UPSIDE

Northern Uganda Resilience Initiative
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NURI

Danida

BASELINE SURVEY REPORT FOR SOUTH WEST NILE AND ACHOLI SUB-REGION 2019

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List of Acronyms

Abb.	Full text
AEO	Agricultural Extension Officer
AES	Agricultural Extension Supervisor
AFARD	Agency for Accelerated Regional Development, Nebbi
APM	Agricultural Production and Marketing
CAR	Community Access Road
CSA	Climate Smart Agriculture
Danida	Danish International Development Assistance
DAR3	Brand name from previous phases used in West-Nile
DCB	DLG Capacity Building
DFA	District Farmers Association
DKK	Danish Kroner
DLG	District Local Government
DRC	Danish Refugee Council
DTPC	District Technical Planning Committee
DWRM	Directorate of Water Resources Management
GoU	Government of Uganda
IP	Implementing Partner
IMC	Implementation Monitoring Committee
IWRM	Integrated Water Resources Management
LLG	Lower Local Government
M&E	Monitoring and Evaluation
MWE	Ministry of Water and Environment
NURI	Northern Uganda Resilience Initiative
MoU	Memorandum of Understanding
NURI CF	NURI Coordination Function
PHH	Post-Harvest Handling
PMP	Production and Marketing Plan
PRDP	Peace, Recovery and Development Plan for Northern Uganda
RAU	Resilience Agricultural Unit
RDE	Royal Danish Embassy
RDNUC	Recovery and Development in Northern Uganda Component
RI	Rural Infrastructure
RWC	Refugee Welfare Committees
WRM	Water Resource Management
UGX/USHS	Ugandan Shillings
UNADA	Uganda National Agro-input Dealers Association
UNWMZ	Upper Nile Water Resources Management

Executive Summary

Introduction

The Northern Uganda Resilience Initiative (NURI) under the Uganda Programme on Sustainable and Inclusive Development of the Economy (UPSIDE) is supported by the Government of Denmark. It is aimed at enhancing resilience and equitable economic development in Northern Uganda. Its focus is on Climate Smart Agriculture (CSA), Rural Infrastructure (RI) and Water Resources Management (WRM). It covers 5 districts in the West Nile and 3 districts in Acholi Sub Regions of Northern Uganda. Besides nationals in the regions, NURI will work with 6 refugee settlements in the districts of Arua, Moyo, Adjumani and Lamwo. A baseline assessment was carried out to provide the baseline values for the intervention performance indicators as per the progamme M&E manual. These values will enable setting realistic performance targets and assessing progress in the achievement of the set targets over the programme life time.

Methodology

The baseline study was conducted in 7 districts in the West Nile and Acholi Sub Regions where NURI programme is being implemented. It was a cross-sectional assessment involving quantitative and qualitative components, targeting farmers organized in groups (new national, mixed refugee and nationals and refugee women groups) and are supported under the output-Climate Smart Agriculture. A combination of multistage sampling, cluster sampling and simple random sampling techniques were used to select the study respondents. Data collection was done using structured direct interviewing based on individual questionnaires developed to provide adequate data for the indicators. Key informants' interviews and focus group discussion were conducted to provide detailed information to explain findings from quantitative analysis. All quantitative data were entered in EpiData software using a double data entry system to minimize entry errors. After cleaning and performing all logical checks, the data were exported to SPSS for analysis that involved univariate and bi-variate analysis.

Indicators at Outcome level

Increase in average annual agricultural cash income of participating HHs (segregated by age, gender of HH head and refugee status)

The average annual agricultural cash income in 2018 was UGx 1,685,419/= for new national farmers, 872,410/= for mixed refugee groups and 294,241/= for women refugee groups. An assessment of income from non-agricultural activities was also done and the results show 1,277,502/= for new national groups, 1,740,429/= for mixed refugee groups, 1,063,875/= for women refugee groups. Comparing results within the household types, results show that for new national farmer groups, male-headed households earned higher than other household types while within the mixed refugee households, income for female-headed households within the groups was much higher than for male-headed households. Results show that new national farmers earned more income from agricultural livelihoods compared to the refugee households that earned more from non-agricultural livelihood activities.

Reduction in number of participating households reporting periods of food insecurity (segregated by age, gender of HH head and refugee status)

Findings show that 45% of the respondents' overall report food insecurity/food shortage during the month of June. In some households it stretched from May to August. During these months, food intake reduced; where a household on average consumed two meals, during those months it reduced to only one. It was the same for households that on average consumed three meals per day.

The average number of meals consumed per day in a household was examined further as a proxy indicator to food security. Findings show that 90% of the respondents consumed at least 3 meals per day in 2018 while in Acholi 97% had 2 meals per day. For the refugee groups, 75% of respondents in mixed groups had 3 meals a day while from the women groups, only 43% reported to have had at least 3 meals. A higher percentage was reported for having at least 3 meals per day by male-headed households compared to female-headed households in both new national farmer and refugee groups.

Indicators at Output Level

Cumulative percentage pf participating HHs adopting additional CSA practices

This indicator was not included in the baseline study but will be included in the upcoming adoption study.

Cumulative percentage increase in average yields per acre for strategic crops

The assessment of this indicator was based on computing quantity of each strategic crop type harvested in 2018 by each household selected for the study. Performances of the different crops varied from district to district given the difference in ecological factors and agronomic practices, however when compared to research yield estimates, it can be considered to be low with the exception of beans. This can be attributed to the farming practices where most of them used un improved seed varieties and rudimentary farming methods. Average yields for refugee households in mixed groups could be seen to be low except for maize and beans.

Cumulative percentage of the quantity of strategic crops harvest that is sold

Over 50% of the quantity of strategic crops harvested was sold to generate income for the households, although the farmers felt market prices were low. This was observed for all group types; new nationals, mixed refugee and women refugee groups. Marketing for most crop produce was done individually, as initiatives for collective/group marketing were nearly nonexistent for most crop varieties except Sunflower, beans and sesame.

Additional assessment at outcome level

Production assets

The average value of production assets for new national farmer groups participating in NURI programme was found to be at UGx 2,230,000/=. Disaggregating per region, the value for Acholi sub-region was higher at UGx 2,626,666/= compared to UGx 1,910,000/= for West-Nile. The most predominant production assets were the hand hoe and panga and the least common included spray pumps, motorcycles, oxen as well as ox-ploughs. Note that an assessment of production assets was not done for refugee groups.

Average value of crop production

The average value of production for all the crops was UGx 3,244,400/= for new national farmer groups. The value for West-Nile was higher than Acholi sub-region with UGx 3,619,500/=

compared to UGx 2,655,600. This was attributed to the difference in market value of the crop types cultivated by farmer households in the two regions.

Indicators at output level

Household participation in VSLA

Results show that 78% of the respondents participated in VSLA activities formally in 2018. 58% reported VSLA as the major source of finance for agricultural activities after sale of agricultural produce. Over 66% of the money borrowed from VSLA is used for agricultural production followed by 57% used for school fees and the petty trade took about 54%. For the refugee groups, most of the money borrowed went into petty trade (49%). Youth participation in VSLA varied; 41% of the respondents interviewed rated it low, 24% medium and 35% rated it as high.

Knowledge about SRHR

About SRHR and family planning, awareness is nearly universal (93%). Of these, 89% had received training about SRHR mostly from health facilities and development partners. Awareness about SRHR was equally high among refugee households at 83% of women refugees and 77% in mixed refugee households respectively. Use of family planning was at 54% of all national farmer households, 39% among mixed refugee and 27% among women refugee households respectively.

Study finding indicates good relationship between refugees and host communities in the settlement. 97% of mixed refugee households acknowledged interacting with locals/national farmers within Arua even before they joined the NURI Programme. Refugee households and national farmer households shared food, improved seeds, social spaces like schools and health facilities.

Assessment of other indicators

Access to production land

On average, the new national farmers supported by the programme cultivated 4.6 acres of land in 2018. Comparing the two regions, Acholi had more access with an average of 7.5 compared to 2.9 in West-Nile. For the refugee households, the picture was varying between mixed groups and refugee women groups. On average households in mixed groups cultivated 1.8 acres while households in women groups could only do 0.6 acres. All refugee households had access to some

land which they used to cultivate on a small scale in 2018, acquired mostly through allocation by Office of the Prime Minister, borrowing and hiring from non-group members.

Use of agro-improved inputs

Use of improved crop seeds and other inputs was notable though low; for instance, 45% of national farmer households that used improved crop seeds, 34% improved pesticides and herbicides while 20% used improved cassava cuttings. For refugee households, 33% of the respondents participating through mixed groups and 35.5% in women groups used improved agricultural inputs obtained from development partners. The low levels of use of improved agricultural inputs was attributed to limited knowledge/awareness on ways to use the improved agricultural inputs, absence of input dealers within walkable distances and cost.

1.0   INTRODUCTION

1.1 Background

The Northern Uganda Resilience Initiative (NURI) is one of three engagements under the Uganda Programme on Sustainable and Inclusive Development of the Economy (UPSIDE). UPSIDE is one of the two thematic Programmes of the Danish Country Programme for Uganda 2018-2022, for which a Memorandum of Understanding (MoU) has been signed between the Government of Denmark and the Government of Uganda.

NURI will pursue enhanced resilience and equitable economic development in Northern Uganda, including for refugees and host communities. This will be achieved by supporting 1) Climate Smart Agriculture (CSA), 2) Rural Infrastructure (RI), and 3) Water Resources Management (WRM). Refugees and host communities will be among the beneficiaries as NURI is designed to support Uganda's progressive refugee policy and the nexus between development and humanitarian action.

Geographically, NURI covers 9 districts in the West Nile and Acholi Sub Regions of Northern Uganda. The districts are Agago, Kitgum and Lamwo in Acholi sub region and Arua, Pakwach, Nebbi, Zombo, Moyo and Adjumani in West Nile sub region. Besides targeting nationals in these districts, NURI will work with refugee settlements within some of the selected districts. Selected settlements are Rhino Camp Refugee Settlement in Arua District, Palorinya Refugee Settlement in Moyo District, 3 selected refugee settlements in Adjumani District and Palabek Refugee Settlement in Lamwo District.

1.2 Overview of the NURI Intervention

NURI consists of three outputs:

- Output 1: Increased agricultural output of small-scale farmers (climate smart agriculture);
- Output 2: Rural Infrastructure which is renovation and construction of agriculturally-related rural infrastructure;
- Output 3: Water Resources Management which is improved climate change resilience in Northern Uganda through WRM, including for refugees and host communities.

There will be training in Sexual Reproductive Health and Rights (SRHR) through the Danida funded - WAY programme. The WAY activities relating to NURI will be handled by CARE in close collaboration with NURI CF and implementing partners in the field.

The NURI intervention intends to benefit about 150,000 households in the selected programme area. The target is to reach 4,000 farmer groups consisting of 120,000 households with agricultural extension and training under Output 1. About 75% of these households will also benefit from VSLA. 28% of households are expected to be from refugee households. 1,800 groups are expected to benefit under Output 2, giving about 54,000 participants (households), of which about 30% are expected to be refugees. Under Output 3, eight communities at micro-catchment level including refugee hosting areas will participate in the programme. The estimated number of beneficiaries will be determined after a baseline survey.

For CSA, there will be 1,250 groups in the refugee settlements, which is 31% of the 4,000 groups, but since some of the groups are mixed refugees and nationals, the refugee households constitute an estimated 28% of the total number of households. The maximization of mixed groups will depend on host community's willingness to join the refugees and provide land for joint group activities.

NURI Target groups

NURI will support farmer households divided up in different categories: Old national farmer groups, new national farmer groups, mixed groups and women refugee groups. For the baseline study, target respondents will be selected from the new national groups, mixed famer groups and

women refugee groups. The old groups will not be included in the baseline study since a survey was conducted in 2017 under RDNUC (DAR3 & RALNUC3) which targeted them.

Old National farmer groups: This refers to the farmer groups that were supported under RDNUC but will continue to receive support under NURI.

New National farmer groups: This refer to farmers who have not received any support from Danida in the previous RDNUC programme.

Mixed groups: This refers to farmer groups that have both new nationals and refugees working together. The level of engagement with these group types is the same as with new national farmers.

Women refugee groups: This refers to an only refugee women group.

1.3 NURI Monitoring and Evaluation System

The M&E system is based on NURI log-frame and theory of change which in turn are in line with UPSIDE results framework as stipulated in the programme document and DED. The baseline study is one of the functions of the NURI M&E system and will provide information about the starting point of the programme.

The objectives of the system are:

  I.   Measure progress towards achievement of component objectives and outcomes
 II.   Enhance learning, information sharing and feedback
III.   Provide a basis for improving delivery and decision making by facilitating the identification of potential implementation challenges and propose possible solutions.

1.4 Objectives of the Baseline study

The baseline assessment was conducted to primarily provide the baseline values for the NURI intervention performance indicators as per the progamme M&E manual. The baseline values will provide a basis for setting realistic performance targets, assessing progress in the achievement of the set targets and making necessary comparisons over the programme life time.

Primarily, the baseline study was intended to;

    i.   To collect data output and outcome indicators as stipulated in the M&E manual for both the refugees and new national groups.

    ii.   To collect data on the household characteristics for the refugees that may be necessary for setting their starting point for the production activities

2.0 METHODOLOGY

The study employed mixed methods including quantitative and qualitative approaches to collect data. The justification for this is that the integration of both methods permitted a more complete and synergistic utilization of data. Findings were more validated, explored and augmented to provide reliable and realistic results.

2.1 Setting

The baseline survey was carried out in 7 districts in the West-Nile and Acholi sub-regions of Northern Uganda where NURI programme is being implemented. The districts include; Nebbi, Pakwach, Zombo and Arua in West Nile and districts of Agago, Lamwo and Kitgum in Acholi sub-region. The reason for carrying out the study in all the districts is because they have different production characteristics and ecological zones. It is not possible to use data for a district to represent another because of the mentioned differences. For districts that are hosting refugees, only Arua was considered in the study because of the number of refugees and similarity in livelihood activities to those that are in being hosted in other districts. Three sub-counties were selected from each district except for Arua where 5 sub-counties were targeted, leading to a total of 23 sub-counties participating in the study (see the table below for details)

Table for Districts and sub-counties covered in the study

DISTRICT	SUB-COUNTY
AGAGO	Adilang, Lira-Palwo, Omiya-Pacwa
ARUA	Ajia, Arivu, Katrini, Logiri, Uriama
LAMWO	Palabek Kal, Palabek Ogili, Paloga
KITGUM	Amida, Kitgum-Matidi, Mucwini
NEBBI	Akworo, Erussi, Ndhew
PAKWACH	Alwi, Pakwach, Wadelai
ZOMBO	Abanga, Kango, Zeu

2.2 Study design

The study was a cross-sectional assessment that involved quantitative and qualitative components. The qualitative component involved direct interviewing of selected farmers using a designed questionnaire. The quantitative questionnaire was developed based on selected programme indicators under output 1 of the programme that required baseline data in 2019. The table below presents details of the selected indicators and method of data collection used during the baseline study.

Table of Programme Performance Indicators

No.	Indicators	Data collection methods
Immediate Objective: To enhance resilience and equitable economic development in supported areas of Northern Uganda, including for refugees and host communities.		
1	% increase in average annual agricultural cash income of participating HHs (segregated by age, gender of HH head and refugee status)	HH interviews
2	% Reduction in number of participating HHs reporting periods of food insecurity (segregated by age, gender of HH head and refugee status)	HH interviews
Objective for output 1: To increase the agricultural output of small-scale farmers		
1	Cumulative % of participating HHs adopting additional CSA practices	HH interviews (not for baseline)
2	Cumulative % increase in average yields per acre for strategic crops for participating HHs	HH interviews
3	Cumulative % of the quantity of strategic crops harvest that is sold	HH interviews
Main activities: Agricultural output of small-scale farmers including for refugees increased		
1.1	% of refugee HHs participating in mixed groups reporting having access to land	HH interviews
1.2	% of strategic crops produced by participating farmers collectively marketed	HH interviews
1.3	% of VSLA loans used for agricultural purpose by FGs and refugee HHs	HH interviews

Qualitative data were collected on different programme aspects to provide detailed information and explanation of the key findings in the quantitative analysis.

2.3 Targeted respondents and sample size

The study targeted farmers participating in the implementation of the NURI activities under output 1 of the programme (Climate Smart Agriculture). Specifically, the targeted respondents were farmer groups participating in the NURI programme as new national farmers, mixed refugee and women refugee groups (that have not received support from any DANIDA programme). The old national farmer groups were not included because it was decided that results from the monitoring survey that was done in the RDNUC programme would be used to set their targets.

New National farmers

A multistage sampling technique was employed in the selection of the study respondents. For each of the 7 study districts, sub-counties were divided into three distinct categories as high, medium and low, based on their agricultural production performance due to difference in agro-ecology and land holdings. One sub-county was then randomly selected from each category using a goldfish method, making 3 sub-counties per district. From each of the selected sub-counties, 2 parishes were randomly selected using a generated sampling frame, leading to 6 parishes per district in the study area. In Arua, using the same procedure, 10 parishes were targeted from 5 sub-counties.

A list of households for new national farmers was compiled as a sampling frame for each selected parish and a simple random technique of lottery method was used to randomly obtain 12 respondents from each selected parish. A total of 520 respondents for the new national group were expected to participate in the study. However, in the districts of Arua and Nebbi, a sampling error was recorded that resulted into 41 additional respondents (37 in Arua, 4 in Nebbi). The study therefore targeted 561 respondents. This did not have significance effect on the results.

Refugee households (mixed and women refugee groups)

The farmer group lists for both mixed and women refugee groups were used as a sampling frame. Using simple random sampling, 6 groups were selected for each category and from each of the groups, a lottery method was used to pick out 5 respondents. A total of 64 refugee households were interviewed (additional 4 respondents were recorded due sampling oversight). The national

farmers in the mixed groups were included in the focus group discussions but not in the household interviews.

<u>Key Informant Interviews</u>

Purposive sampling was used to select the respondents based on the roles they played in the respective DLGs and LLGs.

<u>Focus Group Discussions</u>

Using the farmer group lists as the sampling frame, farmer groups for focus group discussions were selected using simple random sampling method. Caution was observed such that groups selected for FGD were not involved in the household interviews.

2.4 Data collection and quality control

Data collection was conducted through quantitative and qualitative methods.

Structured interviewing; Structured direct interviews were carried out with new nationals, refugees in mixed groups and women refugees who were participating in implementation of NURI activities. Individual questionnaire was developed and used to collect data from each of the afore-mentioned category of respondents. Each questionnaire covered questions on a wide range of aspects including socio economic characteristics, Household income, food security, household assets, land ownership and preparation, access and use of improved agricultural production as well as access to markets, marketing strategy and communication.

Key informant interview; In-depth interviews were held with various key informants selected from key stakeholders. The key informants mainly included district local government agricultural Officials and refugee leaders. A key informant interview guide was used to collect the required data.

 Focus group discussion; FGDs were organized and conducted with different groups of farmers. These helped in providing insights and explanations on knowledge and practices by the farmers in the Climate Smart Agriculture. Using a developed FGD guide, the discussions were held with various groups of farmers, each group with 15-30 people.

Data quality control; this was done by organizing a 4-day training for the recruited enumerators and team leaders. The training involved translating the tool into the local language, discussing research methodologies, ethics and other dynamics. The tools were pre-tested before actual data collection to ensure consistence, reliability and validity. A team leader was recruited to verify and check all data before filing for entry. The CSA staff were involved in the training which helped streamline the tool and enhance use of the right farmer language during research. The team provided conversion units for land size and crop types to ensure quality.

During field work, all the filled data collection tools were reviewed, team de-briefs done to ensure errors are minimized. All the filled tools were kept under lock and key to limit accessibility in order to prevent data tampering.

2.5. Data Processing and analysis

All duly filled questionnaires were verified, edited (in the field and in office) and electronically captured using a statistical package known as EpiData, a suitable software enriched with data validation instruments to ensure minimal data entry errors. EpiData software was selected due to its capabilities; easy to use especially during the development of data entry module and data cleaning, free of charge and it is versatile with ability to export data to various statistical packages including SPSS, STATA and Ms Excel. Double data entry system was used to ensure a high degree of accuracy of captured data. After data entry, data were cleaned and exported to SPSS software (Statistical Package for Social Scientists) for processing and analysis. SPSS was easily accessible and could ably handle the required analysis of the study with limited programming. An analysis plan was formulated in line with the programme indicators in the M&E manual. Both univariate and bivariate analysis were performed to provide the required baseline values with the necessary disaggregation.

2.6 Limitation of the study

The study had limitations in the sample size which can be considered smaller that it should have been for the districts of Agago, Kitgum, Lamwo and Nebbi. Because of time & cost constraints, it was decided that smaller but in-depth analysis of farmer households could be appropriate. The survey should have used probability proportional to size sampling which could have given higher

numbers in the mentioned districts. The sample size achieved was based on production characteristics of the different sub-counties in the district, total number of farmer groups in a district, the size & number of sub-counties of outreach within a district.

Even though the sample size in some districts are smaller, the study findings are reliable for two reasons; the farmer communities are homogenous in their production patterns/characteristics and evenly spread out within the sub-counties. The results may not necessarily depend on large numbers but on the similarity in production patterns & other characteristics.

3.0 FINDINGS FROM THE STUDY

3.1 DEMOGRAPHIC CHARACTERISTICS

3.1.1 Demographic characteristics of new national farmer households

Gender composition

A total of 561 individual farmers were interviewed during the baseline study across the seven districts of implementation. Out of the 561 respondents, 48% were male and 52% female respectively. Apart from Arua, in all districts, slightly more women than men were surveyed contributing 53-57% of the sample. Arua district had a higher sample size (129) because the number of farmer groups and sub-counties are more than for other six districts. The rest of the districts (Lamwo, Agago, Kitgum, Pakwach, Nebbi and Zombo) contributed the same number (72) respondents each. From the above finding, one can note that the level of participation of women in production activities compared to men is higher in both regions. From the focus group discussions, it was mentioned severally that the participation is propelled by the gender division of roles in the households.

Average age of the respondents

The average age of the respondents was 39 years; majority of them (56%) were aged 29-48 which is regarded the most productive age bracket with regards to agriculture. The programme has a deliberate effort to encourage the youth between 18-28 years (as defined by the programme) to participate in production related activities. During the study, only 11% of the respondents were youth aged between 18 and 28 years while 9% of the respondents were aged 59+years. Overall, there was substantive variation in the proportion of respondents aged 29-48 years across the surveyed districts. The average age of respondents was somewhat higher in Nebbi, Pakwach and Zombo compared to Acholi districts and Arua. The farmer groups verified the above average age in the focused group discussions in Agago, Nebbi and Arua by asserting that most households within the age bracket of 35-45 years are very active because by that time, school demands for their children is much higher (secondary school & tertiary institutions), cost of other basic need like clothing, shelter and food is higher compared to those in the lower brackets (25-34).

Education

Results show that majority of new national farmers surveyed had some form of formal education and were able to read and write their names; only 9% had no formal education. Among those with some form of formal education, the highest proportion (36%) had attended upper primary level i.e. Primary 5-7. A notable proportion (24%) had attended Ordinary level (Senior 1-4) but few had attended Advanced level or Tertiary institution. Across all the surveyed districts, majority (over 50%) of respondents reported primary education as the highest level of education attained denoting some degree of literacy.

Main occupation

The study assessed main occupation of new national farmer group members in order to understand the source of their livelihoods. This further included understanding their household types, household size and average age of household heads. In all the districts, farming was found out to be the main occupation new national groups. For instance, all the respondents in the districts of Agago, Lamwo, Nebbi, Pakwach and Zombo were farmers, while in Arua and Kitgum only 4% and 1% respectively were non-farmers i.e. business persons and civil servants respectively.

Household types and size

The study examined four household types; male-headed (the man is decision maker), female-headed (the woman is the decision maker), female managed (the man is present but cannot make decision) and child headed (decision is made by children). Results show that 86% of household types assessed were male-headed, 11% were female-headed and 3% were managed by women. The dominance of male-headed households has not led to a high level of male participation in NURI programme. All across the programme, the participation of women is higher than men. In all the focused group discussions, there was the assertion that providing food for the household has become a woman's responsibility thus compelling them to actively participate. There were no child-headed households surveyed, although it does not mean they do not exist.

To determine the household size, the study established the total number of persons in a household that eat from the same pot daily. The results show that the average household size for new national farmer groups is 8. Significantly it could be seen that 52% had 4-7 household members, 32% 8-10, and 10% had 11+. The numbers in West-Nile were slightly higher than Acholi sub-region. One

key observation was that even within these numbers reported, cases of households supporting orphans and abandoned children were noted. The higher the numbers, the more severe food shortages were experienced between the months of May and August 2018. Also, where the dependents were below 18 years, labour for farming was affected as remarked in the focused group discussions.

The average age of household heads was found to be 44years although there was an even distribution across all the age groups. About 53% were less than 49years and only 4% were youth aged between 18 and 28 years. Further analysis indicates that the household heads in Acholi and Arua tended to be younger with a bracket of 29-48 years compared to 49+ years in Zombo and Nebbi. See Table 3.1.1 and 3.1.2 for district specific data on the various demographic characteristics of the surveyed populace.

Table 3.1.1: Demographic characteristics of sampled community people

		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Gender of respondents	Male	33	46%	67	56%	33	46%	33	46%	36	47%	31	43%	33	46%	266	48%
	Female	39	54%	53	44%	39	54%	39	54%	41	53%	41	57%	39	54%	291	52%
Age of the respondents	19-28	11	15%	30	25%	16	22%	25	35%	15	20%	16	22%	9	13%	62	11%
	29-38	19	26%	39	33%	24	33%	20	28%	16	21%	21	29%	19	26%	160	29%
	39-48	23	32%	35	29%	22	31%	16	22%	20	26%	18	25%	20	28%	152	27%
	49-58	18	25%	11	9%	8	11%	8	11%	15	20%	7	10%	12	17%	111	20%
	59+	1	1%	5	4%	2	3%	3	4%	11	14%	10	14%	12	17%	50	9%
	Average age in years	40		37		37		36		44		40		43		39	
Highest level of education attained by respondents	No formal education	12	17%	8	7%	8	11%	5	7%	8	10%	4	6%	5	8%	50	9%
	Attended lower level primary (P.1 – P.4)	17	24%	22	19%	10	14%	10	14%	21	27%	27	38%	22	33%	129	24%
	Attended upper level primary (P.5 – P.7)	24	33%	39	33%	33	47%	26	36%	28	36%	23	32%	26	39%	199	36%
	Attended O-level (S1-S4)	17	24%	37	31%	14	20%	22	31%	16	21%	16	23%	11	16%	133	24%
	Attended A-level (S5-S6)	1	1%	7	6%	0	0%	1	1%	1	1%	1	1%	0	0%	11	2%
	Tertiary Institution	1	1%	6	5%	6	9%	8	11%	2	3%	0	0%	3	5%	26	5%
	University Education	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%	1	0%
Main occupation for respondents	Business	0	0%	3	3%	0	0%	0	0%	0	0%	0	0%	0	0%	3	1%
	Civil Servant	0	0%	2	2%	1	1%	0	0%	0	0%	0	0%	0	0%	3	1%
	Farming	72	100%	115	96%	71	99%	72	100%	77	100%	72	100%	72	100%	551	99%
Category of household	Male headed	68	94%	107	90%	61	85%	63	88%	61	79%	59	87%	52	75%	471	86%
	Female headed,	2	3%	8	7%	9	13%	8	11%	14	18%	7	10%	11	16%	59	11%
	Female managed	2	3%	4	3%	2	3%	1	1%	2	3%	2	3%	6	9%	19	4%
Age of household head	19-28	9	13%	16	13%	9	13%	15	21%	8	11%	9	13%	1	1%	22	4%
	29-38	12	17%	35	29%	23	32%	22	31%	15	20%	18	25%	16	23%	127	23%
	39-48	25	35%	34	28%	21	29%	11	16%	14	19%	22	31%	21	30%	142	26%
	49-58	24	33%	25	21%	10	14%	12	17%	23	31%	12	17%	15	21%	142	26%
	59+	2	3%	10	8%	9	13%	10	14%	14	19%	11	15%	17	24%	83	15%
	Average age in years	43		41		42		41		47		44		48		44	

Table 3.1.2: Average Household size for National Farmers

Household size		West Nile										Acholi							
		ARUA		NEBBI		PAKWACH		ZOMBO		Total		AGAGO		KITGUM		LAMWO		Total	
		HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
Household size	1-3	3	3%	7	9%	3	4%	3	4%	16	5%	2	3%	4	6%	6	8%	12	6%
	4-7	62	52%	44	57%	31	43%	44	61%	181	53%	32	44%	37	51%	43	60%	112	52%
	8-10	29	24%	19	25%	22	31%	23	32%	93	27%	28	39%	23	32%	19	26%	70	32%
	11+	26	22%	7	9%	16	22%	2	3%	51	15%	10	14%	8	11%	4	6%	22	10%
	Total	120	100%	77	100%	72	100%	72	100%	341	100%	72	100%	72	100%	72	100%	216	100%
	Average	8		7		8		7		8		8		7		6		7	

3.1.2 Demographic characteristics of surveyed refugees

Gender composition

Baseline data on the refugee community was drawn from only Arua district. Refugees surveyed were in two (2) categories as; women refugee groups and refugees in mixed groups (refugees in groups with nationals). Refugees in mixed groups included both men and women. A total of 64 refugees were surveyed (31 women from refugee women groups and 33, 18 male and 15 female refugees in mixed groups). Within the mixed groups, gender distribution was 55% males and 45% female surveyed. Further probing revealed that there were usually more men than women refugees in the mixed group because it was easier for them to interact with the nationals.

Average age

Results show that the average age for refugees in mixed groups is 40 years while for women groups is slightly lower at 34. In the category of women refugee, most of them (58%) were in the age range of 29-38 years while among the mixed refugees, majority of them (61%) were aged at least 29 years and only 40% were youth aged between 18 and 28 years. The mixed groups had a much younger population compared to the women groups. When both group types (mixed and women groups) are compared to the new national farmers, one could see a much younger population. In the new national groups, a higher proportion (9%) of group members were aged at least 59 years compared to only 7% of the refugee population in the same age category.

Main occupation and education

The main occupation for both categories of refugees is farming although done on a small scale due to limitation of land access. Within the women groups, occupation varied; 55% engaged in agriculture, 35% business and 10% in teaching while in the mixed category 94% were in farming. It was noted that women refugees took on small business activities because of the difficulty in negotiation for additional land from the national farmers. See Table 3.1.2a below for detailed characteristics of the refugees.

Household types and size

Looking at the refugee households in mixed refugee groups, 67% reported male-headed households and 27% female-headed. In the women refugee groups, 29% reported male-headed

households, 55% female-headed and 16% female managed. The average household size for male-headed households in mixed groups is 9, female-headed households in mixed groups is 8 and for women refugees is 7. From the focus group discussions, the respondents emphasized the role of caring for the extended families, orphans from brothers and sisters killed during the war, elderly parents whom they had migrated with to Uganda. An interesting observation from this is that, the responsibility to care for extended families, orphans is synonymous to the new national farmers. The inclusion of women only groups significantly increases the number of female-headed and female managed refugee households reached by the NURI programme.

Table 3.1.2a: Demographic characteristics of the Refugees

| | | Mixed Refugees | | | | Women Refugees | |
| | | Male headed HH | | Female headed HH | | | |
		HHs	%	HHs	%	HHs	%
ARUA District		22	66.7	11	33.3	31	100.0
Sex of the respondent	Male	17	77.3	1	9.1		
	Female	5	22.7	10	90.9	31	100.0
Age of the respondent	18-28 (Youth)	10	45.5	3	27.3	10	32.3
	29-38	5	22.7	5	45.5	16	51.6
	39-48	3	13.6	3	27.3	3	9.7
	49-58	0	0.0	0	0.0	1	3.2
	59+	4	18.2	0	0.0	1	3.2
Highest level of education for the respondent	No formal education	1	4.5	3	27.3	2	7.0
	Attended lower level primary education (P.1 – P.4)	1	4.5	1	9.1	7	23.0
	Attended upper level primary education (P.5 – P.7)	5	22.7	5	45.5	12	39.0
	Attended O-level (S1-S4)	9	40.9	0	0.0	5	16.0
	Attended A-level (S5-S6)	0	0.0	1	9.1	1	3.0
	Tertiary Institution	6	27.3	1	9.1	2	7.0
	University Education	0	0.0	0	0.0	2	7.0
Main occupation of the respondent	Farming	21	95.5	10	90.9	17	55.0
	Business	0	0.0	1	9.1	11	36.0
	Teaching	1	4.5	0	0.0	3	10.0
Age of the household head	18-28 (Youth)	6	27.3	3	27.3	6	19.4
	29-38	4	18.2	4	36.4	18	58.1
	39-48	5	22.7	4	36.4	5	16.1
	49-58	1	4.5	0	0.0	1	3.2
	59+	6	27.3	0	0.0	1	3.2

Table 3.1.2b: Refugee household size

Household size	Mixed Refugees						Women Refugees	
	Male headed		Female headed		Total			
	Number	%	Number	%	Number	%	Number	%
1-3	2	9.1%	1	9.1%	3	9.1%	5	16.1%
4-7	7	31.8%	5	45.5%	12	36.4%	12	38.7%
8-10	5	22.7%	3	27.3%	8	24.2%	9	29.0%
11+	8	36.4%	2	18.2%	10	30.3%	5	16.1%
Average	9		8		9		7	

3.2 BASELINE RESULTS FOR NEW NATIONAL FARMER GROUPS

3.2.1 Increase in average annual agricultural cash income for participating HH

The study investigated average annual household cash income in the households of farmers selected in the study sample. Both agricultural related and non-agricultural related income sources for the year 2018 were examined. Data was collected about the total amount of cash obtained from agricultural production related activities such as sale of agricultural produce (crops), vegetables, animals (*i.e. cattle, goats, pigs and sheep*), poultry (*i.e. chicken, ducks and turkeys*), sale/hire of land, oxen and ox-plough, interest from VSLA savings, and non-agricultural products/services such as boda boda riding, brick laying, sale of firewood, charcoal, brewing local alcohol, stone quarrying, casual labours among others.

Results show that in 2018, the average annual agricultural cash income for participating households was UGx 1,685,419/=. Comparing the two regions, agricultural cash income for Acholi sub-region was higher (UGx 1,798,099/=) than West-Nile (UGx 1,569,421/=). It was noted that the farmer households in Acholi sub-region produced high quantities of simsim, sunflower and maize which they marketed in 2018. The district disaggregated data shows Lamwo with the highest income figure (UGx 2,225,322/=) in Acholi, Arua (UGx 1,965,156/=) and Pakwach (UGx 1,946,808/=) in West-Nile. Lamwo district compared to the other two districts in Acholi sub-region is considered a center for sesame production simply because they have vast communal virgin land located close to the border of South Sudan in the sub-counties of Lokung, Palabek Kal, Ogili and Potika (locally known as *"Äker"*). Farmers from within Lamwo and as far as Kitgum district temporarily move to those places for production. Farmers earned some considerable amounts of income from the sale of sesame in 2018. In West-Nile, farmers located along the R.Nile have a practice of moving to Amuru and Nwoya districts for cultivation.

Investigation of non-agricultural income sources was done to enable an understanding of overall income of a household. The average amount from non-agricultural sources was UGx 1,277,502/=. Household income varied both within districts and across districts. The average amount for West-Nile was higher than Acholi showing as UGx 1,528,950/= and UGx 855,304/= respectively. When income from both sources are combined, it gives an average of UGx 2,907,670/= which is 42% above the average from agricultural activities. Farmer households in West-Nile are involved in

small business where they sell other non- agricultural items to supplement their incomes. This is because of the border influence, presence of the refugee operation and limitation to extensive land for cultivation. Note that some of these activities are carried out when the crops are not yet ready or off farming period. See Table 3.2.1 and figure 1 for a detailed breakdown of income reported within and across districts for both agricultural and non-agricultural sources for the year 2018.

The average agricultural cash income at household level across the programme showed that 38% earned between UGx 600,000/= and UGx 1,800,000/=, 19% earned UGx 2,600,000/= and 5% earned below UGx 200,000/=. A comparison of cash income from both sources shows that the new national farmer groups participating in NURI earned more cash income from participating in agricultural related activities compared to non-agricultural activities in 2018.

Disaggregation of household income data by gender and age of the head of the household reveals notable differences. For instance, results show that majority of households that earned more than Ugx 2.6 million in 2018 were male-headed. High proportion of female-headed households earned between Ugx 200,000 – 600,000/=. No major variations in amount earned are observed with age of household heads. The average household cash income per age group of household head was observed to fall between Ushs1,589,000 to 1,800,000 per year. See Table 3.2.2.

The ranking of reliable income sources is shown in Table 3.2.3; with sale of crop produce nearly universally reported as the most reliable source of income across the seven programme districts. Sale of crop produce was ranked as the most reliable income source; the respondents attributed this to the ready produce market throughout the year irrespective of price fluctuations during some months of the year. Further, several participants acknowledged that agriculture is the backbone/source of livelihood for most households in their communities, and therefore crop produce ranks high on their sources of income. Other sources like sale of animals is occasional.

When both income sources are combined, one can see that the districts in West-Nile have had a slightly higher income compared to the Acholi sub-region. In general, the culture of operating small business is not so strong amongst the farmer households in Acholi, most of their livelihood options are built within agriculture. See figure 1 below.

Figure 1: *Average annual household cash income earned by National Farmers in 2018 by districts*
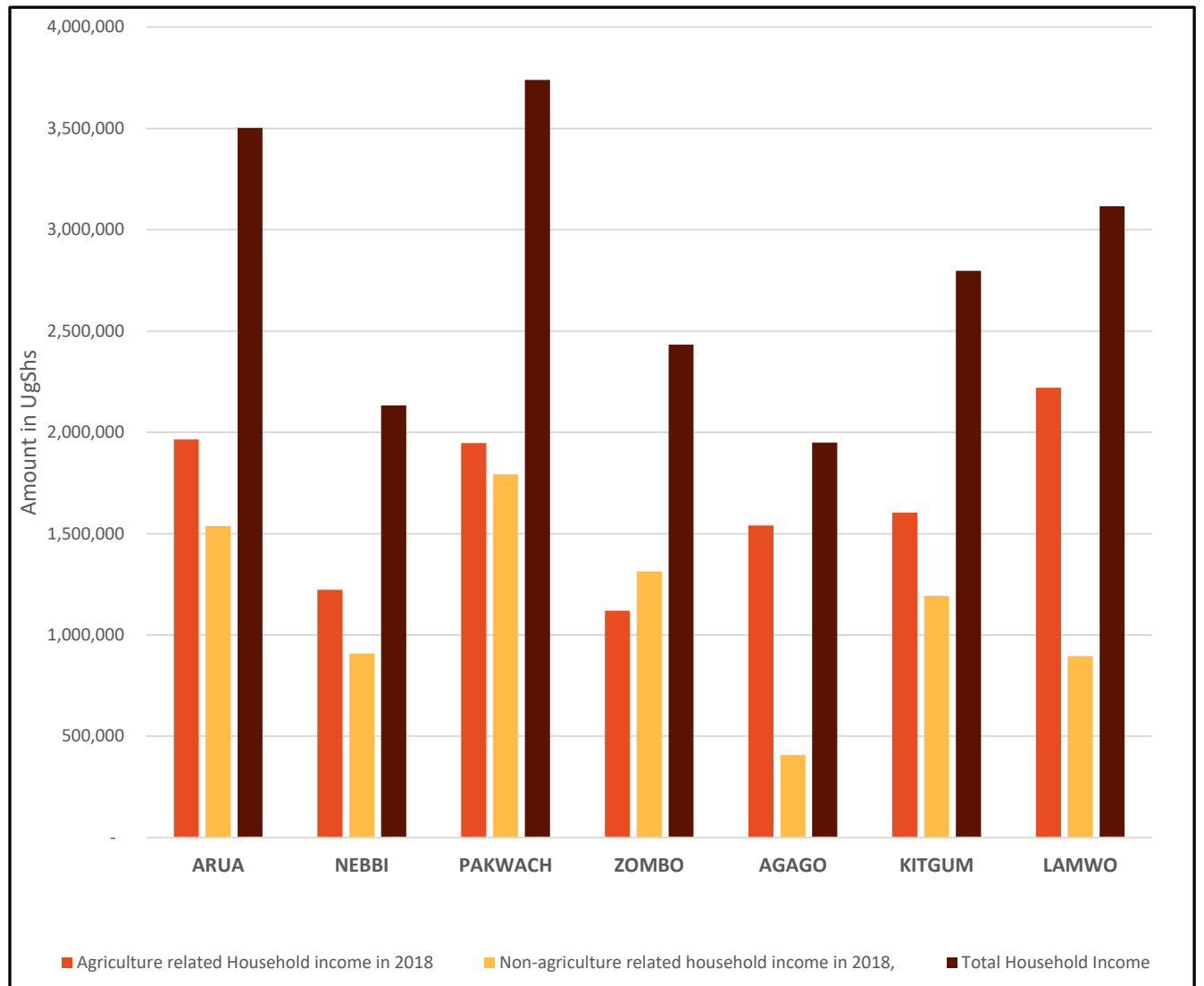
Table 2.2.1: Average annual household income from agricultural related and non-agricultural sources in 2018

		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Agricultural related Household income in 2018	< 200,001	6	8	7	6	3	4	2	3	2	3	2	3	7	10	29	5
	200,001-600,000	17	24	24	20	15	19	9	13	21	28	8	11	21	29	115	21
	600,001-100,0000	10	14	20	17	12	15	9	13	16	21	10	14	17	24	94	17
	1,000,001-1,400,000	11	15	15	13	9	12	5	8	12	16	8	11	10	1	70	1
	1,400,001-1,800,000	4	6	15	13	16	21	12	18	6	8	14	19	4	6	71	13
	1,800,001-2,200,000	5	7	8	7	7	9	3	5	6	8	4	6	6	8	39	7
	2,200,001-2,600,000	3	4	8	7	6	8	4	6	5	7	6	8	1	1	33	6
	2,600,001+	16	22	23	19	10	13	23	34	7	9	20	28	6	8	105	19
	Average/mean	1,540,540		1,965,156		1,628,437		2,225,322		1,246,256		1,946,808		1,119,465		1,685,419	
Non-agricultural related household income in 2018,	< 200,001	33	48	24	23	21	29	16	24	13	20	9	13	6	10	122	24
	200,001-600,000	23	33	26	25	30	41	18	27	22	33	20	28	19	30	158	31
	600,001-100,0000	11	16	12	11	6	8	13	19	8	12	11	16	11	18	72	14
	1,000,001-1,400,000	0	0.0	11	10	7	10	6	9	5	8	4	6	8	13	41	8
	1,400,001-1,800,000	0	0.0	9	9	2	3	8	12	3	5	5	7	1	2	28	5
	1,800,001-2,200,000	1	1	4	4	0	0.0	1	2	7	11	3	4	3	5	19	4
	2,200,001-2,600,000	0	0.0	2	2	1	1	0	0.0	0	0.0	4	6	3	5	10	2
	2,600,001+	1	1	18	17	6	8	5	8	8	12	15	21	12	19	65	13
	Average/mean	425,983		1,740,876		1,213,795		926,134		1,055,970		1,817,690		1,501,263		1,277,502	
Overall income		1,948,774		3,502,930		2,797,574		3,115,839		2,132,081		3,739,252		2,433,071		2,863,566	

Table 3.2.2: Average annual household income and agricultural cash income by gender and age of household heads

Total HH income in 2018	Gender of Household head				Age of Household head:															
	Male		Female		19-28		29-38		39-48		49-58		59+							
	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%						
< 200,001	23	5%	6	7%	2	3%	9	6%	6	4%	7	6%	3	4%						
200,001-600,000	90	19%	25	29%	18	27%	22	16%	36	24%	30	25%	9	13%						
600,001-100,0000	76	16%	18	21%	13	19%	26	18%	18	12%	18	15%	16	22%						
1,000,001-1,400,000	60	13%	10	12%	8	12%	19	14%	22	15%	9	7%	12	17%						
1,400,001-1,800,000	60	13%	11	13%	8	12%	25	18%	17	12%	13	11%	7	10%						
1,800,001-2,200,000	29	6%	10	12%	1	2%	7	5%	6	4%	16	13%	9	13%						
2,200,001-2,600,000	31	7%	2	2%	3	5%	10	7%	11	7%	9	7%	0	0%						
2,600,001+	101	22%	4	5%	14	21%	23	16%	32	22%	19	16%	16	22%						
Average Household income	1,783,509		1,128,612		1,545,281		1,745,874		1,747,889		1,627,783		1,705,752							
Average annual agricultural cash income	1,643,080		621,155		1,540,000		1,630,000		1,160,000		1,920,000		1,160,000							

Table 3.2.3: Ranking of reliable income sources

Most reliable source	AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sale of crop produce	60	83	88	73	60	77	57	85	60	79	60	83	59	82	444	80
Sale of vegetables	0	0	8	7	2	3	2	3	1	1	1	1	1	1	15	3
Sale of animals	7	10	14	12	12	15	3	5	7	9	2	3	2	3	47	8
Sale of poultry	3	4	0	0	2	3	2	3	1	1	0	0	0	0	8	1
Sale of or hire of land	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0
Hire of oxen and Ox-plough	0	0	0	0	1	1	1	2	0	0	0	0	0	0	2	0
Interest from VSLA savings	1	1	4	3	0	0	0	0	5	7	1	1	6	8	17	3
Other sources	0	0	2	2	0	0	0	0	0	0	7	10	1	1	10	2

3.2.2 Reduction in number of participating HH reporting periods of food insecurity

To assess this indicator, the study investigated periods that participating households reported food shortage and average number of meals per day as a proxy indicator. To count the average number of meals, the study considered breakfast, lunch and supper in a day. Households that reported having all the above were classified as having three (3) meals per day. From the results (see Table 3.2.2.1), it is evident that majority (90%) of households in West-Nile region reported eating three or more meals per day and 97% of the households in Acholi sub-region had at least 2 meals a day. No household in West Nile and only 3% of the households in Acholi region had only one meal a day. The results in table 6b below show a very slight difference in the proportion of household eating at least 3 meals a day between male (61%) and female (67%) headed households. Similarly, apart from household with heads aged less than 25 years, no significant variations were observed in the proportion of households taking 3 meals a day (about 60%) across the rest of the age groups for household heads.

To assess food shortage during the year, respondents were asked to indicate months during which they experienced food shortage and the extent of shortage. Results show that food shortage was experienced from the month of May to August. It was highest in June 2018 where nearly half (45%) the sample acknowledged experiencing food shortage – mostly reported in Agago, Arua, Kitgum and Lamwo. During these months the number of meals per day reduced from two to one in Acholi and from three to two in West Nile. See Table 3.2.2.1 and 3.2.2.2 for details on meals consumed per day and food shortage.

In West-Nile, the Focus Group Discussion notes from Tinaku village – Logiri, Ariaze village- Odupi and Aripezu village- Katrini sub-counties attributed food shortage during the mentioned months to poor planning by farmer households, use of poor farming inputs(seeds), pro-longed dry spell, water logging in cassava and high demand for food stuff from the refugee population. High demand for food stuff was mainly experienced in Uriama sub-county that is located in the proximity of Rhino camp settlement. Farmers in Yoro village asserted that sale of food stuff to the refugees is inevitable. The respondents in Zombo, Nebbi and Pakwach reported that buyers who traded in beans and cassava in 2018 claimed that there was high demand for the proceeds by the refugee population in Arua.

The reasons for food shortage in Acholi sub region are similar to West-Nile from the focus group discussions however other factors noted from during the key informant interviews included excessive consumption of alcohol and prevalence of the striga weed as reported in Agago and Kitgum. Alcohol consumption constrained labour for production and led to reckless sale of produce especially for sesame, groundnuts and sunflower. It was easy to transport such crops for sale in the nearby local markets; some quantity would easily be whisked in water jugs, plastic bags, school bags for quick sale to earn money for alcohol but which in the long run reduced food in the household as reported by farmers in Kanyipa West village in Adilang sub county- Agago district.

Table 3.2.2.1: Reported number of meals eaten per day at household level in 2018 by district

		AGAGO		KITGUM		LAMWO		Total-Acholi		ARUA		NEBBI		PAKWACH		ZOMBO		Total-West Nile	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Average number of meals consumed per day	1	2	3	2	3	2	3	6	3	0	0	0	0	0	0	0	0	0	0
	2	58	81	57	79	52	72	167	77	11	9	13	17	9	13	2	3	35	10
	3+	12	17	13	18	18	25	43	20	109	91	64	83	63	88	70	97	306	90
Months during which food shortage was experienced:																			
Jan-18		0	0	0	0	0	0	0	0	10	8	3	4	1	1	2	3	16	5
Feb-18		0	0	0	0	0	0	0	0	12	10	4	5	1	1	2	3	19	6
Mar-18		1	1	1	1	1	2	3	1	20	17	9	12	4	6	2	3	35	10
Apr-18		2	3	5	6	2	3	9	4	30	25	12	16	5	7	11	15	58	17
May-18		17	24	10	13	11	16	38	18	43	36	14	18	8	11	12	17	77	23
Jun-18		49	68	43	55	33	49	125	58	65	54	17	22	21	29	5	7	108	32
Jul-18		55	76	47	60	31	46	133	62	32	27	12	16	9	13	3	4	56	16
Aug-18		25	35	27	35	17	25	69	32	20	17	6	8	7	10	3	4	36	11
Sep-18		4	6	4	5	8	12	16	7	13	11	8	11	10	14	5	7	36	11
Oct-18		3	4	1	1	1	2	5	2	4	3	3	4	2	3	2	3	11	3
Nov-18		2	3	0	0	3	5	5	2	5	4	4	5	1	1	3	4	13	4
Dec-18		2	3	0	0	0	0	2	1	3	3	1	1	0	0	1	1	5	1

Table 3.2.2.2: Reported number of meals eaten per day at household level in 2018 by gender and age of household head

Characteristic	Gender of Household head				Age of Household head											
	Male		Female		19-28		29-38		39-48		49-58		59+			
	HHs	Percent (%)	HHs	Percent (%)	HHs	Percent (%)	HHs	Percent (%)	HHs	Percent (%)	HHs	Percent (%)	HHs	Percent (%)		
Average number of meals eaten																
1	3	1%	3	4%	0	0%	2	1%	1	1%	2	2%	1	1%		
2	179	38%	23	27%	31	46%	51	36%	53	36%	44	36%	22	30%		
3+	289	61%	60	70%	36	54%	88	62%	94	64%	75	62%	50	69%		
Periods of food insecurity reported by Households																
January	16	3%	0	0%	4	6%	6	4%	2	1%	3	3%	1	1%		
February	18	4%	1	1%	5	8%	6	4%	3	2%	4	3%	1	1%		
March	31	7%	7	8%	6	9%	11	8%	10	7%	6	5%	5	5%		
April	57	12%	10	12%	7	10%	21	15%	13	9%	17	14%	9	9%		
May	97	21%	18	21%	8	12%	33	23%	28	19%	28	23%	17	17%		
June	207	44%	26	30%	26	39%	57	40%	64	43%	61	50%	24	23%		
July	164	35%	25	29%	28	42%	41	29%	49	33%	51	42%	19	18%		
August	87	19%	18	21%	16	24%	23	16%	29	20%	23	19%	14	14%		
September	38	8%	14	16%	9	13%	10	7%	13	9%	11	9%	9	9%		
October	11	2%	5	6%	2	3%	5	4%	3	2%	4	3%	2	2%		
November	13	3%	5	6%	4	6%	2	1%	3	2%	6	5%	2	2%		
December	5	1%	2	2%	2	3%	0	0%	1	1%	3	3%	0	0%		

3.2.3 Availability of Production Assets

This study established the production assets owned by the farmer households supported by the programme. Asset ownership relates to overall production levels, patterns and outcomes. Farmers have a tendency of re-investing their income into production assets which is a good thing to assess. In every household surveyed, participants were asked to declare the types of production assets they owned in 2018; their quantity, mode of acquisition, cost of each asset and functionality status.

Results indicate that the average value of production assets across the seven districts is UGx 2,230,000/= in monetary terms. Households interviewed in Kitgum had production assets with the highest total value of UGx 2,910,000/=. The least value was registered in Nebbi with an average of UGx 1,430,000/= (see Table 3.2.3.1 below).

When the two regions are compared, the value in Acholi is higher than West-Nile as results show the average value in Acholi is UGx 2,626,000/= while it is UGx 1,826,666/= in West-Nile. The difference is attributed to the asset types because there are more oxen for ploughing, ox-ploughs and cattle that is not used for ploughing owned by farmers in Acholi sub-region compared to West-Nile. These asset types are of a higher monetary value compared to the rest. Kitgum compared to the other districts has the highest value because the district is situated within the cattle marketing corridor (close to Karimoja). Farmers from the sub-counties of Omiya-Anyima, Namokora, Lagoro, Kitgum-Matidi and Orom have a tendency of exchanging produce for cattle from the Karimojongs. Nebbi and Zombo have the least value also explained by the asset types owned by the households.

Overall, the most common asset type owned by the new national farmer households is the hand hoe with statistics of 100% across all the programme implementations in 2018. The hand hoe is closely followed by a panga (or known as "machete") – found in 87% of households, a goat (81%), mobile telephone set (81%) and poultry (78%). Production assets that were least common i.e. found in very few households included spray pumps, motorcycles, oxen and ox-ploughs (especially in West-Nile). The latter (ox-ploughs) were nearly non-existent in Arua, Nebbi, Pakwach and Zombo. See Table 3.2.3.1 for details on available production assets in households as of 2018.

With regard to mode of acquisition, results show that nearly all participants bought their production assets. Spray pumps and other cattle were the only notable production assets not purchased by households i.e. donated by local governments, NGOs and development partners. See Table 3.2.3.2 for percentage of households that bought their own production assets.

Table 3.2.3.1: Production assets available in households

	AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Hoe:	72	100	117	98	78	100	67	100	76	100	72	100	72	100	554	100
Panga:	52	72	112	93	61	78	50	75	75	99	69	96	68	94	487	87
Ox-plough:	43	60	1	1	36	46	33	49	1	1	1	1	0	0.0	115	21
Spray pump:	5	7	31	26	4	5	7	10	15	20	11	15	9	13	82	15
Bicycle:	45	63	59	49	43	55	35	52	20	26	34	47	31	43	267	48
Motorcycle:	4	6	17	14	5	6	7	10	18	24	17	24	19	26	87	16
Radio:	19	26	84	70	29	37	39	58	50	66	42	58	54	75	317	57
Telephone:	49	68	90	75	60	77	58	87	72	95	62	86	62	86	453	81
Oxen:	46	64	0	0.0	38	49	29	43	0	0.0	0	0.0	0	0.0	113	20
Other cattle:	25	35	58	48	33	42	22	33	25	33	25	35	21	29	209	38
Goat:	60	83	108	90	58	74	40	60	67	88	60	83	58	81	451	81
Sheep:	7	10	30	25	6	8	12	18	9	12	15	21	32	44	111	20
Pig:	31	43	27	23	19	24	14	21	29	38	17	24	38	53	175	31
Poultry:	60	83	80	67	59	76	53	79	61	80	63	88	58	81	434	78
Other:	18	25	23	19	24	31	15	22	4	5	6	8	5	7	95	17
Average total value of production assets per district																
Value in UGx	2,410,000		2,440,000		2,910,000		2,560,000		1,430,000		2,160,000		1,610,000		**2,230,000**	

Table 3.2.3.2: Mode of acquisition of household production assets

Mode of acquisition of production assets		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Hoe	Purchased	69	97	114	97	74	96	65	97	74	97	69	96	70	97	535	97
	Others	2	3	3	3	3	4	2	3	2	3	3	4	2	3	17	3
Panga	Purchased	46	89	107	97	52	85	43	86	73	97	68	99	68	100	457	94
	Others	6	12	3	3	9	15	7	14	2	3	1	1	0	0.0	28	6
Ox-plough	Purchased	42	98	0	0.0	34	94	32	97	1	100	1	100	0	0.0	110	96
	Others	1	2	1	100	2	6	1	3	0	0.0	0	0.0	0	0.0	5	4
Spray pump	Purchased	5	100	22	71	4	100	5	71	12	80	9	82	7	78	64	78
	Others	0	0.0	9	29	0	0.0	2	29	3	20	2	18	2	22	18	22
Bicycle	Purchased	42	93	53	91	41	98	33	97	18	90	31	91	29	94	247	94
	Others	3	7	5	9	1	2	1	3	2	10	3	9	2	7	17	6
Motorcycle	Purchased	2	67	16	100	5	100	7	100	18	100	17	100	19	100	84	99
	Others	1	33	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1
Radio	Purchased	19	100	82	99	29	100	37	100	49	98	41	98	54	100	311	99
	Others	0	0.0	1	1	0	0.0	0	0.0	1	2	1	2	0	0.0	3	1
Telephone	Purchased	47	100	87	98	58	100	52	96	71	99	60	97	62	100	437	98
	Others	0	0.0	2	2	0	0.0	2	4	1	1	2	3	0	0.0	7	2
Oxen	Purchased	42	96	0	0.0	35	95	27	93	0	0.0	0	0.0	0	0.0	104	95
	Others	2	5	0	0.0	2	5	2	7	0	0.0	0	0.0	0	0.0	6	6
Other cattle	Purchased	19	76	52	90	32	97	19	86	21	84	21	84	18	90	182	88
	Others	6	24	6	10	1	3	3	14	4	16	4	16	2	10	26	13
Goat	Purchased	52	90	98	99	56	100	34	90	65	97	57	97	55	95	417	96
	Others	6	10	1	1	0	0.0	4	11	2	3	2	3	3	5	18	4
Sheep	Purchased	7	100	27	93	6	100	12	100	9	100	15	100	29	94	105	96
	Others	0	0.0	2	7	0	0.0	0	0.0	0	0.0	0	0.0	2	7	4	4
	Purchased	27	96	25	100	18	100	12	92	27	93	17	100	35	95	161	96

Mode of acquisition of production assets		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Pig	Others	1	4	0	0.0	0	0.0	1	8	2	7	0	0.0	2	5	6	4
Poultry	Purchased	50	91	74	97	52	95	46	100	57	95	59	97	54	96	392	96
	Others	5	9	2	3	3	6	0	0.0	3	5	2	3	2	4	17	4
Other	Purchased	18	100	21	96	21	88	12	86	3	75	6	100	5	100	86	93
	Others	0	0.0	1	5	3	13	2	14	1	25	0	0.0	0	0.0	7	8

3.2.4 Land Ownership and Preparation Techniques

On average, households across the seven districts targeted in the study cultivated 4.6 acres of land in 2018. Households in the West Nile districts on average cultivated smaller acreages of land (2.9 acres) compared to the Acholi sub-region (7.2 acres). Total acreage of land cultivated by household varied by district ranging between 2.5 acres and 7.8 acres, with the highest in Lamwo and lowest in Zombo district. Finding reveals further that 85% of the land cultivated in 2018 was family owned and this is for both regions. 11% of the land cultivated was hired and was most observed in West-Nile where land fragmentation could be seen. Of all land cultivated in 2018, households that had access to communal land, cultivated the largest acreage, an average of 7.2 acres followed by those that cultivated family owned land (4.0 acres), while the smallest was for hired/borrowed land at 1.9 acres. See Table 3.2.4.1 below.

Regarding methods used in preparation of land for production, results show that in 2018, majority of households used the hand-hoe both for the first and second tillage. Use of ox-ploughs was reported in the Acholi sub-region where large acreages of between 6.1 to 7.2 were cultivated in 2018. The use of oxen for ploughing was not observed in West-Nile. Other methods of land preparation like tractor hire showed insignificant results. See Table 3.2.4.2 below.

Households used varied and mixed sources of labor for cultivating land in 2018. Several households used a combination of family and hired labor to prepare their land for production, but with family labor as the most dominant source. On average family labor was used in 62% of the households, hired labor in 31% while group rotational labor was only reported by 8% of the households surveyed. Use of hired labor was higher in West-Nile (44%) compared to the Acholi sub-region (23%) with Zombo district recording the highest percentage and lowest in Kitgum. Participants of the focus group discussions in Kango, Zeu and Attiak sub-counties in Zombo reported that their terrain is difficult to handle during land opening. Added to this, the men tend to leave land opening to the women whose labour is limited and therefore supplement with hiring. In the Acholi sub-region, farmers explained that labour hire happens mainly during weeding and harvesting since most crops mature at the same time.

Table 3.2.4.1: Total acreage of land cultivated in 2018, mode of acquisition and source of labor used

District	AGAGO HHs	Mean	%	KITGUM HHs	Mean	%	LAMWO HHs	Mean	%	Acholi Region HHs	Mean	%	ARUA HHs	Mean	%	NEBBI HHs	Mean	%	PAKWACH HHs	Mean	%	ZOMBO HHs	Mean	%	West Nile HHs	Mean	%	Total HHs	Mean	%
Total acreage of land cultivated in 2018	71	7.5		78	6.4		67	7.8		216	7.2		120	2.6		75	3.1		72	3.6		68	2.5		335	2.9		551	4.6	
Ways of acquiring total land cultivated by household in 2018																														
Family owned	69	6.5	85%	76	5.8	89%	61	6.8	79%	206	6.4	85%	113	2.4	87%	69	2.5	76%	68	3.4	89%	72	2.2	92%	322	2.6	86%	528	4.0	85%
Communal owned	1	14.0	3%	1	3.1	1%	6	9.8	11%	8	9.5	5%	2	1.0	1%			0%			0%	1	1.0	1%	3	1.0	0%	11	7.2	3%
Hired land	14	2.7	7%	16	2.3	8%	11	4.4	9%	41	3.0	8%	26	1.3	11%	32	1.8	25%	24	1.3	12%	20	1.0	12%	102	1.4	15%	143	1.9	11%
Borrowed	11	3.0	6%	7	1.6	2%			0%	18	2.5	3%	6	0.5	1%	2	2.6	2%	3	0.6	1%			0%	11	0.9	1%	29	1.9	2%
Government protected area	1	5.0	1%			0%			0%	1	5.0	0%			0%			0%			0%			0%	0			1	5.0	0%
Ways acquired the labour for cultivating the total acreage of land for HH production in 2018:																														
Family labour	71	5.0	67%	77	4.6	71%	61	5.9	70%	209	5.1	69%	100	1.4	45%	69	1.7	50%	71	2.2	61%	71	1.2	51%	311	1.6	51%	520	3.0	62%
Hired labour	31	4.2	24%	36	2.8	20%	28	4.5	24%	95	3.7	23%	76	1.7	42%	55	1.9	46%	49	2.0	38%	54	1.7	54%	234	1.8	44%	329	2.4	31%
Group rotational labour	18	3.2	11%	17	2.7	9%	11	3.4	7%	46	3.1	9%	34	1.2	13%	6	0.8	2%	5	1.3	2%	1	0.3	0%	46	1.1	5%	92	2.1	8%

Table 3.2.4.2: Methods used in preparation of land for production

Method used	AGAGO 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	ARUA 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	KITGUM 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	LAMWO 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	NEBBI 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	PAKWACH 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	ZOMBO 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres	Total 1st tillage HHs	Mean acres	2nd tillage HHs	Mean acres
Hand Hoe	66	7.1	30	4.8	117	2.5	115	2.6	66	6.0	26	4.4	57	6.0	13	4.2	73	2.8	68	2.9	72	3.5	71	3.4	72	2.4	69	2.5	523	4.1	392	3.1
Ox-ploughing	14	5.0	46	8.2					16	5.5	52	6.0	18	9.1	50	7.6	5	3.3	2	2.3	2	1.5			1	1			56	6.1	150	7.2
Tractor					2	2.4	1	1.0									1	1.0			1	1.0							4	1.7	1	1.0
Total number of acres	69	7.4	63	7.4	116	2.6	113	2.6	77	6.3	69	6.0	62	7.6	57	7.0	70	3.0	64	3.0	71	3.6	65	3.5	68	2.5	65	2.5	533	4.5	496	4.3

3.2.5 Access and Use of Improved Agricultural inputs

Use of improved agricultural inputs was observed in all households across the seven districts targeted in the study. Results show that nearly half (45%) of all surveyed households planted improved crop seeds in 2018 with the highest proportion reported in Pakwach at 60% and Agago (58%). 20% used improved cuttings and vines, 12% used improved vegetable seeds while 6% used fertilizers. To fight against pests and diseases, results show that 34% used improved/factory produced pesticides/herbicides while 45% used modern livestock drugs to treat their animals. Slightly over half (52%) used modern tools of farming including spray pumps, tarpaulins and gumboots (safety gear).

In assessing the source of the agro-inputs used, the study considered inputs from accredited input dealers, home saved and other sources (usually from open markets, friends, group members). For households that used improved crop seeds in 2018, the majority (64%) obtained the seeds from input dealers from within their district. Very few (8%) used home saved improved crop seeds. Use of home saved materials was more common for cassava cuttings and sweet potato vines. Similar to improved crop seeds, majority of households that used pesticides obtained them from input dealers (87%). There was a challenge of distance to input dealers located not within easily walkable distances; on average input dealers were 13 – 16 kms away from the households. For instance, in Pakwach and Agago, where use of improved crop seeds was highest, input dealers were reported to be located in a distance of 7.2kms and 16.9kms from the farmer households. In Arua, households reported to have bought their improved crop seeds from input dealers 16.7kms away. Only in Zombo and Nebbi farmers move short distances to reach their input dealers, i.e. 2.7 and 3.5kms respectively.

In terms of quality of inputs, majority of farmers rated the seeds, cuttings and pesticides from input dealers highly. For instance, among farmers that used improved crop seeds, 80% rated their quality as high, 19% moderate; only 1% felt the seeds were of low quality. Equally among users of modern pesticides from input dealers, majority (87%) rated their quality as high, only 10% and 3% rated them as moderate and low quality respectively. In other words, many farmers acknowledged that the crop seeds were clean, not broken and had high germination rates while the pesticides were effective in killings the pests.

The farmers' rated their knowledge on use of especially pesticides and even improved crop seeds as low. Through a self-assessment, only 19% of households surveyed felt they had good knowledge about use of pesticides. More than (53%) rated their knowledge about use of pesticides as poor. On use of improved crop seeds, just 45% felt they had good knowledge; 30% reported having fair knowledge while 25% rated their knowledge about improved crop seeds as poor. Varied sources of learning/information on how best to use agricultural inputs were reported, but the most dominant being friends and input dealers.

The low/limited use of improved crop seeds was attributed to the high cost of seed for crops like Sunflower. According to FGD participants in Kanyipa West in Adilang sub-county Agago district, farmers within their community are interested in using improved crop seeds but they are hindered by accessibility and the high cost of the seeds. They mentioned that for instance, in 2018, the cost of one kilogram of improved Sunflower seeds was Ugx 50,000/= which they could not afford. Most of them opted to use local seeds. They also explained that the prices of the produce influence their choice of local seeds over the costly improved seeds. According to them, often buyers promise them good prices when they are planting, but after harvesting, the prices drop causing those that used improved seed varieties losses. Long distances to input dealers was also cited by farmers. For instance, in Yoro village, Arua district, the nearest input dealer's shop is 55km away.

In general, as seen from the above, the use of improved inputs is observed however this has not had great impact on production. A critical examination of this relationship with the groups during the discussion revealed that most of the home saved seeds categorized as improved are old generation seeds which yields are not very promising. Even when the seeds are good, farmers were not paying attention to good agronomic management practices and lastly some improved seeds from input dealers turned out to have been adulterated. These factors have down played the overall crop yields of farmer households in 2018. See Table 3.2.5.1 for details.

Table 3.2.5.1: Level of use of improved agricultural inputs, sources, quality of inputs and distance to input dealers

		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
Used improved agricultural input in 2018																	
Crop seeds:		41	58	42	35	28	36	28	42	37	49	43	60	31	43	250	45
Cuttings and vines		6	9	37	31	12	15	7	10	24	33	20	28	4	6	110	20
Vegetable seeds		4	6	26	22	1	1	7	11	12	19	10	14	4	6	64	12
Fertilizers		0	0	21	18	0	0	2	3	1	2	2	3	5	7	31	6
Pesticides		10	14	49	41	8	10	9	14	54	75	43	61	12	17	185	34
Livestock drugs		40	57	64	54	26	33	30	46	26	41	33	47	22	31	241	45
Tools		26	36	69	58	24	31	26	40	41	57	51	72	47	65	284	52
Sources of inputs you used																	
Crop seeds	Input dealer	32	78	19	45	24	89	21	75	23	61	31	72	10	32	160	64
	Home saved	3	7	0	0	0	0	3	11	2	5	7	16	6	19	21	8
	Others	6	15	23	55	3	11	4	14	13	34	5	12	15	48	69	28
Cuttings and vines	Input dealer	1	17	4	11	1	7	2	18	1	4	0	0	1	25	10	9
	Home saved	2	33	11	30	3	21	4	36	16	67	14	64	3	75	53	45
	Others	3	50	22	60	10	71	5	46	7	29	8	36	0	0	55	47
Vegetable seeds	Input dealer	3	60	21	81	0	0	5	56	8	62	6	60	4	100	47	68
	Home saved	1	20	1	4	0	0	1	11	2	15	0	0	0	0	5	7
	Others	1	20	4	15	2	100	3	33	3	23	4	40	0	0	17	25
Fertilizers	Input dealer	0	0	9	41	0	0	1	25	1	100	2	67	2	33	15	42
	Home saved	0	0	0	0	0	0	0	0	0	0	1	33	0	0	1	3
	Others	0	0	13	59	0	0	3	75	0	0	0	0	4	67	20	56
Pesticides	Input dealer	10	91	38	78	8	100	8	100	47	87	40	93	10	83	161	87
	Home saved	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
	Others	1	9	11	22	0	0	0	0	7	13	3	7	2	17	24	13
Livestock drugs	Input dealer	32	80	40	64	22	88	25	86	19	73	29	88	12	55	179	75
	Home saved	5	13	1	2	1	4	2	7	0	0	0	0	0	0	9	4
	Others	3	8	22	35	2	8	2	7	7	27	4	12	10	46	50	21
Tools	Input dealer	10	39	39	59	16	73	11	48	30	71	33	66	31	67	170	62
	Home saved	4	15	2	3	1	5	3	13	4	10	0	0	7	15	21	8

		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
	Others	12	46	25	38	5	23	9	39	8	19	17	34	8	17	84	31
Average distance to nearest source of input																	
	Crop seeds	16.9		16.7		12.1		16.6		3.5		7.2		2.7		13.3	
	Cuttings and vines	13.6		18.8		11.6		17.1		1.7		1.1		4		14.8	
	Vegetable seed	11.8		19.8		11.7		16.7		8.9		14.3		3.1		15.4	
	Fertilizers	12.6		18.7		14.7		19.5		4.6		13		1.4		16.6	
	Pesticides	11.5		18.3		13.7		16.9		2.7		7.2		9.3		13	
	Livestock drugs	10.9		17.1		12.5		13.6		3.8		9.6		6		12.7	
	Tools	11.0		18.3		12.1		13.3		4.6		6.5		5.5		11.9	
Inputs always available in the shops within the sub county																	
	Crop seeds	25	76	13	50	19	68	20	83	25	78	31	82	12	50	145	71
	Cuttings and vines	2	50	10	59	6	60	3	75	3	38	0	0	1	50	25	54
	Vegetable seeds	2	40	12	52	1	100	5	83	8	73	6	86	3	75	37	65
	Fertilizers	0	0	7	47	0	0	0	0	1	100	3	100	2	67	13	52
	Pesticides	7	70	24	56	5	56	5	63	51	96	38	91	9	90	139	79
	Livestock drugs	28	76	28	60	19	76	22	82	19	91	26	81	17	77	159	75
	Tools	16	76	24	52	18	78	22	88	33	85	37	93	35	81	185	78
Rating of quality of inputs																	
Crop seeds	High	31	76	35	92	19	68	21	78	30	77	34	79	28	90	198	80
	Moderate	10	24	3	8	8	29	5	19	9	23	9	21	3	10	47	19
	Low	0	0	0	0	1	4	1	4	0	0	0	0	0	0	2	1
Cuttings and vines	High	4	67	30	91	10	83	5	63	23	96	17	81	4	100	93	86
	Moderate	2	33	3	9	2	17	1	13	1	4	4	19	0	0	13	12
	Low	0	0	0	0	0	0	2	25	0	0	0	0	0	0	2	2
Vegetable seeds	High	5	100	20	87	1	100	4	50	12	92	10	100	3	75	55	86
	Moderate	0	0	3	13	0	0	2	25	0	0	0	0	1	25	6	9
	Low	0	0	0	0	0	0	2	25	1	8	0	0	0	0	3	5
Fertilizers	High	0	0	21	100	0	0	1	25	1	100	2	67	6	100	31	89
	Moderate	0	0	0	0	0	0	1	25	0	0	1	33	0	0	2	6
	Low	0	0	0	0	0	0	2	50	0	0	0	0	0	0	2	6

			AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
			HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
Pesticides		High	10	100	48	98	7	88	7	88	44	82	35	81	9	75	160	87
		Moderate	0	0	1	2	1	13	0	0	6	11	7	16	3	25	18	10
		Low	0	0	0	0	0	0	1	13	4	7	1	2	0	0	6	3
Livestock drugs		High	30	79	61	97	22	85	26	90	21	81	32	97	22	100	214	90
		Moderate	7	18	2	3	4	15	3	10	5	19	0	0	0	0	21	9
		Low	1	3	0	0	0	0	0	0	0	0	1	3	0	0	2	1
Tools		High	19	73	53	79	18	75	19	76	33	77	43	86	29	62	214	76
		Moderate	5	19	7	10	4	17	5	20	6	14	5	10	11	23	43	15
		Low	2	8	7	10	2	8	1	4	4	9	2	4	7	15	25	9
Rating knowledge on use of the inputs																		
Crop seeds:	Good		39	54	39	33	31	40	24	36	45	59	36	50	34	47	248	45
	Fair		13	18	46	38	17	22	20	30	23	30	25	35	25	35	169	30
	Poor		20	28	35	29	30	39	23	34	8	11	11	15	13	18	140	25
Vegetable seeds:	Good		13	19	30	25	10	13	7	10	32	43	25	35	21	29	138	25
	Fair		16	23	40	33	14	18	21	31	15	20	17	24	18	25	141	26
	Poor		41	59	50	42	52	68	39	58	28	37	30	42	33	46	273	50
Cuttings & vines:	Good		22	31	31	26	12	16	11	16	25	33	24	33	24	33	149	27
	Fair		12	17	43	36	13	17	21	31	28	37	25	35	29	40	171	31
	Poor		36	51	45	38	51	67	35	52	22	29	23	32	19	26	231	42
Fertilizers:	Good		2	3	25	21	2	3	4	6	6	8	2	3	10	14	51	9
	Fair		11	16	20	17	9	12	13	19	8	11	4	6	18	25	83	15
	Poor		56	81	75	63	64	85	50	75	59	81	66	92	44	61	414	76
Pesticides/herbicides:	Good		7	10	27	23	5	7	9	13	29	38	18	25	10	14	105	19
	Fair		14	20	44	37	14	19	12	18	27	36	24	33	20	28	155	28
	Poor		48	70	49	41	56	75	46	69	20	26	30	42	42	58	291	53
Livestock drugs:	Good		19	27	24	20	12	16	12	18	10	13	6	8	2	3	85	15
	Fair		21	30	46	38	19	25	16	24	17	23	20	28	16	22	155	28
	Poor		30	43	50	42	46	60	39	58	48	64	46	64	54	75	313	57
Tools:	Good		21	31	48	40	22	30	21	31	48	64	46	64	44	61	250	46
	Fair		14	21	43	36	23	31	14	21	25	33	26	36	26	36	171	31

		AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
		HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
	Poor	32	48	29	24	29	39	32	48	2	3	0	0	2	3	126	23
Source of information on ways of using inputs																	
	Input dealer	33	46	27	23	34	44	31	46	31	41	26	36	15	21	197	35
	Government agricultural extensionist	13	18	21	18	11	14	8	12	16	21	18	25	14	19	101	18
	Development partner extensionist	18	25	36	30	7	9	8	12	24	32	26	36	29	40	148	27
	Friends	39	54	41	34	33	42	31	46	29	38	31	43	30	42	234	42
	Relative	20	28	19	16	16	21	8	12	17	22	26	36	33	46	139	25
	Radio	23	32	52	43	19	24	19	28	16	21	7	10	5	7	141	25
	Others	8	11	15	13	5	6	5	8	3	4	3	4	3	4	42	8

3.2.6 Cumulative percentage increase in average yields per acre for strategic crops

To examine this indicator, the study considered the different strategic crops cultivated per region (district), the total land under cultivation and quantity of harvest (yields) for each of the crops. At this point in time, yields can only be compared to research estimates for both improved and local varieties. The farming practices employed for production in 2018 were based on farmer own knowledge, peer learning and perhaps if a household benefited from other development interventions before the start of NURI programme. The strategic crops are highlighted in the table below:

Table 3.2.6.1: Strategic crops selected per district

Region	District	Strategic crop
South West-Nile	Arua	Sesame, Beans, Soybeans, Cassava
	Nebbi	Onions, Irish potatoes, Beans and Soybeans
	Zombo	Irish potatoes, Onions and Beans
	Pakwach	Sesame, Cassava and Rice
Acholi	Agago	Cassava, Sesame, Soybean and Sunflower
	Kitgum	Sesame, Cassava, Sunflower and Beans
	Lamwo	Sesame, Cassava, Sunflower and Soybeans

Average yields for strategic crops

Findings indicate that average yields per acre for all the strategic crops in 2018 was low when compared to research estimates for both local and improved varieties. Although the yields were below research estimates, it can be seen that for all the strategic crops, the yields from West-Nile were slightly higher than Acholi sub-region. The yields for non-strategic crops was equally assessed and could be seen to be low when compared to research estimates. Farmers are encouraged to apply CSA practices to all crops although CSA training focusses on the selected strategic crops.

From the Focus Group Discussions, farmers asserted that the low yields resulted from the poor agronomic farming practices (specifically poor crop management and use of poor seeds), some stretch of dry-spell mid-2018 and wastage during harvest. In Acholi sub-region, weed prevalence

affected the yield for cereals (maize, millet, sorghum and rice). The most common weed is the striga which is widespread and difficult to control by farmers. The weed causes stunted growth and affecting yields. Some farmers confessed to have abandoned heavily infested fields. For crops like sunflower in the Acholi sub-region, it was expected that yields could have been better in 2018 since its uptake was high during the RDNUC however when farmers were probed, reports showed that most of the respondents planted the local varieties since they felt they could not afford the improved variety.

Table 3.2.6.2: Average yields for strategic crops in 2018

Strategic crop name	Research yield estimate per acre (kg)	Average yield West-Nile (kg)	Average yield Acholi (kg)	Average yield per acre at baseline (kg)
Sesame	250	176	142	156
Beans	300	279	139	264
Maize	500	419	313	380
Soybeans	400	262	154	231
Sunflower	350	0	240	249
Rice	700	533	220	504
Potatoes	-	747	-	-
Cassava	-	2,982	2,395	2,901
Onions	-	929	2,400	1,052

Table 3.2.6.3: Average crop yields per acre in 2018

Crop	ARUA		NEBBI		PAKWACH		ZOMBO		Total-West Nile		AGAGO		KITGUM		LAMWO		Total-Acholi		Over all	
	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean	HHs	Mean
Sesame	47	233	6	138	62	137	1	120	116	176	31	105	68	149	59	153	158	142	274	156
Beans	94	310	46	250	10	235	70	264	220	279	14	154	7	127	7	123	28	139	248	264
Maize	63	404	53	418	36	375	54	467	206	419	42	294	46	321	33	325	121	313	327	380
Soybeans	14	301	2	190	2	160	2	163	20	262	5	157	2	103	1	240	8	154	28	231
Sunflower					2	760			2	760	54	258	18	184	13	220	85	237	87	249
Rice	8	763	3	327	13	439			24	533	1	80	1	233			2	157	26	504
Groundnuts	90	512	43	456	4	221	14	419	151	480	43	173	26	211	14	223	83	194	234	378
Cassava	107	2,494	62	2,634	70	2,997	62	4,153	301	2,982	11	2,687	21	2,677	16	1,823	48	2,395	349	2,901
Sorghum	37	350	7	233	26	547	7	129	77	386	65	322	58	296	55	250	178	291	255	320
Millet	26	719	2	495	7	219	3	188	38	573	41	268	44	211	23	267	108	245	146	330
Pigeon Peas	16	438			7	542			23	469	27	69	36	101	25	149	88	105	111	180
Sweet potato	26	3,537	3	3,200	6	1,955	4	2,120	39	3,123	12	1,647	11	2,446	5	3,215	28	2,241	67	2,754
Irish Potato	1	8,000	3	480			28	516	32	747	1	60					1	60	33	726
Onions	10	1,375	8	615			4	445	22	929									22	929
Banana	17	4,274					12	2,427	29	3,510									29	3,510

Average value of crop production in 2018

To understand the value of crop production in a farmer household, the study combined total acreage cultivated, yields and price of each of the crop types (strategic and non-strategic) cultivated on a minimum of 0.5 acre per household interviewed. This is important in monitoring improvements in production levels of a household. The farmer groups supported by the NURI programme prepare what is called a production and marketing plan for the selected strategic crops. The PMP serves as a workplan for the farmers and at the end of every production year, they should be able to assess improvements in income as a result of the selected strategic crop. Farmers are encouraged to apply the same process to all the crops grown at household level to ensure all round income in the household.

The average value of all crops (strategic and non-strategic) produced by farmer households in 2018 for the 7 districts was UGx 3,244,400/=. When the two regions are compared, the value in West-Nile was UGx 3,619,500/= and UGx 2,655,600/= for Acholi sub-region. The higher value in West-Nile is attributed to the crop types cultivated like Irish potatoes, banana and cassava that have a higher market value compared to sorghum, millet and groundnuts in Acholi region. For Acholi, its simsim, sunflower, cassava that have had good market value.

From the group discussions, farmer groups reported that most of them do not bother to attach value to their production activities. Even when they make plans at the start of the production cycle, along the way the plans are dropped or not followed. They added that unplanned production explains the fact that some of them cultivate year in and year out but with no major impact on their livelihoods.

Table 3.2.6.4: Average value of crop production per household for different crops by district

Crop	ARUA HHs	ARUA Mean	NEBBI HHs	NEBBI Mean	PAKWACH HHs	PAKWACH Mean	ZOMBO HHs	ZOMBO Mean	West Nile Region HHs	West Nile Region Mean	AGAGO HHs	AGAGO Mean	KITGUM HHs	KITGUM Mean	LAMWO HHs	LAMWO Mean	Acholi Region HHs	Acholi Region Mean	Over-all HHs	Over-all Mean
Sesame	47	450,364	6	272,250	62	382,161	1	174,000	116	402,316	31	491,594	68	881,682	59	1,954,400	158	1,205,700	274	865,599
Beans	94	393,613	46	232,461	10	319,200	70	326,197	220	335,085	14	375,393	7	178,571	7	425,000	28	338,589	248	335,480
Maize	63	173,786	53	266,868	36	234,361	54	179,130	206	209,721	43	347,609	46	343,826	33	414,106	122	364,170	328	267,168
Soybeans	14	130,514	2	136,000	2	64,000	2	168,750	20	128,235	5	432,800	2	210,000	1	189,000	8	346,625	28	190,632
Sunflower					2	190,000			2	190,000	55	361,673	18	192,778	13	313,846	86	319,093	88	316,159
Rice	8	310,875	3	345,000	13	605,423			24	474,688	1	260,000	1	1,050,000			2	655,000	26	488,558
Groundnuts	90	507,328	43	575,326	5	213,730	14	279,400	152	495,913	43	458,116	26	442,115	14	376,786	235	439,386	235	475,948
Cassava	107	1,055,500	62	1,540,700	70	1,784,600	62	2,026,700	301	1,525,048	11	1,651,200	21	1,597,800	16	1,485,000	349	1,572,438	349	1,531,565
Sorghum	37	134,586	7	153,000	27	389,400	7	42,000	78	216,135	65	466,846	58	249,914	55	318,382	256	350,287	256	309,412
Millet	26	615,631	2	371,250	7	173,571	3	55,367	38	477,105	41	655,578	44	398,080	23	501,750	146	517,912	146	507,291
Pigeon Peas	16	396,094			7	445,029			23	410,987	27	106,985	37	117,745	25	173,184	112	130,053	112	187,745
Sweet potato	26	690,385	3	1,520,000	6	506,667	4	742,000	39	731,231	12	1,195,800	11	633,818	5	533,680	67	856,786	67	783,701
Irish Potato	1	600,000	3	276,000			28	356,786	32	356,813	1	90,000					33	90,000	33	348,727
Onion																				
Banana	17	17,672,000					12	9,486,800	29	14,285,021									29	14,285,021
Total	**120**	**4,819,400**	**76**	**2,177,800**	**72**	**2,746,600**	**72**	**4,025,600**	**339**	**3,619,500**	**72**	**2,783,500**	**77**	**2,212,300**	**67**	**3,027,600**	**216**	**2,655,600**	**556**	**3,244,400**

3.2.7 Cumulative percentage of the quantity of strategic crops harvest that is sold

This baseline study assessed the quantity of strategic crops cultivated in 2018 that was marketed. The results in table 3.2.7.1 show that on average, more than half of what was produced by farmer households was sold. Crops like sunflower, rice, onions and soybeans registered very high percentages. One could see that such crops that were highly marketed could not be easily consumed within the households and at the same time their market price was better and so farmers preferred to sell them to earn income. Overall, majority (more than 50%) of the crop harvest among strategic crops was marketed. Specifically, while the districts of Pakwach (*maize*), Zombo (*maize*) and Lamwo (*sesame*) consumed most of the harvests (>50%) for the indicated crops, the following districts marketed all their harvest (100%) for these crops; Kitgum (*Sunflower and soybeans*), Arua (*rice*) and Pakwach (*soya-beans*). See Tables 15 for proportion of crop harvested that was sold in 2018.

Participants in FGDs in Arua, reported selling their produce locally and individually, which they attributed to absence of initiatives for collective marketing of produce within their villages. They however also acknowledged that many of them produce in small quantities which result into low quantities for sale in the market. Such low quantities cannot attract large-scale buyers in to their villages and most of them ended up selling their produce in their small local markets, sale by the roadside or near home.

Collective marketing from the analysis was observed for very few farmer households and was mainly for sunflower in Acholi sub-region, sesame in both regions and beans in only West-Nile. A few farmers from Agago reported having sold some sunflower collectively to buyers from Lira, in Lamwo sesame was sold to buyers from Gulu and Lira; and in West-Nile beans were sold collectively to buyers from Arua, Amuru and Nwoya. The farmers however confessed they felt their produce was bought at low prices compared to prevailing market rates in major towns, for instance, a kilo of sunflower was bought at Ugx 800/= compared to UGx 1000/= per kilo from Lira town. The same feeling was expressed for sesame and beans in both regions.

Most of the households surveyed reported to have obtained information about available markets and/or prices of their produce from local market places and friends. 65% of all households that

sold their produce in 2018, learnt about the prices and demand from local markets within their sub-counties/parishes/villages. In all the sub-counties targeted for the study with the exception of those from Pakwach districts, there were weekly and monthly market days held in designated places. Such market days attracted buyers from within and outside the regions, farmers received price information during such events. Other sources of information were friends, relatives, radio adverts, company agents and farmer organization. See Table 3.2.7.2 for district specific marketing information sources.

Table 3.2.7.1: Average percentage of crops marketed in 2018

Crop	ARUA	NEBBI	PAKWACH	ZOMBO	AGAGO	KITGUM	LAMWO	All districts
Sesame	51	56	56	74	68	57	33	60
Beans	52	54		92	57	41	58	56
Maize	49	58	40	35	59	60	56	55
Soybeans	86	56	100	67	50	100	60	69
Sunflower	79		98	87		100		83
Rice	100	54	86		67	77		71
Groundnuts	41	62	57	51	69	52	61	59
Cassava	39	49	58	54	47	31	18	44
Sorghum	57	42	57	35	69	40	70	49
Millet	44	58	50	43	67	44		51
Pigeon Peas	42	55	73	55		46		56
Sweet potato		56	40	55	67		71	57
Irish Potato	50	6			56		64	60
Onions		88		100	78			82
Banana	24				40			52

Table 3.2.7.2: Source of marketing information for the crops produced

Source of information	AGAGO		ARUA		KITGUM		LAMWO		NEBBI		PAKWACH		ZOMBO		Total	
	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
Radio adverts:	7	10	13	11	8	10	11	16	4	5	5	7	1	1	49	9
Company agents:	16	22	4	3	14	18	17	25	2	3	6	8	1	1	60	11
Market places:	40	56	91	76	54	69	45	67	36	47	42	58	53	74	361	65
Farmer organizations	10	14	7	6	6	8	1	2	3	4	7	10	2	3	36	7
Friends/relatives:	30	42	46	38	33	42	31	46	15	20	25	35	18	25	198	36
Development partners:	1	1	2	2	1	1	1	2	0	0	2	3	1	1	8	1
Others:	2	3	1	1	0	0	0	0	0	0	2	3	0	0	5	1

Challenges faced by farmers in marketing their produce in 2018 were many, but the most commonly cited are listed below:

- Low prices for produce and price fluctuations
- Exploitation by middlemen
- Use of faulty weighing scales by buyers/traders
- Absence of bulk buyers within the locale
- Absence or poor storage facilities
- Lack of Transport for bulk produce
- Bad roads
- Low quality of crop produce
- Producing in small quantities
- Lack of marketing information
- Absence of market linkages

3.2.8 Household participation in VSLA & use of loans for agricultural purpose

Access to credit facilities is a major factor in influencing agricultural production in farmer households. In the rural communities, most farmers are involved in VSLA activities as a means of accessing funds to support production activities. The study established the proportion of households that were participating in VSLA (formal and informal) activities in the base year 2018. Results showed that 78% of the respondents in the sample had at some time participated in VSLA activities; 38% formally and 40% informally in 2018. Only 22% had not participated. Some reasons cited for none participation included lack of trust, negative attitude towards, unreliable and limited sources of income and lack of VSLA initiatives in the area.

Overall, participation in VSLA activities in the base year was highest in Zombo district and lowest in Kitgum. During the focus group discussions in Kango and Zeu, farmers asserted that when Zombo DFA introduced savings activities in the district in the 2016 under RDNUC, many farmer households showed high interest because there are few micro-finance institutions operating in the district. Farmers perceived that as a means of securing the cash they receive regularly from production activities and committed to continue even on their own. Kitgum had the lowest (68%) however this is still above average. This means that VSLA activities have actually been running in many households with support from other development partners but also through peer learning from groups running the schemes in the communities.

 Among households that participated in VSLA activities in 2018, a big proportion (69%) had received some form of training on the methodology mostly from NGOs (61%), Community Based Organizations (28%) and peer learning (29%). For instance, in Zombo, with the highest number of households that participated in VSLA activities, slightly over half (52%) had received training from NGOs like WENIPS, AFARD (under other donors), CEFORD and CREAM. Also note that up to 31% received training from other groups supported under RDNUC. The Acholi sub-region registered highest number for training by NGOs (81%).

To understand youth participation in VSLA activities, results show mixed observations, while 35% said it was high, 24% felt it was just medium while 41% indicated participation of youth in VSLA activities as low. Farmers reported that youths near the trading centers or towns participate more than those in the remote areas. Furthermore, youths that have families that they take care of

normally within the age of 25-28 years register higher participation than those in the lower age brackets who are living with their parents or guardians. See Table 3.2.8.3.

Against the background of VSLA, the study examined various sources from which farmer households obtain finance to support their agricultural production activities. It further assessed the proportion of funds received through VSLA is used for agricultural purpose. The sources were defined as VSLA, Banks, Micro-finance (SACCOs), individual household saving, borrowing from friends, gifts and sale of agricultural produce. Results show that the highest source of funding for production activities came from sale of agricultural produce with 60% followed by VSLA at 49%. The least was observed from banks, micro-finance and gifts. Farmers expressed that the terms for borrowing money from banks and micro-finance institutions (SACCOs) does not favor them. Their biggest security could have been land however they don't have documentation for the land they have been inheriting in their family lineage.

Figure 3.2.8.1 Ways of accessing money for agricultural production
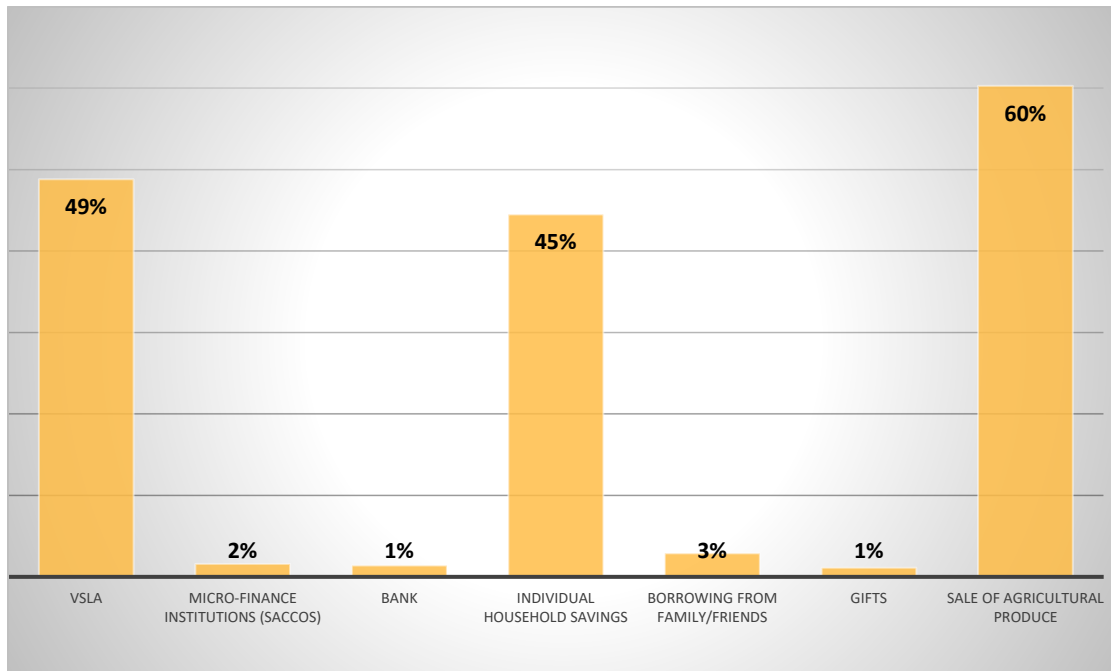
The two regions (West Nile and Acholi) were compared and results show that VSLA as source of funds for agriculture was reported by more households in West Nile (over 50%) than Acholi (less than 40%). In Acholi sub-region, sale of agricultural produce (67%) and household savings (64%) dominated the responses.

Looking at VSLA independently, the study established the average amount a farmer is able to borrow and pay back with interest. Results show that on average, a household was able to borrow UGx 211,674/= across the seven districts. Arua had the highest average which was UGx 277,414/= and Agago had the lowest with UGx 138,411/=. The amount borrowed varied and depended on an individual's ability to pay back and sometimes the magnitude of the use of the money. A few cases of misuse were reported for instance; money borrowed and used to drink alcohol by irresponsible husbands, money stolen or sudden problems like chronic sickness, accidents to mention but a few. The farmers added that their production needs normally exceeded the amount they could obtain through VSLA and so they tried to bridge the gaps using their own means like capitalizing on use of household labour, seeking the help of friends and extended family during weeding etc.

The study investigated what proportions of the funds borrowed from VSLA was used for agricultural purpose. To understand this better, all the uses of VSLA loans were assessed which included school fees/requirements, medical needs, purchase of food stuff, building/construction, purchase of assets and petty trade. According to the results, 66.2% of the loans borrowed was used for agricultural purposes. The proportions used for other activities cannot be overlooked like petty trade (54%) and school fees/requirements (57%). The farmers reported that other special individual needs are solved through borrowing from social funds which are paid back without interest. The money borrowed directly from their savings is normally committed to activities that will enable them pay back the interest. See figure below.

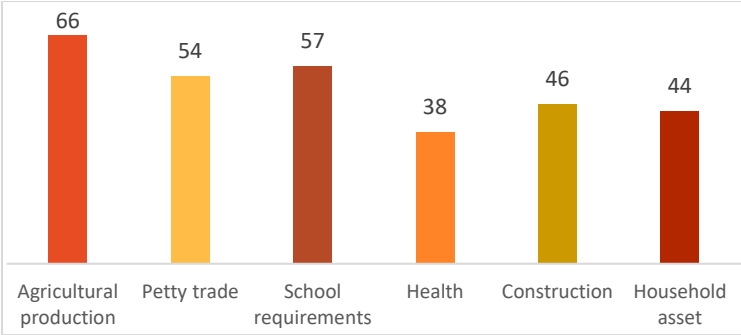**Figure 3.2.8.2 Comparison of use of loans borrowed in VSLA**

Table 3.2.8.3: Participation of Households in VSLA Activities

		ARUA		NEBBI		PAKWACH		ZOMBO		AGAGO		KITGUM		LAMWO		Total	
		HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
Household participated in any VSLA activities in 2018		100	83	60	79	53	74	63	88	57	79	53	68	51	76	437	78
Household received training on VSLA methodology		65	65	40	67	32	62	45	71	38	67	40	76	43	84	303	69
Entity that provided the training on VSLA methodology																	
NGO		27	42	26	65	11	34	24	52	31	82	31	78	36	84	186	61
Community Based Organization		16	25	7	18	12	38	15	33	1	3	3	8	1	2	55	28
Learnt from another group		21	32	7	18	11	34	14	31	11	29	9	23	9	21	82	29
Church based organization		0	0.0	0	0.0	1	3	0	0.0	0	0.0	0	0.0	0	0.0	1	1
Rating participation of youth of 18 - 28 years in VSLA activities	High	27	23	25	33	41	57	25	35	34	47	20	26	29	43	201	35
	Medium	23	19	27	36	14	19	17	24	11	15	29	37	16	24	137	24
	Low	70	58	23	31	17	24	29	41	27	38	29	37	22	33	217	41
Ways of accessing money to finance agricultural production activities in 2018																	
VSLA		84	70	39	51	38	53	37	51	25	35	19	26	30	42	272	49
Micro-finance (SACCOs)		1	1	1	1	2	3	2	3	1	1	2	3	0	0	9	2
Bank		2	2	2	3	0	0	1	1	2	3	1	1	0	0	8	1
Individual household savings		20	17	20	26	34	47	37	51	40	56	47	65	50	69	248	45
Borrowing from family/friends		3	3	3	4	1	1	0	0	4	6	1	1	4	6	16	3
Gifts		0	0	2	3	0	0	0	0	2	3	1	1	1	1	6	1
Sale of agricultural produce		58	48	49	64	54	75	45	63	31	43	48	67	51	71	336	60

Table 3.2.8.6: Average household amount of money received in VSLA loan and how it was used

| | ARUA | | | NEBBI | | | PAKWACH | | | ZOMBO | | | AGAGO | | | KITGUM | | | LAMWO | | | Over-all | |
	No	Mean amount (Ugshs)	Percent (%)	No	Mean amount (Ugshs)	Percent (%)	No	Mean amount (Ugshs)	Percent (%)	No	Mean amount (Ugshs)	Percent (%)	No	Mean amount (Ugshs)	Percent (%)	No	Mean amount (Ugshs)	Percent (%)	No	Mean amount (Ugshs)	Percent (%)	Mean amount (Ugshs)	Percent (%)
Amount of money borrowed (loan) from VSLA	99	277,414		56	220,339		53	170,943		63	210,921		56	138,411		48	247,292		53	166,717		211,674	
Ways the loan was used																							
Agricultural production	70	164,029	62.4	38	156,947	67.7	46	120,478	69.3	51	120,294	61.5	26	74,885	60.9	23	192,478	72.5	30	130,600	76.7	138,785	66.2
Petty trade	32	126,688	56.7	13	96,538	52.9	17	53,765	51.8	21	103,810	63.5	5	155,200	72.2	9	85,889	43.2	14	68,214	44.3	98,261	54.8
School requirements	40	160,650	48.0	17	100,294	39.1	10	101,750	38.5	21	107,143	49.5	23	125,391	80.2	29	163,966	60.9	27	118,630	71.1	133,574	57.6
Health	28	74,411	30.0	11	40,636	32.2	13	38,231	32.8	8	38,125	37.3	15	57,200	60.1	9	83,889	51.2	6	60,000	23.9	58,950	38.2
Construction	5	105,400	34.6	3	256,667	72.5	1	300,000	60.0	4	467,500	39.6	2	80,000	45.5	1	120,000	50.0	1	40,000	50.0	222,765	46.4
Household asset	21	136,262	36.6	16	71,125	57.9	12	74,208	37.6	11	49,818	28.5	17	66,235	54.1	8	130,000	58.3	9	40,000	33.7	84,723	44.0

3.2.9 Gender and Youth Participation in Agricultural Production

Gender and youth participation are being treated as special but also cross cutting issues in the implementation of NURI programme. There are no separate activities tagged to gender and youth concerns and so they are intertwined in the delivery of the different activities. Understanding the picture from before kick-off of NURI activities is important. The baseline study examined the participation of different household members and the youth in the main stages of production. The main stages are land opening/preparation, planting, weeding, pest & disease management, post-harvest handling, marketing and planning.

<u>Gender in production</u>

In every household, the study considered the participation of adult males, adult females, male children, female children and where combined efforts were observed. Results show that in general participation depended on the stage of production however adult female participated highest. The stages of weeding, harvesting and sale, the adult female dominated while land opening, sale and planning registered high participation of adult male. On involvement of the children, the combination adult female and children participated more than adult male and children. The participants in the focus group discussion explained that women participate highest during weeding, harvesting and sale because they are keener and can withstand bending for many hours. Note that weeding some crops like maize, cassava, sunflower, groundnuts and beans had some men take part in. Crops like sesame, millet, sorghum, potatoes were left for the women to weed.

Decision making is critical in managing production activities at every stage. Results indicate that irrespective of the level of participation, by and large decision making is done by the men for the male-headed households. Participants asserted that by culture, it's the men to make production decisions as land and major asset owners. The decisions include proportion of land and crop types to be planted, quantity of harvest to be sold, use of money from sale of produce and plans for the new season. To some extend the women make decisions during weeding, harvesting, drying and cleaning.

Figure 3.2.9.1: Level of participation of household members in various agricultural production
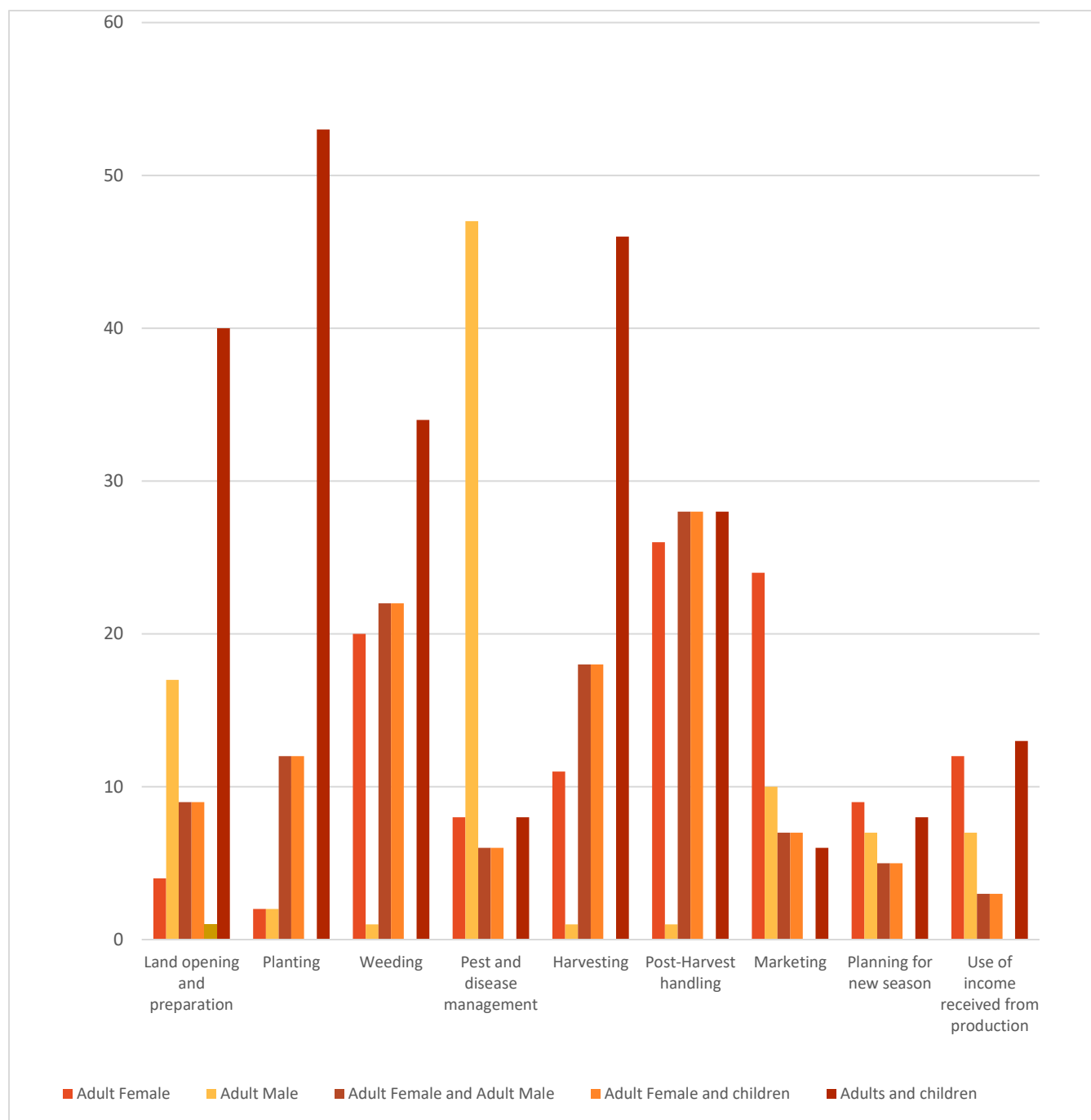
Figure 3.2.9.2: Household member in charge of mobilizing for the various agricultural production activities
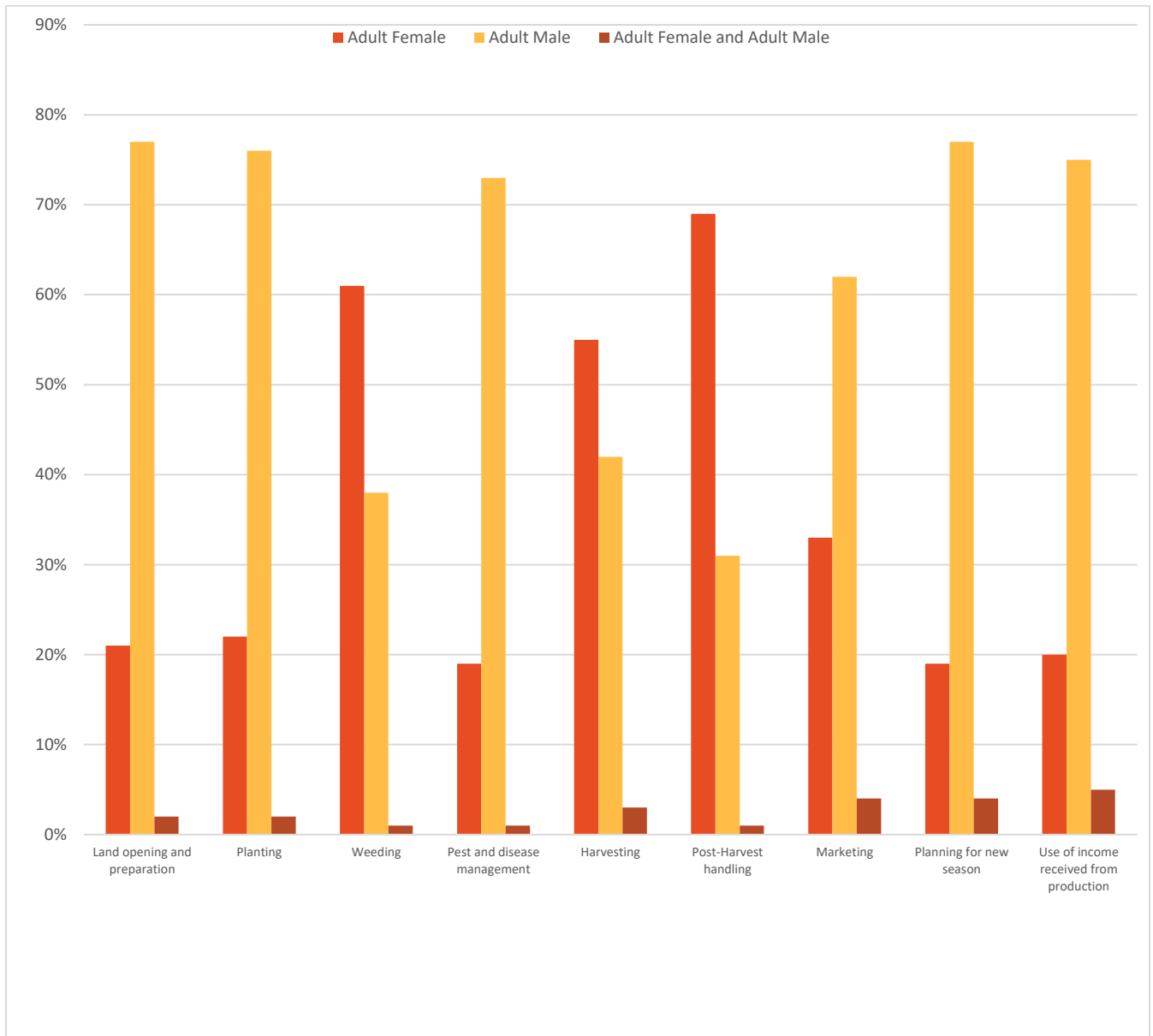
Youth participation in production

Understanding youth participation in production in general is important, like for VSLA, results cutting across the region showed mixed reaction however to a great extent youth participation was rated high (64%). About 23% rated it as medium and 13% rated it low. No major differences could be noted between the two regions. In the focus group discussions, some key notes made that explain the rating include low levels of education for formal jobs, limited opportunities for skilled

labour, parental responsibilities/obligations and farming as the only available livelihood option. The youth in the older age bracket i.e. between 25-28 years register higher levels of participation compared to those in the lower bracket (18-24 years). In West-Nile, the participation of youth sometimes depended on the enterprise type, for instance enterprises like potatoes, rice, cotton and cassava were up taken by more youth compared to sesame and beans. See Table 3.2.9.4.

Figure 3.2.9.3: Youth participation in production in percentages
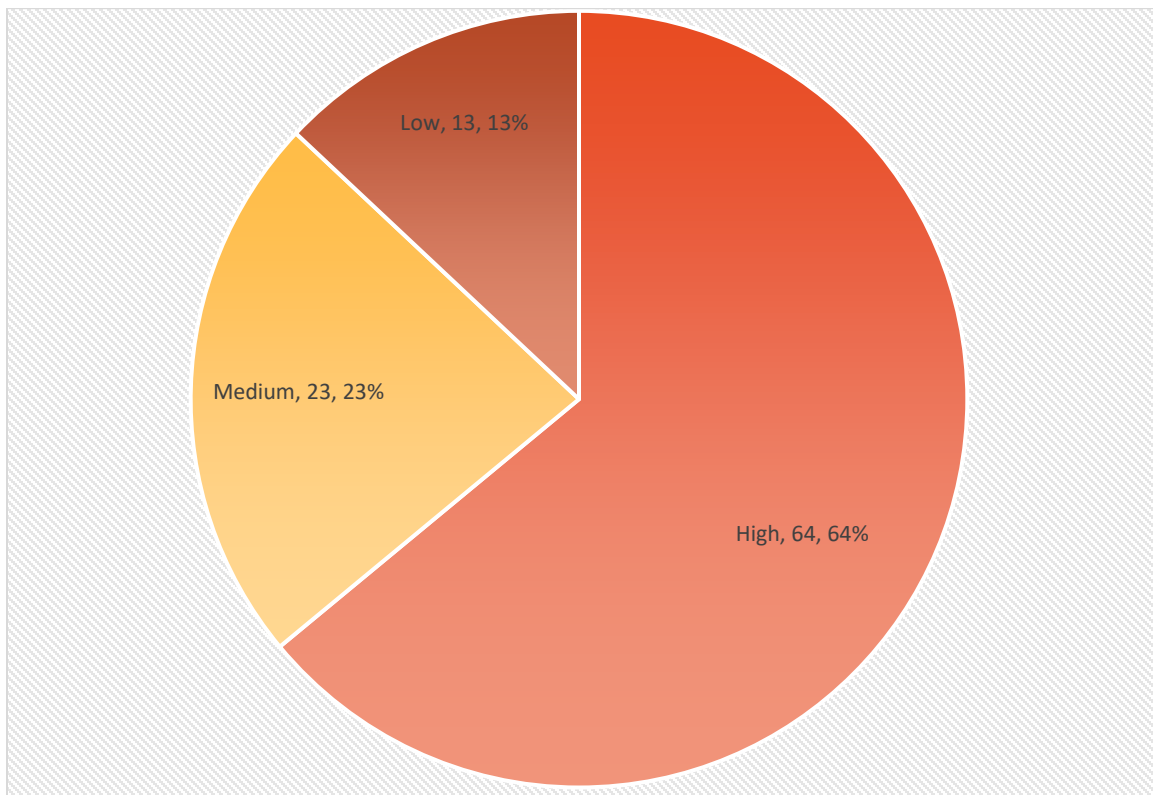
Table 3.2.9.4: Rating of youth participation in agricultural production by district

| | West Nile Region | | | | | | | | Acholi Region | | | | | | Total | |
| | ARUA | | NEBBI | | PAKWACH | | ZOMBO | | AGAGO | | KITGUM | | LAMWO | | | |
	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
High	59	49	56	74	44	61	44	61	53	74	51	65	48	73	355	64
Medium	38	32	11	15	18	25	22	31	11	15	18	23	9	14	127	23
Low	23	19	9	12	10	14	6	8	8	11	9	12	9	14	74	13

3.2.10 Sexual Reproductive Health and Rights

Given that in the NURI context, Climate Smart Agriculture (CSA) is understood in the broadest sense, referring to not only climate-smart agronomic practices but also to the ability of men and women in the farmer groups to exercise their sexual and reproductive rights. The study examined awareness and accessibility to SRHR services. Results show high awareness; 93% had heard about SRHR in their community and 89% of them had received training about SRHR. See Table 3.2.10.1.

Table 3.2.10.1: Levels of awareness about SRHR and use of family planning methods

	West Nile Region								Acholi Region						Total	
	ARUA		NEBBI		PAKWACH		ZOMBO		AGAGO		KITGUM		LAMWO			
	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Ever heard about SRHR	101	84	73	97	68	94	69	96	67	93	72	92	65	97	515	93
Received training about SRHR	86	85	63	85	65	96	62	90	59	88	64	89	58	89	457	89
Providers of training																
Development partner/NGO	9	11	7	11	3	5	4	7	18	31	24	38	23	40	88	19
Health facility	72	84	54	86	61	94	57	92	46	78	52	81	40	69	382	84
Family/Friends	2	2	4	6	3	5	1	2	7	12	5	8	0	0	22	5
Government official	3	4	3	5	4	6	4	7	4	7	4	6	2	3	24	5
Ever used FP methods	69	68	30	41	43	61	39	57	32	49	35	50	31	48	279	54
Source of FP services																
Health facility	61	88	26	87	36	84	32	82	28	88	32	91	24	77	239	86
Family/friends:	3	4	3	10	4	9	6	15	1	3	3	9	4	13	24	9
Development partner center:	3	4	0	0	0	0	1	3	4	13	3	9	1	3	12	4
Other:	3	4	0	0	1	2	0	0	1	3	0	0	3	10	8	3

About use of family planning (FP) methods, results show that only just over half (54%) had ever used FP methods. The highest proportion that had ever used FP were found in Arua (68%) while the least was reported in Nebbi (41%). In terms of sources of the FP methods, majority (86%) across the seven districts cited health facilities as the place where they received the FP method they used. Those that reported receiving FP methods from family and friends were only 9%, while those that got them from development partners were only 3% in the sample.

From the focus group discussions all across the programme, participants cited negative experiences by community members who have used some of the family planning methods to be affecting its uptake. Commonly, participants cited side effects such excessive/uncontrolled bleeding, unexplained pains, development of wounds associated with modern methods of family planning as the reason they do not use. Others (mostly in Arua) were comfortable with the natural methods, such as breastfeeding, which they perceive can enable a woman to prevent conception for even up to three (3) years.

3.3 BASELINE INDICATORS FOR THE REFUGEE COMMUNITY

3.3.1 Household Income

The study assessed average annual agricultural cash income for refugee households participating in the NURI programme. As earlier mentioned, the refugee households targeted participate in mixed groups (refugees and nationals) and refugee women groups. In assessing the refugees in the mixed groups, only refugee households comprising of both men and women were involved in the household interviews whereas the nationals participated in the focus group discussions. Each sampled household was asked to share their income sources from both agricultural and non-agricultural related activities, how much the earned from each and to reveal the most reliable among all sources earned from in 2018.

Results show that the average annual agricultural cash income for refugee households participating through mixed groups was UGx 872,410/= and UGx 294,241/= for the women groups. This average is below what the new national farmers earned in 2018. On the other hand, the average income from non-agricultural activities was much higher for both categories i.e. UGx 1,740,429/= for households in mixed groups and UGx 1,063,875/= for women groups. From this, one can see that whereas the new national farmer groups got more cash income through agricultural activities, the refugee households earned more cash income from non-agricultural activities. During the focus group discussions and reports from the key informant interviews, it was observed that majority of the refugee households interviewed were farmers back home in South Sudan however due to the conditions in the settlement, they are unable to actively engage in production activities.

When cash income from both sources are combined for the refugee households, one can see that their annual earning is close to the combined average of the new nationals. The respondents asserted that the food ratios given is not sufficient likewise the cash transfers. This pushes them to engage in a number of non-agricultural activities like boda-boda riding, casual work on farms, operating small kiosks of non-food items, charcoal burning, small scale baking etc. to supplement their income in order to survive reasonably. A comparison of earning between the different household types within the mixed groups reveals that female-headed households in the mixed groups earned more income than male-headed households. In general, the refugee households in mixed groups received higher cash income than the women groups in 2018.

Figure 3.3.1.1: **Average annual household income earned by Refugees in 2018**
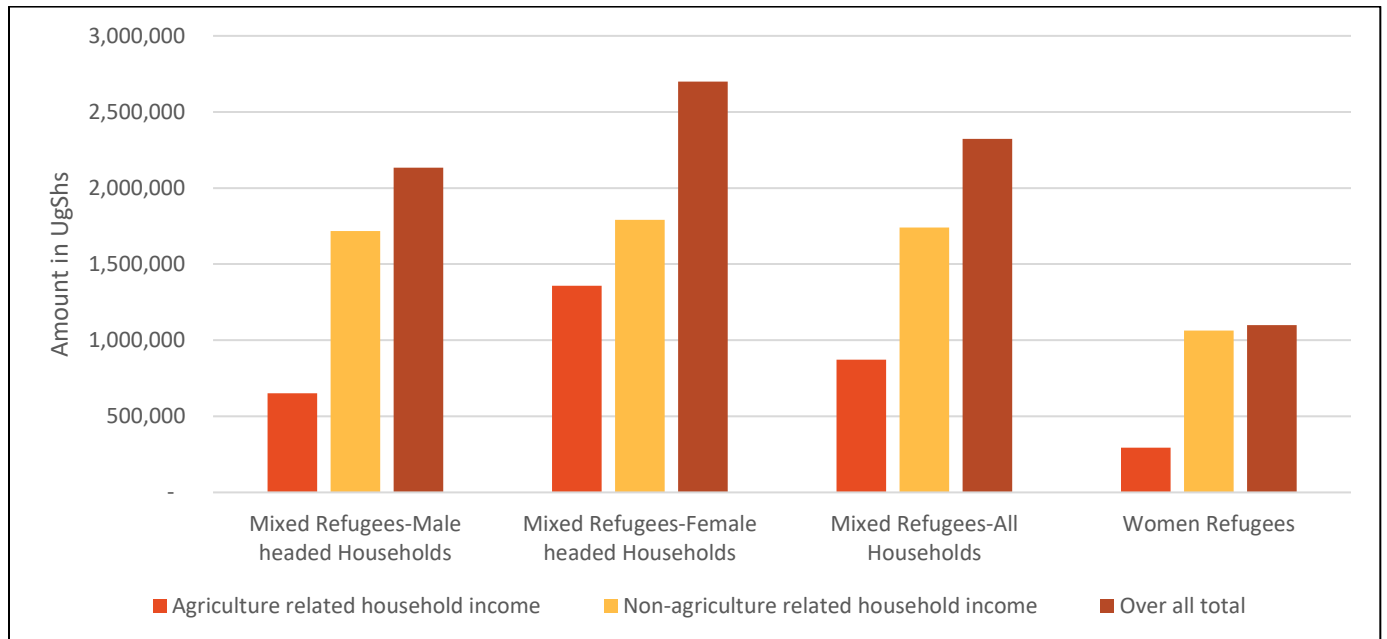
Table 3.3.1.2: Average household income from agricultural and non-agricultural sources in 2018

Table 1

| | | Mixed Refugees | | | | | | Women Refugees | |
| | | Male-headed | | Female-headed | | Total | | | |
		No.	%	No.	%	No.	%	HHs	%
Agriculture related household income in Uganda Shillings	< 200,001	9	40.9	7	70.0	16	50	13	45
	200,001-600,000	5	22.7	0	0.0	5	16	13	45
	600,001-100,0000	4	18.2	1	10.0	5	16	2	7
	1,000,001-1,400,000	1	4.5	0	0.0	1	3	1	3
	1,400,001-1,800,000	2	9.1	0	0.0	2	6	0	0
	1,800,001-2,200,000	0	0.0	1	10.0	1	3	0	0
	2,200,001-2,600,000	0	0.0	0	0.0	0	0	0	0
	2,600,001+	1	4.5	1	10.0	2	6	0	0
	Total	651,795		1,357,761		872,410		294,241	
Non-agriculture related household income (Uganda Shillings) in 2018	< 200,001	3	15.8	3	33.3	6	21.40	12	50
	200,001-600,000	5	26.3	3	33.3	8	28.60	4	17
	600,001-100,0000	4	21.1	0	0.0	4	14.30	2	8
	1,000,001-1,400,000	3	15.8	1	11.1	4	14.30	2	8
	1,400,001-1,800,000	0	0.0	0	0.0	0	0.00	0	0
	1,800,001-2,200,000	0	0.0	0	0.0	0	0.00	0	0
	2,200,001-2,600,000	0	0.0	0	0.0	0	0.00	1	4
	2,600,001+	4	21.1	2	22.2	6	21.40	3	13
	Total	1,716,632		1,790,667		1,740,429		1,063,875	
Over all total		2,134,300		2,699,400		2,322,700		1,098,900	

3.3.2 Food security

To investigate this indicator, the study assessed period during which the respondents reported food shortage and average number of meals a refugee household consumed per day. Results show that all refugee households selected in the sample had at least two meals per day in 2018. Comparing the two categories, more than half (57%) of the women refugee households had two meals per day and 43% had at least three meals per day. The refugee households in the mixed groups had 75% of respondents reporting to have had at least three meals per day and 25% two meals. No refugee household reported to have had one meal or no meal in 2018.

Food shortage was experienced by refugee households mostly in the months of May, June and July 2018 attributed to bad weather/long dry spells that led to crop failure, delays in delivery of relief aid food by WFP and for some households' failure to receive relief food. The latter was attributed to cases of names of beneficiaries missing on the food log. See Table 3.3.2.1 for details on number of meals eaten and proportion that experienced shortage of food.

Table 3.3.2.1: Reported number of meals eaten per day in Refugee households in 2018

| | | Mixed Refugees | | | | | | Women refugees | |
| | | Male-headed | | Female-headed | | Total | | | |
		HHs	%	HHs	%	HHs	%	HHs	%
Average number of meals consumed per day	1	0	0	0	0	0	0	0	0
	2	4	19	4	36	8	25	17	57
	3+	17	81	7	64	24	75	13	43
Months during which food shortage was experienced									
January		4	18	2	18	6	18	5	16
February		3	14	2	18	5	15	3	10
March		6	27	2	18	8	24	6	19
April		7	32	2	18	9	27	7	23
May		9	41	5	46	14	42	17	55
June		12	55	6	55	18	55	22	71
July		7	32	4	36	11	33	12	39
August		3	14	1	9	4	12	5	16
September		5	23	0	0	5	15	4	13
October		4	18	0	0	4	12	5	16
November		3	14	0	0	3	9	3	10
December		2	9	0	0	2	6	2	7

The study collected data on the different types of foods consumed by refugee households and their frequency of consumption in 2018. Among the foods considered were cereals, tubers, vegetables, fruits, meat, eggs, fish, pulses, milk and milk products, oils, fats and butter as well as sugar. Results show that cereals were the most commonly consumed food type by the refugee households and was consumed on a daily basis (women - 90% and mixed refugee households 79%). This was followed by pulses in refugee households participating in mixed groups (79%) and vegetables (55%) for women refugees. Fruits, meat, eggs, and fish as well as milk and milk products were rarely eaten; in both mixed and women refugee households, these food types were either eaten once a month or not at all. The groups expressed during the focus group discussions that the food types that were consumed once a month or not at all were very expensive and most households could not afford to buy them. See Table 3.3.2.2

An understanding of the different sources of food consumed was done and results show that the most frequently consumed food types (cereals, pulses & tubers/roots) were produced by the refugee households, distributed by development partners and bought from the market. Individual production of food was registered more for households participating through mixed groups as compared to women groups. Receipt from development partners and buying from the market was synonymous to both group types. None of the households borrowed or received the foods in form of gifts; they either got them form their own garden, development partners or bought from the market. See Table 3.3.2.3.

Table 3.3.2.2: Frequency at which various foods were consumed by refugee households in 2018

	Mixed Refugees								Women Refugees							
	Daily		Weekly		Monthly		Not at all		Daily		Weekly		Monthly		Not at all	
	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%	HHs	%
Cereals	23	70	9	27	0	0.0	1	3	28	90	3	10	0	0	0	0
Tubers & roots	7	21	14	42	9	27	3	9	8	26	19	61	4	13	0	0
Vegetables	11	33	20	61	2	6	0	0	17	55	14	45	0	0	0	0
Fruits	0	0	7	21	15	46	11	33	2	7	11	36	9	29	9	29
Meat	0	0	4	12	18	55	11	33	0	0	1	3	22	71	8	26
Eggs	0	0	12	36	12	36	9	27	1	3	8	26	17	55	5	16
Fish	0	0	15	46	12	36	6	18	0	0	6	19	20	65	5	16
Pulses	26	79	5	15	1	3	1	3	10	32	15	48	4	13	2	7
Milk & milk products	3	9	2	6	7	21	21	64	1	3	3	10	9	29	18	58
Oils, fats & butter	14	42	16	49	1	3	2	6	14	45	16	52	1	3	0	0
Sugar	5	15	22	67	3	9	3	9	9	29	12	39	6	19	4	13

Table 3.3.2.3 Source of the food consumed

	Mixed Refugees										Women Refugees									
	Produced by HH		Bought from market		Distributed by DPs		Borrowed		Gifts		Produced by HH		Bought from market		Distributed by DPs		Borrowed		Gifts	
	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HHs	%	HHs	%	HHs	%
Cereals	16	50	4	13	12	38	0	0	0	0	2	7	4	13	25	81	0	0	0	0
Tubers & roots	15	48	16	52	0	0	0	0	0	0	9	29	21	68	1	3	0	0	0	0
Vegetables	23	72	9	28	0	0	0	0	0	0	28	90	3	10	0	0	0	0	0	0
Fruits	8	35	14	61	0	0	0	0	1	4	7	32	15	68	0	0	0	0	0	0
Meat	0	0	24	100	0	0	0	0	0	0	1	4	23	96	0	0	0	0	0	0
Eggs	5	21	19	79	0	0	0	0	0	0	11	41	15	56	1	4	0	0	0	0
Fish	2	7	26	93	0	0	0	0	0	0	1	4	26	96	0	0	0	0	0	0

Pulses	11	34	8	25	13	41	0	0	0	0	8	27	13	43	9	30	0	0	0	0
Milk & milk products	4	27	10	67	0	0	1	7	0	0	0	0	14	93	1	7	0	0	0	0
Oils, fats & butter	1	3	15	48	15	48	0	0	0	0	0	0	6	19	25	81	0	0	0	0
Sugar	0	0	30	100	0	0	0	0	0	0	0	0	24	96	1	4	0	0	0	0

3.3.3 Access to Land for Refugee Households

Finding of the study reveals that all the refugee households interviewed had some access to land in 2018. On average the women refugee households cultivated 0.6 acres while the households in mixed groups cultivated 1.8. This shows that women refugee households had less access to land compared to those that participated through mixed groups. Most of this land was obtained through allocation by Office of the Prime Minister (OPM), borrowing and hire from non-group members, partial cultivation on family and communal land from the national farmers.

Although the refugees reported having access to land, it should be noted that access for the women refugees was more challenging and it's the reason why their average acreage cultivated is low. From the Focus Group Discussions, the refugees reported that negotiation or request for land is made to landlords who are mainly men. As women, they are unable to engage in negotiation with landlords as they may be perceived negatively. It would have been easier if female nationals owned some land. Refugees in mixed groups found it easier and faster to negotiate or ask for land for cultivation and it is the reason that their average acreage is high. From the discussions still, respondents asserted that land given by the host community was ranging between 0.5 – 1.5 acres. A few women refugees were also given however complains of distance to the located land were raised. See Table 3.3.3.1.

During the focus group discussions, refugees raised a concern on land access, use and availability. Land access is a challenge as the OPM allocation does not cover their land needs, some nationals are not very cooperative and give land that is located very far from the settlement or infertile. In many instances they are provided with seed and tools but due to land problems they don't use the inputs provided. As part of measures to overcome these challenges, the following suggestions were made;

- Refugee households should be supported financially to rent land for cultivation
- Office of the Prime Minister (OPM) should allocate more land to refugees
- OPM should engage Nationals with idle land to allow refugees use it
- Refugee households should be trained in modern farming using small land acreage

Table 3.3.3.1: Mode of acquisition of land cultivated

Ways of land acquisition	Mixed Refugees									Women Refugees		
	Male-headed			Female-headed			Total					
	HHs	Mean Land size (Acres)	%	HHs	Mean Land size (Acres)	%	HHs	Mean Land size (Acres)	%	HHs	Mean Land size (Acres)	%
Allocated by OPM	10	0.3	6	7	0.2	13	17	0.3	8	27	0.3	42
Borrowed through mixed groups	3	1.5	10			0	3	1.5	8			-
Borrowed from non-group members	5	0.6	7	4	1.0	33	9	0.8	12	10	0.5	31
Hired from group members	2	1.8	8			0	2	1.8	6			-
Hired from non-group members	5	1.2	13	3	0.8	18	8	1	14	7	0.7	28
Family owned	5	3.3	37	1	4.0	32	6	3.4	36			
Communal owned	2	4.3	19	1	0.5	4	3	3	16			-
Total land cultivated	22	2.0	100	10	1.3	100	32	1.8	100	30	0.6	100

3.3.4 Access and Use of Improved Agricultural Inputs

The study assessed access to and use of improved agro-inputs by the refugee households (mixed and women refugee groups) in the settlement in the year 2018. The results show that only 33% of male-headed refugee households in mixed groups, 27% in female-headed households and 35.5% of women groups used improved agricultural inputs. The commonly cited source of the inputs was development partners operating in the settlement implementing agricultural livelihoods activities (64% - mixed groups and 90% women refugee groups). Only one mixed refugee household reported buying from an input dealer within the settlement. See Table 3.3.4.1.

Table 3.3.4.1: Refugee households that used improved agricultural inputs in 2018

| | Mixed Refugees | | | | | | Women Refugees | |
| | Male-headed | | Female-headed | | Total | | | |
	HHs	%	HHs	%	HHs	%	HHs	%
Used improved agricultural inputs in 2018	8	36.4	3	27.3	11	33	11	35.5
Source of the improved inputs								
Input dealer in the settlement	1	12.5	0	0.0	1	9	0	0
Open market	2	25.0	0	0.0	2	18	0	0
Friends/family	2	25.0	0	0.0	2	18	1	9.1
Given by development partner	4	50.0	3	100.0	7	64	10	90.9

From the development partners, refugee households received seeds, pesticides and fertilizers which they rated highly. None of the refugee households rated the quality of the inputs given to them low. Seeds were rated highest by both women refugees (90%) and refugees in mixed groups (71%). A few respondents rated the seed quality as medium and no household rated quality as low. Similarly, mixed refugee households that received pesticides from Development Partners also rated them as highly effective. See Table 3.3.4.2.

Table 3.3.4.2: Rating of the quality of inputs from Development Partners

| | | Mixed Refugees | | Women Refugees | |
Quality of inputs	**Rating**	**HHs**	**%**	**HHs**	**%**
Seeds (germination, cleanliness, whole):	High	5	71	9	90
	Medium	2	29	1	10

	Low	0	0	0	0
Pesticide/fertilizer (effectiveness):	High	3	100	0	0
	Medium	0	0	0	0
	Low	0	0	0	0

3.3.5 Agricultural Enterprise Production on Households' Land

The study assessed production levels of refugee households such that it will possible in the future to measure improvements as a result of application of some CSA practices. This was done for both group types and data for all the crop types grown by a household was collected. The major crops cultivated in 2018 by the households were sesame, beans, maize, groundnuts, cassava, sorghum, millet, pigeon peas, sweet potatoes and vegetables. The average yields varied from crop to crop. In some instances, the yields were higher than for new nationals that cultivated the same crop types.

Comparing yield data between refugee households participating through mixed groups and households in women groups shows varied results, for some crops the performance from one group type appeared to be better and vice versa. The new national farmers who participated in the focus group discussions together with refugee households claimed that the refugee households have better access to improved inputs (seeds) compared to them. The development partners that distribute improved inputs normally target only the refugee households in the settlement.

Table 3.3.5.1: Average yield in Kgs per acre for different crops

Crop	Mixed Refugees									Women Refugees		
	Male headed			Female headed			Total					
	HHs	Mean Kgs per acre	Percentage sold (%)	HHs	Mean Kgs per acre	Percentage sold (%)	HHs	Mean Kgs per acre	Percentage sold (%)	HHs	Mean Kgs per acre	Percentage sold (%)
Sesame	18	208.93	58.4	8	373.3	52.6	26	259.5	56.5	19	297.2	57.6
Beans	3	950	41.7	5	128.2	90.0	8	583.2	57.8	1	33.3	75
Maize	13	814.67	36.7	7	471.8	66.7	20	694.7	54.7	16	846	50.3
Groundnuts	7	782.87	66.2	4	525.0	61.7	11	689.1	64.2	8	441.4	54.5
Cassava	6	892.22	50.0				6	892.2	50	2	684.6	66.7
Sorghum	10	225.40	59.7	6	532.3	45.9	16	340.5	51.4	5	750	66.7
Millet	1	100.00	50.0				1	100	50			
Pigeon Peas	4	320.32	51.7				4	320.3	51.7	2	530.8	25
Sweet potato	7	4341.45	40.7	2	4009.2	39.8	9	4,267.60	40.4	10	3,528.10	45.9
Vegetables	4	816	95.7	5	720	52.2	9	905	60.9	15	605.40	48.7

3.3.6 Refugee Households' participation in VSLA

According to findings of the study, only 33% of refugees in mixed groups and 31% of women groups participated in VSLA in 2018. In terms of training of VSLA participating individuals, all the women refugees (100%) and 80% of refugees in mixed groups reported to have received training from mainly NGOs and CBOs. The respondents explained that the training sessions & cycle were too short, in most cases they were trained not more than thrice and their follow up was poor. Their ability to save was curtailed by lack of a stable and consistent source of income, poor health and exclusion by the leadership of existing VSLA groups. Others revealed that there were no VSLAs in South Sudan, and they had just learnt about their existence for the first time by the time of the baseline study.

Comparing the household types within the mixed groups, results show that the female-headed households saved more that the male-headed households. Unlike the new national farmer households that used most of the loans borrowed for agricultural production, the refugees used the money borrowed for petty trade and purchase of household items. From the focus group discussions, the participants remarked that if they had better access to land, most of the money borrowed could have been used for production purposes. For those that were able to participate and save up some money, the money saved was obtained through small businesses, sale of food items and other activities they are engaged in within the settlement. Youth participation within the refugee groups was rated as low attributed to lack of regular sources of income to support regular savings.

In assessing participation of refugee households in VSLA activities, it was expected that VSLA in itself would be one major source of funding for the agricultural activities that refugee households engage however this has not been the case. From the results, 58% of the respondents from women refugee groups and 47% of mixed groups reported that their major source of finance for agricultural activities is individual household savings. Only 3% of women refugee groups and 17% of mixed groups reported VSLA as a source of finance for their production activities.

Table 3.3.6.1: Participation of Refugee Households in VSLA Activities

		Mixed Refugee						Women Refugee	
		Male-headed		Female-headed		Total			
		HHs	%	HHs	%	HHs	%	HHs	%
Households participated in VSLA activities in 2018		6	32	4	36	10	33	9	31
Households that ever-received training on VSLA methodology		5	83	3	75	8	80	9	100
Provider of training on VSLA methodology									
NGO		4	80	3	100	7	88	9	100
Community Based Organization		1	20	0	0	1	12	0	0
Participation of youth of 18 - 28 years in VSLA activities	High	2	11	0	0	2	7	0	0
	Medium	4	21	0	0	4	13	2	7
	Low	13	68	11	100	24	80	27	93
Ways households accessed money to finance agricultural production activities in 2018									
VSLA		3	14	2	18	5	17	1	3
Individual household savings		9	41	5	46	14	47	18	58
Borrowing from family/friends		2	9	0	0	2	7	2	7
Gifts		0	0	1	9	1	3	0	0
Sale of agricultural produce		7	32	9	82	16	53	4	13
Average amount of money borrowed per household from VSLAs		**166,000**		**1,603,300**		**705,000**		**172,000**	
Ways VSLA loan was used per household									
Agricultural production		85,000	44	300,000	56	214,000	51	115,000	49
Petty trade		125,000	78	240,000	25	163,330	61	105,660	86
School requirements		80,000	50	950,000	22	370,000	40	36,000	7
Health					14	600,000	14	36,667	21
Construction				100,000	2	100,000	2		0
Household asset				1,780,000	42	1,780,000	42	125,000	75

3.3.7 Participation of refugee household members in Agricultural Production

Understanding gender roles and youth participation in agricultural production was done for the refugee households too. Although their production level was much lower than for new national farmers, participation of household members varied and sometimes depended on the production stage. In the households that are participating through mixed groups, the adult males were more engaged during land opening, pest & disease management, marketing and planning for new season. Weeding, harvesting, drying, sorting and storage was left to the women to conduct. In the female-headed households and women groups, the production activities were done by the women in all stages with some help from their children. The households that managed to cultivate more than 1 acre of land supported their labour by hiring and seeking help from relatives and friends.

Making decisions about production activities was majorly done by the males for households that participated through mixed groups. Sometimes it depended on the stage of production, for instance during weeding and harvesting, the women took lead. In the female-headed households and women refugee groups it was the women that made all the production decisions. In a nutshell, during the discussions, the refugee households noted that decisions in a household whether it was to do with production or not, are made by men as long as it is a male-headed household.

Youth participation was rated low by all the refugee households. In the group discussions, respondents remarked that youths in the settlement prefer non-agricultural livelihood activities like operating small kiosks, boda-boda riding, small scale carpentry. Further probing revealed that their interest sometimes was influenced by the type of enterprises. Youths were interested in the non labour intensive enterprises like onions, maize and cassava which were easier to manage. Overall, youths in the lower age bracket within the settlement have found it difficult to access land for production.

Table 3.3.7.1: Level of participation in agricultural production for mixed refugee household members

	Mixed Refugees															
	Adult Female		Adult Male		Children		Adult Female & Male		Adult Female & children		Adult Male & children		All members		No HH members involved	
	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Household members' involvement in the following activities																
Land opening and preparation	2	7	10	32	0	0	6	19	2	7	0	0	8	26	3	10
Planting	2	7	3	10	0	0	7	23	2	7	1	3	13	42	3	10
Weeding	5	16	3	10	0	0	6	19	3	10	0	0	12	39	2	7
Pest and disease management	4	14	9	31	0	0	1	3	0	0	0	0	4	14	11	38
Harvesting	6	19	2	7	0	0	5	16	3	10	0	0	12	39	3	10
Post-Harvest handling	13	42	2	7	0	0	3	10	4	13	0	0	8	26	1	3
Marketing	11	37	7	23	0	0	5	17	2	7	0	0	2	7	3	10
Planning for new season	8	26	8	26	0	0	12	39	1	3	0	0	2	7	0	0
Use of income received from production	8	26	7	23	0	0	8	26	1	3	0	0	6	19	1	3
Household member in charge of mobilizing resources for																
Land opening and preparation	11	36	19	61	0	0	1	3	0	0	0	0	0	0	0	0
Planting	10	32	21	68	0	0	0	0	0	0	0	0	0	0	0	0
Weeding	19	61	12	39	0	0	0	0	0	0	0	0	0	0	0	0
Pest and disease management	8	32	14	56	0	0	0	0	0	0	0	0	0	0	3	12
Harvesting	23	74	8	26	0	0	0	0	0	0	0	0	0	0	0	0
Post-Harvest handling	26	84	5	16	0	0	0	0	0	0	0	0	0	0	0	0
Marketing	15	52	12	41	0	0	0	0	0	0	0	0	0	0	2	7
Planning for new season	11	36	19	61	0	0	1	3	0	0	0	0	0	0	0	0
Use of income received from production	11	37	18	60	0	0	1	3	0	0	0	0	0	0	0	0

Table 3.3.7.2: Level of participation in agricultural production for members in women refugee households

	Women Refugees															
	Adult Female		Adult Male		Children		Adult Female & Male		Adult Female & children		Adult Male & children		All members		No HH members involved	
	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Household members' involvement in the following activities																
Land opening and preparation	11	37	3	10	0	0	10	33	5	17	0	0	0	0	1	3
Planting	10	33	1	3	0	0	4	13	10	33	0	0	4	13	1	3
Weeding	16	53	0	0	0	0	2	7	7	23	0	0	4	13	1	3
Pest and disease management	15	65	1	4	0	0	5	22	2	9	0	0	0	0	0	0
Harvesting	14	47	1	3	0	0	1	3	8	27	0	0	5	17	1	3
Post-Harvest handling	19	63	0	0	0	0	3	10	6	20	0	0	2	7	0	0
Marketing	27	90	2	7	0	0	0	0	1	3	0	0	0	0	0	0
Planning for new season	23	77	0	0	0	0	7	23	0	0	0	0	0	0	0	0
Use of income received from production	20	71	0	0	0	0	8	29	0	0	0	0	0	0	0	0
Household member in charge of mobilizing resources for																
Land opening and preparation	24	80	6	20	0	0	0	0	0	0	0	0	0	0	0	0
Planting	24	80	6	20	0	0	0	0	0	0	0	0	0	0	0	0
Weeding	26	87	4	13	0	0	0	0	0	0	0	0	0	0	0	0
Pest and disease management	18	78	5	22	0	0	0	0	0	0	0	0	0	0	0	0
Harvesting	25	83	5	17	0	0	0	0	0	0	0	0	0	0	0	0
Post-Harvest handling	25	83	5	17	0	0	0	0	0	0	0	0	0	0	0	0
Marketing	25	83	5	17	0	0	0	0	0	0	0	0	0	0	0	0
Planning for new season	24	80	5	17	0	0	1	3	0	0	0	0	0	0	0	0

	Women Refugees															
	Adult Female		Adult Male		Children		Adult Female & Male		Adult Female & children		Adult Male & children		All members		No HH members involved	
	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Use of income received from production	23	82	5	18	0	0	0	0	0	0	0	0	0	0	0	0

3.3.8 Sexual Reproductive Health and Rights

Understanding awareness and access to sexual reproductive health and rights services was done for refugee households. Findings indicate that 83% of women refugee groups and 77% of refugee household participating through mixed groups had heard about SRHR within their communities. Seventy-five (75%) percent of mixed groups and 77% of women refugees had received some training on SRHR from development partners and health facilities.

As indicated in table 3.3.8.1 below, 39% of refugee households in mixed groups reported to have used family planning methods compared 27% in women groups. These services were received from development partners and health facilities for the women groups and in the mixed groups besides the aforementioned sources government officials also helped. A higher level of SHR use can be seen for refugees in mixed groups compared to those in the women groups. The women groups expressed fear for the negative side effects, cultural practices and negative attitudes in general.

Table 3.3.8.1: Awareness about SRHR and use of family planning among refugees

	Women Refugees		Mixed Refugees	
	HHs	%	HHs	%
Ever heard about SRHR in the community	25	83	24	77
Received any training or awareness raising about SRHR	20	77	18	75
Place/person that provided training on SRHR				
Development partner/NGO	11	55	8	44
Health facility	9	45	9	50
Family/Friends	-	-	2	11
Government official	-	-	-	-
Ever used any family planning methods	7	27	12	39
Place/person that provided FP service				
Health facility	5	71	10	83
Family/friends	-	-	2	17
Development partner center	1	14	3	25

3.3.9 Refugees' Relationship with host Communities

This was done for refugee households participating through mixed groups and 97% of the respondents reported to be having a good relationship with the nationals. The good relationship started before joining the NURI programme in the areas of provision of transport to the settlements, showing them around the important service provision points like hospitals, schools and social spaces. Others reported sharing food and improved crop seeds with the locals while on the social front, some reported playing football with

them. 90% reported that joining the NURI programme has improved their interaction with the nationals. For instance, the number of persons (nationals) they interacted with in 2018 increased and opportunities to rent land for cultivation also increased. When asked to describe their relationship with nationals, 48% called it very good and 41% good, leaving only 7% who felt it was just fair and 4% poor. See Table 3.3.9.1 below.

Results from the FGDs corroborates with the results from the face to face interviews. For instance, participants from "God Bless You" Group in Wanyange community, Rigbo Sub-county Arua district reported enjoying a good working relationship with people in the host community which enabled them access land and sometimes tools for cultivation. Asked whether there were situations were relationships were bad existed, most of them confirmed that they were negligible cases that they addressed amicably. The Refugee Welfare Council representative also added that the locals have been very helpful to the refugees and there has been mutual co-existence.

Table 3.3.9.1: Level of interaction between mixed refugee households and locals in Arua

		Mixed Refugees	
		HHs	%
Households that interacted with national farmers prior to joining the NURI programme		31	97
Interaction with national farmers changed upon joining NURI programme		28	90
How would you describe the relationship between the national farmer households	Very good	13	48
	Good	11	41
	Fair	2	7
	Poor	1	4
Nature/kind of production related support received;			
Land for production		24	72.7
Animal traction		2	6.1
Seed for production		18	54.5
Tools (hoes)		12	36.4
Opportunities for casual work to earn income		10	30.3
Others		1	3.0

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The areas of assessment during the baseline were aligned to the results framework of the NURI programme. The key areas were average agricultural cash income, food security, average yields for strategic crops, marketing, land access, VSLA and SRHR awareness. Demographic characteristics like gender, age, household size, education, household types were also examined.

The average annual agricultural cash income for new national farmers showed at average of UGx 1,685,419, Ugx 872,410/= for mixed refugee and Ugx 294,241/= for women refugee households. Efforts were made to ascertain income from non-agricultural activities and results for the refugee households indicated higher figures compared to earnings from agricultural activities. New national households derive their livelihood more from agricultural activities whereas for the refugees it from other nonagricultural activities. 45% of the respondents experienced food shortage between May and August 2018 during which food intake reduced. 89% of the households interviewed were able to consume on average 3 meals per day in West-Nile and 77% had 2 meals per day in Acholi sub-region. For the refugee households, majority of the participants in mixed groups consumed at least 3 meals per day (75%) and in the women group's majority consumed 2 meals (57%). No household was reported to have 1 meal or no food in a day in 2018.

Average yield per acre for strategic crops when compared to research estimates was seen to be low explained by a number of factors such as limited access to improved inputs, unfavorable weather and limited knowledge about improved farming practices. The yields also varied per region and depending on the crop types. Comparing with the refugee households, the yields also varied with some crops performing better and vice versa. Over 50% of the quantity of both strategic and non-strategic crops harvested was marketed to generate income for the households, although the market prices were perceived to be low. Marketing for most crop produce was done individually, as initiatives for collective/group marketing were nearly nonexistent for most crop varieties except Sunflower, sesame and beans. Market places and friends dominated the sources of market information for most households.

Total acreage of land cultivated in 2018 was notable for particularly national farmer households ranging between 2.5 acres and 7.8 acres, most of which owned by families. Households that had access to communal land, cultivated the largest acreage, an average of 7.2 acres. The challenge however, the hand-hoe still dominates among the methods used in preparation of land for production. Use of ox-ploughs was low and nearly non-existent in the West Nile Programme target districts. A combination of family and hired labor to prepare land for production was used, but with family labor as the most dominant source. Use of improved crop seeds and other inputs is notable though low; national farmer households that used improved

crop seeds were 45%, improved pesticides and herbicides (34%) while 20% used improved cassava cuttings. The low levels of use of improved agricultural inputs was attributed to limited knowledge/awareness on ways to use the improved agricultural inputs, absence of input dealers within walkable distances and high cost.

All refugee households had access to agricultural land in 2018, acquired mostly through allocation by Office of the Prime Minister and hire from non- group members. Refugee households participating through mixed groups had better access to land compared to the women groups. In terms of inputs, only 33% of mixed refugee and 35.5% of women refugee households used improved agricultural inputs obtained from development partners.

Participation in VSLA activities in 2018 was seen to be high both for new national farmers and refugee households. Most of the respondents reported to have received training from other development partners, CBOs and peers from within their communities. Most of the loans borrowed from VSLA was used for agricultural purposes for the new national farmers while in the refugee households' loans were used for petty trade. Youth participation varied for new national farmers and was low within the refugee groups.

Awareness about SRHR is high, 93% of respondents reported awareness for new national farmer households and 89% had received some training from health facilities and development partners. Awareness about SRHR was equally high among refugee households at 77% among women refugee and 83% in mixed refugee households. Use of family planning was noticed at 54% for new national farmers, 83% among mixed refugee and 27% among women refugee households respectively.

The objectives of the study and its scope was reached. The methodology employed enabled the realization of the study objective. The areas that were planned to be assessed in the NURI M&E results framework at impact, outcome and output levels were addressed.

4.2 Recommendations

Drawing from the findings of the baseline study, the following suggestions were made.
- NURI should support both national and refugee farmer households to access more improved agricultural inputs from within their communities
- Train farmers both national and refugees on use of improved agricultural inputs
- Support small-holder farmers to access and use modern farming tools such as ox-ploughs and tractors
- Support refugee farmer households to access more acreage of land for agricultural production

- Support both national and refugee farmer households to form groups for use in collective marketing of their produce
- Increase opportunities for farmer households (nationals and refugee) to join and participate in VSLA activities
- Increase of opportunities for learning about SRHR and use of modern family planning services among refugee households

ANNEXES

Annex 1: Baseline Tools

The following data collection tools were used:

1. Household questionnaire for new national farmer group household members
2. Household questionnaire for refugees in mixed groups
3. Household questionnaire for refugees in women groups
4. Key Informant interview guide for DLG and LLG from the sub-counties of study
5. Key informant interview guide for RWC
6. Focus Group Discussion guide

Annex 2: Conversion units for crop production (land and produce)

Units commonly used and standardization (Approximation)

SESAME	MAIZE	SUNFLOWER
1 bag full = 120 kg ½ bag = 60 Kg 1 basin full = 20 Kg 1 cup (mug) = 0.5 Kg 1 cup (min mug) = 0.33 Kg	1 bag full = 120 kg ½ bag = 60 kg 1 basin full = 20 Kg 1 cup = 0.5 Kg 1 cup (min mug) = 0.33 Kg 1 acre maize =400 Kg	1 bag full = 70 kg ½ bag = 35 Kg 1 basin full = 12 Kg 5 cups = 1 Kg
RICE (unmilled) 1 bag full = 100 kg ½ bag = 50 Kg 1 basin full = 17 Kg 1 cup = 0.5 Kg 1 cup (min mug) = 0.33 Kg **RICE (milled)** 1 bag full = 120 kg ½ bag = 60 Kg 1 basin full = 20 Kg 1 cup = 0.5 Kg 1 cup (min mug) = 0.33 Kg	**BEANS** 1 bag full = 120 kg ½ bag = 60 Kg 1 basin full = 20 Kg 1 cup = 0.5 Kg 1 cup (min mug) = 0.33 Kg	**SOYA BEANS** 1 bag full = 120 kg ½ bag = 60 Kg 1 basin full = 20 Kg 1 cup = 0.5 Kg 1 cup (min mug) = 0.33 Kg
Cassava 1 bag full (fresh) = 170 kg 1 basin full (fresh) = 30 kg 1 acre cassava = 6,770 kg 1 acre stems = 4 bags plant 1 bag cuttings = 45 Kg **Cassava (Flour)** 1 bag full (chips) = 92 kg 1 bag (flour) = 100 kg 1 basin full (chips) = 17 kg 1 cup = 0.4 kg 1 cup (mini mug) = 0.3 kg 1 katasa = 5kg 100 kg fresh = 37 kg dry	**Groundnuts (Unshelled)** 1 bag full = 45 kg 1 basin full = 7.5 kg 1 cup = 0.2 kg 1 cup (mini mug) =0.15 kg **Groundnut (Shelled)** 1 bag full = 120 kg 1 basin = 17 kg 1 cup = 0.4 kg 1 cup (mini mug) = 0.3 kg	**Sorghum (threshed)** 1 bag full = 130 kg 1 basin full = 22 kg 1 cup = 0.5 kg 1 cup (mini mug) = 0.35 kg **Bananas** Small bunch = 5 Kg Medium bunch = 10 Kg Big bunch = 20 Kg Very big bunch = 30 Kg

Millet (Threshed)	Pigeon pea (Threshed)	Sweet potato (Fresh)
1 bag full = 130 kg 1 basin full = 22 kg 1 cup = 0.5 kg 1 cup (mini mug) = 0.4 kg	1 bag full = 130 kg 1 basin full = 20 kg 1 cup = 0.5 kg 1 cup (mini mug) = 0.4 kg	1 bag full = 120 kg 1 basin full = 22 kg 1 acre s/pota vines = 5 bags 1 bundle vines = 18 Kg 1 acre yield = 2000 kg 1 basin of sliced s/p = 6.5Kg 1 bag of sliced s/p = 40 Kg **Irish potato** 1 bag full = 120 kg 1 basin full = 15 kg
Tomatoes & cabbage 1 basin tomatoes = 20 Kg 1 acre of tomatoes =1500 Kg 1 bag cabbage = 70 kg 1 big head cabbage = 2.5 kg 1 medium head =1.5kg 1 small head = 0.5 kg	**Sugar cane** 1 bundle = 20 stems (sticks) 1 lorry carries 500 bundles (estimate)	**Onions** 1 basin = 15 Kg 1 bag = 120 kg or 6 basins 1 acre = 1320 kg or 11 bags
Okra 1 acre = 1000 Kg green pods 1 basin = 10 kg 1 bag = 50 Kg	**Pumpkin** 1 Small = 2 Kg 1 Medium = 5 Kg 1 Big = 10 Kg 1 Very big = 20 Kg 1 acre = 120 fruits (6 - 10 plants)	

1 jug small (all grains except sunflower)   = 1 Kg
1 jug medium (all grains except sunflower)   = 2 Kg
1 jug big (all grains except sunflower)   = 3 Kg
1 Katasa (dish)   = 5 Kg
4 Nice cups (Plastic, short and thick)   = 1 Kg
Calabash (medium size for sowing seeds)   = 2 Kg

Conversion Rates

Ground nuts: shelled groundnuts weigh 60% of the unshelled.

Cassava: Dry/Milled cassava weighs 37% of fresh cassava (Assumption based on dry matter of cassava)

Standardizing Area measurements

1 Hectare	= 10,000M^2
1 Hectare	= 2.5 acres

1 acre	= 4000 M^2
0.5 acres	= 2000 M^2
1 acre	= 20 Katalas
1 Katala	= 20 X 10 M^2
1 Lasanduku	= 1 Katala
1 Large garden	= 1.5 acres (Acholi)
1 medium garden	= 1 acre (Acholi)
1 Kenya	= 1/3 acre
1 small garden or 1/2 garden	= 0.5 acres (Acholi)

SUMMARY OF OUTCOME & OUTPUT RESULTS

Indicators		Baseline Results (2018 Base year)				
		New National Farmers			Refugees in Mixed groups	Refugee Women groups
Immediate Objective: *To enhance resilience and equitable economic development in supported areas of Northern Uganda, including for refugees and host communities.*						
Increase in average annual agricultural cash income of participating HHs (segregated by age, gender of HH head and refugee status)		**Overall**	**W/Nile**	**Acholi**	**Rhino camp**	**Rhino camp**
		1,685,419	1,569,421	1,798,099	872,410/=	294,241/=
Reduction in number of participating HHs reporting periods of food insecurity (segregated by age, gender of HH head and refugee status)	Period of food shortage	45%	32%	58%	55%	71%
	No. of meals		90% (3 meals)	97% (2 meals)	75% (3 meals)	43% (3 meals)
Total number of people benefiting from supported WRM interventions		N/A			N/A	N/A
Objective for output 1: *To increase the agricultural output of small-scale farmers*						
Cumulative % of participating HHs adopting additional CSA practices		N/A			N/A	N/A
Cumulative % increase in average yields per acre for strategic crops for participating HHs		**Crop**	**Yield (kg)**	**Crop**	**Yield (kg)**	**Crop**	**Yield (kg)**
		Sesame	156	Sesame	208	Sesame	297
		Beans	264	Beans	1,341	Beans	33
		Maize	380	Maize	814	Maize	1,002
		Soybeans	231	Soybeans	N/A	Soybeans	N/A
		Sunflower	249	Sunflower	N/A	Sunflower	N/A

	Crop		Crop		Crop	
	Rice	504	Rice	N/A	Rice	N/A
	Potatoes	747	Potatoes	N/A	Potatoes	N/A
	Cassava	2,901	Cassava	892	Cassava	684
	Onions	1,052	Onions	N/A	Onions	N/A
Cumulative % of the quantity of strategic crops harvest that is sold	**Crop**	**% marketed**	**Crop**	**% marketed**	**Crop**	**% marketed**
	Sesame	60	Sesame	N/A	Sesame	N/A
	Beans	56	Beans	N/A	Beans	N/A
	Maize	55	Maize	N/A	Maize	N/A
	Soybeans	69	Soybeans	N/A	Soybeans	N/A
	Sunflower	83	Sunflower	N/A	Sunflower	N/A
	Rice	71	Rice	N/A	Rice	N/A