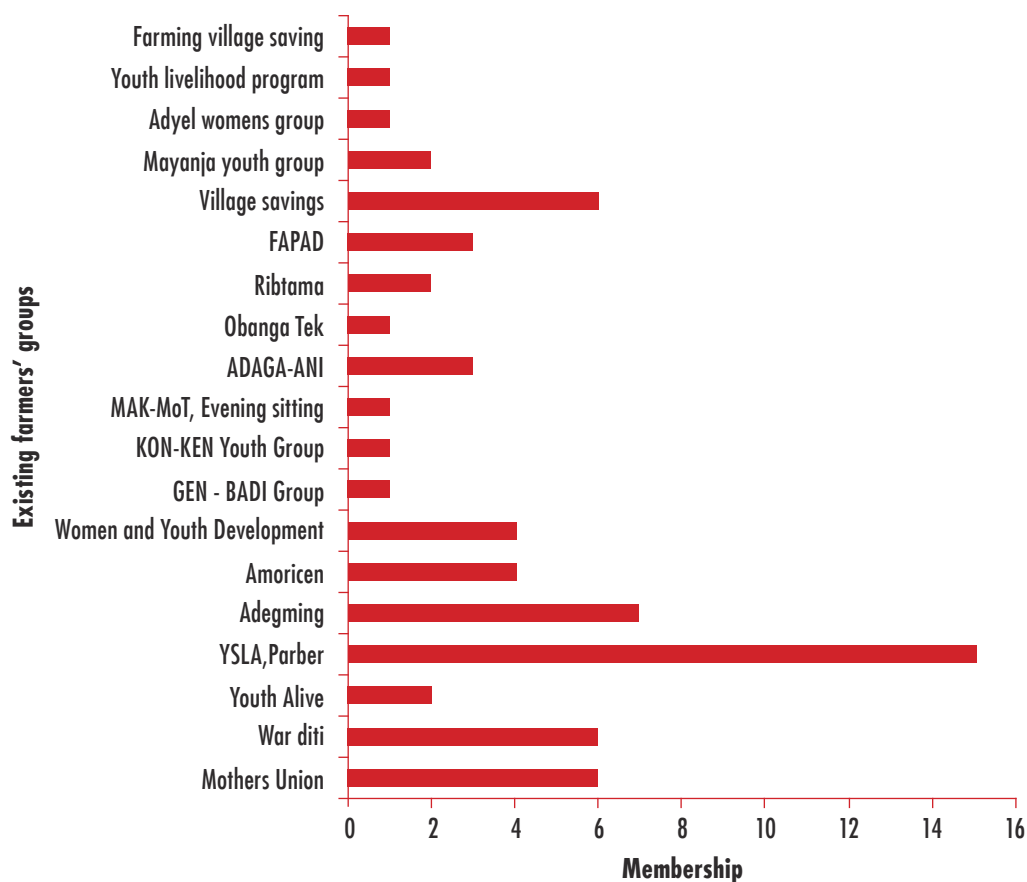
#### Benefits of belonging to farmers’ associations



**Figure 18:** Benefits of small scale farmers from joining farmer groups



Close to 2% of the farmers realized no benefits of belonging to associations.



**Figure 19:** Existing farmer groups in Abim and Lira

The farmers who had not joined groups cited various reasons such as limitations presented by disability, lack of interest and time. However, some farmers (39%) considered the farmers' associations to be led by leaders who are corrupt and segregate among membership and foment hatred. Others felt that associations are time wasting, charge high interests on loans advanced to members and often fine members for minor cases, which all discouraged community members from joining. It should be noted that many of the farmer support grants through government programs such as NAADS and NUSAF used to be channelled through groups and therefore farmers with no groups would automatically be left out. These constraints were amplified by one respondent:

*"To join an association, you need to register and pay membership fees. You are also required to attend their meetings. Personally, I don't see what association members benefit. We are all struggling, so why join?" Farmer in Lira*



## 3.0. THE ROLE OF GOVERNMENT IN SOCIAL DEVELOPMENT

### 3.1. The role of government policies

Interviews with government officials at districts revealed that government policies have led to a number of tailored programs and projects have been developed and implemented for youth, women and the disabled. Such programs aim to provide the vulnerable groups with knowledge, skill, capital assets and farm inputs so that they are able to participate in diverse income-generating activities. Macauley (2015) revealed that most government policies are inappropriate and inconsistent and do not provide an enabling environment for the development of the cereal sector in Africa. This includes low funding of the national agricultural research and extension institutions, leading to ineffective technology development and diffusion mechanisms. The lack of investment in infrastructure such as roads, storage and market facilities handicap the potential role of the private sector. However, a study conducted by Kilimo Trust (2012) found that National Agricultural Advisory Services provides training on good agronomic practices, technology development and promotion, supporting farmers to establish market linkages and market information to cassava farmers in Uganda.

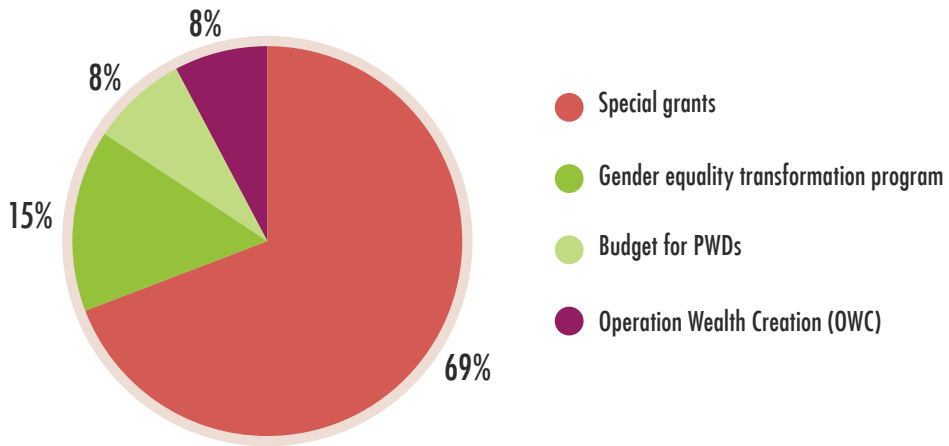
Uganda has a draft national agricultural seed policy (2011) that is currently being reviewed for implementation. The goal of the national seed policy is to 'significantly contribute to increased agricultural production and productivity for improved standards of living and food security through the use of high quality seed (ISSD, 2012). However, in its assessment, TASAI (2015) found that the seed policy was considered poor, attributing it to the fact that Uganda does not have a final policy document that guides the development of the seed sector in the country.

#### 3.1.1. Support for persons with disabilities

Majority of district officials revealed that they have special grants for Persons with Disabilities (PWDs) which are advanced to them to enable them participate in agriculture and business setups. It was also revealed that the Ministry of Gender, Labour and Social Development runs a gender transformation program which also facilitates Persons with Disabilities with capital to establish themselves as productive members of society. Local governments also claimed to have budgets for PWDs but it was not clear who benefits and the criteria of choosing beneficiaries.



### Support for persons with disabilities



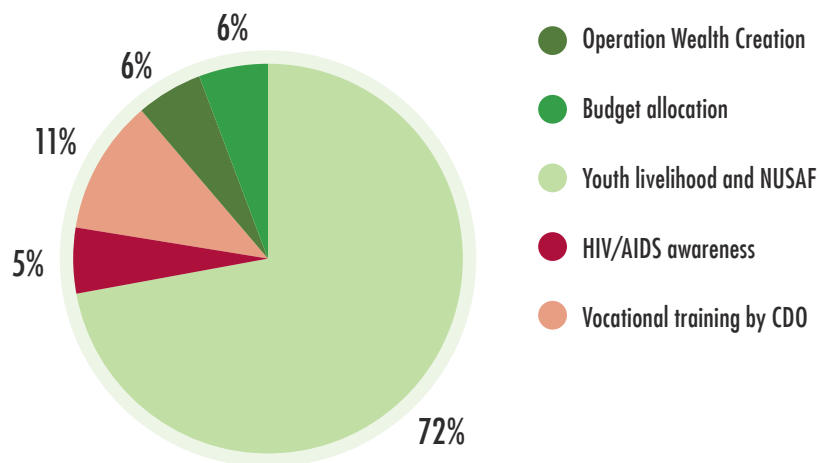
**Figure 20:** Support for Persons with Disabilities

The government program of Operation Wealth Creation (OWC) was also reported to benefit the general population, including Persons with Disabilities. However, no government program currently implemented was targeting or directly benefiting producers of cassava, maize and millet. In previous studies, it was observed that exclusion of PWDs from NAADS was premised on their apparent lack of or limited involvement in farming, which the PWDs countered as untrue.

### 3.1.2. Support for the youth

The youth were reported to enjoy support from the Youth Livelihood Program implemented by the Ministry of Gender, Labour and Social Development. The program provided skills and start-up support to the youth to enable them get actively involved in production.

### Youth support programs



**Figure 21:** Support for the youth



Community development officers were reported to be conducting vocational training courses and providing life skills to youth in their sub-counties. Various government agencies such as The Aids Support Organization (TASO) and AIDS Information Centre were said to be involved in HIV/AIDS awareness among youth while Operation Wealth Creation as well as Local Council budget allocations to youth helped youth groups to set up businesses, participate in agriculture and engage in self-employment. However, some of the youth interviewed revealed that discrimination is observed with the old people taking the lion's share of the farm supplies under NAADS and Operation Wealth Creation. Youth also observed that since they do not own land, they depend on farm land allocation from their clans which limits their agricultural potential. One youth explained:

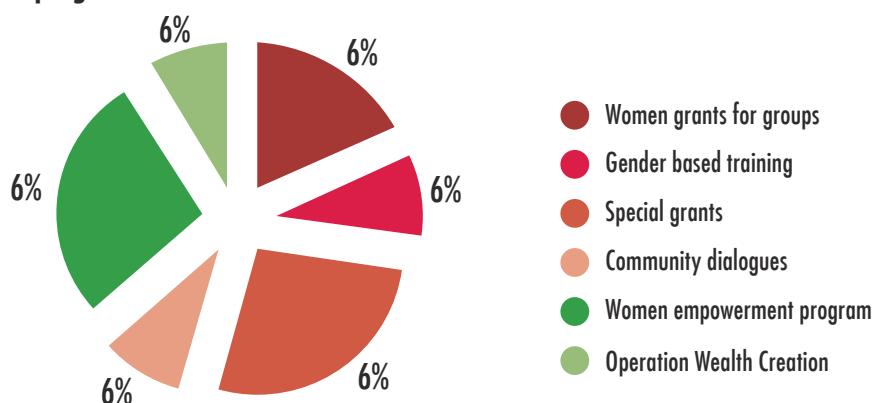
*"I have not benefited from seedlings distributed by NAADS and Operation Wealth Creation. Community members who participate in selecting beneficiaries know that we don't own land and give priority to family heads whenever they are distributing materials".  
A youth in Abim*

Underscoring access to knowledge, Okoboi, et al (2013) found that despite the fact that youths revealed interest in participating in NAADS across the country, they decried the lack of information and discrimination by older persons as the most limiting factor to their participation. With specific reference to youth role in the agricultural value chain, USAID (2014) identified lack of specialized agricultural skills and limited understanding of market opportunities as key constraints for young people to engage in agriculture. These findings underscored the challenge to bring two needs - agricultural modernization and skills development together in coordinated effort.

### 3.1.3. Government support to women

District local government staff revealed that women received support from a number of government programs. Many respondents acknowledged existence of special grants for women in their area as well as women empowerment programs. Local government staff also revealed that there were grants for women groups although it was not clear who provided these facilities, the modalities of application and selection of beneficiaries. District staff also reported of existence of gender-based training programs but did not provide details of who offers the training, the skills provided and impact of such training programs.

**Youth support programs**



**Figure 22:** Women support programs

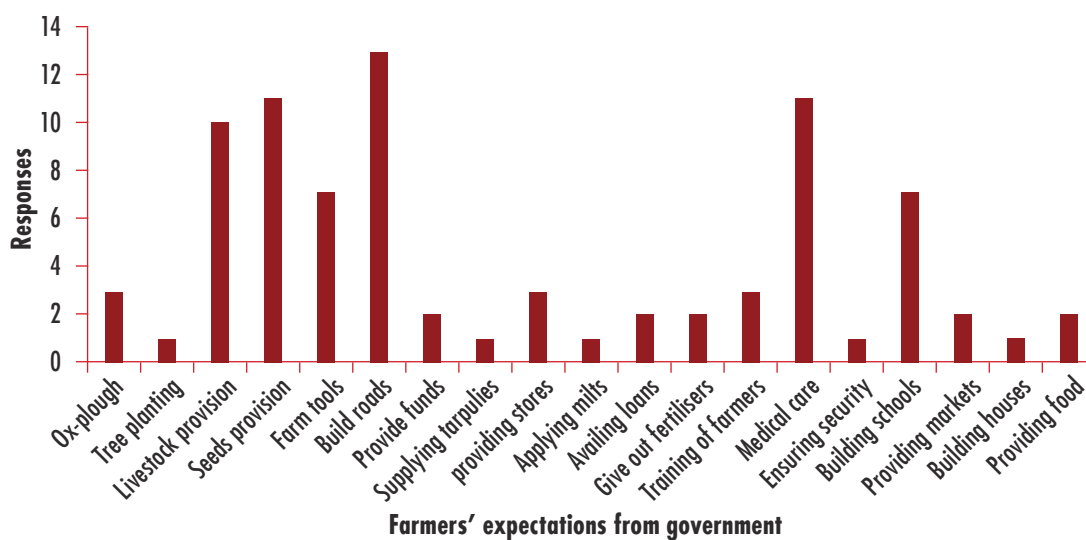


Generally, all districts acknowledged conducting capacity building programs through workshops. The areas of capacity-building included HIV/AIDS awareness creation, human rights, farming and business management. The districts also lobbied non-governmental organizations to supplement government efforts in capacity building initiatives. The District Commercial Officers revealed that they avail market information to farmers. However, there was no indication from district authorities and even farmers that special attention was being paid to enhance market access and stabilize prices of food products. The business environment in Uganda is largely liberalised under the willing buyer and seller arrangements and no government regulation or control. All the farmers' interviews individually and through Focus Group Discussions revealed that price fluctuations and lack of markets were the major post-harvest challenges they were facing, implying that there is little or no concerted efforts through government or CSOs to address markets and price concerns. Farmers echoed their constraints below:

*“Government programs have supported women activities in this area through distribution of farm inputs, seeds and seedlings. However, the problem of markets remains. We are exploited by local traders who buy our produce cheaply and during harvest seasons, the markets are so limited that we lose some of the harvests to rotting or sell cheaply to avoid more losses. Focus Group Discussion in Abim*

### 3.2. Access to basic social services

Majority of the farmers interviewed during the study (52%) were not aware that government is mandated to provide basic social services, funded through the taxes paid by citizens. However, 48% of the respondents were aware of government responsibilities though they were not in position to put government to task to live up to her obligations. There were diverse responses of farmers' expectations from government. In many cases, what farmers construed to be government obligations to citizens were hand-outs to communities from past government projects.

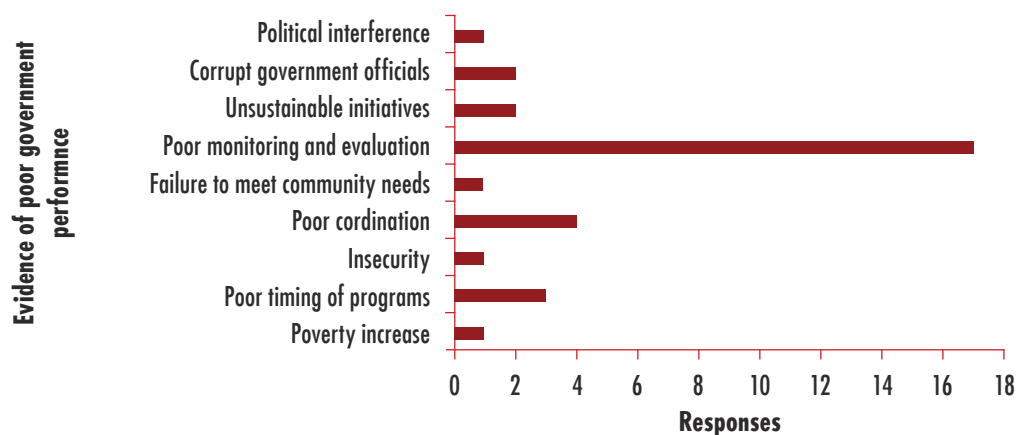


**Figure 23:** What small scale farmers expect government to provide

Basic social services like building roads, schools and provision of medical care dominated the list of services that people expected from government. Many farmers also believed that government must provide farming inputs for households such as seeds, tools and livestock. These beliefs were stemming from past government projects in these areas such as NUSAF, NAADS and now Operation Wealth Creation which have provided farm supplies and equipment. Other farmers believed that government should provide them food, provide loans, supply milling machines, build stores, which were not backed by any existing government policy or by-laws. The overall impression of these findings is that whereas many farmers are aware of what government should provide to society, some farmers have an exaggerated impression based on selected government projects and programs which only operate for a short time. It also appeared that farmers were not empowered to lobby and engage local leadership for provision of good road networks that affected marketing of farm produce.

### 3.3. Perception of government performance

Although many farmers believed that government has a role to provide basic social services and infrastructure, 72% believed that government has failed to deliver on its obligation compared with 28% who believed government was doing enough. The reasons given for poor government performance varied.



**Figure 24:** Factors which limit the performance of government projects and programs

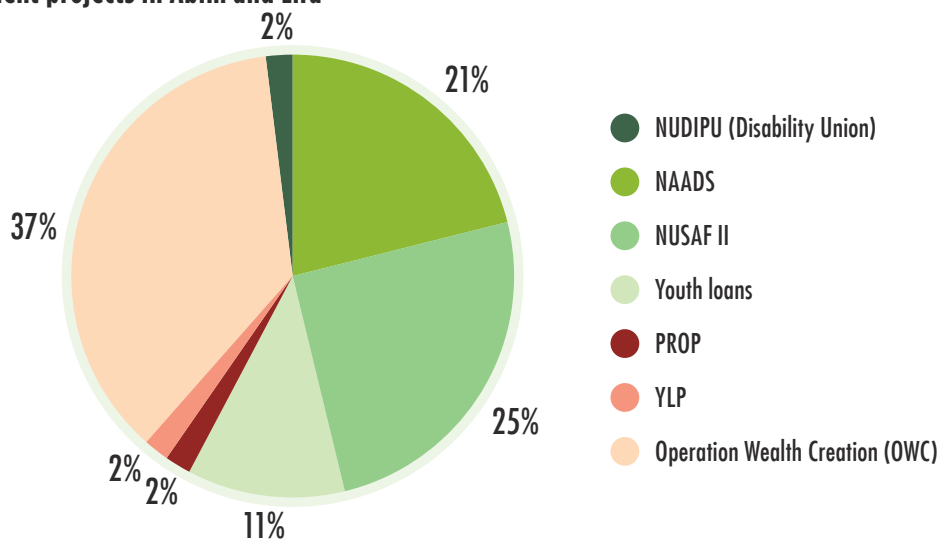
Many farmers cited poor monitoring and evaluation of government projects as being the major cause of failures. They gave examples of NAADS, NUSAF and Operation Wealth Creation where individuals were provided with seeds, livestock and tree seedlings but no follow-up was made to assess individuals' capabilities and farming practices. Many farmers also felt that government programs are poorly coordinated and in many cases poorly timed. The examples included seed and seedling distributions which in many cases are carried out when planting seasons and the rains are over. Other failures of government programs included corrupt government officials who divert government resources to personal use and lack of sustainability plans of government initiatives. Poor coordination of agricultural programs has been discussed by Bihunirwa et al (2012) and Agri-ProFocus (2011). They observed that policy interventions for Plan for Modernisation of Agriculture (PMA) were directed to productivity-

related constraints including lack of skills and knowledge and market-related constraints which directly affected the competitiveness of small-scale farmers. However, Agri-ProFocus (2011) noted that the implementation of Plan for Modernization of Agriculture was hurt by lack of effective coordination among the different government agencies.

### 3.4. Existing government farmer support programs

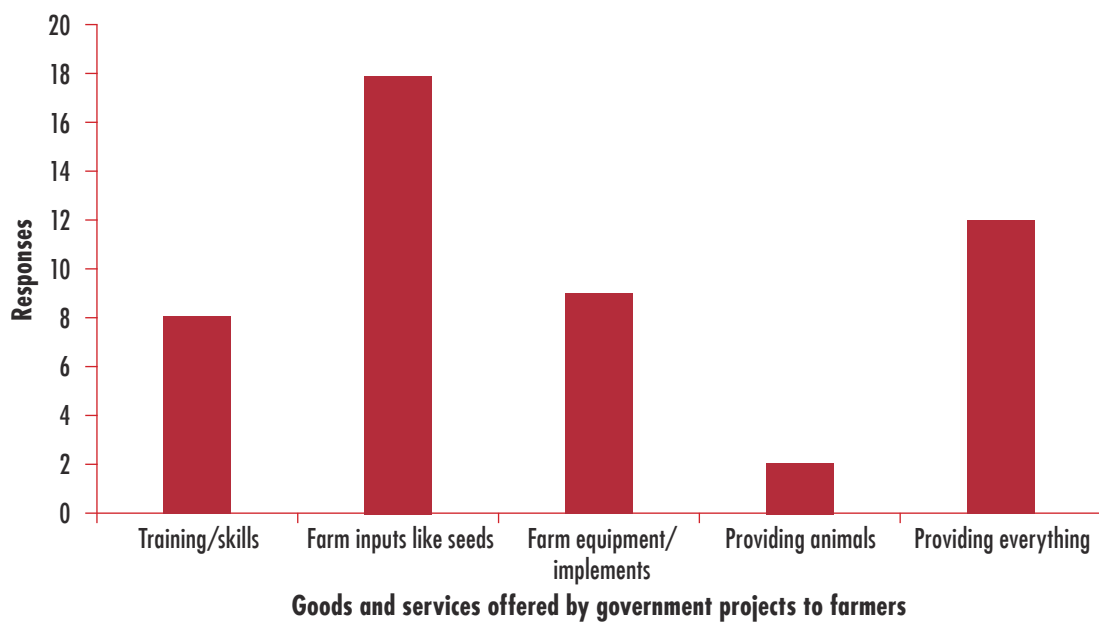
Over 54% of the farmers knew about government programs which were benefiting locals in their areas compared with 46% who knew no government programs. This disparity in information flow suggests poorly coordinated government efforts and information flow. Bihunirwa and Mohammed (2011) and Mugoya and Rwakakamba (2011) who examined key national policies of Uganda that have a bearing on small holder farmers concluded that, for the most part, agricultural policies have not significantly addressed the key long-standing challenges to low productivity of smallholder farmers, stemming from their lack of access to markets, among others. Out of 52 farmer respondents, 37% knew about Operation Wealth Creation, 25% knew about NUSAF II while 11% knew about NAADS, a program that was succeeded by Operation Wealth Creation. Close to 11% of the farmers knew about existence of youth loans, while 6% knew about the Youth Livelihood Program and funds for the disabled from NUDIPU and PROP.

**Government projects in Abim and Lira**



**Figure 25:** Government projects in Abim and Lira

The projects and programs mentioned provided households, individuals and farmer groups a number of goods and services which included farm inputs like seeds, equipment, domestic animals and offered farmer trainings.



**Figure 26:** Goods and services that farmers get from government projects

### 3.4.1. National Agricultural Advisory Services (NAADS)

In 2001, the government launched the National Agriculture Advisory Services (NAADS) program with the overall goal of supporting transformation of the agriculture sector from subsistence to commercial farming (ACODE, 2015). The first phase ended in June 2010. The second phase (2010/11-2014/15) commenced but the program was restructured before completion following a Cabinet directive to address key constraints of inadequate inputs and technologies at farm level, delayed procurements, high costs of administering the program and corruption (GoU, 2015). Over the years, the NAADS program has been riddled with corruption and misappropriation of funds, poor distribution of seedlings to farmers, and politicization of selection of beneficiaries (ACODE, 2015).

NAADS was also criticized for targeting farmers who were considered as doing well rather than those in real need of assistance, hence not benefiting communities as a whole (International Alert, 2013). Starting FY 2014/15, all the NAADS Coordinators at district and sub-county level were phased out and the program gained a new mandate of implementing the Operation Wealth Creation (OWC) intervention.

### 3.4.2. Operation Wealth Creation (OWC)

Operation Wealth Creation (OWC) is a presidential initiative aimed at improving the livelihoods of the rural farmers (ACODE, 2015) through a partnership between NAADS and Uganda Peoples Defence Forces (UPDF). The OWC was tasked to sensitize and mobilize farmers to engage in commercial agricultural activities. It distributes planting and breeding inputs, post-harvest and bulking equipment and processing equipment to farmers. The OWC is operating in 18 zones, namely: Acholi, Ankole, Bugisu, Bukedi, Bunyoro, Busoga, Kampala, Karamoja, Kigezi, Lango,

Madi, Masaka, Mengo, Mubende, Rwenzori, Sebei, Teso, and West Nile. It is operating in all the 112 districts and operations go up to the Constituency level (Ministry of Defence, 2016).

### **3.4.3. Northern Uganda Social Action Fund (NUSAF)**

The Northern Uganda Social Action Fund (NUSAF) is a Government of Uganda project established as a transitory tool and funding mechanism to assist the North to catch up with rest of the country in matters of development (NUSAF 2008). The World Bank injected \$100m (Shs240b) into the second phase of NUSAF II as part of Peace Recovery and Development Plan (PRDP). The money, which is part of the \$325 million social development initiative toward Uganda's economy, comes after the first phase of the NUSAF I project that was dogged by corruption, among other things (GoU, 2010).

The beneficiaries were carefully selected in accordance with the conflict/post conflict situation and in response to the human capital challenges of the region. These challenges include building incentives and opportunities for youth who would otherwise be attracted into rebellion (World Bank, 2009).

According to World Bank (2009), NUSAF support was meant to benefit the following:

- a) Children and youth who had been abducted during the civil war;
- b) People who surrendered and returned guns in exchange for a changed livelihood (including abductees and gun dropouts);
- c) People whose careers were disrupted as a result of the prolonged conflict and breakdown of traditional systems;
- d) Female-headed households; the aged; those affected by HIV/AIDS, including orphans, foster parents, widows and widowers; the very poor; the disabled; and others affected by the conflict;
- e) Local governments and community-level institutions

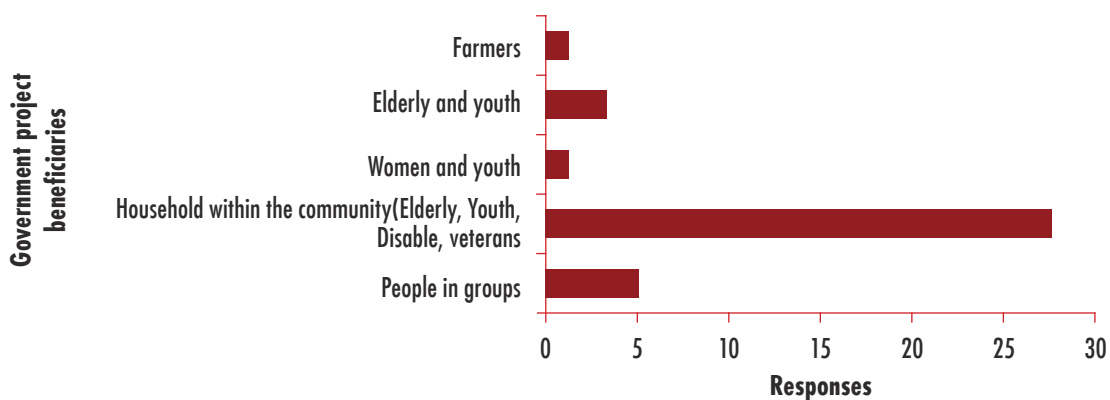
The NUSAF II implementation mechanism is through group formation. The criterion is that communities express interest in being funded. NUSAF II facilitators or community development officers then visit the communities where an Extended Participatory Rural Appraisal (EPRA) is used in supporting the communities to generate project ideas. This process takes not less than seven days before communities narrow down a crucial need that would then constitute a project. Through the wealth ranking method, the community identifies the poor households that will benefit. Each of these poor households identified then selects one representative to be a member of the community interest group of 10-15 members where at least 50% of the members of the community interest groups are women. This system has worked well in identifying the real community needs and provided appropriate solutions to needs of households.

The agricultural training offered in these interventions covered agronomy, soil and water conservation, post-harvest management of produce and marketing. Farm inputs like seeds, seedlings, manure, fertilisers and in some cases herbicides were provided to farmers. Some projects supplied livestock to beneficiaries. However, none of these projects was specifically targeting cassava, maize and millet value chains. Farmers' level of involvement in government projects is articulated below:

*“NUSAF, NAADS and Operation Wealth Creation have supported many farmers through provision of seeds, seedlings and farm tools. However, not every farmer can benefit because of the associated terms and conditions. In addition, many community members are left out because they lack information on terms of participation or when activities like distribution of materials take place” Farmer in Lira*

### 3.4.4. Beneficiaries of government programs

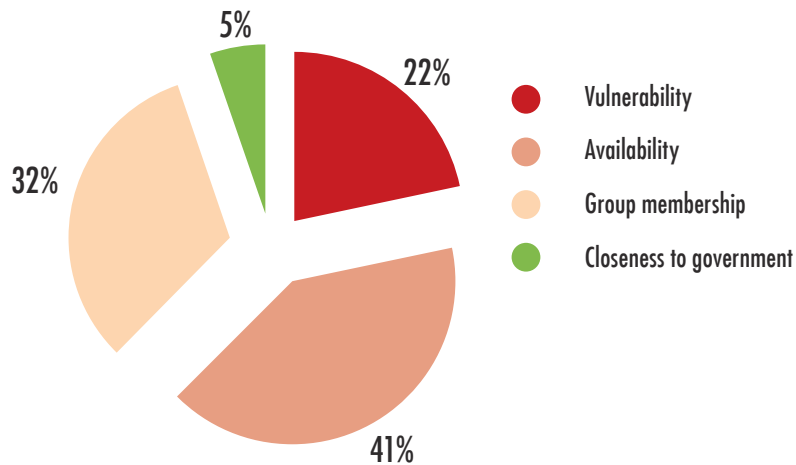
The target beneficiaries of government projects and programs varied depending to the type of the program and its objectives but generally, beneficiaries included all community members, the youth, elderly, disabled, army veterans, among others.



**Figure 27:** Likely beneficiaries of government projects and programs

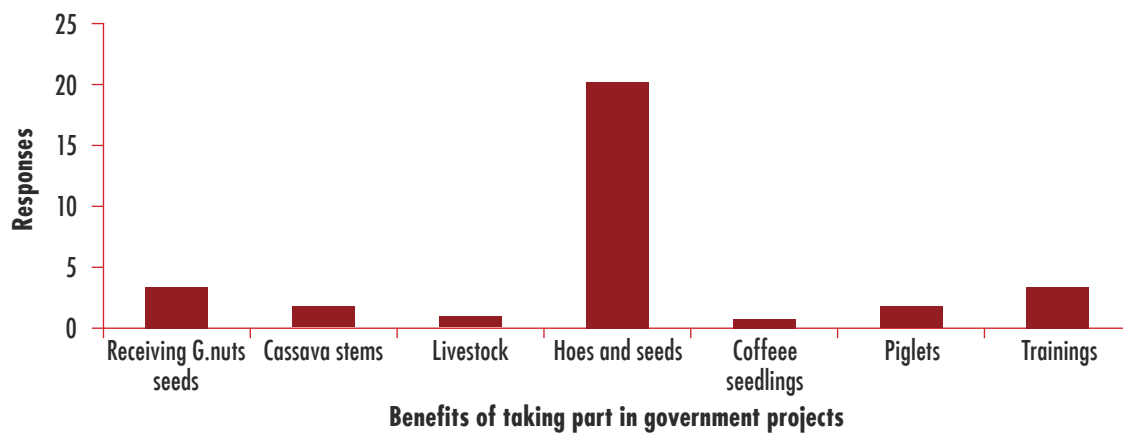
It would therefore appear that community members and groups of people within a community were more likely to benefit from government programs. Groups of farmers were more favoured by NUSAF and in some cases NAADS, where individuals acted as security and guarantor for fellow members. Group members were also presumed to supervise and monitor members, activities to ensure compliance with the terms of farm grants. Individuals were more favoured under Operation Wealth Creation where households are supplied with fruit trees such as mangoes, oranges and coffee seedlings to plant independently. The factors which favoured individuals' access to the support from government varied among different respondents with majority stating that availability to participate in projects activities was key as well as group membership. Vulnerable groups such as women, the disabled, the elderly and youth were also likely to be prioritized in government programs. Other farmers believed that loyalty to the ruling government favoured some of the community members to access government grants.

### Factors which enable one access government support



**Figure 28:** Requirements of farmers to benefit from government projects and programs

Of the farmers interviewed, 56% had benefited from past and existing government programs while 44% had not. Those who benefited from government programs received items like seeds, farm implements, seedlings, livestock and piglets. Others attended training programs where knowledge and skills in farming and management of businesses were provided.



**Figure 29:** Benefits of farmers who join government programs

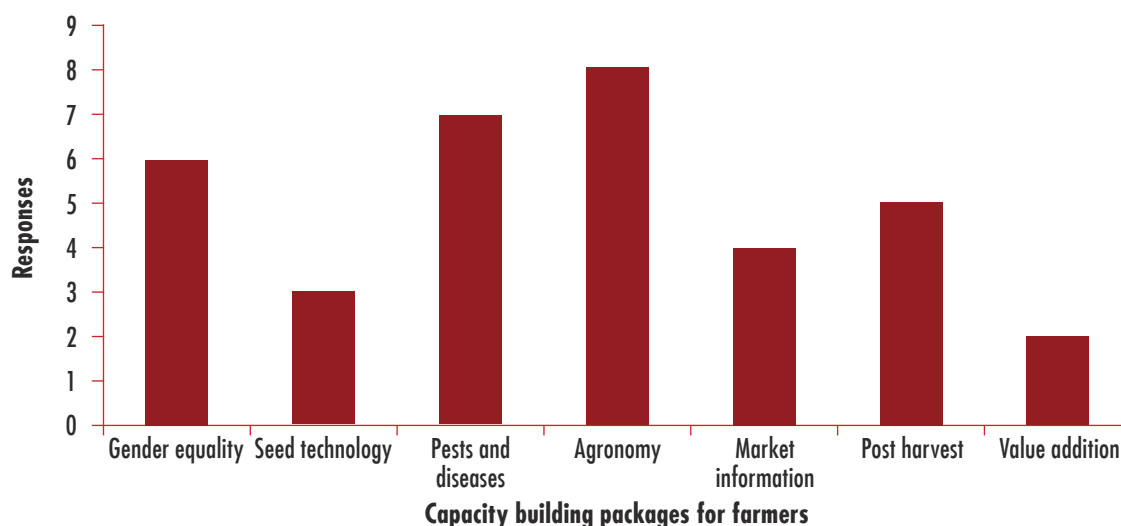
Farmers who missed out on government aid cited bias from local leadership who identify beneficiaries, lack of information and long distances from their homes to distribution centres, wrong timing and not being members to any group. One respondent gave these details:

*“I received a hoe and cassava stems from NUSAF. That season, I was able to plant an acre of cassava”. Farmer in Abim*



### 3.4.5. Government supported capacity building programs

Interviews with local government workers based at district headquarters in Abim and Lira revealed that training sessions were being conducted by district authorities to empower local farming communities. The training was spearheaded by district production offices, district commercial offices and district agricultural offices in collaboration with staff from government programs such as NUSAF and Operation Wealth Creation. In addition, government programs like the recently closed NAADS program, NUSAF and now Operation Wealth Creation also provided training to local communities in different areas of agriculture, business management and other income-generating projects like masonry, carpentry, tailoring, etc independently. Through the lens of agricultural modernization and especially the emerging concept of “value chains,” USAID (2014), in its assessment, found anecdotal demonstration of good and promising skill development programs – some governmental, some private – yet very little collective evidence of an effective system for preparing young people for work.



**Figure 30:** Skills and knowledge provided to farmers through capacity building programs

Government supported agronomic training equipped people with crop production, soil and water conservation techniques. The seed technology course was meant to enable farmers identify good seed sources and have the ability to locally mobilize quality seeds for planting and sale to generate income. Pests and diseases training involved linking of researchers with farmers, besides teaching local people traditional methods of using locally available materials like pepper spray to control pests and weevil attacks. Fencing was also advocated for control of vermin. The district authorities also said that they provided market information to farmers through radio programs, talk shows and through meetings. There was no indication that training had been conducted on marketing of agricultural products, specifically cassava, maize and millet. There was also no indication that inputs like pesticides, etc were supplied to effect the control measures advocated. Post-harvest support included formation of bulking centres where locals were advised to form associations and cooperatives from where they would collect their produce and raise quantities which could attract higher market prices. In some cases, government officials claimed to provide drying materials like tarpaulins, a claim that

was verified as true during farmer interviews and focus group discussions. Issues of gender equality centred on access to and use of land resources by all households and community members. As one farmer explains:

*“The district staff and NAADS trained us on managing pests and diseases. However, they did not provide us with any of the chemicals to use yet we don’t have money to buy them. Even some of the chemicals are not sold in any shop in our area”.*

It was realized that although training sessions were conducted for farmers, most people missed out either because they had no information on the training or they were not beneficiaries of government grants through NAADS or NUSAF which organized the training. NAADS required farmers to form groups before any form of support could be advanced and this left out many farmers who were not able to join any groups. Even with groups being formed, many farmers were still left out, claiming that the process of selecting beneficiaries was corrupt. NUSAF appeared to focus on a much wider range of people who benefitted from any of the two main projects being undertaken. The first project was labour intensive public works which include making roads, water ways, planting trees etc. The second project is the livelihood investments where seeds of unique plants like chilli, ginger, onions and oxen are distributed. None of the NUSAF activities paid attention to cassava, maize and millet value chains or farmers.

It was established that NUSAF train beneficiaries on weekly basis but sometimes it is done based on the need or the production phase of the farmers. However, NUSAF has not adequately addressed the needs and concerns of PWDs. PWDs revealed that NUSAF II facilitators were not adequately educating them on issues of enterprise selection and group formation. In addition, few PWDs belong to project groups, a scenario one key informant attributed to low self-esteem among PWDs. But the PWDs said that their participation was a function of project implementers’ attitudes as well who believe there is nothing PWDs can be able to do for themselves (Ngirabakunzi and Malinga, 2013).

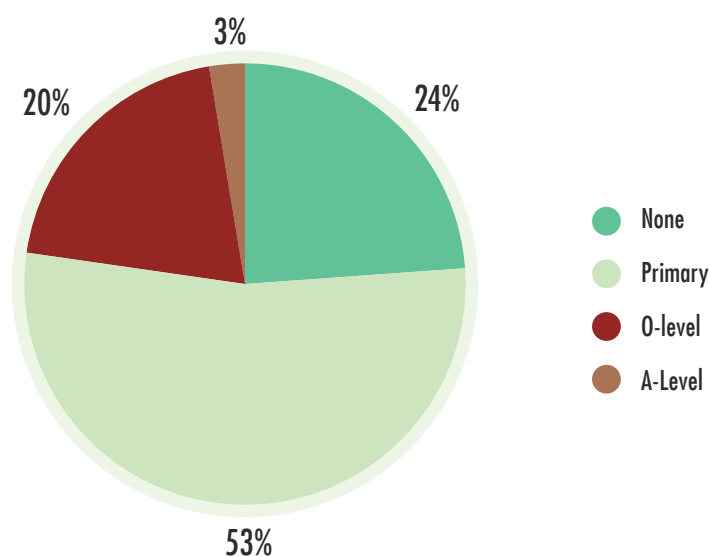
Operation Wealth Creation, on the other hand, only trains farmers once the farming materials have been brought and no further training or follow-up are done. This suggests that existing government programs are not facilitating the farmers involved in production of cassava, maize and millet. Currently, there is no agricultural education policy. The absence of such a policy means that agriculture is not accorded due status as a business or a profession and there is no strategic mobilization of resources for such education. Whereas government developed a National Plan for Functional Literacy, implementation was lagging. Similarly, while government’s policy of Universal Primary Education (UPE) aims at ensuring universal access to primary education, courses are theoretical and examination-oriented and are not linked to practical experiences nor to the activities of community. Although there are tertiary institutions offering agriculture education in Uganda, the general approach to tertiary agriculture education is not largely based on practical experiences nor is it responsive to farmer needs or farmer participation, and does not generate multi-disciplinary graduates (GoU, 2000).

The training styles employed by NAADS, NUSAF and OWC mainly favour the educated since most of the presentation involves written information on flip charts where participants are expected to take notes for future reference. Facilitated participatory trainings are done in local languages with illustrations on flip charts. In many areas, the illustrating posters are missing. For the technical aspects of training, experts like the agricultural and production

officers, professional tailors and hair dressers are invited to facilitate the trainings and enhance the learning processes. However, a survey of the education levels of the respondents reveals that many farmers are illiterate and semi-illiterate and cannot therefore read and write. One respondent's frustration with training is echoed below:

*"We attend the training but we don't learn much. The trainers assume that we are all at the same level of understanding yet some of us cannot write. These days they don't even visit our farms to show us how to plant."* Farmer in Abim

### Education levels of farmers



**Figure 31:** Education levels of farmers in Abim and Lira

Majority of the farmers (53%) had attained primary school level ranging from Primary One to Primary Seven and generally have limited understanding and comprehension of modern agricultural techniques and technologies. The second large category (24%) had no education at all having missed primary education and this group could neither read nor write. About 20% of the farmers had studied up to Ordinary Level and 3% of the farmers had reached advanced levels of education. It could therefore be concluded that only 23% of the farmers had the capacity to benefit from the training offered by government institutions, given the styles used during training sessions.

Buyinza et al (2015) found that the extension methods below are the main approaches used to deliver agricultural technologies to farmers in Uganda and highlighted their strengths and weaknesses:

**Table 1: Commonly used extension methods in Uganda**

<b>Extension approach</b>	<b>Strengths</b>	<b>Weaknesses</b>
1) Group training approach	<p>With effective mobilization, a large number of farmers can be reached</p> <p>The approach is participatory and facilitates learning</p>	<p>Most group trainings are dominated by women, men rarely attend</p> <p>Farmers do not turn-up for trainings if there is no facilitation for food and transport</p> <p>Attendance to group trainings is inconsistent. Turn-up is low during the rainy season because most farmers get engaged in farming</p> <p>Low technology adoption levels among the trained farmers</p>
2) Farm visits by extension staff	<p>An effective extension approach, since it addresses the problem of a specific farmer</p> <p>High technology adoption levels can be achieved among the farmers visited</p>	<p>Requires a lot of funds and transport facilitation for the extension staff</p> <p>Limited coverage by the extension staff, thus difficult to reach out to all farmers</p>
3) Demonstration sites	<p>It enables practical learning among farmers</p>	<p>Demonstration sites are expensive to set-up and maintain.</p> <p>It covers a limited scope and normally few farmers benefit from it</p>
4) Model farmer approach	<p>Suitable for transferring new technologies to farmers</p>	<p>This approach normally targets well-off farmers who have large pieces of land and are willing to co-finance the demonstration</p>
5) Mass media	<p>It has a large coverage</p>	<p>Information may not be beneficial to all the farmers, thus it does not cater for individual farmer extension needs</p>

<p>6) Farmer Field Schools (FFS)</p>	<p>The approach is highly participatory and facilitates learning among farmers</p> <p>Farmers are empowered and own what they do during farmer field schools</p> <p>The approach is self-sustaining and exposes farmers to new technologies</p> <p>This extension approach is effective in imparting the required knowledge and skills to farmers because of the regular interactions between the farmers and the facilitators</p> <p>Group dynamics, participatory group presentation and discussion form part of the approach. As a result, a sense of cooperation and team coordination develops among the farmers, which is helpful in spreading and sharing technologies with one other</p> <p>The approach enhances community interest because impact is visible</p>	<p>It is expensive to implement</p>
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Under NAADS which ended, demonstration gardens were used at parish and sub-county levels. Organized groups also sometimes invited trainers to their farms. However, under Operation Wealth Creation, any training is conducted at the time of issuing planting materials, moreover at sub-counties, parishes or any distribution venues rather than on farm. No follow-ups on farm were reported and as a result, the learning processes under Operation Wealth Creation are limited. A study conducted by GoU (2011) found that agricultural manpower and skills in the country were insufficient and lack practical and usable knowledge, whether from private or public providers for farmers. The public extension system is weak and NAADS did not solve the problem of inadequate knowledge reaching farmers attributing manpower shortages especially at sub-counties to the suspension of recruitment of agricultural extension staff in local governments in 2002 which led to staff attrition. The conversion of some public extension workers to NAADS further weakened the public extension system without increasing the reach to farmers.

### 3.4.6. Monitoring the impact of government programs

Under NAADS, monitoring of activities was conducted weekly using management review meetings with farmers to get proper feedback. There were also parish level, sub-county level and district level monitoring teams which included local council leaders, IGG, OPM, World

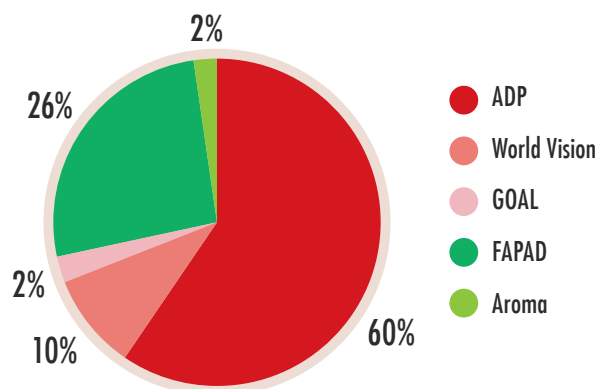
Bank mission, politicians and all concerned citizens. Extension workers were also put in place to do a much closer follow-up with the farmers. However, the currently implemented Operation Wealth Creation does not seem to have these monitoring arrangements which will affect implementation of recommended measures at farm levels.

### 3.5. NGO supported capacity building programs

#### 3.5.1. Skills development and capacity building

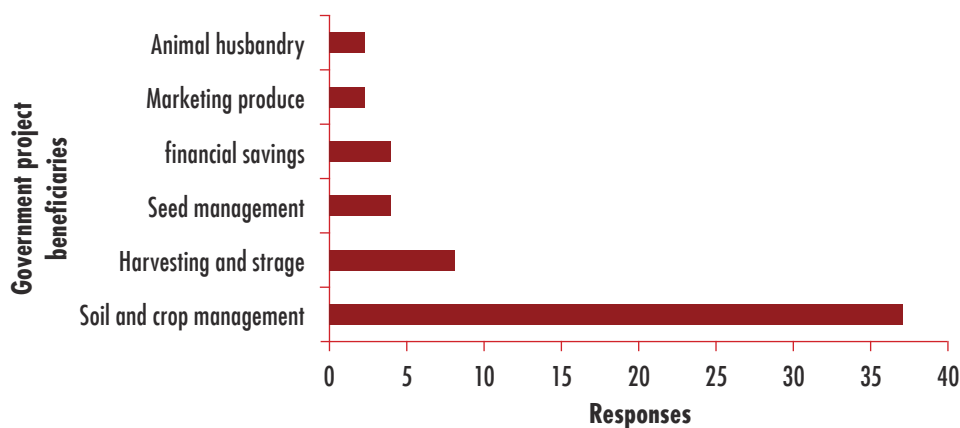
Over 69% of the farmers had observed agricultural training programs offered by various organisations within their communities while 31% had not. Over 75% of farmers had attended a training session between 2000-2016 organized by NGOs and private sector actors, mainly those dealing in agricultural support, equipment and inputs.

**Private organisations and NGOs training farmers**



**Figure 32:** NGOs supporting farmers in Abim and Lira

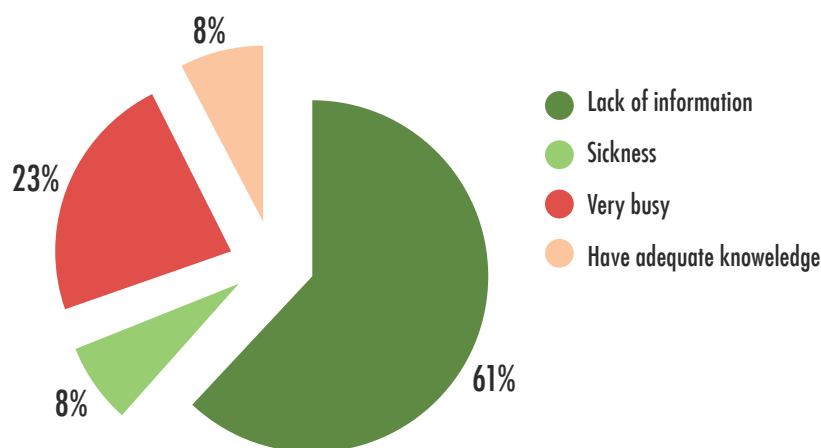
Various skills were passed on to farmers during the training mainly on crop and animal husbandry such as produce marketing, financial saving strategies, harvesting and storage.



**Figure 33:** Knowledge and skills provided by NGOs to farmers in Abim and Lira

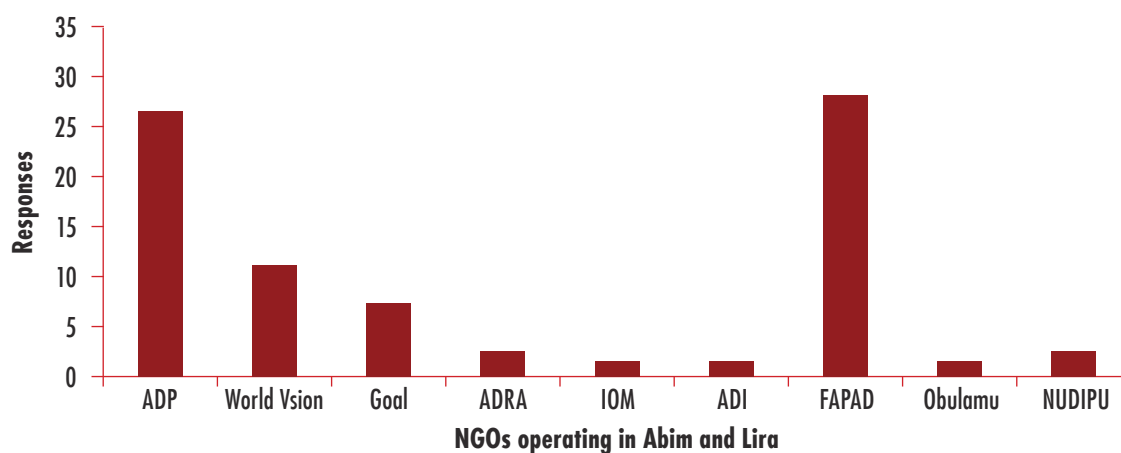
Some of the farmers (=14) who never benefitted from the training offered by NGOs and the private sector cited a number of reasons such as lack of information on organized training, long distances of travel to training venues, being very busy with other activities and illness.

### Factors that led to farmers' missing trainings



**Figure 34:** Factors which prevent farmers from attending NGO capacity building programs

Over 80% of farmers interviewed acknowledged having NGOs operating in their communities while 20% did not. This implied that NGO coverage of Abim and Lira was extensive but knowledge of their existence was limited.



**Figure 35:** NGOs operating in Abim and Lira

Majority of NGOs were involved in capacity building drives in areas such as agriculture, small business management, financial management, tailoring and carpentry. The second largest category was involved in farmer support through provision of seeds, farm implements, seedlings and advising farmers on various aspects of crop and animal husbandry.



### NGO community initiatives

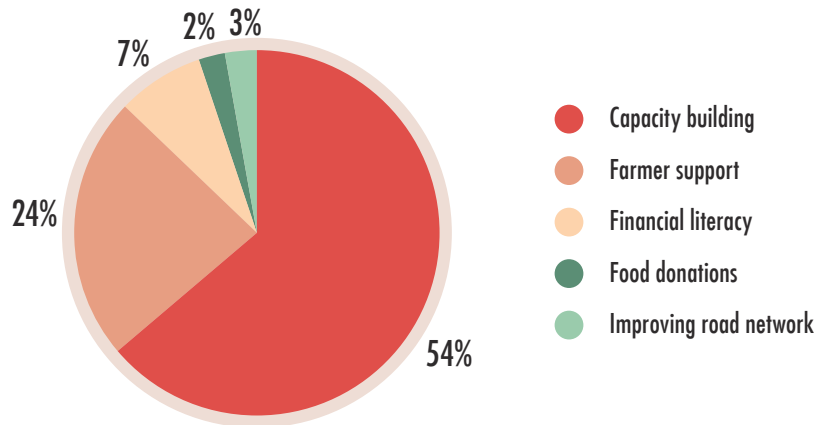


Figure 36: NGO capacity building initiatives in Abim and Lira

Majority of the farmers (66%) revealed that there were no NGOs specifically targeting women, youth and the disabled while 34% believed that those vulnerable groups had NGOs devoted to their causes. The support given to the youth, women and disabled varied but generally included farm seeds and other inputs like manure and fertilisers, domestic animals like cattle and piggery, training in farming activities and business management and providing food supplies to the elderly. No specific NGO was said to be supporting value chains of cassava, maize and millet.

### 3.6 Farmers' access to credit

Close to 53% of the farmers had attempted to borrow from various lenders so as to meet social but also farming expenses. The borrowed funds were used for different purposes such as hiring land, buying farm inputs, weeding and harvesting. Besides, farming ventures, borrowed funds were also spent on social obligations such as medical bills, marriage, school fees.

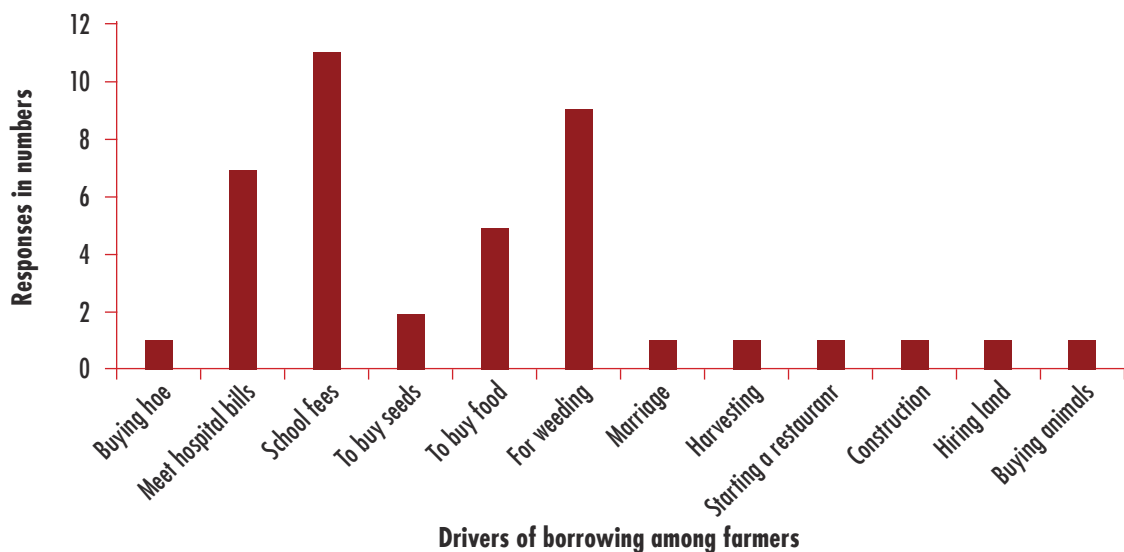
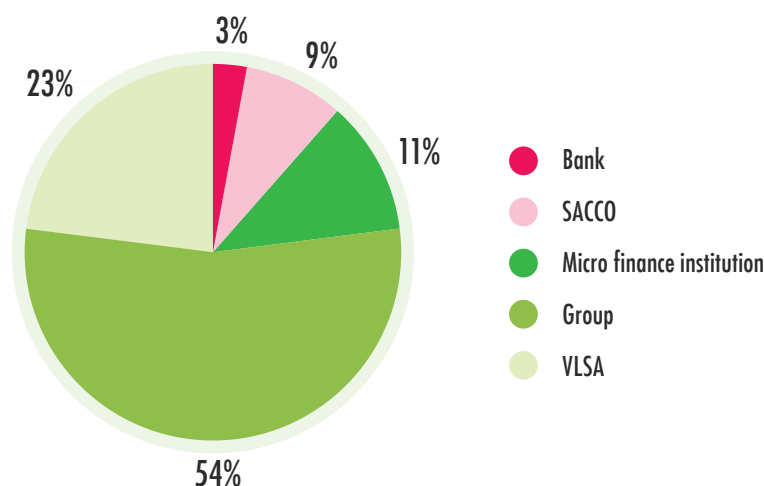


Figure 37: Drivers of borrowing among farmers in Abim and Lira



Many farmers revealed that loan repayments among community members were challenging. Some of the farmers had lost their land and other assets after failing to repay the loans, leading to more apathy. Most farmers appeared to borrow from their group associations, VLSA, micro finance institutions and SACCOs. Only 3% borrowed from commercial banks. The dominance of farmer groups as sources of funds for farmers underpins the importance of farmers to join these groups so as to ease access to credit.

### Loans sources



**Figure 38:** Sources of loans for small scale farmers in Abim and Lira

At least 76% of the farmers who applied for loans had their requests approved in the range of UGX 10,000 to 2,500,000 and a mean of 100,000. The mean annual interest rate accrued on borrowed funds was 12% and a range of 5-30% per annum. Over 66% of the farmers found loan repayments difficult compared with 33% who repaid the loans smoothly. The farmers who failed to repay loans cited lack of money (44%), unforeseen circumstances (20%), poor crop yields (16%), sicknesses (8%) and other reasons such as prevalence of famine. Some farmers had to sell their properties like land and houses to repay the loans. The farmers who were declined loans after application did not meet the requirements for loan security (66%) or the rules and regulations put in place by lenders (34%).

### 3.7 NGO working environment

All farmers interviewed did not believe that the government was interfering with NGO operations at all. These findings corroborated interviews with Police and security agencies which also revealed that NGOs were operating freely with minimal interference from security agencies. The few cases cited centred on conflict resolution where fights erupted during NGO community meetings and Police was called in to calm the situation.

### 3.7.1 Regulation of NGO activities

The government regulates the activities and operations of Non-Governmental Organizations through the NGO Act 2016 and the Public Order and Management Act (POMA). These guide the way NGOs interface with local communities to ensure that peace, security and harmony prevail. Interviews with Police and security personnel revealed that majority (60%) found no threat posed by NGOs in their areas while 40% believed that if NGOs are left unchecked, their activities could cause social disharmony and local conflicts. Over 58% of the security personnel had read through POMA while 42% had not. At least one of the security officers had never read POMA but had previously used it to regulate activities of an NGO. Over 36% of the police officers and security personnel interviewed (n=13) has used POMA to guide NGOs while 66% had never interfered with any NGO based on POMA provisions. The overall impression that these findings create is that NGO activities in Northern Uganda are not substantially restricted by the NGO Act and POMA. Interviews with local farmers also revealed that no single NGO activity within their communities had been suppressed for security reasons. The Police cited a few cases where an NGO was distributing agriculture inputs and seeds when fights erupted over inequality and unfairness in sharing the resources. Below, a Police Officer shares their experience.

*"I have not read through POMA but I have used it once to regulate an NGO meeting."  
Police Officer in Abim*

### 3.7.2 Compliance with NGO Act and Public Order Management Act

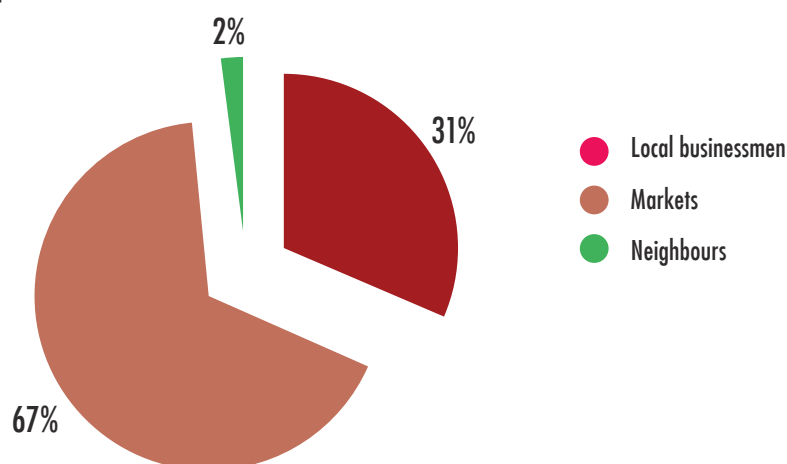
To ensure good working relationships with NGOs, the Police and security organs has put in place a number of channels where police officers met NGO staff and management to coordinate their operations and ensure that peace and security are not compromised by NGO activities. Such meetings also ensure that the security and safety of NGO staff within communities are guaranteed. NGOs were having regular meetings with Police and all they had been requested was to register with the Community Development Officers in their respective sub-counties. Police were also asking NGOs to share the schedules of their activities while offering them guidelines. The sanctions to NGOs from non-compliance with security requirements varied but included stopping of NGO activities, sabotaging NGO operations, caution and suspension of NGO operations. It was however established that although non-compliance of NGOs was registered in some cases, only 10% of NGOs in Abim, Morulem sub-country had been cautioned while in Lira, no case of NGO caution was mentioned. The caution in Abim arose from an NGO which was distributing cattle to farmers but the Police wanted the sources of the cattle to be verified, given rampant thefts of cattle in that area. One respondent recounts their experience:

*"We have not seen any security officer interfere with the meetings our communities hold with NGOs". Focus Group Discussion in Lira*

## 3.8 Marketing of farm produce

Over 77% of farmers were selling some of their produce to generate income while 23% did not because of low farm outputs in relation to domestic consumption needs. Farmers sold their produce so as to meet personal needs (44%), pay school fees for children (23%). Other farmers were motivated by surplus produce (23%) and market availability (9.5%). The mean percentage of food surplus sold was 31%, with a range of 0-70%. Most farmers found markets for produce in local markets (67%) and local businessmen (31%) while 2% sold their produce to neighbours.

### Sales of farm produce



**Figure 39:** Sales points for local produce

Most farmers believed that their produce fetched better prices in markets where they are sold to direct consumers and to large scale buyers. Local businessmen were resented because they often cheat farmers by using faulty weighing scales or tampering with the weighing system. In fact, 83% of the farmers did not trust local businessmen because they were perceived as cheats (55%), offered lowest prices (43%). Only 17% of the farmers preferred to sell farm produce to local dealers so as to avoid transportation costs. Pannhausen and Untied (2010) also found that farmers' knowledge about marketing opportunities and channels in East Africa is a constraint.

### 3.8.1 Challenges faced in farm produce marketing

The challenges faced by farmers in marketing their produce varied but mainly included poor road networks which lead to higher transportation costs, lack of ready markets, poor weighing scales, lack of market information and price fluctuations. According to USAID (2010), small holders' are constrained in accessing viable market for maize because Uganda continues to produce using mostly low level technologies. SEATINI (2013) found that overall, very few farmers (only 21%) are aware of the organization/company helping farmers to access markets with the lowest level of awareness reported in Lira (14.9%) and the highest in Gulu (27.4%).

### Challenges faced in marketing farm produce

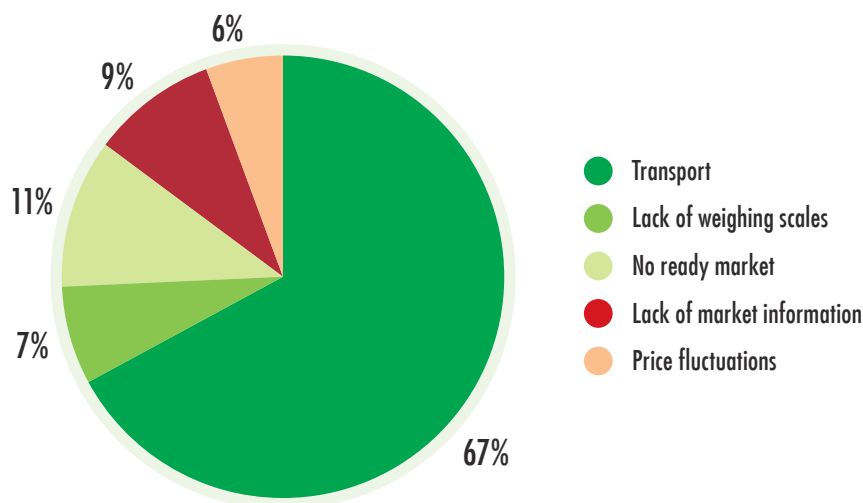


Figure 40: Challenges faced in marketing farm produce

MAFAP (2013c) reported that the Ugandan government no longer practices price controls as a development or trade policy measure. Instead, markets determine prices. This implies that forces of demand and supply determine the price, rather than any regulatory authority or pricing mechanisms.

Aturinde (2012) argued that markets for agricultural products nowadays call for prior planning of production and value-addition infrastructure so as to match farmers' supply with market demands. He noted that there is a growing need to link producers with those value chain players involved in agro-processing and marketing. He however found that in Uganda, such linkages are sometimes weakly organized if available or absent altogether. Although for some time, millet was considered food for the poor, limiting its widespread production and use, Kimenyi and Bombom (2009) found that the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has through agricultural shows, field days and public "barazas" disseminated processing technologies that add value to the grain, which has increased sale of millet products. In bid to attract better prices for their produce, 16% of the farmers had considered forming marketing associations so as to bulk their small harvests and sell. However, 84% of the farmers were still selling their small quantities as individuals hence not attracting competitive prices.

### 3.8.2 Utilization of farm income

Over 92% of the farmers revealed that farm income is utilized by the whole family, 6% said that husbands were in charge of farm income while 2% entrusted groups with custody and investment of farm incomes. Farm proceeds were mainly going towards subsistence living (50%), school fees (44%), buying animals (5%) and land purchases (1%). Over 56% of the farmers believed that sales from produce meet all production costs compared with 44% who revealed that many times they make losses because costs of production exceed farm income. Farmers whose farm sales were below costs of production had resorted to borrowing, sale of animals and engagement in other income activities. One of the respondents had this to explain:

*"In 2014, I invested UGX 300,000 in clearing land and planting maize. However, drought destroyed all the crops and I harvested nothing. I ended in total loss." Farmer in Abim during Focus Group Discussions*

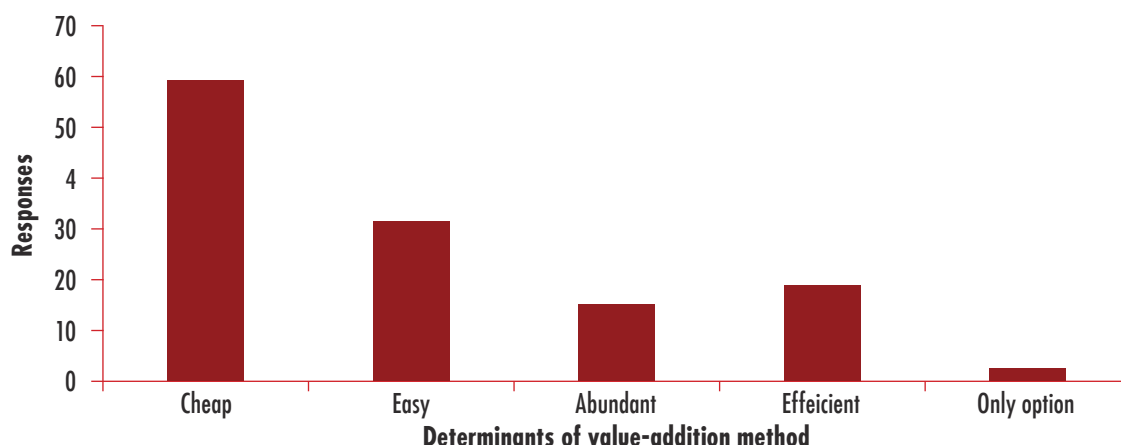
### 3.8.3 Produce storage

Storage facilities seemed to determine when farmers were likely to sell their produce. Over 60% of the farmers revealed that given good storage facilities, they would be able to store their produce and sell when prices stabilize. Because of produce storage challenges, 78% of the farmers sold farm produce in raw form compared with 22% who did some processing or value-addition. Processed food products in most cases registered price increases ranging between 15-25% compared with unprocessed or fresh foods from the garden. CESVI (2013) also found that the quality of farmers produce is considerably below the benchmarks, attributing it mainly to poor post-harvest handling especially at storage level, traditional farming practices and negligence of farmers. Hence, according to the study, the low quality of produce also reinforces the problem of low market prices. Although storage facilities existed at sub-county level in Lango, CESVI (2013) found that only a handful of farmers were aware about the existence of storage facilities. While most stores were empty, they were ill-equipped for proper storage, lacking basic equipment including weighing scales, moisture meters, pallets, ladders, sample spear, set of sieves, hydrometer and sanitary facilities. The physical conditions of the stores were found to be wanting, posing a threat to farmers' produce as explained:

*"We lack proper storage space for our produce. In many cases, we keep the food in our bedrooms to prevent theft. In our houses, the produce gets destroyed by rats, termites and other weevils. We cannot really do anything about this because we are constrained financially." Farmer in Lira during Focus Group Discussions*

## 3.9 Value-addition on food crops

The study found very limited value-addition on crops harvested with many of the farmers referring to traditional seasoning and drying practices as value-addition. Of the 22 farmers who said they added value to maize, 37% did sun drying while 41% ground the maize and consumed or sold the flour. Of the 16 people who said they did value-addition on harvested millet, 50% utilized grinding machines to convert millet grains to flour, 29% used locally made grinding stones while 21% only sun dried the millet after harvest. Cassava was in some cases sold fresh but of the 23 farmers who claimed to add value, 57% sun dried cassava while 43% utilized grinding machines to convert dried cassava into flour. With respect to cassava, Kimenye and Bombom (2009) generally found lack of improved processing technologies, lack of technical know-how on processing with traditional splitting/slicing and drying of cassava chips on bare ground, which compromises market standards, being practiced by most small holder farmers. The reasons given for the choice of value-addition varied with most farmers quoting the cost of technology as being the most determining factor.

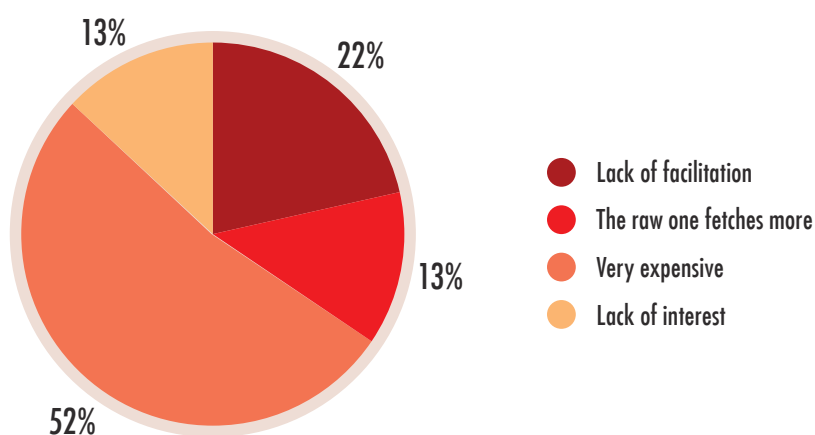


**Figure 41:** Factors which affect the choice of value-addition method

Besides cost, the ease of value-addition method, abundance of the technology and efficiency of the method favoured its use. However, in some cases, the method was the only option available to farmers; for example the use of grinding stones for millet and cassava. Technologies like grinding stones were found to be manually demanding in terms of energy and time and not suitable for commercial large scale production. A respondent bluntly reacts to the subject of value-addition:

*"I haven't been sensitized about value-addition. So I cannot really discuss it or else I will be lying to you". Farmer in Abim*

### Factors which limit value addition



**Figure 42:** Factors which limit value-addition initiatives in Abim and Lira

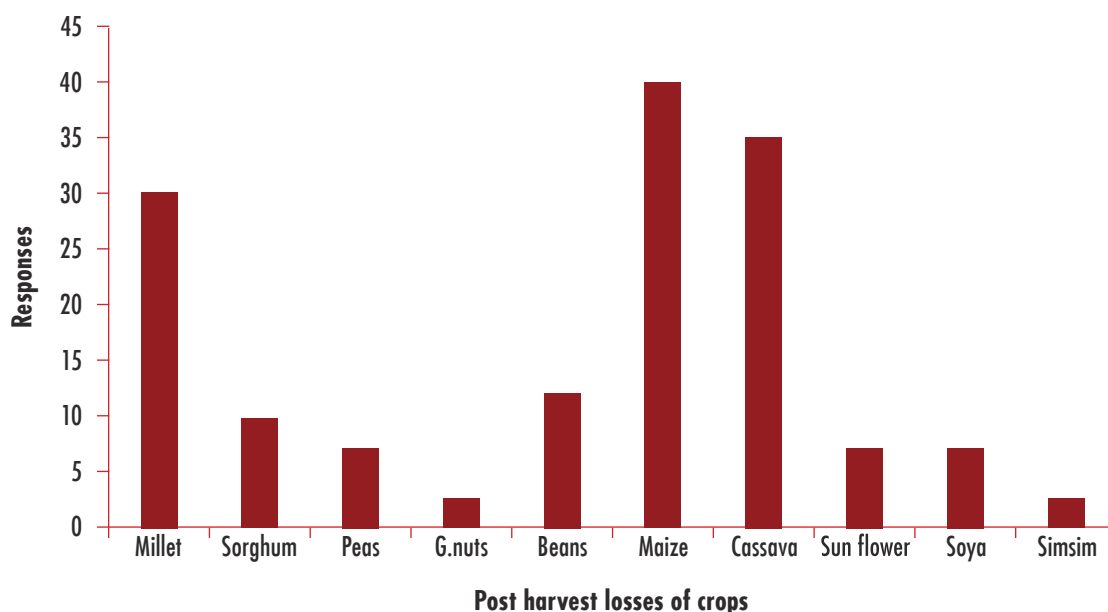
Many farmers had considered value-addition for their farm produce but found the process to be quite expensive and time consuming. Others thought that by selling raw food products, they make better profits while a large number believed that with facilitation, they would consider value addition. Nearly 13% of the farmers had no interest in value-addition processes. CESVI (2013) also found that value-addition is generally low in Lango East with the commonest value-

addition equipment being the grinding mill for processing maize, millet and cassava into flour although most farmers still used pounding motors and peddle stones for the same purpose. Milling machines were employed in grinding dried cassava, millet and maize but traditional technologies like grinding stones were also widely employed in grinding dried cassava and millet. Harvesting of maize and millet involved use of simple tools such as knives and machetes while cassava harvesting was done using hand hoes to excavate root tubers from the soil.

### 3.10 Post-harvest losses

Cassava, maize and millet appeared to have the highest incidences of post-harvest losses due to ease of attacks by weevils, rodents and other insects as one respondent explains:

*“Two years ago, I lost 3 sacks of fresh cassava to rotting because soon after I had harvested, rain started and sun drying was not possible. I watched as all the harvests became discoloured and some started rotting. I was only able to save one tin of dried cassava weighing 17 kg. Since then, I don’t want to cultivate cassava for commercial purposes”.*  
Farmer in Abim



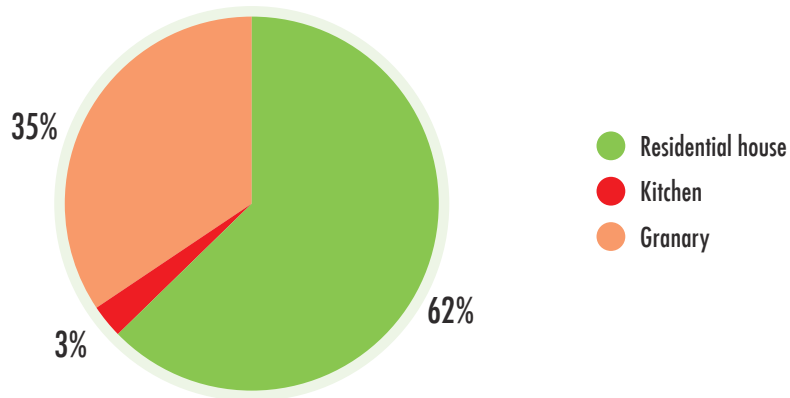
**Figure 43:** Vulnerability of crops to post-harvest losses

Registered losses were mainly experienced through weevils (42%), birds, termites, rats and animals (34%), rotting (14%) and thieves. Most of the farmers stored produce in residential houses to minimize thefts while others had constructed granaries. Close to 3% of the farmers used kitchens for store storage, a practice that led to loss of quality especially colour change of cassava and maize due to the impact of soot. Produce stored in kitchen was fetching lower market prices due to its unattractive appearance.



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### Storage of farm produce



**Figure 44:** Storage of farm produce

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To minimize post-harvest losses, many farmers had resorted to complete seasoning of harvests (35%), improved storage (16%), early harvesting and selling from gardens (8%) and addition of ash and pesticides to the harvests so as to contain weevils (2%). Close to 24% of the farmers revealed that they had no strategy to prevent post-harvest losses.



## 4.0. CONCLUSIONS AND RECOMMENDATIONS


### 4.1. Conclusions

Majority farmers were involved in production of cassava, maize and millet, intercropped or rotated with beans, ground nuts, sim sim and bananas among other crops. The size of the land owned by farmers was small, ranging between 1-25 acres. Due to small land sizes, the quantity of the food produced was small, often for domestic consumption only. Many farmers cannot even produce enough for domestic consumption and therefore supplement with market purchases or starve. However, other farmers especially those with large pieces of land produce surplus which are sold locally in markets or collected by retail traders. It can therefore be concluded that farmers in Abim and Lira can produce for the market as long as they have access to adequate land.

Soil and water conservation measures were applied by some of the farmers. Water and soil conservation mainly entailed construction of diversion ditches, terraces and in some cases mulching. Most farmers depended on indigenous methods and knowledge of soil and water conservation suggesting that extension services have not influenced traditional farming practices. This finding leads to the conclusion that cassava, maize and millet from Lira and Abim are likely to attract a wider market if farmers in those districts adopted modern farming technology or new methods which enhance quality and yields.

Two major factors appeared to be responsible for declines in production of maize, millet and cassava. Declining soil fertility was affecting many farmers, attributed to the long periods of time that land has been continuously cultivated. Climate change was another issue that contributed to crop losses, especially unpredictable rainfall patterns and prolonged drought periods. Drought was affecting maize and millet more compared with cassava which was considered to be drought tolerant. It is on this basis that the study concludes that farmers in Abim and Lira have chances of sustaining agricultural production if they have the means to address natural conditions.

Pests, diseases, vermin and birds affected farm produce right from gardens through post-harvest. Cassava was more affected by diseases especially cassava mosaic and was more vulnerable to disease attacks than millet and maize. A few farmers were able to control pests and diseases using agro-chemicals and traditional technologies. Vermin controls in a few cases were implemented through fencing gardens. However, a significant number of farmers felt they were incapable of doing anything to protect their gardens, leading to crop losses. Based on this finding, it can be concluded that quality and quantity of agricultural produce can be avoided if farmers embrace the right methods to protect farm produce at each stage of the value chain.




Quality seed sources and planting materials appeared to be a challenge that most farmers faced. Most farmers utilized previous harvests for seed sources while others bought seeds from neighbours, retail stores and markets. Most of the seed sources provided untreated seeds which are vulnerable to attacks by insects, leading to reduced germination rates. In some cases farmers purchased seeds that were no longer viable because they lacked the skills and knowledge for determining seed quality. This finding points to the conclusion that small-scale farmers will attract viable markets as long as they have control over the quality of seeds as key farm inputs.

Farming technologies were based on simple tools and implements and there was no single farmer practicing mechanised farming. Hoes, machetes and rakes were the dominant tools used for land clearing, planting and harvesting. Dependence on hand hoes and other simple tools limited the size of land that farmers could cultivate, contributing to small harvests. Notwithstanding size of land available to them, it can be concluded that farmers are able to produce beyond their subsistence needs if they adopt yield enhancing technologies. Researchers from the Ministry of Agriculture, Animal Industry and Fisheries and the National Agricultural Research Organisation (NARO) and Makerere University had conducted extensive researches on cassava and maize, generating suitable varieties. However, there appeared to be limited research on millet. It is on this basis that the study concludes that there is potential to scale up millet production as long as millet growers have access to technical and agronomic advice.

The youth, women and the disabled were participating in agricultural activities although each category faced different limitations. Women dominated the crop production sector but only owned 3% of the land. Women were therefore left at the mercy of their husbands, clans and families for allocation of farming plots. The disabled were faced with discrimination due to physical and mental limitations, among others. The disabled were often left out in community meetings, decision-making, farming and marketing of agricultural produce. The youth were energetic and strong enough to participate in manual agricultural activities. However, they were perceived as lazy, lacking interest in agriculture and not trustworthy with farming resources and inputs. This study concludes that the involvement in agricultural activity can be rendered economically sustainable if challenges peculiar to each category of participant are proactively addressed.

Farmers' associations were found to be in place, bringing together like-minded individuals to engage in farming. Associations also presented avenues where individuals could access government support and grants especially NUSAF. Farming groups also formed credit and saving associations which provided credit for farming communities. However, not every farmer belonged to an association due to lack of information, lack of interest, failure to raise membership fees among other reasons. It is therefore the conclusion of this study that farmers' groups will be supportive if farmers are enabled to access such groups.

Most farmers were accessing credit for funding of agricultural and other social activities. The sources of loans were dominated by farmer groups but also microfinance institutions, SACCOs and commercial banks. The interest rate on loans ranged between 6-30% and was proving a challenge for some farmers to repay. Indeed, some of the farmers had lost their properties to lenders. Based on this finding, it is concluded that agriculture will present opportunities for sustainable economic activity if farmers have access to cheaper agricultural financing.




Government institutions and projects helped many farmers through training, provision of farm inputs, availing livestock, etc. Support was widely available for the youth, women, the disabled and the elderly. Support was provided through local government authorities and projects like NAADS, NUSAF and Operation Wealth Creation. Government institutions were also involved in research and dissemination on agricultural and social issues. However, no specific attention had been paid to production of cassava, maize and millet by any of the government programs currently operating in Abim and Lira. In addition, not all farmers had benefited by participating in government projects due to stringent terms of participation, perceived segregation, lack of information, unclear processes of getting involved, among others. Government projects and programs were reported to be benefiting few people. Their implementation was perceived as inefficient due to lack of monitoring and evaluation. Interventions like Operation Wealth Creation were offering seedlings to farmers without adequate training and follow-up hence leading to waste. Drawing from this, it is possible to conclude that government interventions will only serve farmers' needs if they adopt a more participatory approach, right from their conception to implementation.

Non-governmental organisations and private business entities were supplementing government efforts in training farmers in various aspects of farming and business management. Many of the NGOs were building capacity of local farmers but also supplying farm implements, seeds, livestock and other farm inputs. However, not all farmers had benefited from NGO programs due to lack of information. The conclusion that draws from this finding is that NGOs, as partners to government in service delivery, will be more effective to farmers if there is a deliberate effort to raise awareness about their activities.

Capacity building programs by both government and NGOs fell short of meeting the learning needs and expectations of the largely illiterate and semi-illiterate farmers. Whereas extension agents used teaching sessions and in some cases, demonstrations to educate farmers, many farmers were not benefiting because the methods employed assumed everybody was literate. In addition, capacity building programs were not tailored to specific needs of farmers, based on crops grown, soils and landscapes but rather were generalised to cater for all farmer's needs. As a result, many farmers could not contextualise the knowledge and skills acquired to improve their farming practices. It is therefore concluded that capacity building for farmers will only be effective if approaches employed take into consideration the variation in learning abilities of the participants as well as their peculiar needs.

Marketing of farm produce was found to be a challenge, characterised by low market prices and unstable markets. There were no tailored programs to address farmers' marketing challenges for any crop including cassava, maize and millet. Most farmers sold their produce in local markets, some sold to local traders who were accused of fleecing farmers. The small nature of land holdings and dependence on manual labour imply that saleable quantities of produce from many households are small and not attracting better bargains. However, efforts were being made towards bulking produce so as to attract bulk buyers who offer better prices. Therefore, this study concludes that cassava, maize, millet producers will be assured of a more stable market if they are supported to produce and bulk bigger quantities.

Storage of farm produce was a challenge with many farmers using residential houses, kitchens, stores and in some cases granaries to keep harvested foods. All storage facilities used by farmers fell short of recommended standards and exposed the foods to attacks by rodents,



termites, weevils and in some cases thieves. Community granaries were in existence but were largely abandoned and many farmers did not know about their existence. This study thus concluded that for farmers' produce to compete favourably in the market, challenges associated with storage will need to be addressed.

Value-addition on cassava, maize and millet was minimal and was little understood by many farmers. In some cases, farmers believed that fresh food sales fetch better market prices compared to value-added products. The lack of knowledge, skills, equipment, technology and financial abilities limited value addition initiatives to solar drying of harvested foods and grinding of millet, maize and cassava using electric or diesel-powered mills. Millet and cassava were also manually ground on stones especially for domestic consumption. On the basis of this finding, the study concluded that value-addition will enable farmers to access more profitable markets if the farmers are sensitized on the economic benefits of value-addition.

Government policies on agriculture and food production were found to be in place but many were not being implemented. In many cases, the liberalized economy in Uganda implies that individuals are largely responsible for their welfare and no subsidies or government support is guaranteed for farmers throughout value chains. Government programs and projects like NAADS, NUSAF and Operation Wealth Creation were short lived, selectively implemented and did not benefit every farmer. Besides, value chains for cassava, maize and millet were not catered for under any existing government program. It is on this ground that the study concluded that government policies and programs can only benefit farmers if they are sharply focused to address the specific needs of farmers of different crops.

## **4.2. Recommendations**

### **4.2.1. Recommendations relating to addressing knowledge gaps and skills**

#### **a) Capacity building**

This study found considerable reliance on traditional farming methods and practices which undermine agricultural potential. It is therefore necessary to develop robust capacity of farmers to sustainably use their land. Basic knowledge of agronomy and soil science and management will enable farmers to utilize their land and manage their crops better. Practices like crop rotation and fallow are not adequate enough to replenish nutrients in a short period of time. Training on manure application, agro-forestry, use of artificial fertilisers, among others, will help address soil fertility decline. The farmers will also need to be trained and supported to mitigate against climate change effects through water harvesting and irrigation besides putting in place early warning systems and reliable weather forecasting and reporting mechanisms. Integrating a variety of methods including adult learning techniques to conduct farmer training sessions will be key if farmers are to be effectively prepared to tame nature. The current style of teacher-learner relationship between extension officers and farmers has not worked well given the lack of or minimal education for most farmers. There is need for special training targeting cassava, maize and millet farmers focusing on agronomy, post-harvest and value-addition.

### **b) Awareness creation**

Having found that lack of information has alienated farmers from government programs, this study recommends growing awareness and sensitization. Farmers need to be encouraged and supported to constitute associations or groups, which appear to be the main avenues for accessing government support through programs including NUSAF. Strong links at the grassroots are also necessary to promote tolerance and respect for all community members irrespective of age, gender, physical ability or income status. This will enable every citizen participate in economic activity and access government grants without discrimination. Given that reliance on community meetings, radio adverts and radio programs has still left many people unaware of government programs and NGO activities, efforts should be made to adopt approaches that ensure individual reach. Well-designed door to door information packages have the potential to guarantee that information about on-going government interventions and NGO activities reaches every member of the community.

### **c) Seed quality**

The study found that quality of seed inputs have been a contributing factor to poor yields. To be effective, the study recommends that farmers be supported to undertake specialized training in seed technology and management to enable them identify viable seeds and seed sources. Farmers need to be able to turn to their own for informed guidance and expert advice on treatment and preservation of seeds rather than profit-driven suppliers. Strategies to promote this level of capacity for self-reliance will rely on successively providing groups of farmers with comprehensive training in aspects of identification, treatment, handling and storage of seeds.

### **d) Farming technology**

The use of rudimentary technology, the study found, was limiting the acreage of land under cultivation and ultimately, the volume of marketable produce. Hand hoes are known to mix soil within the top 20 cm of the profile, leaving the nutrients at lower levels of the profile inaccessible by shallow roots of maize, millet and cassava. For farmers to enhance yields and access gainful market, government and other actors have a crucial role to play in supporting mechanized land clearing which will increase the size of crop fields but also improve nutrient availability. The use of tractors would mix the soil within a profile depth of over 80 cm hence returning the leached nutrients to the surface and prolonging the period of time that soils will take to get exhausted of nutrients.

### **e) Research**

As the findings of this study show, farmers have not fully benefitted from agricultural research. In order to keep pace with changes, investment in research to farmers will be useful to assist them make informed decisions on land use based on soil nutrient status and the requirements for cassava, maize and millet. Experimenting on different varieties of cassava, maize and millet to determine suitability to different areas and sites will cement the link between research and practice. The involvement of farmers in research undertakings will also help to ensure that recommended agricultural practices are based on evidence in a way that is understandable to the entire farming community.

## 4.2.2 Recommendations relating to improving market access

### a) Post-harvest handling

This study also identified lapses along the value-chain which comprise quality of produce. Improving quality of cassava, maize and millet will need to take advantage of better post-harvest management systems right from harvest to storage. This will require developing, training and providing farmers with well-defined quality guidelines. The provision of drying platforms as well as training in all aspects of post-harvest processes will safeguard appropriate quality standards and thus enhance market value. Access to proper storage facilities coupled with training in record management contributes to promoting quality of harvest.

### b) Bulk marketing

Based on findings which indicated that sales of individual farmers weakened their bargaining position, this study recommends bulk marketing. In pursuit of this, farmers will need to be supported to form bulking centres and associations or cooperatives where cassava, maize and millet can be collected and jointly marketed. Key players in the agricultural sector will need to set up systems to monitor, process and disseminate market information to help farmers position themselves for better prices as opposed to selling individually at lower prices.

### c) Value-addition

As this study established, the notion of value-addition is insufficiently appreciated among small-scale farmers. There is therefore a case to be made for government and other agencies that work with farmers to invest in promoting value-addition in agriculture. The training of farmers is vital to appreciate value-addition while access to necessary facilities will provide constructive input to farmers' participation in the value-addition progression. Farmers' groups at district level need to be guided to partner with established value-addition enterprises so as to widen the network of opportunities for value-addition among individual farmers.

## 4.2.3 Recommendations relating to a supportive policy environment

### a) Scope of policies and interventions

As findings have indicated, government policy has not tackled specific challenges of small-scale farmers while in other cases, implementation has not been effective. There is need to develop and implement holistic agricultural policies where issues of land access, quality of farm inputs, post-harvest, marketing and value-addition of agricultural products should be addressed. Advocating an all-embracing approach in the implementation of government programs including NAADS, NUSAF and Operation Wealth Creation to benefit their target population irrespective of political leanings, income levels and membership to groups is necessary to ensure that government interventions and policies serve the public interest. The inclusion of cassava, maize and millet value chains in the on-going projects of NUSAF II and Operation Wealth Creation will play a particularly significant role in widening the economic prospects of farmers in Northern Uganda.



## **b) Defined links with government**

It was found that the NGO Act 2016 and Public Order Management Act have not stifled the operations of NGOs in Abim and Lira. Nonetheless, the study recommends that NGOs work closely with the Community Development Offices in the sub-counties they operate in so as to establish synergies with the interventions of the respective local governments. More broadly, in the interest of building and sustaining productive relationships between NGOs and local governments, the study recommends that NGOs take a proactive role in advancing government's appreciation of their role at the grassroots. Consistent awareness creation efforts on the part of NGOs will open up more possibilities of projecting NGOs as genuine partners in community and national development.

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