

**ASSESSMENT OF THE STATUS OF THE PREVAILING
CONDITIONS IN ACDI/VOCA'S MULTI-YEAR ASSISTANCE
PROGRAM (MYAP) TARGET AREAS IN NORTHERN AND
EASTERN UGANDA**

SUBMITTED TO



BY



**MAKERERE UNIVERSITY SCHOOL
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AND



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LIST OF ACRONYMS

ACDI/VOCA	Agricultural Cooperative Development International/Volunteers Overseas Cooperative assistance
ADP	Agricultural development Project
AIDS	Acquired Immune Deficiency Syndrome
AMA	Agribusiness management associates
ANOVA	Analysis of variance
CDC	Centre for Disease Control
DFID	Department for International Development
Faab	Farming as a Business
FGDs	Focus Group Discussions
HDDS	Household Dietary Diversity Score
HIV	Human Immune Virus
IDEA	Investment in Developing Export Agriculture
IDP	Internally displaced people
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
IITA	International Institute for Tropical Agriculture
JEEP	Joint Energy and Environmental Project.
KIIs	Key Informant Interviews
KSIIIP	Kasese Smallholder Income and Investment Program
LRA	Lord's resistance Army
LWF	Lutheran World Federation
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MOH	Ministry of Health
MOLG	Ministry of Local Government
MUSPH	Makerere University School of Public Health
MUWRP	Makerere University Walter Reed Project
MYAP	Multi Year Assistance Program
NEMA	National Environment Management Authority
NGO	Non Governmental Organization
NRI	Natural Resource Institute
NRM	Natural resource management
NUARP	Northern Uganda Agricultural Recovery Program
PLWHA	People Living with HIV/AIDS
PMA	Plan for Modernization of Agriculture
RHSP	Rakai health Sciences Program
TASO	The Aids Support Organization
UBOS	Uganda Bureau of Statistics
UNHCR	United Nations High Commission for Refugees
USAID	United States Agency for International Development
VEDCO	Volunteer Efforts for Development Concern
WFP	World Food Program
WHO	World Health Organization

EXECUTIVE SUMMARY

Introduction, Background and methods

Since 1989 ACDI/VOCA has been managing a USAID funded Title II (Food for Peace) programs in Uganda. In an attempt to address most pressing food security needs in the country it came up with a Multi-Year Assistance Program (MYAP) focusing on agricultural practices, marketing, food security, hygiene and sanitation, natural resource management and roads improvement. The target areas of the program were 17 districts of Acholi, Lango and Teso sub-regions. For purposes of monitoring and evaluation of the program there was a need to carry out a baseline assessment which would provide benchmark values for indicators of the program.

The baseline assessment was designed as a descriptive cross-sectional study. Both quantitative and qualitative methods of data collection were used. The study population included households, communities in form of villages, district and roads. The main outcomes of interest included household status in terms of food security, agricultural practices, marketing of produce, hygiene and sanitation, and natural resource management. Status of roads and land degradation were some of other outcomes of interest. The total number of successful household interviews was 3401 out of targeted 3706. Twenty one Focus Group Discussions (FGDs) and 51 Key Informant Interviews (KIIs) were carried out. A two-stage cluster sampling technique was used to select clusters (villages) and households. Data analysis mainly involved frequency distribution of key variables and cross-tabulations by region and districts. Teso sub-region was split into A and B sub-regions because it has nearly a half of the districts in the whole of the target area. Teso A consists of Katakwi, Kaberamaido, Soroti and Amuria. Teso B consists of Kumi, Pallisa, Bukedea and Budaka. Districts in sub-region of Acholi are Amuru, Gulu, Kitgum and Pader districts while those of Lango are Amolatar, Apac, Oyam, Lira and Dokolo districts.

Results

Background characteristics

The background characteristics investigated were sex, marital status, age group, occupation, education level, main source of income, amount of income and type of house. Majority of heads of households (70%) were male. A half of heads of households were married and most of them (91%) were over 24 years of age. Most of heads of household (83%) had attained primary education. The main source of income to the households was subsistence farming (84%) and nearly a half (49%) earned more than Shs 100,000. A small proportion (13%) of households lived in permanent houses and the mean household size was nearly 8. Acholi and Teso A had the highest proportions of households without formal education and non-permanent households.

Agricultural practices, production, storage and marketing

The land tenure system was found to be pre-dominantly customary (86%) whereby every member of the clan has a right of access to land. The only limitation observed was the

general lack of access to extensive land that might be required for large extensive commercial farming.

The major food crops grown were sorghum, maize, finger millet and g.nuts and were normally grown for both food and income generation. The median crop yield (Kg per acre) was 280kg, 360kg, 280kg and 420kg for sorghum, maize, finger millet and g.nuts respectively. The crop production levels were significantly lower than the expected crop yields. This was attributed to poor agronomic practices, use of poor crop varieties, inadequate extension outreach and use of fertilizers and pesticides. It was also found out that there were several farmer groups in the categories of production, savings, social welfare and environmental management. These groups were noted to be vessels through which program intervention can easily reach out to farmers. They promote collective production efforts, produce bulking and marketing.

The crop postharvest handling was found to be generally poor. Over 50% of the households experienced crop spoilage with more spoilage in Teso A and Teso B. Traditional methods of crop preservation were used by most farmers. About 70% of households practiced crop preservation techniques though majority did not own specific storage facilities. Drying of food was reported by 95% respondents, while others used red pepper or ash, neem tree leaves and tobacco. Chemical preservatives like acetylic dust are used on a small scale. Only 5% to 20% of households had separate storage facilities for the different crops. Lango region had the biggest proportion of storage facilities while Acholi had the least (only 20%).

Livestock production was a prominent farm enterprise and the major livestock kept included; cattle, goats, sheep and poultry. On average, each household kept 3 cattle, 3 goats, 1 sheep and 7 chickens. Fewer respondents (15.4%) in the Acholi kept livestock, only 10% kept chicken, while 15% kept cattle.

Produce marketing was found to have constraints. Marketing of produce was dominated by men. About 65% of markets in the Lango and Acholi two sub-regions involved men especially the control of market revenue. Produce marketing was little and volatile in terms of prices and trading volumes while traders lacked crop finance. The absence of large well-developed marketing systems showed inadequacy of viable market outlets, high costs of transaction as and minimal value addition. Poor access to markets limited information flow while inadequate transportation constrained efficient market exchanges. The major constraints faced by farmers in marketing their produce were having an undeveloped value chain leading to inadequate market information, limited or no storage facilities, poor road network which reduces accessibility to markets which have translated into high marketing costs. Marketing groups were reported in all sub-regions except Acholi. Major means of transportation of crops were by foot and bicycle (60%)

Food Insecurity, Household dietary score and vulnerable populations

There are variations in the food insecurity status in Uganda, with high concentration in the north of 33% in Acholi and 12% in Lango, and as low as 3% mainly in Central and Southern Uganda (UNWFP, 2006). The highest household food insecurity scores were reported in Lango (34%) and Teso A (32%) and the lowest in Acholi (12%).

Overall, food insecurity was a problem, attributed to inadequate food and income to buy inputs. These manifested in: people having less than three meals a day, food crops being

turned into cash crops, the absence of granaries at household level, people in rural areas buying food. Food was only available and accessible at certain periods especially soon after harvest. In Acholi, food insecurity had been experienced over twenty years while in Teso, food was reported to be available but not very affordable to most families.

The Household dietary diversity is the number of different food groups consumed in a given reference period. Overall, the households consumed an average of five and more foods from different food groups implying that their diets offer some diversity in both macro and micronutrients. The highest HDDS score of 7.8 and lowest score of 4.8 were reported in Lira and Pader districts respectively, probably due to the gardening carried out in Lira and overall relying on aid in Pader. Poor diet were reported to be caused by; poverty, inadequate nutritional knowledge, insecurity, lack of storage facility and variety of food crops, large families, prolonged droughts, congestion in the camps, decision making by men, and low yields.

Foods groups commonly consumed by over 60% of the households in the region included fruits, roots and tubers, vegetables, pulses and nuts, as well as cereals. Many of the vegetables and fruits consumed were wild. Most of the households consumed roots and tubers such as cassava as well as pulses such as ground nuts, while the common source of cereals as well as pulses was likely to have been distributed by WFP food.

Most of the households (86.9% - 2,795) did not have enough food to meet their family needs in the last 12 months mainly in the period of March to September. Most households in Acholi and Lango experienced insufficient food to meet their family needs in the month of June and in Teso A and Teso B in the month of May. Unlike Soroti, over 80% of households in the other 16 districts did not have enough food to meet the family needs in the last 12 months.

Overall, food insecurity patterns were attributed to the erratic rainfall patterns, poor cultivation practices and food storage practices. Droughts, hailstorm, floods, war and disease outbreaks of plants, sickness and lack of markets also contributed to low food production and hence subsequent inability to meet household food needs.

In the last 12 months, the average months that the households were able to meet their food needs is 8.0. The households were thus unable to meet their food needs for four months in a year possibly due to poor household farming and storage practices. Pader District had the highest average number of months in which households were able to meet their food needs of 8.9 and the lowest of 6.0 was in Kumi District. The food distribution arrangements in Pader as with districts in Northern Region could have played a big role.

The main factors that enhanced food insecurity were reported to be; low income, drought, pests and diseases, limited farm inputs, limited farm implements, floods/heavy rains and poor farming practices. The LRA insurgency, growing of little food, big family sizes and HIV/AIDS were also responsible for insecurity.

Over one third households compromised their future food needs, did something that they disliked, compromised other needs, received food from relatives and borrowed from neighbours in order to meet their family food needs. Relying on handouts from NGOs and agencies like World Food Programme, government, buying from markets, providing labour for food or income that they use to buy food, selling domestic animals and begging from relatives were practiced. Preserving food after harvest and formation of support groups were

also applied. A few alternative food sources were available and included; swamps and lakes for fish, and gathering of wild vegetables.

Four key population groups considered vulnerable to food insecurity were; the children, the sick, elderly and pregnant women. Overall, children were considered the most vulnerable, considered by 91.7% of the respondents. Among children, boy orphans were more vulnerable than the girl orphans as most care takers were reported to prefer to look after girls than boys.

The signs that show a household slipping into food insecurity included; begging for money, poor health conditions of household members, reduction in amount of food eaten per meal and reduction number of meals eaten per day and buying food instead obtaining from the garden. Further, households with lazy people, households lacking food storage facilities, those with misunderstandings and violence, neglected by the household heads, children missing school and girls being forced into early marriages were considered as insecure.

Reducing vulnerability was handled through; planting more than one crop as well as using better farming practices like; provision of resistant food crops like cassava, post-harvest technology, food processing equipments and planting high yielding crops. Controlling sale of food, education on farming, the use of fertilizers and improved food storage; sensitizing people to grow food crops as well as formation of marketing groups were also emphasised. Besides, subsidizing prices of agro inputs and instituting bylaws on food security were deemed necessary.

Health related measures were also suggested such as; sensitizing people on safe water usage, enforcing by-laws on latrines, implementing hygiene standards, more facilitation of health workers and considering social aspects like; resettling and compensation of displaced people, control of alcoholism and ensuring peace were also emphasised.

There were perceptions that people feel valued when given food, which gives them assurance of food on return as they begin producing their own and engage in other enterprises. There was also a view that food aid had caused dependency in some communities, which necessitated supporting them with farm inputs and improving markets for their produce to improve their incomes. Food rations were viewed to be appropriate only during severe food shortage and not for more than five years, except for vulnerable groups like PLWHA.

Water Hygiene and Sanitation

The commonest water sources in the regions were boreholes (58%) followed by protected springs (24%), mostly used in Teso B and least in Lango with 41% and 30% of households respectively. Only 2% of households had access to piped water. The mean walking distance to sources of water was in between 1 to 2 kilometres.

On treatment of water, only 11% of households treated their water, of which 37% boiled water for drinking and 46% chlorinated it. Among those who boiled water, Lango region had the highest proportion (58%) while the highest proportion (58%) of those who chlorinated was in Teso B.

Sanitation was fair in some aspects but poor in others. Majority (75%) of households had temporary pit latrines, though a fair proportion (22%) still used bushes. Overall, half (51%)

of households had a rubbish pit for disposal of garbage. Majority (78%) of homes had clean compounds especially in Acholi. Only 35% of households had separate structures for animals while 32% others shared board with animals. Over a third (41%) of households penned animals away from food and water sources. Fifty seven percent had clean utensils like; plates, and glasses while 38% stored foods away from animals.

Poor hygiene was associated with poor education, poverty, laziness, negative cultural beliefs practices and poor attitude towards hygiene practices such as pregnant women not being allowed to defecate in pit latrines and hostile environmental factors like water logging. Alcoholism, poor infrastructure in return areas and limited privacy when bathing also led to poor sanitation. Measures to improve sanitation were; establishing bi-law on latrine ownership and garbage disposal, involvement clan leaders to promote good sanitation, sensitizing communities on hygiene practices, establishing home cleanliness competition and promoting use of water guard. Other views were; promoting locally made hand washing facilities, smearing houses with cow dung to avoid jiggers and building bore holes to avoid drinking contaminated water.

Natural resource management

Land tenure does not affect conservation efforts significantly but 22% of people's effort to conserve land in terms of using practices like; planting trees, fallowing and rotational cropping is affected. Women's access to and control of land were also limited as they were not entitled to sharing their parents' land"

There was notable decline in crop production with the highest and least decline of 85.2% and 60.2% recorded in Teso B and Acholi. The above proxy indicators reflect presence of soil exhaustion in the area. The key leading causes of soil degradation were, droughts and floods, each reported by above 40% of households, poor methods of farming including bush burning, overpopulation around camps, limited knowledge and skills on environmental conservation among the community members and overgrazing.

The common soil conservation technologies applied in included; crop rotation and intercropping practiced by 70% of farmers strip cropping practiced by 44% to 60% of farmers, intercropping, agro forestry, crop rotation row planting and fallowing. Practices like contour ploughing, mulching, composting were also applied though used by less than 10% of the respondents.

The forms of energy accessible and used included; wood fuel (90%), charcoal (15%) and biogas, gas and hydro electric power to a lesser extent. The use of such energy sources as biogas, gas and electricity is significantly low due to probably the high cost associated and accessibility difficulties. Majority of households in Acholi and Teso (65.5%) never realised expenses on firewood was high in Acholi (65.5%) and Teso A (65.7%). Fuel wood were the cheapest form of energy is rural areas and often obtained at no direct financial cost, translated eventually to high rate of environmental deterioration. The average distance travelled to access was below 500 meters, which lies within the minimum limits of 500 metres to one kilometre. About a third (33.3%) of the households obtained their energy beyond 1km while almost the same proportion (32.7%) accessed it in 500m distance. The average firewood consumption was estimated at 5.45kg per month. Basing on the average of 2.56Kg used per

day as shown by an earlier studies, about 2.89kgs (53%) of fuel wood is lost per day per household in the regions.

Use of energy saving technologies was low with the highest proportion of 33% recorded in Teso B. The awareness about energy saving technologies in the regions was above 50% except Teso A with 40%. Single opening mud stoves and or Lorena stoves were used by only 17.6% of households while metallic stoves were used by only 4.5% of households. On average, 22% of wood fuel users applied energy saving technologies. The main limitations for non use of energy saving technologies included; limited or lack of awareness, lack of training about energy saving technology (27.8%) as well as limited finance (29.5%),

The major environmental challenges in the regions included; fluctuating climatic patterns, bush burning, deforestation and decline in soil fertility respectively. The major strategies applied to address the challenges were; crop rotation especially in Teso B applies (94.1%), alternative and wise use of energy, tree planting were the major mitigation measures ,and awareness raising mainly through radio talk shows but all to a lesser extent. There were negligible formal (registered) environmental / conservation groups where people would exercise collective effort towards conserving the environment and its natural resources. Community members worked jointly through informal ways on aspects like; afforestation and joint planning.

Over all about 39% of people were constrained by prolonged dry season and sometimes prolonged rainfall in Teso A, inadequate financial resources and logistical support as well as limited knowledge on environmental conservation. Limited land for tree planting, high prices for seeds and seedlings, inaccessibility of some seeds and weakness of the forestry department were also apparent.

The common tree species were *Eucalyptus spp*, *a Pinus spp* and *molinga*, but still grown at low scale. Teso A had the highest number (81%) of the above tree species while the least proportion (64%) was in Teso B. Tree planting practices for pasture and medicinal reasons comprised the least of the factors driving tree growing initiatives with less than about 7% of that grew the common species. Trees were mainly used for provision of fodder, fuel wood, and soil fertility improvement while Shea nuts were used for the extraction of cooking oil which is locally consumed. The main naturally occurring tree species included; Tamarind had a wide coverage in Teso A, with approximately 53% respondents, followed by Shea nut trees (20.6%), while others were; Palmyala (0.6%), Wild plum (2.3%) and Black plum (4.0%). The major uses of the above natural tree species included; medicinal values, economic, and environmental. The most used tree species were Tamarind species with a proportion of 49.6%, and Shea nut species (47%). Other uses of naturally occurring trees included; wood fuel, charcoal, materials for handcrafts and construction, timber and food products such as cooking oil from the shea nut

The major types of fruit trees grown in the region included; avocados, mangoes, avocados, guavas, jackfruits and paw paws. Different fruit trees are planted at different intensities depending on the sub region. However some fruit trees are uniformly in all MYAP areas. Mangoes were the most common, planted by above 60%.

Most (54%) farmers faced difficulties while planting fruit trees with a number of constraints. Some of the common challenges were; limited seed supplies, and limited propagation skills. The natural constraints to tree planting included; poor soils, harsh climatic conditions, pests

and diseases, while the human facilitated constraints included; soil degradation, overgrazing and tree crop destruction, limited propagation skills, poor tree seed quality plantation and land shortage as well as limited market in remote areas.

Roads

Overall, there was relatively good road network in sub counties, counties and districts. There was low coverage of good roads in districts that had been affected more by insecurity. Within the same districts, differences in distribution of roads were noted among counties. Access to communities was largely by land, water transport to some communities while air transport linked Entebbe and two districts of Gulu and Pader. The coverage of year round community roads was reported by 83% of respondents, with Acholi and Teso A communities reporting the highest and least of 92% and 65% respectively. Overall, 60% of households were within less than a kilometre of an all year round passable. Staying in IDP camps and support from CSOs may account for this. Physical assessment of 46 roads revealed that 31% of roads were poor, 43% were fairly good while 23% were good.

Construction and maintenance of roads was shared among the central and local governments, NGOs, private firms and communities but the local government contributed 55.5% and 53.8% respectively. Most roads were constructed five to twenty years ago though relatively new roads had been opened up in Acholi and Lango regions. The participation of community members in maintaining roads was low (22.7%) though their willingness was slightly high.

Overall, 75% of the people were willing to participate in roads maintenance. The willingness level was high in Teso A (83%) and least in Acholi (62%). The major reasons for not participating in road maintenance were; the perception that road maintenance was not their role, sickness and busy schedules as reported by 31%, 16% and 12% of respondents respectively.

Conclusions

The socio-economic and demographic status of people in MYAP target areas is poor. Their conditions are characterised, among others, by low incomes, subsistence farming and poor housing. The commonest land ownership system is customary system.

Farmers have poor agricultural practices and this could be contributing to poor crop yield. However, there are farmer groups in the communities which can be used as a vessel for improvement of the agricultural practices. There was a general lack of improved, strong storage facilities and as a result farmers keep their produce in their own residential houses. This practice has significant compromise on the crop quality. Another constraint in agricultural production is that produce marketing is still little and has several limitations which include low prices lack of well-developed marketing systems and poor access to markets. Livestock production was also major farming component of all areas in the region but the average number of animals was still small.

Food insecurity is a problem, attributed to inadequate food and income to buy inputs. It is worsened by erratic rainfall patterns, poor cultivation practices and food storage practices. The average number of months of food provisioning and household diversity score are less than those expected of a population endowed with good soils. This is partly attributed to poor

household farming and storage practices and decision making by men. The main factors that enhanced food insecurity were reported to be; low income, drought, pests and diseases, limited farm inputs, limited farm implements, floods/heavy rains and poor farming practices.

There is still room for intervention in provision of safe water, promotion of hygiene practices and sanitation improvement. People still walk long distances to access safe water. Many people don't have pit latrines or rubbish pits. Many still share houses with animals. Poor hygiene was associated with poor education, poverty, laziness, negative cultural beliefs practices, alcohol consumption and poor attitude towards hygiene practices such as pregnant women not being allowed to defecate in pit latrines and hostile environmental factors like water logging.

There is a lot of work to do to improve natural resource management. There is evidence to show that there is soil degradation in MYAP areas which is caused by droughts and floods among others. A low proportion of households apply soil conservation technologies. Fuel wood is the cheapest form of energy and this has greatly aided the environment degradation. Use of energy saving technologies was low. Inadequate financial resources and logistical support as well as limited knowledge on environmental conservation are some of the constraints facing environmental management efforts. The major environmental challenges in the regions include; fluctuating climatic patterns, bush burning, deforestation and decline in soil fertility respectively. Common tree species are *Eucalyptus spp*, *a Pinus spp* and *molinga*, but they are still grown at low scale. Different fruit trees are planted at different intensities depending on the sub region. Farmers face difficulties of limited seed supplies and limited propagation skills,

There is a relatively fairly well developed network of roads especially in areas that have internally displaced persons. Construction and maintenance of the roads are shared between central and local governments. People are generally willing to take part in road maintenance programs.

Recommendations

There is a need for continued effort to improve Agricultural production as a means of poverty alleviation since most people are subsistence farmers. In areas where customary land system applies, an intervention through farmer groups can initiate discussion of an agreeable way of land use. Northern and Eastern Uganda, where traditionally people use animal traction to open up land for crop production, more animals for traction should be provided. Agencies and organizations involved in procurement and distribution of animals should involve the target beneficiaries through a wide consultation with their leaders. Care must be taken to show farmers the cost/benefit of the technology through theoretical and practical demonstrations. The demonstration farms should be nearer to the beneficiaries at parish level. Farmer groups formed for production and savings should be supported to graduate into collective marketing groups. Because of the requirements for uniform quality and standards, meeting the market demands and contract negotiations requires collective storage. The program should ensure that along the selected commodity value chain, information on marketing is accessible. The information should include location of the commodity, quality and standards, volumes available, location of the buyers, prices and frequency.

On nutrition and food security, an intervention should lay emphasis on extension outreach and demonstrate better farming practices. The program should ensure that postharvest

technologies are demonstrated to farmers. Community participatory holistic and integrated interventions that include education, health and social components should be instituted.

To improve hygiene and proper sanitation practices NGOs operating in the areas should be encouraged to spread the idea of washing hands in all matters related to food handling and after use of toilets. Public health act enforcing availability of pit latrines to families should be rigorously enforced. LC officials should be counselled and persuaded to appreciate the need for pit latrines because we need to use them to convince community members to embrace the idea of having pit latrines. Bye-laws should be instituted to improve latrine ownership and garbage disposal, involvement of clan leaders in promotion of good sanitation, sensitizing communities on hygiene practices, establishing home cleanliness competition and promoting use of water guard. Other views were; promoting locally made hand washing facilities, smearing houses with cow dung to avoid jiggers and building bore holes to avoid drinking contaminated water.

To improve natural resource management emphasis should be put on environmental education. Others issues to consider include maximally utilising available personnel at districts, designing environment program activities at district level, provision of tree seedlings, promoting commercial tree farming, use of energy saving technologies and encouraging women to take part in environmental management programs

On roads, program intervention should seek consultation with local leaders. More focus should be put in Teso region and social groups should be sensitized about importance of road maintenance to their development

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

For the last eighteen years (since 1989), ACDI/VOCA has been managing USAID-funded PL 480 Title II programs in Uganda. In an attempt to address the most pressing food security needs of the country, ACDI/VOCA has come up with a new program focusing on the root causes of food insecurity with new partnerships and expanded geographical scope of the program area. The partners (sub-grantees) who include Africare, the Lutheran World Federation (LWF), The Aids Support Organization (TASO) and local Non Governmental Organizations (NGOs) will be instrumental in implementing program interventions in vulnerable communities of Northern and Eastern Uganda for five-years. The program will target seventeen districts in the sub-regions of Lango, Acholi, and Teso.

The program will have two major components: the smallholder agriculture and the provision of food rations. These components will be addressed through two strategic objectives, namely:

- i) To reduce food insecurity through better production and utilization of food by supporting 170,600 farmers within a period of five years.
- ii) To provide food rations to 42,000 People Living with HIV/AIDS (PLWHA) including their families and 11,100 children who are highly food insecure.

To achieve the first objective, farmers will be trained in improved nutrition and hygiene, farming methods, post-harvest handling, group savings mobilization and management, benefits of hybrid seeds and inputs, Farming as a Business (FaaB) training and collective marketing. It will also focus on mitigating the Farm-to-market constraints through the rehabilitation of feeder roads in target areas.

In order to gauge future program impact, it was found necessary to undertake a baseline survey so as to establish indicators that will in future be used to measure the impact of agriculture, Natural Resource Management (NRM), health and nutrition and roads interventions in the MYAP areas.

1.2 Purpose of the Baseline Study

The aim of the study was to assess the status of the prevailing conditions in the MYAP (Multi-Year Assistance Program) target areas, capture and establish some current qualitative and quantitative data for specific indicators against which data collected in the

future will be compared so as to measure the MYAP progress and impact. The Survey assessed the status of indicators that will be used to measure the impact of interventions in agriculture, Natural Resource Management, food security, hygiene, water and sanitation and roads in the MYAP areas. The study had four interrelated purposes: inform program management and stakeholders on the current status of target beneficiaries in terms of food security, assess issues behind nutritional status in the program regions, validate program strategies and establish/validate vulnerability factors and indicators.

The overall purpose and objectives of the survey have been addressed in direct response and guidance by the Terms of Reference (TOR) which have been strictly followed by the consultants when designing and implementing the study procedures.

CHAPTER TWO

2.0 METHODS AND MATERIALS

2.1 Study design

A descriptive cross-sectional study design was undertaken. The main outcomes were current status of target beneficiaries in terms of food security, nutritional status, validation of program strategies, and establishment / validation of vulnerability factors and indicators. Both qualitative and quantitative methods of data collection were used.

2.2 Study population

The study population included all households, mothers and heads of household, roads, environment, land, natural resources, transport means and markets in all the 17 districts in Acholi, Lango and Teso Sub-regions. For quantitative data, the primary respondent was a household head or spouse. For qualitative data, people in key positions who were thought to be knowledgeable with regard to specific study issues were targeted for Key Informant Interviews (KII) while adult men and women were also selected for Focus Group Discussions (FGDs).

2.3 Inclusion and exclusion criteria

The inclusion criteria for households for the study were

- i) Head of household/spouse/caretaker was a de-jure resident of the district (>1 year)
- ii) Head of household/spouse or a caretaker was aged 18 years and above

Exclusion criteria for the household were

- i) Refusal to participate
- ii) The would be-respondent was sick or incapable of responding to the questions

2.4 Targeted and realized Sample size

2.4.1 Targeted sample size

According to the objectives of the survey there was a need to get a sample size that ensured comparability between the districts because of the following reasons:

- a. Evidence exists of cultural differences between districts

- b. District authorities tend to prefer statistics of their own districts for future reference

Given these reasons, we had to treat each district as an entity rather than all program areas as one entity. Since the outcomes are changes in knowledge, attitudes, behaviours, practices and production levels, the commonest measure was a proportion outcome. We tested a significance of a difference in the outcome proportion. The Levy and Lemeshow (1991) formula was thus used to calculate sample size as it was the most suitable for the exercise of this nature. According to the formula,

$$n = \frac{N.z^2.pq}{(N-1).d^2 + Z^2.pq} \quad (1)$$

$$\simeq \frac{z^2.pq}{d^2} \quad (2)$$

as $N \Rightarrow \infty$

where :

- n = estimated sample size
 z = value on standardized normal distribution curve corresponding to a level of significance. The level is usually 5% and the corresponding z value is 1.96
 pq = Expected variance where p is expected proportion of respondents with key outcome attribute of interest, and $1-p$ is the expected proportion of respondents without key outcome attribute of interest.
 N = Population size. When N is large say over 100,000, the effect tends to be very minimal. All districts selected have N larger than 100,000.
 d = Selected accepted error (precision). This was taken as 0.082 if we were to be within limit of 140- respondents.

Very important outcomes included in sample size calculation were:

- i) Food insecurity (We took an estimation of 50% of households having experienced food insecurity in previous 12 months). This was a core component because all other project components rotate around agriculture. Based on small holder agriculture objective aiming at reducing food insecurity in the region through better production and utilization of food by farmers, food insecurity is one of the primary key concerns of the ACDI/VOCA MYAP project. Since there was lack of reliable statistics on food insecurity for the Acholi, Lango and Teso regions 50% was the optimal proportion. This proportion gave the maximum sample size number possible.

- ii) Households with acceptable hygiene practices. There were no latest estimates for the sub regions and so an estimate of 50% had to apply.
- iii) Households with acceptable nutritional practices. Again there were no latest estimates for the sub regions and therefore an estimate of 50% had to apply.

The total population of (N) each district is above 100,000. When these data together with an estimated variance (pq) of 0.25 (0.5 x0.5) and an absolute error (d) of 0.082 are substituted in (1) above they give a sample size of 142.7 \approx 143.

We therefore planned to get a minimum of 143 households per district from clusters which in this case are Enumeration Areas (EA). This meant that the sample size had to cater for the clustering effect.

$$S_c = n \times D$$

Where the $D = 1 + (b - 1)roh$

S_c = Sample size after adjusting for the cluster effect.

n = Sample size assuming no clustering effect. In this case it is 143.

roh = rate of homogeneity within a cluster

D = Design effect

b = Cluster size

If we chose the cluster size b of 10 and take a rate of homogeneity roh of 0.05 (they commonly range from 0.01-0.1) then the Design effect D becomes nearly 1.5. This implied that the final sample size $S_c=218$ per district from 22 enumeration areas (we would get 10 per enumeration area).

The number 10 was chosen because in most surveys that involve cluster selection the cluster sizes tend to range from 5 to 20 depending on design effect and the precision desired. Beyond 20, the design effect tends to be large. Ten is normally a manageable number and it lies nearly midway the common lowest and the highest cluster sizes, hence the statistical rational of our choice.

2.4.2 Realised sample size

Table 2.1 shows the targeted and realised sample size by region and district. There were fewer respondents in Acholi sub-Region. This was partly caused by poor roads, floods and insecurity due to cattle rusting. Long distances between villages were a big problem in Acholi also contributed too. Interviewers had to travel long distances from one village to another in order to meet the selected respondents. Acholi sub-Region has an area of 27,946 sq km which is larger than Rwanda (26,340 sq) and nearly the size of Belgium (30,513 Sqkm). Lango sub-region had also a smaller average number of respondents per

district due to large area also, political instability and unfavourable weather at the time of the survey. In some instances canoes were used to access some villages. The highest response rate per district was realised in Kaberamaido, while the lowest response rate was in Oyam district where only 67% of the targeted respondents were successfully interviewed. Overall we achieved a response rate of 92% which was remarkable and this reflects very well on generalizability of the findings of this survey.

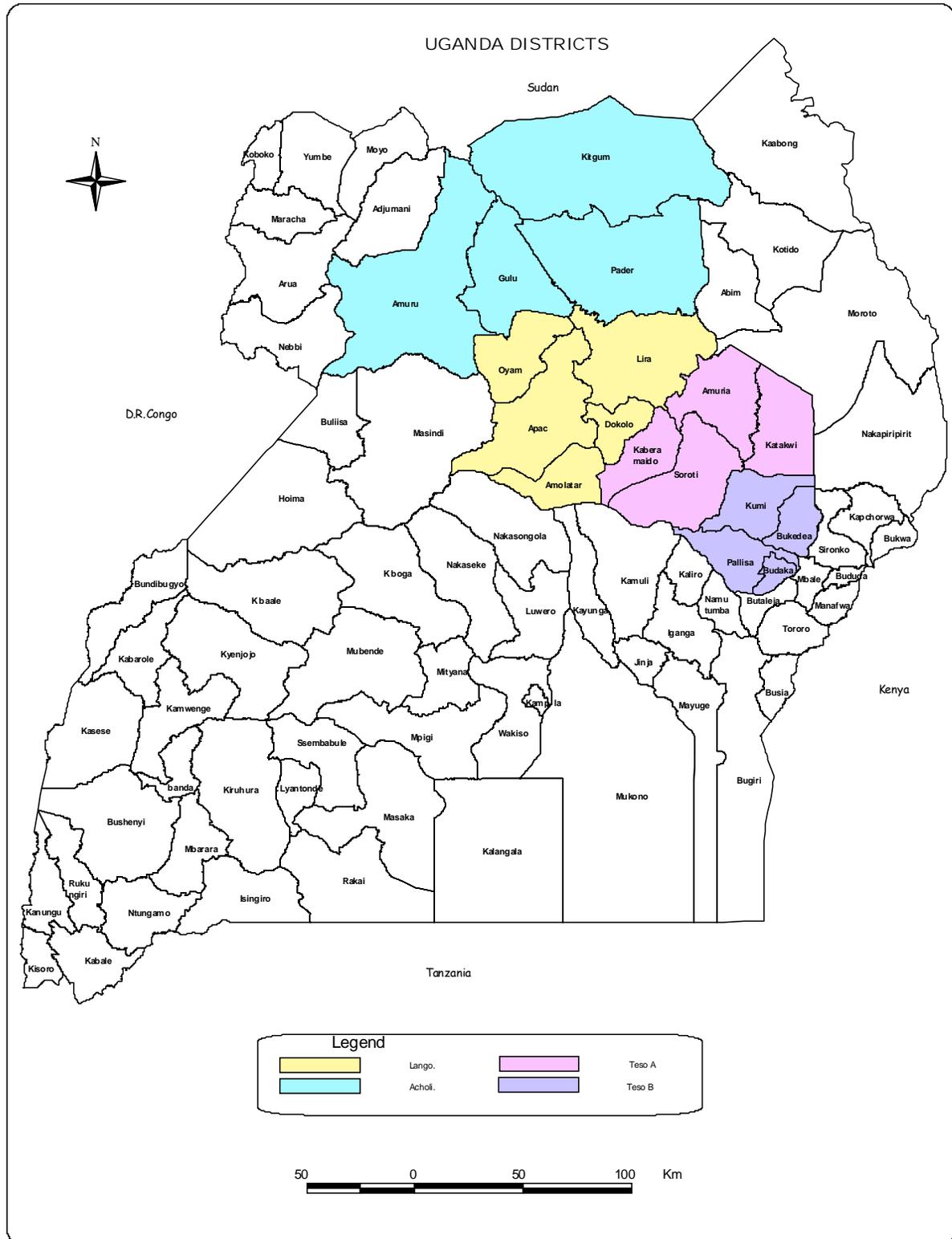
Table 2. 1: Targeted and realised sample size

Region/District	Targeted sample size	Realised	Response rate
Acholi	872	771	88.4
1. Amuru	218	206	94.5
2. Gulu	218	180	82.6
3. Pader	218	175	80.3
4. Kitgum	218	210	96.3
Lango	1090	904	82.9
5. Lira	218	193	88.5
6. Apac	218	196	89.9
7. Oyam	218	147	67.4
8. Amolatar	218	165	75.7
9. Dokolo	218	203	93.1
Teso A	872	864	99.1
10. Kaberamaido	218	239	109.6
11. Soroti	218	211	96.8
12. Katakwi	218	195	89.4
13. Amuria	218	219	100.5
Teso B	872	862	98.9
14. Budaka	218	200	91.7
15. Pallisa	218	226	103.7
16. Bukedea	218	218	100.0
17. Kumi	218	218	100.0
Total	3706	3401	91.8

2.5 Location of the districts

Figure 2.1 shows the map of Uganda indicating relative positions of 17 districts in which the baseline survey was carried out. The survey areas are highlighted.

Figure 2. 1: Map of Uganda Showing the Districts of Study Area in Eastern and Northern Uganda



2.6 *Sampling methodology*

We used a two stage cluster sampling technique whereby Enumeration Areas (EAs) were our Primary Sampling Units (PSUs) and Households our Secondary Sampling Units (SSUs). Enumeration Areas were obtained from Uganda Bureau of Statistics (UBOS). The PSUs were selected using a Probability Proportional to Size (PPS). According to PPS, a list of EAs with their sizes was drawn and another column with the cumulative sizes added. Next we used systematic sampling to select the EAs. Since we wanted 22 EAs from each district we divided the cumulative total of households by 22 to get the sampling interval k . From the first interval we selected a random start g using simple random sampling. Here a table of random numbers was used to get the random start. From the random start we got k th numbers thereafter. The EAs in which the selected numbers fell were the selected EAs.

While in the EAs, the research assistants first located a centre of the village such as a church area or market and shops and then spun a pen to get a random direction. To get which household to start with, a coin was tossed and when it showed the head it meant it was the first household to start with. In the direction of the pen, the research assistants visited every other household. Thus if for example, the second household in the selected direction was the first to visit, the next one would be the fourth household. In the situation where two or more eligible respondents were in one household, one of them was randomly selected. The selection of one respondent in the household was carried out by folding pieces of paper with index numbers for each eligible person and then selecting one after tossing them.

2.7 *Methods of data collection*

2.7.1 *Document review*

A number of documents were reviewed to get literature and other supplementary information for the baseline study. The source of the documents included ministries of finance, agriculture, environment, and natural resources. Other sources were Plan for Modernization of Agriculture (PMA) offices and the National Environment Management Authority (NEMA).

2.7.2 *Household survey*

Quantitative data were obtained by administering pre-tested questionnaires to individual respondents. These questionnaires were translated into both Ateso and Luo languages which were commonly used in the study area. This was to make it easy to communicate with respondents.

2.7.3 Focus Group Discussions (FGDs) and Key Informant Interviews (KII)

In each region 3 FGDs, one for male, the second for female and the 3rd for both males and females were carried out. Other extra FGDs were carried out in Budaka and Kaberamaido because of cultural differences. Three other more FGDs were carried out in Acholi because it is a very big area with possible influences from food insecurity problems in Sudan and Karamoja. All together there were 18FGDs. The FGDs were supplemented by Key Informant Interviews. The Key informants included among others

- i. Heads of relevant departments such agriculture, works, health and community development, and other knowledgeable people on the study issues for example health inspectors on water and sanitation
- ii. Sub-county heads
- iii. Program managers of NGOs with a focus on any of our study aspects

2.8 Hiring and training of research assistants

Criteria for selection of field staff (research assistants and assistant supervisors/Editors) included fluency in spoken and written local language and English, prior experience in conducting research and evidence of tertiary level education. The preferred tertiary education was a degree but in few cases diploma holders were selected if they had long standing experience in research. Gender balance was also observed in hiring of the field staff. To enable the field staff to conduct the assignment as competently and efficiently as possible, a training workshop covering basic research methodology, study goals/objectives, and tools was held at All Nations Church Hall in Lira. Role plays for interviewer and interviewee formed part of the training strategies.

2.9 Developing/Drafting, Reviewing and pre-testing of study tools

2.9.1 Development of the tools

The research tools were developed in accordance with the specified Terms of Reference (TOR). Each question was meant to either get information on a particular item in the TOR or filter information for another question. Some of the questions were adopted from the FANTA (Food, Agricultural, Nutrition Technical Assistance) website while others were got from previous studies, Ministry of Health Nutrition division, and Uganda Bureau of Statistics. ACIDI/VOCA was consulted during tools development to ensure consensus and agreement in terms of meeting their expectations.

2.9.2 Translation and pre-testing of study tools

During the training workshop, interview role plays were carried out in local languages. The research assistants were translating directly from English to local languages and vice

versa. Besides, an expert translator's copy of the questionnaire was available to verify the translations. The expert translation was carried out by staff from Makerere University Institute of Languages and, a sample copy is attached in the appendix B4.

A pilot survey was carried out to pre-test the tools and ensure that the Research Assistants were able to get used to the tools and to capture the intended information. The pilot survey checked the suitability of all survey procedures, organisational arrangement and logistical support. Another importance of the pilot survey was to determine non-response rate. Following pre-testing of the tools they were then refined to improve on their precision and face validity.

2.10 Data collection and supervision

2.10.1 Quantitative data

There were three teams, one for Lango, the other for Acholi, and the third for Teso A and Teso B sub-regions. Each team was supervised by at least two supervisors who were the investigators. The investigators/Supervisors were assisted by Editors/Assistant Supervisors, whose duty was to crosscheck all filled data in the questionnaires. Debrief meetings were held with data collectors at the end of each day to review questionnaires and record any incidents/events occurring during data collection and take decisions where some gaps were identified.

Plate 2.1: Field work required planning. A meeting was held every morning across the regions



2.10.2 Qualitative data

Focus Group Discussions (FGDs) were carried out with groups of 6 – 12 participants per discussion. Discussions lasted for about two hours at a convenient venue identified by and participants. There was a direct interaction between the researchers and the participants on issues of food security, nutrition, hygiene, agricultural practices in the areas of study. All FGDs were tape recorded in the local languages and simultaneously transcribed into English language thereafter.

Key Informant Interviews (KII) was conducted by the investigators/supervisors. They lasted nearly an hour. Making prior appointments with the Key informants made it possible to secure sufficient time with them.



De-briefing meetings at the end of each day included experiences with both FGD and KIIs.

Plate 2.2: The Focus group discussion in Lango sub-region

2.10.1 Substitution policy

In situations where there was no head or spouse or an adult aged 18 years and above a household was substituted with the nearest one. Where two or more households were equally distant from the household to be substituted the main entrance door of the main house of residence was considered

Villages were also substituted. In north eastern part of Kitgum the data collection team arrived after a cattle rustling raid from the Karamajong and in next two days it was decided that two remaining villages close to the border with Karamoja be substituted. One village in Amuru District was also substituted because of inaccessibility due to roads having been cut off by flooded rivers.

2.11 Data management

All questionnaires were checked and assigned field numbers by the editors. When the questionnaires reached the school of Public Health, they were each assigned another identification number after further checking and then the questionnaires were coded before data entry. data entrants.

All filled questionnaires were entered in EPIDATA V.3.1 software which was fitted with range and consistency checks. The data were then exported to STATA V10 for statistical analysis. A team of highly trained and experienced data entrants based at Makerere University School of Public Health entered the data under the guidance of a qualified data manager.

Qualitative data from FGDs were transcribed from audio tapes into Ms Word processor in preparation for subsequent analysis.

2.12 Data analysis

2.12.1 Quantitative data

The analysis output requested in the TOR can be categorized into three analysis types. These are univariate, bivariate and multivariate analysis. In univariate analysis, charts and frequency distribution tables for single variables were used to show the values of indicators in each sub-region and whole study area. In bivariate analysis cross tabulation between key variables were used to identify relationships between two variables. Significance of relationships in bivariate analysis was tested using Chi-square (χ^2) tests between categorical variables. ANOVA was used to test difference in household size between regions. Logistic regression was used to identify socio-economic and demographic characteristics associated with low Household Dietary Diversity score.

2.12.2 Qualitative data

All the data collected were triangulated during the analysis phase to complement, increase validity and check possible oversights to ensure comprehensiveness of the study.

Data from the FGDs and KIIs were thematically analysed. After transcription, themes were identified along the terms of reference. The most relevant quotes were also highlighted in the course of analysis for inclusion in the report. Finally, the outputs from KIIs, FGDs and quantitative data were integrated to produce coherent findings presented in this report.

2.13 Data quality and survey success assessment

Overall response rate was 91.8% and it was computed for fully filled questionnaires only compared to the targeted number of respondents. There were misclassification of districts especially the new ones but this was ironed out by cross-checking with the name of the sub counties, parishes and villages. In some records where data were found to have invalid or inconsistent data arising from coding and data entry errors the data were re-entered.

2.14 Survey Challenges

There were field and non field survey challenges some of which have a methodological effect. These included logistical problems, natural calamities and influence from politicians.

The major logistical problem faced was the acute shortage of fuel which forced prices through the roof. In Gulu the team had to buy fuel at Ug Shs 3,000 (\approx US 2\$) per litre which was far much more than what was budgeted for. In Kitgum data collection delayed for a few hours because of a fuel shortage. The extent of the rise was not anticipated.

Natural calamities included heavy rains which disrupted data collection in some areas like Pader district where a 4-wheel drive vehicle got stuck in a bushy wilderness up to late at night. The research team had to push it for a long distance and for a long time.

Long distances between villages were a big problem in Acholi. In the districts of Kitgum and Pader the team would travel over 60 kilometres to get one village. People in the area are just returning home from Internally Displaced Camps (IDPs) and the infrastructure is still very poor. This led to lower response rates in some Acholi and Lango districts.

2.15. Lessons learnt on the methodology aspect

There was a need to have a map of all villages prior to data collection exercise. Distances between villages should be estimated and travel plans made before setting off for data collection. This was not carried out in this study because of time constraints.

While many organisations have undertaken gender studies in the target areas, formal feedback to the communities has not been done and this made some respondents reluctant to provide information. This is even more important if the program wants to capture early cooperation of the communities.

CHAPTER THREE

3.0 CHARACTERISTICS OF THE HOUSEHOLDS IN THE STUDY POPULATION

This chapter presents general characteristics of the households that were visited. The characteristics can be categorised into social, demographic and economic status. The social status characteristic examined in this chapter is education level. Demographic characteristics are sex, age, marital status and household size. Economic characteristics are occupation of head of household, main source of income of the household, monthly income and type of house.

3.1 *Background characteristics by region*

Table 3.1 shows the distribution of households by socio-economic and demographic characteristics. On distribution of heads of household, it was clear that Acholi sub-region had the highest proportion of female-headed households (24%) followed by Teso A. Compared to the national level (30%), all sub regions in the study have a lower proportion of female headed households. The difference in sex distribution was statistically significant ($p < 0.001$). This could be due to insurgency caused by LRA and insecurity due to cattle rustling. This is because many males died but also high premarital sex in the region leads to high number of female headed households. Acholi had the lowest proportion of households whose heads were married (61%) and this concurs with findings on sex distribution. The proportion that was married was higher than that of adult men aged 15-54 years in the national sample of UDHS 2006. In unstable populations informal sexual partnerships flourish at times due to coping mechanism for survival.

The difference in age group distribution between region was only marginal ($p = 0.04$). Lango had the highest proportion of heads of households (95%) aged 25 years and above, while Teso B had the lowest proportion in the category (87%). A low proportion of those aged less than 25 years can partly be attributed to ignorance of age of head of household.

Occupation of head of household varied by region ($p < 0.001$). The proportion of household heads engaged in subsistence farming ranged from 81% in Lango to 88% in

Table 3. 1: Socio-Economic and Demographic characteristics of households by region

Characteristics	Acholi	Lango	TesoA	Teso B	Total	Uganda
	N=771	N=904	N=864	N=864	N=3401	(UDHS, 2006)
Sex of the head of household						
Male	75.6	85.1	77.1	83.6	80.5	70.1
Female	24.4	14.9	22.9	16.4	19.5	29.1
Marital status of head of household						
Married	60.6	81.4	77.7	83.4	76.2	50.0(M)
Divorced/Separated/Widowed	19.6	11.6	16.4	12.5	14.9	5.0(M)
Cohabiting	17.4	4.5	2.2	0.7	5.9	6.0(M)
Single	1.9	2.0	3.2	2.8	2.5	39.0(M)
Non response	0.5	0.4	0.5	0.6	0.5	0.0(M)
Age group of head of household						
15-24	6.7	4.1	5.8	4.3	5.2	39.8(M)
25+	89.8	95.0	91.1	86.3	90.7	60.2(M)
Non response	3.5	0.9	3.1	9.0	4.1	
Occupation of household head						
Sub farmer	81.2	80.9	85.5	88.2	84.0	75 (W), 69(M)
Salary	7.5	8.6	7.4	6.4	7.5	
Trader	5.7	4.6	5.0	2.7	4.5	
None	3.0	1.1	0.7	1.2	1.4	
Other	2.1	4.4	1.2	1.0	2.2	
Non response	0.5	0.3	0.2	0.6	0.4	
Education level of household head						
None	22.6	11.4	14.7	18.8	16.6	19(W), 5 (M)
Primary	53.8	60.2	60.1	60.6	58.8	59(M), 65(M)
Secondary	19.5	21.2	19.1	17.3	19.3	
post sec	2.5	6.4	3.1	2.1	3.6	
Others	0.1	0.0	1.6	0.3	0.5	
Don't know/No response	1.5	0.8	1.3	0.9	1.1	
Main source of household income						
Sub farmer	79.1	80.1	85.3	90.1	83.7	
Salary	8.0	8.4	6.9	4.3	6.9	
Trader	5.5	5.0	4.3	2.8	4.4	
None	1.3	0.0	0.1	0.0	0.3	
Others	2.9	4.9	1.6	1.0	2.6	
No response	3.2	1.7	1.7	1.7	2.1	
Average annual household income						
<100,000	51.9	41.5	61.0	50.8	51.2	
100,000 to 500,000	34.6	43.6	28.7	35.9	35.8	
500,001 to 1,000,000	7.0	9.2	5.4	7.2	7.2	
> 1,000,000	4.9	4.5	3.5	4.9	4.4	
Non response	1.6	1.2	1.4	1.3	1.4	
Type of house						
Semi-permanent	75.1	40.0	54.7	61.5	57.2	0.6
Temporary	17.5	44.6	36.1	14.2	28.6	78.7
Permanent	6.2	14.4	7.9	23.3	13.1	20.7
Others	0.5	0.3	0.1	0.0	0.2	
Non response	0.6	0.7	1.2	1.0	0.9	
Mean size of household (sd)	6.8 (3.2)	7.5 (3.5)	7.6 (3.5)	8.3 (4.4)	7.6 (3.7)	5.1

NB: All χ^2 tests of significance showed a p-value of less than 0.001 except age group where it was 0.004. The ANOVA F-test p-value of less than 0.001 for comparison of mean household size. The abbreviations W and M refer to women and men respectively.

Teso B. The proportion in subsistence farming is higher than that of the national level at 75% for women and 69% for men.

Education level varied significantly by region. Expectedly, Acholi sub-region had the highest proportion with no education (23%), followed by Teso B (19%). The Acholi sub-region had also the lowest proportion of heads of households in other levels of education.

The proportion with no formal education in Acholi is higher than that at national level (19% women, 5% men) thus showing a need for more opportunities for education.

The main source of income in all sub-regions was subsistence farming. Teso B appears the most reliant on subsistence farming (90%), while Lango is the least reliant (80%). The difference in the distribution was statistically significant ($p < 0.001$). The distribution pattern of households by main source of income is nearly similar to that of type of occupation of head of household.

Most households (87%) in all sub-regions in the study area earn less than UgShs 500,000 (\approx US\$ 330) per year. The sub-region with the highest proportion of households earning between 100,000 to 500,000 was Lango (44%) followed by Teso B (36%).

The commonest type of house in the study area was the semi-permanent. This was defined as *one* that was built with mud and wattle with tinned/grass roof. Temporary houses were shacks, polythene/grass walled structures and were most common in Acholi (18%). The proportion with temporary structures was much lower than the national level of 78% because of a different definition of temporary structure. However, the proportion with permanent structures in study area (13%) is expectedly lower than the national level of 20.7%. The situation is worst in Acholi Sub-region.

On size of households, Acholi sub-region had the lowest number of people per household (6.8) while Teso B had the highest number (8.3). This may partly be due to different household formations in the regions. The situation of internally displaced camps could be inducing young people to set up their own households. In Teso B young people may be staying longer with their parents thus increasing the household size. The household size in all sub-regions is significantly higher than that of the national level of five people per household.

3.2 Background characteristics by district

Table 3.2 shows the detailed comparison of background characteristics by district. The districts with the highest female headed households were Gulu (28%), Pader (26%), Soroti (24%), Katakwi (28%) and Amuria (26%) while those with the lowest proportion were Budaka (10%), Pallisa (15%) and Kaberamaido (15%). In Gulu, Pader, Katakwi and Amuria faced the problems of Lord's Resistance Army (LRA) insurgency while Soroti had a problem of influx of refugees from the troubled area. Soroti district has a higher

Table 3. 2: Social, Economic and Demographic characteristics of the visited household by district

Region & District	Sex	Marital status	Age group of HH head	Education	Occupation	Main source of Income	Average annual income	Type of house	Mean size of household
	% female	% married	% Aged 25+	% Had formal education	% Subsistence farmer	% subsistence farmer	% Gets 100,000 and above	% permanent	Mean(sd)
Acholi	24.4	60.6	89.2	75.9	81.2	79.1	46.6	6.2	6.8 (3.2)
Gulu	28.2	58.3	88.8	82.5	64.6	63.6	48.5	7.8	6.5 (3.0)
Amuru	21.1	57.2	89.4	75.6	86.7	85.6	46.1	6.1	7.0 (3.3)
Pader	25.7	64.0	92.0	70.9	90.3	87.4	45.1	2.9	6.6 (2.9)
Kitgum	22.4	62.9	87.1	73.8	85.2	81.9	46.2	7.6	7.1 (3.5)
Lango	14.9	81.4	94.8	87.8	80.9	80.1	57.3	14.4	7.5 (3.5)
Lira	19.7	78.2	92.8	87.6	65.8	65.3	56.5	20.2	6.9 (2.8)
Apac	14.3	81.6	95.2	91.2	76.9	74.2	64.6	16.3	7.4 (3.7)
Oyam	13.9	81.2	94.6	85.5	90.3	90.9	55.8	15.2	7.7 (4.3)
Amolatar	13.3	81.8	96.1	90.6	81.3	80.3	56.7	8.4	7.8 (3.6)
Dokolo	13.3	84.2	95.4	84.7	90.3	89.3	54.6	12.8	7.6 (3.1)
Teso A	22.9	77.7	91.1	83.9	85.5	85.3	37.6	7.9	7.6 (3.5)
Kaberamaido	15.1	79.9	92.2	87.2	87.2	87.2	32.9	6.9	7.2 (3.0)
Soroti	23.9	72.8	90.8	87.0	77.4	72.4	55.2	13.8	8.1 (3.8)
Katakwi	27.5	77.7	91.5	82.5	85.8	89.6	31.3	7.1	8.1 (3.7)
Amuria	25.6	81.0	89.7	78.0	93.3	94.4	28.2	2.6	6.9 (3.2)
Teso B	16.4	83.4	86.3	80.3	88.2	90.1	47.9	23.3	8.3 (4.4)
Budaka	9.5	88.5	95.0	84.0	86.5	88.5	22.5	25.5	9.0 (4.8)
Pallisa	15.0	90.3	91.6	76.6	91.2	90.7	46.5	31.0	8.6 (4.6)
Bukedea	21.1	79.4	77.1	79.8	87.2	90.8	67.9	21.6	7.7 (4.3)
Kumi	19.3	75.7	82.1	81.2	87.6	90.4	52.8	15.1	8.0 (3.7)
ALL	19.5	76.2	90.4	82.2	84.0	83.7	47.5	13.1	7.6 (3.7)

proportion in urban area and this in itself may also increase the proportion of female headed households.

While Acholi sub region has the lowest proportion of married heads of household, Amuru district has the lowest proportion of married heads of household (64%). The district with the highest proportion is Pallisa (90%). In most districts, the proportion is generally high.

The age group distribution shows that Bukedea had the lowest proportion of heads of household aged 25 and above (77%). The district with the highest proportion was Amolatar (96%).

Large variation exists in proportion of heads of household that attained formal education. The proportion ranged from 71% in Pader to 91% in Apac. In Lango, Teso A and Teso B sub regions the least privileged districts in education level were Dokolo, Amuria and Pallisa respectively.

Dependence on subsistence farming as an occupation and main source of income varied from district to district. Subsistence farming as an occupation was most common in Amuria (93%) and least common in Gulu (65%). Subsistence farming as the main source of income was also most common in Amuria (94%) and least common in Gulu (64%). (Lower proportions in Gulu can be attributed to being a municipality with other job opportunities).

The proportion of households earning Shs 100,000 per year was, on average, highest in Lango and least in Teso A. However, the district with the highest proportion was Bukedea (68%), while the lowest was Budaka (23%), both in Teso A.

The distribution pattern of type of house varied between regions and districts. The proportion of households with the highest proportion of permanent houses was highest in Pallisa (31%) in Teso A and lowest in Amuria (3%).

Household size was highest in Budaka (9.0) and lowest in Gulu (6.5). Within regions, the districts with highest household size were Kitgum (7) for Acholi, Amolatar (8) in Lango, Katakwi (8) in Teso A and Budaka in Teso B.

CHAPTER FOUR

4.0 AGRICULTURE SUB/SECTOR

4.1 Introduction

Chapter Four presents key findings of the prevailing conditions in the three sub-regions of Acholi, Lango and Teso in MYAP target areas concerning agricultural strategies. The findings are on the following key areas; land tenure, farming systems, farm enterprises, land utilization, crop postharvest and agricultural marketing. It also presents key performance indicators (KPIs) to be used by ACIDI/VOCA in measuring program progress through the life of the program within the sub-sector.

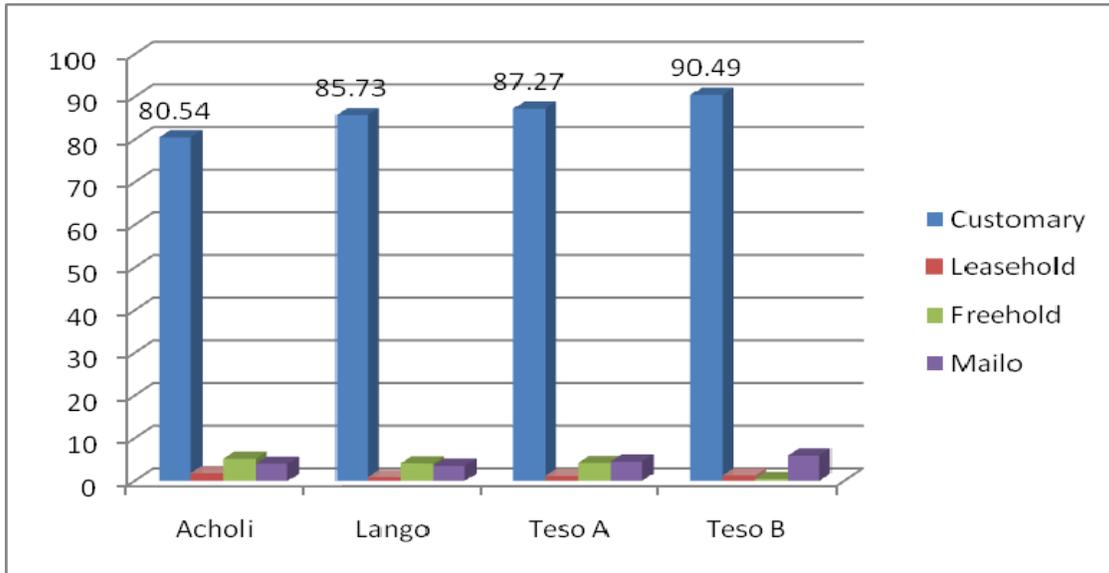
4.2 Farming Systems and Farm Enterprises

Traditionally, farming system in the study region is characterized by mixed farming where both crops and livestock enterprises are predominant. The farmers in the region grow a wide range of crops and keep livestock. The two farm enterprises form the basis for livelihood of the farming communities in terms of food and income generation. In order to meet the food and financial requirements of the communities, land as a production resource becomes very critical in supporting overall output and increased household income.

4.2.1 The Land Resource

The land is a production resource supporting both crop and animal production. Farmers in the respective districts grew a variety of crops and rear different animals. Since the livelihood of over 80% in all the sub-regions, the respondents relied entirely on farming; land was the most important asset that a farmer owned. As the most critical production resource, land was owned under different tenure systems, with an average of 85% of households under customary land tenure system (Figure 4.1). Other land tenure systems in the three sub-regions include leasehold, freehold and mailo.

Figure 4. 1: Percentage household under the different land tenure system in regions



The proportion of household occupying land under the different tenure systems by district are presented in Table 4.1. Across all the districts, over 80% of all the respondents reported customary land tenure system being used. During the FGD and KII with farmer groups and technical staff of the districts listed, it was indicated that the customary land tenure system, limited production and commercial farming. Households that had bigger family sizes did not own big acreage as the total land was sub-divided amongst individual household members. Households with small family sizes on the other hand enjoyed vast pieces of farm land since their family land was not subdivided into smaller pieces. However, the advantage of the customary land tenure system is that it allowed for several community members to access land for agricultural use as perceived by the respondents.

Table 4. 1: Land tenure system by district

District	Customary	Leasehold	Freehold	Mailo	Not Sure
Bukedea	98.2	0.0	0.5	0.0	1.4
Kumi	94.0	1.4	0.5	1.4	2.8
Oyam	92.7	0.6	1.8	3.0	1.8
Amuria	92.3	1.0	1.5	4.6	0.5
Dokolo	91.8	2.0	0.5	2.0	3.6
Pallisa	89.8	1.3	0.4	7.1	1.3
Kaberamaido	89.0	0.5	3.7	4.6	2.3
Pader	88.0	1.7	4.6	1.7	4.0
Amolatar	86.2	0.0	3.0	3.5	7.4
Soroti	84.5	2.1	4.2	6.3	2.9
Apac	84.4	0.7	5.4	2.0	7.5
Katakwi	83.9	1.0	7.1	2.4	5.7
Amuru	80.0	1.1	7.2	1.1	10.6
Budaka	79.0	2.5	0.5	16.0	2.0
Gulu	78.2	2.9	3.4	5.3	10.2
Kitgum	77.1	1.4	5.7	7.1	8.6
Lira	74.1	1.0	9.8	6.7	8.3

Words of a Key Informant about Land Tenure Systems;

“The land tenure system is largely customary and freehold. This is of an advantage because it gives clan members equal chance to access land. It places elders in a position of control and to ensure that it is optimally and profitably utilize; farmers are well protected by this tenure system; it however limits unnecessary sale of land”. **A key informant from Teso.**

Though this is true, it was indicated that women and children had limited or no access at all to land and cultivation of perennial crops was restricted. According to key informants in Acholi, customary land tenure protected land from family members who would otherwise like to sell it for social enjoyment. This implies that land acquisition for extensive farming is difficult. It should also be noted that land owned by households did not have title deeds and hence could not be used as collateral to access funds from commercial financial institutions. Also, the land system did not provide guidelines for controlled grazing, bush burning, poor crop rotation, which made it difficult to enforce quarantine and other measures to control animal diseases and as well

as maintain soil fertility. Other land tenure systems, which include leasehold, freehold as well as mailo land were only reported by less than 6% of the respondents that were interviewed. The Lease holds however were more common in urban centres where occupants leased land from its owners for a period of up to 49 years for capital for development and investment. In both urban areas and satellite camps, land was also rented from real owners for production of annual crops.

Land owned under the various land tenure systems ranged from no land at all to 10 acres per household. It is important to note that some of the households visited did not own any land and instead relied on hired and/or borrowed land to earn a livelihood. Nonetheless, the biggest proportion of land owned by individual households was set aside for crop and livestock production, as well as agroforestry (Table 4.2).

Table 4. 2: Land utilization for the Various Farm Enterprises

Region	Land utilization (Acres)			
	Crop production median (IQR)	Livestock Production Median (IQR)	Agro-forestry Median (IQR)	Total land Median (IQR)
Acholi	3.0 (1.4-4.0)	1.5 (1.0-3.0)	2.0 (0.5-0.4)	4.0 (2.0-8.0)
Lango	3.5(2.5-5.0)	1.0 (0.5-2.0)	1.0 (0.5-2.0)	5.0 (3.0-7.0)
Teso A	3.0 (2.0-4.0)	1.0 (0.5-2.0)	0.5 (0.5-2.0)	4.0(3.0-6.0)
Teso B	2.0(1.0-4.0)	0.5 (0.3-1.0)	0.3(0.1-1.0)	3.0 (2.0-5.0)
All	3.0(2.0-4.5)	1.0 (0.5-2.0)	1.0(0.3-2.0)	4.0 (2.5-6.0)

Interquartile ranges are indicated in brackets.

Crop production took over 50% of the total land available to each household. It is a higher proportion compared to Livestock and agro-forestry (Tables 4.2, Table 4.3). Having less land allocated to livestock did not imply that livestock production was not important in the study area; it is because livestock was grazed on communal land which was not reflected as land that belonged to the visited households. Communal grazing land was not estimated.

Table 4. 3: Land utilization for the Various Farm Enterprises by districts)

District	Land utilization in by Acres			
	Crop production median	Livestock Production Median	Agro-forestry Median	Total land Median
Gulu	2.0	0.8	0.2	4.0
Amuru	3.0	0.6	0.5	6.0
Kaberamaido	3.0	0.1	0.3	4.0
Pader	3.0	0.2	0.5	5.0
Kitgum	3.0	1.0	0.5	5.0
Soroti	3.0	1.0	0	4.0
Katakwi	3.0	0.5	0	4.0
Amuria	4.0	1.0	0	5.0
Lira	3.0	1.0	0	4.0
Budaka	1.8	0.1	0	2.0
Pallisa	1.5	0.3	0.3	2.0
Apac	4.0	0.5	0.3	5.0
Oyam	3.0	1.0	0.5	5.0
Amolatar	4.0	1.0	0	5.0
Bukedea	3.0	1.0	0	4.0
Dokolo	3.5	0.5	0.5	5.0
Kumi	3.0	0.4	0	4.0

4.2.2 Major Food and Cash crops grown

The farming communities in the study districts grew a variety of crops for both home consumption and income generation. These crops include but not limited to legumes, roots, cereals, vegetables and fruits. Table 4.4 shows the major food crops grown across all the three sub-regions. It was found out that all the crops are both grown for both income and food consumption. The leading crops in Acholi were G.nuts 41% followed by simsim at 24% and sorghum at 21%. In Lango, maize was leading at 33%, while beans and simsim had the same weight. In Teso cassava was leading with 44% followed by G.nuts at 43% in Teso A and 40% in Teso B. Sorghum ranked number three in Teso A and millet was third in Teso B.

Table 4. 4: Proportion of households growing selected Food and Cash Crops in the Study Area

Crops	Acholi			Lango			Teso A			Teso B		
	Food	Cash	Both	Food	Cash	Both	Food	Cash	Both	Food	Cash	Both
Season A												
Simsim	10.4	0.5	24.1	14.3	1.5	30.0	10.0	0.2	12.5	3.7	0.2	2.9
Sorghum	27.5	1.1	21.4	4.6	0.4	8.5	32.3	0.2	33.5	33.1	1.5	20.6
G.nuts	25.9	2.2	40.5	17.5	0.6	16.8	30.6	0.4	43.1	27.9	1.9	39.9
Beans	20.6	0.8	16.5	32.0	1.4	29.3	10.0	0.2	10.5	20.0	1.1	14.7
Sweet potatoes	34.6	6.4	10.1	27.5	10.4	8.0	35.4	5.2	14.4	25.2	2.1	15.6
Rice	5.9	2.5	7.5	3.2	0.2	6.5	3.2	0.2	5.0	8.2	3.7	9.7
Millet	33.4	2.0	20.7	26.8	1.2	22.7	21.3	0.5	27.8	30.6	2.2	24.6
Maize	31.1	1.5	15.8	25.3	1.5	32.9	15.3	0.5	13.6	22.9	2.2	29.0
Yam	4.1	0.0	1.4	3.7	0.0	2.7	3.6	0.0	3.2	3.4	0.0	3.4
Cassava	36.9	1.6	18.0	45.8	0.8	22.2	35.5	0.6	40.6	35.4	3.3	40.8
Vegetables	28.1	1.1	6.3	13.1	0.1	2.1	6.8	0.2	2.9	6.3	0.1	1.3
Fruits	8.6	0.4	1.9	5.3	0.2	1.7	4.3	0.1	2.6	2.9	0.0	0.8

4.2.3 Decision making for crops to be grown: A gender issue

Decision making pertaining to the type of crops to be grown on the farms for the respective households, and the proportion to be allocated to home consumption and sales varied. Figure 4.2 shows the variation in decision making with respect to men and women.

Figure 4. 2: Percentage households on decision making on the type of crops to be grow in a homestead

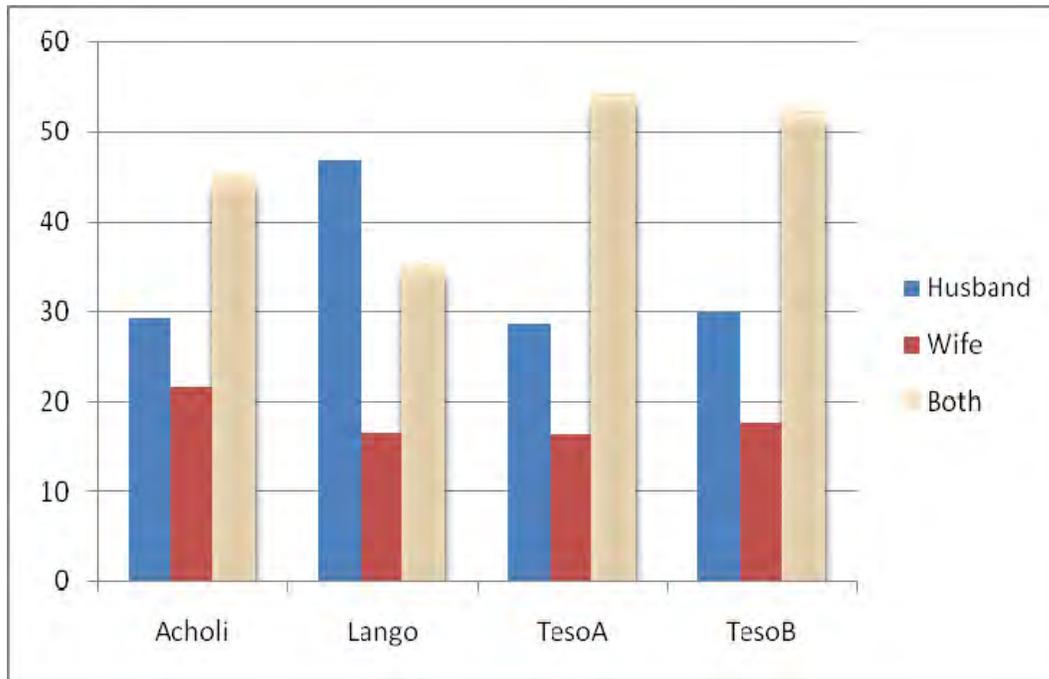


Figure 4.2 shows that both husbands and wives participated in making decisions on which crops to grow. However, it was recorded that 42% of respondents in Acholi take collective decision making, while in Teso sub-region the percentage of households taking collective decision making was above 50%. It is important to note that in all regions, the majority of decisions on crop production were jointly made between husband and wife except in Lango region where husbands still predominated the decision making process. However, in circumstances where decisions were individually made, men had the upper hand though women too, made some of these decisions. The rationale for the choice of the individual who made the decision on the kind of crop produced on the farm depended on the crop yields of the major crops as indicated in table 4.4. While looking at the results by district, the same picture is indicated that at production, decisions are made collectively by both husband and wife, with a proportion ranging from 25% in Budaka to 80.6% in Kumi (Table 4.5).

Table 4. 5: Decision making on the types of crops grown by district

district	husband	wife	Both Husband and Wife	Son/Daughter
Gulu	24.2	29.5	43.7	2.6
Amuru	27.8	20.1	49.1	3.0
Kaberamaido	30.9	14.3	54.4	0.5
Pader	25.0	20.8	48.2	6.0
Kitgum	34.2	17.6	42.7	5.5
Soroti	22.8	21.5	54.4	1.3
Katakwi	30.5	16.0	53.0	0.5
Amuria	23.2	16.0	60.3	0.5
Lira	44.2	22.1	31.3	2.5
Budaka	52.0	21.9	25.0	1.0
Pallisa	50.0	19.4	30.6	0.0
Apac	46.6	19.6	31.6	2.3
Oyam	47.8	16.2	35.4	0.6
Amolatar	49.2	14.6	35.7	0.5
Bukedea	17.0	14.6	67.9	0.5
Dokolo	50.5	12.5	33.9	3.1
Kumi	5.3	14.1	80.6	0.0

4.2.4 Yields of Major Crops within the Study Area by region

The crop yields were very low and varied significantly among households (Table 4.6). The yield estimations were much lower compared to the yields at research stations (Table 4.7). The reasons for low yields were given as follows; small acreage (ranging 0.5-1.0) to crop production, poor seed and failure to use crop productivity enhancement techniques. Important to note, yam production in the country is very low and the yields records confirmed this with a response rate of less than 5%.

Table 4. 6: Yields of Major Crops within the Study Area by region

Crop	Acholi Med (IQR)	Lango Med (IQR)	Teso A Med (IQR)	Teso B Med (IQR)	All Med (IQR)
Simsim	183 (86-280)	140 (70-280)	187 (80-280)	140 (50-420)	140 (80-280)
Sorghum	280 (140-560)	210 (100-350)	280 (140-420)	280 (140-560)	280 (140-480)
G. nuts	500 (240-980)	280 (140-560)	420 (200-840)	280 (140-560)	420 (160-840)
Beans	276 (133-560)	210 (105-350)	240 (136-420)	200 (100-500)	240 (120-420)
Sweet potatoes	960 (480-2000)	1120 (427-2400)	640 (320-1280)	640 (320-1600)	800 (360-1600)
Rice	480 (240-1200)	480 (140-840)	450 (140-960)	600 (400-1120)	560 (240-1040)
Millet	280 (120-520)	280 (140-420)	280 (140-420)	280 (140-560)	280 (140-480)
Maize	360 (180-563)	320 (160-600)	280 (140-560)	400 (210-640)	360 (180-600)
Yam	520 (219-2560)	560 (280-1400)	450 (7.5-2100)	520 (180-1040)	520 (200-1600)
Cassava	1080 (360-2400)	1389 (640-2400)	640 (320-1280)	820 (500-1280)	840 (400-1600)
Cow peas	140 (80-560)	140 (56-360)	160 (75-280)	140 (100-280)	160 (80-320)
Pigeon peas	140 (80-280)	140 (70-280)	106 (20-280)	67 (20-88)*	140 (70-280)
Sunflowers	272 (64-600)	200 (40-480)	130 (80-140)	200 (100-453)	200 (62-480)

*Very few respondents. Med=Median IQR=Interquartile range

Table 4. 7: Expected Crop yields for some Selected Crops in Kitgum District

Crop	Expected yield (kg/acre)
Rice	820
Cassava	15,000
Simsim	320
G. nuts	540
Sunflower	700
Millet	500
Sorghum	1,330

Source: District Agric. Office Kitgum

Though the yields were low, they also varied across the regions. For example, the yield of pigeon pea was 100kg/acre, 147kg/acre, 50kg/acre and 31kg/acre in Acholi, Lango, Teso A and Teso B region respectively. Further, the average yield of simsim per household was 140 kg/acre with a range of 70-280 kg/acre; (140kg/acre for Acholi; 145kg/acre for Lango; 120 kg/acre for Teso A, 70 kg/acre for Teso B). Yield estimations across the districts are presented in Table 4.8. The yields recorded are similar to aggregated data presented by regions. Since the general yields for most of the crops were low, it is important to provide improved agricultural inputs and extension outreach to assist in production, postharvest and marketing.

Table 4. 8: Crop yields recorded by districts

Crop	Gulu Med (IQR)	Amuru Med (IQR)	Kabera m aido Med (IQR)	Pader Med (IQR)	Kitgum Med (IQR)	Soroti Med (IQR)	Katakwi Med (IQR)	Amuria Med (IQR)	Lira Med (IQR)	Budaka Med (IQR)	Pallisa Med (IQR)	Apac Med (IQR)	Oyam Med (IQR)	Amolatar Med (IQR)	Bukedea Med (IQR)	Dokolo Med (IQR)	Kumi Med (IQR)
Simsim	210 (120-360)	226 (85-380)	140 (70-280)	140 (68-280)	180 (90-280)	260 (110-560)	240 (80-280)	210 (80-420)	140 (60-240)	123 (40-280)	200 (87-490)	160 (100-280)	120 (60-280)	150 (80-280)	280 (140-1120)	175 (80-280)	88 (35-140)
Sorghum	280 (187-560)	280 (140-543)	232 (120-360)	280 (140-560)	280 (160-480)	280 (140-560)	280 (140-420)	280 (140-450)	200 (84-280)	400 (200-560)	280 (250-560)	280 (140-560)	140 (60-350)	160 (140-400)	140 (70-280)	154 (75-350)	180 (140-3360)
G. nuts	560 (240-980)	560 (240-1120)	420 (240-560)	480 (280-980)	480 (140-840)	560 (280-960)	280 (140-560)	420 (205-840)	260 (140-560)	280 (133-560)	560 (227-700)	300 (140-920)	280 (140-600)	280 (140-420)	350 (140-560)	300 (84-560)	187 (70-420)
Beans	261 (140-480)	280 (120-700)	240 (120-700)	260 (140-525)	250 (80-1120)	450 (250-747)	220 (160-700)	280 (140-420)	240 (112-420)	210 (100-500)	240 (100-560)	210 (140-420)	140 (93-280)	150 (70-280)	140 (70-336)	280 (120-403)	140 (120-280)
Sweet potatoes	1340 (720-3200)	960 (560-1920)	480 (300-960)	1165 (336-1920)	629 (412-1120)	840 (560-1280)	413 (200-1280)	640 (560-1280)	640 (200-1563)	640 (320-1280)	640 (300-1680)	1760 (980-3200)	1400 (560-3200)	960 (465-1960)	800 (480-1400)	960 (400-1600)	960 (400-1600)
Rice	480 (240-1200)	540 (240-1200)	380 (260-480)	327 (240-820)	850 (720-980)	390 (122-1400)	240 (140-960)	480 (300-840)	360 (140-840)	720 (327-1120)	650 (480-1050)	820 (700-1520)	770 (336-1330)	450 (420-1200)	560 (400-1000)	560 (360-560)	560 (360-560)
Millet	280 (136-560)	280 (140-560)	187 (120-280)	200 (120-400)	280 (120-480)	280 (140-420)	280 (140-420)	320 (145-560)	180 (112-420)	300 (210-670)	280 (140-560)	280 (140-480)	160 (67-280)	280 (140-426)	140 (70-240)	280 (140-420)	90 (64-140)
Maize	360 (188-640)	420 (225-563)	240 (122-480)	240 (140-560)	360 (180-580)	480 (280-560)	340 (120-480)	140 (120-360)	280 (105-480)	420 (240-720)	480 (250-700)	420 (200-600)	280 (140-700)	300 (180-600)	280 (110-480)	360 (200-600)	290 (240-420)
Yam	480 (240-720)	2560 (2285-2560)	-	5667 (77-2100)	-	2100 (420-8000)	-	480	840 (480-1280)	380 (180-580)	800 (400-1800)	280 (70-1600)	1600 (350-4160)	560 (560-1050)	-	215 (85-840)	-

Cassava	1387 (400-3200)	800 (320-1600)	640 (300-1400)	800 (320-1600)	1280 (520-2400)	800 (320-1600)	480 (173-960)	700 (423-1280)	1280 (400-1920)	900 (560-1400)	800 (533-1120)	1520 (800-2693)	1280 (480-2240)	1600 (800-2400)	800 (300-1600)	1520 (310-2520)	1160 (500-1600)
Cow peas	136 (40-608)	140 (120-360)	240 (69-392)	280 (80-560)	120 (100-130)	237 (80-550)	140 (60-280)	160 (80-280)	145 (48-630)	195 (140-250)	455 (210-1260)	158 (117-200)	110 (20-360)	70 (60-80)	140 (70-240)	140 (56-840)	140 (40-210)
Pigeon peas	171 (110-298)	140 (60-280)	-	140 (80-315)	140 (68-280)	280 (20-2800)	-	132 (44-560)	120 (70-280)	36 (20-53)	88 (80-2800)	173 (140-320)	140 (80-280)	140 (40-280)	-	100 (40-210)	-
Sunflower	286 (206-1750)	140	300 (120-480)	210 (35-625)	240 (35-600)	140	30	110 (80-140)	280 (56-480)	193 (95-300)	400 (160-500)	134 (50-280)	215 (50-400)	-	315 (280-350)	442 (94-805)	3200

Generally the most commonly used practices among the farmers in the four regions were strip cropping, intercropping, agro forestry, crop rotation row planting and fallowing as presented in (Table 4.9). The results indicated that over 70% of the households practice intercropping and crop rotation. While row planting is practiced, the proportion varied between 44 to 60% in the regions. Practices like contour ploughing; mulching, compost making and use of chemical fertilizers were not used by many households as only 10% of households reported use. Field resting was significantly less practiced by the majority of farmers across the region. It was noted that there was a general low level of use of improved seed less than 15%, with exception of Teso B, which recorded 33% application. The reason for increased use for seeds in Teso B is that ACIDI/VOCA is already supporting about 4,000 farmers in the four districts of Budaka, Bukedea, Kumi and Pallisa through FEDEPU. FEDEPU supplies improved seeds of rice and maize and also facilitates collective marketing linkages. However, the low usage of improved seeds recorded in Teso A despite having Serere Agricultural Research Station in Soroti district, the general is the general lack of support in the promotion of field trials and multiplication.

Table 4. 9: Current agronomic and farm management practices in the four major regions

Agronomic practices	Percentage household undertaking agronomic practices			
	Acholi	Lango	Teso A	Teso B
Crop rotation	80.8	86.7	81.5	86.4
Intercropping	80.7	80.3	77.9	79.7
Line planting	49.4	59.5	44.0	51.5
Fallowing	41.0	34.1	33.6	11.3
Agroforestry	31.2	22.8	13.1	25.4
Strip growing	24.4	22.5	15.0	33.9
Cover cropping	17.4	2.7	3.7	3.8
Use of improved varieties	14.6	12.0	13.8	32.5
Mulching	8.5	2.9	3.9	5.1
Contour ploughing	8.4	3.5	4.7	27.0
Compositing	5.6	5.8	8.2	11.2
Use of inorganic fertilizers	2.5	1.8	1.4	4.2

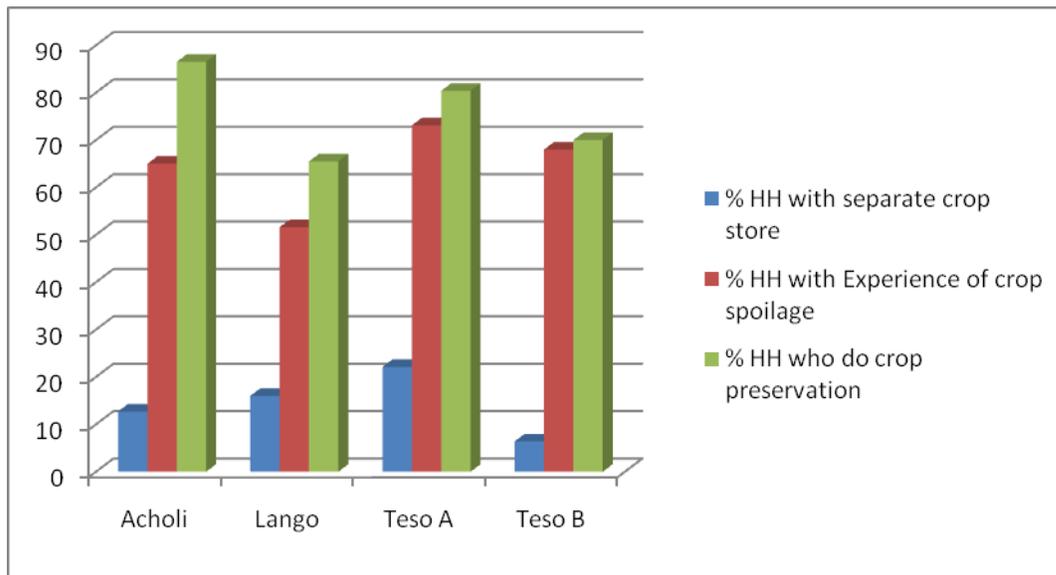
4.2.3 Post harvest handling

Post harvest handling is one of the major activities that farmers in the study area carried out to ensure household food security. Post harvest handling was critical because a big proportion of farmers in the various regions lost crop produce through inadequate crop preservation and storage thus leading to crop spoilage

Crop storage facilities

Improvement of methods of postharvest handling is one way of reducing crop losses and increasing household food security. One of the methods is to have good produce storage facilities. The study findings show that farmers are having losses because of poor storage. Figure 4.3 shows the percentage of households with crop storage facilities and those who do crop preservation.

Figure 4. 3: Percentage household with Crop storage and carry out crop preservation



Over 50% of all households experienced crop spoilage with more cases recorded in Teso sub-region than in Acholi and Lango sub-regions. The resultant crop spoilage therefore caused close to 70% of all the households across the regions to engage into crop preservation techniques though the majority of respondents did not own specific storage facilities for crop preservation. Across the region, traditional methods of preservation were used by most farmers though a small number of farmers used chemical preservatives. The most common traditional preservation methods involved mixing crops with red pepper or ash, neem tree leaves, and other birationals such as tobacco. Drying method however was the commonest means of preservation as over 95% households in all the regions was recorded. A few people also mixed their produce with chemical

preservatives like acetylic dust especially for beans preservation though this was not a common practice.

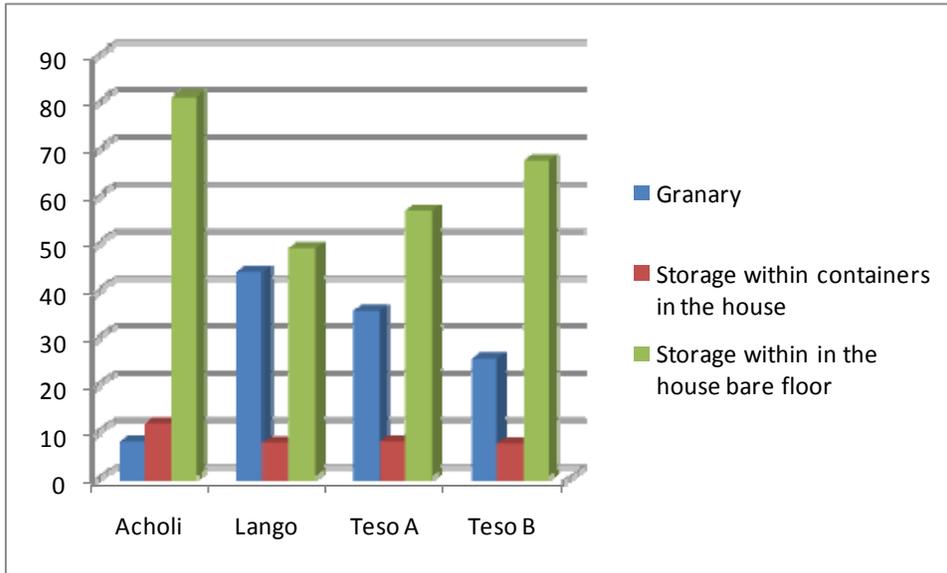
The proportion of households with the different crop storage facilities across the districts of study are represented in table 4.10. The majority of respondents indicated of keeping the crop produce in their own houses on the bare floor. It was observed that, the percentage of households keeping crop produce in the residential house was over 70% across all the districts.

Table 4. 10: Table of storage facilities

District	Granary	In house plastic containers	In own house bare floor
Gulu	11.7	19.4	68.9
Amuru	12.2	8.3	79.4
Kaberamaido	27.4	34.7	37.9
Pader	10.3	10.9	78.9
Kitgum	14.3	6.2	79.5
Soroti	23.9	24.3	51.9
Katakwi	16.1	17.5	66.4
Amuria	25.1	17.4	57.4
Lira	17.6	30.1	52.3
Budaka	2.5	35.0	62.5
Pallisa	5.8	39.8	54.4
Apac	15.0	37.4	47.6
Oyam	7.9	42.4	49.7
Amolatar	11.3	57.1	31.5
Bukedea	10.1	35.8	54.1
Dokolo	23.0	49.0	28.1
Kumi	5.1	38.1	56.9

The percentage of households with a store separate from the house they live in for different crops was very low ranging from 5% to 20% of the total households within regions (Figure 4.4). Farmers constructed their storage facilities from locally available materials most times not strong enough to keep away thieves.

Figure 4. 4: Type of storage facilities reported by farmers



Across the regions, the proportions of farmers who owned storage facilities varied but farmers in Lango sub-region were ahead of others. Across all the regions, it was recorded that, farmers do not have separate storage facilities different from the residential houses. Even those reported to having the granaries were not in good conditions and not enough for a single harvest. Farmers noted that the use of separate storage facilities as those indicated in picture 4.1 was becoming less popular due to increased theft of farm produce.

Picture 4. 1: Crop granary



Availability of market for fresh produce, inability of some farmers to protect storage facility from vermin and rodent attack. In other circumstances, farmers noted that crops such as cassava could stay for sometimes in the field and there was no need for storage. The strategy to store food was, however, two folds: to curb food insecurity on one hand, and to wait for higher market prices at a later stage.

A key informant from Dokolo had this to say about those farmers who did not save any food for use during the dry spell.

“Some farmers just eat, they do not plan for tomorrow, and they will use everything during the time of harvesting so that in other season when they are still planting, there is already terrible famine striking in such a home”.

Preservation of Specific crops

Table 4.11 shows preservation of specific crops. In the Acholi ground nuts and sorghum were preserved by 72.5% and 75.7% of households, respectively. For this region, sweet potato was the least preserved since it was consumed fresh. In Lango region, simsim and millet were the most preserved crops as indicated by approximately 50% of the households. Teso A had large proportion of farmers preserving sweet potatoes (64.2%), cassava (81.1%), groundnuts (80.6%) and millet (69.3%), Teso B households on the other hand preservation was groundnuts at (68.5%), sorghum at (69.1%) and millet at (69.3%). It was noted that Lango region had the least proportion of its households preserving food stuffs

Table 4. 11: Percentage households preserving the crops grown

Region	N	Percentage households preserving crops					
		Sweet potatoes	Cassava	G.nuts	Sorghum	Simsim	Millet
Acholi	639	32.9	41.3	72.5	75.7	59.5	56.3
Lango	552	32.1	35.0	27.0	21.4	48.9	49.8
Teso A	715	64.2	81.1	78.6	80.6	34.6	62.5
Teso B	515	35.5	73.4	68.5	69.1	13.6	69.3

Major causes of crop losses

It was recorded that across the regions, over 80% of the respondents identified vermins and other storage pests as the major causes of crop loss and spoilage (Fig 4.5 and Table 4.12). Poor crop storage facilities was ranked second to Vermins and storage pests, the proportion ranged between 40% in Acholi and 60% in Lango.

Figure 4. 5: Percentage household reporting major causes of crop spoilage and losses

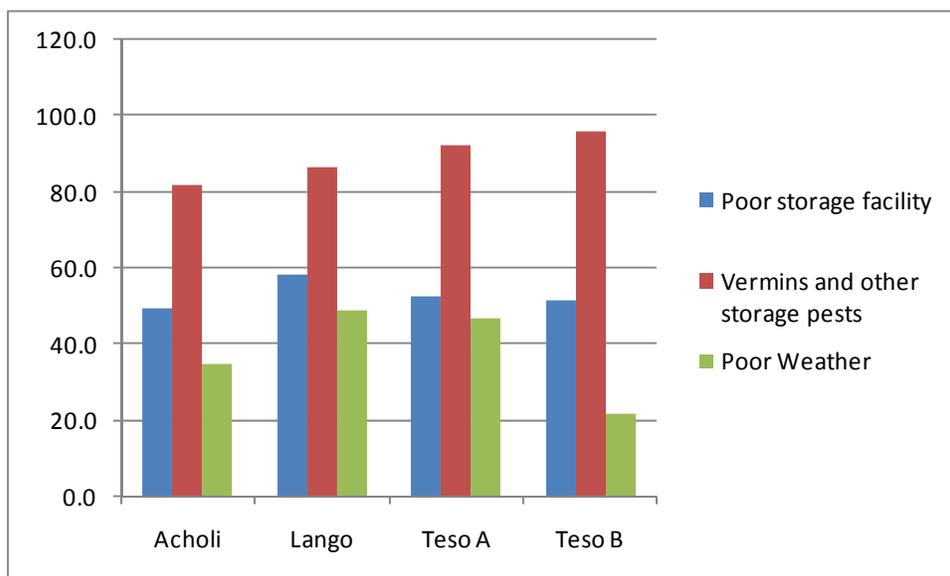


Table 4. 12: Major causes of crop losses by district

District	Percentage household reporting causes of crop losses	
	Poor storage	Pests
Gulu	50.5	80.7
Amuru	56.0	77.6
Kaberamaido	60.0	86.4
Pader	47.4	90.4
Kitgum	45.8	80.2
Soroti	49.4	93.7
Katakwi	56.2	96.7
Amuria	46.3	92.5
Lira	66.7	79.2
Budaka	74.7	97.8
Pallisa	66.7	90.8
Apac	64.3	84.3
Oyam	65.9	83.5
Amolatar	50.0	93.0
Bukedea	46.8	97.4
Dokolo	50.5	91.4
Kumi	32.8	97.3

Major Production Constraints

Farmers that participated in the baseline study faced various production constraints. The production constraints varied from limited capital, use of rudimentary farming tools and equipments and inadequate skills in agricultural production for improved technology adoption (Table 4.13).

Table 4. 13: Major constraints to production process among farmers in the MYAP operation area

Major Constraint	Percentage of Households with respect to Regions			
	Acholi	Lango	Teso A	Teso B
Limited capital	64.85	85.10	84.42	93.91
Rudimentary tools and equipment	58.94	80.79	75.53	79.71
Inadequate agricultural skills	42.03	57.51	56.04	67.67
Late planting	18.1	38.8	22.6	28.8
Drought	41.6	60.6	57.5	78.9
Floods	42.0	35.8	65.6	26.4
Low soil fertility	33.3	48.1	34.9	81.9
Pests and diseases	16.4	53.9	51.0	59.0
Reduced crop acreage	14.3	20.8	15.8	37.7

Though various factors contributed to low crop yield, the general constraints that cut across all the three regions included limited capital investment, use of rudimentary farming tools as well as inadequate agricultural skills. Limited capital for investment in agricultural production was the most pressing problem as indicated by over 80% of the households in regions of Lango, Teso A and Teso B. Though too, limited capital was least pronounced in Acholi region compared to other regions as reported at 65% of the total households. Better farming tools and equipment was also a major problem as indicated that 58.9%, 80.8%, 75.5% and 79.7% of the households from Acholi, Lango, Teso A and Teso B respectively who used rudimentary farming tools. Inadequate skills in agricultural production was the least reported problem among the three major production constraints as indicated by over 55% of all the respondents in the Lango, Teso A and Teso B regions. Acholi region had only 42% of its respondents indicating inadequate agricultural skills as a major production constraint. Other crop production constraints though important were only recorded. For example, drought was more of a production constraint in Teso A and Lango, while floods were more pronounced in Teso B, poor soil fertility and reduced farm acreage prevailed more in Teso B. Table 4.14 shows percentage households affected across all the districts.

During the key informant with District Agricultural officers of Gulu and Kitgum it was reported that cattle's rustling was also a major constraint to production especially in Kitgum district. District Agricultural Officers as key informants also indicated that Wild Game and conflicts over land were other constraints limiting agricultural production.

During the FGD it was recorded that several other factors were affecting production across the regions. They include; unavailability and affordability of improved seeds, overdependence on rainfall, declined soil fertility, gendered division of labor, high post harvest losses, political instability which displaced about 50% of the population in some districts and lack of adequate agricultural inputs. Soil degradation, poor road network, lack of storage facilities, low prices for agro commodities, land fragmentation, lack of produce markets were among the other factors that impacted on production levels in the three regions (Table 4.14).

Table 4. 14: Constraints to crop production process by district

District	Capital	Limited tools	Inadequate skills	Late planting	Drought	Floods	Low soil fertility	Pests	Reduced acreage
Budaka	97.5	93.0	52.0	11.5	85.0	7.5	78.5	64.5	21.5
Kumi	95.0	73.9	79.8	37.6	65.1	41.7	73.9	56.9	67.9
Bukedea	94.5	67.9	81.7	35.8	44.5	28.9	45.9	23.9	22.0
Dokolo	88.3	86.2	59.2	32.1	49.0	24.0	46.9	48.0	18.9
Pallisa	87.2	75.7	44.7	12.0	73.9	10.6	79.7	55.8	15.9
Amolatar	84.7	83.7	52.7	32.5	46.8	22.2	27.1	32.5	16.3
Amuria	84.1	59.0	46.7	22.1	36.9	60.0	21.5	40.0	8.2
Katakwi	83.9	72.5	58.8	28.9	55.5	79.2	30.3	55.0	10.4
Oyam	81.8	81.2	55.2	26.7	45.5	42.4	34.6	42.4	11.5
Soroti	80.8	75.7	56.9	10.5	45.6	38.9	33.1	33.5	11.3
Kaberamaido	78.5	76.3	49.3	11.4	44.8	33.8	25.1	34.3	20.6
Apac	78.2	70.1	50.3	25.2	41.5	18.4	37.4	40.1	17.7
Lira	61.7	55.4	39.4	24.4	38.9	24.9	31.1	35.2	11.9
Amuru	60.0	51.1	43.3	8.3	15.6	32.8	16.7	10.0	4.4
Pader	60.0	73.7	31.4	11.4	32.6	32.6	17.7	9.7	12.0
Gulu	59.7	39.3	38.4	8.7	12.6	17.0	17.0	4.9	4.4
Kitgum	55.7	53.3	36.2	10.5	29.5	11.0	20.0	11.0	10.0

4.3 Livestock production

Livestock production was also reported as a prominent farm enterprise within the regions. Results of the study show that in spite of the 20 years of conflict that devastated the livestock sector in Acholi, Lango and Teso regions, some households kept some livestock. The major livestock kept included; cattle, goats, and chicken poultry (Table 4.14).

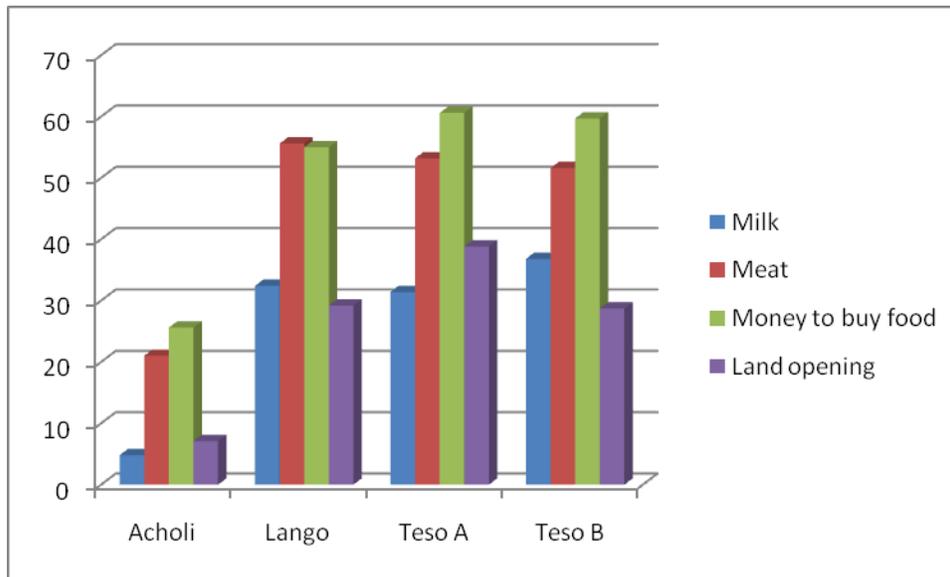
Table 4.14: Percentage households keeping livestock by type

Livestock type	Acholi		Lango		Teso A		Teso B		All	
	Av. No. per HH	% HH with animals (n =771)	Av. No. per HH	% HH with animals n =864	Av. No. per HH	% HH with animals (n =904)	Av. No. per HH	% HH with animals n =862	Av. No. per HH	% with animals n =3401
Cattle	2.6 (4.4)	15.4	3.9 (3.8)	49.0	3.2 (3.1)	43.5	3.2 (5.4)	39.8	3.3 (4.2)	37.8
Goats	1.6 (2.7)	7.8	3.8 (9.3)	36.7	3.3 (4.8)	35.0	3.3 (7.8)	36.8	3.2 (7.2)	
Sheep	1.1 (2.2)	3.8	1.7 (4.1)	14.6	1.2 (2.2)	18.1	1.4 (4.6)	13.0	1.4 (3.5)	12.6
Chicken	4.0 (7.4)	10.0	9.0 (8.4)	58.7	7.0 (10.6)	51.9	6.4 (8.0)	47.5	7.1 (9.1)	43.1

On average, each household kept 3 heads of cattle, 3 goats, 1 sheep and 7 chickens. Acholi sub-region recorded the lowest percentage (15.4%) of households keeping livestock compared to their counter parts in Lango and Teso sub-region regions. This was because many farmers were still in transitional camps and the restocking exercise had just begun. The observation within the region show that, animals are mainly exported to southern Sudan are the traditional long-horned that are predominantly found in the cattle corridor of Ankole, Sembabule, Mubende, Luwero Kiboga and Nakasongola. In the same region, chicken were only kept by 10% of the households, while cattle were kept by 15.4% of households. This is probably due the political insurgency that was more intense in the Acholi sub-region than any other region. War and political unrest disrupted the livestock sector and the fewer animals currently raised were as a result of a restocking program initiated by government under NUSAF and other NGOs. By contrast, Lango sub region, 49%, 58.7%, 36.7% and 14.6% of the households kept cattle, chicken, goats and sheep respectively. The proportion of these farmers compare favourably with those of Teso A and Teso B. Unlike in the Acholi sub-region, the political insurgency spread later in Lango and Teso and were highly resisted by the population. As a result, there was only partial displacement of people into camps, leaving the rest of the population to raise their livestock. But given the importance attached to animals as sources of income, food, animal traction and payment of dowry during marriage (Figure 4.5), the number of livestock in the area is still very low.

The importance of livestock to households varied, four major uses were reported as follows; provision of milk, beef, household income and land opening (Figure 4.6). Across all the sub-regions over 20% of households reported that, income generation is the major reason of keeping livestock. Land opening was reported by at least 30% of households in Lango and Teso sub-regions, less than 10% of households in Acholi reported use of cattle in land opening (Figure 4.6).

Figure 4. 6: Importance of Livestock by region



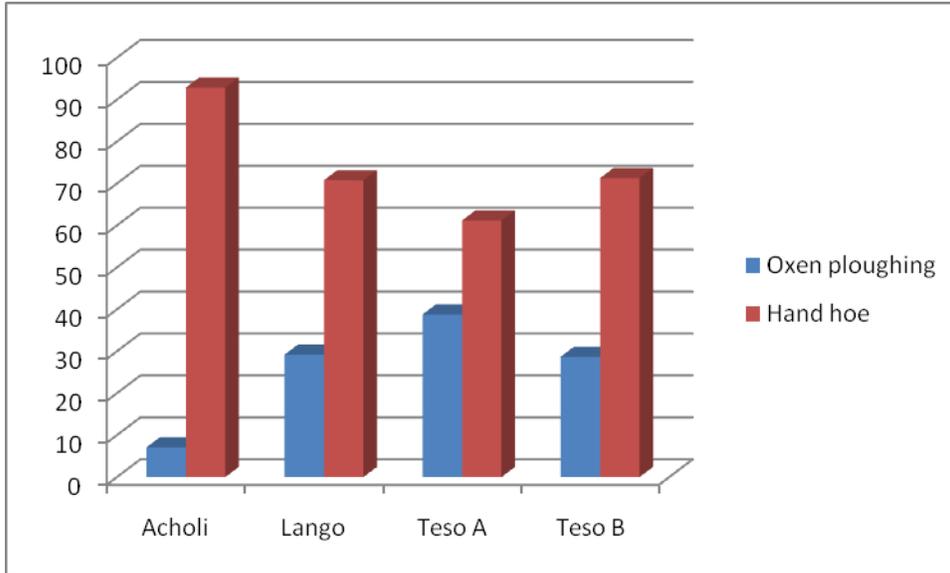
The livestock sector faced various production constraints as revealed through farmer focus group discussions and key informants. Diseases such as Nagana were most prevalent in cattle, Newcastle in poultry and this rendered the livestock sector unproductive. This, coupled with the high prices of animal drugs and other veterinary services made the livestock sector unproductive. In addition, shortage of pastures and water in prolonged dry season, limited and poorly facilitated extension workers were among other common production constraints. In Teso region, poverty, HIV AIDS, poor government support to the livestock sector, inadequate markets, and low prices for livestock products, were among the major constraints. During the FGD, it was also observed that transportation by oxen using oxen cuts was very popular during the days when the region had cattle, however currently the oxen cut are not readily available. Looking at purpose of keeping livestock by districts, source of household income ranked highest, followed by provision of food and land opening, respectively (Table 4.15).

Table 4. 15: Importance of livestock by farmers in the different districts

District	Milk	meat	Money	opening up land
1. Gulu	20.7	62.2	76.8	19.5
2. Amuru	12.7	66.7	79.4	7.9
3. Kaberamaido	40.1	76.1	80.2	48.5
4. Pader	11.3	50.9	60.4	20.8
5. Kitgum	6.1	47.6	59.8	28.1
6. Soroti	47.7	78.7	80.2	51.8
7. Katakwi	41.9	55.2	78.7	44.9
8. Amuria	35.1	60.8	70.3	56.1
9. Lira	36.7	52.5	69.2	30.8
10. Budaka	38.5	51.9	52.6	16.3
11. Pallisa	31.7	50.6	76.6	20.3
12. Apac	46.3	74.1	71.3	36.1
13. Oyam	38.7	67.7	72.6	32.3
14. Amolatar	41.1	80.6	71.4	41.1
15. Bukedea	54.6	74.4	77.8	52.8
16. Dokolo	44.3	75.9	69.0	43.7
17. Kumi	60.5	83.2	92.4	50.8

It was observed that over 60% of all the households across the regions use hand hoe to open up land as shown in Figure 4.7. Because of lack of tractors and the few that are available were being used for transportation of goods to markets. Farmers also reported that, it was expensive to hire a tractor. If agricultural production has to be rejuvenated through crop and livestock production, strategies to mitigate the above constraints must be carried out. Such mitigation measures, however, are more feasible and more efficiently defined if they are implemented through farmer organization groups.

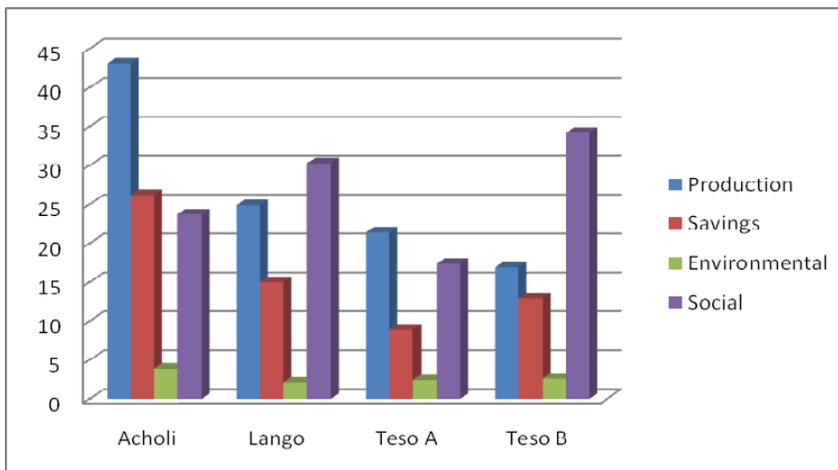
Figure 4. 7: Technologies used to open up land



4.4 Types of farmer organizational groups

Farmer organizational groups are not a new thing in the area of study. Results of the study revealed that farmers belonged to four organizational groups namely: Production, Savings, and Environmental and Social groups (Figure 4.8 and Table 4.16)

Figure 4. 8: Percentage households belonging to farmer organizational groups



The percentage of farmers who belonged to production groups was highest in Acholi with 43%, while the lowest proportion of 17% was recorded in Teso B. Savings groups were also highest in Acholi region, with 25% of the households recorded, while the lowest percentage was recorded in Teso A which had less than 10% of the respondents belonging to savings groups. Interestingly, social groups were more common in Teso B and Lango. Environmental groups however, were the least common among all the farmer groups. Production and social groups were the most common across the region due to the re-introduction of organized village farming groups known as the “Wang Kweri” that rotated on production and socialization. The Wang Kweri is a group of 10-20 people who work together in an organized manner on each other’s gardens to perform various tasks such as opening the land, planting and weeding. During an FGD held in Kitgum, the research team found out that the “Wang Kweri” group was working very well under three arrangements namely:

- (a) “Awak” Where a member may call others to work for food to be served on the same day
- (b) “Aleya or Kalulu” where members work in groups from one garden of household to another. A lottery is drawn to determine the order in which members will rotate working on working in each member’s garden. No form of payment is expected.
- (c) “Dira” where a member calls others to perform a task for a drink (usually alcoholic brew) to be served at a later date.

The “Wang Kweri” is a versatile production group and can be turned into savings and credit society or social groups for developmental purposes. It is therefore a good entry point for NGO activities in the community. The farmers across the regions indicated that they belonged to savings groups; the highest of 25% was recorded in Acholi sub region, while the lowest of 7.5% was recorded in Teso B.

Comparing Teso A and B, group formation is higher in Teso B than Teso A due to ACDI/VOCA interventions through FEDEPU. Through FGDs, members reported that, the support from ACDI/VOCA through the mentioned organization resulted into formation of about 4000 farmer groups in Bukedea, Kumi, Pallisa and Budaka, where FEDEPU is operating. There is no reported related intervention by NGO in the districts of Teso A.

Table 4.8 shows the farmer groups by district. The largest group is the production group while the smallest is the environmental group. Kitgum has the largest active membership of production group (61%) while Budaka had the lowest (12.0%). The largest savings membership is in Pader (33%) while Amuria has the lowest. Gulu has the largest environmental group membership (7%) while Bukedea has the lowest (<1%). Social group membership was highest in Bukedea (52%) but lowest in Amuria (10%).

Table 4.16: Farmer groups in MYAP areas

District	Kind of group			
	Production	Savings	environmental	Social
1. Gulu	27.2	23.8	6.8	15.5
2. Amuru	36.7	26.7	4.4	20.0
3. Kaberamaido	22.4	8.2	2.7	21.9
4. Pader	48.6	33.1	2.3	34.9
5. Kitgum	60.5	22.4	1.9	25.7
6. Soroti	24.7	13.8	4.2	24.3
7. Katakwi	18.0	8.5	1.0	11.4
8. Amuria	20.5	4.1	1.5	10.3
9. Lira	23.3	14.0	2.6	23.3
10. Budaka	12.0	6.5	1.5	17.0
11. Pallisa	14.6	8.9	2.2	18.6
12. Apac	21.1	18.4	2.0	36.1
13. Oyam	24.9	9.1	2.4	28.5
14. Amolatar	19.2	15.3	1.0	27.6
15. Bukedea	22.5	17.4	0.9	52.3
16. Dokolo	35.2	18.4	2.6	37.2
17. Kumi	18.4	18.4	5.5	48.2
Total	26.2	15.5	2.7	26.5

4.4 Agricultural marketing

4.4.1 Background

Marketing forms an important aspect in agriculture. Whatever the farmers, the extension agents, projects, or governments do, the ultimate satisfaction is usually expressed in form of increased incomes to the producer. In Uganda several marketing initiatives have sprung up since independence. Some of these initiatives have collapsed while a few have survived. In the past the poor performance of the agricultural sector in Uganda used to be regarded merely as a consequence of insufficient production but increasing importance is now being attached to domestic and external market access issues as a driving force behind the transformation of the agricultural sector.

During the post-independence era, rural marketing of agricultural produce in Uganda was focused on the traditional export crops, mainly coffee, cotton, tea and tobacco. The Cooperative Unions, through their primary societies, were involved in buying and selling these crops. The non-traditional export commodities, such as maize, beans, sorghum, millet, cassava, groundnuts and matooke, were basically considered as household food security crops and only traded in rural markets for supply to households/communities with food shortages or in need of seed reserve stocks. .

Around the early 1980s, the Government of Uganda (GoU) identified five major food crops, namely maize, beans, groundnuts, simsim (sesame) and soya beans, as non traditional agricultural exports (NTAEs). But due to national and regional demand as a result of population increases, institutions, people in refugee camps and food deficits in some areas due to change of weather partners these crops began turning into cash crops. As a result Produce Marketing Board (PMB) was established and mandated to procure and market these commodities. The primary objective of PMB was to procure, store, grade and sell food to deficit areas, thereby ensuring food security. Any surplus was then to be sold outside the country. Marketing under the PMB-controlled era was, however, characterized by several flaws including diversion of crop finance, lack of prompt payment and inability to reach the rural farmers, due to poor feeder roads.

Following these and other related shortcomings, government decided in the early 1990s to open up the marketing of agricultural produce to competition. The objective was to improve efficiency, restore price incentives and consequently generate producer confidence. Under the liberalized marketing system, farmers were generally paid cash for their produce. However, no price was set by government and hence prices paid to the farmers were generally dictated by the buyer. The marketing of agricultural produce could therefore take place either on the farm, at the buyer's store, or in the rural market with heavy presence of middlemen/buying agents representing big produce buyers.

4.4.2 Field Findings

4.4.2.1 Commodity Supply Chain

With regard to sell of produce, the respondents in Lango said men had an upper hand in marketing the agro produce; they dictate as to what is done with the harvest. In Acholi the men mostly sold cash crops and also determined the use of the proceeds from the sale of other crops. However, it is estimated that in these two regions about 65% of markets involves men especially on the control of market revenue.

“Marketing is still poor, not organized, it is done in piecemeal with little bargaining power, the quality of the produce is also poor due to low quality assurance and they market in row form”.

“After harvest, the man will dictate on what will be done to the harvest, they sell and use the money for leisure, there is unequal sharing of the benefits. Formerly cash crops belonged to men and food crops to women

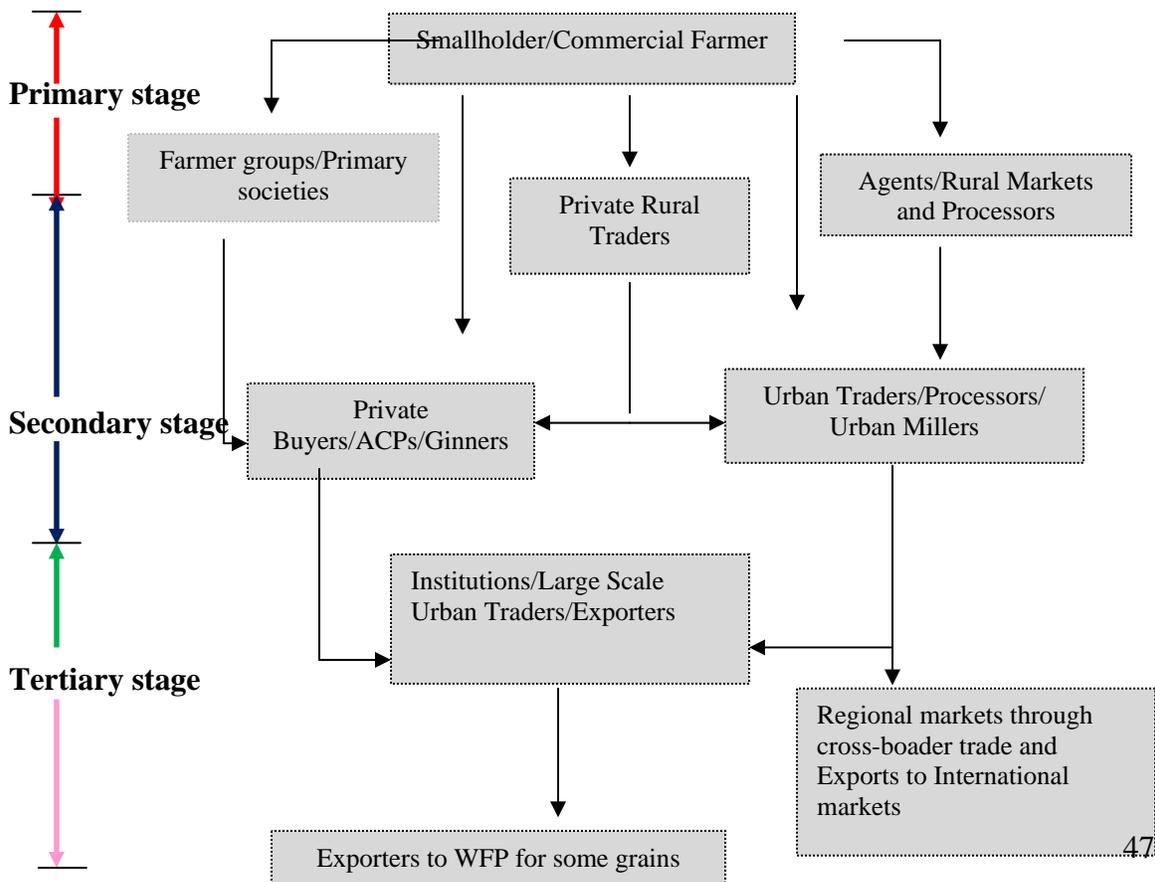
but it has changed since food crops are also increasingly being sold”. A key informant from Oyam had to say this.

In Teso however the whole family was involved in marketing of produce, families sold individually, especially when in desperate situations like sickness. Another key informant from Teso said that both women and men participated but the men had an upper hand, especially those that were largely cash crops.

The participants said “that selling crops at the household level, minimised gain, there is no profit from their sweat; it is also not good because a lot of the produce is sold and a little is left for home consumption”. The participants in Acholi were of the view that the use of weighing scales should be stopped and each seller uses own calabash for measurement, and that all family members should be involved in taking the decision on when and how much to sell.

During the baseline survey, it was found out that commodity marketing in both northern and eastern Uganda can be categorized into three main stages namely the primary, secondary and tertiary. The primary stage involves individual farmers, private rural traders, farmer groups, primary societies under the Area Cooperative Enterprises (ACPs) as the main players. The secondary stage has district urban traders, wholesalers and processors, while the tertiary stage includes larger-scale urban traders, exporters and institutions as shown in figure 4.9, below:

Figure 4. 9: The Commodity Supply Chain



Normally at the time of harvest, there is always an influx of middlemen moving into villages to buy produce from farmers when the prices are very low. They do not offer an opportunity to farmers to dry properly, sorting and grade their produce. And as such lower farm gate prices are offered. This is mainly due to inability of farmers to have proper crop storage facilities and also there is a general, lack of other household sources of income.

It was also found out that produce marketing in the regions was thin and volatile in terms of prices and trading volumes as well as traders lacking crop finance. The absence of large well-developed marketing system showed inadequacy of limited viable market outlets, high costs of transaction as well as minimal value addition. In addition, poor access to markets in terms of long distances, limited information flows and inadequate transportation means constrain efficient market exchanges.

At primary stage, there are mainly producers who sell to buyers at secondary stage. The few private traders are also producers who have stores and do engage in buying from farmers within the communities without necessarily paying cash.

These normally pay after selling to buyers at the secondary stage. Buyers at the secondary stage are based at Trading centres or main markets at sub/county level and have limited crop finance. However, depending on how much produce at the primary stage, they can get cash for produce buying from big buyers at the tertiary stage. There are also limited storage facilities. At the tertiary stage, the main buyers are town based, with access to credit from commercial institutions in case of increased supply at the secondary stage. There are enough storage facilities that can allow the buyers to speculate.

With intervention by facilitating groups in storage facilities and market skills at primary stage, the activators at secondary stage are drastically reduced.

4.4.2.2 Marketing Constraints

A number of constraints are faced by farmers in marketing their produce. The key informants noted that the value chain is not well developed, so there is inadequate market information.

“For the few farmers that produce larger quantities, they lack information on market and cannot easily predict periods of peak prices”.

Key informant from Teso

There are no stores where farmers’ can be stored until such a time when supply is reduced and sale prices are favourable. The poor road network was also mentioned among the marketing constraints that hampered accessibility to the markets. This was coupled with poor transportation translated into high marketing costs. There is no processing of the crops produced, thus compromising the value and the price subsequently obtained from the sales.

The small number of marketing associations limits the farmers' bargaining power; middlemen cheat the farmers because harvesting and selling are done at the same time to the same businessmen who take advantage and dictate low prices. Production costs are usually not known and are therefore not factored into prices of produce which make farmers sell at losses. Also fluctuating prices are unhelpful to the farmers. Also mentioned was the low quantities and quality of produce that do not guarantee competitiveness in the market.

The focus group participants said that farmers faced low marketing prices for produce which demotivated them to cultivate more. The farmers also do not have information about the produce markets; this leads them to being cheated. The middlemen also cheat farmers during weighing of produce and subsequently calculations of final costs of produce.

“Produce buyers cheat us during calculation of amount to be paid to me because a farmer cannot multiply so the buyer just uses a calculator and tells you that this is your money, they give you little money compared to what you have sold to them”

“Secondly if they tell you that they measure using a cup locally called “apwoti” you will find that their cup is different from the usual “apwoti” that we have because they first boil the cup, then expand it so that it is bigger than the usual ones.” **FGD Participant from Acholi**

When they get to the markets, they are faced by high market dues that reduced their profit margins, the high dues were attributed to privatization. Some of the participants noted that the lack of storage facilities and the negative attitude towards collective marketing also constrained the marketing of produce.

Institutional/ infrastructure constraints

- a) Insecurity does not allow one travel at the convenient time, and not allowing more traders in the district especially using own trucks.
- b) In a few cases, farmers who sold to middlemen on credit failed to receive their money or received it in bits. This normally happened when buyers failed to raise enough capital or diverted it for more profitable ventures. This created an atmosphere of mistrust.
- c) Lack of appropriate processing technologies, both on and off farm.
- d) Farmers often complained about improper weighing scales and general cheating by the middlemen.

- e) Lack of government support on market infrastructure, like roads leading to markets, and provision of extension services. The poor rural road networks in some of the major producing areas not only increase the transaction costs within the supply chains, but also the time taken to bulk the crops. Some areas are impassable, otherwise if the roads were good, more traders would go to the farmers, competition would increase and in so doing market information would be more easily accessed and prices would be more favourable.
- f) Lack of storage facilities that render the produce to be of poor quality at harvesting and post-harvesting. The absence of appropriate storage facilities has resulted into high post harvest losses and untimely delivery of consignments from one stage to another within the grain supply chain.
- g) Lack of strong farmer groups has resulted in the small-scale farmers who are the major producers of grains operating individually, which undermines bulking and consolidation of surpluses. Besides, it also increases the cost of collection of grain from farmers scattered in various areas of the country
- h) There are inadequate sources of extension services and technical support. Farmers hardly receive guidance and advice and therefore have not changed their farming methods. This has resulted into consistently low yields year on year. Other provisions like training, research and related infrastructure are also limited and are mainly supported by government and development partners.
- i) There is a relatively small degree of reliable and knowledgeable rural input supply stockists who can sell genuine inputs and advice farmers accordingly. The input stockists attribute this to the seasonal nature of the business and low input usage by the farmers. These stockists are not able to finance these inputs and neither can they accept to offer inputs to farmers on credit without a guarantee.
- j) Inadequate credit support is amongst the major constraints to the development of an efficient and self-propelling supply chain. Notably, commercial banks normally require physical assets as collateral before availing credit to the beneficiaries rather than usage of stock inventories.

Constraints related to market issues

Figure 4.10 shows constraints related to market issues. Below, we give details about each constraint:

- (a) Farmers were still receiving less for their produce compared to the prevailing market prices. They had no bargaining power to negotiate prices as marketing decisions were individually made by middlemen. Most participants in the supply

chains act individually and carry out on-spot cash based market transactions, which limit horizontal and vertical linkages that hinder the integrating of activities and efficiency within the supply chains.

(b) Poor information flow between the various participants constrains development of a competitive and efficient supply chain. In reality, access to information by individual participants is used to one's advantage at the expense of other participants within the supply chains.

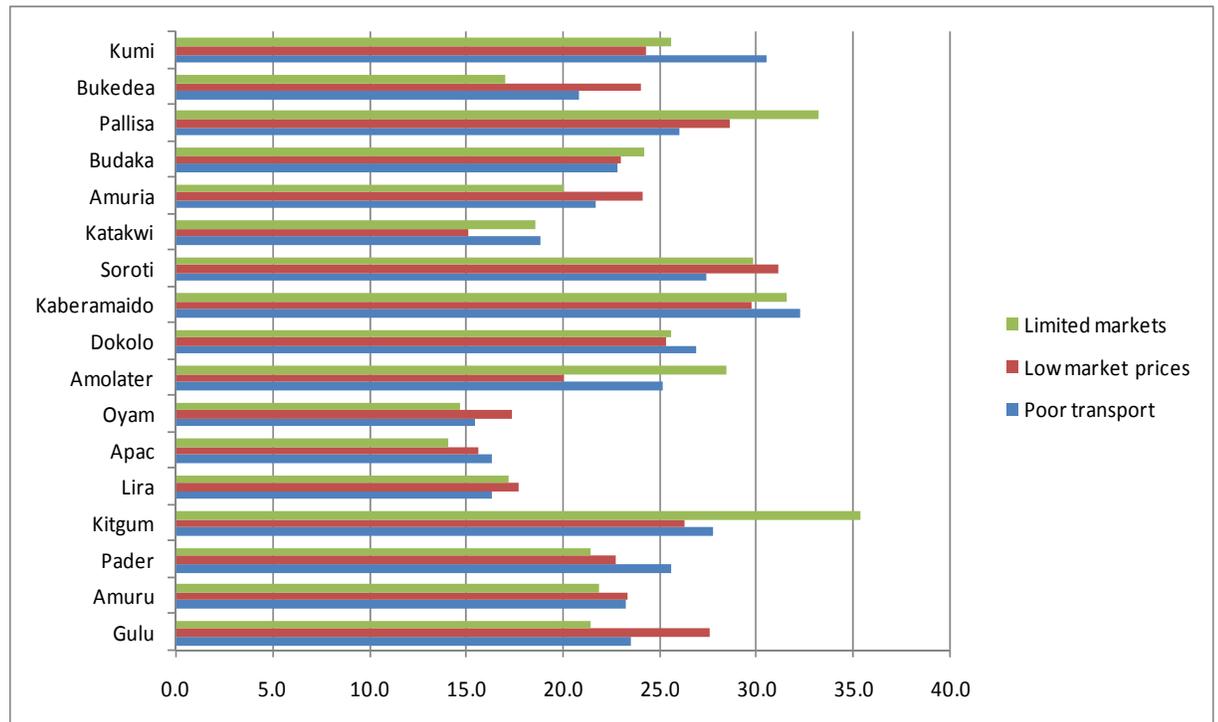
(c) Deals and transactions are mainly based on volumes and visual quality inspection and assessment. The failure by the participants to reward quality improvements within the supply chains has undermined quality improvement.

(d) The failure to develop contractual arrangements between participants has led to parasitic behaviour and on and off seasonal participants within the supply chains, which increases uncertainties.

(e) Mobilizing large volumes is still a problem due to the following reasons:

- Failure by farmers to know what was required by the market as a result of the missing link between the buyer, extension worker and the farmer.
- Production at subsistence level, with farmers scattered in villages and without common storage facilities.
- Majority of farmers still not organized, lacked leadership and therefore could not pool produce together for price negotiation and selling in bulk.
- Buyers lack finance to procure big volumes even if there was a readily available market.
- Poor post-harvest handling and poor storage facilities that lead to high crop losses that is estimated at (30-40%) and overall poor crop quality.
- Equipment and machinery for processing (like dryers, hullers, pre-cleaners that could process sizeable quantity of produce) are limited or unaffordable.
- Lack of affordable credit for crop finance and lack of knowledge on how to access whatever funds are available.

Figure 4. 10: Households reporting Agriculture marketing constraints by Districts



4.4.3 Causes of the marketing constraints

These constraints in marketing were attributed to weak government policy. For example, there is little protection on prices from the government and the farmers have not been facilitated to process their produce. It was government policy that removed the cooperatives and the farmers have not been sensitized on alternative group marketing, inadequate marketing information, and the crops being the only source of income for other needs. Insecurity was also mentioned in Acholi as a cause of marketing constraints.

“I think it was government decision that they should abolish cooperatives especially lint and coffee marketing boards. When I talk of northern Uganda it was the lint marketing board so the cotton growers are now lacking where to sell their produce. LMB would even do the negotiation and they would just come and offer them some good prices. Such opportunity is no longer there, you are now supposed to look for your own buyer especially the middlemen who now come with the intention of making profits. They do not care about the farmers; don’t look at their welfare but the LMB being a government parastatal they would balance the two.” This is quote from one KI in Acholi region.

Marketing was also constrained by the lack of designated market places where farmers can sell; a monopoly of individuals that buy produce from the farmers, poor access to the

farmers because of poor roads; broken bridges and the failure of the government to regulate the prices for produce.

The poor quality produce, poverty (no money to buy a variety of seeds to plant), lack of marketing groups, poor storage facilities and government neglect on identifying good markets were also observed as other constraints.

4.4.4 For an effective marketing the following should be addressed

Improving commodity supply chain competitiveness must entail reducing the unit costs of production, strengthening horizontal and vertical linkages between participants, quality improvement, minimization of post-harvest losses, bulking of produce as well as reduction of transaction costs. A supply chain should ensure that the following is in place.

a) Promoting contractual procurements

The procurement and payment is through clearly defined contractual arrangements in order to attract high volumes and delivery of products within the supply chains. Besides, stock inventory financing through warehouse receipt mechanism gives comfort to participants and financial institutions, will be boosted.

b) Establishing quality control measures

Well laid down quality control procedures will help avoid mistrust and scepticisms. A mechanism that offers a premium for quality will ensure compliance, and thus boosting competitiveness of the supply chains.

c) Adequate and proper storage

Sizeable storage capacity will attract more serious buyers, as they would want to procure what they can see and not what they can imagine. Besides having facilities such as dryers, graders and sorters in place will enhance quality improvements and thus competitiveness of the supply chains.

d) Increasing Information flow

Active and functioning information flow channels will nurture vertical and horizontal linkages as a means of enhancing competitiveness within the supply chains.

e) Minimizing Transaction Costs

Knowledge and appreciation of reduced transaction costs and maintaining a clear cost structure minimizes costs, which makes the supply chains more competitive.

f) Sufficient turnover

Supply chains operating from areas with huge surpluses, will not only be able to pull product at low costs and enjoy economies of scale, but also attract bulk buyers.

4.4.4 Marketing groups

There were no marketing groups reported in the Acholi sub region for any crops. This was attributed to suspicion of being conned of their money;

“Some people came and deceived us that they want people to form groups. They will want you to pay some money as group member. So the little money which we could have kept to help us we are forced to pay it away. They will go and never come back; you never hear about the name any more or see them. I cannot even know where to get them”

A FGD participant from Acholi

While in Lango these groups were only mentioned in Lira district for rice, maize, and sunflower and kwera Dokolo. The marketing groups in Teso included AT Uganda for ground nuts in Butebo, ground nut marketing groups in Lyama, Kamonkoli, a rice marketing group in Kamonkoli, Malera marketing group, Koena cooperatives and Emono marketing group. An informant said also that marketing groups were being developed under NAADS especially for citrus fruits; there is also one group supported by the vegetable oil development programme for marketing sunflower. Also marketing groups existed in Bukedea: these are imono-iteso (for groundnuts) and Malera farmers marketing group for groundnuts, sunflower, cassava and maize while there were no groups mentioned for Kumi and Budaka.

Build a small scale farmer groups to do farming as a business based on the following:

To build commercial smaller scale farmers, one should apply a quadruple focus of technology transfer, input supply, output marketing and financial services support on the production base. If farming is to be done as a business, one should attract buyers by ensuring that the following are in place:

- i. Farmers need to form groups for easier access to information, extension services, bulk inputs procurement and marketing
- ii. Technology should be demonstrated under farmers’ conditions through field schools
- iii. Expertise in agricultural production should be easily available to producers
- iv. Processors/exporters should buy grain directly from organized producers at market prices.

- v. Buyers should participate in the production of grain through contract farming, in order to have influence over the grain they want to buy in terms of quantities, quality and time when to get them, for effective operations.
- vi. Establish commodity collection centres/storages, bulk the produce and carry out collective marketing.
- vii. Establish an effective information system to boost information seeking, dissemination and sharing.
- viii. Seek for market information, share it with others. An effective information system can be put in place.
- ix. Set up grain quality monitoring and evaluation committees to ensure that targets and standards are realized.
- x. Make supply and buy contracts/agreements and abide by them. (Sell produce to only the agreed upon time and buyers)
- xi. Attend grain production and marketing workshops/fora and demand for periodical orientation on production and market requirements to get updates on demand and prices from buyers and extension service delivery institutions/organizations.
- xii. Build trust and collaboration amongst chain actors (farmers, input suppliers, extension workers, buyers and consumers) to identify market opportunities that benefit all of them.
- xiii. Get trained in record keeping and keep both production and market records to aid in setting prices and making contracts with buyers.
- xiv. Advocate for legal supply/buyer contracts/ agreements that bind both parties and endeavour to break them.
- xv. Pool resources to promote production and collective marketing as well as establishment of collection centres.
- xvi. Have a diversity of stable sources of income rather than depending on one source

4.4.5 Gender and marketing

- a) Women provide most of agricultural operations; however, they don't make decisions on marketing. Marketing is mainly done by men as they control the expenditure of output income. This disincentive leads to decline in productivity
- b) An intervention is necessary to include both men and women in capacity building.
- c) Women need fair representation on all committees formed for agricultural activities, especially on marketing.

4.4.6 Access and means of transport of produce to markets

Table 4.11 and figure 4.12 show the percentage of households that accessed markets for their produce by region and district. Figure 4.13 shows the modes of transport. Over 50% of the households in all regions indicated that they got access to markets within the communities, where prices are better than those offered by the middlemen or passerby.

Figure 4. 11: *Percentage of households that access markets*

District	Freq	%
Gulu	132	69.5
Amuru	122	72.6
Kaberamaido	140	65.7
Pader	102	60.7
Kitgum	127	64.8
Soroti	153	66.5
Katakwi	66	32.8
Amuria	114	58.5
Lira	118	72.8
Budaka	143	71.9
Pallisa	170	76.6
Apac	94	70.7
Oyam	105	67.3
Amolatar	143	77.7
Bukedea	156	72.6
Dokolo	146	77.7
Kumi	156	72.9
Total	2,187	67.6

Foot and bicycle accounted for about 60% of the commonest mode of transport (Figure 4.13). Districts like Dokolo, Kaberamaido and Apac are where motorcycle usage was not recorded. Foot, bicycle, vehicle and motor cycle are the most common means of transportation of crop products to the market.

Figure 4. 12: Access to markets

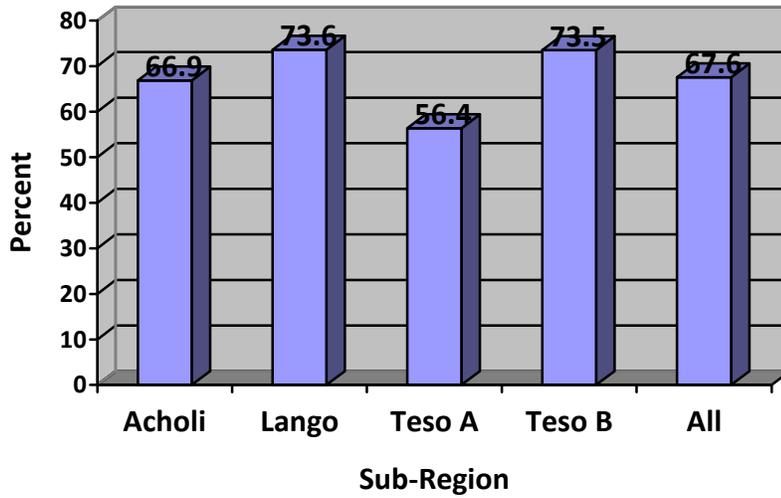
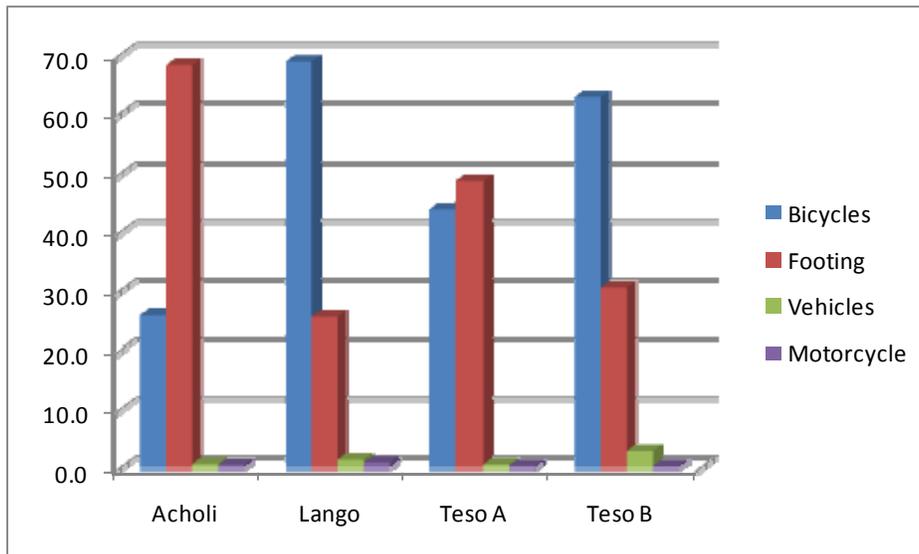


Figure 4. 13: Means of transport for households who market their produce



Teso B has the highest access to market; this could be attributed to earlier interventions by ACDI/VOCA through FEDEPU in strengthening and support the formation of new farmer groups. In addition, the districts are close to Mbale trading town with access to regional trade especially to Kenya through major borders of Busia, Malaba and Lwakhaka. It was also observed during focus groups that although men control produce marketing and revenue generated from sale of the produce women provide much of the labour during production.

It was observed that less than 5% across the regions were involved in collective marketing focussing on maize and sunflower. This was as a result of some interventions by NGOs.

Table 4.17 shows the utilization estimates of selected crops according to the Uganda Bureau of Statistics (UBOS). When the overall output for maize is 20 bags, 2 bags is lost during postharvest handling and storage, 1 bag reserved for seed, 1 bag reserved for consumption and the rest are marketed. This model is based on a household doing in farming as a business in Uganda.

Table 4. 17: Percentage Utilization estimates of selected crops

Commodity utilisation	Maize (%)	Beans (%)	Sorghum (%)
Losses at post-harvest	10	15	10
Seed	05	15	20
Home consumption	10	35	40
Local markets	55	30	25
Industrial use	02	0	05
Exports	18	05	0

Source: UBOS Household survey and analysis by consultant

4.4.6 Concluding Remarks on marketing

The donor community in supporting increased commodity marketing should ensure that the missing link be identified to include among others;

- (i) Strong farmer group / Associations.
- (ii) Vibrant Rural Input Dealers.
- (iii) Flow of Market Information.
- (iv) Provision of extension and technical support to farmers in all the farming operation.
- (v) Quality control regulations to be put in place in line with market specifications.
- (vi) Sufficient and good quality storage facilities plus provision of harvest and post-harvest handling facilities.

- (vii) Road network and infrastructure to inaccessible productive areas.
- (viii) Facilitate value addition of some products and development of products for specific markets.

This would be accompanied by with increased volumes, specialization in specific products, segmenting a wider market for both products and productive resources through analysis of supply / demand situation and cost analysis benefits.

Agricultural Indicators:

Production

- (i) Types of crops grown
- (ii) Average Land per each crop grown
- (iii) Yields kilograms grown for each crop
- (iv) Type of technology used to open upland
- (v) Type of technology used for production, weeding, postharvest
- (vi) Sources of inputs, number of farmer groups involved in procurement and selling of inputs
- (vii) Types of inputs
- (viii) Number of farmer groups
- (ix) Percentage of households reached by extension services

Livestock

- (i) Type of livestock
- (ii) Land available for livestock
- (iii) Type of cattle kept dairy or beef
- (iv) Type of goats kept

Postharvests handling:

- (i) Percentage households using storage facility and by type
- (ii) Percentage households keeping their produce in the same house of residence
- (iii) Type of technology used for harvesting
- (iv) Type of technology used for threshing
- (v) Percentage crop loss incurred during storage
- (vi) Number of farmer groups with improved postharvest technology and storage facilities

Marketing

- (i) Types of crops and sales
- (ii) Local marketed produce
- (iii) Average prices by type of commodity
- (iv) Cost of transport to the market
- (v) Destination of the produce and type of buyers
- (vi) Inputs marketed, procurement and sales

CHAPTER FIVE

5.0 FOOD SECURITY

5.1 Introduction

Food security is defined as a state in which “all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life” (USAID, 1992). Three distinct components are thus essential in the attainment of food security namely:

1. Food availability – This refers to the state of foods being consistently available to individuals or are within reasonable proximity to them or are within their reach. The foods should be available in sufficient quantities and of appropriate, necessary types from domestic production, commercial imports or donors.
2. Food access – This refers to the ability to acquire sufficient quality and quantity of food to meet individual or household members’ nutritional requirements for productive lives. Food access depends on the ability of households to obtain food from their own production, stocks, adequate incomes or other resources to purchase, gather, barter, or through food transfers from relatives, members of the community, the government, or donors. A household’s access to food also depends on the resources available to individual household members and the steps they must take to obtain those resources, particularly exchange of other goods and services.
3. Food utilization - This refers to the individual’s biological capacity to make use of food for a productive life. To enable this, food should be properly used, proper processing and storage techniques are employed, adequate knowledge of nutrition and child care techniques exist and is applied, and adequate health and sanitation services exist.

Food insecurity exists when people do not have physical, social and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and health life (FAO, 2002). Nearly 1.7 million people in Uganda are currently food insecure (FEWS Uganda Food Security update, April 2008). This includes approximately 1.2 million people suffering the effects of prolonged civil insecurity in the north, about 275,000 in the northeast (Karamoja) where multiple hazards resulted in lower than normal harvests in both 2006 and 2007, and about 200,000 flood affected individuals in Eastern Uganda.

Improvement of food security is a critical component of USAID funded Title II programs in Uganda. In order to address the most pressing food security needs for households living in Northern and Eastern Uganda, baseline food security information was thus sought.

5.2 Assessment of household food access

To determine household food access, two strategic objective level indicators of household food access were measured namely household dietary diversity (HDDS) and months of adequate household food provisioning (MAHFP). These two indicators focus on the desired outcome of improved food access which is improved household food consumption.

5.2.1 Household Dietary Diversity Score (HDDS)

a) Household dietary diversity score

The household dietary diversity is the number of different food groups consumed in a given reference period. The twelve food groups used in calculating the HDDS include cereals, root and tubers, vegetables, fruits, meat/poultry/offal, eggs, fish and seafood, pulses/legumes/nuts, milk and milk products, oil/fats, sugar/honey and miscellaneous.

In all sub regions, the households consumed on average 5 and more foods from different food groups implying that their diets offer some diversity in both macro- and micronutrients (Figure 5.1). Acholi sub-region had the lowest HDDS (5.4) whilst Lango had the highest (7.1). The lower HDDS in Lango is reflective of the consequences of the two decade insurgency that has affected this sub-region the most.

Figure 5. 1: Average household dietary score by Sub-Region

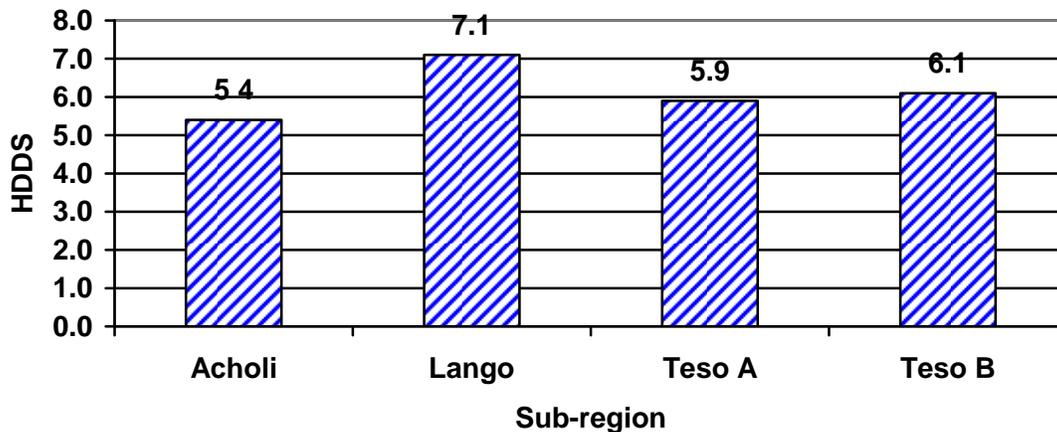


Table 5.1 shows households in Lira district reported the highest household dietary diversity score (7.8) and the lowest score in Pader district (4.8). The high dietary diversity score in Lira is attributable to households having the benefit of access to gardening as well as commercial sources of food commodities. On the other hand, households in Pader were affected by food insecurity as a result of the civil strife in Northern Uganda and hence rely largely on food distribution.

Table 5. 1: Average household dietary diversity score by district

District	Frequency	HDSD
Lira	193	7.8
Apac	147	7.4
Kumi	218	7.0
Amolatar	203	7.1
Dokolo	196	6.8
Bukedea	218	6.8
Kaberamaido	219	6.7
Oyam	165	6.6
Gulu	206	6.5
Soroti	239	5.9
Amuria	195	5.8
Katakwi	211	5.3
Amuru	180	5.3
Budaka	200	5.3
Pallisa	226	5.2
Kitgum	210	4.9
Pader	175	4.8
Total	3401	6.2

Poor dietary diversity score is reflective of poor household dietary intake. The key informants mentioned that the factors leading to poor diet were poverty, inadequate nutritional knowledge, insecurity, lack of storage facility and variety of food crops, large families, prolonged droughts, congestion in the camps, decision making by men, and low yields due to poor soils.

“... at the time of paying school fees you, find them selling their food which they could have used to feed”. “Prolonged droughts and increase in soil infertility lead to poor harvests limiting people from eating balanced meals” (KI –Pallisa district).

“The camp is so congested with people; currently there about 20,000-30,000 children and such numbers may not allow room for balanced diet”. (KI- Acholi sub region).

b) Types of food consumed by region

Common food groups consumed by households in the past 24 hours were established using the dietary diversity questionnaire. Foods groups commonly consumed by over 60% of the study households included fruits, roots and tubers, vegetables, pulses and nuts, as well as cereals (Table 5.2). A wide variety of fruits were readily available to the populations. These comprised of oranges, mangoes, pawpaws and jackfruits that are seasonal. Other wild fruits were also available such as guavas. Many of the vegetables consumed were wild, hence largely available and served as a good source of food to cope with food insecurity. By tradition, most of the households in survey regions consume roots and tubers such as cassava which is also drought resistant as well as pulses such as ground nuts. Common source of cereals as well as pulses is likely to have been from WFP food distribution. Lango sub-region specifically was noted to consume relatively high amounts of oils and fats (69.8%) as well as sugars (64.5%). This finding is linked to its proximity to urban centres hence the availability of such products as well as their cultural production and consumption of shear nut, groundnuts and simsim.

Table 5. 2: Proportion of food groups consumed by region

Food groups consumed	Percentage (%)				
	Acholi	Lango	Teso A	Teso B	All
Fruits	66.7	79.4	80.1	84.2	77.9
Roots and tubers	43.7	78.3	90.1	94.6	77.6
Vegetables	78.6	66.0	75.6	87.7	76.8
Cereals	90.7	60.0	75.9	73.1	74.3
Pulses, legumes and nuts	77.7	80.9	68.2	36.8	65.8
Others	48.3	66.0	35.2	51.0	50.4
Oils and fats	46.0	69.8	32.8	29.1	44.7
Sugars	44.5	66.4	30.2	27.8	42.5
Fish	21.7	43.0	31.4	39.0	34.2
Meat	9.9	35.4	30.3	34.9	28.2
Milk and its products	6.6	42.5	25.8	33.3	27.8
Eggs	6.2	26.1	16.8	15.8	16.6

5.2.2 Months of adequate household food provisioning

a) Average Months of adequate household food provisioning by sub- region

In the last 12 months, the average months that the households were able to meet their food needs is 8.0 (Table 5.3). The households were thus unable to meet their food needs for four months in a year due to inadequate crop production, poor farming and storage practices and natural disaster namely floods.

Table 5. 3: Average months of adequate household food provisioning by region

Region	Experienced food shortage in past 12 months		All respondents	
	<i>n</i>	Average Number of months	<i>n</i>	Average Number of months
Acholi	663	8.8	771	9.1
Lango	754	8.2	904	8.7
Teso A	714	7.0	864	7.8
Teso B	489	7.8	862	8.3
Total	2,620	8.0	3401	8.5

b) Average months of adequate household food provisioning by District

Table 5.4 shows that in the last 12 months, the district with highest average number of months that the households were able to meet their food needs was Pader district (9.2) and the lowest was Katakwi district (6.5). Households in Pader as with others in the greater part of Northern Region were benefiting from food distribution hence the ability to have more months of adequate household food provisioning.

Table 5. 4: Average months of adequate household food provisioning by district

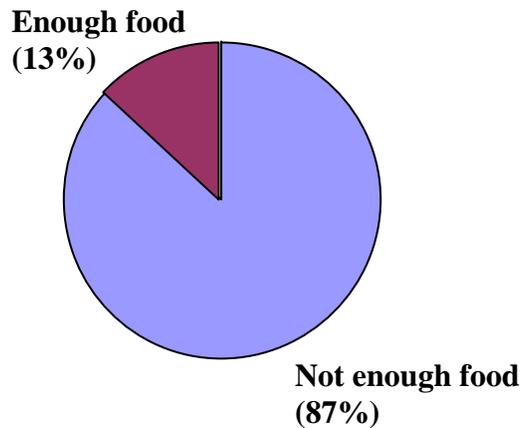
District	Frequency	Average
Pader	175	9.2
Amuru	180	9.1
Kitgum	210	9.0
Gulu	206	9.0
Apac	147	9.0
Amolatar	203	8.9
Oyam	165	8.7
Budaka	200	8.7
Lira	193	8.7
Kaberamaido	219	8.7
Bukedea	218	8.7
Pallisa	226	8.6
Dokolo	196	8.4
Soroti	239	8.4
Amuria	195	7.5
Kumi	218	7.1
Katakwi	211	6.5
Total	3401	8.5

NB: All households included

c) Households with inadequate household food provisioning

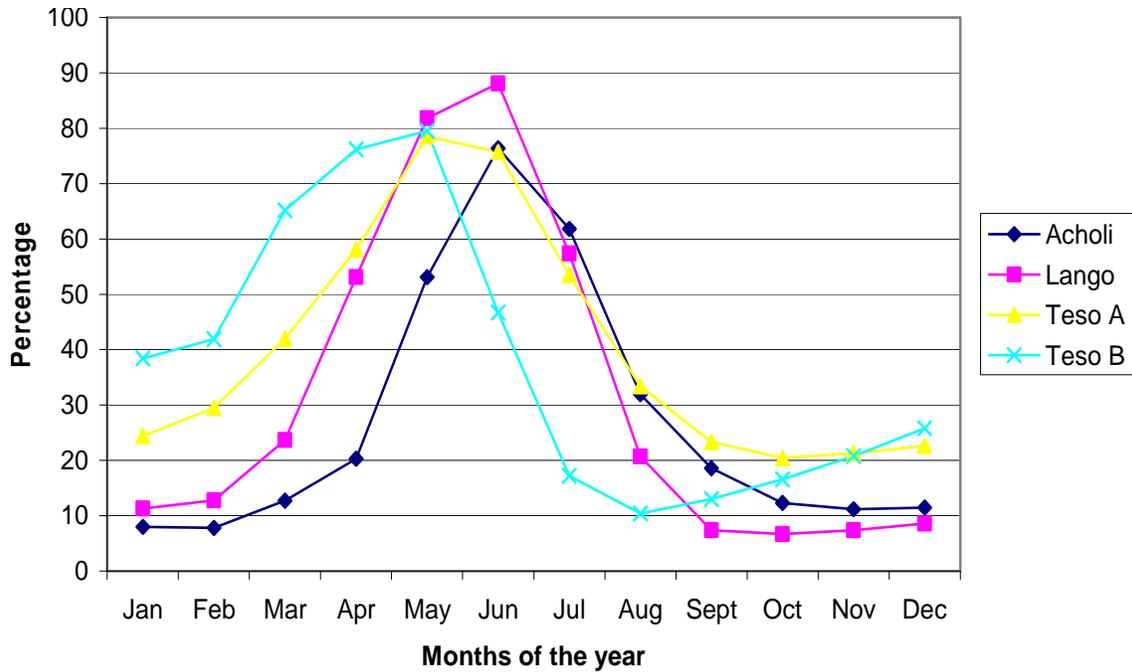
Overall, most of the households (87%) did not have enough food to meet their family needs in the last 12 months (Figure 5.2).

Figure 5. 2: Proportion of households with adequate household food provisioning in the last 12 months



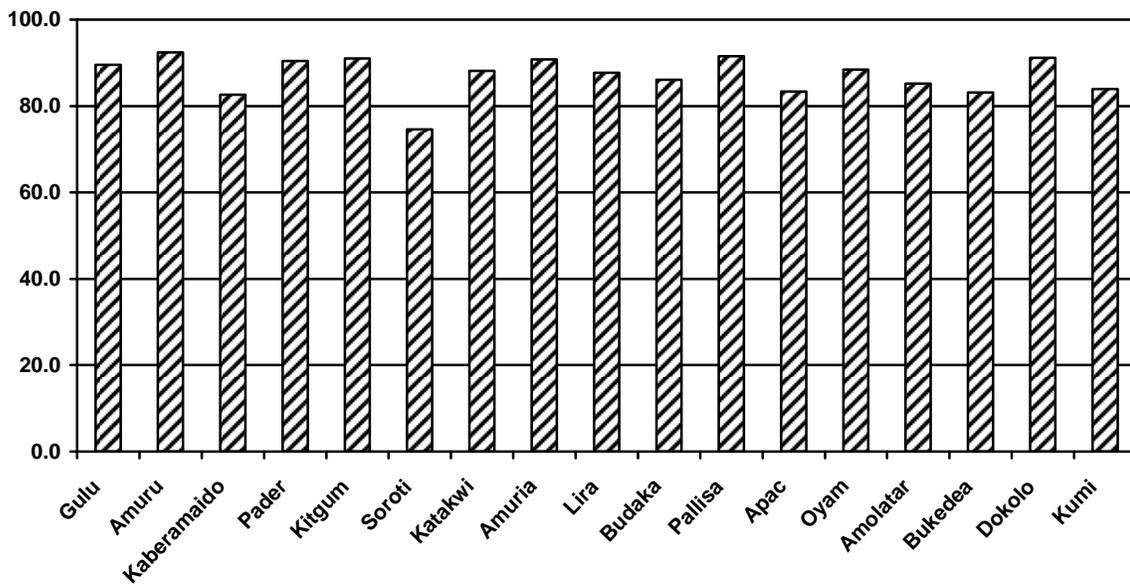
Further analysis revealed that most households did not have enough food to meet the family needs for approximately four months (April to July) in the last 12 months. Most households in Acholi and Lango sub regions experience insufficient food to meet their family needs in the month of June and in Teso A and Teso B in the month of May (Figure 5.3). This indicated lack of expected rains during these months hence poor harvest. Teso B was specifically observed to experience food shortages much earlier (January) due to the devastating effects of the floods.

Figure 5. 3: Proportion of households with insufficient food by month



With the exception of Soroti, over 80% of the households in all the other 16 districts did not have enough food to meet the family needs in the last 12 months (Figure 5.4). This is indicative of an exceptionally high level of food insecurity within the Northern and Eastern Region.

Figure 5. 4: Proportion of households who did not have enough food to meet family needs in the last 12 months by District



Overall, rampant food insecurity patterns could be attributed to changes in rainfall patterns, poor cultivation practices as well as poor food storage practices. In this regards, droughts, hailstorm, floods, war and disease outbreaks of plants were the most cited issues by key informants that suddenly affect food production and hence subsequent inability to meet household food needs. Others included sickness of members of household, lack of market leading to rotting of the produce in the gardens and companies promoting growing of cash crops against food crops leading to low food production.

“...selling of all food without leaving some for consumption, prolonged drought, too much rain and eviction of families due to war greatly affect food growing” (KI- Pallisa district)

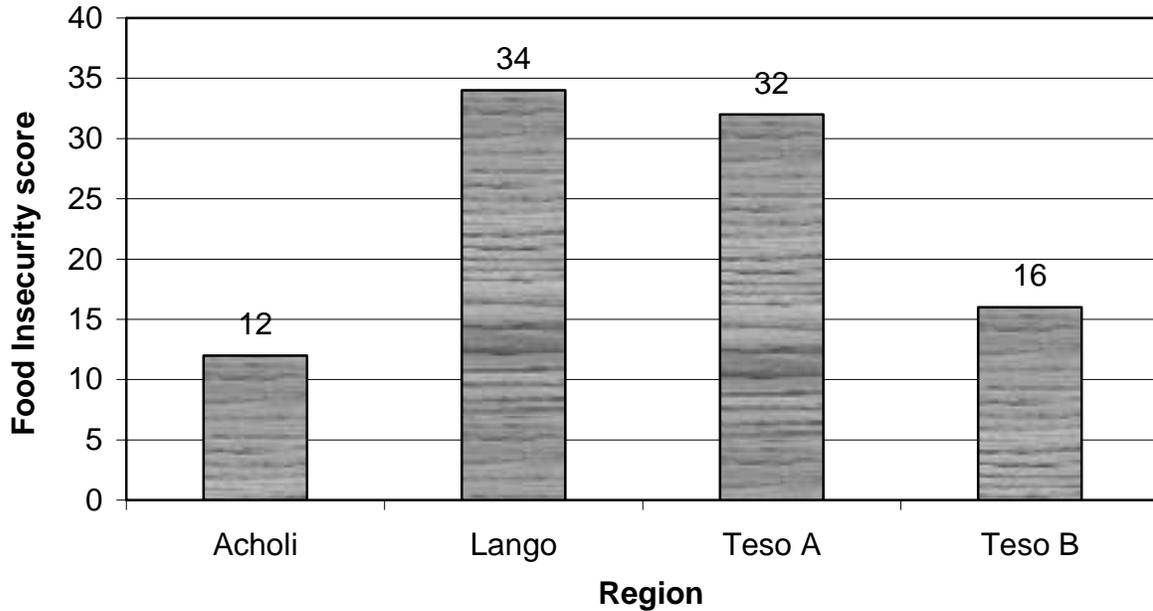
Household food and resource distribution systems were also identified to be a causal factor for food insecurity. In this regard, it was revealed that as much as women were the main producers of food and joint decisions were made on the foods to grow, in most cases the men had the sole discretion on the sale of the harvest and subsequent division of monies obtained from the sale of harvests.

5.3 Assessment of Household Food Insecurity

The Household Food Insecurity Access Scale (HFIAS) is used to assess whether households have experienced food access problems within a defined period and in this context, in the last 12 months. It is based on the idea that the experience of food insecurity (access) causes predictable reactions and responses that can be captured and quantified. These reactions may be ones of uncertainty or anxiety leading to reported reduction of food intake, negative consequences or resorting to socially unacceptable means to obtain food resources.

Figure 5.5 shows high household food insecurity scores were observed in Lango (34%) and Teso A sub regions (32%) and the lowest in Acholi sub region (12%). Higher food insecurity in households in Lango and Teso A sub regions were as a result of long duration of civil strife existent in the region coupled with climatic effects that have negatively impacted the households' ability to produce food and generate individual income. On the other hand, lower household food insecurity scores in Acholi are reflective of the impact of assistance provided by the numerous non-governmental organizations.

Figure 5. 5: Average household food insecurity access scale by Sub-region



The highest food insecurity access score was reported in Katakwi district (18.1) and the lowest in Dokolo district (12.6) as shown in table 5.5.

Table 5. 5: Average Household Food Insecurity Score by District

District	HFIS
Katakwi	18.1
Amuria	16.4
Pallisa	15.8
Amuru	15.0
Kumi	14.9
Kitgum	14.8
Bukedea	14.6
Budaka	14.4
Kaberamaido	14.2
Oyam	14.2
Soroti	14.0
Pader	13.5
Lira	13.1
Amolatar	13.0
Apac	12.9
Gulu	12.8
Dokolo	12.6
Total	14.4

From the key informant interviews it was noted that in all the three sub regions, food insecurity is a problem and this was attributed to fact that people had just gone back to their homes from the internally displaced people’s camps hence some of the families do not have enough food. The people also had inadequate money to buy agricultural inputs. The people were said to be selling most of the food that they had grown to obtain money for other needs. This implies that they were probably not storing food hence shortly after the harvesting period, they will not have enough food.

Generally, most of the households were reported to be practicing the traditional way of growing crops, hence limited agricultural output. The manifestations of the problems were: people having less than three meals a day, food crops being turned into cash crops, the absence of granaries at household level, people in the rural areas buying food and very low quantities of food being harvested. Food was only available and accessible at certain periods like soon after harvest. Food inaccessibility was also reported to be due to

the poor road conditions. In Acholi region, it was reported that the problem of food insecurity has been there for the entire twenty year period of the insurgency. In Teso region however, food was said to be available but not very affordable as most families are too poor to buy food.

5.4 Perceived causal factors of food insecurity

By region, the main factors reported that enhance food insecurity by over half of the households were low income, drought, pests and diseases, limited farm inputs, limited farm implements, floods/heavy rains and poor farming practices (Table 5.6).

Table 5. 6: Factors enhancing food insecurity by region

Factors	Percentage (%)				
	Acholi	Lango	Teso A	Teso B	All
Low income	53.4	73.2	73.1	86.3	71.4
Drought	45.1	67.6	78.3	84.8	69.0
Pests and diseases	39.3	62.0	72.4	68.6	60.9
Limited farm inputs	46.5	55.7	61.1	62.5	56.4
Limited farm implements	35.1	62.4	58.6	54.0	53.1
Floods/Heavy rains	38.2	54.1	30.8	70.9	53.1
Poor farming practices	27.9	50.9	56.5	66.4	50.3
Poor soils	25.5	41.7	38.5	81.9	45.5
Poor health	31.5	39.6	39.7	24.4	34.6
Insecurity	20.2	24.1	26.6	6.1	20.3
Cattle rustling	10.7	5.6	24.2	10.8	13.1

In addition to the factors reported by household members interviewed, key informant interviews, further cited the major factors causing food insecurity were the LRA insurgency, growing of little food and big family sizes. In Teso region, HIV/AIDS was mentioned as a cause of the food insecurity because it made people lose the morale for production and that mothers and children were most affected by the food insecurity. These finding confirm that the causes of food insecurity are multiple, complex and not always within the control of the individuals or households.

5.5 Vulnerability and signs to food insecurity

People are vulnerable or at risk of food insecurity because of their physiological status, socioeconomic status or physical security in addition when the ability of people to cope has been temporarily overcome by a shock (TANGO International, 2004). The degree of individuals, households or groups of people being vulnerable is determined by their exposure to the risk factors and their ability to cope with or withstand stressful situations (FIVIMS Initiative, 2006).

5.5.1 Populations vulnerable to food insecurity

The four key population groups considered as vulnerable were namely the children, the sick, elderly and pregnant women. Overall, children were considered the most vulnerable across all regions by 91.7% of the respondents (Table 5.7). This is attributable to the fact that a child, depending on the age would require an adult caretaker to fend for their food and livelihood.

It was further mentioned that among children, the boy orphans are more vulnerable than the girl orphans. It's alleged that care takers/guardians prefer to look after girls than boys because girls would fetch dowry in future and would not be assertive over their parents' property compared to the boys.

"The vulnerable groups in this community include, women, orphans ...but the boys suffer more than girls because relatives want to look after girls since they will at one time marry and bring in dowry..." (KI- Oyam district)

"...here you find people do not want to keep boys who have lost their parents, because in future they claim their parents' property..." (KI- Bukedea district)

Although the study respondents only identified few categories of vulnerable populations, all population groups in the study areas were vulnerable including the men.

Table 5. 7: Vulnerable populations in case of abrupt food shortage

Vulnerable population	Percentage (%)				
	Acholi	Lango	Teso A	Teso B	All
Children	85.3	93.1	93.6	94.1	91.7
Elderly	42.1	65.8	73.3	69.1	62.9
The sick	40.5	60.8	69.1	60.3	58.2
Pregnant women	28.5	57.1	59.8	66.6	52.9

5.5.2 Signs of vulnerability to food insecurity

The signs of households or community slipping into a food insecure condition are indicated in Table 5.8. Key signs included skipping meals and having no meals all day. Skipping meals was largely a measure taken to ensure that at least a meal is consumed per day whereas not taking a meal was a sign of complete lack of food in terms or access and availability.

Table 5. 8: Signs of a household/community slipping into food insecurity by region

Signs	Percentage (%)				
	Acholi	Lango	Teso A	Teso B	All
Skipping meals	61.8	75.7	82.4	87.9	77.0
No meal all day	49.7	54.9	73.4	70.0	62.0
Having chronically sick people	34.2	38.7	34.8	26.3	34.1

The key informants were of the view that the signs that show a household is slipping into food insecurity include begging for money, poor health conditions of the household members, reduced amount of food eaten per meal, reduced number of meals to one meal a day, buy food instead obtaining from the garden, the husbands in such households spend a lot of money on alcohol, the children under five years are malnourished, the adults lose weight, and the family seeks assistance from neighbours and relatives. In addition, the households where people do not work very hard on the land or are unable to work on their land will also slip into food insecurity, the homesteads lack food storages facilities, misunderstanding and violence in the home, neglect of the home by the household heads, children missing school and girls being forced into early marriages.

5.5.3 Household strategies of coping with food insecurity

Over one third of the households reported that they compromised their future food needs, did something that they disliked, compromised other needs, received food from relatives and borrowed from neighbours in order to meet their family food needs (Table 5.9).

Table 5. 9: Coping strategies to food insecurity by region

Coping strategies	Percentage (%)				
	Acholi	Lango	Teso A	Teso B	All
Compromised future food needs	52.5	52.4	54.2	50.9	52.6
Did something that I disliked	45.4	47.2	52.6	54.1	49.7
Compromised other needs	41.3	47.8	52.7	40.5	46.0
Borrowed from neighbour	38.5	39.2	46.4	54.7	44.2
Received from relatives	34.8	42.0	50.3	45.1	43.3
Was forced to do something else	20.7	32.3	40.9	38.2	33.2
Did something I am ashamed of	22.1	32.9	35.8	23.2	29.1

The key informants affirmed that the household strategies for coping with the insecurity varied. These ranged from relying on handouts by non governmental organizations like World Food Programme and government, buying food from the market, providing labour for food or income that they use to buy food, selling domestic animals and begging from relatives. Other people preserve their food after harvest, while others have formed groups to help one another with food shortage. Some NGOs such as WFP give food rations and planting materials.

A few alternative food sources mentioned included swamps where people obtained mud fish and wild vegetables. Lake Kyoga was also mentioned as an alternative food source for people in Lango and Teso where they obtained fish. Some of the respondent also mentioned small shops in rural areas and food stores in trading centres as alternative sources, but said people needed money to access this food.

5.5.4 Suggested strategies of reducing household vulnerability to food insecurity

The overall goal of food security programs is to reduce the degree to which a household is vulnerable to any factor that results in insufficient food or to enhance community resilience and livelihood capacities in the face of shocks. Key strategies to address vulnerability included:

- Agro-based interventions
- Provision of food aid
- Holistic and integrated interventions

a) Agro-based interventions

The key agro based interventions in which vulnerability to food insecurity at household level can be alleviated are indicated in Table 5.10. These included planting more than one crop, using better farming practices and using short term improved seeds.

Table 5. 10: Measures addressing vulnerability to household food insecurity by region

Measures	Percentage (%)				
	Acholi	Lango	Teso A	Teso B	All
Planting more than one crop	75.6	81.7	82.5	87.8	81.8
Use better farming practices	39.1	51.2	54.5	65.7	52.2
short term improved seeds	10.9	9.1	8.8	7.7	9.1
working in the field	2.6	1.4	2.4	1.7	2.0
more farm inputs and implements	7.8	3.9	3.2	3.5	4.5
More food	4.0	2.1	3.0	2.8	2.9
Use of proper irrigation	0.7	1.0	2.6	2.1	1.6
use of oxen	1.7	1.3	1.6	0.6	1.3
Other	6.2	4.8	4.9	5.5	5.3

The key informants were of the view that agro-based strategies could be instituted as measures to address vulnerability of households to food insecurity in the region. Amongst those mentioned were as follows: provision of resistant food crops like cassava, post-harvest technology, food processing equipment, high yielding crops, control of sale of food, education on farming, the use of fertilizers and improved food storage; sensitizing people to grow food crops rather than cash crops as well as formation of marketing groups. The key informants further suggested that government should subsidize prices of commodities and institute by laws on food security. It was emphasized that farmers

should be encouraged to diversify crop production and reverse the selling of food crops as cash crops.

“...high yielding crops, improved storage, provision of resistant planting materials and improved post harvest technology can help” (KI- Kumi district)

“Special attention should be given to the girl child. Homes with literate mothers, the level of health status is high whereas the literacy levels of the men are not strongly co-related to the health status, educated women attend more the antenatal, children to such mothers complete immunization, the women are influential and others can copy them”. (KI-Lango sub region).

“This syndrome of converting food crops into cash, all interventions should be addressed locally, diversify crop production by growing high value crops like sunflower and onions” (KI- Apac district).

b) Provision of food aid

Food aid was deemed to be highly important in times of food insecurity. Giving food to vulnerable people was perceived help to the people especially if provided in times of shock as they feel valued. Provision of food aid would encourage others to come out of the camps because they would be assured of a way to start in terms of food. Some respondents were of the view that people do not totally depend on food supplies donated to them. But they engage in other enterprises to supplement on what is supplied.

“...these people are not seated idle. They are also working to supplement on what is supplied.”(KI- Lango sub region).

“Since we have just come back home, I see that food ration should be given to help people but they should also dig (FGD participant –Acholi sub region).

“giving food to the vulnerable groups is good. When we used to get this food, it was not enough for our families. It does not come every week, so I can not depend on such food” (FGD participant – Teso A sub region).

Both men and women focus group discussions (FGDs) and key informants (KIs), participants were of the view that food ration should be given only during severe food shortage and people should be empowered to produce their own food other than depend on rations.

“Giving food to vulnerable groups is good, but give them also free medical services and encourage them to grow their own crops” (FGD participant - Teso A sub region.)

Majority of the KIs and FGD participants were of the view that food should be given for a limited duration but not more than five years. This period was viewed to be long enough for the people to produce their own food from their gardens. However, others believed that it should be continuous for some groups particularly for the PLWHA to support and strengthen their health.

“Yes relief food should be given for a limited time up to harvesting time, after this, food should not be given to stop dependency syndrome. (KI – Kumi district)

“...Food should be given up to the harvest time for example for 4-5 months” (KI- Soroti district)

“... two years especially in cases of emergency and maximum of five years....., otherwise children will lose interest in traditional foods and get used to what is provided” (KI- Katakwi district).

c) Holistic and integrated interventions

To address vulnerabilities to food security both the key informants and the focus group discussions cited the implementation of holistic and integrated interventions involving various components and population groups. It was suggested that these interventions should include health related measures. Examples cited included to sensitize people on safe water usage, enforce by-laws on latrines, implement hygiene standards, use of Homapack and treated mosquito nets, promote immunization, control of family size and introduce nutrition support programs in the districts for children, pregnant mothers and those with chronic illnesses like Tuberculosis and HIV/AIDS. Other health related suggestions included to educate people on quality feeding using drama groups, increase facilitation of health workers to conduct sensitization and awareness about the importance of good nutrition in the communities and provide seeds and use of better methods of farming.

Improvements of the social aspects were also alluded to. These included resettling and compensation of displaced people, control of alcoholism, ensuring peace, sensitizing people on saving culture and increase literacy level among girls.

“Special attention should be given to the girl child, homes with illiterate mothers, the level of health status is high whereas the literacy levels of the men are not strongly co related to the health status, educated women attend more the ant natal, children to such mothers’ complete immunization, the women are influential and others can copy from them”. (KI- Lango sub region).

Involvement and support of vulnerable members of the community was deemed as crucial. Specifically mentioned was the involvement of PLWHAs in government

programs, creation of income generating activities and provision of farm inputs and scholastic materials for youth, orphans and widow, educate the children who head households, establish vocational trainings in the area and treating the sick . Other strategies mentioned were couple counselling, reduce sensitization of prevention of HIV/AIDS, strengthening child protection through probation office, police, local councils and community awareness of the children rights.

The following quotes illustrate the views mentioned

“...involve the vulnerable people such as the PLWHAs in government programs. They should be considered as priority. For example here we want them to participate in the NAADS program. NAADS helps groups of farmers with agriculture techniques” (KI – Oyam district).

“...provide education to children who are looking after their siblings after loosing their parents...” (FGD participant - Lango sub region).

“...training of household heads and wives about family planning and provision of health services near to the community” (FGD participant- Teso A sub region).

“Government should provide food rations, fast yielding crops, farm equipment like hoes, oxen ploughs and sensitize people on food security that is benefits of saving food” (KI- Katakwi district)

In as much as food aid was important, it was resounded that it should be provided in a manner that it does not lead to dependency. Some KIs were of the view that providing food would lead to food dependency. The people should be provided with planting materials so that they are empowered to produce their own food other than depend on rations. They should be supported with farming inputs, improve the market for their produce rather than giving them food in kind.

“...distribute improved seeds, and cows, instead of giving food aid, relief food only goes to the few and those who get manage to get only a tumpeco or ½ kg” (FGD participant- Teso B sub region).

“Giving food will help for few months, instead give improved seeds” (KI- Kumi district)

“Incomes can be improved by giving good seeds, oxen and ox-ploughs and training in modern agriculture practices and identifying enterprises that does not require a lot of labour for elderly and orphans” (KI- Teso B sub region).

“Food ration is spoiling some women that is why some women do not want to go back home and dig. People should go back home and plant their own food” (FGD participant - Acholi sub region).

5.6 Conclusions

- All sub-regions are food insecure with Lango and Teso A sub regions being more food insecure.
- The key factors that enhance food insecurity were low income, drought, pests and diseases, limited farm inputs, limited farm implements, floods/heavy rains and poor farming practices by region.
- Majority of the households did not have enough food throughout the year and had average adequate household food provisioning for 8 months. Their diet was fairly diverse.
- Fruits, roots and tubers, vegetables, pulses and nuts, as well as cereals were the main foods groups commonly consumed by most of households.
- Region, education, income, type of house and occupation were the major determinants of low HDDS. Households most likely to have low HDDS were from Lango and Teso A sub-regions, with no formal education, low income earners and subsistence farmers.
- Natural calamities such as drought and floods, poverty, pests and diseases, poor storage practices and poor farming methods were the key factors enhancing food insecurity.
- The most vulnerable populations were the children, elderly, sick and pregnant women.

5.7 Recommendations

In order to address food insecurity in the all the sub-regions, we propose that ACIDI VOCA should

- Improve farming practices through provision of farm inputs and training.
- Sensitize and orient populations on importance of food storage and also encourage the adoption of good storage methods to ensure a longer shelf life so that food is available throughout the year.
- Continue food aid provision as a short term measure especially in times of shock.
- Institute sustainable holistic and integrated interventions focusing on agriculture, education, health and social components so as to tackle food insecurity in a holistic approach and encourage community participation.

CHAPTER SIX

6.0 HYGIENE, WATER AND SANITATION ISSUES

This section is addressing the following tasks spelt out in the terms of reference. These are; percentage of Households with recommended hygiene practices and to establish factors behind the poor hygiene practices.

Hygiene, water and sanitation are some of the most essential things necessary for a healthy living. An assessment was done in the study area in regard to water, hygiene and sanitation. This chapter presents findings of this survey on these three important issues.

6.1 Water

6.1.1 Types of water sources

The commonest water sources in the study area (all sub- regions) were boreholes which provide about 58% of all households. Teso A was leading in the use of boreholes in 71% of households, followed by Acholi sub region where 67% of households used boreholes. The second commonest sources were protected springs from which about 24% of households drew water. Protected springs were mostly used in Teso B where 41% of households used such water followed by Lango 30%. The most ideal source which would be piped water was supplied to only 2% of households. Public taps and piped water were least commonly used except in Acholi region where 15% of households used public taps.

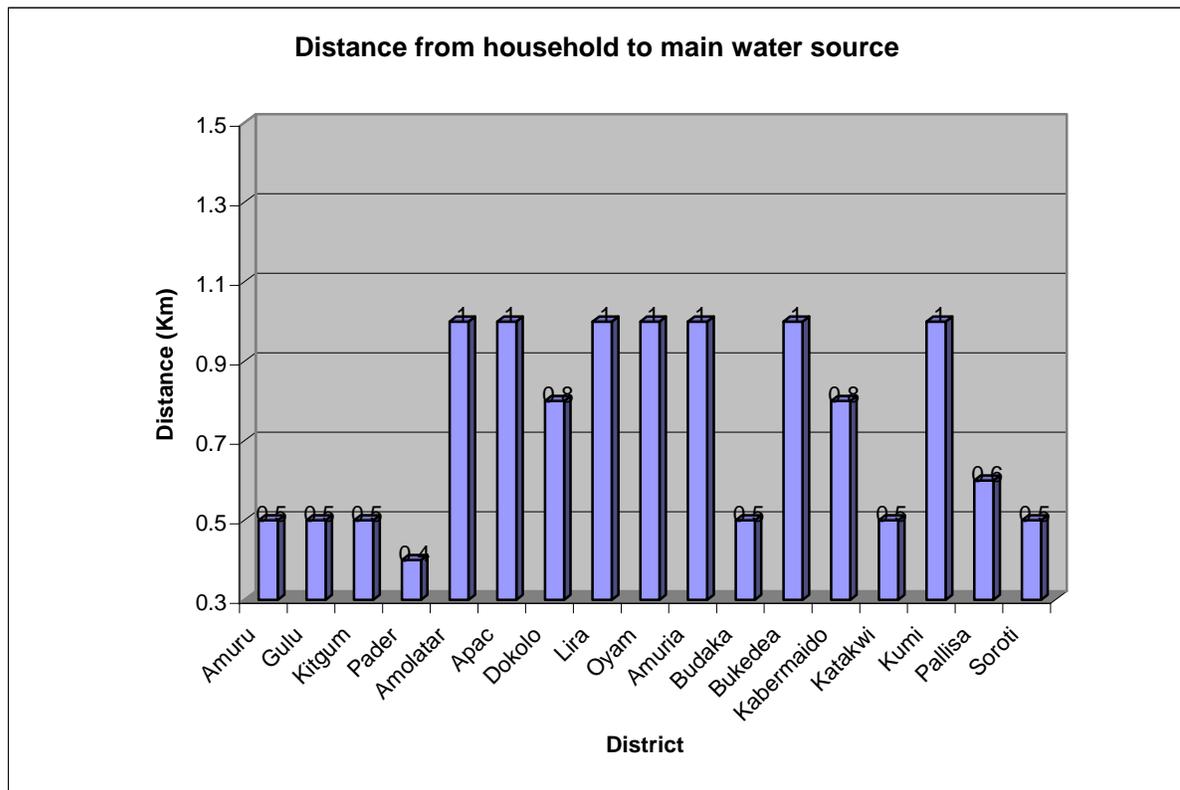
Table 6. 1 Types of water sources by sub region

Source	Region				
	Acholi N=751 (%)	Lango N= 869 (%)	Teso A N=835 (%)	Teso B N=845 (%)	Total N= 3,300 (%)
Public tap	13.6	4.1	4.7	0.7	5.6
Piped water	0.8	3.5	2.4	0.8	1.9
Protected spring	14.5	30.8	8.3	40.5	23.9
Borehole	68.9	46.3	74.1	45.2	58.2
Rain water	0.1	0.1	0.5	0.3	0.2
Other	2.1	15.2	10.0	12.5	10.2
Total	100	100	100	100	100

6.1.2 Distance to nearest water source

Most homes were within short walking distance to the nearest water source. The mean walking distances in the different districts lay between 1 to 2 kilometres.

Figure 6. 1: Distance to water source from household by district



(Note: Medium values used to draw this figure)

6.1.3 Water treatment before drinking

Only 11% of households took positive action while 89% did nothing in the entire region. Of the 11% who took recommended actions, 37% boiled water for drinking, while 46% chlorinated the water, the rest did either of the action. In positive actions, the Lango region was leading in boiling (58% HH) followed by Acholi (45% of HH). Teso B led in chlorinating water (54% HH), followed by Teso A (53% HH).

6.2 Food hygiene

The recommended action of washing hands with water and soap before handling food was practiced by about 95% of respondents who washed with water alone, or water with soap in the whole region, leaving 5% who never washed. Out of all those who took positive action, 78% washed with water only, while 22% washed with water and soap. The latter was almost uniform in all the regions.

Almost all those who washed their hands before handling food knew why it was important to do so, while those who didn't, did not know why they needed to wash their hands. So, here, knowledge guided action.

Food was kept on the raised surface in only 42% of households and the proportions of these homes were almost uniform in all the districts. Overall 82% of the households reported that they served food on clean utensils. The cleanest was Lango sub region with 85%.

6.3 Sanitation

6.3.1 Disposal of human waste

The facilities for faecal matter disposal included the following in a descending order; Pit latrines which were either temporary or semi permanent (75%), bushes (22%), ventilated improved pit latrine (VIP) structures (2%) and flush system (about 1%) (See table 6.2)

Table 6. 2: Primary ways of disposing of human waste in the household

Disposes of	Region				
	Acholi	Lango	Teso A	Teso B	All
Temporary latrine	26.4	52.8	44.5	44.0	42.5
Semi-permanent	45.1	23.0	19.0	43.7	32.3
Ordinary	6.6	10.8	5.5	5.7	7.2
VIP Latrine	2.8	3.2	1.2	1.8	2.3
Flush toilet	0.0	0.3	0.4	0.0	0.2
Other types (e.g.	19.1	9.9	29.4	4.8	15.5
Total	100	100	100	100	100

Overall latrine coverage, (all types of latrine and toilets combined) was 84.5%. Figure 6.2 shows latrine coverage by district. However, majority of the people in the region have either temporary (42.5%) or Semi-permanent (32.3%) latrines (see figure 6.3).

6.3.2 Sharing of latrines

Sharing of toilets is a common practice the entire study region. More than a third (40%) of the selected households shared their pit latrines with at least another household. This means that coverage that was observed translates to almost a half, if each household is to have its own facility. Fig 6.4 shows that the practice of sharing is more common in Kitgum, Pader, Amuru and Gulu districts (Acholi region).

Figure 6. 2. Latrine coverage by district.

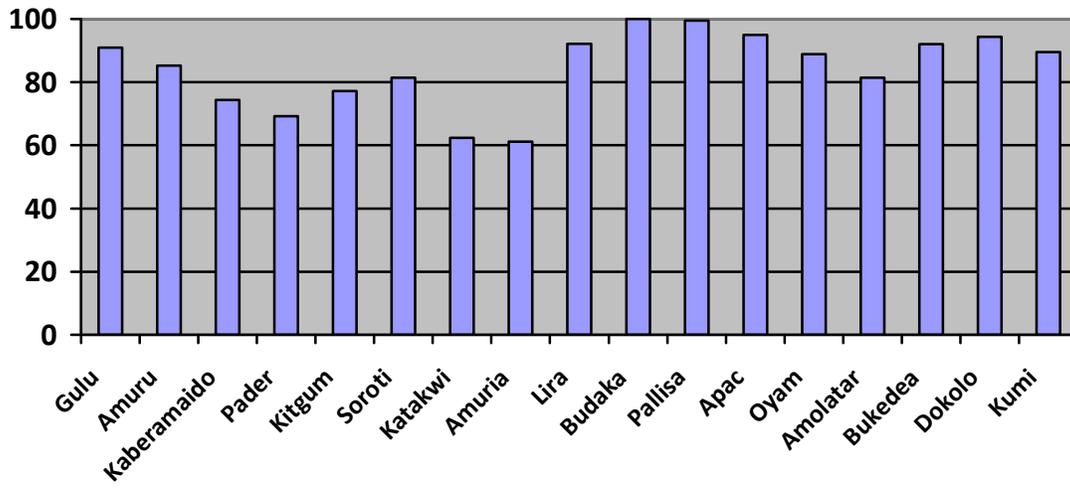


Figure 6. 3 Showing type of pit latrine by district.

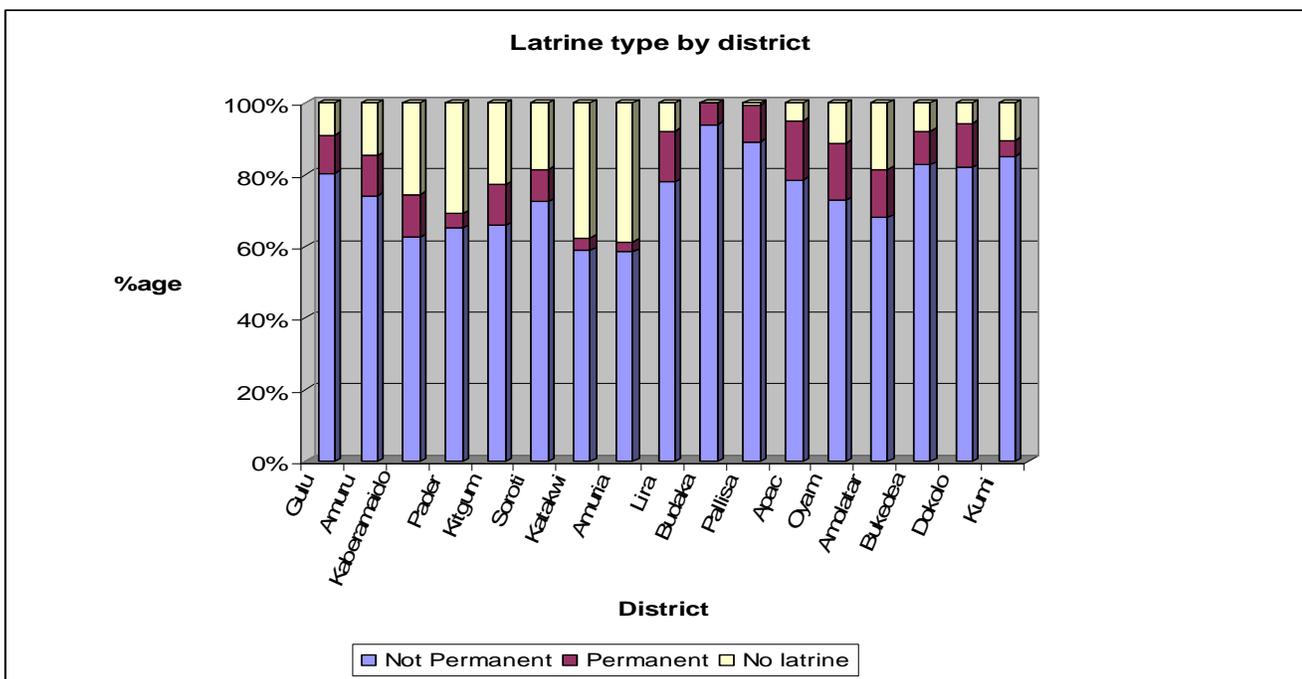


Figure 6. 4: Showing proportions of households that share latrines/toilets by district.

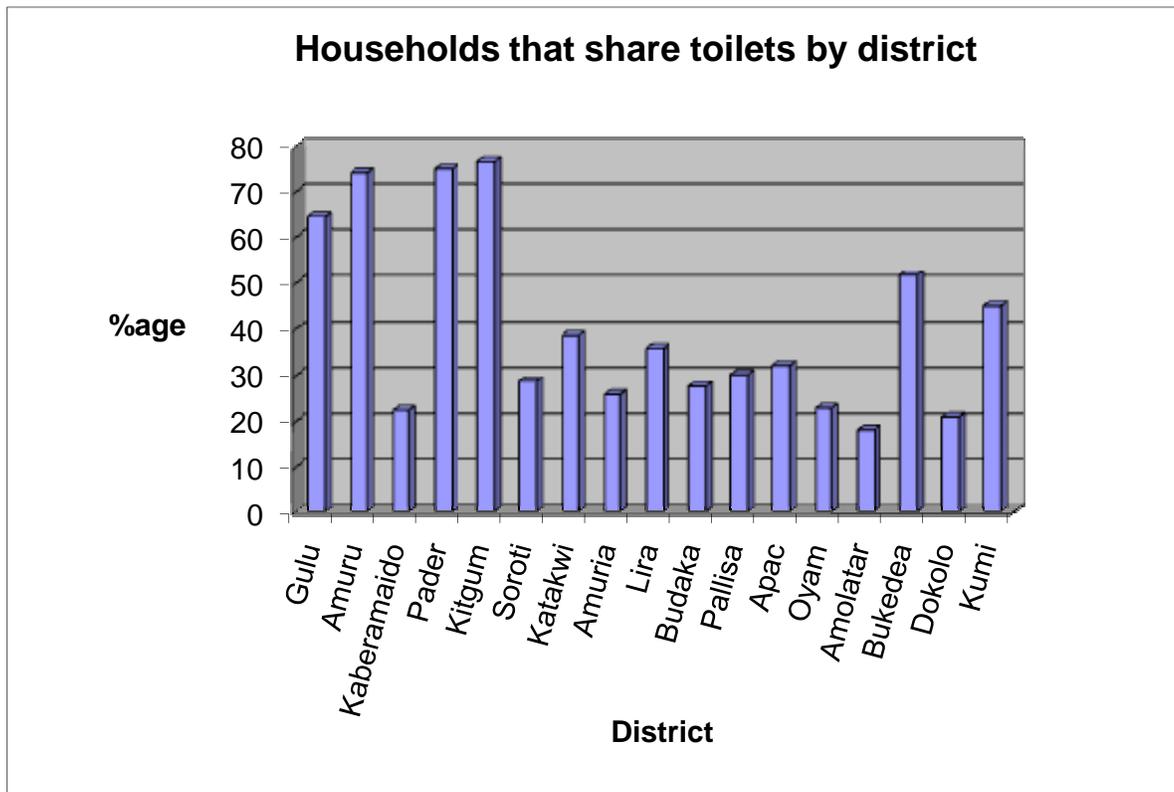
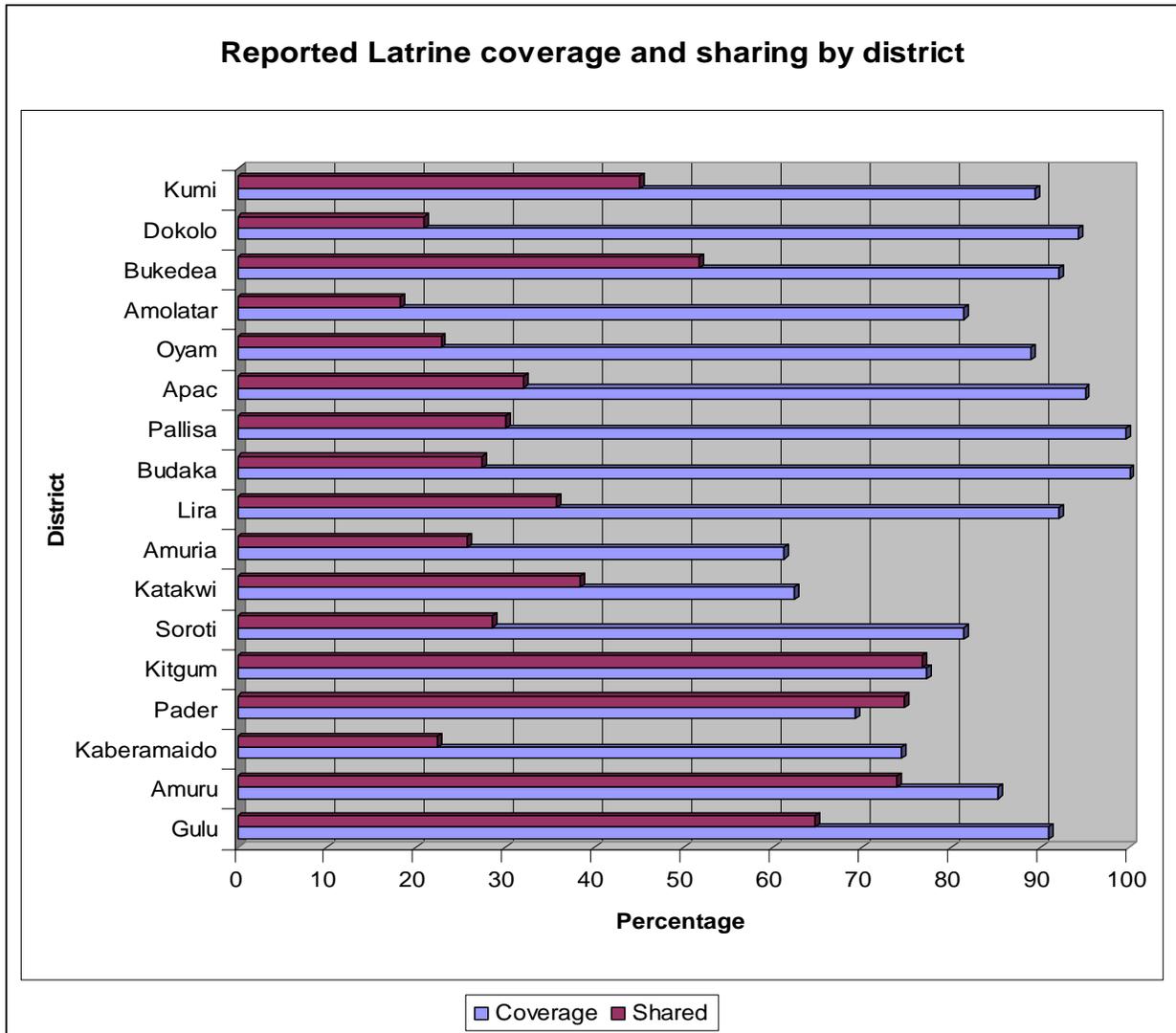


Figure 6. 5. Showing Latrine ownership in comparison to sharing among households by district.



6.3.3 Disposal of other wastes in home such as garbage

About 51% of households had a rubbish pit for disposal of garbage in all the regions, while about 3% paid private collectors, and varying proportions of 6-32% of households burnt their home refuse. Teso A was leading other districts (32%) which burnt the home garbage while Acholi region did the least of burning refuse (6%) (See figure 6.6 and table 6.3). Use of rubbish pit and burning were the two major methods of garbage disposal in the study area.

Figure 6. 6: Households with rubbish pit by region

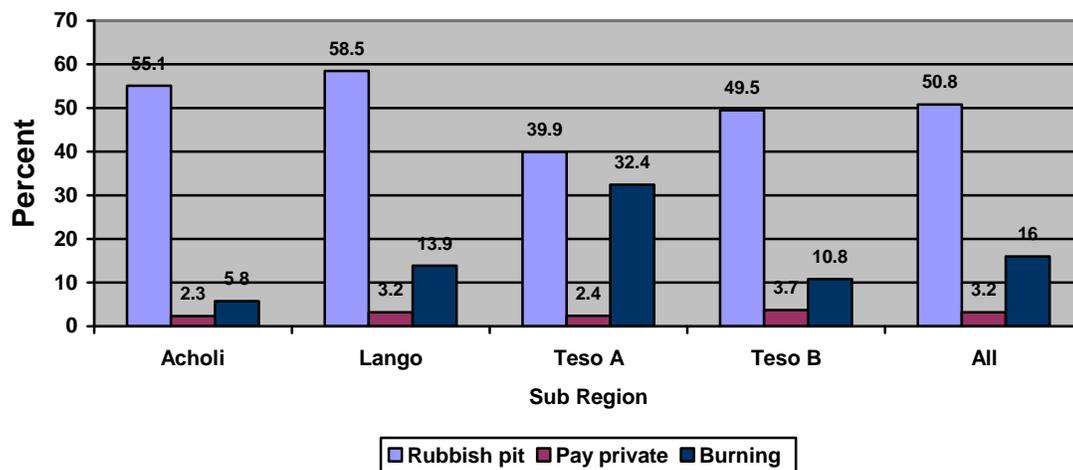


Table 6. 3 Showing disposal methods for other wastes in home such as garbage by district

District	Disposal methods (%)		
	Rubbish Pit in Compound	Burning	Pay private collectors
Gulu	62.3	7.0	2.5
Amuru	51.4	7.7	0.6
Kaberamaido	35.5	29.4	1.4
Pader	49.4	3.5	3.5
Kitgum	59.8	6.0	2.9
Soroti	46.0	26.5	8.9
Katakwi	42.4	38.4	1.5
Amuria	39.0	41.0	1.1
Lira	63.0	22.8	6.0
Budaka	75.4	5.7	6.2
Pallisa	58.6	3.9	2.4
Apac	66.9	17.7	0.8
Oyam	54.1	12.2	2.6
Amolatar	54.3	11.9	3.6
Bukedea	37.8	22.6	5.4
Dokolo	66.3	10.2	3.2
Kumi	38.0	21.2	4.1
Overall	52.6	17.2	3.4

6.3.4 Recommended hygiene and sanitation Hygiene practices

Washing hands with water before eating was the most practiced among 72.9% surveyed household followed by having clean water containers (53.5%) and least practiced was boiling water before drinking (10.9%), followed by homes with hand washing facility and soap near a pit latrine (14.3%). Acholi and Lango regions had the lowest proportion of households that boiled water before drinking (8 %). See table 6.4.

Figure 6. 7: Showing major recommended hygiene and sanitation practices by region

Practices	Region				All % (n =3401)
	Acholi % (n =771)	Lango % (n =904)	Teso A % (n =864)	Teso B % (n =862)	
Do anything (boiling) water before drinking	8.0	8.3	12.0	14.9	10.9
Washing hands with water before eating	73.7	76.4	74.2	67.3	72.9
Washing hands with soap and water	18.0	18.4	18.8	25.3	20.1
Washing hands with water and soap after toilet	39.2	46.7	25.7	49.5	40.4
Homes with hand washing facility and soap near a pit latrine	9.6	12.7	13.5	20.8	14.3
Homes with clean water containers	57.5	43.6	39.5	74.6	53.5
Homes with clean latrines floor	44.9	37.9	28.8	40.9	31.4
Homes which dispose rubbish in a sanitary manner	61.1	45.6	43.3	53.7	50.6

Budaka (94.5%) and Pallisa (94.7 %) districts had the highest proportion of households that practiced washing hands with water before eating. See table 6.5. Gulu (7.3%) and Pallisa (7.1%) had the lowest proportion of households that hand washing facilities near the latrines (Table 6.6).

Table 6. 4. Showing recommended hygiene and sanitation practices by district.

District	Treat/Boil water	Wash hands with soap after using a toilet	Wash hands before eating	Wash raw food and fruits with water
Gulu	11.7	45.6	89.8	51.0
Amuru	2.8	36.1	90.6	60.0
Kaberamaido	7.3	20.6	88.6	60.3
Pader	9.1	24.6	95.4	61.7
Kitgum	8.1	47.6	93.8	58.1
Soroti	16.7	35.2	91.6	42.7
Katakwi	9.0	21.3	82.9	35.1
Amuria	14.9	24.6	88.7	36.9
Lira	11.9	50.3	86.0	65.8
Budaka	6.0	65.5	94.5	60.5
Pallisa	6.6	72.6	94.7	57.5
Apac	12.2	49.0	88.4	61.9
Oyam	3.0	44.9	87.3	66.1
Amolatar	7.4	46.3	90.6	43.4
Bukedea	30.7	35.8	82.1	34.4
Dokolo	7.1	43.4	87.2	51.0
Kumi	15.6	24.8	92.7	31.7
Overall	10.9	40.4	89.7	51.0

Table 6. 5 Showing recommended hygiene and sanitation practices by district.

District	Clean compound	House free of bush	Animal penned away	Clean water containers	Hand washing facility near latrine
Gulu	83.5	74.8	23.3	50.0	7.3
Amuru	80.0	78.9	17.8	67.8	8.3
Kaberamaido	69.4	65.8	34.7	36.5	8.2
Pader	84.0	82.9	25.1	58.3	3.4
Kitgum	84.3	83.3	24.3	55.2	18.1
Soroti	79.9	71.6	41.0	51.1	20.1
Katakwi	74.9	55.9	26.5	31.8	10.9
Amuria	78.5	61.5	32.3	36.9	14.4
Lira	82.4	79.8	45.6	37.8	20.2
Budaka	76.5	78.0	38.5	64.0	18.5
Pallisa	53.1	59.3	55.3	62.4	7.1
Apac	77.6	67.4	46.3	50.3	11.6
Oyam	67.9	68.5	53.3	43.0	18.2
Amolatar	69.0	59.1	46.3	42.9	4.9
Bukedea	88.1	74.3	62.8	86.2	35.8
Dokolo	78.1	63.8	56.6	45.4	9.7
Kumi	92.2	91.7	70.2	85.3	22.0
All	77.6	71.5	41.4	53.5	14.3

6.3.5 Validating information on household hygiene and sanitation by direct inspection

Household hygiene

About 78% of homes had clean compounds with Acholi leading with 83% of homes. The range of clean homes regionally was 75%-84%. About 18% of houses were however, surrounded by bush in the entire region. Teso A had the biggest proportion of households (36%) surrounded by bush. The evidence of sanitary disposal of garbage was observed in 51% of households. This almost corresponded with availability of rubbish pits. In only 35% of households, there were separate structures for domestic animals compared to 32% who shared board with their animals; the rest did not have animals. Acholi region had the least separate structures for their animals (17%) while Lango region had the majority homes (48%) catering for animals separately. Only 41% of households which had domestic animals penned these, away from food and water; the rest either didn't or had no animals.

Water storage containers were clean only in 54% of homes, and plates, pans, pots and glasses appeared clean only in 57% of households. Also, 38% of households covered and stored their foods away from domestic animals.

Sanitation

Among homes where pit latrines were available, only 72% appeared to be in active use regionally. The best district in this respect was Teso B with 81% in active use, while TesoA least used pit latrines, only in 53% homes. Clean floors were observed overall in 39% of pit latrines. Teso A was with the least clean floors (28%) while Acholi and Teso B had the cleanest floors (45%). Hand washing facilities with soap near pit latrines were present in only 14% of homes with pit latrines. The best served was Teso B with 23% and the least served of all others was Acholi with only 10 %.(see table 6.7)

Table 6. 6: Physical Inspection of hygiene and sanitation status of household

Observed	Region				
	Acholi N=771	Lango N=904	TesoA N=864	Teso B N=862	Total N=3401
Clean compound	83.0	75.0	75.7	77.3	77.6
House surrounding free bush	79.9	67.6	64.0	75.6	71.5
Garbage appears to be disposed off in sanitary way	61.1	45.6	43.3	53.7	50.6
Separate structure for domestic animals	17.3	47.6	36.3	36.1	34.9
Animal penned away	22.7	49.7	33.9	57.1	41.4
Water containers with clean covers	57.5	43.6	39.5	74.6	53.5
Pots, pans, plates appear clean	62.8	45.8	49.9	70.4	56.9
Fruits, vegetables, meat stored well	36.2	37.3	21.1	55.6	37.6
Latrines appear to be in use	72.2	79.0	53.8	80.5	71.5
Latrine floor clean	44.9	37.9	28.0	45.1	38.8
Presence of hand washing facility with soap	9.6	12.7	13.5	20.8	14.3

6.4 Factors contributing to poor general hygiene and sanitation practices

Qualitative data was collected using key informant interviews and focus group discussion to explore factors contributing to poor general hygiene and sanitation practices in the sub regions. The results revealed factors that included but not limited to the following:

i) Poor education

Lacks of education coupled with ignorance and lack of knowledge on hygiene have led to poor perceptions of hygiene and sanitation practices, resulting into people dumping rubbish irresponsibly, defecating in bushes comfortably, leave

children to defecate in the compound and see no reason to boil drinking water as illustrated below.

“Most of these communities are very ignorant; they don’t know the importance of keeping hygiene” (KI- Apac district)

“A common practice which I think is pouring of the rubbish anyhow and then another is children defecating anyhow; they are not encouraged in early ages to go in pit latrines for the fear that they may fall in the pit latrine; other people go to the bushes...” (KI- Dokolo district)

“...Those with no pit latrine choose to go to the bush. Like “Kavera”, people just throw them anyhow not knowing that it will affect growing crops, and if you move around then you get “Kavera” everywhere” (KI- Apac district).

ii) Poverty

Some community members cannot afford soap or buy materials for constructing pit because of poverty.

“You see the problem is that most of these families are poor and even constructing the toilets here is something expensive. One foot is dug at 5,000/=.” KI- Apac district)

iii) Laziness

Some key informants reported that in awareness about recommended hygiene practices and sanitation was high but people were just lazy to execute these practices.

“People are lazy, forget, and don’t consider hand washing necessary, awareness is high but people are just lazy” (KI –Apac district)

“... they use the bush! They don’t want to dig pits due to sheer laziness” (KI- Oyam district)

iv) Negative cultural beliefs , practices and poor attitude towards hygiene practices

The negative belief and practices contribute to poor hygiene and sanitation in the sub regions. Although some beliefs may be thought to be out dated, there community members who still strongly uphold them. For example, pregnant women not being allowed to defecate in pit latrines, or daughters-in-law, not being allowed to use same pit latrines with fathers-in-law and cultural

permissiveness to defecate in bushes. This is supported by the quantitative results which showed that 15.5% of all households surveyed did not have structures for human waste disposal. In both Lira and Amuria districts about 40% of households did not have latrines/ toilet. Key informant on several occasions mentioned that those community members that did not have latrines, most times use the bush.

“...a belief like a baby dies if his faeces are put in the latrine likewise for pregnant mothers”. (KI – Katakwi district)

“... those who don’t have latrines go to the bush. That is why we want to start a sanitation campaign in the district.”(KI- Oyam district)

Also, the concept of men having absolute ownership of everything in homes leading them to misuse resources selfishly compounding poverty, leading to inability to afford simple things like soap. That some home chores like cleaning homes must be done by only women, thus dirty plates or dirty compound can remain as such because a wife is away for some reasons and nobody else would do the cleaning.

v) Hostile environmental factors

Some areas have environmental challenges like water logged soils and rocky areas making it difficult to dig pits and also to sink bore holes.

*“We have very few boreholes, and most of them are not even functioning. Others you find that the yield is very, very poor. Yes, it’s because of the water table. You see most of these parts have been affected by this lake Kyoga”
(FGD Lango sub region)*

People engage into stealing animals from others and this forces some people to stay with their animals in the same house.

“People are sharing houses with domestic animals so that they are not stolen” (FGD participant TESO A)

People are resettling in villages where they do not have any structures in place to start with.

“The hygiene is poor because of the poor practices like defecating anywhere due to lack of toilet, as people are moving out slowly back home the vacant hut are being used as toilet, others simply dig small hole and cover them with logs”.

(KI- Amuru district)

vi) Alcoholism

Once drunk a person becomes irresponsible and neglect their personal hygiene. They tend to use up their funds from the produce for alcohol and this compounds poverty therefore unable to afford items like soap for washing and building materials for pit latrine.

“... alcohol consumption also make people practice poor hygiene, they don’t bathe, urinate anywhere and sometimes defecate long roads”. (FGD participant – Teso B sub region)

In all sub regions poor hygiene and sanitation was acknowledged by the community members and leaders. Several opinions were put forward to try and address this problem .these include establishing bi-law in respect to latrine ownership and garbage disposal, involve clan leaders to promote good sanitation ,sensitization of community about proper hygiene practices, establish home cleanliness competition, and promoting use of water guard tablets. Other views were, promote locally made hand washing facilities ,smear houses with cow dung to avoid jiggers , advocate for animal separation houses and bore hole should be build in the area to avoid drinking contaminated water.

“...as a district we should pass a bi-law of having a latrine. We are thinking of establishing “Oyam declaration on sanitation” to promote good hygiene practices (KI Oyam)

“Sensitization has to be done to make people aware of the importance of hygiene. Follow-ups should be done to see that each house has a toilet because toilet slab were already distributed” (KI –Acholi)

“The use of clan leaders would also help in promoting hygiene and sanitation since they command a large audience. The government needs to increase funding for water and sanitation” (KI –Pallisa)

vii) Lack of privacy

It was observed that many bathrooms especially those in the camps are close to the roads. Some of them don’t have sufficient privacy and this discourages people to use them. The bathrooms are few and they double as urinals.

Figure 6.2. Temporary structure of bathroom/urinal



Viii) Enforcement authorities not being exemplary

Health and other enforcement agents such as Local Councils members who do not have pit latrines and yet are part of enforcement officials for hygienic practices in their communities. Leaders should practice what they preach so that this encourages the people to adopt recommended hygienic practices.

“... Some of our local leaders don’t have latrines! Can you imagine?” (KI- Amolatar district).

ix) Insecurity

Some key informants mentioned that the unstable security environment leading to displacements and compounding it with poverty makes people practice poor hygiene particularly the disposal of human wastes. In such circumstance the people cannot construct latrines since they are always on the move.

“Poor hygiene is a problem in our communities like when people had to run away from their homes due to insecurity latrines are not constructed immediately in the places they take refuge....” (KI- Dokolo district)

CHAPTER SEVEN

7.0 NATURAL RESOURCE MANAGEMENT IN MYAP AREAS

7.1. *Introduction*

Since the 1970s the natural and agro-ecosystems have been suffering degradation following rapid population growth and deterioration in the economic situation. As the population grew, natural forest and woodlands were cleared for agriculture use, fuel wood, timber and human settlements. Wetlands were massively converted to agriculture lands for the cultivation of rice, sugar cane, yams, millet, sweet potatoes and vegetable production (FAO 2002)

ACDI/VOCA has been collaborating with local and international organizations in various countries to help farmers restore and protect farmland, improve agricultural production, bring added value to crop production through the transfer of processing technologies, and learn marketing strategies to increase their incomes. (<http://www.acdivoca.org/acdivoca/PortalHub.nsf/ID/rwandapl480>). ACDI/VOCA and her local partners will address the root causes of food insecurity in vulnerable households living in Northern and Eastern Uganda through a five-year assistance program - MYAP (Multi-Year Assistance Program).

The overall aim of this section is to present the detailed assessment and status of the prevailing conditions in the MYAP target areas in regard to Natural Resource Management (NRM) that are vital while addressing food insecurity in the region. The section also covers the indicators against which future evaluations will be based. There are five interrelated NRM aspects in this section: land ownership and soil conservation; causes and magnitude of soil exhaustion; major environmental challenges and mitigation; tree resources and their management; and energy availability and utilization.

7.2 *Land ownership and Soil Conservation.*

7.2.1 *Land tenure system and its impact on land conservation*

i. Land tenure

There are four types of land tenure in Uganda: customary, *mailo*, freehold, and leasehold. Owners of freehold land have complete rights to use, sell, lease, subdivide, mortgage, or bequeath this land. . Owners of customary land generally have secure rights to use, lease, and bequeath this land, but sales are subject to approval of clan leaders and family members (John Pender et al 2004) *Milo* land tenure is similar to free hold because land

title is issued, and the interest goes into perpetuity (Marquardt 1994). Leasehold land is private or public land leased from the landlord for a specific period of time.

Throughout the study, the land tenure regime specific to the MYAP area remain the same. Of the seventeen districts studied, customary land tenure was the most dominant with an average of approximately 86.1%. Other land tenure systems comprise 9.2% of the households since 4.7% did not know the tenure they have or they chose not to respond. (Table 7.1).

Table 7. 1: Land tenure systems per region

District	% House hold and land tenure system				
	Customary HH (%)	Leasehold HH (%)	Freehold HH (%)	Mailo HH (%)	Missing / Don't know HH (%)
Bukedea	98.2	0.0	0.5	0.0	1.4
Kumi	94.0	1.4	0.5	1.4	2.8
Oyam	92.7	0.6	1.8	3.0	1.8
Amuria	92.3	1.0	1.5	4.6	0.5
Dokolo	91.8	2.0	0.5	2.0	3.6
Pallisa	89.8	1.3	0.4	7.1	1.3
Kaberamaido	89.0	0.5	3.7	4.6	2.3
Pader	88.0	1.7	4.6	1.7	4.0
Amolatar	86.2	0.0	3.0	3.5	7.4
Soroti	84.5	2.1	4.2	6.3	2.9
Apac	84.4	0.7	5.4	2.0	7.5
Katakwi	83.9	1.0	7.1	2.4	5.7
Amuru	80.0	1.1	7.2	1.1	10.6
Budaka	79.0	2.5	0.5	16.0	2.0
Gulu	78.2	2.9	3.4	5.3	10.2
Kitgum	77.1	1.4	5.7	7.1	8.6
Lira	74.1	1.0	9.8	6.7	8.3
Average	86.1	1.3	3.5	4.4	4.7

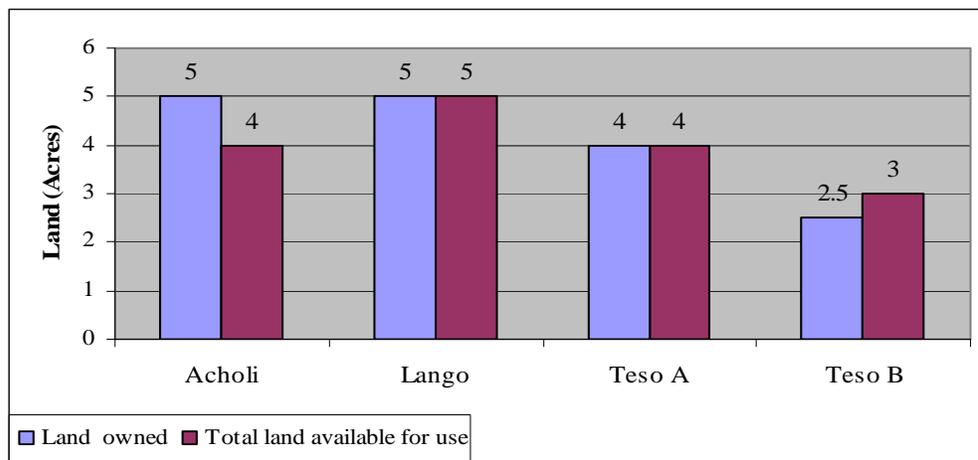
According to Uganda Bureau of Statistics (2006), Northern Uganda had 92% households on customary land by the year 2002. Customary lands were traditionally governed by clans who allocated plots of land to members. Households settled on lands and acquired strong permanent rights to specific parcels which are later passed over through inheritance (Frank & Otsuka, Keijiro 1997).

ii. Acreage per Household

This refers to land owned by a household excluding any rented/hired one. The researchers were however cautious of the possibility of respondents concealing the actual size of land

as due to the current amendments of the land bill before Parliament that generally received a negative publicity. Therefore, total land available for use (for forestry, animal and crop production) including the rented was asked. Asking the total land available would enable the investigators capture the likely land under each household in case there would be deceit. Figure 6.1 shows the comparisons of the acreage per household and total land available for use for each house hold.

Figure 7. 1: Average land holding (acres) and average land in uses in MYAP area



From the Figure 7.1 above, Households in Acholi and Lango have 5 acres each. Teso A and Teso B have 4 and 2.5 Acres respectively. There were no significant differences from the land owned and total land available to households for use that spells out the possibility of deceit. However, in Acholi, households used less of what was owned which may be attributed to their settlement in IDPs. In the reverse, Teso B use more than they owned which may be attributed to the rather settled nature in their villages compared to Acholi and higher population densities in Teso region.

iii. Impact of customary tenure and size of land towards efforts to conserve land

Property rights and security influence the incentive and behaviour of individuals with in a community with respect to rules that each and every person must observe on utilizing the land resources. In this study, it was not found that people’s effort to conserve land is very much affected by the land tenure (Table 7.2). Conservation of land in this regard was considered as the ability of the house hold to plant trees, to practice fallowing, do rotational cropping among others.

Table 7. 2: Households (%) that are negatively affected by the tenure system (customary)

Sub-region	n	%
Acholi	706	21.7
Lango	852	20.1
Teso A	839	16.9
Teso B	846	26.6
All	3,243	21.3

As indicated in the above table, an average of 21% believed that the tenure system (in this case customary) could stop them from conserving land. One of the key informants from Budaka noted that:

“...efforts to conserve are not mainly affected by land tenure but lack of information and ignorance on what should be done on land...”

However, through FGDs and KII, most community members and key informants in all regions indicated that attempts to develop land by some individuals had been constrained due to limited control of land under the customary land tenure system:

“The customary land tenure system does not cater for everyone’s interests in land use. One cannot sell land to start business; He is bound by the aspect of collective ownership. Even when one wishes to use land for tree planting, the family members will say that they cannot eat trees because they take long to mature. The community members have a lot of control over land than individuals, as shown by some cases where some individuals sold land but the communities cancelled the sale” **KII with a technical staff in Apac District**

Ownership of land by women in most parts of the country has tended to be limited by cultural differences among cultures. The customary land tenure system is largely reliant on clans, which are slightly negative regarding land ownership by women. Almost in all districts, community members felt women were deprived opportunities to own and control land.

“The customary land tenure limits women access to and control of land they are not entitled to any land shares from their parents” **FGD with males and females in Budaka District.**

Poor land tenure system is frustrating investment

Kampala - John Ogwang (not real name) who is turning 50 was born in Gogonyo sub-county in Pallisa district

He has lived on his piece of land that was allocated to him by his parents

It's from here that he married his wife Jennifer with whom he has four children

"Here, we don't sell land. It's inherited from our parents and we shall pass it to our children. That's the culture. If one wants to sell, it must be agreed upon by the community but not just an individual deciding on behalf of others," he says.

"Even if you have that personal piece of land demarcated by the sisal plants and want to sell it, the clan must give a go-ahead," he said in an interview at Apeta village.

Despite the identification of two commercial agriculture investors by the Uganda Investment Authority (UIA) for the district worth sh12b, residents have rejected them due to the communal land tenure system.

Eco Friendly Farming and Executive Estates want to establish a project worth sh11.79b.

As part of the mobilisation process to familiarise locals with the projects and their importance, UIA has held two sensitisation workshops.

Two documentaries of Kaweeri Coffee Plantation and Tilda Uganda were shown, highlighting how the new projects have benefited the locals there, including building of schools, health centres, roads and electricity supply.

However, even after the videos, the locals said they were not ready to vacate land for the projects.

"That is how we lost a health project that was to construct a hospital and it was transferred to Mbale where you people go for treatment after paying high taxi fares.

"We are slated to lose these ones as well," warned the district chairperson, Bob Wasugiriya, at one of the sensitisation workshops at Gogonyo sub-county headquarters recently.

Dr Maggie Kigozi, the UIA executive director, said Executive Estates expected to get 5,000 acres of land but had only got 100 acres and now wants about 80 acres because of the difficulties of acquiring land. The locals are resistant

"Pallisa district authorities identified the 5,000 acres and the investor has money to grow 5,000 acres of cotton. It is becoming very difficult for us to acquire it yet it is the district

that wrote to us. This has encouraged the investor to order for equipment for the ginning plant," says Kigozi.

"Due to complications in the eastern and northern regions, I have written to all districts including Tororo to help us identify land for Tororo Cement that wants land for their \$10m (sh1.7b) expansion project," Kigozi said.

She said another delayed project is the development of a free trade zone by a US-based company owned by Ugandan group called Benunula

The group is seeking land in Rakai while CMG plans to set up a beef plant in Mubende.

"Another investor who wants to set up an abattoir, a modern tractor plant and other agricultural assembling plants is waiting for the Government to compensate the bonafide occupants of Nalumunye," Kigozi said.

However, according to Article 237(1), the Government or local government, subject to Article 26 of the Constitution may acquire land in the public interest and the conditions governing acquisition shall be prescribed by Parliament.

Article 26(2)(b) says, "No person shall be deprived of property of any interest in or right over property except when compulsory taking of possession or acquisition of property is made under a law which makes provision for prompt payment of fair compensation prior to the acquisition"

Source: By New Vision (Uganda), David Muwanga | 04.14.2005

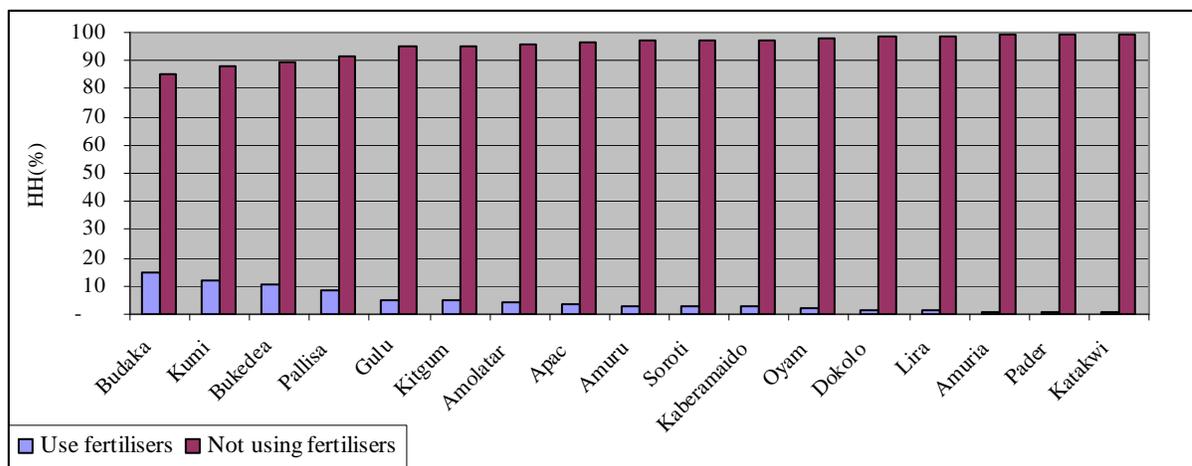
7.2.2. Causes and magnitude of soil exhaustion

Soil exhaustion under this study was regarded as a state in which the soil potential to yield optimum crop production has declined due to factors such as soil erosion, over-cropping among others. The indicators that were chosen to signify the degree of soil exhaustion include the use and extent of fertilizer application, and reduction in crop harvests realized over the last three years. The use of fertilizers (organic and inorganic) is considered as an indicator for the loss of soil potential to sustain agricultural production without external soil improvement interventions.

i) Fertilizer use as an indicator of Soil Exhaustion

The use and extent of use of fertilizer was taken to be one of the measures for soil degradation in the survey area. Holding other factors constant, the degraded soils and therefore less fertility soils will usually be supplemented by fertilisers (organic and inorganic). Respondents were asked whether they use fertilizers in their agriculture production. Figure 7.2 indicates the responses.

Figure 7. 2: Households (%) using fertilizers in MYAP areas



In MYAP areas, use of fertilisers is generally low with 14.7% of the household as the highest in Budaka and 0.5% lowest in Katakwi (Figure 7.2). This may not imply that soil exhaustion is low, since fertilizer application is subject to myriad factors not limited to the levels of income, community and individual awareness, among others including:

- the degree of the land users’ awareness (facilitated by extension advice and traditional soil conservation knowledge),
- the land users’ level of income (the land users’ purchasing power)
- the marketability of the agricultural products (as an incentive to improve soil productivity)

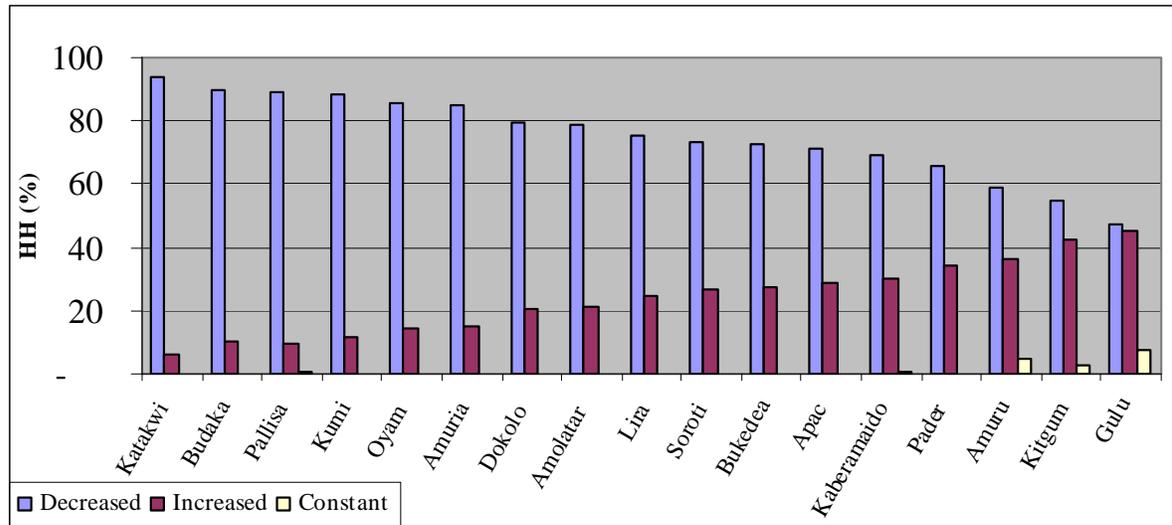
The application of soil fertilizers therefore is not a function of the degree of soil exhaustion alone but also a number of other factors. Nevertheless, the use of fertilizers is an important indicator of soil exhaustion holding other factors constant.

ii) Crop yield reduction as an indicator of soil exhaustion

The decline in crop yield per household is regarded as one of the indicators of soil exhaustion in regions surveyed (Figure 7.3). The reduction in crop yield directly shows the decline in the soil physical and chemical properties. Most of the regions surveyed indicated a decline in crop production with the highest decline recorded in Teso sub-regions where over 88.4% of the respondents Katakwi, Pallisa, Budaka and Kumi noted to have experienced reduced crop yields on their household landholdings for the last three

years. This is attributed to the fact that Teso region and particularly Teso B is more engaged in agriculture as already seen in Figure 7.0.1 where acreage use per household is more than the acres owned. Some sub regions such as Acholi Sub region recorded the lowest percentage of respondents, (with about 56% of respondents). Holding other factors constant, consistence reduction in crop yield is a clear indicator that soil exhaustion is actually a very big challenge in the MYAP areas.

Figure 7. 3: Households experiencing crop reductions on the private land parcels in MYAP Districts



Respondents were also asked the crop that they realised were reduced at harvests. Here, the investigators were interested in the actual crops affected by soil infertility. The type of crop in relation to the chemical soil properties that relies much on parent rock determines the need for fertilisers. Most exotic crop varieties usually require inorganic fertilisers. Table 7.3 shows the crops whose yields reduced.

Table 7. 3: Crops that are being affected most (yield reduction) by soil degradation.

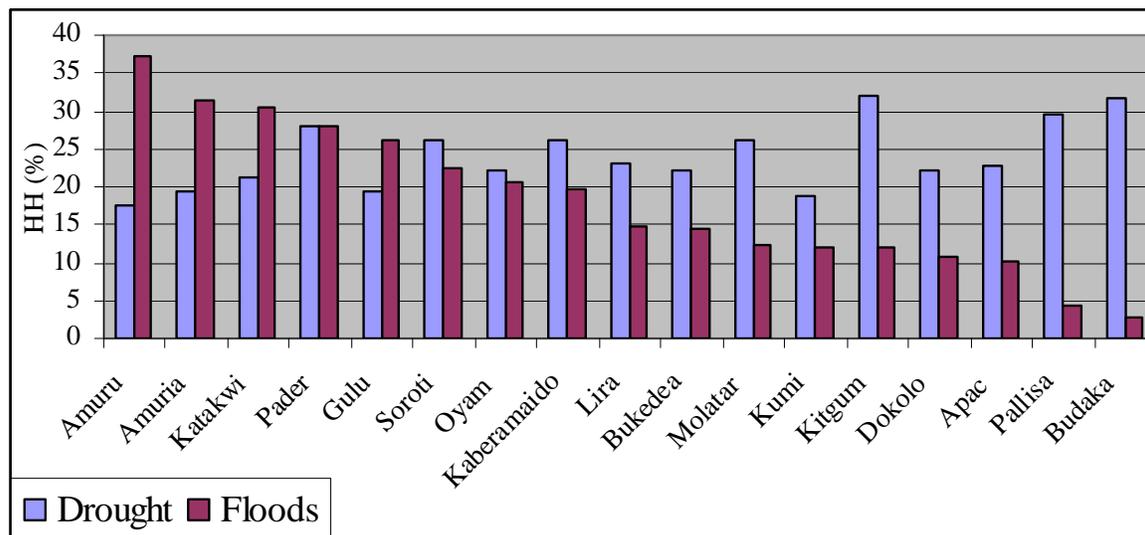
Acholi (N=298)	Lango (N=535)	Teso A (N=546)	Teso B (N=450)	All (N=1829)
Simsim (24.1%)	Beans (36.0%)	G.nuts (28.2%)	G.nuts (20.2%)	G. nuts (18.5%)
G.nuts (21.4%)	Simsim (16.8%)	Cassava (22.5%)	Cassava (16.8%)	Simsim (15.0%)
Millet (10%)	Maize (10.8%)	Sorghum (12.8)	Sorghum (7.5%)	Millet (14.4%)

As observed from the table, it is only cereals, legumes and roots crops whose yields reduced. These are the same traditional crops that form the stable food for the people in the MYAP areas. A reduction in yield of food crops is a true indicator of soil exhaustion. (and a sign of increasing food insecurity)

iii) Causes of soil exhaustion

To obtain the factors influencing soil degradation, the people in MYAP area were asked what they thought was a cause of reduced yield (Figure 7.4) and soil management technologies applied by households (Figure 7.5). The two would enable us to tease out exactly the likely causes of soil degradation.

Figure 7.4: Causes of reduced crop yield in MYAP



Among the key leading causes of crop reduction and therefore causes of soil degradation are droughts and floods. As seen in figure 7.4 above, droughts are more pronounced in all districts but more in Kitgum compared to the rest. Amuru, Katakwi, and Amuria had their crop yield reduction caused by floods and droughts. At the same time, other than intercropping and crop rotation of all the soil management technologies, the rest were below 40% of the household application. This leads to a deduction that soil degradation is caused by both natural and human facilitated causes which are basically droughts and floods (for natural causes), and lesser practice of recommended farm management practices by man. (Figure 7.5)

Although most people are desirous for more food, their consequent activities to have food are largely a cause of soil degradation and other environmental challenges in the regions. People’s poor methods of farming including bush burning, the pressure they exerted on land due to concentration in specific places especially camps, and deforestation were noted as the major causes of soil degradation in all regions through Key Informants. Over cultivation mainly in Teso, burning especially in Lango and poor waste management mainly in Acholi, as well as sand and murrum extraction especially in Teso were also forwarded as soil degrading factors. Whereas environmental issues have attracted

government and civil society attention, limited knowledge and skills on environmental conservation among the community members was still contributing to soil degradation especially in Teso sub region.

This is a cattle-rearing area; animals have been reared for long time. When the animals trample on soils, they become weak and easily carried away by wind and rainwater. Due to this and other factors, the soils are no longer fertile and the crop yields have reduced. In urban areas, sand mining and brick making are main economic activities, which have accelerated soil erosion.

The wetlands are being encroached on partly because the upland soils are no longer productive as they used to be and the rain patterns have changed. So people decide to plant rice in wetlands knowing that there is water even in dry seasons **KII with an official of Soroti District.**

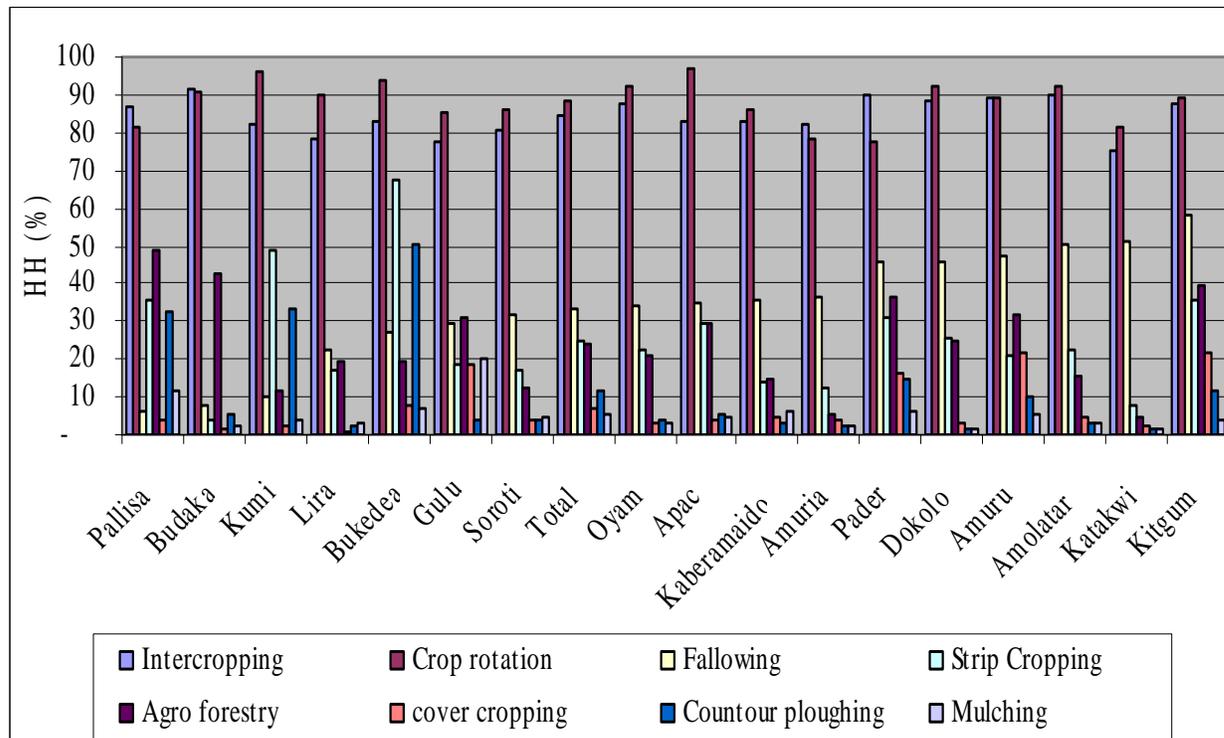
From other Key Informants, it was reported that soil degradation was evident in many parts of the regions as seen from cleared tree cover, reduced vegetation cover, poor methods of farming and population pressure, while wetland reclamation, reduced crop yields and open holes (pits) in some of the districts. Open hilltops and holes were also common in some places, which had been left uncovered for a long time and posed a risky situation to people and animals

“Soil degradation is evident in many places and can be seen from the rampant reclamation of wetland along the lakeshores, and open holes created after sand and marrum extraction in places like Otuboyi and Kalaki sub counties” (KII with an official from Kaberamaido District).

7.2.3 Current soil fertility management technologies and levels of utilization

A number of soil conservation technologies are being applied to improve soil fertility in the MYAP areas. The common soil conservation technologies applied in include crop rotation, strip cropping, intercropping, agro forestry, crop rotation row planting and fallowing (Figure 7.5).

Figure 7. 5: Soil fertility improvement technologies/practices applied by households (%) in MYAP areas



Intercropping, crop rotation, row planting, and fallowing, comprise the most applied soil fertility improvement technologies in all the MYAP areas in general. In all the districts, over 70% of the respondents noted to be practicing both intercropping and crop rotation. While row planting is practiced, the proportion varied between 44 to 60%. About 30% of the respondents in all districts areas confirmed resting of their fields to regain fertility.

Bush fallowing is one of the practices aimed at ensuring soil fertility regeneration by resting land parcels for a time period, subject to the situation of the land user and therefore liable to decline with increase in population pressure. Although bush fallowing is one of the most highly practiced as per the totals for all the regions, the sub regional statistics indicate that some individual regions have not generally embraced it comprehensively. In most Teso districts (Pallisa, Budaka, Bukedea and Kumi), for example, a significantly lower number of farmers practice fallowing, with less than 30% recorded. More still, practices like contour ploughing, mulching, and cover cropping

comprise the least applied soil improvement options applied with at least less than 10% of the respondents reporting to have applied them (Figure 7.5).

7.3. Energy Availability and its levels of sustainable utilization

7.3.1 Forms of energy for cooking by HH

There are different forms of energy accessible and used in MYAP areas. These include wood fuel, charcoal, biogas, gas and hydro electric power. Table 7.4 shows the use of the different forms of energy in the different sub regions in MYAP areas. Note that this was a multiple response question where by a family may have more than one source of energy.

Table 7. 4: The different forms of energy and the extent of their use in MYAP areas

District	Firewood HH (%)	Charcoal HH (%)	Electricity HH (%)	Biogas HH (%)
Kumi	98.2	5.1	0.0	0.0
Amuria	98.0	5.1	0.5	0.5
Bukedea	96.8	6.4	0.5	0.5
Budaka	96.5	4.0	0.5	0.0
Dokolo	96.4	9.2	0.5	0.5
Pallisa	95.6	2.2	0.9	0.9
Kaberaido	95.4	11.4	0.0	0.5
Oyam	95.2	6.1	1.2	1.2
Katakwi	94.3	5.7	0.0	0.0
Pader	93.7	7.4	0.6	0.0
Amolatar	93.1	6.4	0.0	0.0
Amuru	92.2	8.9	0.6	0.0
Kitgum	91.9	9.5	0.0	0.5
Apac	91.2	15.0	0.7	0.0
Soroti	87.9	17.2	2.1	0.4
Gulu	85.9	33.0	0.0	0.5
Lira	81.9	38.9	2.1	0.5

According to this survey, fire wood is used in over 90% of households sampled in all the sub regions. From Table 7.4, a relatively small proportion of the population use charcoal with regions such as Acholi and Lango leading with about 15% of the sampled households respectively while less was recorded for Teso A and Teso B with about 4.4% and 10% in that order. The use of such energy sources as biogas, gas and electricity is significantly low due to probably the high cost associated and accessibility difficulties.

7.3.2 Cost of energy in MYAP areas

Usually in rural poverty stricken areas, the use of any form of energy depends on the households' ability to meet the costs associated. Table 7.5 indicates the cost of energy per month per household.

Table 7. 5: Comparison of the estimated expenses on energy and use in MYAP areas per household

District	Estimated amount for the use of energy (in Ug Shs) per month					
	No cost HH (%)	<15,000 HH (%)	15,001-30,000 HH (%)	30,001-60,000 HH (%)	>60,000 HH (%)	Non response HH (%)
Pallisa	60.2	18.6	0.9	-	16.8	3.5
Budaka	53.5	1.5	-	-	42.5	2.5
Lira	45.6	28.5	7.3	1.0	16.6	1.0
Bukedea	35.8	17.0	2.8	1.4	41.7	1.4
Oyam	32.1	4.9	3.0	-	58.8	1.2
Apac	29.3	15.7	1.4	-	51.0	2.7
Gulu	26.7	20.9	3.4	0.5	46.6	1.9
Kumi	26.6	20.6	0.9	-	49.5	2.3
Kaberamaido	26.5	9.1	1.4	-	62.1	0.9
Katakwi	22.3	4.3	1.0	0.5	67.8	4.3
Amolatar	21.7	14.3	2.0	1.0	60.1	1.0
Amuria	21.5	5.1	1.5	-	70.3	1.5
Dokolo	21.4	11.2	1.0	-	64.8	1.5
Soroti	18.4	12.1	2.9	0.8	63.6	2.1
Amuru	13.9	12.2	1.1	0.6	66.1	6.1
Kitgum	7.6	12.9	1.4	-	73.8	4.3
Pader	6.3	12.6	-	0.6	77.1	3.4
Average	27.6	13.0	1.9	0.4	54.7	2.5

From Table 7.5 the about 27 % of the households never realised expenses (in cash form) on energy with Pallisa, Budaka and Lira with for above the average. (all above 45%).

On the other hand, Padel, Kitgum and Amuria spend much on energy with over 70% of the households spending over Shs 60,000 every month, a figure high compared to the

rural income. Fuel wood (charcoal and firewood), is the cheapest form of energy in rural areas and often obtained at no direct financial cost. It may be most obvious that, due to lower financial costs involved in obtaining fuel wood, it becomes the highest form of use (table 7.4) in rural areas. This eventually translates to high rate of environmental deterioration

However in areas such as Acholi sub region where customary tenure accommodates communal land ownership, the cost of wood fuel and especially firewood mostly includes the distance travelled to the communal lands unless purchases are made for the firewood on the market.

7.3.2 Distance travelled to obtain energy by households in MYAP

The distance travelled to access energy (wood fuel) may also be an indirect cost to households. Distances comprise part of the costs expended where or not fuel access was free of charge. The more the distance covered and time spent the more the cost realised. Table 7.6 shows the distance covered in the surveyed districts to access different sources of energy in MYAP areas.

Table 7. 6: Average distance to obtain the used energy source by households

District	Estimated distance taken to energy source by households					
	< 500m HH (%)	500m-1km HH (%)	1.1-2km HH (%)	2.1-4km HH (%)	>4km HH (%)	No response HH (%)
Budaka	76.5	9.5	1.0	0.0	0.5	12.5
Pallisa	55.3	18.1	12.0	2.7	0.4	11.5
Kaberamaido	44.3	26.0	18.3	3.7	2.7	5.0
Amuria	40.5	23.6	18.5	8.7	1.0	7.7
Soroti	37.2	28.9	13.8	2.5	7.1	10.5
Lira	36.8	23.3	11.4	10.4	11.9	6.2
Katakwi	35.1	35.6	9.5	4.7	2.8	12.3
Gulu	33.5	21.4	18.9	12.1	10.7	3.4
Bukedea	25.7	45.0	14.7	7.8	2.3	4.6
Amolatar	24.6	29.6	17.2	14.8	11.8	2.0
Oyam	24.2	25.5	20.6	17.0	9.1	3.6
Apac	23.1	32.0	23.1	10.2	8.2	3.4
Dokolo	21.4	35.7	22.5	12.8	4.6	3.1
Kumi	17.4	44.5	17.0	6.0	6.9	8.3
Amuru	17.2	22.2	12.2	16.1	20.6	11.7
Pader	17.1	12.0	24.0	28.0	12.0	6.9
Kitgum	16.2	21.9	18.1	14.8	19.5	9.5
Average	32.1	26.7	16.0	10.1	7.8	7.2

At a distance below 500 meters to access any form of energy, it is considered short. This lies within the minimum limits of the households to expend less time. With a distance of 500m-1km, it is acceptable and 32% of the households obtain their energy within the same range. Over 68 % obtain their energy beyond 1km. A key informant notes:

A big number of people travel about two kilometers to get firewood while on average, a bundle of ten to fifteen kilograms costs about 2,000 shillings. This has tended to limit the capacity of most people to meet their domestic fuel needs. **KII with an official of Kaberamaido District**

7.3.4 Amount of energy consumed by households in MYAP

Bearing in mind (through available literature), and considering that firewood accounts for over 90% of energy consumed in all the sub regions, in the study area the main measurement of firewood is a bundle whose size was estimate at 12kgs. It was assumed that any bundle of firewood would be compared to dry eucalyptus trees wood bundle to sustain similar strength in cooking. The strength of firewood depends on the tree species and dryness among others. This was determined during a pre-visit period and information obtained from JEEP¹ and through consultation of technical officials from Ministry of Energy. Table 7.7 indicates the results of amount of energy use.

Table 7. 7: Monthly firewood consumption rate per household in MYAP areas

Sub-region	Est. bundles/Month	Est. Kg/Month	Est.Kg/day
Acholi	15.6	187.2	6.24
Lango	10.3	123.6	4.12
TesoA	14.3	171.6	5.72
Teso B	14.3	171.6	5.72
Average	13.625	163.5	5.45

From Table 7.7 the average firewood consumption is estimated at 5.45kg per month. According to Habermehl Eschborn (2007), the use of energy saving technologies such as Rocket Lorena stoves can save 60% of firewood. A study in Kamuli indicated that an average house hold of 5 individuals used 2.56Kg per day. This implies that about 2.89kgs (53%) is lost per day per household in the MYAP areas. This eventually translates to higher rate of deforestation.

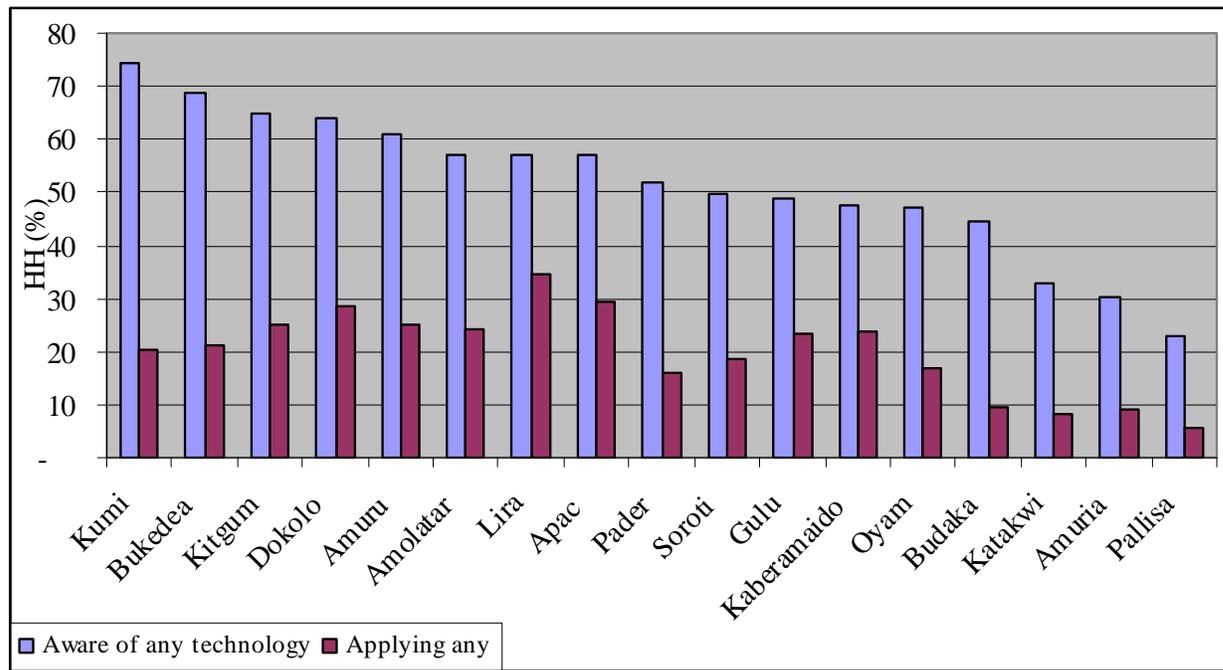
7.3.5 Use and extent of use of energy saving technologies in MYAP areas.

Household heads were asked about their awareness of energy saving technologies. Also levels of use of energy saving technologies were determined. The awareness of energy saving technologies in all 17 districts of MYAP ranges between 23-74% in Kumi and

¹ JEEP (Joint Energy and Environmental Project) is a Kampala based NGO operating in some of the Central Districts in promotion of energy saving technologies among others.

Pallisa respectively. (Figure 7.6). Although the people’s awareness may not relate to their ability or willingness to utilise such energy saving technologies, this signifies a possibility of, and their sensitivity towards sustainable energy consumption which bears long term economic and environmental positive changes.

Figure 7. 6: Comparison of households’ awareness and use of any energy saving technology



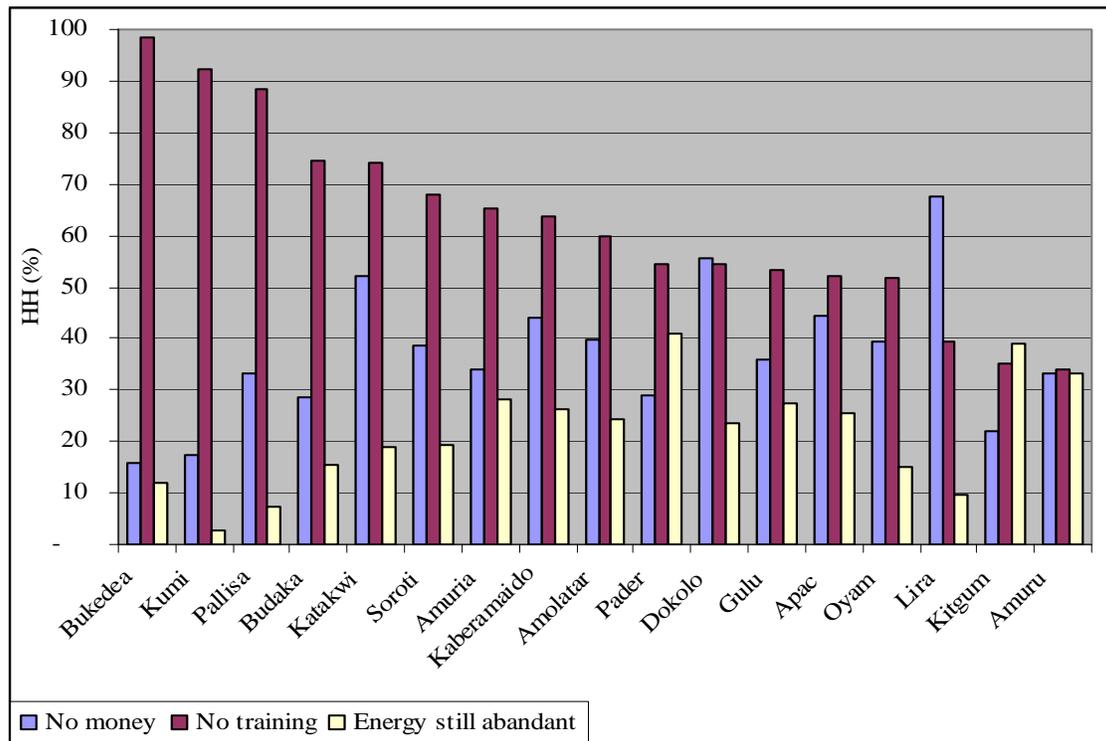
In all districts, there was a low use of the energy saving technologies despite their awareness of any technology. From Figure 7.6, Pallisa had low level of knowledge of any technology as well as the lowest in use of any energy saving technologies. Lango sub-region districts appears to be the only are where energy saving technologies has been embraced more than any other region with an average of about 56% awareness and 33% application.

For the entire region, most respondents utilised single opening mud stoves/and or Lorena stoves (17.6%) which are the most affordable to the households. Metallic stoves at 4.5% were on the other hand the least opted for which corresponds to the lesser use of charcoal 11.2%. On average, 22% of those who used wood fuel apply some form of energy saving technology.

7.3.6 Factors for use and non use of energy saving technologies

Limited or lack of awareness and lack of training about energy saving technology comprises one of the main factors affecting the households’ adoption of sustainable energy consumption strategies. Figure 7.7 compares the various factors for hindering use of energy saving technologies.

Figure 7. 7: Factors hindering use of energy saving stoves by households



All districts indicated that lack of training on appropriate technologies for energy saving is the single most factor for non use. However, Lira and Kitgum indicated that the major hindrances to appropriate technologies as lack of money and abundance of energy/firewood respectively. From some of the FGDs, one of the participants noted that;

Energy-saving stoves are good for all of us but they are costly and are not affordable by most people. If organizations can provide more information, and there are sources of money for constructing them, we would have many of them **FGD with men and women of Nakyewo Village, Kamonkoli Sub County, Budaka.**

Where use of energy saving technologies existed but to a limited degree, there are a few communities in Lango and Acholi where they are largely promoted by civil society organizations (CSOs) such as Action Against Hung (ACH).

7.4. Environmental Challenges and Mitigation

7.4.1 Environmental challenges in MYAP areas

There are several environmental challenges in MYAP areas, some of which are major and others minor. The determination of whether minor or major depended on the severity of the identified problems. Table 7.8 shows responses to environmental problems. Fluctuating climatic patterns, bush burning, deforestation and decline in soil fertility respectively are the first four major challenges identified by the respondents followed by Wetland encroachment, pollution of water sources and overgrazing which comprised major environmental problems in the sub regions within MYAP areas.

Table 7. 8: Household responses (%) regarding major environmental problems in MYAP areas

Environmental Challenges	Acholi	Lango	Teso A	Teso B
Fluctuating climatic patterns	66.7	73.7	80	82.7
Bush burning	53.1	55	79	20.7
Deforestation	48	53.7	68.4	67
Decline in soil fertility	51.1	40.7	41.8	77.3
Wetlands encroachment	24.1	26.2	24.1	4.8
Pollution of water source	16.8	29.6	16.9	23.5
Pests and diseases	13.6	0	19.4	2.2
Overgrazing	3.7	24	19.4	35.6
Charcoal burning	3.7	40	11.1	2.2
Brick making	0	4	11.1	17.8

7.4.2. Strategies against environmental challenges by households.

Households were asked any general practice aimed to solving any of the environmental problems experienced. Table 7.9 shows the number of households that responded to each measure applied.

Table 7. 9: Strategies to environmental problems at household level in MYAP areas.

Strategies to Environmental problems	Acholi HH (%)	Lango HH (%)	Teso A HH (%)	Teso B HH (%)	Average HH (%)
Crop rotation	62.9	76.7	71.5	94.1	76.3
Nothing	27.8	2.3	13.8	3.1	11.75
Alternative/wise use of energy	23.1	36.4	9.8	26.1	23.85
Rain harvesting	15.9	13.7	3.2	11.1	10.975
Trenches/grass bands	14.5	36	8.5	7.7	16.675
Planting trees	12.7	20.9	33.1	13.8	20.125
Intercropping	4.8	10.5	6.9	12.3	8.625
By-laws	3.6	10.5	4.6	0	4.675
Fallowing	3.6	1.2	8.5	1.5	3.7
Strip cropping	0.6	1.2	7.7	26.2	8.925

From Table 7.9, crop rotation is the mostly applied soil management measures to avert the impacts of declining soil fertility. Teso B applies crop rotation was the highest of all regions with 94.1%. and Acholi with the least at 62.9% responses. Alternative/wise use of energy and tree planting are the other ways of tackling environmental problems in MYAP areas.

From key informants and focus group discussions, vital responses in regard to strategies for solving environmental problems were notable. Throughout the study area, the need for environmental conservation was apparent, expressed by both community members and district officials. Attempts to control soil degradation focused mainly on awareness rising in all regions, with radio programs organized and local council leaders trained in some districts like Kaberamaido though for a short period of time.

Some people lack knowledge on the value of tree planting, so positive change will be realised when they are educated on the importance of trees as has been done in some areas (FGD with males and females in Atula village, Omot sub county, Pader District).

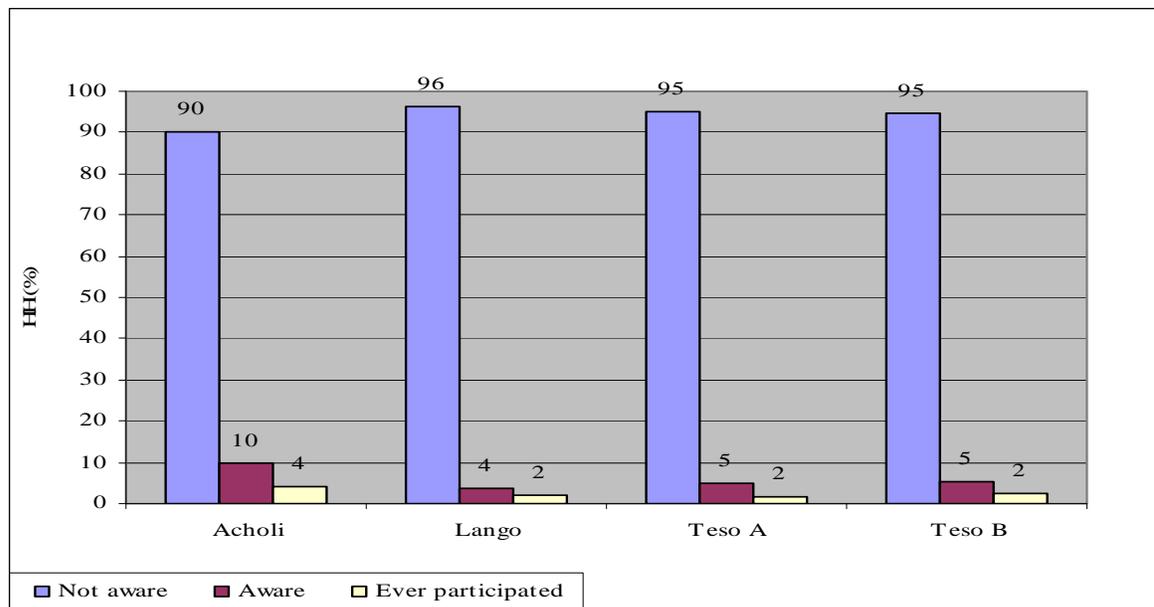
Awareness rising seem to have translated in the involvement of community members in tree planting as a way of minimizing soil degradation. Some re-forestation campaigns were reported in Acholi and Lango regions while tree planting projects mainly in form of agro-forestry were prevalent in some communities of Teso region. Most of the efforts to agro forestry are spearheaded by civil society organizations like Soroti Catholic Diocese Development Organisation (SOCADIDO) which complement government programs such as the National Agricultural Advisory Development Services (NAADS).

Looking at NAADS, it has helped farmers to form groups that are channels of information for solving problems while NGOs such as SOCADIDO and Soroti Environment Concern are also addressing environment concerns like soil degradation (KII with an official from Soroti District).

7.4.3. Collective community participation towards conserving environment

Collective participation in environmental conservation involved the collective efforts of groups of individuals to ensure efficient natural resource management. People were asked whether they were aware of any formal (registered) environmental/conservation group in their area. They were also asked whether they participate in any way if the groups exist. The presence of groups as well as their participation would indicate the level of willingness/readiness to join into natural resource management associations. Figure 7.8 shows the results.

Figure 7. 8: Individual awareness or/and participation in Environment Conservation/conservation groups.



From the figure above, it is clear that there were no formal environmental/conservation groups where people would exercise collective effort towards conserving the environment and its natural resources.

Further questions were posed to probe if there were other informal ways through which communities worked together. Such questions would help to establish if there are other informal ways not realised by all (including the participants) where people have involved themselves, The table 7.10 shows some of the activities jointly done by the community or as individuals resulting from collective agreement.

Table 7. 10: Activities where an individual had ever participated or ever done jointly

	Formation of environmental bye-laws	Afforestation	Joint planning	Sale of environmental products & tree seedlings	Environment Drama groups
District	HH (%)	HH (%)	HH (%)	HH (%)	HH (%)
Gulu	89.7	31.0	51.7	24.1	8.6
Amuru	84.8	28.3	28.3	32.6	10.9
Kaberamaido	82.4	43.1	23.5	11.8	9.8
Pader	80.5	39.0	14.6	9.8	14.6
Kitgum	79.5	51.3	18.0	15.4	10.3
Soroti	75.0	51.8	37.5	12.5	3.6
Katakwi	75.0	16.7	25.0	44.4	0.0
Amuria	73.6	62.1	13.8	16.1	3.5
Lira	65.1	44.4	39.7	19.1	4.8
Budaka	64.8	64.1	26.2	33.1	4.8
Pallisa	61.7	45.0	28.3	18.3	1.7
Apac	61.2	44.7	18.8	12.9	3.5
Oyam	59.1	54.3	33.9	33.9	1.6
Amolatar	58.1	38.7	19.4	11.3	11.3
Bukedea	56.8	38.6	38.6	27.3	18.2
Dokolo	50.0	75.0	8.3	0.0	8.3
Kumi	39.1	69.6	4.4	21.7	17.4
Average	68.0	46.9	25.3	20.3	7.8

According to table 7.10 above, formulation of byelaws is the most common where at least 68% of the people in MYAP had participated in. Forestation and joint planning were also most prominent activities where people had participated with 46.9.8% and 25.3 % respectively. This generally indicates that there is willingness and potential for people to work together to conserve the environment. There are a number of NGO’s in the study area, which in some ways have been bringing people in various meetings which can be perceived as informal initiatives.

7.4.4 Constraints towards individual efforts in conservation of environment natural resources

There are usually encumbrances in effective natural resource management. Respondents were asked if they were aware of any events or social activities that retard them from any

effort towards conservation of either water, soil, plants or both. . Overall, 52.1 % of the respondents agreed that there are such encumbrances. Activities or/and events that retarded people’s effort were also obtained from the respondents as indicated in Table 7.11

Table 7. 11: Activities and events that affect conservation of environment.

District	Prolonged dry seasons	Communal animal rearing	Prolonged rainfall	Cattle rustling
	HH (%)	HH (%)	HH (%)	HH (%)
Kumi	80.3	45.4	31.2	19.7
Budaka	68.0	2.0	5.5	1.0
Bukedea	66.1	48.6	35.8	6.0
Pader	49.1	38.3	18.3	26.3
Amolatar	46.3	34.5	15.3	3.0
Soroti	46.0	23.4	34.3	8.4
Kaberamaido	42.0	29.2	32.9	6.4
Katakwi	41.7	43.6	31.8	46.5
Kitgum	39.1	30.5	15.7	20.5
Amuria	38.0	34.4	34.9	23.1
Pallisa	34.5	28.3	9.7	2.7
Dokolo	32.1	34.7	21.9	0.5
Apac	25.2	28.6	14.3	1.4
Oyam	23.0	17.6	15.2	0.0
Amuru	11.7	15.0	18.9	1.1
Lira	8.3	18.7	7.8	5.2
Gulu	8.3	13.6	11.7	1.0
Average	38.8	28.6	20.9	10.1

Over all, about 39% of the people in the MYAP had are constrained by prolonged dry season in their efforts to do anything to save environmental conservation with Kumi, Budaka and Bukedea being affected most. In addition to prolonged dry season, communities, Some districts of Teso are affected by prolonged rainfall. This response is expected to have been triggered by the 2007 floods of Teso region that left many displaced.

Through key informants and FGDs, it was realised that, where as district authorities, civil society organizations and communities were determined and had attempted to solve soil degradation and other environmental problems, limitations to their attempts were apparent. The major hindrances in all regions were; inadequate financial resources for environmental programs especially notable in government. The environment offices in all districts were under funded, with others lacking even basic office equipment like computers, printers and means of transport. Poor facilitation to the environment offices had limited their support extended to community groups.

“Our efforts to address environmental issues are constrained due to limited funding for related programs. This year, the total budget for the department was about seven million shillings; and the facilities are inadequate for instance we do not have any computer and means of transport such as even a motorcycle. So, we cannot do all required of us (KII with an official from Kaberamaido District).

The value of having the relevant skills and knowledge on promotion of conservation cannot be over emphasized. However, community members in all the regions showed that their skills and knowledge on soil environmental conservation were inadequate and could not comprehensively handle the environmental challenges:

People can play an active role in protecting the environment but have limited knowledge on environmental protection practices and their importance. We need to be educated more so that we save our natural resources (FGD with men and women of Kamonkoli Sub County, Budaka District).

The interplay of the above limitations seem to have led to further constraints in the environmental conservation drive in Acholi region such as; limited land for tree planting, high prices for seeds and seedlings, inaccessibility of some seeds and weakness of the forestry department.

7.5. Tree resources and management of trees

7.5.1. Common tree species, factors for preference and constraints in their management

Common trees are considered to be those species whose presence is widely spread in MYAP area. For purposes of avoiding overlaps of sections, a common tree here excludes fruit trees and naturally occurring/indigenous trees. These species however includes exotic trees. These exclusions are covered in detail in other sections (7.5.2 and 7.5.3).

There are a number of common tree species often planted in the surveyed sub regions. A specie was considered common depending on the number of households that have such species on their land. The trees with higher frequencies were then considered common. The major trees species identified are indicated under able 7.12 while the rest of several trees that were mentioned, including their local names are listed in annex 1.

Table 7. 12: Common trees present in MYAP area.

	Eucalyptus	Pinus	Molinga	None (no trees
District	HH (%)	HH (%)	HH (%)	HH (%)
Kitgum	4.8	1.6	1.1	93.5
Pader	11.4	2.7	3.4	90.6
Amuria	12.1	3.1	3.7	87.9
Katakwi	5.4	1.1	6.0	87.7
Amuru	16.0	1.3	3.3	84.4
Soroti	12.7	2.0	3.0	82.5
Kaberamaido	11.0	3.8	11.0	68.2
Bukedea	33.6	7.1	7.3	66.0
Kumi	17.4	4.9	5.7	65.2
Gulu	30.4	10.6	8.4	64.3
Pallisa	20.3	2.3	7.5	61.8
Lira	19.8	3.7	14.1	56.7
Oyam	16.3	3.4	8.9	50.0
Dokolo	16.4	12.7	13.3	49.4
Budaka	18.3	4.5	16.3	46.7
Amolatar	13.4	2.2	11.3	42.3
Apac	23.9	6.0	11.2	36.4
Average	16.7	4.3	8.0	66.7

As observed above, *Eucalyptus spp*, *a Pinus spp* and *Molinga*, are the common specie but still grown at low scale. Most households had no such trees as noted with over 66% and having none of the eucalyptus, pinus or molinga. *Eucalyptus Spp.* is the most planted (with at least more than 10% across all the sub regions surveyed except Kitgum) while *Molinga* is the least planted with less than 15% in all MAYP areas.

It should be born in mind that eucalyptus trees, where as they are preferred, are not recommended especially if there are alternative agro forestry trees to provide similar benefits. Eucalyptus replaces vegetation species that provide food reserves to birds which eventually changes diet to agricultural crops (such as coffee, apples, millet, sorghum, and maize among others), resulting into severe crop destructions. As a measure, some land users may consider bird poisoning to minimize crop losses which may conservation paradox. Eucalyptus tree planting effects such as ellelopathic, shed and high water loss affect crop production.

7.5.1.1 Preference and general Importance of common trees

Unless otherwise, the non fruit tree species are normally intended to provide firewood and timber for example for the case of *Eucalyptus*, shed, and generally environmental

benefit as a positive externality. Of the few respondents who have some common trees on their land the reasons as to why they preferred the species. Table 7.13 shows other reasons (including timber) for tree planting in MYAP areas

Table 7. 13: Reasons for planting trees in the Sub regions within MYAP areas

District	(N)	Timber	Income	Shade	Soil fertility	Pasture	Medicine	Firewood
		HH (%)	HH (%)	HH (%)	HH (%)	HH (%)	HH (%)	HH (%)
Gulu	173	30.1	32.9	16.8	7.5	0.6	5.8	6.4
Amuru	64	29.7	35.9	15.6	4.7	0.0	7.8	6.3
Kaberamaido	193	31.6	25.4	23.3	9.8	4.1	5.2	0.5
Pader	38	39.5	39.5	10.5	7.9	0.0	2.6	0.0
Kitgum	49	20.4	30.6	20.4	10.2	2.0	10.2	6.1
Soroti	182	36.3	28.0	24.2	5.5	1.6	2.2	2.2
Katakwi	129	34.9	27.9	27.9	1.6	1.6	6.2	0.0
Amuria	145	35.9	27.6	25.5	4.8	1.4	2.8	2.1
Lira	209	28.7	30.6	24.9	3.3	0.5	9.6	2.4
Budaka	403	18.6	30.8	26.8	6.7	2.5	3.5	11.2
Pallisa	246	26.0	35.0	21.1	5.7	0.4	5.3	6.5
Apac	232	26.7	26.3	25.9	11.2	1.7	3.0	5.2
Oyam	234	26.1	24.8	32.5	8.1	1.3	3.0	4.3
Amolatar	349	32.4	25.5	24.6	8.3	2.9	3.4	2.9
Bukedea	269	32.0	33.5	26.4	2.2	0.4	3.3	2.2
Dokolo	358	31.3	27.7	20.4	10.3	2.2	4.2	3.9
Kumi	241	28.6	30.7	31.1	0.4	1.2	1.2	6.6
Average		29.9	30.2	23.4	6.4	1.4	4.7	4.0

From Table 7.13 above, tree planting practices for pasture (fodder), fuel wood, soil fertility improvement and medicinal reasons comprise the least of the factors driving tree growing initiatives. The major driving force behind tree planting is income, including timber sales. In terms best practices for natural resource management, it is important that only agroforestry trees that have high potentials for income generation should be encouraged/introduced. Failure to plant trees as a form of environmental conservation is a phenomenon that is linked to lack of knowledge on importance of some types of trees on soil fertility improvement and fuel wood provision. It is interpreted that some communities still regard firewood to be abundant.

7.5.1.2 Constraints for planting common trees

Tree growing is a subject of both natural and human factors. Therefore some constraints to tree planting problems were notably both external and internal. Normally, natural constraints are listed to include soil qualities, climatic conditions, pests and diseases while the human facilitated constraints include; soil degradation, overgrazing and tree

crop destruction, limited propagation skills, and poor tree seed quality plantation, land shortage, among others.

In MYAP areas, factors constraining tree planting considered were rather generalized and they are summarised in the following table 7.14. They include limited land, Lack of markets for tree products, poor quality seedlings accessible, and lack of tree seedlings at all.

Table 7.14: Factors constraining tree planting in MYAP sub regions

District	No seed supply	No land	No market	Poor quality
	HH (%)	HH (%)	HH (%)	HH (%)
Gulu	60.0	26.0	6.0	6.0
Amuru	73.5	28.4	1.0	2.0
Kaberaido	75.0	26.4	15.7	14.3
Pader	68.1	23.4	0.0	1.1
Kitgum	81.1	18.0	2.7	4.5
Soroti	65.0	17.2	3.3	5.0
Katakwi	69.6	14.1	7.4	5.9
Amuria	78.3	13.0	7.8	7.8
Lira	63.2	33.3	10.5	4.4
Budaka	92.7	39.7	4.4	4.4
Pallisa	64.8	41.4	4.1	2.1
Apac	83.5	26.8	9.3	11.3
Oyam	76.5	23.5	6.1	8.7
Amolatar	85.1	24.3	5.4	15.5
Bukedea	76.6	74.7	4.4	2.5
Dokolo	85.5	20.7	4.1	8.3
Kumi	87.9	80.5	2.0	2.0
Average	75.7	31.3	5.6	6.2

From Table 7.14, lack of seedlings (high quality seedlings) emerged as the key constraint to tree planting in all the districts by an average of over 75% of the households in all the regions. Households do not have access to the seedlings of their preferred tree species. Also, land shortage was a big challenge in most areas especially in Kumi, Bukedea, Pallisa and Budaka. This could be due to population growth and its associated land fragmentation that have ultimately led to the rise in land shortages. More land is preferred for crop growing than tree planting due to the long gestation periods for tree projects

Lack of market for tree products was reported in such areas where accessibility to efficient transport systems affected the transportation of materials to the market centres. In such sections of the surveyed sub regions, there has been a limit on the incentives to drive households into tree planting.

7.5.2. Naturally occurring tree species, their use and management practices (income potential, wide multiplication, propagation, use)

7.5.2.1. Indigenous trees on households land

The naturally occurring trees include those tree species for which households have no much care and yet their products are of great importance to man. There are many different species of naturally occurring trees in the sub regions surveyed. Some of the tree species were identified in their respective regions as indicated in Table 7.15 below.

Table 7.15 Naturally occurring tree species present on peoples land in MYAP areas.

District	Tamarind (<i>Tamarindus indica</i>)	Shea nut (<i>Butyrospermum paradoxum</i>)	Fig tree (<i>Ficus spp</i>)	Black plum (<i>Vitex doniana</i>)	Palmyra Palm (<i>Borassus aethiopum</i>)	Wild date plum (<i>Phoenix reclinata</i>)	Coco nut palm (<i>Cocos nucifera</i>)
	HH (%)	HH (%)	HH(%)	HH (%)	HH (%)	HH (%)	HH (%)
Gulu	19.4	17.0	15.1	2.9	-	6.8	24.8
Amuru	18.9	16.7	15.6	12.2	1.1	5.0	10.0
Kaberamaido	24.2	13.7	8.7	0.9	2.3	3.2	2.7
Pader	40.6	53.7	14.3	14.3	-	1.1	14.9
Kitgum	39.1	27.1	24.3	12.4	1.9	2.4	21.9
Soroti	50.6	29.7	3.4	0.8	-	3.4	2.5
Katakwi	73.9	60.2	3.8	-	-	2.4	1.4
Amuria	64.6	70.8	3.1	-	0.5	1.5	2.6
Lira	31.6	31.1	16.1	4.2	0.5	2.1	17.1
Budaka	0.5	1.0	7.0	0.5	-	-	0.5
Pallisa	5.8	0.9	9.3	0.4	-	-	0.9
Apac	19.1	6.1	29.9	6.8	3.4	3.4	20.4
Oyam	15.2	3.6	24.9	6.1	1.2	3.0	23.6
Amolatar	19.2	0.5	15.3	2.0	-	2.5	22.7
Bukedea	24.3	7.3	0.5	0.9	-	-	0.5
Dokolo	23.0	8.7	20.4	8.2	0.5	3.6	32.7
Kumi	44.5	2.3	-	-	-	-	1.8
Average	30.3	20.6	12.4	4.3	0.7	2.4	11.8

From Table 7.15, Tamarind was identified to existing indigenous tree species in the study area with approximately 30% respondents noting to have identified it on their area.. Tamarind was followed by Shea nut tree species that had about 20.6% of respondents reporting its existence on their land. Some of the trees which were not common were palmyala (0.7% overall), Wild plum (2.4%), and Black plum (4.3%) and it could be probable that they are either endangered, soils do not favour or they are of less importance.

7.5.2.2. *Income generating Potentials of naturally occurring tree species*

Indigenous or otherwise naturally occurring tree species are important to the households in the sub regions surveyed. They include medicinal values, economic, and environmental. In particular to income generation, table 7.16 shows the degree to which households earned incomes from various naturally occurring tree species.

Table 7.16: Indigenous trees with potentials for income to households in MYAP area

District	Shea nut	Coco nut tree	Fig tree	Tamarind	Wild plum	Black plum	Palmyara tree
	HH (%)	HH (%)	HH (%)	HH (%)	HH (%)	HH (%)	HH (%)
Kumi	100.0	100.0	100.0	35.3	50.0	0.0	0.0
Amuria	78.7	8.1	7.5	46.7	8.3	0.0	2.9
Bukedea	78.6	0.0	25.0	21.6	0.0	0.0	0.0
Katakwi	69.3	1.7	14.8	56.9	6.4	0.0	0.0
Pader	67.0	56.0	33.3	18.3	0.0	23.1	0.0
Amuru	60.6	62.5	29.6	8.3	0.0	15.0	0.0
Kitgum	60.4	27.9	38.8	16.7	37.5	38.5	28.6
Gulu	58.5	63.5	33.3	14.6	13.3	7.4	0.0
Lira	55.3	29.3	6.9	20.7	0.0	5.3	0.0
Soroti	54.0	17.9	9.4	35.6	17.2	0.0	0.0
Kaberaido	36.5	5.9	20.0	11.0	12.1	0.0	6.3
Dokolo	17.0	45.6	30.0	13.8	7.3	12.2	2.6
Apac	12.8	39.6	30.4	9.5	6.5	18.9	9.4
Pallisa	4.0	3.1	18.8	2.2	0.0	0.0	0.0
Budaka	2.7	0.0	15.5	0.5	0.0	1.4	0.0
Oyam	2.2	44.1	12.5	9.7	7.7	14.9	2.7
Amolatar	0.0	39.6	20.5	10.3	18.2	0.0	0.0
Average	68.2	36.7	29.9	27.5	13.3	8.9	3.2

Households use indigenous tree species in different ways to earn incomes through such means as; medicine, wood fuel, charcoal, materials for handcrafts and construction, timber, food products such as cooking oil from the shea nut tree, among others.

Unfortunately, the more a tree species earns to the communities the more it's threatened with extinction both in the short and long run. For example, whereas Tamarind species was recorded to be used by an overall percentage of 49.6%, and Shea nut species 47% as the leading most exploited species for income purposes.

From FGDs and Key Informants, it was noted that all regions almost had the same tree species with potential for income generation. Mangoes and oranges were sold in many urban centres, Shear nuts were used for extraction of oil, which was consumed by most people in the communities. Besides, Musisi and Tick trees though planted by very few people, had a high potential for income generation and were advocated for by most district officials:

Musisi and Tick trees are not yet known by many community members but they have a high potential for commercial tree planting. You can easily get a lot of money if you plant around 10 acres of any of them (KII with an official of Kaberamaido District).

7.5.2.3. Other uses of indigenous trees

Other than income generation from the naturally occurring tree species there are other uses that may usually not refer to market price. For example, Tamarind provides a number of uses as follows in able 7.17.

Table 7.17: General usage of Tamarind

Tree specie	Acholi	Lango	Teso A	Teso B	All
	HH % (n=237)	HH % (n=207)	HH % (n=455)	HH % (n=167)	HH % (n=1066)
Timber	3.4	3.4	4.6	2.4	3.8
Pasture	1.3	2.4	0.9	3.0	1.6
Food	67.1	56.0	70.3	65.3	66.0
Medicine	0.4	1.9	0.9	0.6	0.9
Firewood	5.5	8.7	2.6	2.4	4.4
Food	18.1	21.3	6.4	22.2	14.4
Others	4.2	6.3	14.3	4.1	8.9

All the products from the indigenous/naturally occurring tree species are consumed domestically but double as sources of income when put on the open market. Tamarind yields more incomes to the households through food production (66%) than any other products it yields followed by Firewood and timber (4.4 and 3.8% respectively).

Through FGDs and Key Informants, it was also noted that trees were mainly used in the construction industry as timber and poles, for making shades for simsim drying and as food in form of fruits. Though Mangoes and oranges are not indigenous, they were sold in many urban centres; Shear nuts were used for extraction of oil, and while most of the tree species were used for firewood and charcoal. As most people return home from

campes and the business community begin concentrating, charcoal burning had taken root almost in every district.

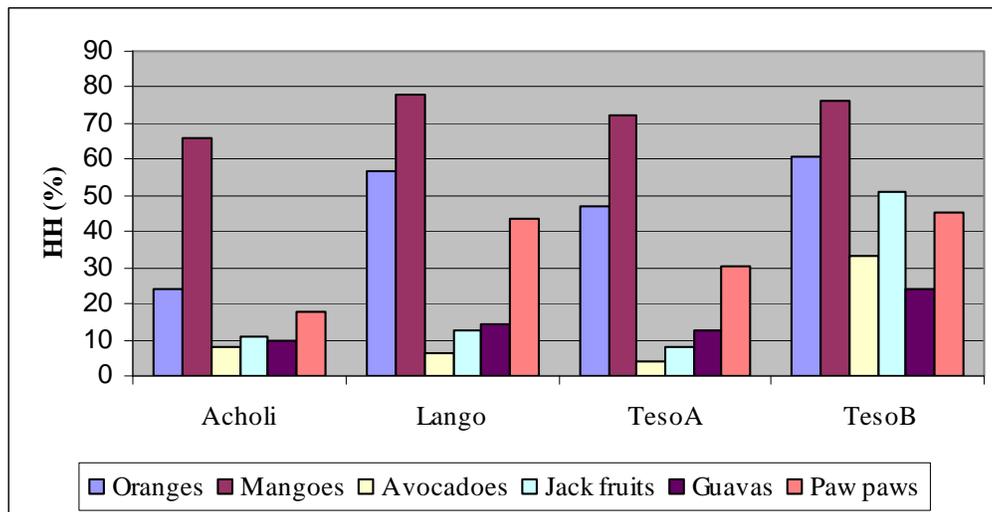
Some time back, there was no energy crisis but the situation has changed over the last ten years. There is an increase in cutting trees, firewood was hardly sold in rural areas but it is now sold in expensively, they would rely on dry tree branches for firewood instead of cutting trees. Some of the tree species are becoming rare such as shea nut and tamarind trees, which are marketable because of their hard wood (KII with an official of Soroti District).

7.5.3 Fruit tree resources in MYAP area

7.5.3.1 Extent of fruit trees growing

Fruit trees are planted to satisfy domestic needs, either through income generation or providing food to the households. In MYAP areas, several types of fruit trees are grown some of which are; Avocados, mangoes, avocados, guavas, jackfruits and paw paws. Different fruit trees are planted at different intensities depending on the sub region. However some fruit trees are uniformly in all MYAP areas. Mangoes are for example mangoes were reportedly planted by above 60% of the households surveyed in all the regions, while Lango registering 78% and Acholi 76% (Figure 7.9) as the leading growers. Guavas and jackfruits comprise some of the least grown fruit trees in all the MYAP areas as the highest figure for jackfruits only rising to 50% in Teso B.

Figure 7. 9: Fruit trees grown in MYAP areas



From Figure 7.9, orange fruit tree growing comes next to mangoes in the entire sub regions although Acholi was recorded the last orange tree growing sub region. Avocado

growing is the least done in all the sub regions except 30% of the households in Teso B sub region.

7.5.3.2. Constraints of fruit trees growing

Fruit tree planting is faced with a number of constraints. According to the survey about 54% of the respondents for all the MYAP areas indicated to have been faced a number of fruit trees planting challenges. Some of the common challenges were; limited seed supplies, limited propagation skills, and harsh climatic conditions.

Table 7.18: The factors constraining tree planting in MYAP areas

District	Limited seed supply	Limited propagation skills	Harsh climatic conditions
	HH (%)	HH (%)	HH (%)
Kumi	72.9	76.6	36.2
Bukedea	61.9	62.4	27.1
Pallisa	56.2	31.9	38.9
Soroti	51.5	33.5	30.5
Budaka	48.0	31.0	41.5
Kaberaimaido	44.8	37.0	21.0
Katakwi	42.7	28.4	34.6
Pader	39.4	17.7	14.9
Kitgum	37.1	23.8	23.3
Dokolo	34.7	21.9	28.1
Amuria	34.4	23.1	21.5
Amuru	33.9	23.3	10.6
Amolatar	31.0	22.7	25.1
Apac	27.9	26.5	27.9
Oyam	26.7	20.0	26.1
Gulu	19.9	11.2	9.7
Lira	17.1	12.4	16.1
Average	45.3	33.3	27.2

From Table 7.18, limited seed supplies to the households constitute the biggest (45%) impediment to fruit trees growing in all the study districts. Seeds are either expensive or unavailable to the household members. However, the situation is further constrained by the limited propagation skills which also limit the availability of seedlings to be planted.

The climatic conditions hinder the growth of tree plants and have been part of the other hindrances to fruit tree growing as noted by 27% of the respondents. Such conditions include prolonged draughts, and floods which may affect either the seedling germination

process or the yielding of the mature fruit tree plants. Nevertheless, it remains one of the least challenging problems that was noted but remains a significant issue.

From key informants and FGDs, it was also noted that some members of the local communities did not fully appreciate the role of trees, seeds and seedlings, some were too expensive (especially Pine whose cost was about two million per kilogram), and the long maturity period for these discouraged farmers while inadequate land deterred large scale tree planting.

Although attempts were under way to improve the production of trees, such efforts were constrained by some factors. As was the case of solving environmental problems, limited funds for related projects as well as limited seeds and seedlings of trees were the key constraints across all regions. Besides, lack of appropriate policies and enforcement of current ones was also limiting the production of trees in all the regions. The existence of several NGOs (both local and international) had not been of help as most of them seemed to have concentrated on emergency and livelihood interventions.

The cost of obtaining some tree seeds and seedlings is so high that very many community members cannot buy them and are not readily available as they are bought from Kampala (KII with an official of Apac District).

The production of trees is a bit difficult in different rural areas; most people cannot afford to buy the seeds and or seedlings of some tree species. For instance, a kilogram of Pine seeds is sold at around twenty thousand shillings (KII with an official of Kaberamaido District).

In light of the high costs of some exotic tree species, the use of local species would be helpful. However, the willingness of some community members to plant local species was low especially in Teso region. Such negative attitude by community members could lead to extinction of some local tree species.

7.5.3.3. Opportunities for Fruit tree growing

There are various opportunities that were noted to favour fruit trees growing in the sub regions. Such opportunities that were mentioned were government programs and good soils.

Table 7.19: Opportunities for tree planting in the study areas

District	High Market value	Govt programs	Others
	HH (%)	HH (%)	HH (%)
Kaberamaido	70.3	29.2	4.1
Pader	63.4	13.1	3.4
Amuria	58.5	25.6	10.3
Kitgum	56.2	15.2	1.4
Budaka	55.5	24.0	10.5
Apac	54.4	15.0	9.5
Pallisa	54.0	42.0	7.5
Soroti	52.3	25.9	5.0
Katakwi	52.1	37.9	1.9
Dokolo	52.0	13.3	9.2
Amuru	51.7	17.2	3.3
Amolatar	50.7	13.8	5.9
Gulu	50.5	15.5	2.4
Oyam	38.8	17.0	14.6
Lira	32.6	17.1	13.5
Bukedea	23.4	40.4	9.6
Kumi	12.8	56.4	13.8
Average	55.5	22.1	5.7

The benefits from such opportunities have accrued to various districts at different levels. Teso districts for example, recorded the most of respondents to have benefited from the government programmes. Such government programs include the NAADS programs and such as services offered by NARO.

From FGDs and Key Informants, it was noted that some Districts supported farmers and institutions with seedlings, developed a byelaw calling for use of trees for demarcating land by all farmers though not yet approved by the ministry of justice and forced contractors to plant trees on site. At community level, people had been encouraged to engage in establishment of tree nurseries as a business.

Both CSOs and government had attempted to improve tree production in all regions though at varying levels. Through the government program of NAADS, services were extended services to the some communities with grafting of trees as a one of the components, while small projects by CSOs had raised the awareness on tree planting and establishment of nurseries beds. However, most of these interventions were more in Teso region than in Acholi and Lango.

*Initially, trees were given to communities by the district forestry services but with privatization, it was agreed that farmers buy tree seedlings and the District cooffers advisory services. Some NGOs such as Soroti Environment Concern, work with farmer groups in villages to provide trees such as grafted oranges trees (**KII with an official of Soroti District**).*

Although there have been a number of opportunities to fruit tree planting, the challenges are still enormous. Such challenges go far outweigh the opportunities available. Fertile soils may not yield much at the peak of climatic hardships. More still, access to government programs are not evenly accessible to all the sub regions and therefore are not opportunities everywhere.

CHAPTER EIGHT

8.0 ROADS

This chapter discusses the status and location of the roads, major means of transport, key players in road construction and maintenance, willingness of the community to maintain the roads and existence of bye-laws on maintenance of the roads.

8.1 *Location and status of roads*

8.1.1 *Specific location of roads at the sub county, county and district levels*

Overall, there was relatively good road network in sub counties, counties and districts. There was low coverage of good roads in districts that had been affected more by insecurity. Within the same districts, differences in distribution of roads were noted among counties especially those neighbouring Karamoja region such Ngariam sub county in Katakwi District.

8.2 *Main types of access to communities and specifics of the land transport*

Like other rural areas in the country, access to communities is largely by land. Land transport within communities is dependent on road trunks that are mainly undeveloped, characterised by bush outgrowth. In addition most access roads are narrow and unclear to allow use of big vehicles. Some access roads in districts have not been rehabilitated for a long time and have developed very big potholes for instance the Orungo–Omodoi road joining Orungo and Morungatuny sub counties in Amuria District. Air transport is used to link Entebbe and the districts of Gulu and Pader, while in some communities in Amolatar that are near Lake Kioga only water transport is used as illustrated in the figures 8.1a and b below.

Picture 8.1 Community members of village waiting to cross lake Kwania using a boat



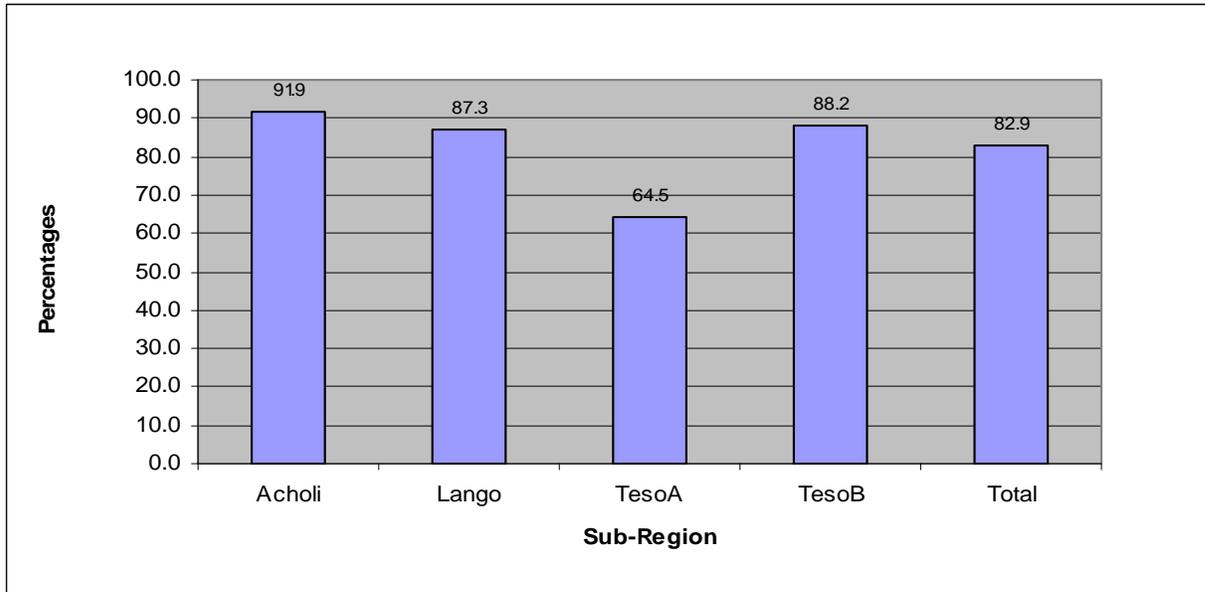
Picture 8.2 A research team member crossing lake kwania to one of the study areas



8.3 Status of the roads year around

The presence of roads that can be used all year round in communities is a vital ingredient of community development. According to the community members' perceptions, the overall coverage of such community roads in all regions was high with 83% of respondents reporting their existence (Fig 8.1). The highest percentage was reported from Acholi region (91.9%) and the lowest from Teso A (64.5%). The high proportion in Acholi can be attributed to the recent reconstruction following a return of peace in the region.

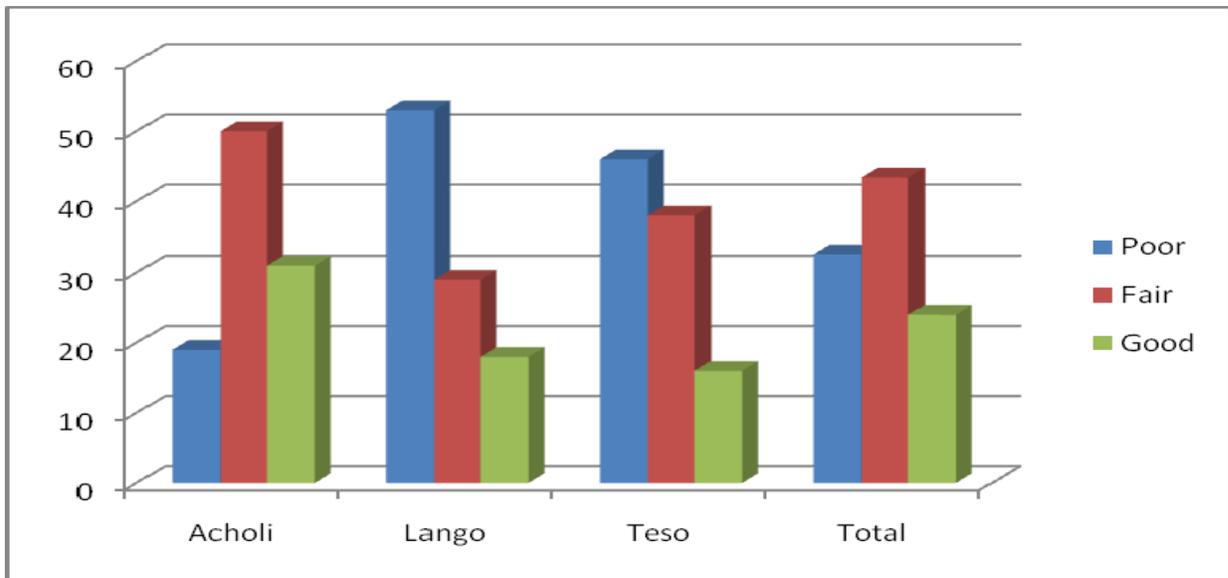
Figure 8. 1: Availability of passable roads all year round in regions as reported by respondents



Whereas the willingness of community members to participate in the maintenance of roads is viewed to have a positive effect on the availability of passable roads, the results revealed a contrasting scenario. Within Teso A where community willingness was highest at 83.3% had the lowest coverage of passable roads, while Acholi where community willingness was least at 61.7% had a relatively good coverage. The differences above seem to have largely been attributed to the support extended to the region towards roads construction and maintenance. Acholi and Lango regions had attracted support from some organizations like World Food Program (WFP), Norwegian Refugee Council (NRC), DANIDA, Danish Refugee Council, Premier Urgence, ACTED, ASB, and RULNAC as compared to Teso region where such support was minimal.

However, according to the technical physical assessments of 46 roads in the study area for parameters such as presence of pot holes, state of drainage, clearing of road sides, road width, presence of culverts and their distribution, road centerlines as well as heads and wings, revealed general fairness of roads. Overall, less than half (43%) of roads were fairly good, 31% were poor while only 23% were good (Fig 8.2). Within regions, results conformed to household views as Lango and Teso regions had the poorest roads with 52.9% and 46% while half of the roads in Acholi were fairly good and had the highest proportion (31.2%) of good roads.

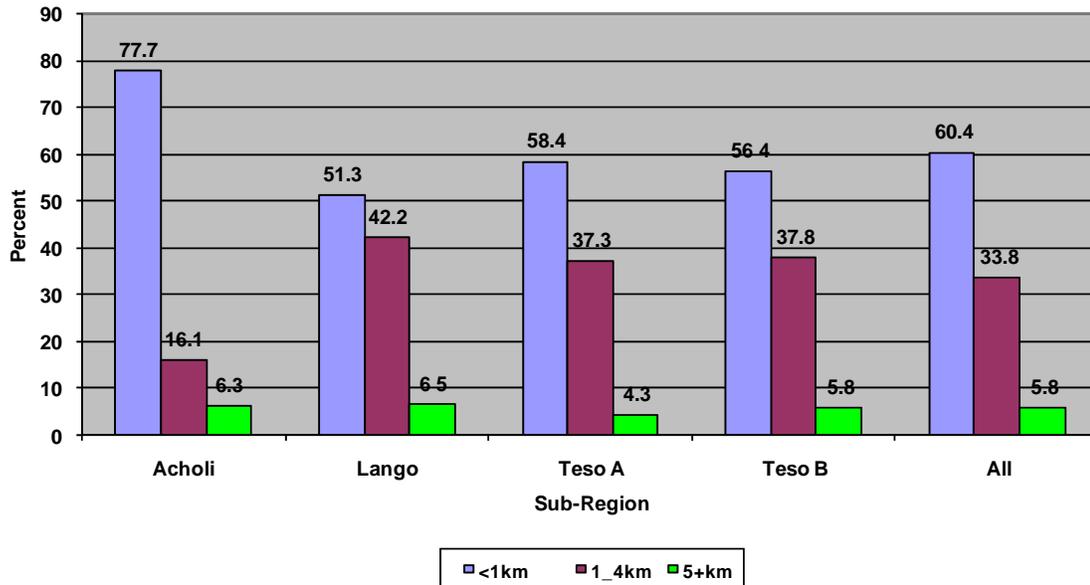
Figure 8. 2: Status of roads as assessed during the study



8.4 Distance to the all year around road

Figure 8.3 shows the distribution of households by distance from the all year round roads. The results show that Acholi region had the highest proportion (78%) of households within less than a kilometer from all year passable road while Lango region had the lowest proportion (51.3%) of households within same distance. Overall, 60.4% of households in all regions were within less than a kilometer of an all year round passable road while some households (5.8%) were relatively far within five or more kilometers to roads passable year around.

Figure 8. 3: Distance to the all-year passable road



The differences in access to all year passable roads in the regions can be explained by the return of internally displaced people (IDPs). Majority of the community members in Acholi region were still living in camps that were located mainly in urban areas which have better roads. The differences above seem to have largely been attributed to the support extended to the region towards roads construction and maintenance.

8.5 Most common means of transport and expenditure

8.5.1 Common means of transport

Within all the regions, majority (53.5%) of household members use bicycles as their means of transport (Table 8.1). Lango region had the highest use of bicycles (70.9%) while the least of 27.1% was in Acholi region. The use of vehicles as a common means of transport was still limited to only 1.5% of community members. Whereas Acholi region had the highest coverage of roads that were passable year around, it had the highest proportion (71.7%) of people relied on footing as the common means of transport. This may partly be attributed to the fact that most people were still leaving in camps and their level of engagement in production activities was still low compared to other regions.

Table 8. 1: Commonest means of transport

Type	Acholi % (n=734)	Lango % (n=877)	Teso A % (n=810)	Teso B % (n=835)	All % (n=3256)
Footing	71.7	26.3	51.9	31.5	44.3
Bicycles	27.1	70.9	46.8	64.8	53.5
Vehicles	0.7	1.5	0.6	3.0	1.5
Motorcycle	0.5	0.9	0.4	0.4	0.6
Other	0.0	0.3	0.3	0.4	0.3

8.5.2 Expenditure on transport to nearest social centres

Within all regions, the cost of transport to agricultural research centres was too high (Ushs5801) compared to other social centres. Comparing inter-regional differentials, costs were highest in Lango (Ug shs6468) and least in Acholi (Ug shs.4315) (Table 8.2). Accessing markets and health centres was also costly, with averages of 1,524 and 1,508 shillings respectively. Expenditures on transport to markets and health centres were highest in Acholi and least in Teso B. transport costs to churches and mosques were the least (Ug Shs 699)

Table 8. 2: Average cost of transport in Ug. Shs to important places

	Acholi	Lango	Teso A	Teso B	All
Market	1936 (1837)	1643 (1748)	1564 (1059)	1112 (1271)	1524 (1516)
Church/Mosque	1111 (1078)	629 (481)	801 (736)	474 (378)	699 (684)
Trading Centres	1637 (502)	950 (888)	1094 (913)	683 (589)	1032 (1028)
Health Centre	1813 (1569)	1689 (1355)	1501 (1102)	1144 (812)	1508 (1231)
School	1365 (2275)	985 (1721)	879 (1587)	642 (1460)	905 (1719)
Agricultural research centre	4315 (3752)	6468 (6314)	6198 (5550)	5985 (6357)	5801 (5780)

NB: values in brackets show the standard deviation

The low coverage of agricultural research centres and poor means of transport, largely explain the high expenditure to reach the centres. On the other hand, as people had just started returning to their homes after over 22 years, most health facilities had not yet been renovated or were not in use, while markets were mainly in urban areas. This largely explains the high expenditure on transport to these facilities.

8.6. Construction and maintenance of roads

8.6.1 Road construction, timing, mode and key players.

Road Construction

The responsibility of constructing roads was shared among the central and local governments, non-governmental organizations and communities in all regions. Local governments were the major players with an overall contribution of 55.5% and the least contribution of 1.2% was received from other sources not so familiar among communities. Considering the regular participants in community development, the central government had the least contribution of only 4.1%. The contribution of NGOs was lower in Teso A and B regions with 1.3% and 1.7% respectively and highest in Lango accounting for 17.8% as shown in table 8.3 below.

Table 8. 3: Key players in construction of roads

Constructor	Acholi % (n=771)	Lango % (n=904)	Teso A % (n=864)	Teso B % (n=862)	All % (n=3401)
Central govt	1.6	2.1	3.9	8.5	4.1
Local govt	63.4	46.5	54.5	59.1	55.5
NGO	6.9	17.8	1.7	1.3	7.1
Community	4.2	19.6	10.2	9.7	11.2
Other	0.8	1.9	1.4	0.8	1.2
Don't know	20.1	6.9	22.5	17.9	16.6

Timing and mode of road construction

Most of the roads were constructed five to 20 years ago in all regions. Acholi and Lango regions had however attracted support from some civil society organizations that had opened up roads in some rural areas in support of the return program. Construction of roads in the regions mainly involved opening, covering with marrum and development of drainage channels.

8.6.2 Maintenance of roads

Provision of labour and financing

The maintenance of roads was a shared responsibility between the central and local governments, non-governmental organizations and communities. As was the case of

construction of roads, local governments were the major players with overall contribution of 53.8% while NGOs provided the least support of 4.5% among the main stakeholders in community development. Differentials within regions were apparent, with NGOs' contribution least in Teso A and Teso B with 1.9% and 2.0% respectively and highest in Acholi with 7.1% as reflected in table 8.4 below. Where the maintenance of roads was instrumental to the development of communities, some members seemed to have been less concerned about it in all regions. The participation of community members in maintaining roads was still low (22.7%) though their willingness was slightly high.

Table 8. 4: Players in maintenance of roads

Constructor	Acholi % (n=771)	Lango % (n=904)	Teso A % (n=864)	Teso B % (n=862)	All % (n=3401)
Central govt	5.1	5.0	7.4	17.5	8.8
Local govt	59.5	43.9	50.6	62.2	53.8
NGO	7.1	7.3	1.9	2.0	4.5
Community	14.0	33.0	28.6	13.7	22.7
Other	3.6	2.0	2.2	1.3	2.2
Missing/Don't Know	13.6	11.7	15.7	6.8	11.9

Contracting was a common phenomenon in all the regions. Contractors working in collaboration with the local governments were key players in maintenance of feeder roads as they provided skilled labour. The ministry of works offered skilled labour for support supervision of central roads; district local governments did the same for feeder roads while the sub counties mobilized communities who provided unskilled labour.

Whereas financing is so crucial to the maintenance of roads, it largely remained a responsibility of the central government through the ministry of works and district local governments. The funds from central government were used for maintenance of central and feeder roads. Within all regions, the sub county councils were responsible for raising funds for maintenance of community roads and were only supported with small proportions from the district local governments. However, the capacity of sub counties to mobilize the required funds was too low as their revenue bases were small as reiterated by district officials:

Whereas the district receives funds from central government for road maintenance, the sub counties are supposed to generate their own income. With the abolition of graduated tax coupled with the 'privatisation' of the economy, the sub counties have neither been able to generate enough income to pay for community road maintenance nor have they been able to get the community to actively participate in road maintenance activities.

Key Informant - Lira District

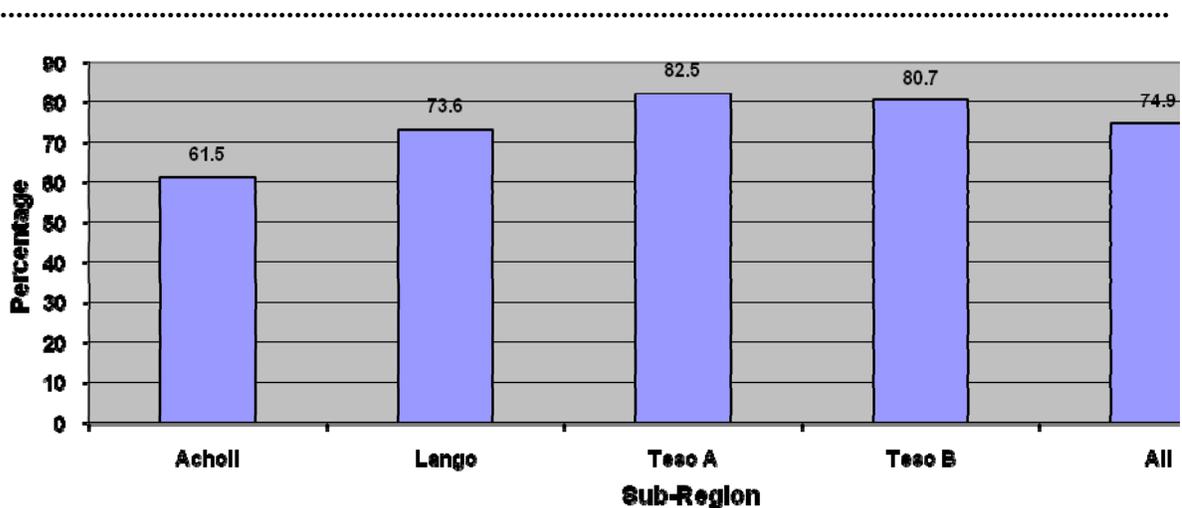
Rehabilitation maintenance was mainly carried out by the local and central governments on feeder and central roads respectively, while periodic maintenance was performed by the local government with involvement of the local communities. Routine maintenance was largely carried out by community members through contracting with seven kilometres distance each.

Community willingness and what they can do in roads maintenance

The willingness of community members to participate in development interventions is a driving factor for the rapid and sustained development. Overall, three quarters (74.8%) of people in the regions were willing to participate in roads maintenance. The levels of support was more in Teso A region with a big majority (82.5%) while Acholi communities were less supportive with willingness level of only 61.5% as reflected in figure 8.4 below. The high willingness of 80.7% and 73.6% in Teso B and Lango regions respectively were in conformity with the relatively high coverage of passable roads.

The differences above seem to have been largely attributed to the support extended to the regions towards roads construction and maintenance.

Figure 8. 4: Willingness to participate in road maintenance



Whereas community members in all regions were supportive to the maintenance of roads, their participation was largely subject to the provision of financial and material returns. Even with the high level of participation of NGOs in Acholi region, community members' willingness to participate in maintenance of roads was still low compared to other regions. Within each region, most community members demanded for payment as a prerequisite to their involvement in any road maintenance activity as a district official reiterated:

People are very ready to take part in road construction and maintenance provided there is something to be paid, they are very much willing and sometimes women always take higher percentage. But if you tell them to do it on community service voluntarily, they become rigid.

Key Informant - Dokolo District

Why the members are unresponsive towards the road maintenance

Within all regions, a big number (46.3%) of community members did not participate in the maintenance of roads due to the perception that road maintenance was not their role but rather the responsibility of the local government. Sickness and busy schedules of community members were also reported to have participation with proportions of 15.8% and 11.6% respectively as reflected in table 8.5 below. The high expectation of community members regarding the role of local government in maintenance of roads seems to have been a result of the low mobilization and awareness levels in roads maintenance.

The commonest reason for not participating in road maintenance was a feeling that it wasn't their role to work on the roads indicated by 30.3%. The feeling that working on roads wasn't their role was most common in Acholi with 34.9% and least common in Lango with 27.2%. Another major reason was that they felt they were too old and or weak to work on the roads as indicated by 23.9%. In Lango a fifth of respondents said they were too busy.

Table 8. 5: Reasons for not participating in road maintenance

Reason	Acholi % (n=272)	Lango % (n=221)	Teso A % (n=121)	Teso B % (n=148)	All % (n=762)
It is not my role	34.9	27.2	28.9	27.7	30.3
Sick or old	22.8	27.1	19.0	25.0	23.9
Busy	3.7	21.7	6.6	8.8	10.4
Pay taxes/ Government work	4.8	3.2	7.4	4.7	4.7
Others	5.9	4.5	5.0	8.1	5.8
Did not mention	37.1	30.8	38.8	37.8	35.7

NB: The question applies to only those that were unwilling to participate in road maintenance. It is a multiple response question

The apathy of the community members to participate in road maintenance could possibly be attributed to their expectation of the role of the local government and low mobilization for and awareness about roads maintenance.

“The community members can participate in road maintenance if they are well mobilized and fully understand how they will benefit. For instance when there is a disaster, they mobilize very fast and act in order to get support”

Key informant-Amuria District

Availability of skilled labour for road maintenance in communities

Through the involvement of community members in various aspects of road construction and maintenance, some community members acquired related skills. The tendering of road maintenance works by local governments in all regions involved assigning sections of roads to some community members who met the basic requirements. International agencies and organisations like World Food Program (WFP), Norwegian Refugee Council (NRC), DANIDA and RULNAC in Acholi and Lango regions. The last two were instrumental in Lango region as they trained community members in opening and maintaining roads:

The communities do not have skilled people with regard to roads maintenance but those who were contracted for routine maintenance got one-week training in what they were expected to do. In Namasale sub county, there is a labour-based program where contractors come with other experts trained by the Mount Elgon labour based road works school

Key Informant - Amolatar District

Some communities, in which roads have been rehabilitated, have some people skilled. People participate and see how work is done and get more skills during training. I am not sure whether they are still available given that people move from place to place

Key Informant - Soroti District

Community initiatives related to roads maintenance

Almost in every community, members opened up paths, later developed them to into strikes, and sought for support from the sub counties to upgrade them to trunks.

In Pa omo, Gaya parish, the community constructed the 4.6 kilometre road from Obur durkan to Aliaba. The community of Oluga village, Labara parish, constructed a road from Ceri to Olinga via Otolokum

Key Informant - Amuru District

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In Pa omo, Gaya parish, the community constructed the 4.6 kilometre road from Obur durkan to Aliaba. The community of Oluga village, Labara parish, constructed a road from Ceri to Olinga via Otolokum

Key Informant - Amuru District

Whereas some communities had initiatives for roads maintenance and development, they were not having clear structures through which they worked to facilitate their ideas.

8.6 Policy issues and byelaws on road maintenance

8.6.1 Establishment of byelaws

There were differentials in the formulation of byelaws relating to roads maintenance in regions. Whereas the byelaws existed in all regions, their formulation was by communities and approved by sub counties in districts like Amuru and by sub counties in Teso region.

8.6.2 Enforcement of byelaws

Whereas some policies had been formulated in some districts, their enforcement was still weak, largely left to community leaders. For instance, the byelaw in Amuru provides that whenever people go for community road maintenance works, whoever does not participate was supposed to pay five thousand shillings.

The requirement was that all sub counties have bylaws on the maintenance of community roads. So if you do not do it, you are reported to the parish chief who then reports to the sub county and then it's enforced by the sub county.

KI - Dokolo District

8.7 Linkage of rehabilitation of roads and food security

For community members to take an active role in roads maintenance, their understanding of the importance is very crucial. Community members realized the link between maintenance of roads and improvement in the state food security in all regions. Most communities noted that the rehabilitation was associated with; increase of their production as they aimed at having surplus for sale, increased access of community members to food markets and improvement of transport of produce in all regions. The improvement in delivery of extension services to farmers was also expressed in Teso region.

With rehabilitation of roads, you are able to transport your produce, NGOs will come to Omot Sub County, children go to school properly and marketing becomes easy while taking the sick to hospital becomes easy

FGD - Males and females Acholi

CHAPTER NINE

9.0 KEY OVERALL OBSERVATIONS

This chapter presents the observations made by investigators in the study areas during the data collection exercise. The observations cover the areas of hygiene, water, sanitation and food issues.

9.1 Hygiene, water, sanitation, food and agricultural practices

9.1.1 Teso Sub-Region

- a. Culturally, men are heads of households and have total power over members of their families; they have unchallengeable power over produce, property and money. Men are generally free living.
- b. Generally, it is women and children who toil to produce crops for food which men, many cases, sell and misuse the money through alcohol consumption.
- c. Washing hands after toilet is a new thing in these communities particularly rural area.
- d. Boiling water for drinking is generally not done/ acceptable, especially in rural communities. Even if it was acceptable, there is no fuel/ firewood to spare for this boiling water. There are also no big sauce pans to use.
- e. Defecating in bushes is almost a cultural norm, although there is an effort in improving pit latrine coverage. Children almost exclusively use bushes for faecal matter disposal. Generally, women in late pregnancy are not supposed to defecate in pit latrines for fear of pushing babies in pits. The Bagweri women are not allowed to use the same pit latrines as their fathers'-in-law.
- f. In Bukedea, food especially meat is culturally allowed to go bad before cooking.
- g. Lack of pit latrines is partly traditionally accepted; partly due to lack of building materials e.g. logs, slabs, etc, poor attitudes, and lack of equipment e.g. pick axes. Also, poor soils e.g. sandy, rocky or water logged areas with low water tables.
- h. Men suppress women and use harvested food for personal and selfish reasons especially alcohol.
- i. Use of food crops to convert it into alcohol (cassava, millet, sorghum, etc) leads to further lack of food and potential for malnutrition.
- j. Issue of property ownership rights for women is urgent; at least to develop capacity to have cash or property is basic.
- k. Generally, no balanced diets are available. There is general lack of knowledge in this area.
- l. Men hardly participate in food production.
- m. Some negative food beliefs exist e.g. in Pallisa, it is held that children should not eat eggs because they would spoil their teeth; children should not eat liver because they would defecate in the houses as a result; elderly women should not eat chicken.
- n. Polygamy is rampant and is a cause of poverty.

- o. Male orphans are worse off than female orphans in terms of vulnerability generally, but particularly in Kumi. This is because girls are taken care of for future dowries, and their parents' property is easier to take over than for boys.
- p. Because of water committee fees to take care of maintaining bore holes, some families opt for open water sources which are less hygienic.

9.1.2 Acholi Sub-Region

- a. People in IDP camps are traumatized and spend most of their time drinking alcohol.
- b. L.C officials are willing to participate in surveys of this nature because of allowances; will sabotage if not involved.
- c. A lot of conflicts are now on land borders; between neighbours and those returning home. Some are killing each other.
- d. Gulu and Amuru Road are only passable by 4×4 wheel drive; elsewhere, roads are passable.
- e. Many are still in IDPs; those back home are using bushes for faecal matter; no hand washing after toilet.
- f. females are generally not allowed to eat chicken and eggs especially in illiterate homes; no reasons given,
- g. Boiling water is not there.

9.1.3 Lango Sub-region

- a. In some communities people are just returning or just returned. Such groups will need special consideration in regard to food security
- b. Maps for roads in new districts are not available. We will have to use old maps from parent districts
- c. Community is very interested in the follow up of this research. (How will they get feedback from this study?)
- d. District officials are demanding for a copy of the report from this survey
- e. Some Lake shore communities in Kwania, Apac district are bitter with organizations which start programs and don't complete them. This makes them suspicious of people who want to bring in new programs. It was challenge collecting data from these communities as they were chancing our research assistants away.
- f. Water transport should be considered in some communities for example in Dokolo and Amolatar
- g. Food provision has been taking place from many organizations without providing trainings in agricultural practices to community members leaving them unequipped to fight food security.
- h. For those people who have returned they are already fully engaged in farming activities and are eager to get easy access to farming inputs, extension services and a good market.

9.2 General issues on produce marketing

- a. It was found out that with successful commodity output marketing services for grains (maize, beans, groundnuts, sorghum), especially in collective marketing/bulking and for negotiating for better prices are key elements in promoting producer group sustainability.
- b. Availing marketing information to farmers (prices, location of buyers and what quantities and qualities wanted, and location of producers) will lead to collective marketing and increased production. Price information is more communicated on radios in local languages.
- c. Farmers in a given location engaging in producing many varieties of crops cannot meet the demand of buyers who want big volumes; hence producing for big markets requires specialization.
- d. Farmer groups who charge commission during the output marketing are more viable than those heavily relying on external support and member contributions through membership fees and buying of shares.
- e. Members need to be trained in how best they can effectively market and controlling/investing the revenue.
- f. Failure of effective marketing is said to be due to poor/problem leadership in homes due to lack of priorities or when farmer groups have no goals and objectives,
- g. Farmer groups with more women carry out marketing better than groups that are predominantly men. It said that men start demanding for marketing of the produce even when they know that prices are still very low.
- h. Most men despite their low level of contribution in farming activities, they still control the revenue from the farm proceeds.
- i. Poor roads within the production areas are some of the reasons farmers get low produce prices
- j. Lack of farmer groups hinders bulk procurement of good quality inputs from inputs dealers.
- k. Once farmer groups increase their volumes in response to better market prices, then production technologies and natural resource management become important for expansion otherwise, expansion without these as they respond to the market will degrade the environment.
- l. Party politics do not favour production/marketing credit, though it is currently difficult for members to access credit.
- m. Quality products for markets require good seeds proper crop husbandry, better post-harvest handling and good storage.
- n. Farmers add value get better revenue and residue for farm manure.

9.3 Internally Displaced Persons (IDP) Vs the rest

The issues that could be inferred from the survey data by region and are attributable to the presence or otherwise of internally displaced people IDP's.

- a. The Acholi region had the highest the biggest number household heads having no occupation, highest incidences of cohabiting, no education of household head, also the highest responses for no main source of household income. These could perhaps be explained by the fact that majority of the population is in camps where there is few possibilities of employment, interruption in the institution of marriage where people do not go through all the cultural steps but choose to cohabit. Because of the prolonged war, the social structures do not have such a strong hold on to the people; the value of marriage is not as much appreciated as it ought to be. The people may also not be able to meet the costs of paying bride price; there is a possibility of elopement.
- b. The nature of the camps setting also does not allow the construction of permanent house because of the limitation of land, scarcity of construction materials, and expectation of the camp situation being temporary.
- c. The smallest number of household with crop storage facilities was reported in the Acholi region. This could also be explained by the IDP camp situation where people cultivate very little or no crops at all, the need for such a facility is very limited.
- d. The region also reported the lowest levels of food insecurity, this can also attributed to the food that is supplied by world food organization and other CSO's to the people living in the camps. This can also account for the fact that cereals were most consume in this region, the food rations given especially by WFP mainly comprise of cereals.
- e. Public water tap as a source of water was also highest in Acholi. This is because of people living in designated areas where such public water taps are provided by the government.
- f. All year passable roads were also most reported by the people of Acholi, in the camps, the roads within are well maintained and the homesteads are near these roads that is why the respondents in the region also reported the least distance from their house hold to the nearest all year passable road.
- g. Footing as the commonest means of transport was also reported in the Acholi sub region. This could also be attributed to the presence of camps where people are limited in how far they can travel; most of their travel is most likely between camps that are close to one another which make footing the most affordable means of transport.

9.4 Gender perspectives of nutrition

The gender dimension in nutrition is the element of men having the upper hand when it comes to marketing the produce and allocating the proceeds there from. This implies a lot of food is sold and the money is spent, most likely on alcohol. The women are

responsible for food preparation but do not have much control on expenditure of revenue, this has implication when seen from the context of so much food sold yet the money to buy food is also not in the control of the women. This compromises the amount and variety of food available to the house.

CHAPTER TEN

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

10.1.1 General characteristics of the household

- i. Subsistence farming was the major household occupation and source of livelihood. The income sources per households were low; the situation was not supporting investment.
- ii. Type of houses was mainly semi permanent and the number of female-headed households was reasonably high in some districts especially those with internally displaced people.

10.1.2 Agricultural Production

- i. The major land tenure system across in the study area is primarily customary. The land belongs to all clan members and the authority of management is vested in the hands of the clan leaders. This implies that individuals interested in extensive commercial agriculture, and vulnerable groups like women, orphans, widowers and the elderly have limited access.
- ii. It was generally observed that, traditional food crops like cassava, G.nuts, Sesame, Finger millet are becoming key sources of household incomes while still grown for food. The traditional cash crops mainly tobacco and cotton, were no longer lead crops for cash. The above mentioned crops are now grown for both food and household incomes. The production levels are still very low mainly because of poor crop varieties, rudimentary tools used and less use of agricultural fertilizers and pesticides. The use of livestock in land opening is still limited by the few animals available in the region.
- iii. Failure to make a collective household decision on production, marketing and investment leads to reduction in production, household investment and increases food insecurity.
- iv. Limited adoption of technologies like use of improved seeds and fertilizers are major causes of low crop yields. The overall output is aggravated by crop losses due to poor postharvest handling and limited storage, which all lead to increased household food insecurity and reduction in household incomes.

- v. Technology packages like use of improved varieties, use of fertilizers and pesticides, improved storage facilities are better accessed through farmer groups and agricultural extension services are more effective through farmer group.
- vi. Limited participation of the beneficiaries in the selection of the animal breeds tends to influence the low rate of technology adoption, while cattle raids, wars and conflicts are key disincentive to animal husbandry growth.

10.1.3 Agricultural marketing

- i. Collective marketing through farmer groups leads to reduction of middlemen participation; improve product quality, reduces operational costs and increases farm gate prices hence improved household incomes and investment.
- ii. Market demand is easily met through collective farmer crop bulking and storage, In addition to increasing farmers' access to credit through warehouse receipt system.
- iii. Access to Market Information Services (location of both producers and buyers, prices, quantity demanded and in what form) by both producers and buyers, promotes efficiencies in agricultural marketing. This should be supported by record keeping at each level of transaction (value chain).

10.1.4 Food Insecurity and Vulnerability

- i. The majority of the households were found to have the following;
 - a. Had a fair dietary diversity score (above 5)
 - b. Had average adequate household food provisioning for 8 months
 - c. Did not have enough food throughout the year
- ii. Food insecurity was found in all the sub-regions although higher in Lango and Teso and such factors like natural calamities (drought, floods), poverty, pests/diseases and poor farming methods key factors enhancing food insecurity
- iii. Children, elderly, sick and pregnant women were perceived to be the most vulnerable to food insecurity by community members. Vulnerability to food insecurity resulted insufficient intake of food both in quantity and quality.
- iv. Skipping meals or total lack of meals was identified as key signs that a household was food insecure. Household strategies to cope with food insecurity varied from compromising their future food or other needs, borrowing or doing something that they disliked in order to meet their family food needs

10.1.5 Hygiene, Water and Sanitation

- i. Borehole and protected springs in less densely populated areas provide major sources of water.
- ii. Homestead hygiene like having a latrine, availability of hand washing facility, separate livestock shelter and proper methods of garbage disposal promote hygiene and sanitation at household level.
- iii. The majority of household members share a shelter with animals and this is likely to be a source of diseases.

10.1.6 Natural Resource Management

- i. Land tenure system in the study was mainly customary. The type of tenure and the size of land holding do not have major negative influence on efforts to conserve land by communities in the study area. It is noted that recommendable best land use practices such as agroforestry; mulching and crop rotation can be practiced under customary irrespective of the size of land per hectare. The only identified challenge is that women have limited control of land and access therefore regulated. For that matter, women's contribution to land conservation is limited to some degree.
- ii. Soil exhaustion is high and mainly manifested through loss of soil fertility to sustain viable yields. All communities in the study area, including those in the Districts with IDPs indicated to have realised reduced crop yield within the last three years. In areas such as Teso B where people have been more stable than in Acholi, cultivation of the already fragmented small parcels of land has reduced the soils ability to sustain stable yields. Intercropping and crop rotation were however the only major forms of soil management practices.
- iii. Firewood is the major form of energy for cooking and mainly obtained at no or very little cost. In most of Uganda's rural areas, the only available and affordable source of energy is always wood fuel. The worrying situation is that tree resources are used beyond their replenishment and there is little effort to use energy saving technologies. For example, half of the population was aware of energy saving technologies and about 20% have practical energy saving initiatives.
- iv. Environmental challenges have not spared the populations in North and North Eastern Uganda. Changing weather pattern, bush burning and deforestation are major challenges that are met by the people. Virtually there are no major efforts to avert environmental problems. Environment sector is still less of priority to most districts with financing difficulties. Lack of environment education is a major cause of natural resource distress.

- v. In this survey, it was also realized that the major trees grown in the study area were fruit trees. Mangoes were found the commonest as they are used as supplement during food shortages. Other indigenous trees identified included Tamarind and Shear nut trees and are targeted for income to households.
- vi. Eucalyptus trees highly desired were also realized to be the most common trees planted and most desirable. The reasons for preferring eucalyptus, like any other part of the country usually include;
 - a. Rapid growth comparative advantage over other tree species with fast possibilities to yield economic returns
 - b. Its ability to coppice with ease and to multiply on land parcels
 - c. *Eucalyptus* tree species are easier to raise on nursery beds and their seedlings are therefore cheaper on the market than other tree species
 - d. Its ability to grow on steep rocky areas and other waste lands with ease
 - e. Promotion by certain NGOs, and government and other agencies.

10.1.7 Roads

- i. Road construction and sustainable maintenance calls for participation of the community leaders, local government authorities and other community based organizations. While road opening and maintenance of the district road is a primary responsibility of the district and central government, community roads remain a responsibility of the community members, who should be responsible for maintenance.
- ii. Participation of community members in road construction through organized social and production farmer groups is important to ease mobilization and participation. There is a general willingness by the community to participate in community road maintenance.

10.2 Recommendations

10.2.1 General characteristics

- i. The program intervention should focus on agricultural extension services emphasizing farming as a business. Commercial farming should be taken from perception to reality through demonstration of the technologies. The program should Endeavour to create a link between productions, extension services to marketing through market linkages.
- ii. Through formation of farmer groups and strengthening, training programs geared towards household income generation and investment should be emphasised. This could be achieved through encouraging savings groups, and financial mobilization.

10.2.2 Agricultural production and postharvest

- i. Given the land tenure system that does not promote extensive commercial production, it is recommended to farmers' group select crop(s) that attract the majority of clan members as an incentive to increase production. Through farmer groups, discussion of an agreeable land use fee can be determined and paid by one interested to expand acreage. This will assist in consolidation of commodities and encourage group marketing of the produce. This will promote farmer cooperation, strengthen their management of production process and negotiate better prices for the produce.
- ii. It is recommended to select crops through ranking and such be supported by the program through the entire value chain. At farm level emphasis should be based on-farm demonstration of the varieties coupled with other production practices to ensure whole technology package uptake and hence increase productivity.
- iii. Northern and Eastern Uganda, traditionally use animal traction to open up land for crop production, this will increase production acreage and output. Provision of animals through farmer groups at a cost-sharing basis will help to quickly increase the number of animals but also promote responsibility among group members to look after the animals.
- iv. Agencies and organizations involved in procurement and distribution of animals should involve the target beneficiaries through a wide consultation with their leaders. This should be coupled with training on livestock management and general disease control, through ACIDI/VOCA sub/guarantees and other identified Service Providers in the respective sub/counties.
- v. In order to enhance technology adoption among farmers for production and postharvest handling, practical training focussing on demonstrations will stimulate technology update. Care must be taken to show farmers the cost/benefit of the technology through theoretical and practical demonstrations. The demonstrations should be nearer to the beneficiaries at parish level.

10.2.3 Agricultural marketing

- i. Farmer groups formed for production and savings should be supported to graduate into collective marketing groups. This will assist to consolidate the crops grown, establish a minimum quality standard and negotiate a better price with reputable buyers. The program should train farmer groups to keep basic records and help to ensure that it is done properly. The program through sub/guarantees should assist in identifying big potential markets for the farmers' produce and in the initial stages participates in marketing negotiations to develop capacity of the groups.

- ii. Because of the requirements for uniform quality and standards, meeting the market demands and contract negotiations requires collective storage. In addition the bulked produce will act collateral for farmers to access credit.
- iii. Through collective production and marketing, farmers could be assisted to get access to postharvest value addition technologies.
- iv. The program should ensure that along the selected commodity value chain, information on marketing (location of the commodity, quality and standards, volumes available, location of the buyers, prices and frequency). The program should ensure that the organizations have the capacity to track trends through good record keeping.

10.2.4 Food Security

- i. In a bid to address the nutrition and food security needs of the households in the MYAP areas, stakeholder organization should;
- ii. The program should put emphasis on extension outreach and demonstrate better farming practices. The program should work with input dealers and stockists to ensure availability and affordability of agricultural inputs to farmers. While at the same time facilitates market linkages as this is a stimuli for increased use of inputs.
- iii. The program should ensure that postharvest technologies are demonstrated to farmers. The program should continue to provide food aid only as a short term measure especially in times of shock.
- iv. Institute community participatory holistic and integrated interventions that include education, health and social components and have a special focus on vulnerable populations that are more prone to the impacts of food insecurity.

10.2.5 Hygiene, Water and Sanitation

- i. NGOs are operating in the areas should be encouraged to spread the idea of washing hands in all matters related to food handling and after use of toilets. In one district there is already one NGOs spear heading washing hands with water.
- ii. Public health act enforcing availability of pit latrines to families should be rigorously enforced
- iii. LC officials should be counselled and persuaded to appreciate the need for pit latrines because we need to use them to convince community members to embrace the idea of having pit latrines.
- iv. Raise awareness about benefits of boiling water for drinking, washing hands in any food related activities, and after toilet. This can be done through the offices of DHTS, Churches and mosques and through political leadership in communities.

10.2.6 Natural Resource Management

- i. Based on filed findings, the following are the recommendations under natural resource management
- ii. Emphasis should be put on environmental education. As noted, land tenure systems do not have much negative impact on level of application of the best practices in natural resource management. Small or large the land for a household hold may be, if there is no education and sensitization on the best practices, households will never realize anything wrong with their indigenous practices. Whereas some energy-saving technologies are cheap to make and most use locally available materials, there is less use of them. Lack of training is cited to be a major factor for failure to use energy saving technologies.
- iii. There is need to take advantage, and make use of available district environmental and natural resource management personnel, as well as available community based organizations, in advancing any program to avert environmental challenges. Generally, it was observed that there are considerable personnel at districts to carry out natural resource management activities. These include the agriculture, environment, production and veterinary officers/offices. During the field work, it was often a complaint from some key informants that such offices are usually neglected in NGO's project designs and implementation yet they are expected to continue the activities after projects time ends.
- iv. Related to the above (b), there is need to closely design activities based on district development plans. A look at some of these plans indicated that a lot is planned but never implemented due to lack of finances. Yet, the ultimate goals for both district development plans and external funded projects seem closely related-to fight poverty, hunger and disease. Not only working as per district plans achieves quick realisation of people's desires and needs and aspirations, but such an external project gains greater acceptance and support. Note that care must be taken to avoid political hijack.
- v. Trees seeding provision for tree species preferred (and environmentally friendly) is the way to forestation / re-forestation. Note that tree planting is the basic known measure in absorbing carbon emissions, reversing climatic changes and many other benefits. At the same time, it came out prominently that those communities in the MYAP area lack seedlings. It is importing, that any program design and later its monitoring considers trees planted per household. Agro forestry trees are recommended. The common agro forestry tree species that are recommended and provide a mix of benefits include Calliandra, Leucaena, Sesbania, Alnus, Grivellia and fruit tress such as Avacado, oranges and Pronus among others. This may start through seedlings distributed to farmers as an incentive, and a capacity building measures.

- vi. Related to the above (c) promotion of commercial use of fruit trees is a double benefit on income and food. Whether common, indigenous or fruit trees, they are mainly planted due to their financial benefits and to some extent food. This is an opportunity for tree growing in the area.
- vii. The women should play a big role in tree planting especially for fuel wood because the depletion of trees implies a bigger burden for them in search of wood for food preparation.
- viii. Use of energy saving technologies is generally low. It is important to note that, if tree resources are to be conserved, then energy saving technologies need to be adopted. There are various Non Governmental Organizations with in the region and beyond that can ably train trainers, or train local communities themselves on energy efficiency technologies. Those applying the locally available materials and easy to adapt such as Lorena stoves should be considered.

10.2.7 *Roads*

- i. The program intervention in the field of roads should seek wide consultation with local leaders, local government authorities and other CSOs involved in similar work.
- ii. The program should have more focus on Teso sub-region in road construction and maintenance.
- iii. Full participation of social groups and sensitizing them about the linkages between road maintenance and agricultural marketing is very important.

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APPENDIX A: INDIGENOUS AND EXOTIC TREE SPECIES IN MYAP TARGET AREAS

#	Origin	Scientific Name	COMMON ENGLISH/TRADE NAME*	ATESO	LANGI	ACHOLI	LUGWERE	KUMAM
1	IND	<i>Acacia gerrardii</i>		Eminit				
2	IND	<i>Acacia hockii</i>		Ekisim	Achiru, Okeetu	Okutu-oryang	Musiono	
3	IND	<i>Acacia mellifera</i>	Wait-a-bit thorn	Eregai				
4	IND	<i>Acacia Senegal</i>	Sudan gum Arabic/Three-thorned acacia	Ekodokodoi	Okutokech	Achika/Lakido		Okuto
5	IND	<i>Acacia sieberiana</i>		Etirir /Etirok	Okuto-etiri	Lachari		Okuto
6	IND	<i>Afzelia africana</i>	Lucky-bean tree/Afzelia*			Beyo/Baa		
7	IND	<i>Albizia coriaria</i>		Etek/Etekwa	Itek/Bata	Latoligo/Ayekayek		Eteka
8	IND	<i>Albizia glaberrima</i>	White nongo*	Ebatata	Abaa-achol			Eteka
9	IND	<i>Albizia grandibracteata</i>	Large-leaved albizia			Awok		Eteka
10	IND	<i>Albizia zygia</i>	Nongo*	Ebatat			Mulongo/Nongo	Eteka
11	IND	<i>Annona senegalensis</i>	Wild custard apple/Wild soursop	Ebolo	Obwolo	Ovolo/Obwolo	Kinaboru	
12	IND	<i>Antiaris toxicaria</i>	Antiaris*/False mvule*/False iroko*/Kirundo*/Upas tree*	Eloa	Elwa	Olivaa		
13	IND	<i>Borassus aethiopum</i>	African fan palm/Borassus palm/Deleb palm/Palmyra palm	Edukudukut/Edukut	Tugu	Tugu		Tugo
14	IND	<i>Bridelia micrantha</i>			Odugu-kulo			
15	IND	<i>Butyrospermum paradoxum/Vitellaria paradoxa</i>	Shea-butter tree	Ekunguru	Imuru	Yao/Yaa	Kinakongole	Yao
16	IND	<i>Carissa edulis</i>	Natal Plum	Emuriai	Achuga	Achuga		Oluga
17	IND	<i>Combretum collinum</i>		Ekuloin			Mukora	
18	IND	<i>Combretum molle</i>	Velvet-leaved combretum	Ekworo/Eworo	Iworo/Iyoro/Odugut	Okechu/Oduk	Kinakworo	
19	IND	<i>Cordia monoica</i>	Sandpaper cordial		Edomel			
20	IND	<i>Croton macrostachyus</i>	Broad-leaved croton		Ekwango	Ekwanga	Mwiyo	
21	IND	<i>Croton megalocarpus</i>	Croton			Chetwingo		
22	IND	<i>Dalbergia melanoxylon</i>	African ebony/African			Opo		

			blackwood/Poyi*					
23	IND	<i>Dichrostachys cinerea</i>	Sickle bush	Etira/Etirai	Okutu-ipeti	Okiro/Okito		
24	IND	<i>Diospyros abyssinica</i>	Giant diospyros			Chumu		
25	IND	<i>Diospyros mespiliformis</i>		Ekum	Chumu			
26	IND	<i>Entada abyssinica</i>					MukoZIA	
27	IND	<i>Erythrina abyssinica</i>	Lucky-bean tree/Uganda coral	Engosorot	Ewilakot	Kisoro/Lochoro/ Loting/Oding		
28	IND	<i>Erythrophleum suaveolens</i>	Mumara*/Sasswood*	Earamor				
29	IND	<i>Euphorbia candelabrum</i>	Candelabra euphorbia	Epopong	Epopong			
30	IND	<i>Euphorbia tirucalli</i>	Finger euphorbia		Oligo	Kilajok		
31	IND	<i>Faidherbia albida</i>	Apple-ring acacia	Edurakoit/Ewoi				
32	IND	<i>Ficus exasperate</i>					Mkende/Speri	
33	IND	<i>Ficus glumosa</i>		Ebiong/Edalach	Ekworo/Eworo			
34	IND	<i>Ficus natalensis</i>	Back-cloth fig				Tera	Tera
35	IND	<i>Ficus ovata</i>		Eboliboli/Ebuli			Mukoko	Ebolo
36	IND	<i>Ficus platyphylla</i>		Ebulai/Ebule				
37	IND	<i>Ficus sur</i>	Cape fig	Edulo/Edurokoi	Ebuu/Oduru			
38	IND	<i>Ficus sycomorus</i>	Sycomore fig	Eborborei/Ejinga/Edalat	Olam		Kinabule	
39	IND	<i>Flacourtia indica</i>	Indian plum		Kokowi			
40	IND	<i>Garcinia buchananii</i>		Atenum/Ekwalakwala				
41	IND	<i>Grewia mollis</i>		Eparis	Opopu	Pobo		Aparis
42	IND	<i>Hagenia abyssinica</i>	Hagenia	Bushishi		Leo		
43	IND	<i>Kigelia africana</i>	Sausage tree	Edodoi			Mwaigo	Edodoi
44	IND	<i>Lannea barteri</i>		Ebolochi/Etit	Etitiatar	Ajwesa	Kinatiti	
45	IND	<i>Lannea fulva</i>			Logologo			
46	IND	<i>Lannea schweinfurthii</i> var. <i>stuhlmannii</i>		Egarai/Ematakiro	Kwogo	Elogologo		
47	IND	<i>Margaritaria discoideus</i>		Erionoi		Otego	Lukamakambugo/ Mutaigumbwa	
48	IND	<i>Markhamia lutea</i>	Markhamia	Emiti	Nsyambya			Eminti
49	IND	<i>Milicia excelsa</i>	Iroko*/Mvule*	Elowa/Elua/Olwaa				Elwa
50	IND	<i>Mimusops kummel</i>	Mimusops/Red milkwood	Elepolepo				
51	IND	<i>Neoboutonia macrocalyx</i>					Pate	

52	IND	<i>Oxytenanthera abyssinica</i>	Lowland bamboo	Keo		Anino		
53	IND	<i>Ozoroa insignis subsp. reticulata</i>		Ekamaturu	Emuturu			
54	IND	<i>Phoenix reclinata</i>	Senegal palm/Wild date palm/Mukindu palm	Emusogot	Tit/Otit	Otit		Tugo
55	IND	<i>Piliostigma thonningii</i>	Camel's foot leaf tree	Epapai	Ogali			
56	IND	<i>Prosopis africana</i>		Ekiki		Kijing		
57	IND	<i>Pseudocedrela kotschyi</i>		Eputon	Eputi	Ofuti/Oput		
58	IND	<i>Pycanthus angolensis</i>	Pycanthus/False nutmeg/African nutmeg/Lunaba*				Maddula	
59	IND	<i>Sapium ellipticum</i>		Elipilepo	Musaja			
60	IND	<i>Sarcocephalus latifolius</i>		Ebeliodole/Ebolo//Edoil/ Ekomokoi/Eomokoi/ Eutukidole		Munyu	Mutama	
61	IND	<i>Sclerocarya birrea subsp. Caffra</i>		Ejikaiskoi/Ejikai/ Ekajikai/Eko	Jakayit	Luguotu/Otitimo		
62	IND	<i>Securidaca longipedunculata</i>	Violet tree	Elilyoi/Elilie	Elila	Aliya/Lalia/Lalon	Loloyi	
63	IND	<i>Spathodea campanulata</i>	Flame of the forest/Nandi flame/Nile flame/Tulip tree /Uganda flame	Etukubai	Elwa/Opal	Lepengwata		
64	IND	<i>Steganotaenia araliacea</i>		Ebusubusi/Egwapet/ Enyongai	Ebusubus/Elwilwi	Olwiro/Opolok		
65	IND	<i>Stereospermum kunthianum</i>		Enyiti/Enytet	Lorokwoin		Mukonowarogo	
66	IND	<i>Strychnos innocua</i>		Ekwalakwala/ Eturukukuti		Koko		
67	IND	<i>Strychnos spinosa</i>	Kaffir orange	Eturukurut		Akwalakwala		
68	IND	<i>Tamarindus indica</i>	Tamarind	Epeduru	Chwaa/Chwoo	Chwaa/Chwoo		Chwaya
69	IND	<i>Teclea nobilis</i>		Ekude/Ejoroi	Achacho	Achacha/Atachogat/ Opodeko/Kilere	Nakamole	
70	IND	<i>Tetrapleura tetraptera</i>			Itek			Eteka
71	IND	<i>Treculia africana</i>	Wild jackfruit/African breadfruit			Opobo-bunga		
72	IND	<i>Trema orientalis</i>		Erere		Acak		
73	IND	<i>Uapaca guineensis</i>				Locaca		

74	IND	<i>Vangueria apiculata</i>		Emalere	Amalera	Adengoye		
75	IND	<i>Vernonia amygdalina</i>			Okdo-okdo	Labori		
76	IND	<i>Vitex doniana</i>	Black plum	Ekarukei/Ewelo	Owelo	Oyelo/Oyelo gwok	Mukarukei	Owelu
77	IND	<i>Vitex madiensis</i>		Ekarukei				
78	IND	<i>Ximenia Americana</i>	Wild plum	Elamai	Olimu	Alelemo/Olamoi/ Alemolemo/Kichuk	Mukomeri	
79	IND	<i>Zanthoxylum chalybeum</i>		Eusuk		Roki	Musuku	Eusuk
80	IND	<i>Zizyphus abyssinica</i>		Esisalang		Lango/Olango	Mukodolowa	
81	IND	<i>Balanites aegyptiaca</i>	Desert date/Heglig berries*	Echomai/Ekorete		To	Kinachoma	
82	EXO	<i>Artocarpus heterophyllus</i>	Jackfruit	Epenesi				
83	EXO	<i>Azadirachta indica</i>	Neem					
84	EXO	<i>Carica papaya</i>	Pawpaw	Epapali	Apapalo			Apapalu
85	EXO	<i>Citrus sinensis</i>	Orange	Emucuga	Acungwa			Mucungwa
86	EXO	<i>Citrus limon</i>	Lemon	Enimu	Alemon/Awach			Enimu
87	EXO	<i>Citrus reticulata</i>	Mandarin/Tangerine/Fancy fruit		Magada			Magdalena
88	EXO	<i>Grevillea robusta</i>	Grevillea, Silky oak					
89	EXO	<i>Leucaena leucocephala</i>	Leucaena			Otlug		
90	EXO	<i>Mangifera indica</i>	Mango	Emiebe	Aeme	Atego		Mayembe
91	EXO	<i>Moringa oleifera</i>	Horse-radish tree					
92	EXO	<i>Psidium guajava</i>	Guava	Emapera	Amapera			Mapera
93	EXO	<i>Pinus Caribea</i>	Carribbean pine, Cuban pine, Pitch pine, Slash pine					
94	EXO	<i>Pinus patula</i>	Mexican weeping pine, Spreading-leaved pine					
95	EXO	<i>Tectona grandis</i>	Teak					

EXO-Exotic tree species, IND-Indigenous tree species, *Trade names

APPENDIX B : TERMS OF REFERENCE

ATTACHMENT 1 SCOPE OF WORK

1. The SECOND PARTY shall ensure proper delivery of all contracted items and service including, but not limited to necessary labor (manpower), equipment and tools or any other services needed for the delivery and support of these items.
2. Unit prices are fixed and not subject to any variation. The SECOND PARTY accepts the responsibility for labor and material availability in performance of this contract.

TERMS OF REFERENCE

BASELINE STUDY

1. Background

Since 1989, ACDI/VOCA has been managing USAID-funded PL 480 Title II programs in Uganda. In its newest program, ACDI/VOCA has shifted geographic focus and expanded upon/formed new partnerships in order to address the most pressing food security needs of the country.

ACDI/VOCA and its sub-grantees, Africare, the Lutheran World Federation (LWF), The AIDS Support Organization (TASO) and local NGOs will address the root causes of food insecurity for households living in Northern and Eastern Uganda through a five-year assistance program, funded by USAID Food For Peace, aimed at improving food insecurity in vulnerable populations in Uganda. The project will target 17 districts (Amolatar, Dokolo, Amuria, Apac, Gulu, Amuru, Katakwi, Kitgum, Lira, Pader, Kumi, Soroti, Oyam, Bukedea, Pallisa, Budaka, and Kaberamaido)² in the sub-regions of Lango, Acholi, and Teso.

The program has two strategic objectives (SO). The smallholder agriculture objective will reduce food insecurity through better production and utilization of food by 170, 600 farmers. Farmers will be trained in improved nutrition and hygiene, farming methods, post-harvest handling, group savings mobilization and management, benefits of improved seeds and inputs, *Farming as a Business* (FaaB) training and collective marketing. Farm-to-market constraints will be mitigated through the rehabilitation of feeder roads in target areas. The second objective will provide food rations to 42, 000 people living with HIV/AIDS (PLWHA).

2. Purpose of the Baseline Study

The overall aim of the Survey is to assess the status of the prevailing conditions in the MYAP (Multi-Year Assistance Program) target areas, capture and establish some current qualitative and quantitative data for specific indicators against which data collected in the future will be compared so as to measure the MYAP progress and impact. The Survey will assess the current status of indicators that will be used to measure the impact of the agriculture, NRM (natural resource management), health and nutrition and roads interventions in the MYAP. The survey shall collect information that will inform management on the current prevailing conditions and status of beneficiaries in the target areas.

The study has four interrelated purposes: inform program management and stakeholders on the current status of target beneficiaries in terms of food security, assess issues behind nutritional status in the program regions, validate program strategies and establish/validate vulnerability factors and indicators.

3. Objectives of the Baseline Study

- i) Provide a general background information on the MYAP's 17 districts intervention area by looking at a) the general characteristics of the sampled households (Gender, marital status, Occupation, Age, educational level and so on); b) at the socio-economic characteristics of the sampled households (sources of income, group and organization membership, socialization patterns, labor distribution/characteristics, types and characteristics of dwellings and so on); c) at the agricultural characteristics of the intervention area as they relate to:

A) Agricultural strategies such as:

- Crops grown for food at household level
- Crops grown for cash
- Cops grown for both food and cash
- Decision-making at the household level on what types of crops to grow
- Food availability and food provisioning at household level
- Factors that enhance food insecurity in eastern and northern Uganda

² The number of districts has changed from the initial MYAP document due to administrative restructuring that took place in Uganda after the MYAP was approved.

- Coping strategies to the food insecurity at the household level
- Crop yields and their impact on the household food security
- Current Agronomic practices/improved technologies practiced by the farmers
- Major constraints at farm level
- Land availability and utilization
- Land tenure systems and access to land by farmers
- Average land holdings
- Rearing of livestock by farmers
- Number of livestock kept at the household level and the role they play in food security

B) Market and marketing issues such as:

- Value of main crops
- Marketing constraints encountered by farmers
- Time and distance taken to reach the market
- Decision making about marketing of the produce at household level

C) Post-harvest handling such as:

- Current crop storage techniques and technologies practiced by the farmers
- Reasons for storing or not storing the crop
- Major causes of crop spoilage during storage
- Means of transporting produce to the markets
- Current food/crop preservation techniques
- Duration (months) that crops take before the produce get spoiled

Additionally, the baseline should establish the current value of the following performance indicators in sub-counties selected for project implementation –

- Number of months of adequate HH food provisioning
- Household dietary diversity score
- Average yield for selected crops
- Value of crop production per household
- % of HH with recommended nutrition practices
- % of HH with recommended hygiene practices
- % of HH with improved agricultural practices
- % of HH who adopted at least 3 sustainable agricultural technologies
- % of households that are members of savings groups
- % HH with improved access to food markets
- % of HH growing wide variety of crops

With respect to the Natural Resource Management (NRM), the study will

- Estimate the average acreage per HH for people in the target areas and identify the land tenure system and how it impacts on efforts to conserve land

- Identify the prevailing environmental challenges in the target areas regarding soils, tree resources, fuel wood and water resources
- Enumerate the current strategies being used by people in the target communities to address the identified environmental problems/challenges
- Collect information regarding the current level of collective community efforts or activities being performed towards conserving the environment, water and soils in target areas
- Identify activities or events that retard/constrain individual efforts in conservation of natural resources in the target communities
- Ascertain the magnitude of the soil degradation/exhaustion problem in the target areas and the factors that cause soil exhaustion
- Establish the soil fertility management technologies that are being used by the beneficiaries and the levels of their use
- Identify the common tree species grown, the reasons for their preference and factors constraining tree planting in the target areas
- Identify naturally occurring tree species with potential for income generation and wide multiplication, obtain information on current propagation practices and use for naturally occurring (indigenous) tree species
- The extent to which fruit trees are planted and the constraints and opportunities related to their wider dissemination for both nutritional and income generation purposes
- Determine the forms of energy commonly used for cooking among target communities as well as its accessibility (cost, source, distance traveled to access it and average amount used per HH)
- Identify the extent to which energy saving technologies e.g. stoves are being or not being used and the reasons.

With respect to the road, the study will provide information on:

- The specific location of roads at the sub county, county and district levels.
- The main type of access to the community, whether its land, air, or other specified method and the specifics of the land transport.
- For access to the community by community roads/footpaths, the survey should give the status/condition of the roads year round during the dry and wet seasons. In addition, the survey should establish the respondents' closeness to roads that are passable year round.
- The survey should also establish the communities' most common means of transport and costs to nearest markets, hospital/health centres, trading centres, schools, research centres and other key areas nearest to them
- The survey should also establish where most of the household produce is sold (whether to the markets, local trading centers, passers by the farm gate) and who buys the produce (whether it is the community members, traders from far or whether the produce is delivered to the buyers away from the community).
- The baseline survey should establish who the key players in the road construction and maintenance industry are; provide information on how and who constructed the nearest road(s) in the different areas and when the last road(s) were constructed.
- In addition, the survey should seek information on how the available roads in the area are maintained (if at all they are maintained) and who maintains (pays for the maintenance) of the roads.
- The survey should also assess the willingness of the community members to participate in the community road maintenance exercise.
- For willing members, the survey should also come up with ways how the members are willing to participate in the exercise and to what extent
- If the community members are unwilling, the reasons why the members are unresponsive towards the road maintenance activities should be established.
- Furthermore, the survey should establish the availability of skilled labor for road maintenance activities in the different communities

- It should establish whether there are existing bylaws in the communities that are specifically dealing with road maintenance, who established the bylaws, whether the existing bylaws (if any) by laws are being enforced.
- ii) Validate the strategy adopted in the MYAP proposal by finding out problems associated with food insecurity and the capacity of a household to withstand shock. Such validation will include answers to the following questions that will be designed as open-ended through focus groups and key informant interviews:
- What factors do respondents think are the root causes for food insecurity [academic education, income, security, inadequate water, government services, roads, knowledge of nutrition, poor soils, farming methods, fertilizer, seeds and planting materials, market to sell produce, middlemen, places to buy food, lack of disposable assets or savings?
 - Who are the most vulnerable populations?
 - How will giving food to the most vulnerable help? Does it cause dependency? How long food should be given?
 - What benefit will rehabilitation of roads bring?
 - What would comprise a shock, or a sudden event that could easily destabilize food production and consumption?
 - How can people living here be better equipped so as to have food even during shocks?
- iii) Establish factors behind the low household dietary diversity score, poor hygiene and nutrition practices
- iv) Establish food insecurity risks, vulnerabilities and trigger indicators by getting answers to such questions as:
- When people start producing food and improving their nutrition through this program, what events have the potential to distract progress? How can the project do to stop such events or reduce their impact?
 - In the knowledge of local people, how can you tell a household or a community that is slipping into a food insecurity situation? Can these indicators be used in an early warning system?
 - What are the manifestations of vulnerable or unshielded households? What can be done to reduce vulnerability?

4. Study Methodology

This will be a population based study. It is suggested that a mixture of quantitative and qualitative methodologies be applied. In addition to survey methods, focus group discussions and key informant interviews will be used to provide insights and interpretation of the quantitative data. Where quantitative methodologies are applied, the sample must be designed so as to provide technically sound estimates of all variables listed above. The contractor will be responsible of suggesting the most efficient and reliable sampling design. A two-stage cluster sampling design may be recommended to collect the data used in this survey. Primary clusters will be localities, selected using PPS (Probability Proportional to Size). Secondary units will be the households. However, it is important to specify that the first step in determining the sample size will consist in selecting an indicator/ variable on which to base the sample size calculations. One problem when working in such contexts, of multisectoral programs, is that several outcomes are targeted at once (nutrition, agriculture, health, etc.). Since sample size calculations have to be based on one indicator only, a choice must be made as to which outcome will be used. The contractor can: (a) list all the outcomes, and selecting the indicator that is most demanding from the point of view of the sample size –this selection, though, may identify a high sample size and relative high survey cost; (b) select the indicator that is considered the most important outcome the project is attempting to achieve. Doing the calculations on that basis ensures that the sample size will be adequate at least for the key indicators. (c) A combination of the two. We need to keep in mind (c) the cost and time involved in either option. The combination option ensures that the sample size will be adequate for the key indicators and we will have the best possible estimations for the more demanding indicators. (FANTA. 2002. Bergeron and Deitch. Report on the 2002 Joint Baseline Survey in the Targeted Areas of the PL480, Title II Programs in Haiti). The contractor will be expected to provide a detailed justification for the sample size recommended taking into considerations the above mentioned recommendations and the budget limitations,.

5. Study Team and Responsibilities

A study team will consist of one Study Director/Team Leader (consultant), specialists (in agriculture, nutrition/health, sociologist and Natural Resource Management) Interviewers/Research Assistants.

The Team Leader will have the overall responsibility for the administration of the baseline. His or her responsibilities will include:

- Informing local authorities about the administration of the baseline
- Sampling including establishing an exhaustive list of all the sub-counties in the 17 districts covered by the MYAP program and their respective populations

- Taking in charge all the logistics related to the study
- Selecting the supervisors and the enumerators for the study (local enumerators need to be selected)
- Being responsible for hiring the supervisors and enumerators and providing them with all the necessary work conditions for a good administration of the baseline
- Training all the supervisors and enumerators
- Design and developing the study tools
- Translating the study tools in the local languages for an easy administration of the baseline
- Formatting and printing all tools according to client's specifications;
- recruiting and training of interviewers in household and respondent selection and face-to-face interviewing techniques
- Conducting a pretest to ensure that the questionnaire addresses adequately the concerns raised in the study proposal
- Informing the populations sampled in the study
- Responsible for selection and hiring of data entry clerks
- Supervising the field administration of the questionnaire
- Supervising the data entry process using SPSS
- Conducting study results restitution meetings in all the sampled areas
- Editing and coding responses and entering and processing data
- weighting the data, if appropriate, using procedures approved by the Client (including Census level data, if available); and
- Analyzing collected data and submitting a complete standard report with outlines and fully written text in a timely manner
- Submitting to ACIDI/VOCA all the documents related to the study (filled questionnaires, electronic versions of the collected data and so on)
- Quality control: The Contractor will implement quality control measures to ensure a high level of interviewer performance. A full description of these measures and the results of the quality control must be included in the final technical report.

The Study Director/Team Leader should be well qualified (or have a team that is well qualified) in sociology/rural development, agriculture, public health, statistics, and survey techniques. In addition, s/he will be someone with proven experience in participatory evaluation, community based approaches, developing and evaluating integrated food security and development programs. S/he will have broad understanding of food security and have skills in measuring and assessing the effectiveness of rural production and marketing systems. Experience in survey planning and directing is necessary while understanding of local government structure in Uganda will be an added advantage.

N.B. Submitting contractors/ firms should bear in mind that ACIDI/VOCA might use more than one firm/qualified individuals to conduct the baseline in order to get the technical expertise needed for this endeavor.

6. Timeframe

The Study must be completed and submitted to ACIDI/VOCA 65 days after the date of the signature of the contract.

7. Deliverables

The following are the expected deliverables:

- Inception report
- Survey instruments
- Detailed Sampling plan
- Protocol/Instructions for field assistants
- Training manual
- Data sets

- Draft Report
- Final Report

The final report **should** include at a minimum the following elements:

- Executive Summary
- Acknowledgements
- List of Acronyms and abbreviations
- Table of Contents
- Background/Brief program description and context
- Purpose and expected use of the survey
- Methodology
- Objectives of the survey
- Summary of the survey methodology and data collection techniques
- Main findings (to include values of all PMP indicators listed in the objectives section)
- Key observations (to include cultural issues behind feeding practices and beliefs about nutrition, vulnerability analysis and trigger indicators)
- Lessons Learned and Recommendations for Future data collection
- Conclusion

Annexes to the evaluation report:

- Terms of Reference for the evaluation
- Timetable
- Survey instruments: questionnaire, interview guide (s), etc. as appropriate
- Sampling Plan

APPENDIX B1: QUESTIONNAIRE

BASELINE STUDY TO ASSESS THE STATUS OF THE PREVAILING CONDITIONS IN A MULTI YEAR ASSISTANCE PROGRAM (MYAP) TARGET AREAS OF ACDI/VOCA IN NORTHERN & EASTERN UGANDA

INFORMED CONSENT

Good morning/afternoon. My name is _____ and I am working for a collaborative research project between Makerere University School of Public Health and Agribusiness Management Associates of Kampala. We are conducting a survey on general health, nutrition, agriculture, natural resources, environment and access to markets. This information is required by an organization called ACDI/VOCA which is already operating in this region and will enable it to set up projects geared at reducing food insecurity and improving health of community members. We request you to kindly answer questions on the issues mentioned. The information you give us will be treated with a high level confidentiality. That is why we won't write your name on the questionnaire. Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions.

You are free to ask me any question about the survey.

Now, given the information I have given you do you accept to participate in the study?

Respondent accepts the interview 1

Respondent does not want to be interviewed 2 (terminate interview)

THANK YOU.

I. IDENTIFICATION	CODE
REGION _____	<input type="checkbox"/>
DISTRICT: _____	<input type="checkbox"/>
COUNTY	<input type="checkbox"/>
SUBCOUNTY	<input type="checkbox"/>
PARISH	<input type="checkbox"/>
VILLAGE	<input type="checkbox"/>
HOUSEHOLD NUMBER	<input type="checkbox"/>

II. INTERVIEWER VISITS		
FIRST VISIT	SECOND VISIT	
DAY ____ MONTH ____ YEAR ____	DAY ____ MONTH ____ YEAR ____	
INTERVIEWER NAME _____	INTERVIEWER CODE ____	RESULT OF VISIT ** _____

****RESULT CODES**

1. COMPLETED
2. PARTLY COMPLETED- GIVE REASON _____
3. OTHER SPECIFY _____

COMMENTS _____

INTERVIEW STARTED AT: ____AM/PM INTERVIEW ENDED AT: ____AM/PM

SUPERVISED BY	I. CHECK ED BY	CODED BY	ENTERED BY
NAME _____	NAME _____	NAME _____	NAME _____
CODE: _____	CODE: _____	CODE: _____	CODE: _____
DATE _____	DATE _____	DATE _____	DATE _____

1.00. GENERAL CHARACTERISTICS OF THE HOUSEHOLDS

No.	QUESTION	CODING CATEGORIES	CODE	SKIP
Q1.01	Respondent's relationship to head of household	HEAD 1 SPOUSE 2 DAUGHTER 3 SON 4 RELATIVE 5 OTHER UNRELATED (SPECIFY)6	<input type="checkbox"/>	
Q1.02	Sex of head of household	MALE 1 FEMALE 2	<input type="checkbox"/>	
Q1.03	Sex of respondent	MALE 1 FEMALE 2	<input type="checkbox"/>	
Q1.04	How old were you at your last birthday? <i>IF DON'T KNOW, MAKE AN ESTIMATE</i>	AGE IN COMPLETED YEARS	<input type="checkbox"/>	
Q1.05	What is the age of head of household		<input type="checkbox"/>	

Q1.06	Marital status of head of household	SINGLE 1 MARRIED 2 DIVORCED 3 SEPARATED 4 WIDOWED 5 COHABITING 6 MISSING/REFUSED 9	<input type="checkbox"/>	
Q1.07	What is the highest level of education attained by the household head?	NONE 1 PRIMARY INCOMPLETE 2 PRIMARY COMPLETED 3 SECONDARY (LOWER) 4 SECONDARY (UPPER) 5 POST SECONDARY 6 OTHER(S) SPECIFY 7 DON'T KNOW 8 MISSING/REFUSED 9	<input type="checkbox"/>	
Q1.08	Number of people living in the household (HH size) by age groups	0-59 MONTHS (UNDER 5) _____	<input type="checkbox"/>	
		5-17 YEARS _____	<input type="checkbox"/>	
		ADULTS _____	<input type="checkbox"/>	

	(ii) Household incomes			
Q1.11	Main occupation of the household head	SUBSISTANCE FARMER 1 TRADER/BUSINESS MAN/WOMAN 2 SALARY/WAGE EARNER 3 FISHER 4 NONE 5 OTHER(S) SPECIFY..... 6	<input type="checkbox"/>	IF 5 GOTO Q1.14
Q1.12	Occupation of the spouse	SUBSISTANCE FARMER 1 TRADER/BUSINESS MAN/WOMAN 2 SALARY/WAGE EARNER 3 FISHER 4 NONE 5 OTHER(S) SPECIFY..... 6	<input type="checkbox"/>	
Q1.13	Main source of household income	SUBSISTANCE FARMING 1 TRADE 2 SALARY/WAGES 3 FISHING 4 CHARCOAL BURNING OR FIREWOOD 5 NONE 6 OTHER(S) SPECIFY..... 7	<input type="checkbox"/>	
Q1.14	Average annual household income	LESS THAN 100,000 SHS 1 100,000 - 500,000 SHS 2 500,001 - 1,000,000 SHS 3 MORE THAN 1,000,000 SHS 4	<input type="checkbox"/>	
Q1.15	Types of house (OBSERVE) <i>Permanent (Brick walls, iron sheet roof), semi-permanent (Mud and wattle, tinned/grass roof) and temporary (Shack, polythene/grass walls)</i>	PERMANENT 1 SEMI-PERMANENT 2 TEMPORARY 3 OTHER 4	<input type="checkbox"/>	
1.20	Organisation membership			
Q1.21	Are there any farmer groups in this area?	YES 1 NO 2	<input type="checkbox"/>	IF 2 GOTO 1.24

Q1.22	If yes, which one do you or any member of the household belong to? <i>If two or more name the major one.</i>	NAME: _____ NONE 2	<input type="checkbox"/>	
Q1.23	How often do you or the member of household participate in the group's activities like meetings?	OFTEN (AT LEAST ONCE A WEEK) 1 SOMETIMES (AT LEAST ONCE A MONTH) 2 ONCE IN A WHILE (AT LEAST ONCE IN 3 MONTHS) 3 RARELY/NONE (TAKES MORE THAN 3MNS) 4	<input type="checkbox"/>	
Q1.24	Are there any saving and credit groups in this area?	YES 1 NO 2	<input type="checkbox"/>	IF 2 GOTO 1.28
Q1.25	If yes, which one do you or any member of household belong to? <i>If two or more name the major one.</i>	NAME: _____ NONE 2		
Q1.26	Have you or any member of household deposited any savings in last 6 months in the saving group?	YES 1 NO 2	<input type="checkbox"/>	
Q1.27	How often do you or the member of household participate in the group's activities like meetings?	OFTEN (AT LEAST ONCE A WEEK) 1 SOMETIMES (AT LEAST ONCE A MONTH) 2 ONCE IN A WHILE (AT LEAST ONCE IN 3 MONTHS) 3 RARELY/NONE (TAKES MORE THAN 3MNS) 4	<input type="checkbox"/>	
Q1.28	Are there any Environmental groups or associations	YES 1 NO 2	<input type="checkbox"/>	IF 2 GO TO 1.31
Q1.29	If yes, which one do you belong to? <i>If two or more name the major one.</i>	NAME: _____ 1 NONE 2		
Q1.30	How often do you or member of household participate in the group's activities like meetings?	OFTEN (AT LEAST ONCE A WEEK) 1 SOMETIMES (AT LEAST ONCE A MONTH) 2 ONCE IN A WHILE (AT LEAST ONCE IN 3 MONTHS) 3 RARELY/NONE (TAKES MORE THAN 3MNS) 4		
Q1.31	Are there any social groups in this area?	YES 1 NO 2	<input type="checkbox"/>	IF 2 GOTO 1.41
Q1.32	If yes, which one do you or a member of household belong to? <i>If two or more name the major one.</i>	NAME: _____ NONE 2	<input type="checkbox"/>	
Q1.33	How often do you or the member of household participate in the group's activities?	OFTEN (AT LEAST ONCE A WEEK) 1 SOMETIMES (AT LEAST ONCE A MONTH) 2 ONCE IN A WHILE (AT LEAST ONCE IN 3 MONTHS) 3 RARELY/NONE (TAKES MORE THAN 3MNS) 4	<input type="checkbox"/>	
Q1.34	How do you benefit from the social group? (Tick ✓ or cross where appropriate)	A. SUPPORT IN FORM OF LABOUR	<input type="checkbox"/>	
		B. SUPPORT IN FORM OF MONEY	<input type="checkbox"/>	
		C. MATERIAL SUPPORT	<input type="checkbox"/>	
		D. PSYCHO-SOCIAL SUPPORT	<input type="checkbox"/>	
		E. OTHER(S) SPECIFY.....	<input type="checkbox"/>	
1.40	Labour distribution among household members			
Q1.41	Please indicate who participates in the following activities by ticking ✓ the right box			

	Activity	Male Adults	Female adults	Male children	Female Children		
	A. Land opening					<input type="checkbox"/>	
	B. Planting					<input type="checkbox"/>	
	C. Weeding					<input type="checkbox"/>	
	D. Harvesting					<input type="checkbox"/>	
	E. Transport					<input type="checkbox"/>	
	F. Drying					<input type="checkbox"/>	
	G. Storage					<input type="checkbox"/>	
	H. Marketing					<input type="checkbox"/>	
Q1.42	Do people from outside the family provide labour during crop production?	YES		1		<input type="checkbox"/>	IF 2 GOTO 2.01
		NO		2			
Q1.43	If yes, under which activity do they participate? (<i>Multiple response</i>)	A. LAND OPENING				<input type="checkbox"/>	
		B. PLANTING				<input type="checkbox"/>	
		C. WEEDING				<input type="checkbox"/>	
		D. HARVESTING				<input type="checkbox"/>	
		E. STORAGE				<input type="checkbox"/>	
		F. MARKETING				<input type="checkbox"/>	

2.00 AGRICULTURAL STRATEGIES

Q2.01 What crops do your household grows for cash, food or both in different seasons? (*Please tick appropriately*)

CROPS	Major food crops planted		Major cash crops planted		Crops that are for both cash and food	
	First season	Second season	First season	Second season	First Season	Second Season
A. SIMSIM						
B. SORGHUM						
C. G. NUTS						
D. BEANS						
E. SWEET POTATOES						
F. RICE						

G. MILLET						
H. MAIZE						
I. YAM						
J. CASSAVA						
K. VEGETABLES						
L. FRUITS						
M. COW PEAS (NGOR/IMARE)						
N. PEGEON PEAS (LAPENA)						
O. GREEN GRAM/PEAS (CHOROKO/ECHOROKO)						
P. OTHERS SPECIFY----						

2.10 Decisions on crops planted

2.10 Decisions on crops planted				
Q2.11	Who makes decisions on the type of food crops planted by members of this household?	HUSBAND WIFE BOTH SON / DAUGHTER MYSELF	1 2 3 4 5	<input type="checkbox"/>
Q2.12	Who makes decisions on the type of security crops planted by members of this household?	HUSBAND WIFE BOTH SON / DAUGHTER MYSELF	1 2 3 4 5	<input type="checkbox"/>
Q2.13	Who makes decisions on the type of cash crops planted by members of this household?	HUSBAND WIFE BOTH SON / DAUGHTER MYSELF	1 2 3 4 5	<input type="checkbox"/>
Q2.14	Who makes decisions on the acreage to be used for particular crops	HUSBAND WIFE BOTH SON / DAUGHTER MYSELF	1 2 3 4 5	<input type="checkbox"/>

2.20 Crop yields

Considering the food crops produced in this household for the last season, what could have been their average yield in kilograms? (indicate yield of each crop)

CROP	Total land planted in acres (Equiv. football pitch).		Total production in farmers' unit of measure				Total production in Kgs (Fill after interview)		Price per kg (Last sales)	
			Local		Improved		Local	Improved		
	Local	Improved	Farmer's unit	Est. Price	Farmer's unit	Est. Price			Local	Improved
A. SIMSIM										
B. SORGHUM										
C. G. NUTS										
D. BEANS										
E. SWEET POTATOES										
F. RICE										
G. MILLET										
H. MAIZE										
I. YAM										
J. CASSAVA										
K. VEGETABLES										
L. FRUITS										
M. COW PEAS (NGOR/IMARE)										
N. PEGEON PEAS (LAPENA)										
O. GREEN GRAM/PEAS (CHOROKO/ECHOROKO)										
P. OTHERS SPECIFY-----										

2.30 Rearing of livestock by farmers

Q2.31	Do you have any animals in this household?	YES NO	1 2	<input type="checkbox"/>	IF 2 GOTO 2.41
Q2.32	If yes, tell me the number you have by type (MULTIPLE RESPONSES WRITE ZERO "0" IF NONE)	GOATS	_____	<input type="checkbox"/>	
		CATTLE	_____	<input type="checkbox"/>	
		PIGS	_____	<input type="checkbox"/>	
		CHICKEN	_____	<input type="checkbox"/>	
		TURKEYS	_____	<input type="checkbox"/>	
		OTHER(S) SPECIFY _____		<input type="checkbox"/>	
Q2.33	How does keeping livestock help you to meet your food needs? (Tick ✓ where appropriate)	A. OBTAIN MILK		<input type="checkbox"/>	
		B. OBTAIN MEAT		<input type="checkbox"/>	
		C. SELL THEM AND BUY FOOD		<input type="checkbox"/>	
		D. OPENING UP LAND		<input type="checkbox"/>	
		E. OTHER(S) SPECIFY		<input type="checkbox"/>	

2.40 Current agronomic and farm management practices			
Q2.41	What agronomic practices do you use? Multiple responses possible. The interviewer may have to read out each of the practices for the purpose of the next question.	A. CONTOUR PLOUGHING	<input type="checkbox"/>
		B. STRIP CROPPING	<input type="checkbox"/>
		C. MULCHING	<input type="checkbox"/>
		D. AGRO FORESTRY	<input type="checkbox"/>
		E. INTERCROPPING	<input type="checkbox"/>
		F. CROP ROTATION	<input type="checkbox"/>
		G. COMPOSTING / MANURE	<input type="checkbox"/>
		H. USING IMPROVED SEED VARIETIES	<input type="checkbox"/>
		I. LINE/ROW PLANTING	<input type="checkbox"/>
		J. FALLOWING	<input type="checkbox"/>
		K. COVER CROPPING (used to regain soil fertility and minimise erosion e.g mucuna)	<input type="checkbox"/>
		L. USE OF CHEMICAL FERTILIZERS	<input type="checkbox"/>
		M. OTHER(S) SPECIFY	<input type="checkbox"/>
Q2.42	Have you ever been trained in any of the above practices	YES 1 NO 2	IF 2 GOTO 2.44
Q2.43	If yes, who provided the latest training and for how long	A. PROVIDER _____ B. LENGTH OF TIME _____ DAYS	
Q2.44	What techniques do you use for controlling pests? (MULTIPLE RESPONSE)	A. ORGANIC PESTICIDES LIKE URINE,ASH	<input type="checkbox"/>
		B. INORGANIC PESTICIDES LIKE AMBUSH	<input type="checkbox"/>
		C. NONE	<input type="checkbox"/>
		D. OTHER(S) SPECIFY.....	<input type="checkbox"/>
Q2.45	What could be the three major constraints to your production process (crop & livestock)? (TICK WHERE APPLICABLE)	A. LIMITED CAPITAL	<input type="checkbox"/>
		B. LIMITED TOOLS AND EQUIPMENT	<input type="checkbox"/>
		C. INADEQUATE SKILLS	<input type="checkbox"/>
		D. OTHER(S) SPECIFY _____	<input type="checkbox"/>
Q2.46	Does your household do the following? (TICK WHERE APPLICABLE)	A. RECORD KEEPING	<input type="checkbox"/>
		B. MARKET CROPS IN GROUPS	<input type="checkbox"/>
Q2.47	If you use any of the above, why do you do it?	_____	
Q2.48	Did you or a member of your household attend training on the following? (FAAB involves training in workplan, record keeping, collective action in buying inputs, marketing, working in groups, value addition & cost-benefit analysis)	A. POST HARVEST HANDLING	
		B. GROUP MARKETING	
		C. GROUP FORMATION, SAVINGS, MOBILIZATION & MANAGEMENT	
		D. RECORD KEEPING	
		E. USE OF IMPROVED PRACTICES	
		F. GROUP PRODUCTION	
Q2.49	Did you receive extension/outreach services?	YES 1 NO 2	<input type="checkbox"/> IF 2 GOTO 3.01

Q2.50	If yes, which services did you receive?	_____			
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3.00 FOOD SECURITY

Adequacy of household food provisioning

Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months starting with the current month.

Q3.01	In the past 12 months, were there months in which you did not have enough food to meet your family's needs?	YES 1 NO 2	<input type="checkbox"/>	If 2 GOTO 3.03
Q3.02	If yes, which were the months (in the past 12 months) in which you did not have enough food to meet your family's needs?	A. JANUARY B. FEBRUARY C. MARCH D. APRIL E. MAY F. JUNE G. JULY H. AUGUST I. SEPTEMBER J. OCTOBER K. NOVEMBER L. DECEMBER	<input type="checkbox"/> <input type="checkbox"/>	
Q3.03	Please mention the factors that promote food insecurity in your household or community?	A. POOR SOILS B. LOW INCOMES C. POOR FARMING PRACTICES D. LIMITED FARM IMPLEMENTS E. LIMITED FARM INPUTS F. PESTS AND DISEASES G. POOR HEALTH H. CATTLE RASTLING I. INSECURITY J. DROUGHT K. FLOODS/HEAVY RAINS L. OTHER(S) SPECIFY	<input type="checkbox"/> <input type="checkbox"/>	
Q3.04	In case of an abrupt shortage of food in this community, which categories of people do you think would be affected most?	A. CHILDREN B. THE SICK C. THE ELDERLY D. PREGNANT WOMEN E. OTHER(S) SPECIFY	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Q3.05	Does your household receive food rations?	YES NO	1 2	<input type="checkbox"/>	
Q3.06	Considering people who are supported with food rations, would you say that they end up depending on it than producing their own?	YES NO	1 2	<input type="checkbox"/>	
Q3.07	What is the reason for your answer?	_____		<input type="checkbox"/>	
Q3.08	In our country many of our households have somebody living with HIV/AIDS. Is it the same with this household?	YES NO	1 2	<input type="checkbox"/>	If 2 GO TO 3.12
Q3.09	If yes, are there any organizations that provide food rations to such person(s)?	YES NO	1 2	<input type="checkbox"/>	
Q3.10	On average how much is given per type and per person in a month? Use locally known units and convert. E.g basins, mugs	A. OIL _____ J.CANS _____ LTRS		<input type="checkbox"/>	
		B. BEANS _____ BASINS _____ KGS		<input type="checkbox"/>	
		C. SOYA _____ BASINS _____ KGS		<input type="checkbox"/>	
		D. OTHER _____ UNIT _____ KGS		<input type="checkbox"/>	
Q3.11	Is the person(s) with HIV/AIDS linked to complementary services like income generating activities	YES NO	1 2	<input type="checkbox"/>	
Q3.12	In your opinion, how can you tell a household that is slipping into an insecure food condition?	A. SKIPPING MEALS		<input type="checkbox"/>	
		B. GOING WITHOUT MEALS ALL DAY		<input type="checkbox"/>	
		C. HAVING CHRONICALLY SICK PEOPLE		<input type="checkbox"/>	
		C. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q3.13	In what ways do you think vulnerability to food insecurity can be reduced?	A. PLANTING MORE THAN ONE CROP		<input type="checkbox"/>	
		B. USE OF BETTER FARMING PRACTICES E.G AGROFORESTRY		<input type="checkbox"/>	
		C. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q3.14	In order to meet your household food needs in the past 12 months, did you have to do something that you disliked?	YES NO	1 2	<input type="checkbox"/>	
Q3.15	In order to meet your household needs in the past 12 months, did you have to compromise your future food needs? E.g selling seeds for next season	YES NO	1 2	<input type="checkbox"/>	
Q3.16	In order to meet your household needs in the past 12 months, did you have to compromise needs other than food? E.g clothing	YES NO	1 2	<input type="checkbox"/>	
Q3.17	In order to meet your household needs in the past 12 months, did you have to do something that you are ashamed of?	YES NO	1 2	<input type="checkbox"/>	
Q3.18	Were you forced to do anything not mentioned above in the past 12 months in order to meet your household food needs?	YES NO	1 2	<input type="checkbox"/>	
Q3.19	What other ways do you use to cope with food shortages in your household?	A. BORROW FROM NEIGHBOUR		<input type="checkbox"/>	
		B. RECEIVE FROM NEIGHBOUR / RELATIVES		<input type="checkbox"/>	

	C. OTHER(S) SPECIFY		<input type="checkbox"/>	
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	3.20 Food Insecurity at household level IN THE LAST 12 MONTHS– All household members. <i>(Statements 3.21-3.28 refer to events that took place in previous 12 months. The interviewer should probe for frequency. You may start with</i> In the past 12 months did the following happen in this household?				
Q3.21	Were worried that your household would not have enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.22	Your usual food supply ran out or did not have all of the food the household needed	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.23	Your household ate a limited variety of foods	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.24	You or other adults in the household had to limit the amount of food eaten in a day because there wasn't enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.25	You or other adults in the household had to eat fewer meals in a day because there wasn't enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.26	You or other adults in the household did not eat for a whole day because there wasn't enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.27	You or other adults in the household were hungry, but didn't eat because there was not enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		
Q3.28	You or other adults in the household lost weight because there was not have enough food	YES 1 NO 2	<input type="checkbox"/>		

	3.40 Food Insecurity at household level – Respondents / Adults IN THE LAST 12 MONTHS <i>(Statements 3.40-3.46 refer to events that took place IN PREVIOUS 12 MONTHS. They are read to the respondent who is expected to answer any of the options given. This section applies only if the household includes children under 18 years old. If the household has no children, skip this section. The interviewer should probe for frequency. You may start with</i> Did the following happen in this household in the last 12 months?				
	3.40 Food Insecurity at household level – Children under 18 years				
Q3.40	Relied on a few kinds of low-cost food to feed children because there was not enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>		

Q3.41	Could not feed your children on a variety of foods because there was not enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>	
Q3.42	Children were not eating enough (3-5 meals) because there was not enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>	
Q3.43	Did the children ever get their meals cut because there wasn't enough food?	YES 1 NO 2	<input type="checkbox"/>	
Q3.44	Did the children ever go to sleep at night hungry because there was not enough food?	YES 1 NO 2	<input type="checkbox"/>	
Q3.45	The children skipped a meal because there wasn't enough food	OFTEN (ALMOST EVERY MONTH) 1 SOMETIMES (3-10 MONTHS) 2 RARELY (1-2 MONTHS) 3 NEVER 4	<input type="checkbox"/>	
Q3.46	Did the children ever not eat for a whole day because there wasn't enough food?	YES 1 NO 2	<input type="checkbox"/>	

	3.50 Household Dietary Diversity Score					
	Now I would like to ask you about the foods that you or anyone else in your household ate yesterday during the day and at night. (Read the list of foods. Place a tick in the box if anyone in the household ate the food in question and a cross if the food was not mentioned. The food should have been prepared from the house. Ascertain that the previous 24hours was a usual day. If it was not a usual day for instance, there was a feast or funeral or if most household members were absent that day, then another day should be selected. If it is not possible, then another household should be selected).					
Q3.51	Did any one in the HH eat food made from the following?	A. MILLET	<input type="checkbox"/>			
		B. SORGHUM	<input type="checkbox"/>			
		C. MAIZE	<input type="checkbox"/>			
		D. RICE	<input type="checkbox"/>			
		E. WHEAT	<input type="checkbox"/>			
Q3.52	Did any one in the HH eat any of the following foods?	A. SWEET POTATOES	<input type="checkbox"/>			
		B. YAMS	<input type="checkbox"/>			
		C. CASSAVA	<input type="checkbox"/>			
		D. OTHER FOODS MADE FROM ROOTS AND TUBERS	<input type="checkbox"/>			
Q3.53	Did any one in the HH eat any vegetables?	A. Dark green leafy vegetables like dodo, nakati, bunga, jjobyoy, malakwang, ngobe etc	<input type="checkbox"/>			

		B. Orange coloured vegetables like pumpkins, carrots, orange fleshed sweet potatoes		<input type="checkbox"/>	
		C. Other vegetables e.g eggplants, green pepper etc		<input type="checkbox"/>	
Q3.54	Did any one in the HH eat any fruits?	A. Orange/red coloured fruits like mangoes, pawpaws, melons		<input type="checkbox"/>	
		B. Other fruits e.g pineapple, jackfruit, pineapple, oranges etc			
Q3.55	Did any one in the HH eat any of the following foods?	A. BEEF, PORK, LAMB, GOAT, RABBIT WILD GAME, CHICKEN, DUCK, BIRDS		<input type="checkbox"/>	
		B. LIVER, KIDNEY, HEART, OTHER ORGAN MEATS		<input type="checkbox"/>	
Q3.56	Did any one in the HH eat any eggs?	YES 1 NO 2		<input type="checkbox"/>	
Q3.57	Did any one in the HH eat fresh or dried fish?	YES 1 NO 2		<input type="checkbox"/>	
Q3.58	Did any one in the HH eat any of the following foods?	A. BEANS		<input type="checkbox"/>	
		B. PEAS (Cow peas, guinea peas -lapena, choroko, ngor – ngobe seeds)		<input type="checkbox"/>	
		C. NUTS		<input type="checkbox"/>	
		D. SIMSIM			
Q3.59	Did any one in the HH eat any of the following foods?	A. CHEESE		<input type="checkbox"/>	
		B. YOGURT		<input type="checkbox"/>	
		C. MILK		<input type="checkbox"/>	
		D. OTHER MILK PRODUCTS		<input type="checkbox"/>	
Q3.60	Did any one in the HH eat any foods prepared using the following?	A. OIL (E.G MUKWANO)		<input type="checkbox"/>	
		B. FAT (E.G COWBOY)		<input type="checkbox"/>	
		C. BUTTER (SHEA BUTTER, MILK BUTTER)		<input type="checkbox"/>	
Q3.61	Did any one in the HH eat sugar or honey?	YES 1 NO 2		<input type="checkbox"/>	
Q3.62	Did any one in the HH eat any other foods such as <i>A condiment is substance, such as a relish, vinegar, or spice, used to flavor or complement food. Ketchup, Mustard, Salt & Pepper</i>	A. CONDIMENTS (E.G SPICES LIKE GINGER)		<input type="checkbox"/>	
		B. COFFEE		<input type="checkbox"/>	
		C. TEA		<input type="checkbox"/>	
Q3.63	Were you or a member of household trained in the following?	A. NUTRITION PRACTICES		<input type="checkbox"/>	
		B. HYGIENE PRACTICES		<input type="checkbox"/>	

4.00. POST HARVEST PRACTICES AND MARKETING

	Storage technologies and practices		
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Q4.01	Do you have a store for your crops?	YES NO	1 2	<input type="checkbox"/>	IF 2 GOTO 4.04
Q4.02	If yes, do you have a separate store for each crop?	YES NO	1 2	<input type="checkbox"/>	
Q4.03	What type of crop harvest storage facilities do you have?	A. GRANARY		<input type="checkbox"/>	
		B. PLASTIC / METALLIC CONTAINER		<input type="checkbox"/>	
		C. OTHER(S) SPECIFY		<input type="checkbox"/>	
Major causes of crop spoilage /loss					
Q4.04	Have your crops ever been spoiled while in storage? (not necessarily a store. Can be under a bed)	YES NO	1 2	<input type="checkbox"/>	IF 2 GOTO 4.11
Q4.05	If yes, what caused the spoilage /loss during storage?	A. POOR STORAGE FACILITY		<input type="checkbox"/>	
		B. DESTROYED BY PESTS / VERMINS		<input type="checkbox"/>	
		C. POOR WEATHER		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY		<input type="checkbox"/>	
4.10 Preservation of food / crops					
Q4.11	Do you preserve the crop(s) you produce?	YES NO	1 2	<input type="checkbox"/>	IF 2 GOTO 4.20
Q4.12	If yes, which crop(s) do you preserve?	A. SWEET POTATOES		<input type="checkbox"/>	
		B. CASSAVA		<input type="checkbox"/>	
		C. GROUND NUTS		<input type="checkbox"/>	
		D. SORGHUM		<input type="checkbox"/>	
		E. SIMSIM		<input type="checkbox"/>	
		F. MILLET		<input type="checkbox"/>	
		G. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q4.13	What method(s) do you use for preserving sweet potatoes?	_____		<input type="checkbox"/>	
Q4.14	What method(s) do you use for preserving cassava?	_____		<input type="checkbox"/>	
Q4.15	What method(s) do you use for preserving ground nuts?	_____		<input type="checkbox"/>	
Q4.16	What method(s) do you use for preserving sorghum?	_____		<input type="checkbox"/>	
Q4.17	What method(s) do you use for preserving simsim?	_____		<input type="checkbox"/>	
Q4.18	What method(s) do you use for preserving millet?	_____		<input type="checkbox"/>	
Q4.19	What method(s) do you use for preserving other crops?	_____		<input type="checkbox"/>	
Q4.20	What is the average duration in weeks taken before the following crops gets spoiled?	A. SWEET POTATOES		<input type="checkbox"/>	
		B. CASSAVA		<input type="checkbox"/>	
		C. GROUND NUTS		<input type="checkbox"/>	
		D. SORGHUM		<input type="checkbox"/>	
		E. SIMSIM		<input type="checkbox"/>	

		F. MILLET		<input type="checkbox"/>	
		G. OTHER		<input type="checkbox"/>	
4.20 Value of the main crops					
Q4.21	What major crops do you produce?	A. SWEET POTATOES		<input type="checkbox"/>	
		B. CASSAVA		<input type="checkbox"/>	
		C. GROUND NUTS		<input type="checkbox"/>	
		D. SORGHUM		<input type="checkbox"/>	
		E. SIMSIM		<input type="checkbox"/>	
		F. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q4.22	Do you sell any of your produce?	YES 1 NO 2		<input type="checkbox"/>	If 2 GOTO 5.01

Q4.23	What quantity of food do you sell? (INDICATE UNITS IF DIFFERENT)	A. SWEETPOTATOES _____(BASINS)	<input type="checkbox"/>		
		B. CASSAVA _____ (BASINS)	<input type="checkbox"/>		
		C. GROUND NUTS _____ (BASINS)	<input type="checkbox"/>		
		D. SORGHUM _____ (BASINS)	<input type="checkbox"/>		
		E. SIMSIM _____ (BASINS)	<input type="checkbox"/>		
		F. OTHER _____ (BASINS)	<input type="checkbox"/>		
Q4.24	What is the approximate distance from this household to the nearest market where you can sell crops?	_____ MILES _____ KMS		<input type="checkbox"/>	
Q4.25	Who buys your produce?	A. PASSERS BY B. MIDDLE MEN C. OTHER(S) SPECIFY.....			

4.30 Marketing					
Q4.31	What means of transport do you use to transport the produce?	A. FOOT		<input type="checkbox"/>	
		B. BICYCLE		<input type="checkbox"/>	
		C. VEHICLE		<input type="checkbox"/>	
		D. MOTORCYCLES		<input type="checkbox"/>	
		E. OTHER(S) SPECIFY _____		<input type="checkbox"/>	
Q4.32	How long do you take to reach the market using the common means of transport? (fill either min or hour)	_____ MINUTES _____ HOURS		<input type="checkbox"/>	
Q4.33	Considering the marketing of crops, what major constraints do you face in the process?	A. POOR TRANSPORT		<input type="checkbox"/>	
		B. LOW MARKET PRICES		<input type="checkbox"/>	
		C. LIMITED MARKETS		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY		<input type="checkbox"/>	

	Marketing costs			
Q4.34	How much do you spend while marketing each of the crops mentioned above (Interviewer, probe)	_____ SHS	<input type="checkbox"/>	

5.00 WATER SUPPLY, HYGIENE AND SANITATION

Q5.01	What is your main source of water in this household?	PIPED WATER / PUBLIC TAP 1 PIPED WATER IN HOUSHOLD 2 PROTECTED WELL / SPRING 3 BORE HOLE 4 RAIN HARVEST-E.G TANKS 5 OTHER(S) SPECIFY6	<input type="checkbox"/>	
Q5.02	What is the estimated distance from this household to the water source mentioned above?	_____KM _____MILES	<input type="checkbox"/>	
Q5.03	Is your main water supply chlorinated (TREATED)?	YES 1 NO 2 DON'T KNOW 8	<input type="checkbox"/>	
Q5.04	Do you do anything to your water before drinking?	YES 1 NO 2 DON'T KNOW 8	<input type="checkbox"/>	IF 2 GOTO 5.06
Q5.05	If yes, what do you do?	BOIL 1 CHLORINATE 2 OTHER SPECIFY _____ 8	<input type="checkbox"/>	
Q5.06	Do you do anything to your hands before handling food?	YES 1 NO 2 DON'T KNOW 8	<input type="checkbox"/>	IF 2 GOTO 5.08
Q5.07	If yes, what do you do?	WASH 1 WASH WITH SOAP 2	<input type="checkbox"/>	
Q5.08	Why is it important to wash your hands? (The research assistance should know the answer first)	KNOWS 1 DOESN'T KNOW 8 NO RESPONSE 9	<input type="checkbox"/>	
Q5.09	What is the primary way this household disposes of human waste?	TEMPORARY LATRINE 1 SEMI-PERMANENT LATRINE 2 ORDINARY PERMANENT 3 VIP LATRINE 4 FLASH TOILET 5 OTHER 6	<input type="checkbox"/>	
Q5.10	Do you share this toilet with another household?	YES 1 NO 2	<input type="checkbox"/>	

Q5.11	In this household do you do the following? (To indicate "sometimes" with a half tick ✓)	A. KEEP FOOD ON RAISED SURFACE	<input type="checkbox"/>	
		B. WASH RAW FOOD AND FRUITS WITH SAFE WATER BEFORE SERVING	<input type="checkbox"/>	
		C. SERVE FOOD IN CLEAN UTENCILS	<input type="checkbox"/>	

		D. WASHES HANDS WITH CLEAN WATER AND SOAP BEFORE PREPARING FOOD		<input type="checkbox"/>	
Q5.12	Do household members do the following	A. WASH HANDS WITH SOAP AFTER CLEANING A DEFECATING CHILD		<input type="checkbox"/>	
		B. WASH HANDS WITH WATER AND SOAP AFTER USING TOILET		<input type="checkbox"/>	
		C. WASHING HANDS WITH WATER BEFORE EATING		<input type="checkbox"/>	
		D. WASHING HANDS WITH SAFE WATER AFTER EATING		<input type="checkbox"/>	
Q5.13	How do you dispose of garbage in this household?	A. RABISH PIT IN COMPOUND		<input type="checkbox"/>	
		B. PAY PRIVATE COLLECTOR		<input type="checkbox"/>	
		C. BURNING		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY.....		<input type="checkbox"/>	

6.00: NATURAL RESOURCES MANAGEMENT

Land Resources and Tenure systems					
Q6.01	What is the approximate size of your land in acres?	_____ ACRES		<input type="checkbox"/>	IF NO LAND GOTO 6.21
Q6.02	What size of your land do you use for crop production?	_____ ACRES		<input type="checkbox"/>	
Q6.03	What size of your land do you use for livestock?	_____ ACRES		<input type="checkbox"/>	
Q6.04	What size of your land do you use for forestry?	_____ ACRES		<input type="checkbox"/>	
Q6.05	What is the total land area available to you for use (includes rented)	_____ ACRES		<input type="checkbox"/>	
Q6.06	What type of land tenure system applies to your land?	CUSTOMARY 1 MAILO 2 LEASE HOLD 3 FREE HOLD 4		<input type="checkbox"/>	
Q6.07	Does the land tenure system negatively affect the use of your land?	YES 1 NO 2 DK 3		<input type="checkbox"/>	IF 2 GOTO 6.09
Q6.08	If yes, how does it affect you (Multiple responses possible)?	A. LIMITS ACCESS		<input type="checkbox"/>	
		C. LIMITS CONTROL (INCLUDES POWER TO SELL)		<input type="checkbox"/>	
		G. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.09	Does the existing land tenure system enable you to carry out land conservation practices	YES 1 NO 2		<input type="checkbox"/>	IF 2 GO TO 6.21
Q6.10	If yes, what conservation practices are enhanced by the land tenure system? (Multiple responses)	A. AGRO FORESTRY		<input type="checkbox"/>	
		B. ROTATIONAL CROPPING		<input type="checkbox"/>	
		C. FALLOWING		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY		<input type="checkbox"/>	
6.20 General Environmental Challenges and their Management					
Q6.21	What environmental challenges do you face in this	A. SOIL EROSION		<input type="checkbox"/>	

	area? (Multiple responses)	B. DEFORESTATION		<input type="checkbox"/>	
		C. FLUCTUATING CLIMATIC PATTERNS		<input type="checkbox"/>	
		D. POLLUTION OF WATER SOURCES		<input type="checkbox"/>	
		E. WETLAND ENCROACHMENT		<input type="checkbox"/>	
		F. BUSH BURNING		<input type="checkbox"/>	
		E. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.22	In this household, what are you doing to address the environmental problems mentioned above?	A. CROP ROTATION		<input type="checkbox"/>	
		B. PROPER USE OF FIRE WOOD (ENERGY SAVING STONES)		<input type="checkbox"/>	
		C. RAIN HARVESTING AND STORAGE		<input type="checkbox"/>	
		E. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.23	What is being done by other people to address the problems mentioned above?	A. CROP ROTATION		<input type="checkbox"/>	
		D. PROPER USE OF FIRE WOOD (ENERGY SAVING STONES)		<input type="checkbox"/>	
		C. USE OF OTHER ALTERNATIVE ENERGY SOURCES		<input type="checkbox"/>	
		D. AGRO-FORESTRY		<input type="checkbox"/>	
		E. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.24	Does the community participate in the conservation of soils, water and plants in this area?	YES 1 NO 2		<input type="checkbox"/>	IF 2 GOTO 6.26
Q6.25	Indicate the activities jointly done by the community environmental groups in your area or individual activities resulting from collective agreement. (Multiple responses possible)	A. ENVIRONMENT /CONSERVATION DRAMMA		<input type="checkbox"/>	
		B. AFFORESTATION / RE-AFFORESTATION		<input type="checkbox"/>	
		C. SALE OF PRODUCTS E.G TREE SEEDLINGS, STOVES		<input type="checkbox"/>	
		D. JOINT PLANNING		<input type="checkbox"/>	
		E. BYE-LAWS		<input type="checkbox"/>	
		F. OTHERS (SPECIFY)		<input type="checkbox"/>	
		G. NONE			
Q6.26	Is there any social activity or events that negatively affect your efforts to conserve water, soil and plants?	YES 1 NO 2		<input type="checkbox"/>	IF 2 GOTO 6.28
Q6.27	If yes, mention them (multiple response)	A. COMMUNAL ANIMAL REARING		<input type="checkbox"/>	
		B. CATTLE RUSTLING		<input type="checkbox"/>	
		C. PROLONGED DRY SEASONS		<input type="checkbox"/>	

		D. PROLONGED RAINFALL		<input type="checkbox"/>	
		F. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.28	Do you use fertilizers?	YES 1 NO 2		<input type="checkbox"/>	IF 2 GOTO 6.30
Q6.29	How often do you use fertilizers	A. ALL SEASONS		<input type="checkbox"/>	
		B. FOR SOME SPECIFIC CROPS (MENTION MAJOR ONE)		<input type="checkbox"/>	
		C. ONLY WHEN SUPPLIED FREE		<input type="checkbox"/>	
Q6.30	Looking at the production of the major crops planted in last 3 years, would you say that the yield from your land has increased or decreased?	INCREASED 1 DECREASED 2 CONSTANT 3 DON'T KNOW 8		<input type="checkbox"/>	IF 1/3/8 GOTO6.4 1
Q6.31	Mention one major crop whose yield reduced	_____		<input type="checkbox"/>	
Q6.32	Why do you think was the reason for the reduction in yield of that named crop in 6.31 above (MULTI RESPONSE)	A. LATE PLANTING		<input type="checkbox"/>	
		B. DROUGHT		<input type="checkbox"/>	
		C. FLOODS		<input type="checkbox"/>	
		D. LOW FERTILITY IN THE SOIL		<input type="checkbox"/>	
		E. PESTS		<input type="checkbox"/>	
		F. LESS/REDUCED ACRAGE PLANTED		<input type="checkbox"/>	
		G. OTHERS (SPECIFY)		<input type="checkbox"/>	
		H. DK		<input type="checkbox"/>	
Q6.33	For the specific piece of land from which you got a decreased harvest, what did/do you do to ensure that it remains fertile? (multiple response)	A. MULCHING		<input type="checkbox"/>	
		B. AFFORESTATION		<input type="checkbox"/>	
		C. CROP ROTATION		<input type="checkbox"/>	
		D. INTERCROPPING		<input type="checkbox"/>	
		E. USE OF ORGANIC MANURE		<input type="checkbox"/>	
		F. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.34	For how long did you use the above mentioned methods?	ONE SEASON 1 2-3 SEASONS 2 4-5 SEASONS 3 6 SEASONS 4		<input type="checkbox"/>	
6.40 Common tree specie (Non food)					
Q6.41	What tree species are commonly planted on your land? (multiple response)	A. EUCALYPTUS		<input type="checkbox"/>	IF E GO TO 6.44

		B. PINUS SPP		<input type="checkbox"/>	
		C. MORINGA		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY		<input type="checkbox"/>	
		E. NONE			
Q6.42	Which one of the above trees is planted more than others on your land (major tree/most preferred, non indigenous and, non fruit)	_____			
Q6.43	Why do you prefer planting the tree species mentioned in 6.42 above? (Multiple response)	A. GETTING CONSTRUCTION TIMBER.		<input type="checkbox"/>	
		B. FOR INCOME		<input type="checkbox"/>	
		C. PROVISION OF SHADE		<input type="checkbox"/>	
		D. INCREASING SOIL FERTILITY / SOIL CONSERVATION		<input type="checkbox"/>	
		E. PASTURE FOR ANIMALS		<input type="checkbox"/>	
		F. PROVISION OF MEDICINE		<input type="checkbox"/>	
		G. OTHER(S) SPECIFY.....		<input type="checkbox"/>	
Q6.44	For any tree species, have you ever wished to plant it but for some reason you failed to do so?	YES 1 NO 2		<input type="checkbox"/>	IF 2, GOTO 6.50
Q6.45	Mention the name of the tree	_____			

Q6.46	What are those reasons that fail you to continue planting the same species?	A. NO LAND/LAND NOT ENOUGH		<input type="checkbox"/>	
		B. NOT ENOUGH ECONOMIC BENEFIT /NO MARKET		<input type="checkbox"/>	
		C. POOR QUALITY PRODUCED		<input type="checkbox"/>	
		D. NO SEED (SEEDLING) SUPPLY		<input type="checkbox"/>	
		E. OTHERS (SPECIFY)		<input type="checkbox"/>	

6.50 Indigenous (naturally occurring) tree species at household level (considering the naturally occurring tree species on your land, please tell me their income generation value, means of propagation and multiplication)

Name of species	Present on Land 1 YES 2.NO	Used for income or Potential for Income 1. YES 2. NO	Other USES (multiple response) A. Timber B. Pasture C. Food D. Medicine E. Firewood F. Others (specify)	Current propagation means 1. Seeds 2. Roots 3. Stem 4. Grafting 5. Other specify	Multiplication rate (time taken to produce seed, root or stem suitable for planting) 1. less than a year 2. 1-3 years 3. over 3 years
Tamarind (<i>Chwa</i>)					
Shea nut (<i>yaa</i>)					
Fig tree (<i>kituba</i>)					
Black plum					
Palmyra tree					
Wild plum					
Coco nut tree (<i>tugu</i>)					
Other(s) specify					

6.60 Fruit trees (for food)					
Q6.61	Could you mention the different types of fruit trees you plant on your land? (MULTIPLE RESPONSE)	A. ORANGES		<input type="checkbox"/>	
		B. MANGOES		<input type="checkbox"/>	
		C. AVOCADOES		<input type="checkbox"/>	
		D. JACK FRUITS		<input type="checkbox"/>	
		E. GUAVAS		<input type="checkbox"/>	
		F. PAW PAWS		<input type="checkbox"/>	
		G. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.62	Do you face any problems related to fruit trees wider dissemination for both nutritional and income generation purposes.	YES 1 NO 2		<input type="checkbox"/>	IF 2 GOTO 6.64
Q6.63	If yes, what problems do you face related to the fruit trees (MULTI RESPONSE)	A. LIMITED SEED SUPPLIES		<input type="checkbox"/>	
		B. LIMITED PROPAGATION SKILLS		<input type="checkbox"/>	
		C. HARSH CLIMATIC CONDITIONS		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q6.64	What opportunities exist in the community to enable the wide planting and use of the above mentioned fruit trees? (MULTIPLE RESPONSE)	A. GOVERNMENT PROGRAMMES		<input type="checkbox"/>	
		B. HIGH MARKET VALUE (SPECIFY FRUIT TREES)		<input type="checkbox"/>	
		C. GOOD SOILS		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY.....		<input type="checkbox"/>	

6.70 Energy Resources					
Q6.71	What form of energy do you use for cooking? (MULTIPLE RESPONSE)	A. FIRE WOOD		<input type="checkbox"/>	
		B. CHARCOAL		<input type="checkbox"/>	
		C. BIOGAS		<input type="checkbox"/>	
		D. GAS		<input type="checkbox"/>	
		E. ELECTRICITY		<input type="checkbox"/>	
		F. OTHER(S) SPECIFY.....		<input type="checkbox"/>	
Q6.72	For the form of energy for cooking indicated above, what is the estimate cost per month	LESS THAN SHS15,000 1 SHS 15,001-SHS30,000 2 SHS 30,001-SHS 60,000 3 MORE THAN SHS 60,000. 4 NO COST 5		<input type="checkbox"/>	

Q6.73	Estimate the distance taken to obtain the mentioned form of energy	LESS THAN 500M 500 METRES-1KM 1.1 -2KM 2.1KM-4KM MORE THAN 4KM	1 2 3 4 5	<input type="checkbox"/>	
Q6.74	Estimate the consumption amount for the form of energy used per month	A. FIRE WOOD _____ BUNDLES/KG		<input type="checkbox"/>	
		B. CHARCOAL _____ SACKS		<input type="checkbox"/>	
		C. GAS _____ KG		<input type="checkbox"/>	
		D. ELECTRICITY _____ UNITS		<input type="checkbox"/>	
		E. OTHERS (SPECIFY).....		<input type="checkbox"/>	
Q6.75	Are you aware that there are energy saving technologies	YES NO	1 2	<input type="checkbox"/>	IF 2 GOTO 7.01
Q6.76	If yes, what technologies are you applying (MULTIPLE ANSWER)	A. SINGLE OPENING MUD STOVES		<input type="checkbox"/>	
		B. METALLIC ENERGY SAVING STONES		<input type="checkbox"/>	
		C. NONE		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY.....		<input type="checkbox"/>	

Q6.77	If you are not using energy saving technologies what is (are) the reason(s)? (MULTIPLE RESPONSES POSSIBLE)	A. NO MONEY TO BUY		<input type="checkbox"/>	
		B. NO TRAINING		<input type="checkbox"/>	
		C. ENERGY STILL ABANDANT		<input type="checkbox"/>	
		D. OTHERS (SPECIFY).....		<input type="checkbox"/>	

700. ROADS

Q7.01	Are there roads that are passable year round in this community?	YES NO	1 2	<input type="checkbox"/>	IF 2 GOTO 7.03
Q7.02	If yes, how long is it from here to the nearest such road mention in 7.01? <i>Fill one</i>	_____ MILES _____ KM		<input type="checkbox"/>	
Q7.03	What is your commonest means of transport?	FOOTING BICYCLES VEHICLES MOTORCYCLE OTHER(S) SPECIFY	1 2 3 4 5	<input type="checkbox"/>	
Q7.04	What is the average cost of transport from here to the nearest social centres? (ASK ALL SHOWN)	A. MARKET _____ SHS			
		B. CHURCH/MOSQUE _____ SHS			
		C. TRADING CENTRES _____ SHS			
		D. HEALTH CENTRE _____ SHS			
		E. SCHOOL _____ SHS			
Q7.05	Who constructed the nearest road to this household?	A. LOCAL GOVERNMENT STAFF		<input type="checkbox"/>	
		B. NGO		<input type="checkbox"/>	
		C. OTHER(S) SPECIFY		<input type="checkbox"/>	
		D. DON'T KNOW		<input type="checkbox"/>	
Q7.06	Who maintains the roads in this community?	A. LOCAL GOVERNMENT STAFF		<input type="checkbox"/>	

		B. NGO		<input type="checkbox"/>	
		C. CENTRAL GOVERNMENT		<input type="checkbox"/>	
		D. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q7.07	Are you willing to participate in road maintenance?	YES 1 NO 2		<input type="checkbox"/>	IF 2 GOTO 7.09
Q7.08	If yes, what role can you play in the maintenance process?	A. PROVIDE LABOUR		<input type="checkbox"/>	
		B. PROVIDE LOCAL MATERIALS		<input type="checkbox"/>	
		C. OTHER(S) SPECIFY		<input type="checkbox"/>	
Q7.09	If you can not participate in road maintenance, what could be the reason(s)?	A. IT IS NOT MY ROLE B. OTHER(S) SPECIFY _____ _____ _____			

8.00 OBSERVATIONAL CHECK LIST FOR HYGIENE AND SANITATION

	Question	YES=1	NO=2	NA-7*		
Q8.01	Is the compound clean?				<input type="checkbox"/>	
Q8.02	Is the house surrounding free of bush?				<input type="checkbox"/>	
Q8.03	Does garbage appear to be disposed off in a sanitary way?				<input type="checkbox"/>	
Q8.04	Is there a separate structure for domestic animals?				<input type="checkbox"/>	
Q8.05	Are the animals penned away from water and food?				<input type="checkbox"/>	
Q8.06	Does water storage container have a clean cover / lid?				<input type="checkbox"/>	
Q8.07	Do pots, pans, plates and glasses appear clean?				<input type="checkbox"/>	
Q8.08	Are fruits, vegetables, meats covered and stored away from small domestic animals?				<input type="checkbox"/>	
Q8.09	Does the latrine appear to be used?				<input type="checkbox"/>	
Q8.10	Is the latrine floor clean?				<input type="checkbox"/>	
Q8.11	Is there a hand washing facility with soap near the latrine?				<input type="checkbox"/>	

APPENDIX B2: FGD GUIDE

FOCUS GROUP DISCUSSION GUIDE TO ASSESS HOUSEHOLD FOOD SECURITY, NUTRITION, NATURAL RESOURCE MANAGEMENT AND ROADS IN MYAP AREAS OF ACHOLI, LANGO AND TESO SUB-REGIONS OF UGANDA

Date : _____
District : _____
Sub county : _____
Village : _____
Composition : _____

Name of moderator: _____

Name of note-taker : _____
Number of Discussants : _____
Interview Start Time : _____
Interview End Time : _____

INTRODUCTION:

Good morning/afternoon/evening to you all. My name is and my colleagues are.....(mention your names). We are a team from Makerere University School of Public Health and Agribusiness Management Associates would like to discuss with you about food availability and adequacy, natural resources and road management in your community and factors that may affect them. We are conducting this group discussion to understand whether the community needs to improve these issues.

Your honest answers to our questions will help us develop a community-based action plan. There are no "right" or "wrong" answers as we want information based on your experiences, observations and feelings. Please feel free to ask for clarifications where needed. You do not have to reveal any personal information if you do not want to. All your answers shall be completely confidential and your name shall not be directly mentioned in the report. Your answers will only be used design methods to help the community.

Before we begin I ask that we all introduce ourselves and mention how long you have lived in this area. I request that you speak one at a time as well as loudly and clearly when answering a question so that all your views are understood and written down. When making a point during the discussion, you may choose either to use your name or not. To help us capture the whole discussion and ensure that we do not miss anything that you say, I kindly ask to use this tape recorder here. May I use the tape recorder? May I continue with the interview? Thank-you for accepting to take part in this discussion.

A) FOOD SECURITY

Let us start by thinking back over the past year (**recall period should be the previous 12 months starting with the current month - state period**) and the situation of food availability in your households and communities.

Root causes of food insecurity

1. Would you say that in this community some households **ran out** of food during the past one year? (*if no, probe for not having 2-5 meals a day, missing a meal, or eating one type of food*)
2. From your experience, what are some of the things that happen regularly that cause households to run out of food (*Probe for medical emergencies, large bills, helping family members with their needs, changes in job status, food production*)
3. What events can suddenly affect food production and consumption in this community?
4. In your opinion, what do you think can be done to ensure that people in this community continue to have food even during these sudden occurrences (Shocks)?
5. In your opinion, what are the early warning signs that a household is moving into food insecurity? (*Describe those things that can indicate that a household is soon facing food insecurity.*)

Coping strategies to food insecurity

6. When you realize the food is running out,
 - a. What are some of the things households do to try and make the food they have last longer? (*Probe for reduce amounts of food per meal, reduce number of meals, eat cheaper foods (get examples), serve less nutritious foods because they are cheaper (get examples), serve children nutritious foods but eat less or less nutritious foods yourself.*)
(*Probe for places the community members go to get food, food assistance programs, other "free" food resources.*)
7. What do you think the community (government, businesses, people) could do to make it easier for people to get enough food? (Accessibility) (*Probe – how could they make it easier for food to be more accessible, available, and affordable.*)

Vulnerability

8. In your opinion which categories of people would you consider to be referred to as the **most** vulnerable populations in this community in relation to food insecurity? Why? (*Describe the population or characteristics of the household*)
9. What do you think should be done to reduce this vulnerability?
10. What is your view regarding giving food to the vulnerable groups mentioned above? (*period of support, and dependency syndrome*),

Roads

11. Are people in this community willing to participate in road maintenance exercise? If yes/No give reasons.
12. In which ways are people in this com
13. Mention any community led initiatives in this area relating to roads maintenance (*probe for activities started by communities to improve roads*)
14. How do you mobilize resources (financial, labor, materials) for these initiatives? (*Probe for ways through which resources are obtained e.g .from NGOs, government, community itself, politicians, etc*)
15. What are the benefits of rehabilitating roads in this area? (*Probe for food security, health and marketing*)

Community Health- Nutrition and hygiene

16. What common practices in this community can result into poor hygiene? (*Probe practices at households and in community*)
17. What are the most commonly consumed foods in this community
18. Which of the foods are most available to most households
19. What are the factors affecting availability of such foods
20. What factors determine consumption of a balanced meal at household level? *That is a meal with vitamins, proteins, fats, carbohydrates*). *What are the hinderances?*
21. What factors influence the hygiene practices at household and community level? (*Probe for washing hands with soap after toilet, before handing food, washing with soap after cleaning baby*),

Natural resources section

22. How is land owned in this area? (*may need to clarify on various land tenure systems*)
23. How does the land ownership system affect its accessibility and conservation (*probe relationship between access and control with ability to do activities such as afforestation, protection from bush burning etc*)
24. What are the environmental problems in this community? (*Probe for problems related to soils, water and tree resources*)
25. what are the causes of the above environmental challenges (*Prob for socio-cultural practices, human practices and land use practises*)
26. What measures are you applying as a community to address the above environmental problems
(*probe for roles of the community groups/associations and other communal activities such as tree planting, cleaning water resources*)
27. What limitations do you meet in addressing the above challenges (*probe for man made and natural limitations*)

Agriculture and Marketing section

28. What are the main food crops, cash crops and both cash/food crops?
29. What are the main domestic animals in this area?
30. What are hindrances to agriculture and livestock production?
31. In your opinion what is the effect of crop yield on food security?
32. In your opinion what marketing constraints are encountered by farmers in this community? (*Probe for problems farmers face in marketing their produce*)
33. What are the causes of these constraints/problems?
34. Mention existing marketing groups by type of crop they are marketing.
35. What are your views regarding marketing of produce at household level? (*Probe for involvement of all family members and consider all crops*)
36. How does the land ownership system affect agricultural production? (*probe for use of fertilizers, planting perennial crops*)

37. what are current crop storage techniques and technologies practiced by farmers
38. What are reasons for storing or not storing the crop?
39. what are current food/crop preservation techniques?
40. Do you have any question or comments regarding our topics of discussion?

APPENDIX B3: KII GUIDE

KEY INFORMANT GUIDE TO ASSESS HOUSEHOLD NATURAL RESOURCE MANAGEMENT IN MYAP AREAS OF ACHOLI, LANGO AND TESO SUB-REGIONS OF UGANDA

Date : _____
District : _____
Sub county : _____
Village : _____

Designation

1. District Environmental officer
2. District Forestry officer
3. Subcounty Environment officer (name title if different_____)
4. Subcounty forest officer
5. Officer of NGO dealing with natural resource management (name NGO and designation of officer_____)

Interview Start Time : _____
Interview End Time : _____

INTRODUCTION:

Good morning/afternoon/evening Sir/Madam. My name is (mention your name). I am from Makerere University School of Public Health/ Agribusiness Management Associates. The purpose of this interview is to explore your perceptions regarding natural resources and management in your community.

Your honest answers to our questions will help us develop a community-based action plan. There are no "right" or "wrong" answers as we want information based on your experiences, observations and feelings. Please feel free to ask for clarifications where needed. You do not have to reveal any personal information if you do not want to. All your answers shall be completely confidential and your name shall not be directly mentioned in the report. Your answers will only be used design methods to help the community.

To help us capture the whole discussion and ensure that we do not miss anything that you say, I kindly ask use this tape recorder here. May I use the tape recorder? May I continue with the interview?

Thank-you for accepting to take part in this discussion.

Natural Resource Management

1. Land ownership and conservation (Agricultural Officer, Environmental Officer)

- How is land owned in this area/district? (*probe for the dominant tenure*)
- How does the common land tenure system in this area affect people's access and control to land (*access and control for activities such as afforestation, fallowing, mulching and rights to sell etc*)?
- How does the common land tenure system affect people's efforts to conserve land?

2 Soil degradation (Agricultural Officer or Environmental Officer)

- Would you say that there is soil degradation in this district (*such as soil erosion and loss of soil fertility*)? (*If yes*), what are its manifestations? (*such as loss of soil fertility, erosion, etc*)?
- What are the causes of degradation (*type of land ownership may be one of the underlying cause but probe for other causes that may include natural phenomenon and other poor farming practices*)?
- What are the ways through which soil degradation problems are being addressed?

3. Energy resources (District Environmental Officer)

- Are there fuel wood problems in this area/district? (*find out issues of fuel wood prices, sources and abundance*)
- Are there energy saving technologies used in this district? (*probe for energy saving stoves, use of solar energy etc*)
- What are the factors hindering the use of other energy saving technologies (*probe for cost, source, skills, efficiency*)?

4) Tree Resources (District Forest Officer, District Agricultural Officer)

- What tree species commonly grow in this area (naturally or planted)? (*Probe for fruit and non-fruit trees, indigenous trees, common trees*)
- Which of the species mentioned has a potential for income generation?
- What are the current uses of those trees? (*uses*) ?
- Are there any efforts to improve the production of trees (*probe for indigeneous, exotic species*)?
- What are the constraints towards your efforts to improve production of those trees?

5) Community effort towards effective NRM (District Environmental Officer)

- Are there community-focused environmental projects/programs trying to address these challenges?
- What are those projects/programs? (*examples can be community forests, environmental awareness groups etc*)?
- What limitations do the community members meet in addressing the above challenges (*probe for man made and natural limitations*)

6) General (District Environmental Officer)

- What other environmental issues would you to talk about in this district? –DEO, DAO

Information Materials to collect.

- ◆ Copies District Environment Plans and Reports
- ◆ Sub county Environment Action Plans

KEY INFORMANT GUIDE TO ASSESS HOUSEHOLD FOOD SECURITY IN MYAP AREAS OF ACHOLI, LANGO AND TESO SUB-REGIONS OF UGANDA

Key informants:

Date : _____
District : _____
Sub county : _____
Village : _____

Designation (circle)

- District agricultural officer,
- Production coordinator,
- Agricultural extension officer,
- District Veterinary office
- Program officer in NGO (Name the NGO and designation) _____

Interview Start Time : _____

Interview End Time : _____

INTRODUCTION:

Good morning/afternoon/evening Sir/Madam. My name is (mention your name). I am from Makerere University School of Public Health/ Agribusiness Management Associates. The purpose of this interview is to explore your perceptions regarding the presence of food security adequacy and management in your community and how these factors that may affect them.

Your honest answers to our questions will help us develop a community-based action plan. There are no "right" or "wrong" answers as we want information based on your experiences, observations and feelings. Please feel free to ask for clarifications where needed. You do not have to reveal any personal information if you do not want to. All your answers shall be completely confidential and your name shall not be directly mentioned in the report. Your answers will only be used design methods to help the community.

To help us capture the whole discussion and ensure that we do not miss anything that you say, I kindly ask use this tape recorder here. May I use the tape recorder? May I continue with the interview?

Food security

1. (a) Do you think that there is a problem of food insecurity in this area? Yes/No. Why?

If yes,

(b) What is the extent of the problem? (Probe - magnitude of the problem, when does the problem exist and when in a year does the problem occur, who is affected most, period in months)

(c) What are the main factors contributing to food insecurity in the community?

Coping strategies for food insecurity

2. (a) From your experience how do people cope with the problem of food insecurity in this community? (probe for the different things people do to solve this problem?)

(b) What is the status food accessibility, availability and affordability in your community?

3. When people start producing food and improving their nutrition through this program, what events have the potential to distract progress? How can the project do to stop such events or reduce their impact?

4. (a) In your opinion, what are the early warning signs that a community is moving into food insecurity? (Probe for those things that can indicate that a household is soon facing food insecurity.)

b) How can these signs be used in an early warning system to avert food insecurity in the community? (Probe if all or some, or none can be used)

c) What do you think can be done to improve on food accessibility, availability and affordability. (Probe for roles of stakeholders, private sector, government and community).

5. What is your view regarding supporting vulnerable groups with food (Probe for dependency syndrome and duration of support).

5. Do you have any question or comments regarding our topic of discussion?

THANK YOU FOR YOUR TIME AND COOPERATION

KEY INFORMANT GUIDE TO ASSESS COMMUNITY DEVELOPMENT AND HEALTH IN MYAP AREAS OF NORTHERN AND EASTERN UGANDA

Date : _____

District : _____

Sub county : _____

Village : _____

Designation : _____

Interview Start Time : _____

Interview End Time : _____

INTRODUCTION:

Good morning/afternoon/evening Sir/Madam. My name is (mention your name). I am from Makerere University School of Public Health/ Agribusiness Management Associates. The purpose of this interview is to explore your perceptions regarding health and the presence of food security in your community.

Your honest answers to our questions will help us develop a community-based action plan. There are no "right" or "wrong" answers as we want information based on your experiences, observations and feelings. Please feel free to ask for clarifications where needed. You do not have to reveal any personal information if you do not want to. All your answers shall be completely confidential and your name shall not be directly mentioned in the report. Your answers will only be used design methods to help the community.

To help us capture the whole discussion and ensure that we do not miss anything that you say, I kindly ask use this tape recorder here. May I use the tape recorder? May I continue with the interview?

Thank-you for accepting to take part in this discussion.

Vulnerability

As a community development officer in this community, let discuss issues regarding vulnerability in this community.

1. a) In your opinion who would you consider to be referred to as the **most** vulnerable populations in your community? (*Describe the population*)
- b) What can be done to reduce those situations /issues /factors that cause households to become vulnerable?
- c) In your view, how will giving food to the most vulnerable help?
- d) In your opinion, would providing food cause dependency syndrome among these vulnerable groups?
- e) In your view, for how long should food be given these vulnerable populations?

Shocks

2. a) What events can suddenly affect food production and consumption in this community?
- b) In your opinion, what do you think can be done to ensure that people in this community continue to have food even during these sudden occurrences?

Community health

- 5 a) What common practices in this community can result into poor hygiene in this community? (*Probe practices at households and in community*)
 - b) What can be done to strengthen those practices that improve hygiene in their homes?
(*Probe for hand washing, use of safe water for drinking, safe garbage and human waste disposal*)
6. Do you have any question or comments regarding our topic of discussion?

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX C: SAMPLED AREAS

Acholi sub-region

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Amuru	Kilak	Amuru	Acwera	Tedi b/tedi a	1
Amuru	Kilak	Amuru	Pagak	Amoyokoma	2
Amuru	Kilak	Amuru	Pamuca	Ogali	3
Amuru	Kilak	Amuru	Toro	Toro-kal	4
Amuru	Kilak	Atiak	Kal	Kal west 'd'	5
Amuru	Kilak	Atiak	Palukere	Palukere east 'a'	6
Amuru	Kilak	Atiak	Pawel	Pawel pukumu 'd'	7
Amuru	Kilak	Lamogi	Agwar-yugi	Jimo 'b'	8
Amuru	Kilak	Lamogi	Lacor	Pukere 'd'	9
Amuru	Kilak	Lamogi	Pagoro	Pagoro coo-rom 'c'	10
Amuru	Kilak	Lamogi	Coke	Lamola/coke 'b'	11
Amuru	Kilak	Lamogi	Oboo	Oboo d	12
Amuru	Kilak	Pabbo	Kal	Akore 'a'	13
Amuru	Kilak	Pabbo	Labala	Kal centre 'b'	14
Amuru	Kilak	Pabbo	Labala	Olinga 'd'	15
Amuru	Kilak	Pabbo	Parubanga	Abera 'a'	16
Amuru	Kilak	Pabbo	Pogo	Okutire 'a'	17
Amuru	Nwoya	Alero	Bwobonam	Bwobonam b 'b'	18
Amuru	Nwoya	Alero	Panokrach	Latek - odong 'c'	19
Amuru	Nwoya	Anaka	Paduny	Lamogi a& b Pabit east/murchison falls n.p	20
Amuru	Nwoya	Purongo	Pabit	falls n.p	21
Amuru	Nwoya	Koch goma	Coorom	Okir	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Gulu	Gulu municipality	Bar-dege	Bar-dege	Mican	1
Gulu	Gulu municipality	Bar-dege	Kasubi	Goan quarter	2
Gulu	Gulu municipality	Bar-dege	For god	Obiya east	3
Gulu	Gulu municipality	Laroo	Pece prisons	Lukung	4
Gulu	Gulu municipality	Lay bi	Kirombe	Alokolum-kirombe	5
Gulu	Gulu municipality	Lay bi	Techo	Wii-layibi	6
Gulu	Gulu municipality	Pece	Pawel	Pawel pudyek	7
Gulu	Gulu municipality	Pece	Tegwana	Cubu 'b'	8
Gulu	Aswa	Awach	Paduny	Paduny-paromo a	9
Gulu	Aswa	Bungatira	Atiaba	Rwot-obilo	10
Gulu	Aswa	Bungatira	Pabwo	Kulukeno 'a'	11
Gulu	Aswa	Paicho	Kal- umu	Kiceke	12
Gulu	Aswa	Paicho	Pakwelo	Tepwoyo	13
Gulu	Aswa	Patiko	Kal	Anyadwe 'a'	14
Gulu	Omoro	Bobi	Paidwe	Onekdyel	15
Gulu	Omoro	Koro	Acoyo	Acoyo east/aria	16
Gulu	Omoro	Koro	Lapainat west	Lacen-otinga	17
Gulu	Omoro	Lakwana	Parak	Te-ilwa	18
Gulu	Omoro	Lalogi	Idobo	Loyo ajonga	19
Gulu	Omoro	Odek	Binya	Romkituku	20
Gulu	Omoro	Odek	Lukwor	Oryang	21
Gulu	Omoro	Ongako	Alokolum	Kati - kati	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample
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					e_no.
Kitgum	Chua	Kitgum tc	Alango	Cham cham	1
Kitgum	Chua	Kitgum tc	Pager ward	Lamit kapim north	2
Kitgum	Chua	Kitgum tc	Westland	West village	3
Kitgum	Chua	Kitgum matidi	Lomule	Okwongobone/oryaa central	4
Kitgum	Chua	Labongo akwang	Lukwar	Oget / mwolbune/oget	5
Kitgum	Chua	Labongo amida	Lamola	Lagaya/binen/binen	6
Kitgum	Chua	Labongo layamo	Pamolo	Pamolo olet	7
Kitgum	Chua	Lagoro	Pawidi	Akuna	8
Kitgum	Chua	Mucwini	Ogwapoke	Omuna	9
Kitgum	Chua	Namokora	Pogoda west	Boroboro/jai pii	10
Kitgum	Chua	Omiya anyima	Palwo	Acutomer/larakaraka	11
Kitgum	Chua	Orom	Kiteny	Palowala/ ajuluu	12
Kitgum	Lamwo	Agoro	Lopulingi	Agula adiciri	13
Kitgum	Lamwo	Agoro	Pot ka	Lobule-yweyope b	14
Kitgum	Lamwo	Lokung	Licwar	Ngomoromo	15
Kitgum	Lamwo	Lokung	Pawor	Yoke	16
Kitgum	Lamwo	Madi opei	Okol	Kapeta / litengi	17
Kitgum	Lamwo	Parabek ogili	Paracele	Muddu south/muddu central	18
Kitgum	Lamwo	Padibe east	Wangtit	Wigweng	19
Kitgum	Lamwo	Padibe west	Ywaya	south/wigweng north	20
Kitgum	Lamwo	Palabek gem	Moroto	Ram - ram south/ram - ram north/lokiri	21
Kitgum	Lamwo	Palabek kal	Labigiryang	Arusha	22
				Alimot ko west	

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sampl e_no.
Pader	Aruu	Pader tc	Lagwai/paipe	Lagwai east	1
Pader	Aruu	Acholibur	Latigi	Purungu/omowony-tupubuc	2
Pader	Aruu	Atanga	Kal	Obako-or/aria	3
Pader	Aruu	Atanga	Pungole	Lee oyika/lelem/obittoo	4
Pader	Aruu	Awer	Lagile	Bolo dam/lukwor	5
Pader	Aruu	Kilak	Kilak	olokotum	6
Pader	Aruu	Laguti	Paibwor	Corner kilak	7
Pader	Aruu	Lapul	Ogole	Tungtwon/lobut	8
Pader	Aruu	Pajule	Paiula	Akwara west/lageya	9
Pader	Aruu	Puranga	Aringa	Tokodo/ominyimac/lacur	10
Pader	Agago	Adilang	Lalal	Laminawoto/ajanyi/winy kitwor/okoco kabila	11
Pader	Agago	Lapono	Kaket	Anyami/ajwaa-lela-pura	12
Pader	Agago	Lira palwo	Agengo	Lubiri/layugi/abilo bom	13
Pader	Agago	Lira palwo	Otaka	Adaki-otumpuli/ayweekeyo	14
Pader	Agago	Lukole	Kiteny	Paicam	15
Pader	Agago	Omot	Agelec	aywee/laminodyek	16
Pader	Agago	Paimol	Mutto	Adak	17
Pader	Agago	Paimol	Pacabol	Dog-agweng/cawente	18
Pader	Agago	Parabongo	Town board	Lai central/lai west	19
Pader	Agago	Patongo	Lakwa	Katurukuku/aloi/akwang	20
Pader	Agago	Patongo	Omato wee	Bar dege	21
Pader	Agago	Wol	Kal-agum	Akomo/akomo london	22
				Ororo/iwoo	
				Lamit central/lamit west/lamit east	

Lango subregion

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Amolatar	Kioga	Aputi	Adonyoimo	Agweng/abuti	1
Amolatar	Kioga	Aputi	Akwon	Apum/anyuka/anyom can/okiji	2
Amolatar	Kioga	Aputi	Awonagiwo	Awilwala/atercip	3
Amolatar	Kioga	Aputi	Otira	Olel-pek	4
Amolatar	Kioga	Aputi	Amai	Otimai 'a'	5
Amolatar	Kioga	Awelo	Abwong	Ogenga/agalo/abar-ocao	6
Amolatar	Kioga	Awelo	Akongomit	Barajanga/alwit/abongolworo	7
Amolatar	Kioga	Awelo	Anamido	Aweiwot/aweoyie/anak aneni/amakikoma/adero	8
Amolatar	Kioga	Awelo	Anamwany	Aryei/anamwany 'a'/aloboket/ajokonywal	9
Amolatar	Kioga	Awelo	Arwotcek	Atura/ongudananga/angwalo-jeri/odokodero	10
Amolatar	Kioga	Awelo	Etam	Okuruwie/aornga/acolam/abwoccol	11
Amolatar	Kioga	Awelo	Abeja	Anamoloi	12
Amolatar	Kioga	Muntu	Alemere	Alemere bung/aburkot	13
Amolatar	Kioga	Muntu	Alyecmeda	Akuri b/akuri a	14
Amolatar	Kioga	Muntu	Muntu	Acutcami b/acutcami a	15
Amolatar	Kioga	Muntu	Nakatiti	Rwanjogi/nakatiti	16
Amolatar	Kioga	Muntu	Nalubwoyo	Opir a/opir b	17
Amolatar	Kioga	Namasale	Acii	Muchora	18
Amolatar	Kioga	Namasale	Izigwe	Anoga	19
Amolatar	Kioga	Namasale	Wabinua	Odokolit/arwotogik/alobokwe	20
Amolatar	Kioga	Namasale	Bangladesh	Bangladesh	21
Amolatar	Kioga	Namasale	Kayago	Kayago c	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Apac	Maruzi	Apac tc	Eastern	Upper centre	1
Apac	Kole	Aboke	Apach	Ogamkati/obelower/baromo/bar - yao a/ayai b/ayai a/agwatatek	2
Apac	Kole	Aboke	Opeta	Ogwangolowelo/matimed kiti/beioko/bar-odyek/bar bati/barcik/ajubi	3
Apac	Kole	Akalo	Adyeda	Bar -ajet/bar - dokoculi/bar - ibuu/akura/adaganii	4
Apac	Kole	Alito	Ayara	Aro-adyang/oruni/okunodayai/ayamo	5
Apac	Kole	Alito	Otkwac	Wiadu/telela/otkwacamalo/amintato a/adyelomwodo/aboloneno	6
Apac	Kole	Ayer	Abur	Rao/atimning/aparango/akwo/akwanycingi	7
Apac	Kole	Ayer	Ilera	Okabo/lela/kona/bung	8
Apac	Kole	Bala	Aumi	Ogedi/ejumara/apak/aduodyek	9
Apac	Kole	Bala	Omuge	Eduka/abyece/atoki	10
Apac	Kwania	Abongomola	Akali	Alango/ogora/alira	11
Apac	Kwania	Aduku	Adyeda	Adyedaimalo/atakara/a porwegi a/aporwegi b	12
Apac	Kwania	Chawente	Acenlworo	Goi/ayat/anok/awei	13
Apac	Kwania	Inomo	Abedmot	Bung/aleko/alai b/acegi	14
Apac	Kwania	Inomo	Inomo	Bar-lwala a/apiremit	15

Apac	Kwania	Nambieso	Aornga	Wiadu/etek - ber a/abur - kec/akokodako/etek - ber b Akokoro tr.	16
Apac	Maruzi	Akokoro	Akokoro	Centre/abeybuti/abalok weri	17
Apac	Maruzi	Akokoro	Ayeolyec	Pabbo/kitgum/wambura /pakwatch/corner park	18
Apac	Maruzi	Apac	Akere	Ngayiki 'b'/te - ibu/angayiki/acut - ayiki Owang	19
Apac	Maruzi	Apac	Atik	central/acekene/matimi a - amor	20
Apac	Maruzi	Cegere	Cegere	Atek/alari/adingdong/ad em	21
Apac	Maruzi	Ibuje	Aketo	Omulakere/ojaa/aneno ber	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Dokolo	Dokolo	Agwata	Bardyang	Aboli	1
Dokolo	Dokolo	Agwata	Adwoki	Ayito/agula/abongo rwot	2
Dokolo	Dokolo	Agwata	Amuda	Te-tugo/okwor	3
Dokolo	Dokolo	Agwata	Kachung	Owiri/adedi/abali	4
Dokolo	Dokolo	Batta	Abalang	Angoromo/amomtum/a cori	5
Dokolo	Dokolo	Batta	Abyenek	Omeny/inget/bar-lela	6
Dokolo	Dokolo	Batta	Akwanga	Odeye/acangweno	7
Dokolo	Dokolo	Batta	Atabu	Adip/okalopyen/abenyo nya	8
Dokolo	Dokolo	Batta	Teyao	Apenyo	9
Dokolo	Dokolo	Dokolo	Alenga	Iduny/abiece/abarlela	10
Dokolo	Dokolo	Dokolo	Alwitmac	Basere/arudabiro/gorogoro	11
Dokolo	Dokolo	Dokolo	Angwecibange	Acengryeny/otolemom oleo/akaidebe	12
Dokolo	Dokolo	Dokolo	Atur	Olelpek/akedgweno/ac andyang	13
Dokolo	Dokolo	Dokolo	Awiri	Olomet/ilong/alyet	14
Dokolo	Dokolo	Dokolo	Iguli	Apor/adak/adagani	15
Dokolo	Dokolo	Kangai	Adeknino	Alwar/ajiba/acanpii	16
Dokolo	Dokolo	Kangai	Akurolango	Ilong/amati/alela	17
Dokolo	Dokolo	Kangai	Angwenya	Bata/aliwok/acekikot b/acekikot a	18
Dokolo	Dokolo	Kwera	Aneralibi	Amit iceng	19
Dokolo	Dokolo	Kwera	Anwangi	Obapodero/adari/abuli	20
Dokolo	Dokolo	Kwera	Apyen-nyang	Atwac/alake/ading	21
Dokolo	Dokolo	Kwera	Ageni	Akuli	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Lira	Erute	Adekokwok	Anyangapuc	Ngetta ginnery	1
Lira	Erute	Adekokwok	Boroboro	Teobwolo/owinyo	2
Lira	Erute	Amach	Adyaka	Amori city/amori border/abwong b	3
Lira	Erute	Amach	Rao	Akonye/abuto-adi/abakuli	4
Lira	Erute	Aromo	Arwot- omito	Lela kworo/barnyang/abung eng	5
Lira	Erute	Barr	Ayira	Okwero owila	6
Lira	Erute	Lira	Amuca	bongo/obot a	7
Lira	Erute	Ogur	Adwoa	Te-okole/olengobir Bedi-amol/bar-omio/bar-kworo/	8

				barkwac	
Lira	Erute	Ogur	Ogur	Odokolit/aduu/te-akang	9
Lira	Lira municipality	Adyel	Omito	Akiteniino	10
Lira	Lira municipality	Central	Ireda-west	Ireda lumumba	11
Lira	Lira municipality	Ojwina	Ojwina ward (ober)	Kicope Okwalo b/okwalo a/arwot b/arwot a	12
Lira	Moroto	Abako	Acede	Amia/teyao/apatonya	13
Lira	Moroto	Abako	Ojul	Kakira	14
Lira	Moroto	Aloi	Akwangkel	Te-obwolo	15
Lira	Moroto	Aloi	Anyanga	Omee/alebtong	16
Lira	Moroto	Amugo	Ajonyi	Agweng	17
Lira	Moroto	Apala	Obim	Odado/awonatal/atyene tino	18
Lira	Moroto	Omoro	Alolololo	Ilara/anyomilaka/alwit	19
Lira	Otuke	Adwari	Alango	Barabolo/amon-pe- winya	20
Lira	Otuke	Okwang	Olworngu	Akandikumu/te- cwao/awake	21
Lira	Otuke	Orum	Anepmoroto		22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sampl e_no.
Oyam	Oyam	Aber	Akaka	Okarowok	1
Oyam	Oyam	Aber	Kamdini	Amukogungo	2
Oyam	Oyam	Aber	Ocini	Awaimunga/acutaneno	3
Oyam	Oyam	Aber	Wirao	Wirao	4
Oyam	Oyam	Acaba	Anyeke	Atek/agoa	5
Oyam	Oyam	Acaba	Dogapio	Abala/abarler/gwete Bungonger/atwonolop/a pidodak/aloni/agwedola /adak - ikweri	6
Oyam	Oyam	Iceme	Aloni	Barpama/akolodong/or upo/dele	7
Oyam	Oyam	Iceme	Aungu	Ogonylao b/ogonylao a/awangi d/awangi c/awangi a	8
Oyam	Oyam	Iceme	Orupo	Akaoidebe/omolo a/kokcanikweri/aloc/ada koberiot	9
Oyam	Oyam	Loro	Adigo	Gwengapeta/acankoma /abongokere/abero	10
Oyam	Oyam	Loro	Adyeda	Aloka a/atyeto a/alimo b/alimo a/ongor/aloka b	11
Oyam	Oyam	Loro	Agulurude	Odiro/dag - atuk	12
Oyam	Oyam	Minakulu	Aceno	Barlaka/opan	13
Oyam	Oyam	Minakulu	Amwa	Oyo alwak/lango/bobi Otwonogwen c/otwonogwen b/otwonogwen a/nuyo/bar dyel/aminongenge	14
Oyam	Oyam	Minakulu	Oyoro	Te - opok b/te - opok	15
Oyam	Oyam	Ngai	Akuca	a/oyimo a/bed - twot Kok - kec - ikweri/ilodo/dwaliro/akel oalyek/abok	16
Oyam	Oyam	Ngai	Bar	Amonena/dagatinga/ab ongolworo b/abongolworo a/bar- dyang/bar-apwo	17
Oyam	Oyam	Ngai	Acut	Wipip/te - angolo/baromio/ayamo kuta/apurukec/acekelati Te - okuto/baromele/bar dam/bar - abolo/acut - kumu/tecwao	18
Oyam	Oyam	Otwal	Acokara		19
Oyam	Oyam	Otwal	Amukogungo		20
Oyam	Oyam	Otwal	Amukogungo		21

Oyam	Oyam	Otwal	Okii	Oguk/nyeko balo tc/kotokelo - ayela/dicwinyi/cengpep uru/barlwala	22
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Teso sub region a

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Amuria	Amuria	Abarilela	Katine	Akamurie/ogwete	1
Amuria	Amuria	Abarilela	Ocal	Ocal	2
Amuria	Amuria	Asamuk	Ajaki	Golokwara/apeduru	3
Amuria	Amuria	Asamuk	Asamuk	Agule ii/agule i	4
Amuria	Amuria	Asamuk	Odoon	Omariai/odoon centre	5
Amuria	Amuria	Kuju	Alere	Agalibu/acomai/opalango/ojota	6
Amuria	Amuria	Kuju	Kuju	Alira/agereger/adome	7
Amuria	Amuria	Orungo	Akeriau	Oteme/obiongio/akoyo	8
Amuria	Amuria	Orungo	Orungo	Ometai/omorato	9
Amuria	Amuria	Wera	Amolo	Omunyal/aroba	10
Amuria	Amuria	Wera	Wera	Osekai	11
Amuria	Amuria	Morungatuny	Morungatuny	Omodoi/orapak/ayola	12
Amuria	Amuria	Morungatuny	Ogangai	Orimai/ajukot/abplet/olusa	13
Amuria	Amuria	Morungatuny	Olwa	Olwa corner/abakuli/agwanjua	14
Amuria	Kapelebyong	Acowa	Akoromit	Aminito/angaro	15
Amuria	Kapelebyong	Acowa	Akum	Morutemel/atirai/ominai	16
Amuria	Kapelebyong	Acowa	Angolebwal	Acinga/atido/adeper	17
Amuria	Kapelebyong	Acowa	Kobuin	Atutur / aturitur/akore	18
Amuria	Kapelebyong	Kapelebyong	Amaseniko	Onganykonye/apopong/anyan ngareng/aditetau	19
Amuria	Kapelebyong	Kapelebyong	Okoboi	Aturai/amookori	20
Amuria	Kapelebyong	Obalanga	Alito	Matilongo b/matilongo a	21
Amuria	Kapelebyong	Obalanga	Opot	Alupe/alela	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Kaberamaido	Kaberamaido	Alwa	Abalang	Ominai/atigo forest rev./alwa	1
Kaberamaido	Kaberamaido	Alwa	Palatau	Bira/oculoi	2
Kaberamaido	Kaberamaido	Kaberamaido	Achanpi	Omwony/olele	3
Kaberamaido	Kaberamaido	Kaberamaido	Kamuk	Omodoi/goria/abola	4
Kaberamaido	Kaberamaido	Kaberamaido	Okapel	Awirech/ajikdak/agule/abirabira	5
Kaberamaido	Kaberamaido	Kobulubulu	Kabalkweru	Otill	6
Kaberamaido	Kaberamaido	Kobulubulu	Katinge	Angorom/akora	7
Kaberamaido	Kaberamaido	Ochero	Kagaa	Byayale/akwei	8
Kaberamaido	Kaberamaido	Ochero	Kanyalam	Odubai/awimon	9
Kaberamaido	Kaberamaido	Ochero	Swagere	Atwei/alwa/agule	10
Kaberamaido	Kalaki	Anyara	Anyara	Auna/aloet	11
Kaberamaido	Kalaki	Anyara	Ogwolo	Acida	12
Kaberamaido	Kalaki	Anyara	Omid	Amaret/angaro	13
Kaberamaido	Kalaki	Bululu	Obur	Oyalem	14
Kaberamaido	Kalaki	Bululu	Ochelakur	Katinge/agule	15
Kaberamaido	Kalaki	Kalaki	Kakure	Ojele/akura	16
Kaberamaido	Kalaki	Kalaki	Kalaki	Kalaki central	17
Kaberamaido	Kalaki	Kalaki	Kamuda	Omor/awilyec	18
Kaberamaido	Kalaki	Otuboi	Apapai	Aj kdak/rarak/ousia	19

Kaberamaido	Kalaki	Otuboi	Kadie	Ochanga	20
Kaberamaido	Kalaki	Otuboi	Lwala	Kojago/kalobo	21
Kaberamaido	Kalaki	Otuboi	Opilitok	Kaburuburu	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Katakwi	Usuk	Kapujan	Kapujan	Apule/adodoi	1
Katakwi	Usuk	Kapujan	Kokorio	Oregia/soriman	2
Katakwi	Usuk	Katakwi	Abela	Abo boi	3
Katakwi	Usuk	Katakwi	Aleles	Atekwa/agurigur	4
Katakwi	Usuk	Katakwi	Alyakamer	Amuria/alogook	5
Katakwi	Usuk	Katakwi	Dadas	Aterai/otoboi	6
Katakwi	Usuk	Katakwi	Katakwi	Olela/keelim	7
Katakwi	Usuk	Katakwi t.c	Southern	Pamba cell	8
Katakwi	Usuk	Magoro	Magoro	Kanapa/akworo	9
Katakwi	Usuk	Magoro	Omasia	Kipinyang/adurukoi	10
Katakwi	Usuk	Ngariam	Bisina	Okuso/bisina	11
Katakwi	Usuk	Ngariam	Odoot	Opedongor/atiira	12
Katakwi	Usuk	Ngariam	Pakwi	Opiananya/okibui/kelim	13
Katakwi	Usuk	Toroma	Akura	Aleles	14
Katakwi	Usuk	Toroma	Aputon	Olet/apuuton	15
Katakwi	Usuk	Usuk	Usuk	Adurukoi	16
Katakwi	Usuk	Usuk	Abwokodia	Acuurun	17
Katakwi	Usuk	Usuk	Cheleuko	Ongole	18
Katakwi	Usuk	Ongongoja	Aketa	Aketa 'b'/aketa 'a'	19
Katakwi	Usuk	Ongongoja	Okuda	Okuda a/okuda b	20
Katakwi	Usuk	Ongongoja	Ongongoja	Akamurie	21
Katakwi	Usuk	Omodoi	Aparisia	Aguya	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Soroti	Kasilo	Bugondo	Bugondo	Moru/kikota	1
Soroti	Kasilo	Kadungulu	Iruko	Amukurat/ajuba	2
Soroti	Kasilo	Pingire	Aarapoo	Mulondo	3
Soroti	Kasilo	Pingire	Odapakol	Okolonga 'b'	4
Soroti	Serere	Atiira	Alengo	Obia - odocai/abur	5
Soroti	Serere	Kateta	Kamusala	Oburiokori	6
Soroti	Serere	Kateta	Kateta	Agola Mukakala/kamurojo central	7
Soroti	Serere	Kyere	Kamurojo	central	8
Soroti	Serere	Kyere	Kyere	Kobwakol	9
Soroti	Serere	Olio	Oburin	Jelal	10
Soroti	Soroti	Arapai	Aloet	Akum - aloet	11
Soroti	Soroti	Arapai	Dakabela	Onyorai/alilio	12
Soroti	Soroti	Asuret	Obule	Otaba / onyerai	13
Soroti	Soroti	Gweri	Aukot	Ariet	14
Soroti	Soroti	Gweri	Dokolo	Angaro 'a'	15
Soroti	Soroti	Kamuda	Aminit	Awasi/amotot	16
Soroti	Soroti	Katine	Katine	Obiol/katine Oderai/oburitok/kadinya	17
Soroti	Soroti	Katine	Olwelai	/amutur	18
Soroti	Soroti	Tubur	Achuna	Chele b/agorikoc/abeko	19
Soroti	Soroti municipality	Eastern division	Central ward	Cell e/cell c	20
Soroti	Soroti municipality	Northern division	Camp swahili ward	Cell a3	21
Soroti	Soroti municipality	Western division	Nakatunya ward	Nursery	22

Teso sub-region b

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Budaka	Budaka	Budaka	Budaka	Naigumya/buwemba	1
Budaka	Budaka	Budaka	Macholi	Bujjasi	2
Budaka	Budaka	Budaka	Sapiri	Nampangala	3
Budaka	Budaka	Budaka	Chali	Gadumire a	4
Budaka	Budaka	Iki- ki	Iki - ki	Buloki	5
Budaka	Budaka	Iki- ki	Kakoli	Kakoli	6
Budaka	Budaka	Iki- ki	Kerekerene	Buloki	7
Budaka	Budaka	Iki- ki	Kadatumi	Bukomolo ii	8
Budaka	Budaka	Kaderuna	Kabuna	Kotia/bulefe	9
Budaka	Budaka	Kaderuna	Kaderuna	Kebula	10
Budaka	Budaka	Kaderuna	Kiryolo	Mijoyi	11
Budaka	Budaka	Kamonkoli	Kadimukoli	Nakyewo	12
Budaka	Budaka	Kamonkoli	Kamonkoli	Nyanza	13
Budaka	Budaka	Kamonkoli	Jami	Bunyoro	14
Budaka	Budaka	Kamonkoli	Sekulo	Kositi	15
Budaka	Budaka	Lyama	Lyama	Lukonge a	16
Budaka	Budaka	Lyama	Nansanga	Nataalo 'a'	17
Budaka	Budaka	Lyama	Tademeru	Butove/naluli	18
Budaka	Budaka	Naboa	Kakule	Buloki/lerya/nakatende	19
Budaka	Budaka	Naboa	Lupada	Namuseru ii	20
Budaka	Budaka	Naboa	Namusita	Bugolya	21
Budaka	Budaka	Kameruka	Kameruka	Buganza	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Bukedea	Bukedea	Bukedea	Akuoro	Okichira	1
Bukedea	Bukedea	Bukedea	Kasoka	Kajamaka	2
Bukedea	Bukedea	Bukedea	Kokutu	Kokutu	3
Bukedea	Bukedea	Bukedea	Kaloko	Kaloko	4
Bukedea	Bukedea	Bukedea	Okunguro	Okunguro	5
Bukedea	Bukedea	Kachumbala	Amus	Sapir	6
Bukedea	Bukedea	Kachumbala	Kawo	Kawo 'a'	7
Bukedea	Bukedea	Kachumbala	Kongunga	Komelekes	8
Bukedea	Bukedea	Kachumbala	Kotia	Mukongoro	9
Bukedea	Bukedea	Kachumbala	Kabwalin	Kabwalin	10
Bukedea	Bukedea	Kachumbala	Kongoidi	Komuriakerei	11
Bukedea	Bukedea	Kachumbala	Koutulai	Koutulai	12
Bukedea	Bukedea	Kidongole	Kajamaka	Kajamaka 'b'	13
Bukedea	Bukedea	Kidongole	Kawo	Kawo 'a'	14
Bukedea	Bukedea	Kidongole	Kanyamutamu	Kanyamutamu 'b'	15
Bukedea	Bukedea	Kolir	Kolir	Kagoloto	16
Bukedea	Bukedea	Kolir	Aminit Kamutur/kamongo	Amuen	17
Bukedea	Bukedea	Kolir	meri	Akou etom	18
Bukedea	Bukedea	Malera	Kachede	Kachabule	19
Bukedea	Bukedea	Malera	Koreng	Koreng 'c'	20
Bukedea	Bukedea	Malera	Kakori	Kakori	21
Bukedea	Bukedea	Malera	Kachonga	Kachonga 'b'	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Kumi	Kumi	Atutur	Aterai	Okanyumo	1

Kumi	Kumi	Atatur	Ariet	Ariet	2
Kumi	Kumi	Kanyum	Kamacha	Kamacha 'a'	3
Kumi	Kumi	Kanyum	Omurang	Kajamaka	4
Kumi	Kumi	Kumi	Agule	Agule 'a'	5
Kumi	Kumi	Kumi	Asinge	Asinge	6
Kumi	Kumi	Kumi tc	Boma	Boma north	7
Kumi	Kumi	Mukongoro	Mukongoro	Mukongoro 'a'	8
Kumi	Kumi	Mukongoro	Kajamaka	Kajamaka	9
Kumi	Kumi	Mukongoro	Kachaboi	Kachaboi 'b'	10
Kumi	Kumi	Nyero	Ariet	Ariet 'a'	11
Kumi	Kumi	Ongino	Akum	Akum 'b'	12
Kumi	Kumi	Ongino	Oseera	Kaduka	13
Kumi	Kumi	Ongino	Kongura	Apuuton	14
Kumi	Ngora	Kapir	Kapir	Atiira	15
Kumi	Ngora	Kapir	Oluwa	Oluwa	16
Kumi	Ngora	Kobwin	Kodike	Apujan	17
Kumi	Ngora	Kobwin	Oswara	Kalina	18
Kumi	Ngora	Mukura	Mukura	Mukura	19
Kumi	Ngora	Mukura	Adul	Rapad	20
Kumi	Ngora	Ngora	Oteteen	Oteteen	21
Kumi	Ngora	Ngora	Kachinga	Kachinga	22

District_name	County_name	Subcounty_name	Parish_name	Lcname	Sample_no.
Pallisa	Butebo	Butebo	Kasiebai	Solonko/kangado	1
Pallisa	Butebo	Kabwangasi	Nasenyi	Bulalaka	2
Pallisa	Butebo	Kakoro	Tekwana	Oguramai/sogono	3
Pallisa	Butebo	Kibale	Opogono	Opogono/apuna	4
Pallisa	Butebo	Petete	Kachocha	Bunamwera	5
Pallisa	Kibuku	Bulangira	Lyama	Lyama	6
Pallisa	Kibuku	Buseta	Kasasira	Kasasira west	7
Pallisa	Kibuku	Kibuku	Bumiza	Bumiza	8
Pallisa	Kibuku	Kadama	Dodoi	Kawami/dodoi ii	9
Pallisa	Kibuku	Kadama	Nandere	Mavungo/bulabya	10
Pallisa	Kibuku	Tirinyi	Nanoko	Nansonko	11
Pallisa	Kibuku	Kagumu	Goli - goli	Yoyo	12
Pallisa	Kibuku	Kir ka	Kajoko	Kabusule 'a'	13
Pallisa	Pallisa	Agule	Okunguro	Okunguro	14
Pallisa	Pallisa	Apopong	Kapala	Osiepai/kapala Kateki/kachango/akuwo ro	15
Pallisa	Pallisa	Gogonyo	Kachango		16
Pallisa	Pallisa	Kameke	Nyakoi	Nyakoi kinomo	17
Pallisa	Pallisa	Kasodo	Najeniti	Nabitende/kasanvu	18
Pallisa	Pallisa	Pallisa	Kagoli	Kaitambiri/kagoli central	19
Pallisa	Pallisa	Pallisa tc	Hospital	Hospital	20
Pallisa	Pallisa	Puti-puti	Limoto	Limoto a	21
Pallisa	Pallisa	Kamuge	Boliso ii	Okwamirio/aputon	22

APPENDIX D: LIST OF RESEARCH ASSISTANTS AND DATA MANAGEMENT TEAM

ACHOLI REGION

Name	Designation
1. Akot Polvey	Research assistant
2. Labong Denis James	Research assistant
3. Okot Esther	Research assistant
4. Ocan David	Research assistant
5. Auma Sarah	Research assistant
6. Amony Isabella	Research assistant
7. Alwedo Rebecca	Research assistant
8. Oroma Joyce Barbara	Research assistant
9. Otingiu Collins	Research assistant
10. Akoli Stella	Research assistant
11. Jimmy Ojok	Research Assistant
12. Simon Oyet	Research Assistant
13. Akello Betty	Editor/Asst. Asst. Supervisor
14. Kobusingye Stella	Editor/Asst. Asst. Supervisor
15. Twikirize Eunice	Editor/Asst. Asst. Supervisor
16. Arinaitwe Euz	Editor/Asst. Asst. Supervisor
17. Karuhanga Jackie	Editor/Asst. Asst. Supervisor

LANGO REGION

1. Olet Charles	Research assistant
2. Acio Jannet	Research assistant
3. Olet Felix	Research assistant
4. Olake George Felix	Research assistant
5. Orec Stephen	Research assistant
6. Akoli Hilda Eunice	Research assistant
7. Adongo Alice	Research assistant
8. Ogwang Andrew	Research assistant
9. Akoli Suzan Bridget	Research assistant
10. Mwesiwa Hans	Editor/Asst. Asst. Supervisor
11. Mwijuka Louis	Editor/Asst. Asst. Supervisor
12. Tayebwa Arthur	Editor/Asst. Asst. Supervisor
13. Ogo Denis	Research assistant

TESO A REGION

1. Opolot Simon Pter	Research assistant
2. Imeru Stella	Research assistant
3. Abao Rose Mary	Research assistant
4. Esupu Richard	Research assistant
5. Egou Simon	Research assistant
6. Mooka Deo	Research assistant
7. Andrew Okabaale	Research assistant
8. Ewiny Paul	Research assistant
9. Olega Silver R.	Research assistant
10. Okiror Pius	Research assistant
11. Oyambi John	Editor/Asst. Asst. Supervisor
12. Nakityo Praxeda	Editor/Asst. Asst. Supervisor

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|--------------------------|-------------------------------|
| 13. Mashemererwa Moureen | Editor/Asst. Asst. Supervisor |
| 14. Tumuhikye Martin | Editor/Asst. Asst. Supervisor |

TESO B REGION

- | | |
|-------------------------|-------------------------------|
| 1. Maasa Reuben | Research assistant |
| 2. Opejo John C | Research assistant |
| 3. Oboi Andrew | Research assistant |
| 4. Okwakol Ochom Samuel | Research assistant |
| 5. Adongo Betty | Research assistant |
| 6. Okoboi Joseph | Research assistant |
| 7. Okalangh Jonathan | Research assistant |
| 8. Hamba Yusuf | Research assistant |
| 9. Elungat Robert | Research assistant |
| 10. Anyango Teopista | Research assistant |
| 11. Kwesiga Grace | Editor/Asst. Asst. Supervisor |
| 12. Nuwagaba Emmanuel | Editor/Asst. Asst. Supervisor |
| 13. Wednesday Winnie | Editor/Asst. Asst. Supervisor |

DATA MANAGEMENT TEAM

Name	Designation	Name	Designation
Rukundo Josephat	Coder	Musiimenta Molly	Coder
Regina Nyamishana	Coder	Martin Ashongyeirwe	Coder
	Coder	Tukamuhabwa	Coder
Dick Ainomugisha		Mathias	
Denis Denis	Coder/Data entrant	Tony Musinguzi	Coder
Oribakiriho John Bosco	Coder/Data entrant	Atwijukye Claire	Coder
Orikiriza Brian	Coder	Turamye Jonas	Coder
		Namunu Immaculate	Coder

DATA ENTRY

Ariho Denis	Data entrant	Atwine Wilbert	Data entrant
Mbabazi John Bosco	Data entrant	Turamye Jonas	Data entrant
Barenga E	Data entrant	Kamazzi Ferdinand	Data entrant
Nangonzi Agnes K	Data entrant	Matsiko Ashir	Data entrant
Tumuhe Jarvis Levi	Data entrant	Musana Benon	Data entrant
Tony (Public Health)	Data entrant	Senyondo Richard	Data entrant
Kusemererwa	Data entrant		Data entrant
Caroline		Nyabahutu Patricia	
Nabimanya Sam	Data entrant	Mwesigwa Hans	Data entrant
Tusiime Wilsonn	Data entrant	Mwijuka Louis	Data entrant
Wandera Peter	Data entrant	Sserugo Ronald	Data entrant
Twesigye Denis	Data entrant	Atwongirwe Marriet	Data entrant
Mwerera Robert	Data entrant	Ebitu Moses	Data entrant
	Data entrant	Ndyabahika	Data entrant
Musiime Phiona		Emmanuel	
Etumu Tonny	Data entrant	Anne Achunge	Data entrant
Twinamatsiko Bright	Data entrant	Musaazi Joseph	Data entrant

ADMINISTRATIVE ASSISTANT

Julian Barungi, BA (Land Management)